



## Economic and Social Council

Distr.: General  
15 December 2004

Original: English

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### Statistical Commission

#### Thirty-sixth session

1-4 March 2005

Item 7 (e) of the provisional agenda\*

**Activities not classified by field: common open standards  
for the exchange and sharing of data and metadata**

### **Report of the task force to establish standards on data and metadata exchange**

#### **Note by the Secretary-General**

In accordance with a request of the Statistical Commission at its thirty-fifth session,<sup>a</sup> the Secretary-General has the honour to transmit the report of the task force to establish standards on data and metadata exchange. The report is presented to the Commission for information.

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\* E/CN.3/2005/1.

<sup>a</sup> *Official Records of the Economic and Social Council, 2003, Supplement No. 4 (E/2004/24), chap. I.A.*

## **Report on common open standards for the exchange and sharing of socio-economic data and metadata: the Statistical Data and Metadata Exchange initiative<sup>1</sup>**

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## I. Introduction

1. The Statistical Data and Metadata Exchange (SDMX) initiative fosters standards for the exchange of statistics and related metadata. The initiative is sponsored by the Bank for International Settlements, the European Central Bank, the Statistical Office of European Communities (Eurostat), the International Monetary Fund (IMF), the Organization for Economic Cooperation and Development (OECD), the United Nations and the World Bank.

2. The Statistical Data and Metadata Exchange started its activities in 2001. Since then, the Chair of the SDMX Sponsors Committee has regularly reported to the Statistical Commission on progress and has envisaged the next steps. The 2004 report provided a wide-ranging review of the initiative's goals and initial achievements and highlighted the way forward.<sup>2</sup> The present report focuses on progress since March 2004 in establishing standards and on practical steps to implement those standards in statistical domains.

## II. Progress since March 2004

3. A newly designed SDMX web site was launched in May 2004, providing new functionality to support the initiative's activities and communication. Key sections of the web site (<http://www.sdmx.org>) include the following:

- What's new in SDMX. A news area on the site to bring the latest developments in Statistical Data and Metadata Exchange to the attention of users
- E-alerts. E-mail information for users, allowing them to receive important announcements by email about SDMX and its projects
- Standards. The central point on the site for details about evolving SDMX standards
- Knowledge centre. A "one-stop shopping" location where users can find and download all SDMX documents available on the web site
- Case study demo. A link to a demonstration facility that illustrates how SDMX functionality can be applied to the case of external debt statistics
- Status of Statistical Data and Metadata Exchange projects. Snapshots of the latest developments and a starting point for navigating to more information about projects

4. A new pilot project was announced on the Statistical Data and Metadata Exchange web site in May 2004. Its goals are to develop a coherent structure of SDMX standards and freely available tools for data exchange and dissemination on the World Wide Web, and to launch a web-based reference implementation. In going forward, the following steps have thus far been taken:

- A first draft of SDMX standards (Version 1.0) was released for public review and comment (from end May to end July 2004).
- Following a review of public and project team input on the draft standards, which involved comments from national and international statistical agencies, the SDMX Sponsors Committee approved the release of SDMX Version 1.0 standards on 30 September 2004.

- Developments are on schedule with regard to the release of freely available tools based on the standards, fostering data exchange and dissemination of statistical information in conformity with SDMX formats.

5. Efforts are also now under way to take the SDMX Version 1.0 standards forward for adoption within the framework of the International Organization for Standardization (ISO). In anticipation of that step, the documents released on the Statistical Data and Metadata Exchange web site were designed as formal technical specifications and cover the following topics:

- Framework. Introduces the documents in the Version 1.0 package and provides requirements for conformance
- Information model. Unified Modeling Language (UML) conceptual design: provides a detailed explanation of the SDMX information model complete with UML diagrams. Includes tutorials on key families and UML notation
- SDMX-ML. Specifies and documents the Extensible Markup Language (XML) formats for describing structure and data (accompanied by a file with XML schemas and samples)
- SDMX-EDI. Specifies and documents the Electronic Data Interchange for Administration, Commerce and Transport (EDIFACT) format for describing structure and data (includes samples)
- Implementer's guide for SDMX format standards. Provides best practices and information for implementers, including an overview of the information model intended for those working with the formats
- Web services guidelines. Provides suggestions for the use of SDMX-ML formats in web services

6. At the last meeting of the Committee for the Coordination of Statistical Activities held in September 2004, the activities of the Statistical Data and Metadata Exchange initiative were recognized as an important building block of the international statistical system. In particular, technical standards for data and metadata exchange to be developed under the initiative should complement methodological standards developed by international organizations, to help data providers and data receivers to improve the efficiency of their activities and improve coherence and interpretability of statistics disseminated by national and international organizations.

