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Topic (i): Web technology in statistical information systems

PRACTICAL EXPERIENCE TOWARDS IMPLEMENTING SDMX AT OECD

Invited Paper

Submitted by the Organisation for Economic Cooperation and Development (OECD)¹

Executive Summary

1. SDMX (*Statistical Data and Metadata Exchange*) is an international cooperation initiative aiming at developing and employing more efficient processes for exchange and sharing of statistical data and metadata among international organizations and their member countries.

2. This paper describes work underway at the OECD towards practical implementation of SDMX. This includes contributions to four major projects:

- Definition of a common vocabulary for statistical metadata;
- Development of a model for metadata repositories;
- Participation in a case study on standards for statistical data and metadata exchange;
- Maintenance and advancement of standards for time series data exchange.

3. The paper also describes development work at OECD involving use of XML and Web Services – basic SDMX building blocks – for sharing of data and metadata, both within the Organization and with its partners. Four activities are described, highlighting experience and lessons learnt:

- Exchange of national accounts data between the OECD and member countries (NAWWE);
- Joint UN/OECD Foreign Trade Statistics project;
- Export to, and extraction from OECD's central data repository, OECD.Stat²;
- Technical Collaboration Project on Web Services with the IMF and World Bank.

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² OECD's new corporate database for internal and external sharing of statistics

4. The experience acquired is helping confirm the validity of proposed SDMX e-standards, and contributing guidance to further enrichment of these standards.

I. INTRODUCTION

5. The OECD is continually looking for ways to modernize the methods it uses for gathering statistics and related metadata from national agencies and other international organizations, and for dissemination of its statistical products. The Organization is therefore working with other international organizations, national statistical office and central banks to share experience with the innovative use of information technologies, and to develop “best practices” for data sharing.

6. The Organization supports, in particular, the goals of SDMX (Statistical Data and Metadata Exchange), a cooperative initiative sponsored by seven international organizations (including OECD) aimed at developing and employing new e-standards for the exchange and sharing of statistical data and metadata.

7. This paper does not pretend to give a comprehensive description of all activities related to SDMX. Its focus is on experience gained by the OECD and prospects for future benefits from SDMX and related projects, as seen by the Organization.

II. WHAT IS SDMX? WHY ARE WE INTERESTED IN IT?

8. SDMX stands for Statistical Data and Metadata eXchange. It is a cooperation initiative sponsored by BIS, ECB, IMF, EUROSTAT, OECD, UN, and the World Bank to develop and employ more efficient business processes for exchange and sharing of statistical information and metadata. The sponsors are all international organizations (IOs) deeply involved in collecting statistical information for their analysis and policy purposes from institutions in their member countries, and then processing this information and disseminating the resulting internationally comparable statistics.

9. At the OECD, this data collection work has traditionally been carried out by way of standard questionnaires, increasingly in electronic form, sent to member countries that are asked to fill in the needed information. This puts a heavy reporting burden on the respondents, who often have to fill in similar questionnaires for other IOs, but with variations in timing, formats, concepts and definitions. Therefore it is sometimes difficult for member countries to adhere to reporting deadlines. As a consequence, the timeliness of the statistical basis of the IOs leaves a lot to be desired. In addition, the many manual processes involved are error prone.

10. Traditional reporting methods are also labour intensive for the organizations that receive the data and have to verify and compare them. It is obviously important for all parties to employ the most efficient methods. This implies avoiding overlap and duplication of statistical data collection among international organizations: If two IOs need approximately the same data, they should cooperate and seek to compromise on concepts, timing and modalities of the data collection. This would also strengthen coherence and comparability between data sets used by different organizations, thus diminishing extraneous “noise” from data inconsistencies in analytical work. This is of course an ambitious goal, and it is important to note that many benefits from SDMX can be realised in the short term even if this kind of coordination of contents cannot be achieved. The goal of employing the most efficient methods also implies taking full advantage of emerging information technologies for the exchange of statistical data and metadata.

11. The OECD thus looks forward to the promise of the SDMX initiative for:

- more efficient reporting, i.e. less burden on countries as well as on OECD;
- automated procedures which are less error prone;
- more timely reporting and, consequently, dissemination;

- enhanced coordination with other international organizations.

