SDMX stands for Statistical Data and Metadata eXchange.

Is an ISO standard designed to:

- Describe statistical data and metadata
- Normalize and improve the exchange of statistics across organizations.
- Enable interoperable implementations within and between systems.
- Improve exchange, reporting and dissemination of statistical data and their related meta-information.
The sponsors of the SDMX initiative are:

- BIS, Bank of International Settlements
- ECB, European Central Bank
- Eurostat, The Statistical office of the European Union
- IMF, International Monetary Fund
- OECD, Organisation for the Economic Co-operation and Development
- UNSD, United Nation Statistical Division
- World Bank
SDMX deals with:

- **Structural metadata**: Defines the structure of statistical data sets and metadata sets (e.g. names of variables or dimensions of a statistical cube). Data must be linked to structural metadata; without these data identifiers and descriptors, they cannot be identified, retrieved or browsed.

- **Reference metadata**: Set of concepts that describe and qualify statistical data sets and processing more generally, and which are often associated not with specific observations or series of data, but with entire collections of data or even the institutions which provide that data.
Types of Reference Metadata

• Describes contents and quality of statistical data

• Includes:
  • **Conceptual** Metadata.
    • Concepts and practical implementation.
  • **Methodological** Metadata.
    • Methods used to generate the data.
  • **Quality** Metadata.
    • Quality dimensions of the resulting statistics.
Main Components of SDMX

Technical Standards
(Core of SDMX)
- Formats
- Structures
- Functionalities

Statistical Guidelines
(Harmonization and Governance of Concepts)
- Management
- Concepts
- Methodologies
- Classifications
- Modelling

IT Architecture and Tools
(Support of the SDMX Implementation)
- Design
- Map
- Fill
- Exchange
- Disseminate
GSBPM as a Cycle

1. Evaluate
2. Specify Needs
3. Build
4. Collect
5. Process
6. Analyse
7. Disseminate
8. Evaluate

Change Work
Ongoing Work
<table>
<thead>
<tr>
<th>Overarching Processes</th>
<th>Specify needs</th>
<th>Design</th>
<th>Build</th>
<th>Collect</th>
<th>Process</th>
<th>Analyse</th>
<th>Disseminate</th>
<th>Evaluate</th>
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**GSBPM Levels**

