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Statistical data and metadata exchange (SDMX)

Données statistiques et échange de métadonnées (SDMX)

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 17369 was prepared by Technical Committee ISO/TC 154, *Processes, data elements and documents in commerce, industry and administration*.

This first edition of ISO 17369 cancels and replaces ISO/TS 17369:2005, which has been technically revised.

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Introduction

The Statistical Data and Metadata Exchange (SDMX) initiative (http://www.sdmx.org) sets standards that can facilitate the exchange of statistical data and metadata using modern information technology, with an emphasis on aggregated data.

There are several sections to the SDMX technical specification.

a) The SDMX Framework Document presents the scope and integrated functionality of the concepts and specifications that constitute the SDMX standard.

b) The SDMX Information Model is the information model upon which syntax-specific implementations described in the other sections are based. This is intended for technicians wishing to understand the complete scope of the technical standards in a syntax-neutral form. It includes as an annex a tutorial on UML (Unified Modelling Language).

c) SDMX-ML is the XML format for the exchange of SDMX-structured data and metadata. This document describes the use of the XML syntax in SDMX messages, and is accompanied by a set of XML schemas and sample XML document instances.

d) SDMX-EDI is the UN/EDIFACT format for exchange of SDMX-structured data and metadata. This describes the use of the UN/EDIFACT syntax in SDMX messages.

e) The SDMX Registry Specification provides for a central registry of information about available data and reference metadata, and for a repository containing structural metadata and provisioning information. This specification defines the basic services offered by the SDMX registry: registration of data and metadata; querying for data and metadata; and subscription/notification regarding updates to the registry.

f) The SDMX Technical Notes constitute a guide to help those who wish to use the SDMX specifications. They include notes on the expressive differences of the various messages and syntaxes; versioning; maintenance agencies; the SDMX Registry.

g) Web Services Guidelines constitute a guide for those who wish to implement SDMX using web-services technologies. They place an emphasis on those aspects of web-services technologies (including, but not requiring, an SDMX-conformant registry) which will work regardless of the development environment or platform used to create the web service.

SDMX version 2.0 represented a significant increase in scope, and also provided more complete support in those areas covered in SDMX version 1.0. SDMX version 2.0 is backward-compatible with SDMX version 1.0, so that existing implementations can be easily migrated to conformance with SDMX version 2.0.

SDMX version 2.1 represents a set of changes resulting from several years of implementation experience with SDMX version 2.0. The changes do not represent a major increase in scope or functionality, but do correct some bugs and add functionalities in some cases. Major changes in SDMX-ML include a much stronger alignment of the XML schemas with the information model, to emphasize inheritance and object-oriented features, and increased precision and flexibility in the attachment of metadata reports to specific objects in the SDMX information model.

The idea of backward-compatibility in the standards is based on the information model. In both releases, some non-backward-compatible changes have been made to the SDMX-ML formats. However, the same set of information required to use SDMX version 1.0 will permit the use of the same features in SDMX version 2.0. Thus, a data structure definition (DSD) is easily translated from SDMX version 1.0 to SDMX version 2.0, without requiring any new information regarding structures, etc. There have been no changes to the SDMX-EDI format.

The main changes from SDMX version 1.0 to SDMX version 2.0 can be briefly summarized as follows.

— Reference Metadata: In addition to describing and specifying data structures and formats (along with related structural metadata), SDMX version 2.0 also provides for the exchange of metadata which

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is distinct from the structural metadata in SDMX version 1.0. This category includes "reference" metadata (regarding data quality, methodology and similar types: it can be configured by the user to include whatever concepts require reporting); metadata related to data provisioning (release calendar information, description of the data and metadata provided, etc.); and metadata relevant to the exchange of categorization schemes.

— SDMX Registry: Provision is made in SDMX version 2.0 for standard communication with registry services, to support a data-sharing model of statistical exchange. These services include registration of data and metadata, querying of registered data and metadata, and subscription/notification.

— Structural Metadata: The support for exchange of statistical data and related structural metadata has been expanded. Some support is provided for qualitative data; data cube structures are described; hierarchical code lists are supported; relationships between data structures can be expressed, providing support for extensibility of data structures; and the description of functional dependencies within cubes are supported.

The main changes from SDMX version 2.0 to SDMX version 2.1 can be briefly summarized as follows.

— Web-services-oriented changes: Several organizations have been implementing web services applications using SDMX, and these implementations have resulted in several changes to the specifications. Because the nature of SDMX web services could not be anticipated at the time of the original drafting of the specifications, the web services guidelines have been completely re-developed.

— Presentational changes: Much work has gone into using various technologies for the visualization of SDMX data and metadata, and some changes have been proposed as a result, to better leverage this graphical visualization.

— Consistency issues: There have been some areas where the draft specifications were inconsistent in minor ways, and these have been addressed.

— Clarifications in documentation: In some cases it has been identified that the documentation of specific fields within the standard needed clarification and elaboration, and these issues have been addressed.

— Optimization for XML technologies: Implementation has shown that it is possible to better organize the XML schemas for use within common technology development tools which work with XML. These changes are primarily focused on leveraging the object-oriented features of W3C XML Schema to allow for easier processing of SDMX data and metadata.

— Consistency between the SDMX-ML and the SDMX information model: Certain aspects of the XML schemas and UML model have been more closely aligned, to allow for easier comprehension of the SDMX model.

— Technical bugs: Some minor technical bugs have been identified. These bugs have been addressed.

— Support for non-time-series data in the generic format: One area which has been extended is the ability to express non-time-series data as part of the generic data message.

— Simplification of the data structure definition/specific message types: Both time series (SDMX version 2.0 Compact) and non-time series data sets (SDMX version 2.0 cross sectional) use the same underlying structure for a structure-specific formatted message, which is specific to the data structure definition of the data set.

— Simplification and better support for the metadata structure: New use cases have been reported and these are now supported by a re-modelled metadata structure definition.

— Support for partial item schemes such as a code list: The concept of a partial (sub-set) item scheme such as a partial code list for use in exchange scenarios has been introduced.

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Statistical data and metadata exchange (SDMX)

1 Scope

This International Standard provides an integrated approach to facilitating Statistical Data and Metadata Exchange (SDMX), enabling interoperable implementations within and between systems concerned with the exchange, reporting and dissemination of statistical data and related metadata.

This International Standard is applicable to any organization that has a need to manage the reporting, exchange and dissemination of its statistical data and related metadata. The information model at the core of this International Standard has been developed to support statistics as collected and used by governmental and supra-national statistical organizations, and this model is also applicable to other organizational contexts involving statistical data and related metadata.

2 Terms, definitions and abbreviated terms

2.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

2.1.1
representational state transfer
REST
style of software architecture for distributed hypermedia systems, such as the worldwide web

2.1.2
RESTful web service
RESTful API
simple web service implemented using HTTP and the principles of REST

2.1.3
data set
organized collection of data and associated metadata according to an identified data structure definition

2.1.4
data structure definition
DSD
collection of metadata concepts, their structure and usage when used to collect or disseminate data

2.1.5
metadata set
organized collection of metadata structured according to an identified metadata structure definition

2.1.6
metadata structure definition
collection of metadata concepts, their structure and usage, when used to collect or disseminate reference metadata

2.1.7
reference metadata
metadata describing the contents and the quality of the statistical data

2.1.8
code list
predefined list from which some statistical coded concepts take their values

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