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 Provider 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

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SDMX 3.0 roadmap 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

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 challenges

- **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

- **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

Replacement of “final” flag

![Complexity chart](image-url)
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

Array values
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/Metadataflow
  - The SDMX 3.0.0 metadata structure definition and metadataflow are not backwards compatible with 2.x
- SDMX 2.xHierarchical Codelist vs SDMX 3.0.0 Hierarchy
  - The SDMX 3.0.0 is a subset of SDMX 2.x Hierarchical Codelist
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Thank you