**Level 0: Process**

**Level 1: Phases, 8**

**Level 2: Sub-processes, 44**
<table>
<thead>
<tr>
<th>Specifying needs</th>
<th>Design</th>
<th>Build</th>
<th>Collect</th>
<th>Process</th>
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<tbody>
<tr>
<td><strong>Identify needs</strong></td>
<td>2.1 Identify needs</td>
<td>Reuse or build collection instruments</td>
<td>4.1 Create frame and select sample</td>
<td>5.1 Integrate data</td>
<td>6.1 Prepare draft outputs</td>
<td>7.1 Update output systems</td>
<td>8.1 Gather evaluation inputs</td>
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<tr>
<td><strong>Review of existent data and metadata flows</strong></td>
<td></td>
<td>Select/Build DSDs, MSDs and VTL artefacts, and decide on SDMX supported patterns</td>
<td>Review and make use of available SDMX dataflows, update the registry</td>
<td>Populate databases from SDMX dataflows, update the registry</td>
<td>Prepare draft outputs</td>
<td>Integrate data</td>
<td>Update output systems</td>
</tr>
<tr>
<td><strong>Design outputs</strong></td>
<td>2.2 Design outputs</td>
<td>Design data and metadata flows</td>
<td>4.2 Set up collection</td>
<td>5.2 Classify and code</td>
<td>6.2 Validate outputs</td>
<td>7.2 Produce dissemination products</td>
<td>8.2 Conduct evaluation</td>
</tr>
<tr>
<td><strong>Design data and metadata flows</strong></td>
<td></td>
<td>Design Concept Schemes, DSDs and MSDs</td>
<td>Run pilots to check SDMX dataflows</td>
<td>Update codelets, and version DSDs and MSDs as needed</td>
<td>Check gathered information, review metadata reports</td>
<td>Provide flexible data and metadata services using the SDMX Registry and Web Services</td>
<td>Assess the benefits from actual SDMX implementation and plan for improvements</td>
</tr>
<tr>
<td><strong>Identify concepts</strong></td>
<td>2.3 Identify concepts</td>
<td>Reuse or build dissemination components</td>
<td>4.3 Run collection</td>
<td>5.3 Review and validate</td>
<td>6.3 Interpret and explain outputs</td>
<td>7.3 Manage release of dissemination products</td>
<td>8.3 Agree an action plan</td>
</tr>
<tr>
<td><strong>Review cross-domain and global concepts, build a concept scheme</strong></td>
<td></td>
<td>Check for available tools in the SDMX.ORG website</td>
<td>Collect/Exchange the information</td>
<td>Run VTL artefacts to help in the process</td>
<td>Detect discrepancies using VTL artefacts, use the SDMX datasets and metadata reports to build stories</td>
<td>Use embargo capabilities to automate this task</td>
<td>Make the agreements to improve the actual SDMX implementation to get more benefits</td>
</tr>
<tr>
<td><strong>Check data availability</strong></td>
<td>2.4 Check data availability</td>
<td>Design the ICT architecture for collection, integration, exchange and dissemination</td>
<td>4.4 Finalise collection</td>
<td>5.4 Edit and impute</td>
<td>6.4 Apply disclosure control</td>
<td>7.4 Promote dissemination products</td>
<td>8.4 Promote dissemination products</td>
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<tr>
<td><strong>Check data from available data and metadata flows</strong></td>
<td></td>
<td>Design the ICT architecture for collection, integration, exchange and dissemination</td>
<td>Automated by SDMX, check it with VTL tools</td>
<td>Run VTL artefacts to help in the process</td>
<td>Check confidentiality using VTL tools, generate new dissemination DSDs/Web services</td>
<td>Promote the use of new enabled SDMX capabilities, like direct connection to data and metadata</td>
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</tr>
<tr>
<td><strong>Prepare and submit business case</strong></td>
<td>2.5 Prepare and submit business case</td>
<td>Design the ICT architecture for collection, integration, exchange and dissemination</td>
<td>4.5 Finalise collection</td>
<td>5.5 Derive new variables and units</td>
<td>6.5 Finalise outputs</td>
<td>7.5 Manage user support</td>
<td>8.5 Manage user support</td>
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<tr>
<td><strong>Design the strategy to make use of SDMX</strong></td>
<td></td>
<td>Design constraints</td>
<td>Automated by SDMX, check it with VTL tools</td>
<td>Run VTL artefacts to help in the process</td>
<td>Connect SDMX datasets to dissemination systems, use of internationalization features intrinsic to SDMX</td>
<td>Check the use of SDMX enabled services to be ensure alignment with user’s needs</td>
<td>Connect the use of SDMX enabled services to be ensure alignment with user’s needs</td>
</tr>
<tr>
<td><strong>Test data availability</strong></td>
<td>2.6 Test statistical business process</td>
<td>Run pilots to check resulting SDMX messages and reports</td>
<td>4.6 Finalise collection</td>
<td>5.6 Calculate weights</td>
<td>6.6 Finalise outputs</td>
<td>7.6 Finalise data files</td>
