SDMX Ontology

Sharing Data and Metadata using SDMX Semantics

- Introduction
- Task Force
- Results so far
- Next Steps

SDMX 10th Global Conference

Rome, 1 October 2025

SDMX & LOD (Linked Open Data)

Key points: Interoperability, Harmonization, Comparability

When sharing data, we must speak <u>the same</u> language

What is an ontology

Ontology:

ousía ("being," "what exists") + **logos** ("study," "science,").

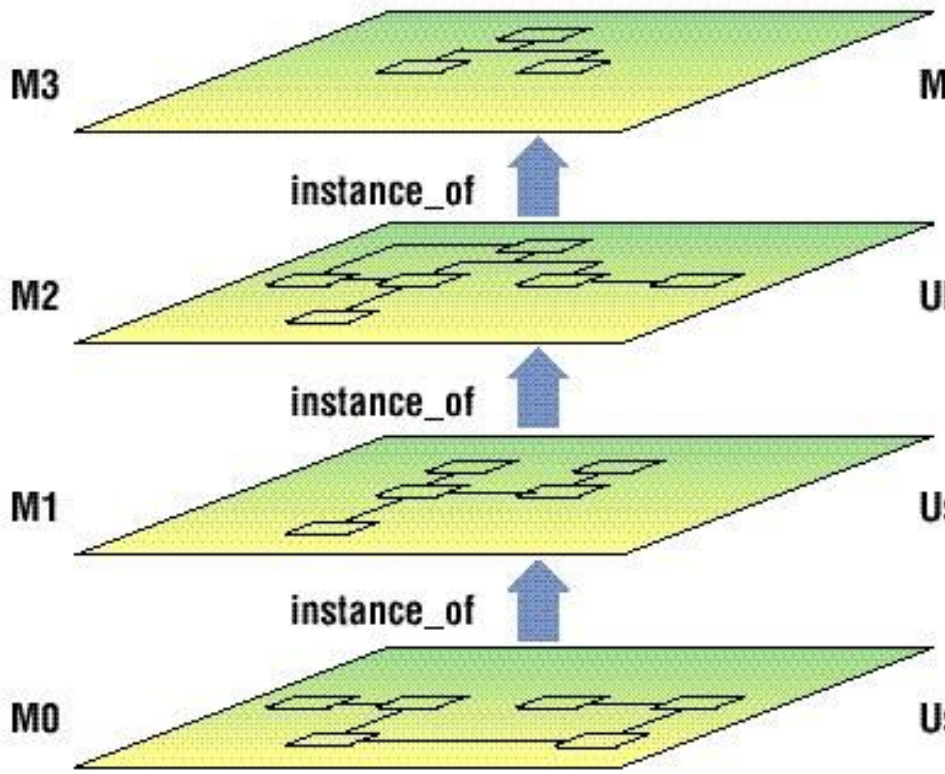
A representative model of the reality

- More expressive than any other modelling language
- Can be expressed using logical rules (reasoner)
- Can be queried using a specific language: SPARQL

OPPORTUNITIES:

- **The standard can be more understandable**
- **Can be used in machine-readable formats**
- **Allows a semantic web (meta)data discovery**
- **When mapped, allows more semantic languages**