III. MOVING FORWARD WITH SDMX: FOUR PROJECTS

12. The OECD has a number of initiatives underway directly related to the practical implementation of SDMX, including the definition of related statistical and metadata standards, and the development of robust and comprehensive technology standards.

A. Definition of the Metadata Common Vocabulary

13. The Metadata Common Vocabulary (MCV) project is led by OECD, with OECD and Eurostat being the main contributors.

14. The aim of the MCV project is to develop a common understanding of standard metadata terms, focusing on descriptions of statistical concepts and methodologies used by statisticians in the collection, processing and dissemination of statistical data. The immediate objective is to develop a Glossary of these standard terms, whose definitions are consistent with international standards and guidelines, with the terminology being used within SDMX organizations, within national agencies and, to the extent possible, consistent with other related projects involving development of international standards.

15. The idea for developing a common metadata vocabulary stems from the need to improve consistency in the content of metadata compiled by metadata authors in different national agencies and international organizations. Such consistency is a prerequisite both for enabling the use of metadata to compare national methodological practices, and for the creation of efficient mechanisms for exchange of data and metadata between organizations, as envisaged by the SDMX initiative.

16. It is well known in metadata circles that it is extremely difficult to agree on common metadata models, and that terminology varies widely among statisticians. The Vocabulary is only concerned with the elaboration of some terminological “building blocks” based on statistical international standards or best practices, easily understandable and re-usable.

17. The MCV consists of two elements:

- a basic vocabulary of key metadata items, related standard definitions and context explanations which can be used in existing dissemination and data sharing frameworks;
- linkage (or mapping) of metadata detailed (*atomic*) items in the MCV to existing dissemination frameworks, giving priority to current dissemination formats, such as the Special Data Dissemination Standard (SDDS) developed by the IMF.

The present version of MCV can be viewed at www.sdmx.org/General/Projects/MCV-draft-20031001.doc

B. Development of a model for metadata repositories

18. This project aims at developing a standard approach for the creation and use of metadata repositories, allowing access, analysis and reuse of statistical metadata stored in multiple websites. The project took as its starting point the IMF's Special Data Dissemination Standard (SDDS) framework. The main deliverables of the project are a metamodel for metadata repositories derived by adapting and expanding the SDDS framework to accommodate the needs of other SDMX partners, and an XML schema and protocol to enable search and query across metadata repositories. This project has been closely coordinated with the MCV project.

C. A practical case study on emerging e-standards: External Debt statistics

19. Under the SDMX initiative, a practical case study is being carried out to investigate the ways in which web standards can be used to simplify the collection, compilation and dissemination of statistical information. The case study is being led by BIS and focuses on the Joint BIS-IMF-OECD-World Bank external debt statistics and national debtor data. Key deliverables include:

- identifying e-standards that can foster the achievement of practical benefits;
- demonstrating how web-based technologies can point to possible improvements and advances in statistical information exchange processes;
- recommending ways to go forward with future SDMX activities.

20. A standard XML schema has been developed as the format for the exchange and sharing of data and metadata. The logical data model (or information model) of the schema is building on the EDIFACT standard GESMES/TS, which has been intensively used for several years for batch exchange of time series data, and which is also supported by the SDMX initiative³. The XML schema is still being adjusted, with the ambition to ascertain that the format is sufficiently general to be able to accommodate all kinds of statistical data and metadata being exchanged between international organizations and countries. It is envisaged that the first “production” version of the standard schema, SDMX-ML 1.0, will be made available for public comment in the coming months.

21. A central point in the project is a demo of the standards, using a “hub” which is accessible through the SDMX web site⁴. It consists of a *registry*, i.e. a collection of notifications on which datasets from the member countries have been made accessible to the SDMX. The registry keeps track on whenever a reporting member country organization makes data available on its web site (in the accorded format). The registry provides a web service, allowing users to query.

