INTERSTATE STATISTICAL COMMITTEE OF THE COMMONWEALTH OF INDEPENDENT STATES

WELCOME TO THE STATISTICS OF THE COMMONWEALTH OF INDEPENDENT STATES

CISStat Linked Open Statistics: The Approach to Semantic Transformation of SDMX

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SEMANTIC KNOWLEDGE MANAGEMENT AND LOSD IN CISSTAT DATAHUB

UNIFIED INFORMATIONAL ANALYTICAL SYSTEM

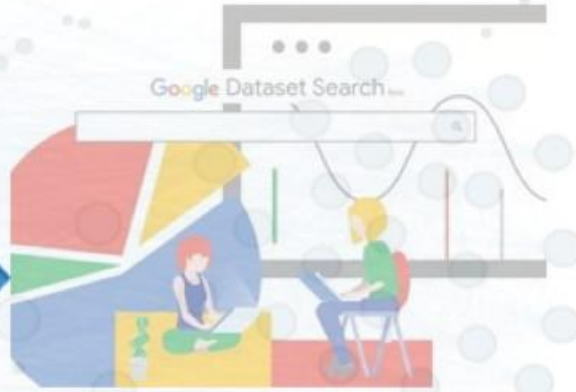
COPMETENCE CENTRE. EXPERT COMMUNITY

SEMANTIC KNOWLEDGE MANGEMENT SYSTEM