How SDMX fits: modelling Levels



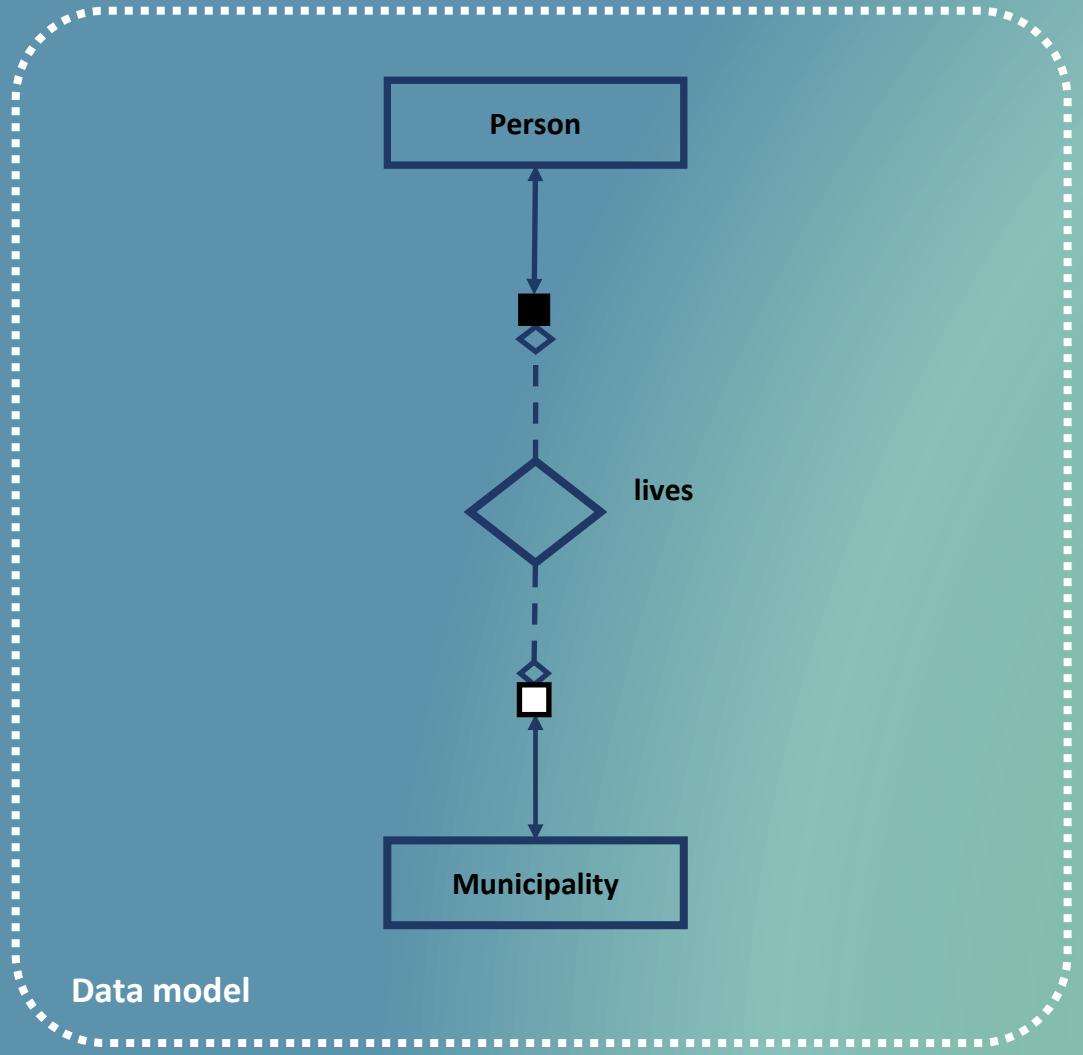
SDMX Metamodel (Information Model)