7. Presentations about Statistical Data and Metadata Exchange developments were organized for potential users in central banks and national statistical agencies, taking advantage of a network of regional and international working groups and committees that address statistical and related information technology topics. In the exchange of views, the importance of national input in creating sound and useful international standards was stressed. Moreover, important benefits were envisaged to follow from active national participation in SDMX-conformant implementation exercises with regional and international institutions.

### III. Next steps

8. The pilot project is now turning its attention to the following:
- Two major analytical efforts (see below), to complete the development of a coherent set of standards for the forthcoming draft Version 2.0 release envisaged for the second quarter of 2005
  - A production implementation based on SDMX standards in an initial statistical domain

The first analytical area involves technical issues concerning SDMX architecture standards. The work will highlight the important role of the Internet and web technologies, allowing data and metadata to be “pulled” rather than “pushed” vis-à-vis data compilers and users. The essential mechanism of the architecture is a registry, which is basically a high-level catalogue or database that stores summary information only about data and metadata (not the actual data or metadata) and contains pointers to the locations where the data and metadata can be accessed. An SDMX-conformant registry will be one of the products of the pilot project, to be used by interested parties to pull data from original sources.

The second analytical area concerns standards for metadata:

- Core subject-matter domains. Providing a commonly used classification of statistical areas to facilitate efficient use of SDMX architecture standards and to foster expert groups working together on common domain-specific identifiers (key/concept families) for data and metadata exchange using SDMX formats
- Core statistical concepts. Articulating an agreed set of cross-domain statistical terms used to identify data being exchanged (structural metadata) and to explain statistics being compiled (reference metadata involving methodologies and processes)
- Metadata common vocabulary. Comprising metadata terms, and their associated definitions, regularly used across statistical subject-matter domains to describe and explain content and processes and to facilitate agreement on terminology for SDMX core statistical concepts (see current draft version available on <http://www.sdmx.org>)

Finally, production implementation of the Pilot Project will focus on the subject matter of external debt statistics. It will build on the work of the SDMX case study project and will involve close coordination with the Inter-agency Task Force on Finance Statistics. A new Bank for International Settlements-International Monetary Fund-Organization for Economic Cooperation and Development-World Bank joint external debt hub is scheduled to be available by the end of 2005.

9. Awareness and opportunities for applying SDMX standards in other subject matter domains appears to be growing, with the following areas envisaged to make progress in the months ahead:
- The Federal Reserve Bank of New York is the first known institution applying experimental SDMX case study standards for the public release of official foreign exchange data (<http://www.newyorkfed.org/xml/fx.html>), and other financial market domain data are also being considered.

- The OECD National Accounts World Wide Exchange (NAWWE) project is taking steps forward to integrate SDMX standards for this statistical domain.
- The United Nations Statistics Division and the OECD will be making use of Version 1.0 standards in their collaborative work on the Commodity Trade Statistics Database.
- Eurostat has started work on a pilot project (SDMX Open Database Interchange (SODI)) to evaluate the use of SDMX standards and tools to achieve more rapid dissemination of the Eurostat Principal European Economic Indicators for European Union member States.
- The European Central Bank, together with the euro area national central banks, is conducting a project concerning web dissemination of a range of financial statistics.

## IV. Conclusions

10. As noted in the previous report to the Statistical Commission,<sup>2</sup> the Statistical Data and Metadata Exchange initiative has the potential to make an important contribution in helping international and national agencies involved in the production of statistical data and metadata to become more efficient in their internal operations and to provide users with higher-quality service.

11. With SDMX standards being based on evolving information and communication technology (ICT), they represent a new cooperative effort among international organizations:

- To minimize the duplication of data and metadata collections
- To maximize the coherence of data sets disseminated by various international organizations on the same subject matter
- To improve the accessibility and interpretability of statistics disseminated by international organizations
- To automate the data exchange processes and gain efficiency from the use of up-to-date ICT tools

12. In some cases, SDMX standards may offer statistical “communities” the possibility of reconsidering the current pattern of data and metadata exchange. Moreover, new models for data exchange and dissemination based on the concept of a “hub” (a common registry keeping track of data and metadata available on a network of web sites of partners) can reinforce the opportunities for better coordinating current flows between data providers and international compilers. Similarly, international organizations have the opportunity to share data and metadata among themselves and with other users, and establish new ways to co-manage international statistical activities and to cooperate in that regard.

### *Notes*

<sup>1</sup> The report has been jointly prepared by the Bank for International Settlements, the European Central Bank, the Statistical Office of European Communities, the International Monetary Fund, the Organization for Economic Cooperation and Development, the United Nations Statistics Division and the World Bank.

<sup>2</sup> See E/CN.3/2004/27; also available from <http://unstats.un.org/unsd/statcom/sc2004.htm>.