



# The journey of implementing SDMX 3.0

Approach and lessons learned

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# SDMX 3.0 challenges

- Many new features
- New formats
- Backward & forward interoperability issues
- Changes in the IM, new artefacts, changes in existing ones, etc.
- New REST API

# SDMX 3.0 integration within ESTAT tools

- Split into 6 main packages, based on priorities and dependencies
- Global roadmap for all the tools
  - Each tool/component has its own development lifecycle, dependencies and feature needs
  - SdmxSource library is a key component, SDMX 3.0 implemented in a single place
- USE CASE = implementation 😊

***Package 1: Structures***

***Package 2: Web Services***

***Package 3: Data and data formats***

***Package 4: Metadata***

***Package 5: Geo and metadata formats***

***Package 6: Hierarchies and mappings***

# SDMX 3.0 integration within ESTAT tools

## Package 1: Structures

- Semantic Versioning
- Wildcards in versioning
- SDMX 3.0.0 Structure XML
- REST v2.0 Server side
- DSD 3.0 Array
- DSD 3.0 Measures
- DSD 3.0 Sentinel Values
- DSD 3.0 Multilingual value
- DSD 3.0 MSD link
- DSD 3.0 Metadata attributes
- DSD 3.0 XHTML
- SDMX 3.0.0 Data XML parser
- Codelist Inheritance
- Codelist Discriminated union

## Package 2: Web Services

- SDMX 3.0.0 Data XML writer
- REST v2.0 Data API
- REST v2.0 Structure API

## Package 3: Data and data formats

- REST v2.0 Data API
- REST v2.0 Structure API
- REST v2.0 Availability API
- SDMX JSON Data v2.0.0
- SDMX CSV Data v2.0.0
- SDMX JSON Structure v2.0.0
- Data Constraints - Attributes
- Data Constraints - Measures
- Data Constraints - Wildcard selection
- Codelist Valuelist

## Package 4: Metadata

- Standard Concept Roles
- MSD 3.0 simplification
- Metadataflow 3.0 Target
- Metadata Provision Agreement - Target
- Metadata Provider scheme
- Validity period in Content Constraints
- SDMX 2.0 REST Client

## Package 5: Geo and metadata formats

- Codelists – Geographical
- Codelists - GeoGridCodelist
- Geospatialinformation type
- Metadataset with Maintainable Properties
- SDMX 3.0 Metadataset formats (XML, JSON, CSV)

## Package 6: Hierarchies and mappings

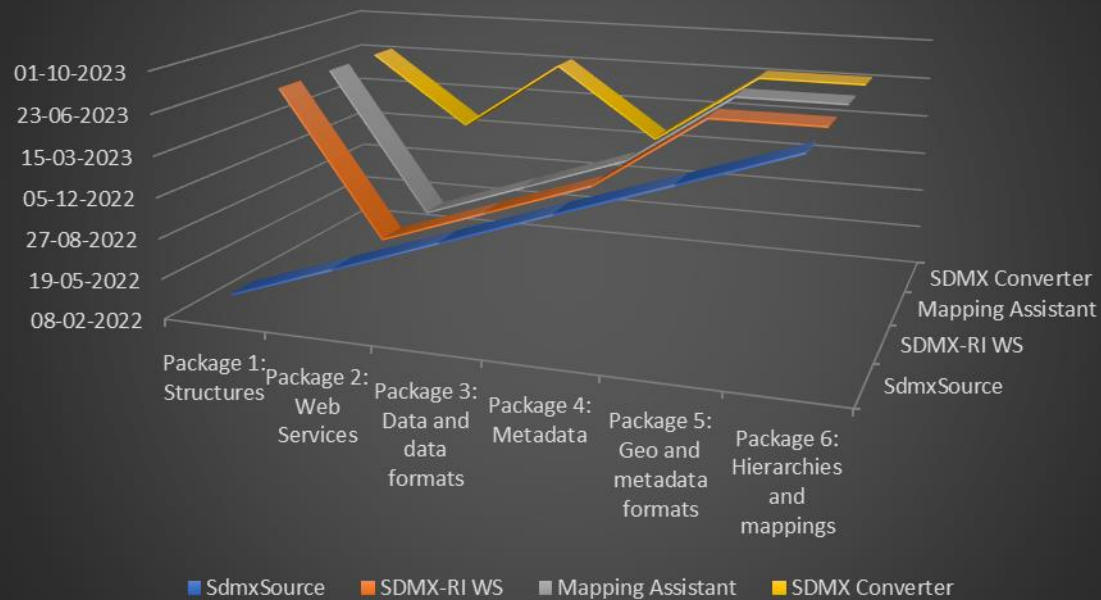
- Metadata Constraints
- Hierarchy Association
- Hierarchies
- Mappings - Structure Map
- Mappings - Representation Map
- Mappings - Category Scheme Map
- Mappings - Reporting Taxonomy Map
- Mappings - Organisation Scheme Map
- Mappings - Concept Scheme Map