SKMS

LOSD PREPARATION AND DISSEMINATION SYSTEM

LOSD PDS



GOOGLE DATASET SEARCH CENTER

WEB & SEMANTIC WEB PUBLICATION

CISSTAT LINKED OPEN STATISTICS

SEMANTICALLY RICH INTERPRETATION ENVIRONMENT

IMPROVE THE QUALITY OF STATISTICAL DATA AND METADATA

HARMONIZE STATISTICAL TERMINOLOGY AND ALIGHN METHODOLOGY

COMPLY WITH FAIR PRINCIPLES

PROVIDE SEMANTIC INTEROPERABILITY

FACILITATE (META)DATA RELEVANT INTERPRETATION

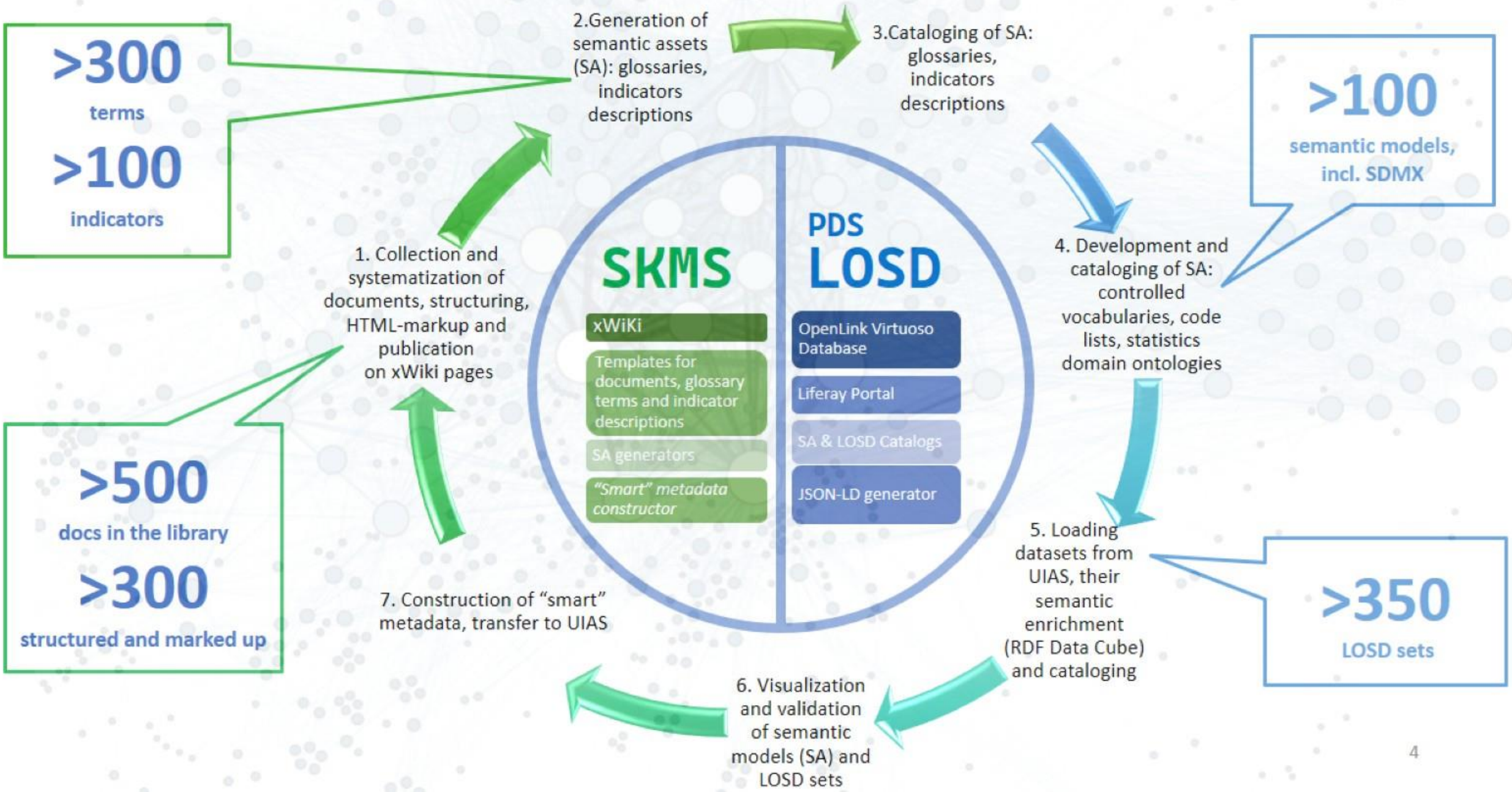
SEMANTIC MODELS

SMART METADATA

