



**United Nations Economic Commission for Europe
Statistical Division**



Introduction to Models and Standards for Statistical Modernisation

Session 6 : SDMX

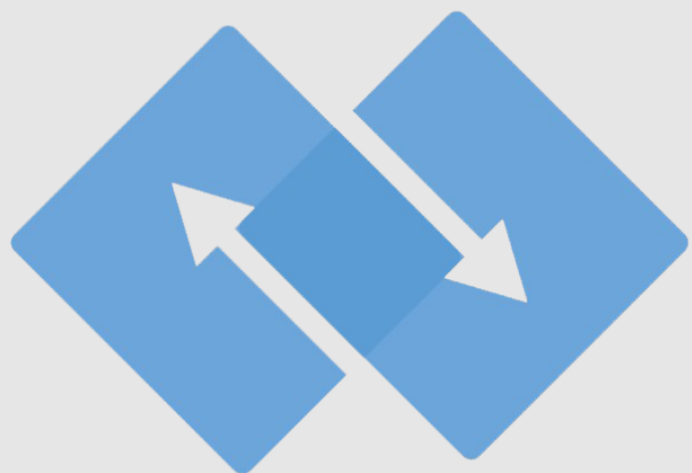
**Building national capacities on
International Standards for Official Statistics
Chisinau 19-21 September, 2022**



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3. SDMX



sdmx

WHAT IS SDMX?



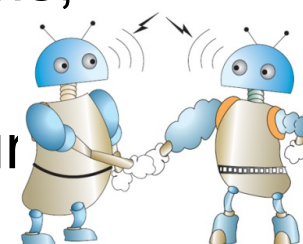
- ❖ Statistical Data and Metadata Exchange (SDMX) is the global standard for the exchange of statistical information.
- ❖ SDMX is an ISO standard adopted at level of UNSC
- ❖ SDMX is a standard for both content and technology
- ❖ SDMX facilitates data exchange between organisations and within a national statistical system
- ❖ SDMX is a common way of describing data and making it shareable
- ❖ SDMX is a set of reusable tools



WHY USE SDMX?



- ❖ To improve machine-to-machine data exchange between organisations
- ❖ To save resources – reusing data exchange systems, statistical metadata and methodology
- ❖ Improves quality – automated validations of structure and content:
- ❖ Faster and more reliable - automated workflows reduces delays from manual intervention
- ❖ Many tools freely available to use - standard software and components
- ❖ Much know-how and guidelines on how to represent and create data and metadata structures.



How does SDMX work?



- ❖ SDMX provides existing data structures for many domains to map your own data to.
- ❖ If needed you can create your own SDMX data structures using the SDMX toolkit.
- ❖ You can then use the SDMX toolkit to convert your data into SDMX

HOW DOES SDMX WORK?



The Data Structure Definition (DSD) defines:

- ❖ the **structure and valid content** of a Data Set in terms of the *Concepts* (dimensions, measures, attributes)
- ❖ **Code lists** define data concepts
- ❖ **Dimensions** - identify and describe the data.
- ❖ **Attributes** - provide additional information about the data (estimates, measures) – used in processing.

HOW DOES SDMX WORK?



❖ **Structural metadata:**

metadata used to identify, formally describe or retrieve statistical data (dimension names, variable names, dictionaries, dataset technical descriptions, dataset locations, and keywords).

❖ **Reference metadata:**

describes the contents and the statistical data quality (explanatory texts on the context of the statistical data, methodologies for data collection and data aggregation as well as quality and dissemination characteristics).

STEPS TO SHARE DATA USING SDMX



Use Case 1: Reporting National Accounts SDMX to International Organisations

You will need:

- National Accounts Global DSD (from Global Registry)
- Mapping from your database to Global DSD
- Implementation of tool such as the SDMX Converter or SDMX Reference Infrastructure (SDMX-RI) or full SDMX-based platform (.Stat suite)

How to do it:

1. Either:

- a) Fill in existing Excel questionnaire, then convert to SDMX using SDMX converter, or:
- b) Implement the SDMX-RI, create a mapping between the Global DSD and your data, or:
- c) Implement a platform, such as SIS-CC .Stat suite (or IAIS...)

If 1a) send file to IO, if 1b) or 1c) inform them of web service endpoint

STEPS TO SHARE DATA USING SDMX



Use Case 2: Collecting SDMX from another agency

1. You will need:

Agreement between exchange partners on:

- A standard reporting form (such as Global DSD)
- A means of reporting – either push (sending the file), or pull (query the data)

Map the reporting form/DSD to your database

A tool to import the SDMX into your database

2. How to do it:

- a) Agree with exchange partners on the means
- b) Create the mapping between the SDMX data and your database
- c) Use connector tools to import and remap the data (SDMX.org/tools)

STEPS TO SHARE DATA USING SDMX



Use Case 3: Disseminating statistics

1. You will need:

- A database containing the statistical datasets
- A tool or platform that can generate SDMX from diverse data structures
- A dissemination end-point (web service)