# The SDMX 3.0 approach

N	SDMX Feature	P	a	c	k	r	i	o	d	i	m	Priority (1-High; 2-Medium; 3-Low)					Description /Additional information
												SDMX-RI WS	MAP ASSIST	Converter/S TRUVAL /Struval	Registry	SdmxSource	
1	Semantic Versioning	1	1	All	REG	M	Done	Done	Done		Done				Adoption of		
2	Wildcards in versioning	1		All	REG	M	Done	Done	Done		Done						
3	REST v2.0 Server side	1		All	SRI	Big	Done	Done			Done				The REST		
4	REST v2.0 Client side	4		All	REG	M	TODO (data	Registration	Done		Done						
5	SDMX 3.0 Data Formats (XML, JSON, CSV)	1, 3		All	Sdm xSou	Big	Done	Done	Done		Done						
6	SDMX 3.0 Structure Formats (XML, JSON)	1		All	Sdm xSou	Big	Done	Done	Done		Done						
7	SDMX 3.0 Metadataset formats (XML, JSON, CSV)	5		All	Sdm xSou	Big					Done				No support in SDMXRI		
8	DSD 3.0 Array	1	DS	Regi	Big	Done	Done	Done			Done				Split into 2		
9	DSD 3.0 Measures	1	DS	Regi	M	Done	Done	Done			Done						
10	DSD 3.0 Sentinel Values	1	DS	Regi	Sm	Done	Done	Done			Done				No special		
11	DSD 3.0 Multilingual value	1	DS	Regi	bi	Done	Done	Done			Done				headlines		
12	DSD 3.0 MSD link	1	DS	Regi	Sm						Done						
13	DSD 3.0 Metadata attributes	1	DS	Regi	Sm										Blocked		
14	DSD 3.0 XHTML	1	DS	Regi	Sm												

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## SDMX 3.0 integration roadmap



All non breaking 3.0 changes implemented in public releases

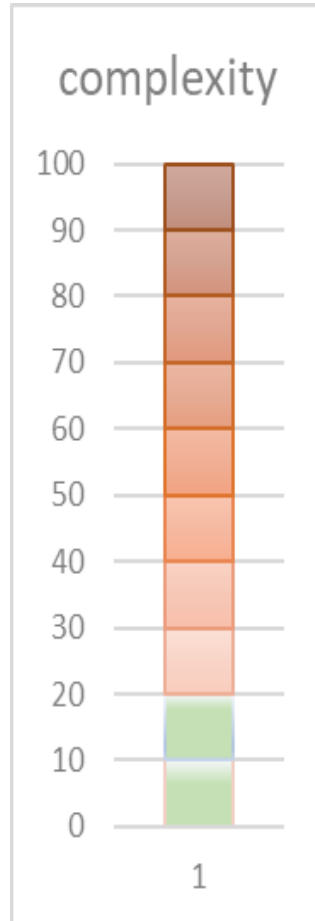
- V8.x.x – SDMX-RI
- V9.x.x – SDMX Converter
- ***SdmxSource (Java)***
- SdmxSource (.NET)
- Euro SDMX Registry
  - Replace with Fusion Metadata Registry (BIS)

# SDMX 3.0 road map overview

- Start **Q1/2022** End **Q4/2023**
- Development releases (every 3 w)
- Test releases (every 2 months)
- Public releases Q4 2023
  - V 9.x.x - SDMX-RI
  - V 10.x.x - SDMX Converter