<td>8.6 Finalise data files</td>
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<tr>
<td><strong>Test production systems and workflow</strong></td>
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<td>Run pilots to check resulting SDMX messages and reports</td>
<td>Automated by SDMX, use ICT infrastructure to move to dissemination</td>
<td>Run VTL artefacts to help in the process</td>
<td>Connect SDMX datasets to dissemination systems, use of internationalization features intrinsic to SDMX</td>
<td>Automated by SDMX, use ICT infrastructure to move to dissemination</td>
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<tr>
<td><strong>Finalise production systems</strong></td>
<td>3.7 Finalise production systems</td>
<td>Finalize mappings and ICT infrastructure</td>
<td>4.7 Finalise collection</td>
<td>5.7 Calculate aggregates</td>
<td>6.7 Finalise outputs</td>
<td>7.7 Finalise data files</td>
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</table>
| 1.1 Identify needs  
Global and international  
DSDs, MSDs. SDMX, Registry | 2.1 Design outputs  
DSDs, MSDs. Registry | 3.1 Reuse or build collection instruments  
Sdmx.org, Registry | 4.1 Create frame and select sample  
Registry | 5.1 Integrate data  
Dataflows, Registry | 6.1 Prepare draft outputs  
VTL artefacts, APIs, Registry | 7.1 Update output systems  
VTL artefacts, APIs, Registry, Dataflows, Metadataflows, APIs | 8.1 Gather evaluation inputs  
Technical Standards, COG, Statistical Guidelines |
| 1.2 Consult and confirm needs  
Provision agreements, Registry | 2.2 Design variable descriptions  
COG, Statistical Guidelines, DSDs, MSDs. SDMX, Registry | 3.2 Reuse or build processing and analysis components  
Sdmx.org, Registry | 4.2 Set up collection  
Mappings, Constraints | 5.2 Classify and code  
Codelists, DSDs, MSDs | 6.2 Validate outputs  
VTL artefacts, APIs, Registry | 7.2 Produce dissemination products  
VTL artefacts, Registry, Constraints, Dataflows, Metadataflows, APIs | 8.2 Conduct evaluation  
Technical Standards, COG, Statistical Guidelines |
| 1.3 Establish output objectives  
DSDs, MSDs. SDMX, Registry | 2.3 Design collection  
COG, Statistical Guidelines, DSDs, MSDs. SDMX, Registry | 3.3 Reuse or build dissemination components  
Sdmx.org | 4.3 Run collection  
Mappings, Constraints | 5.3 Review and validate  
VTL artefacts, APIs | 6.3 Interpret and explain outputs  
VTL artefacts, APIs, Registry | 7.3 Manage release of dissemination products  
VTL artefacts, Registry, Constraints, Dataflows, Metadataflows, APIs | 8.3 Agree an action plan  
Technical Standards, COG, Statistical Guidelines |
| 1.4 Identify concepts  
Glossary, Registry, | 2.4 Design frame and sample  
Constraints | 3.4 Configure workflows  
Mappings, constraints, APIs, VTL artefacts | 4.4 Finalise collection  
Mappings | 5.4 Edit and impute  
VTL artefacts, APIs | 6.4 Apply disclosure control  
VTL artefacts, APIs, Registry, Constraints | 7.4 Promote dissemination products  
VTL artefacts, Registry, Constraints, Dataflows, Metadataflows, APIs | 8.4 Manage user support  
Technical Standards, COG, Statistical Guidelines |
| 1.5 Check data availability  
DSDs, MSDs, SDMX, Registry | 2.5 Design processing and analysis  
Registry, COG, Statistical Guidelines | 3.5 Test production systems  
Mappings, constraints, APIs | 5.5 Derive new variables and units  
VTL artefacts, APIs | 6.5 Finalise outputs  
VTL artefacts, APIs, Registry, Mappings, Dataflows | 7.5 Manage user support  
Technical Standards, COG, Statistical Guidelines |
| 1.6 Prepare and submit business case  
COG, Statistical Guidelines, DSDs, MSDs. SDMX, Registry, Sdmx.org | 2.6 Design production systems and workflow  
MSDs, Registry, Statistical Guidelines | 3.6 Test statistical business process  
Mappings, constraints, APIs | 5.6 Calculate weights  
VTL artefacts, APIs | | | |
| | | 3.7 Finalise production systems  
Mappings, constraints, APIs | | | | |
| | | 3.8 Finalise data files  
Dataflows, Registry | | | | |
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| Available SDMX tools are grouped under GSBPM activities at the Awesome list [github.com/SNStatComp/awesome-official-statistics-software](https://github.com/SNStatComp/awesome-official-statistics-software)
Relation With Other Standards and Models
Conclusions

• The relation SDMX-GSBPM keeps along the whole statistics production process

• There is an ecosystem of coexisting standards that have been created to improve different aspects related to the production of official statistics

• As this standards and models evolve, their tend to converge and cover existing gaps. In order to obtain the best benefits of them and to avoid overlaps and inconsistencies it is needed to visualize them as an integrated framework.
Questions?

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