22. It is not necessary that the data itself, or indeed its statistical metadata, is kept in one location in order to allow users to have access across all data suppliers participating in the data sharing arrangement. Instead, the user may query the web service of the registry and use the result (information on all relevant data and their location) to make a query towards all hosts who will each keep their part of the data. Each host will provide a standardised web service, allowing the user to view all answers as one table. However, for performance reasons, it has been decided at this stage to keep a cache with recently accessed data as part of the hub.

23. The study is seen as a proof of concept of a generic approach, based on technical standards proposed for use in any field of statistics where countries and international organizations can agree on core standards for the contents. This will create opportunities for reduced reporting burden for suppliers, more user-friendly access to national and international data published on the web, leading to easier comparative data analysis.

D. GESMES/TS

24. GESMES (Generic Statistical Message) is a UN/CEFACT standard that has been used world-wide for more than five years in automating statistical data exchange. GESMES/TS is a GESMES profile created to make the standard simpler to use, thus supporting its application throughout the world of official statistics. The maintenance of GESMES/TS is organized under the SDMX umbrella.

25. Initially, GESMES/TS was called GESMES/CB reflecting the fact that its use started in the central banking (CB) community in Europe (European System of Central Banks) and world-wide (Bank for

³ www.sdmx.org/General/Projects/GesmesTS_re13.pdf

⁴ <http://sdmx.oecd.org/sdmxDemo/notes/index.htm>

International Settlements and its partners). But soon also Eurostat and the European national statistical institutes took it on board. From the outset, the IMF and Eurostat adopted it as their most preferable standard for receiving balance of payments statistics. During 2003, in light of the expected use of the message by a wider range of national and international organizations, the message was renamed from GESMES/CB to GESMES/TS (GESMES for time series). Moreover, after extensive consultations between the corresponding SDMX project team and interested users with additional requirements, the updated release 3.0 of GESMES/TS was made available in March 2003 and became operational in July 2003. The SDMX-ML standard mentioned in the preceding section is actually an XML implementation that builds on the information model of GESMES/TS.

26. Eurostat has expressed its commitment to GESMES/TS, making it the mandatory standard for reporting from member countries' NSOs in the future. Consequently, many statistical agencies have implemented automated creation of GESMES/TS reports from their web databases.

27. The OECD has not yet implemented reporting in this format for any of its statistical data streams. The reporting is still to a large extent based on specific questionnaires for each subject area, often based on Excel. Various initiatives, among them the ones mentioned in section 5.A and B, aim at changing this situation, automating data streams based on standard formats. Whether these initiatives actually use the EDIFACT standard GESMES/TS or its XML incarnation SDMX-ML does not change the benefits that should accrue.

IV. SDMX-ALIGNED PROJECTS

28. The OECD is involved in two projects which, while not emanating from SDMX, have the same purpose as SDMX and involve use of SDMX standards: the NAWWE and Comtrade projects.

A. The NAWWE Project: National Accounts World Wide Exchange

29. NAWWE is a project initiated by the OECD with the aim of facilitating the exchange of national accounts data between Member countries and the OECD – and hopefully also with other international organizations, utilising SDMX principles and tools.

30. NAWWE is based on a common questionnaire agreed by the OECD and Eurostat for the collection of annual national accounts data. The questionnaire comprises a very detailed set of national accounts variables that have been specified to meet the requirements of international agencies. These variables are identified in an extensive set of Excel spreadsheets by means of a common code and specific presentation format (e.g. in national currency at current price/constant prices). It builds directly on SNA specifications and structures. The idea behind the NAWWE project is to establish a web-based mechanism to ease countries' reporting of these common data. If this can be done, all involved international organizations could then use the same mechanism. Every organization would access the subset of the common data pool relevant to it.

31. The OECD has now implemented a model very much in the spirit of the External Debt Hub (see above). Data are not necessarily transferred across organizations but, rather, published on the web in such a form that users can extract them by simply using the country and variable references. As a proof of concept, two Member countries, Australia and Canada have agreed to pilot the suggested mechanism for a subset of the national accounts tables.