# SDMX 3.0 challenges

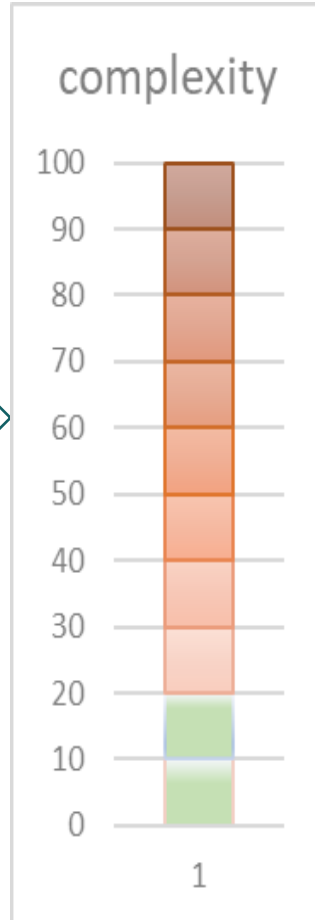
Wildcard versioning



- Scope: support wildcards
- Challenge: move away from specific structure referencing (like in SDMX 2.1)
- Impact: whole codebase, DB, Submit/Retrieve structure, Mapping
- Solution: code the functionality needed and create a model to keep the wildcard reference, and to resolve it to the actual structure it targets
- Remodel the DB based on 1 to many references

# SDMX 3.0 challenges

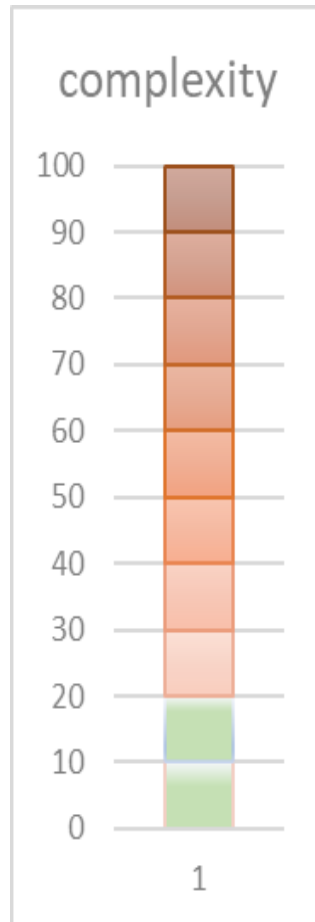
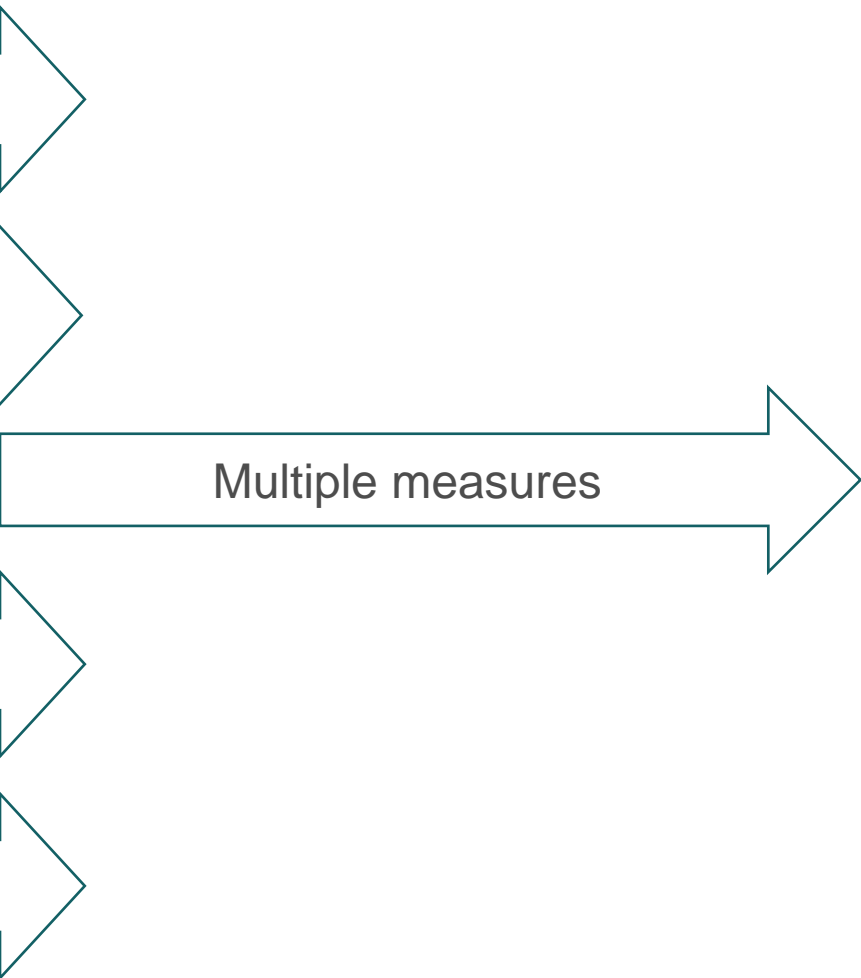
Replacement of “final” flag