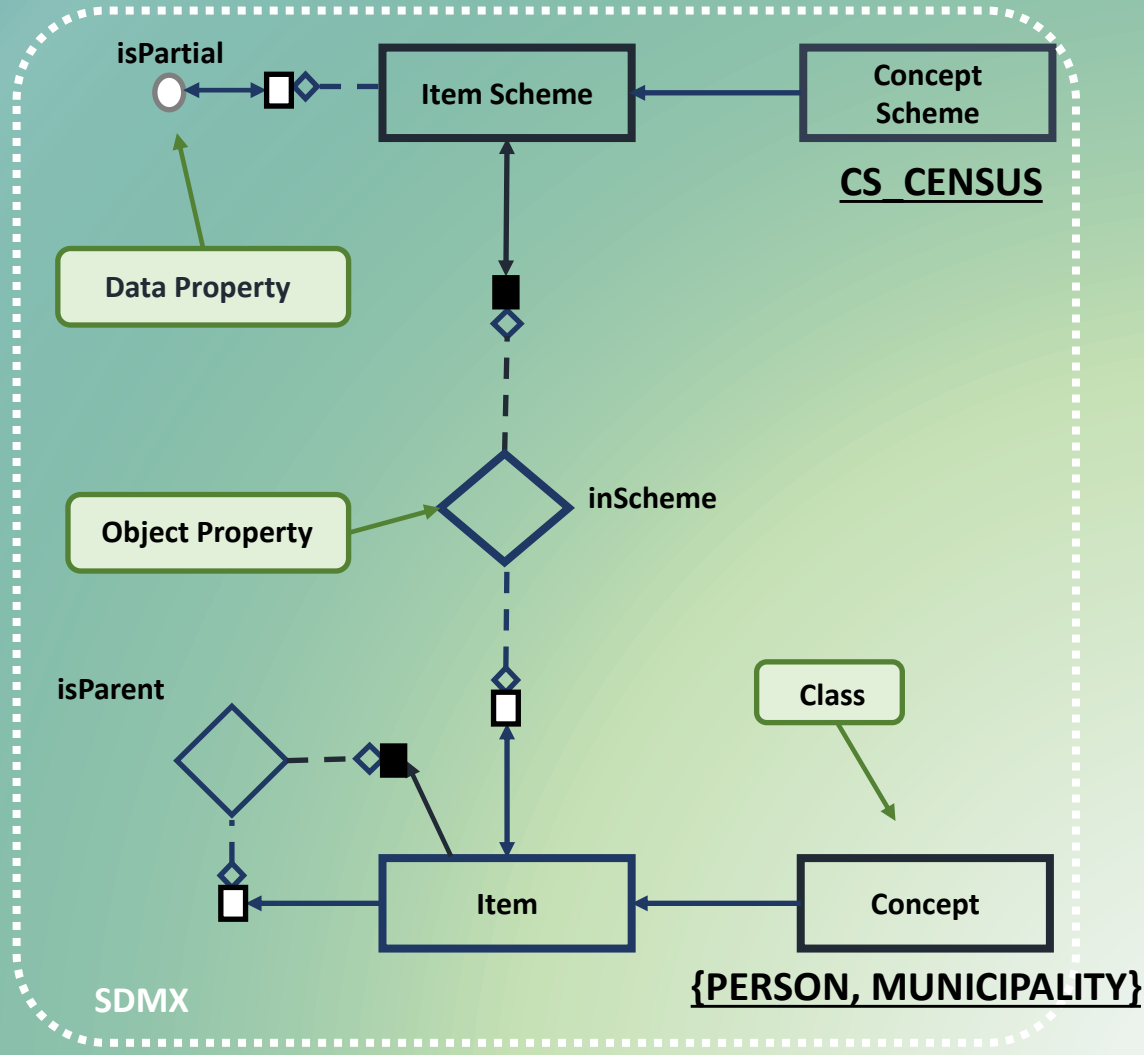
Data model: concepts, codes, DSD

Real data (e.g. BOP, SNA/ESA)

A model *represents a system and conforms to a metamodel*

Example


Person
lives
Municipality
Data model


isPartial
Item Scheme
Concept Scheme
CS_CENSUS
Data Property
Object Property
inScheme
isParent
Class
Item
Concept
SDMX
{PERSON, MUNICIPALITY}

Use Case

Querying the Global Registry without clicks, menus, or complex SDMX query messages.

Ex: Select the codes associated to a codelist of a concept ‘FREQ’ in a DSD ‘CPI’

Traditional GUI workflow

1.Select DSD ‘CPI’

2.Select concept ‘FREQ’

3.Open the associated codelist

4.Browse the available codes

Ontology-driven query (pseudo-language)