32. The OECD has set up a demonstration model of this kind of data extraction from the two participating countries. The pilot projects start from the Excel tables already produced by national agencies for transmitting annual national accounts data to international organizations, transforming these tables into XML files conforming to the SDMX-ML specification. The data are made accessible by the NSO via a web service to OECD and other international organizations and countries. However, the idea is that, eventually,

the XML files should be created automatically, directly from the NSO's online databases, when data are released.

33. The expected benefits from a reporting country's viewpoint are:

- one reporting to cover all reports (provided international organizations agree);
- created automatically from database, thus saving resources;
- code mapping from the NSO's own code system only to SNA93, settled once and for all.

34. Benefits from OECD's and other international organizations' viewpoint are:

- timely reporting;
- complete reporting;
- no code misinterpretations;
- efficient NSO data validation and import processes.

35. The results of the pilot study can be seen on a special page on the OECD website which is at present only accessible to partners⁵, i.e. the two participating countries and the OECD. This site contains:

- description of the project;
- the Excel tables making up the common national accounts questionnaire (a sample of 12 tables);
- links to the corresponding XML reports from Australia and Canada;
- a query tool that allows users to extract arbitrary tables, using the data and metadata of the reporting countries.

36. It is planned to move on with the following steps:

- evaluate the pilot based on feedback from involved partners, and post results on the web site;
- give access to the web site to SDMX partners and NSOs;
- extend the pilot to a country from the European Union;
- urge other international organizations to evaluate the usefulness of the pilot;
- move on to full scale implementation by OECD and, hopefully, other international organizations, proposing that countries who so wish may use the NAWWE reporting and data validation mechanisms.

B. The Comtrade Project: UN/OECD Foreign Trade Statistics Project

37. Following agreement to share responsibilities for collection of annual foreign trade data, the OECD and UN have additionally agreed to work jointly to establish a common system for managing annual foreign trade data, using an SQL-based data model designed by the UN Statistics. Development effort for data collection, validation, processing and management software is being shared by the OECD and the UN. Responsibilities for collecting and validating data will also be shared, with data periodically replicated from one site to the other.

38. The OECD and UN agreed to use the SDMX-ML schema for replication of annual foreign trade data between the databases maintained at UN/New York and OECD/Paris. Initial experience with the proposed schema, however, has revealed that an extension is needed, to accommodate large-scale bulk data transfer of the sort that foreign trade statistics involve. An extension has, in fact, been proposed to and accepted by the SDMX standards group. This resulting XML schema may eventually be shared with other international

⁵ It is planned to make the NAWWE site accessible to all interested parties well before the MSIS meeting in May 2004.

organizations using these foreign trade statistics (FAO, UNCTAD, etc.). It is also hoped that it will be used for the reporting from countries to international organizations.

V. ENRICHING SDMX TECHNOLOGY STANDARDS

39. Practical experience with early implementations of SDMX technology standards, at OECD and elsewhere, is providing a basis for further enriching these standards. The ultimate goal is a set of format and transport standards that accommodate a broad spectrum of statistical data and metadata, and that can be easily and securely implemented and managed. The OECD seeks, in particular, to help advance definition of robust and comprehensive standards for two key SDMX building blocks – XML and Web services. This has involved working with these technologies, gaining experience in their use for both internal purposes and for external information exchange, and sharing this experience with others participating in the SDMX initiative. The SDMX-aligned NAWWE and Comtrade projects described provide examples of this. Two further examples are described below.

A. OECD's New Statistical Information System

40. The technology foundations of OECD's new Statistical Information System⁶ espouse principles common to the SDMX initiative:

- an XML schema for sharing statistical data and metadata;
- a Web service as a standard method for query and retrieval of these data.

The Organization is, as a result, gaining considerable experience in the practical use of both XML and Web services for sharing statistical data and metadata, which are relevant to the SDMX initiative.

41. The use of XML has permitted the "loose coupling" of the components of OECD's new Statistical Information System. That is, a change in one component and/or its data inputs and outputs can be made without necessitating changes in the others. An attempt was made at an early stage to use the draft case study SDMX-ML schema for these statistical data and metadata flows. As the initial draft was essentially time series oriented, recommendations concerning OECD's need to address cross-section and micro data datasets has been passed along to those working on SDMX standards-setting issues in order to strengthen future developments.