- Scope: Final artefacts (before SDMX 3.0), draft in production in SDMX 3.0
- Challenge: still being compatible with previous versions of the standard, SDMX 3.0 the final attribute needs to be calculated implicitly by examining the version
- Impact: codebase, DB, SdmxSource, structure retrieval/submission
- Solution: re-write, remodel

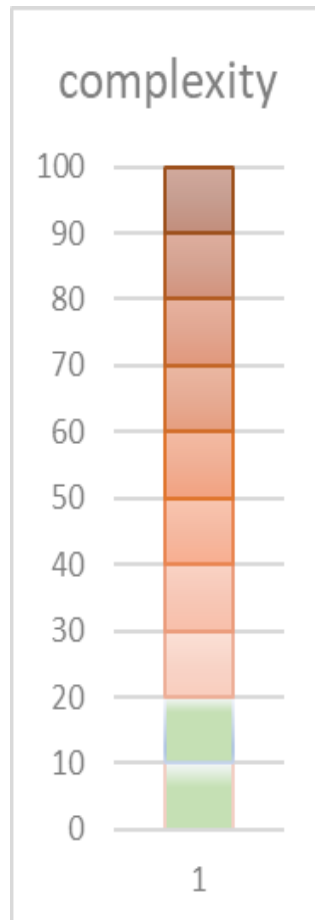
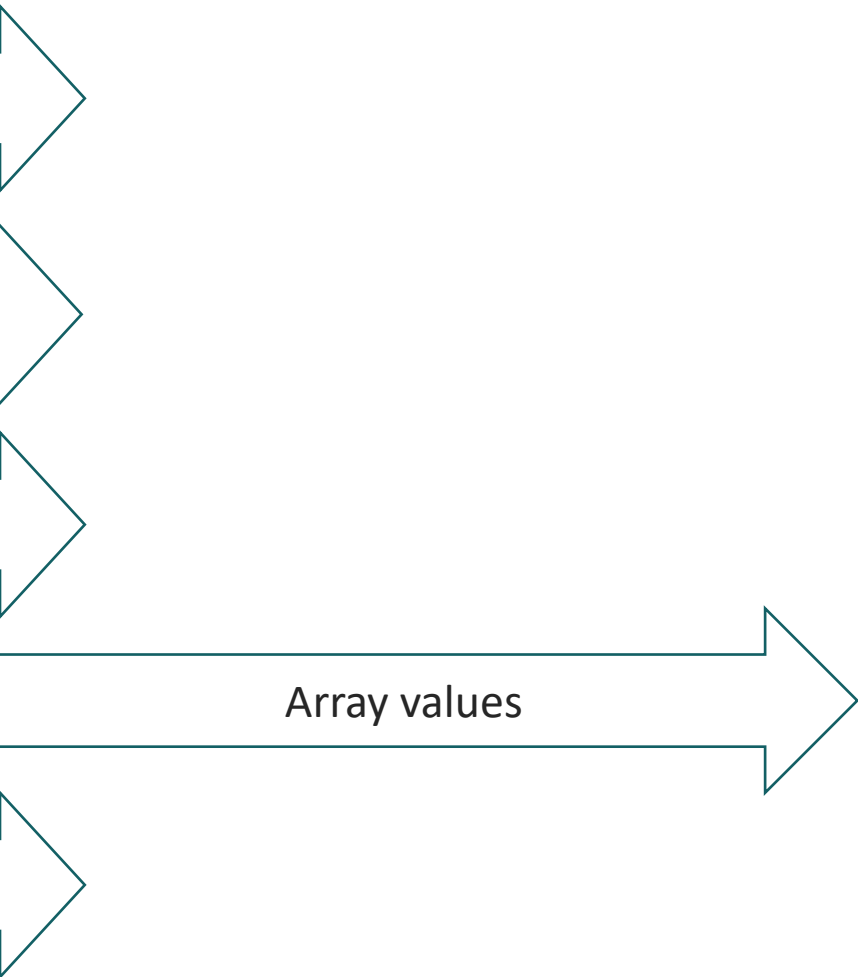