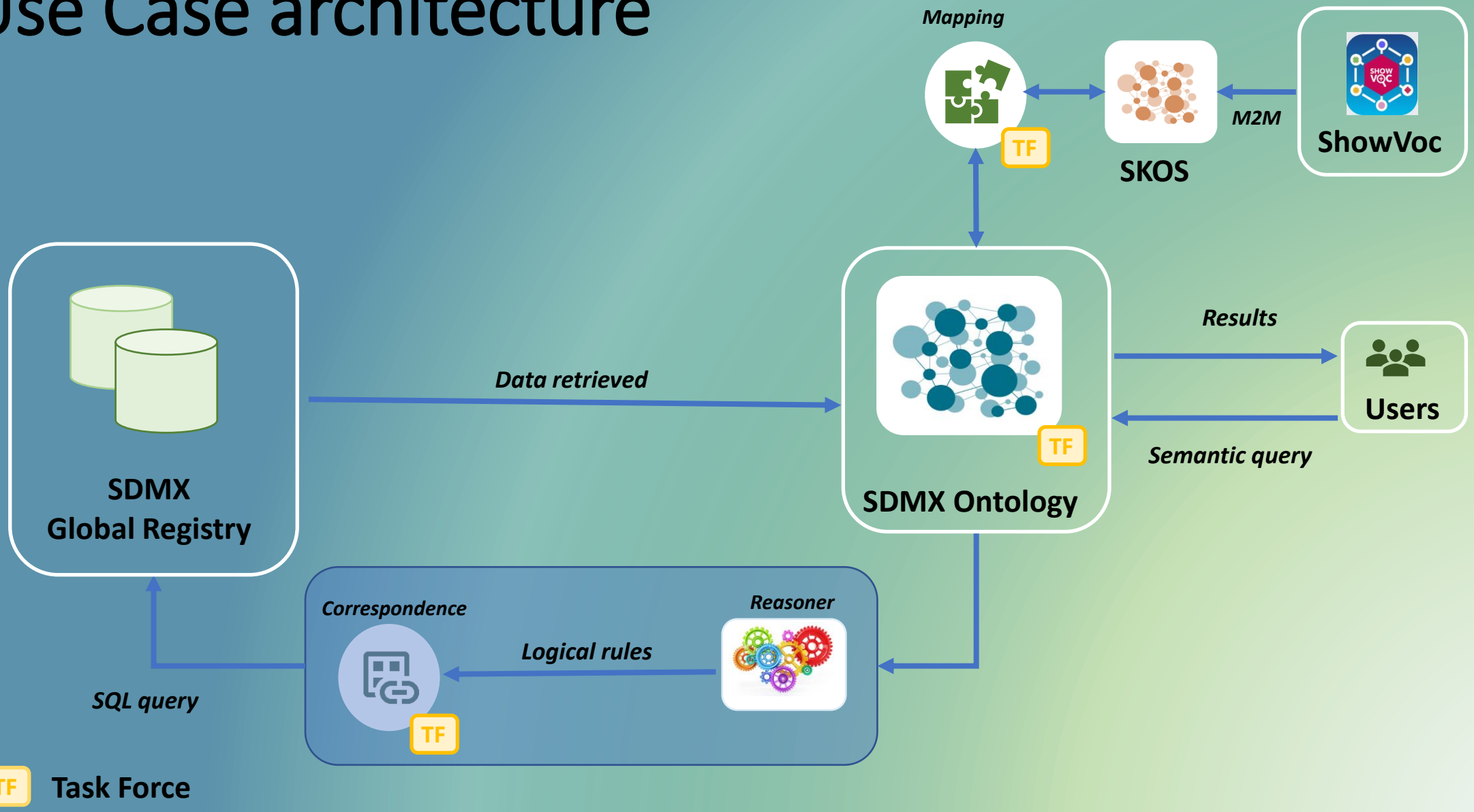
find all *code*(s) in

codelist used_by concept=‘FREQ’

concept in dsd=‘CPI’

Key point! Semantic queries enable flexible access to metadata.

Use Case architecture



Task Force

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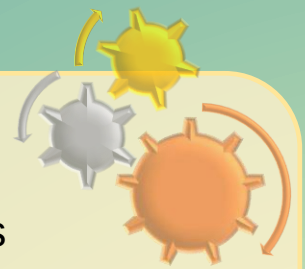


Objectives:

- Definition of use cases
- reuse existing ontologies
- Implementation of SDMX ontology