42. A Web service provides a standard means of extracting statistical data and metadata from the Organization's central repository for validated statistical data and metadata, OECD.Stat. This Web service is used to return selected statistical data and metadata to an online browser, to analytical tools commonly used by the Organization's analysts and statisticians, and to the publications and dissemination processes. This Web service constitutes a single data extraction mechanism, which has been designed as a general method supporting both internal (i.e., on the LAN) and external (i.e., via Internet) access to OECD.Stat resources.

43. While the technical feasibility of accessing OECD.Stat from the Internet through this Web service has been demonstrated, this capability has not yet been fully implemented pending resolution of a certain number of policy and governance issues. For illustrative purposes, the characteristics of OECD.Stat's DataSetBrowser Web service have been set out in an Annex. This Web service was designed specifically to be used by the OECD.Stat Excel Add-in – one of the means via which the Organization's analysts and statisticians can access validated statistical data and metadata. It should be possible in the near future to provide information on the more general Web service enabling broader access to OECD statistical resources, make this Web service available via the Internet, and integrate it within the SDMX framework.

⁶ Building OECD's New Statistical Information System, MSIS Invited paper

B. Technical Collaboration Project on Web Services

44. Technical staff at the IMF, OECD and World Bank are participating in a Technical Collaboration Project on Web Services, sponsored by the IMF, with a view to sharing experience and developing common technology choices as the basis for statistical data management, publication and dissemination by the three organizations. A number of issues specific to implementing Web services for exchange of statistical data and metadata are being addressed, including:

- security issues (i.e., authentication and access controls for restricted datasets, Web services vis-à-vis firewalls)
- performance issues (i.e., Web services between geographically dispersed locations under heavy load conditions)
- standardisation issues (how a Web service is to be invoked, what it is to provide), and
- management issues (i.e., monitoring availability, performance, interoperability)

45. The three participating organizations wish, in particular, to move ahead quickly with SDMX implementation, and thus are working to define concrete examples of quickly-achievable “stepping stone” projects towards this end. This may well involve, in the first instance, replacing some existing data sharing processes between the OECD, the IMF and the World Bank with data exchange via Web services. This cooperative work may, in due course, lead to proposals concerning standards for SDMX Web services.

VI. CONCLUDING REMARKS

46. A paradigm shift is underway, with strategy shifting from a data collection system based largely on questionnaires to new approaches based on “data sharing”. The data sharing model, as exemplified by the SDMX initiative, has the potential to produce important changes in the way in which national data providers and international organizations interact.

47. To help facilitate progress in this direction, the OECD has recently set up an international expert group -- the OECD Expert Group on Statistical and Metadata Exchange -- to foster dialogue with national and international partners on strategic issues related to the development and the practical implementation of new procedures for statistical data and metadata exchange.

ANNEX

DatasetBrowser Web Service

1. The DataSetBrowser Web service was designed specifically to be used by the OECD.Stat Excel Addin, via which the Organization's analysts and statisticians can easily access validated statistical data and metadata. The characteristics of this Web service are summarised here for illustrative purposes. A more generic web service will soon be made available to enable broader access to OECD statistical data.

- XML Schema used for input and output parameters:
<http://webnet3.oecd.org/oecdstatws/Schemas/V2/DatasetBrowserParameter.xsd>
- XML schema used for description (metadata):
<http://webnet3.oecd.org/oecdstatws/Schemas/Metadata.xsd>

XML input is validated against the schema DatasetBrowserParameter.xsd for each method.

2. In addition, the following "business rules" are checked when applicable and, if needed, a SoapException is returned with detailed explanation:

- CheckDatasetName. Checks if dataset name is valid. To ensure validity, use GetDatasetList to retrieve the list of available dataset.
- CheckDimensionName. Checks if dimension name is valid. To ensure validity, use GetDatasetDimensionsList to retrieve the list of dimensions in a given dataset.
- CheckMemberName. Checks if member name is valid in the given dimension. To ensure validity, use the GetDatasetDimensionMembersList to retrieve the list of members in a dimension of a given dataset.
- CheckDimensionNumber. Checks if the number of dimensions given as input matches the number of dimensions in the given dataset. To ensure validity, use GetDatasetDimensionsList to retrieve the list of dimensions in a given dataset.