2. How to do it:

1. Put your statistical datasets into a common database (IAIS?), or a platform such as SIS-CC .stat
2. If the common database does not have native SDMX dissemination (such as SIS-CC .Stat):
 - Implement the SDMX-RI or equivalent;
 - Connect the SDMX-RI to your database
3. Configure the SDMX web service endpoint

STEPS TO SHARE DATA WITH USING SDMX



Use Case : Reporting National Accounts SDMX to International Organisations

You will need:

- National Accounts Global DSD (from Global Registry)
- Mapping from your database to Global DSD
- Implementation of tool such as the SDMX Converter or SDMX Reference Infrastructure (SDMX-RI) or full SDMX-based platform (.Stat suite)

How to do it:

1. Either:

- a) Fill in existing Excel questionnaire, then convert to SDMX using SDMX converter, or:
- b) Implement the SDMX-RI, create a mapping between the Global DSD and your data, or:
- c) Implement a platform, such as SIS-CC .Stat suite (or IAIS...)

If 1a) send file to IO, if 1b) or 1c) inform them of web service endpoint

SDMX LINKS AND RESOURCES



- ❖ [SDMX official website](#).
- ❖ The [SDMX Content-Oriented Guidelines \(COG\)](#) recommend practices for creating interoperable data and metadata sets using the SDMX technical standards..
- ❖ [Inventory of software tools for SDMX](#) implementers and developers.
- ❖ [Eurostat main SDMX page](#).
- ❖ European Statistical System's [SDMX standards for metadata reporting](#).
- ❖ Guidelines for [managing an SDMX design project](#).
- ❖ The [SDMX Starter Kit](#) - a resource for an NSO wishing to implement SDMX.
- ❖ The [IMF SDMX Central](#) project allows users to Validate, Convert, Tabulate, and Publish data to the IMF

SDMX LINKS AND RESOURCES



- ❖ SDMX-SDG Working Group: <https://unstats.un.org/sdgs/iaeg-sdgs/sdmx-working-group/>
- ❖ A list of SDMX Tools: https://sdmx.org/?page_id=4500
- ❖ SDMX Converter: <https://circabc.europa.eu/w/browse/76a63fc2-3d22-42cc-85f2-4f6f30b4d8eb>
- ❖ SDMX RI: <https://circabc.europa.eu/w/browse/1c958330-ae5b-42e0-b7dd-3d77a0141194>
- ❖ SMART: <http://www.ilo.org/ilostat/tools/smart/index.html>
- ❖ DSD Constructor: <http://www.ilo.org/ilostat/tools/dsdConstructor/Install.htm>
- ❖ Matrix Generator: <https://gitlab.com/sis-cc/sdmx-matrix-generator>
- ❖ SDMX ISTAT Toolkit: <https://github.com/SDMXISTATTOOLKIT>
- ❖ Fusion Registry and other community tools: <https://metadatatechnology.com/community/>
- ❖ The African Development Bank [Open Data for Africa](#) project.

SDMX LINKS AND RESOURCES



Login



The Central Source of SDMX Structural Metadata

The SDMX Global Registry is the central authoritative source of SDMX structural metadata.

National or international organisations that use the SDMX standard for exchanging statistical data can register their structures with the service.

[SDMX Global Registry Home](#)

[Frequently Asked Questions](#)

The [SDMX Global Registry](#) is the technical infrastructure containing publicly available metadata material, data structure definitions (DSD), and related artefacts (concept schemes, metadata structure definitions, code lists, etc.).

SDMX LINKS AND RESOURCES

A screenshot of a web browser displaying the SDMX website. The browser's address bar shows "sdmx.org/?page_id=13". The website has a blue header with the SDMX logo and the text "Statistical Data and Metadata eXchange". A navigation menu includes "Standards", "Guidelines", "Domains", "Implementations", "Tools", and "Events". The main content area is titled "SDMX IT tools and SDMX tutorials" and is divided into three numbered sections: "1. SDMX IT tools", "2. SDMX Tutorials", and "3. SDMX IT infrastructures". Each section contains descriptive text and links. A sidebar on the right contains a search box, a list of navigation links (Home, About us, FAQs, SDMX User Guide, Contact us), and a sign-up form for further information. The Windows taskbar at the bottom shows the Start button, language settings (EN), and several open applications including iTunes, SDMX, and Microsoft Office.

SDMX FOR SUSTAINABLE DEVELOPMENT GOALS INDICATORS



Why use SDMX for SDG Indicators?