But of course…the more, the better!!! Our task force has unlimited seats

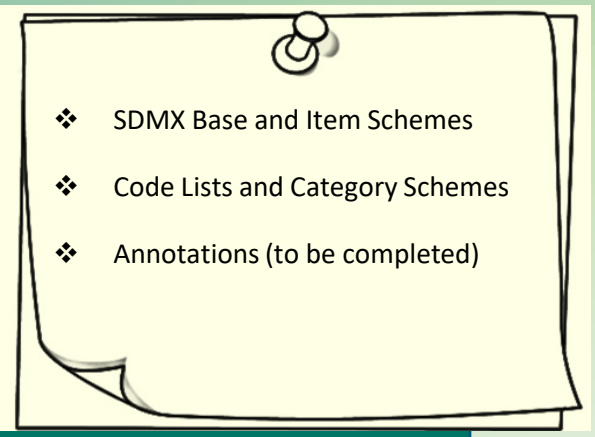
Results so far

One-time Actions

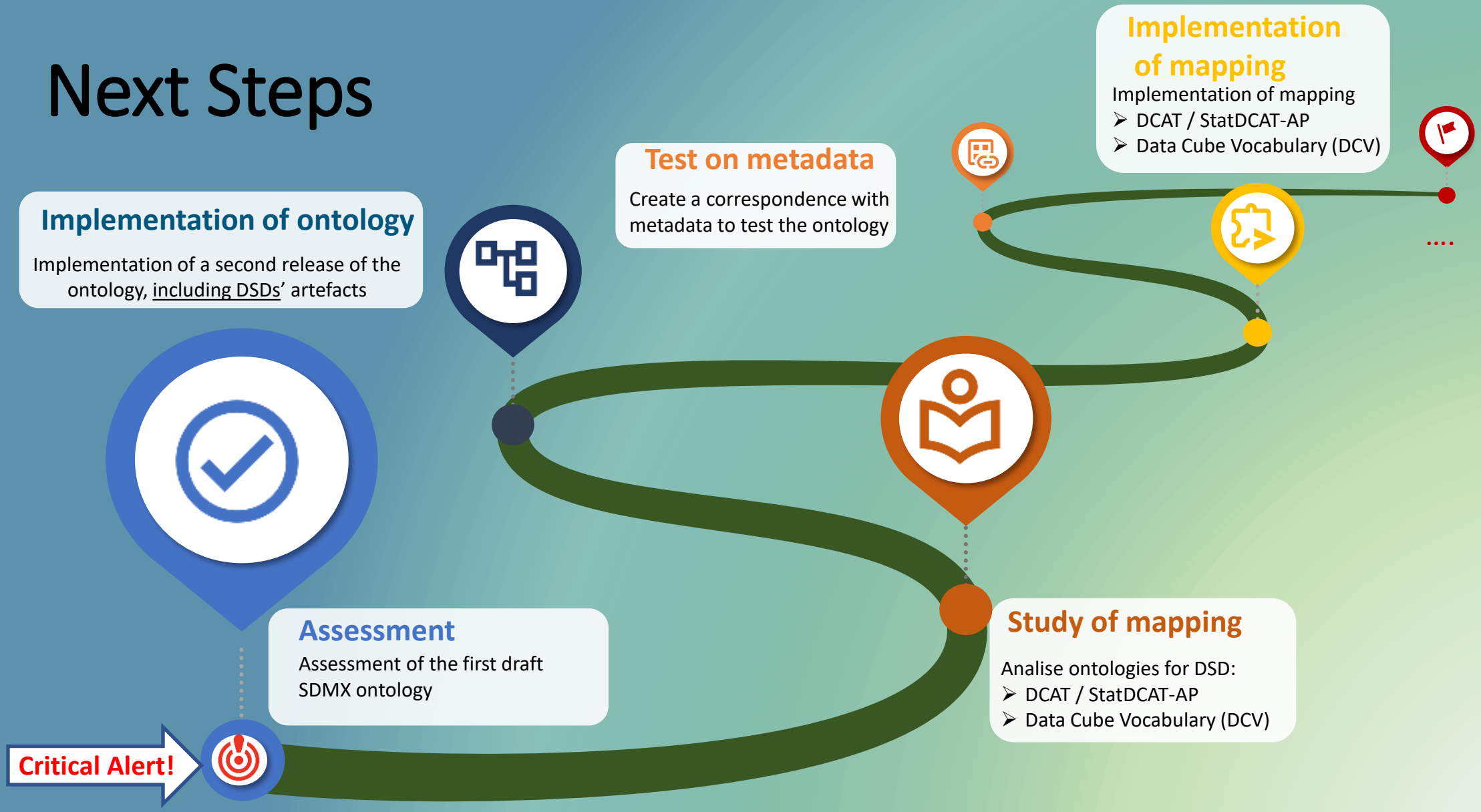
- Survey on existing ontologies that fit best
- Prioritisation of SDMX Artefacts

Recurring Actions

- Study of mapping with SDMX artefacts
- Implementation of the SDMX ontology
- Implementation of the mapping with external ontologies
- Creating correspondence with metadata to test the ontology



Next Steps


Implementation of mapping
Implementation of mapping
➢ DCAT / StatDCAT-AP
➢ Data Cube Vocabulary (DCV)
Test on metadata
Create a correspondence with metadata to test the ontology
Implementation of ontology
Implementation of a second release of the ontology, including DSDs' artefacts
....
Assessment
Assessment of the first draft SDMX ontology
Study of mapping
Analise ontologies for DSD:
➢ DCAT / StatDCAT-AP
➢ Data Cube Vocabulary (DCV)
Critical Alert!

Core Vocabularies and Ontologies

- SKOS – Simple Knowledge Organization System
- XKOS – Extended Knowledge Organization System
  - XKOS Best Practices Guide
- DCAT – Data Catalog Vocabulary
  - StatDCAT-AP – Application Profile for data portals
- DCV – The RDF Data Cube Vocabulary
- DQV – Data Quality Vocabulary
- ORG – The Organization Ontology
- Schema.org
  - StatisticalVariable - A Schema.org Type
- SSSOM – Simple Standard for Sharing Ontological Mappings
- DDI-CDI (DDI–Cross Domain Integration)

Useful Links

- **Problem statement:** *SDMX Ontology Problem Statement.docx*
- **Mapping between SDMX and SKOS:** *XKOS2SDMX.xlsx*
- **OWL file:** sdmx.owl
- **Graphical picture:** sdmx.pdf

Thanks for your attention !

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- https://github.com/sdmx-twg/twg/tree/develop/workpackages/sdmx_lod (restricted)