3. The following operations are supported. For a formal definition, please review the Service Description .http://webnet3.oecd.org/oecdstatws/datasetbrowser_V3.asmx?WSDL

- http://webnet3.oecd.org/oecdstatws/datasetbrowser_V3.asmx?op=GetDatasetDimensionLevelsList
Use this method to retrieve the list of levels in the dimension 'DimensionName' of the dataset 'DatasetName'.

-Sample input: http://webnet3.oecd.org/oecdstatws/Documentation_V3/GetDatasetDimensionLevelsList.xml

-Sample output:

http://webnet3.oecd.org/oecdstatws/Documentation_V3/GetDatasetDimensionLevelsList_Output.xml

-Usage example (C# code):

http://webnet3.oecd.org/oecdstatws/Documentation_V3/GetDatasetDimensionLevelsList.txt

Business Rules:

-CheckDatasetName

-CheckDimensionName

- http://webnet3.oecd.org/oecdstatws/datasetbrowser_V3.asmx?op=GetDatasetValue

Use this method to retrieve a single value in the dataset.

-Sample input: http://webnet3.oecd.org/oecdstatws/Documentation_V3/GetDatasetValue.xml

-Sample output: http://webnet3.oecd.org/oecdstatws/Documentation_V3/GetDatasetValue_Output.xml

-Usage example (C# code): http://webnet3.oecd.org/oecdstatws/Documentation_V3/GetDatasetValue.txt

Business Rules:

-CheckDatasetName

-CheckDimensionNumber

-CheckDimensionName (for each given dimension)

-CheckMemberName (for each given member)

- http://webnet3.oecd.org/oecdstatws/datasetbrowser_V3.aspx?op=GetDatasetDimensionsList
Use this method to retrieve the list of dimensions in the dataset 'DatasetName'.

-Sample input: http://webnet3.oecd.org/oecdstatws/Documentation_V3/GetDatasetDimensionsList.xml

-Sample output:

http://webnet3.oecd.org/oecdstatws/Documentation_V3/GetDatasetDimensionsList_Output.xml

-Usage example (C# code):

http://webnet3.oecd.org/oecdstatws/Documentation_V3/GetDatasetDimensionsList.txt

Business Rules:

-CheckDatasetName

- http://webnet3.oecd.org/oecdstatws/datasetbrowser_V3.aspx?op=GetDatasetDimensionMembersList

Use this method to retrieve the list of members in the dimension 'DimensionName' in the dataset 'DatasetName'.

-Sample input:

http://webnet3.oecd.org/oecdstatws/Documentation_V3/GetDatasetDimensionMembersList.xml

-Sample output:

http://webnet3.oecd.org/oecdstatws/Documentation_V3/GetDatasetDimensionMembersList_Output.xml

-Usage example (C# code):

http://webnet3.oecd.org/oecdstatws/Documentation_V3/GetDatasetDimensionMembersList.txt

Business Rules:

-CheckDatasetName

-CheckDimensionName

- http://webnet3.oecd.org/oecdstatws/datasetbrowser_V3.aspx?op=GetDatasetDescription

Use this method to retrieve the metadata associated with the dataset 'DatasetName'.

-Sample input: http://webnet3.oecd.org/oecdstatws/Documentation_V3/GetDatasetDescription.xml

-Sample output: http://webnet3.oecd.org/oecdstatws/Documentation_V3/GetDatasetDescription_Output.xml

-Usage example (C# code):

http://webnet3.oecd.org/oecdstatws/Documentation_V3/GetDatasetDescription.txt

Business Rules:

-CheckDatasetName

- http://webnet3.oecd.org/oecdstatws/datasetbrowser_V3.aspx?op=GetDatasetDimensionDescription

Use this method to retrieve the metadata associated with the dimension 'DimensionName' in the dataset 'DatasetName'.