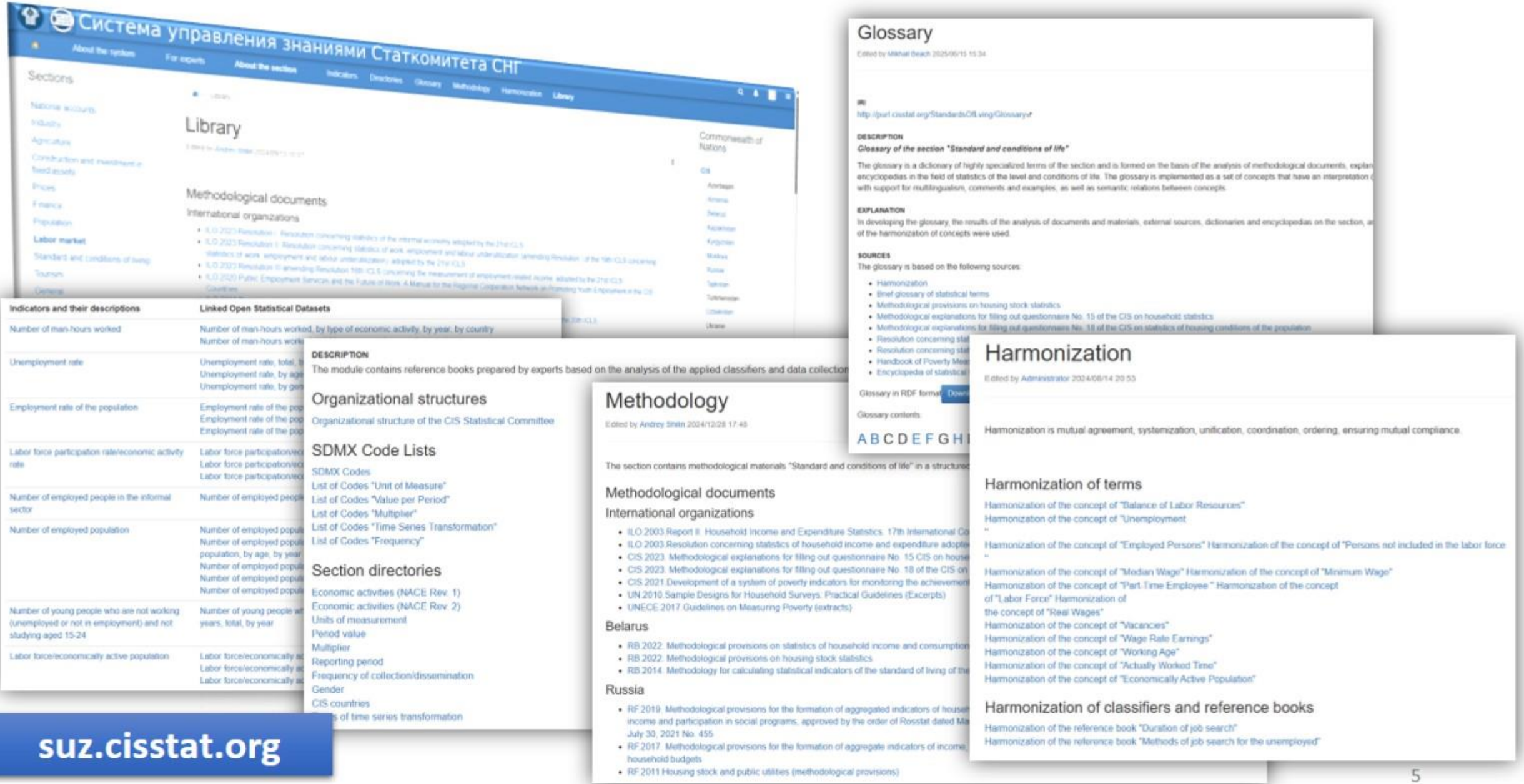
SEMANTICALLY RICH LOSD

VISUALISATION FOR EXPERT VALIDATION

CISSTAT. CURRENT RESULTS: 15 STATISTICAL DOMAINS

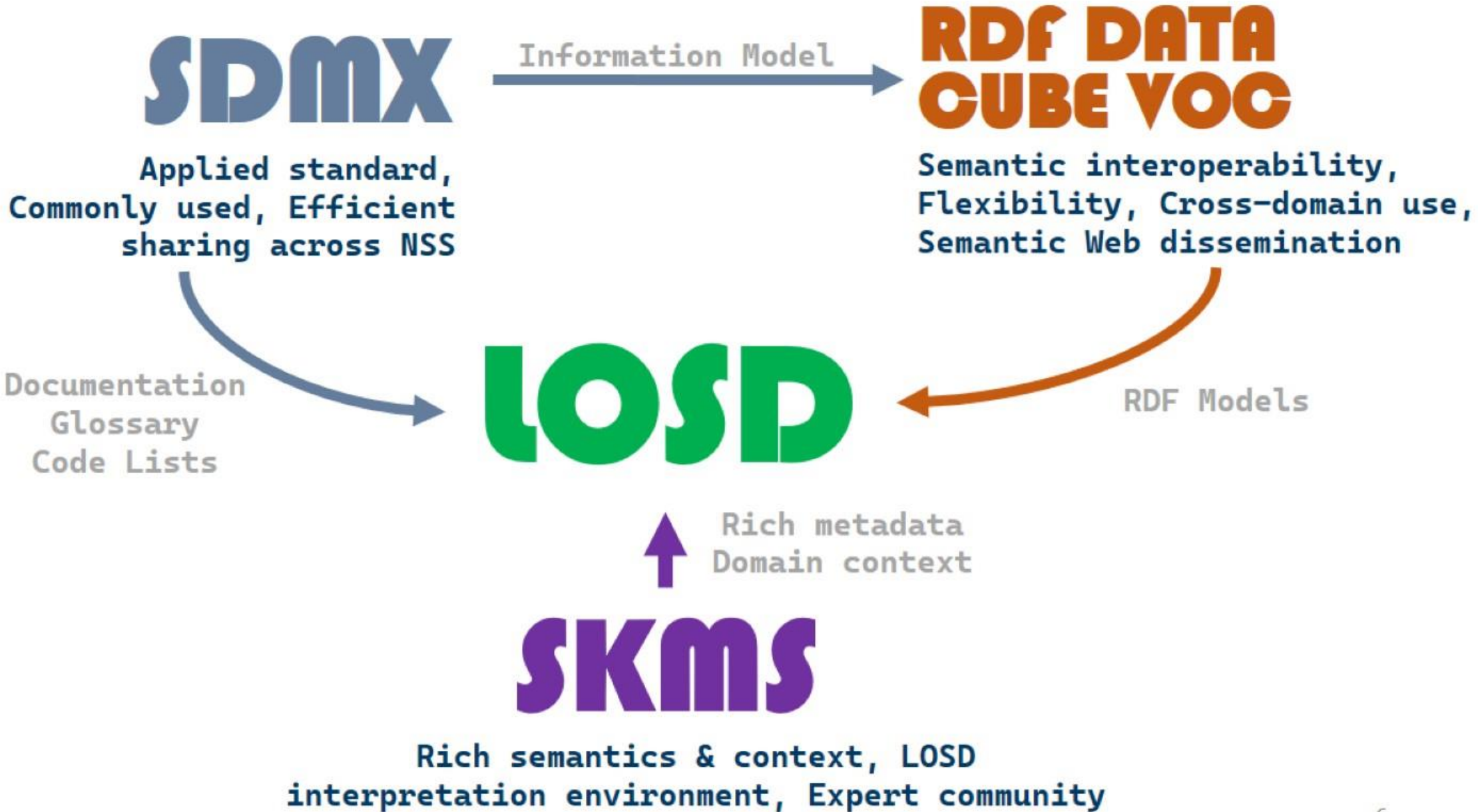


CISSTAT SEMANTIC KNOWLEDGE MANAGEMENT SYSTEM



suz.cisstat.org

THE ROLE OF SDMX IN LOSD



CHALLENGES OF SDMX IMPLEMENTATION FOR LOSD

RDF DATA CUBE VOCABULARY

Based on an earlier, now **outdated version** of the **SDMX Information Model** (specification published in 2009)

No namespace maintenance since 2013 and no alignment with best practices of **URI persistence** promoted by interoperability experts (e.g., in EU ISA²)

Limited set of semantic models, not supporting the full range of classifications required for LOSD development (only 9 code lists and 75 codes)

INTEROPERABILITY BASIS

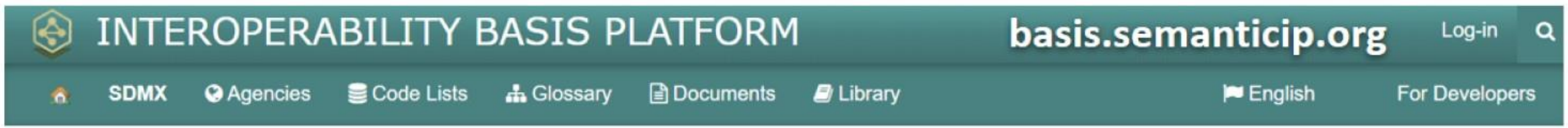
Open, non-profit initiative aimed at overcoming technological and organizational barriers that hinder the effective exchange and dissemination of Linked Data