# SDMX 3.0 challenges



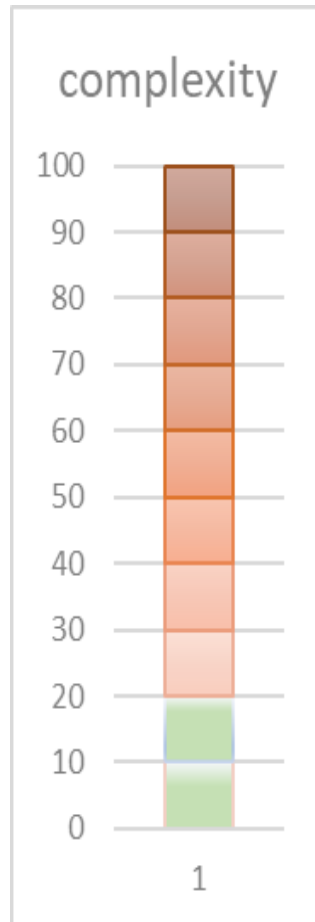
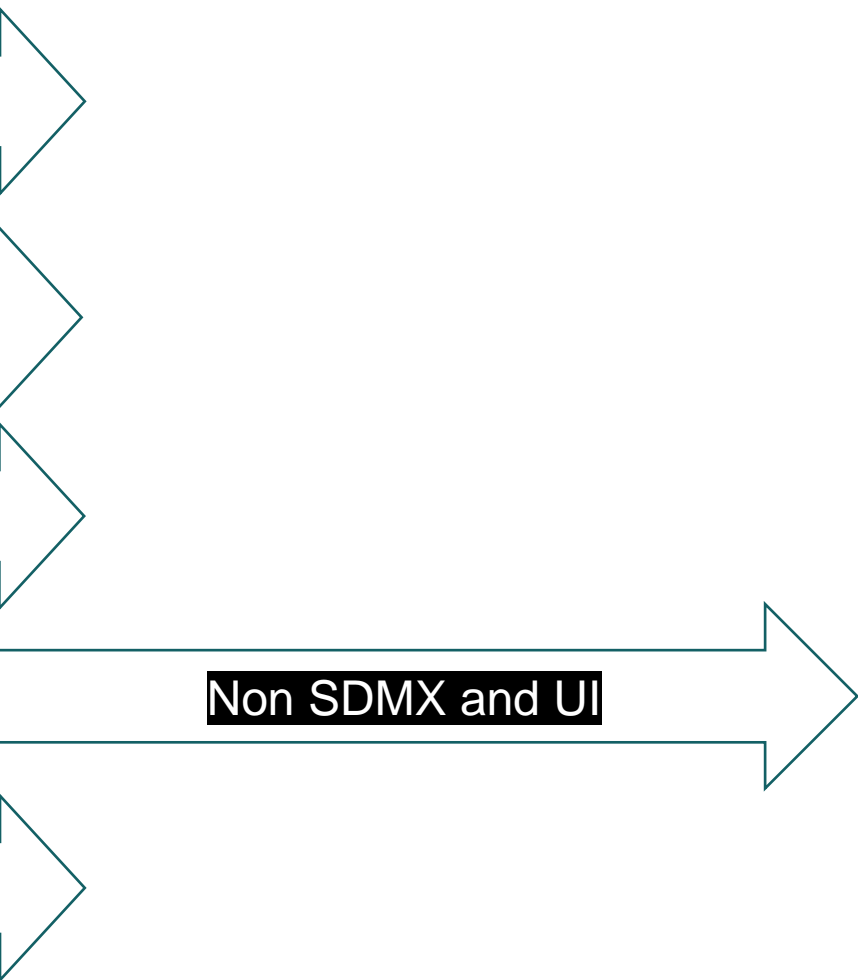
- Scope: support multiple measures
- Challenge: Replacing primary measure by one or more measure and keep compatible with 2.1
- Impact: codebase, data storage (database), mapping, structure and data retrieval, data query, UI
- Solution: re-write, remodel

# SDMX 3.0 challenges



- Scope: Array values
- Challenge: storage allowing mappings, transcoding
- Impact: codebase, DB, SdmxSource, mapping, structure and data retrieval/query, UI
- Solution: enhance the mapping and transcoding

# SDMX 3.0 challenges



- Non-SDMX formats
  - Supporting SDMX 3.0.0 features in non-SDMX formats like Excel/FLR has been (still ongoing)
- UI
  - The changes to mapping pages to support SDMX 3.0.0 multiple measures and array values

# SDMX 3.0 challenges (possibly)

- Metadata Structure Definition/Metadatabflow
  - The SDMX 3.0.0 metadata structure definition and metadatabflow are not backwards compatible with 2.x
- SDMX 2.x Hierarchical Codelist vs SDMX 3.0.0 Hierarchy
  - The SDMX 3.0.0 is a subset of SDMX 2.x Hierarchical Codelist



MSD and Hierarchy



# Keep in touch



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# Thank you



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