- ❖ A global standard Data Structure Definition, including concepts and code lists, facilitates interoperability and simplifies dissemination and reporting
- ❖ Guidance on the customization of the global DSD for national use
- ❖ A range of tools and platforms for structure maintenance, data authoring, dissemination including the Open SDG Platform, designed and optimized specifically for the dissemination of SDG indicators
- ❖ Exchange with the Global SDG Platform
- ❖ Facilitates comparisons of country data and international harmonized data as well as metadata

SDMX FOR SUSTAINABLE DEVELOPMENT GOALS INDICATORS

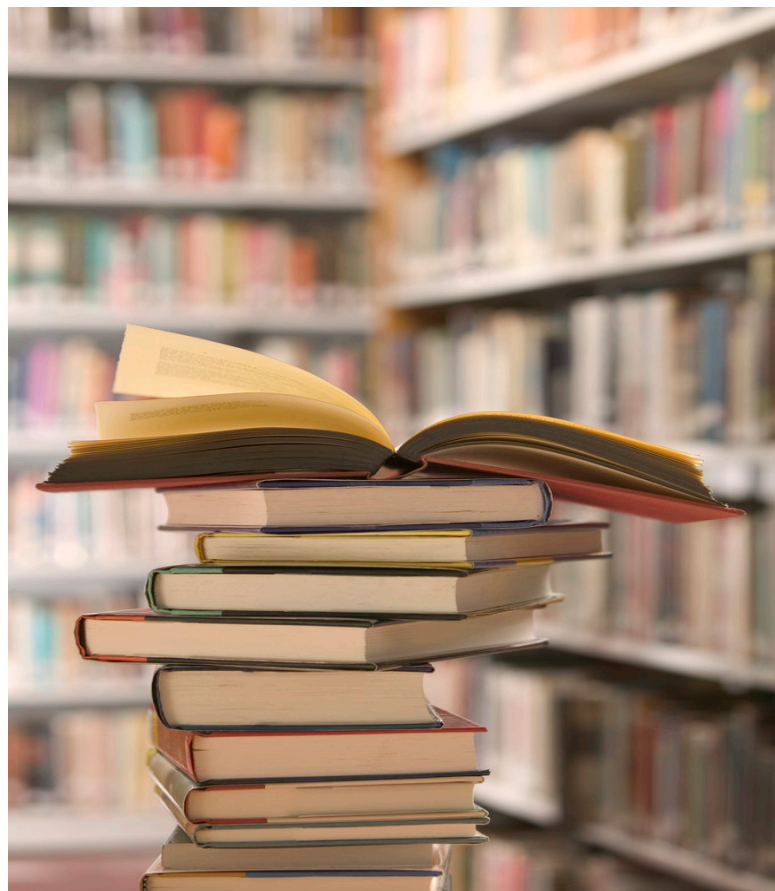


Open SDG - An open source, free-to-reuse platform for managing and publishing SDG data and statistics.

A screenshot of the Open SDG website. The left sidebar is dark grey with a blue header 'Open SDG' and a search bar. The main content area is white with a blue header 'Open SDG' and a 'Welcome to the Open SDG community' section. The 'Key features include:' section lists: Machine-readable data, Data visualizations: graphs, data tables, and maps, Multilingual: already available in the six official UN languages and more, using the SDG Translations resource, and Fully customisable. The footer includes links to 'Open SDG Features page' and 'Frequently Asked Questions page'.

<https://open-sdg.readthedocs.io/en/latest/>

HOW TO LEARN MORE ABOUT SDMX



HOW TO LEARN MORE ABOUT SDMX



The official site for the SDMX community
A global initiative to improve Statistical Data and Metadata eXchange

[SDMX Glossary](#)
[SDMX User Guide](#)
[SDMX Global Registry](#)
[SDMX Roadmap 2020](#)

Home

[Standards](#)

[Guidelines](#)

[Implementations](#)

[Tools](#)

[Learning](#)

[Events](#)

[Public Reviews](#)

[About SDMX](#)

Welcome!

New SDMX Glossary available !

The new SDMX Glossary has just been released ! It contains concepts and related definitions that are useful for building and understanding data and metadata exchange arrangements based on SDMX. ... [Read More](#)



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NEWS


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<http://sdmx.org/>

HOW TO LEARN MORE ABOUT SDMX



← → ↻ 🏠 https://sdmx.org/?page_id=4500 ☆ 🌐 🗄️ 🔒 🌐 🌐 🌐



The official site for the SDMX community
A global initiative to improve Statistical Data and Metadata eXchange

- SDMX Glossary
- SDMX User Guide
- SDMX Global Registry
- SDMX Roadmap 2020
- Frequently Asked Questions

Home Standards Guidelines Implementations **Tools** Learning Events Public Reviews About SDMX

Software Tools for SDMX Implementers and Developers

You will find below an alphabetical list of software tools which have been developed by organisations involved in the SDMX initiative. For each tool, a succinct description is provided – you can use the respective links for a more detailed description of the tools' specific features.

Please note that Eurostat, the Statistical Office of the European Union, also maintains a webpage dedicated to [SDMX-related IT tools](#).

If your organisation is ready to offer IT tools to the SDMX user community, please contact the SDMX Secretariat (secretariat@sdmx.org) so that they can be included in the Repository.

Data Structure Wizard

Desktop application that is able to convert/edit commonly used metadata formats into SDMX-ML formats. It contains an interface that allows the user to select a given Data Structure and to complete the data according to requirements... [MORE>>](#)

Windows taskbar: Windows logo, Search, Task View, Word, File Explorer, Edge, Music, Mail, Chrome, File Explorer, PowerPoint, System tray: Network, Volume, ENG 06:11, FR 15/04/2019, 7 notifications.



Thank you for your attention....

Q&A