GOAL

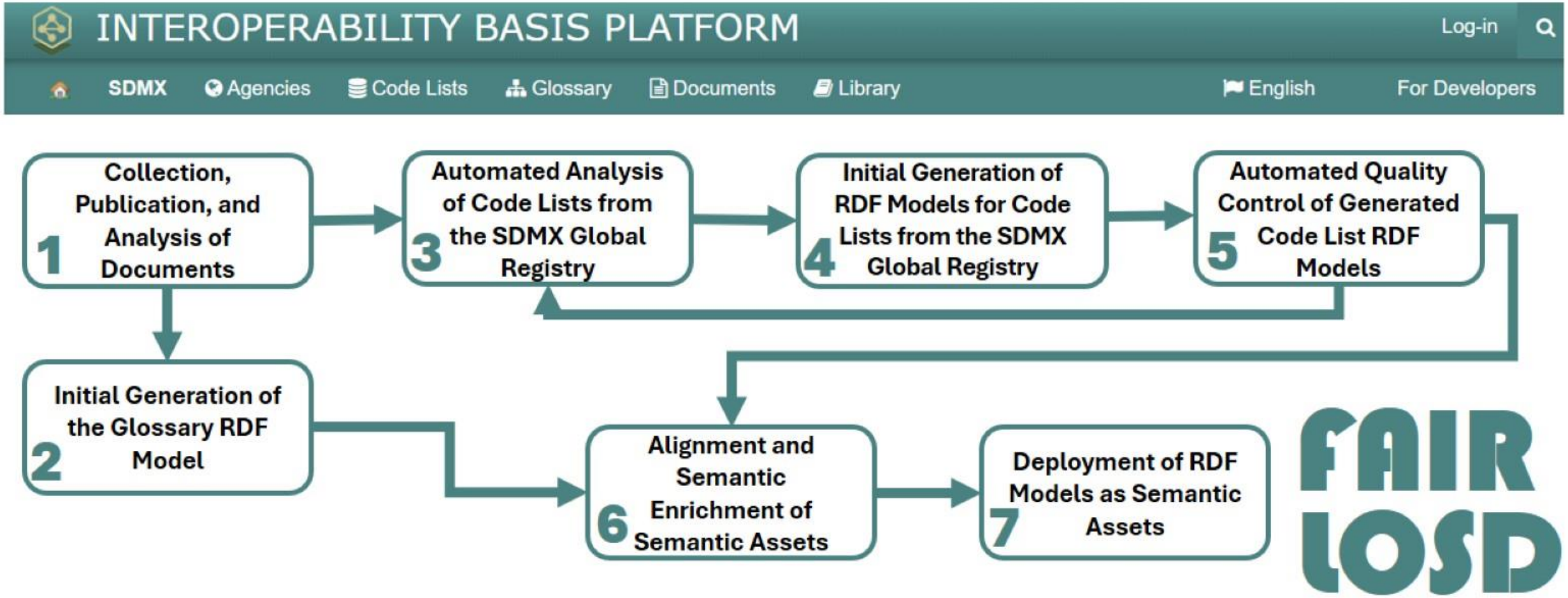
To integrate existing data exchange standards, classifications, and reference systems into the Semantic Web environment to achieve **sustainable semantic interoperability** across a wide range of user scenarios

IoBP

Interoperability Basis Platform (IoBP) supports **semantic alignment, enrichment,** and publication of existing standards using a knowledge management system, modeling tools, **namespace control, and persistent URI infrastructure**



SEMANTIC TRANSFORMATION PIPELINE. SDMX DOMAIN



Interoperability Basis © https://basis.semanticip.org/xwiki/bin/view/Main/

BENEFITS OF USING IoBP IN CISSTAT

SDMX context navigation; interactive discovery and exploration; linked elements and backlink analysis

/ SDMX / SDMX Documents / SDMX 3.1 Standards. Section 1. Summary of Major Changes and New Functionality

SDMX 3.1 Standards. Section 1. Summary of Major Changes and New Functionality

Last modified by Artur on 2025/09/13 19:12

Document card
Download document

Contents

1. Overview

SDMX 3.1 is a minor revision to the SDMX 3.0 Standard which introduces a limited set of changes, which cover the following:

Information Model

- Support for Dataflows to reference a subset of Dimensions from a Data Structure Definition
- Simplification to Data Constraints
- Addition of Availability Constraints

Documentation

Registering Reference Metadata removed from d … reference a Metadata Provision, a…

Breaking Changes

- Remove version property on Categorisation
- Removal of Advanced Release Calendar

Content of the Document

The remainder of this document contains a summary of the changes. More detailed information can be found in the SDMX 3.1 Technical Specifications, in particular:

Data structure definition

Set of structural metadata associated to a data set, which includes information about how concepts are associated with the measures, dimensions, and attributes of a data cube, along with information about the representation of data and related descriptive metadata.