-Sample input:

http://webnet3.oecd.org/oecdstatws/Documentation_V3/GetDatasetDimensionDescription.xml

-Sample output: http://webnet3.oecd.org/oecdstatws/Documentation_V3/GetDatasetDescription_Output.xml

-Usage example (C# code):

http://webnet3.oecd.org/oecdstatws/Documentation_V3/GetDatasetDimensionDescription.txt

Business Rules:

-CheckDatasetName

-CheckDimensionName

- http://webnet3.oecd.org/oecdstatws/datasetbrowser_V3.aspx?op=GetDatasetDimensionRootMembersList

Use this method to retrieve the list of members at the root level in the dimension 'DimensionName' in the dataset 'DatasetName'.

-Sample input:

http://webnet3.oecd.org/oecdstatws/Documentation_V3/GetDatasetDimensionRootMembersList.xml

-Sample output:

http://webnet3.oecd.org/oecdstatws/Documentation_V3/GetDatasetDimensionRootMembersList_Output.xml

-Usage example (C# code):

http://webnet3.oecd.org/oecdstatws/Documentation_V3/GetDatasetDimensionRootMembersList.txt

Business Rules:

-CheckDatasetName

-CheckDimensionName

- http://webnet3.oecd.org/oecdstatws/datasetbrowser_V3.aspx?op=GetDatasetValueRange

Use this method to retrieve a range of values in the dataset 'DatasetName' corresponding to the range coordinates 'Coordinates'. 'Coordinates' array elements are string concatenation of dimension members (separated with ',') for the corresponding cell in the range.

-Sample input: http://webnet3.oecd.org/oecdstatws/Documentation_V3/GetDatasetValueRange.xml

-Sample output: http://webnet3.oecd.org/oecdstatws/Documentation_V3/GetDatasetValueRange_Output.xml

-Usage example (C# code):

http://webnet3.oecd.org/oecdstatws/Documentation_V3/GetDatasetValueRange.txt

Business Rules:

-CheckDatasetName

-CheckDimensionNumber

-CheckDimensionName (for each given dimension)

-CheckMemberName (for each given member)

- http://webnet3.oecd.org/oecdstatws/datasetbrowser_V3.aspx?op=GetDatasetDimensionMemberChildrenList

Use this method to retrieve the list of children of the member 'MemberName' of the dimension 'DimensionName' of the dataset 'DatasetName'.

-Sample input:

http://webnet3.oecd.org/oecdstatws/Documentation_V3/GetDatasetDimensionMemberChildrenList.xml

-Sample output:

http://webnet3.oecd.org/oecdstatws/Documentation_V3/GetDatasetDimensionMemberChildrenList_Output.xml

-Usage example (C# code):

http://webnet3.oecd.org/oecdstatws/Documentation_V3/GetDatasetDimensionMemberChildrenList.txt

Business Rules:

-CheckDatasetName

-CheckDimensionName

-CheckMemberName

- http://webnet3.oecd.org/oecdstatws/datasetbrowser_V3.aspx?op=GetDatasetList

Use this method to retrieve the list of names of available datasets.

-Sample output: http://webnet3.oecd.org/oecdstatws/Documentation_V3/GetDatasetList_Output.xml

-Usage example (C# code): http://webnet3.oecd.org/oecdstatws/Documentation_V3/GetDatasetList

- http://webnet3.oecd.org/oecdstatws/datasetbrowser_V3.aspx?op=GetDataSetDimensionMemberDescription

Use this method to retrieve the metadata associated with the member 'MemberName' of the dimension 'DimensionName' in the dataset 'DatasetName'.

-Sample input:

http://webnet3.oecd.org/oecdstatws/Documentation_V3/GetDataSetDimensionMemberDescription.xml

-Sample output: http://webnet3.oecd.org/oecdstatws/Documentation_V3/GetDataSetDescription_Output.xml
-Usage example (C# code):
http://webnet3.oecd.org/oecdstatws/Documentation_V3/GetDataSetDimensionMemberDescription.txt

Business Rules:

- CheckDatasetName
- CheckDimensionName
- CheckMemberName

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