ALTERNATIVE NAME
DSD

DEFINITION
Set of structural metadata associated to a data set, which includes information about how concepts are associated with the measures, dimensions, and attributes of a data cube, along with information about the representation of data and related descriptive metadata.

COMMENT
A *DSD* defines the structure of an organised collection of data (Data Set) by means of concepts with specific roles, and their representation. In order to exchange or disseminate statistical information, an institution needs to specify which statistical concepts are necessary for identifying the series (and for use as dimensions) and which statistical concepts are to be used as attributes and measures. These definitions form the *data structure definition*. In a data collection scenario the specification of the *data structure definition* is often a collaborative venture between the collecting institution and its partners. There are three types of construct in the *DSD*: Dimension, Attribute, and Measure. Each of these combines a Concept with its representation (this can be either a reference to a Code list or a non-coded data type such as "integer", "string", "date/time"). The roles of the three types of construct (Dimension, Attribute, and Measure) are as follows: A Dimension is an identifying component, sometimes referred to as a "classificatory variable". When a value is given to each of the Dimensions in a data set (this is often called a "key" or a "series") the resulting key, when combined with a time value, uniquely identifies an observation. For instance, country, indicator, measurement unit, frequency, and time dimensions together identify the cells in a cross-country time series with multiple indicators (for example, gross domestic product, gross domestic debt) measured in different units (for example, various currencies, percent changes) and at different frequencies (for example, annual, quarterly). The cells in such a multi-dimensional table contain the observation values. The *DSD* construct that specifies the Concept and expected representation of an observation is called a Measure. The semantics of the measure are derived from the Dimensions or a sub set of them and, if not specified in a Dimension, an Attribute indicating the measurement unit e.g. indicator and measure unit (gross domestic product percentage change). Additional metadata that are useful for understanding or processing the observed value or the context of data set or series are called an Attribute in the *DSD*. Examples of an attribute are a note on the observation, a confidentiality status, or the unit of measure used, or the Title of a series.

BROADER
Data set

NOTATION
urn:sdmx:org.sdmx.infomodel.conceptscheme.Concept=SDMX:CROSS_DOMAIN_CONCEPTS(2.0).DSD

RELATED
Attribute, Dimension, Measure

Used in the following terms: Attachment level, Attribute relationship, Code list, Comment, Component

More (14)

Backlinks: 1 Introduction, 1 Introduction, 1 Introduction, 1 Introduction, 1 Purpose and Structure

More (93)
1 Purpose and Structure, 1 Purpose and Structure, 10 Community Management, 10 Constraints , 10 Constraints, 10 Constraints, 10 Validation and Transformation Language (VTL), 11 Annex 1 – Content Oriented Guidelines (COG), 11 Transforming between versions of SDMX, 11 Transforming between versions of SDMX, 12 Annex 2 – SDMX Business Process Model, 12 Constraints, 12 Constraints, 12 Validation and Transformation Language (VTL), 12 Validation and Transformation Language (VTL), 13 Annex 3 – Data and Metadata Samples, 13 Structure Mapping , 13 Structure Mapping, 13 Validation and Transformation Language, 14 Annex 4 – Data Reader and Data Writer Functions, 15 Validation and Transformation Language, 15 Validation and Transformation Language, 16 Annex 6: Worked Use Case, 2 Actors and Use Cases, 2 Actors and Use Cases, 2 Actors and Use Cases, 2 General Notes on This Document, 2 General Notes on This Document, 2 General Notes on This Document, 3 Guide for SDMX Format Standards , 3 Guide for SDMX Format Standards, 3 Guide for SDMX Format Standards, 3 SDMX Base Package, 3 SDMX Base Package, 3 SDMX Base Package, 3 Use Cases, Scenario and Example, 4 Data and Metadata Creation and Reporting, 4 General Notes for Implementers, 4 General Notes for Implementers, 4 General Notes for Implementers, 4 Specific Item Schemes, 4 Specific Item Schemes, 4 Specific Item Schemes, 5

BENEFITS OF USING IoBP IN CISSTAT

Semantic SDMX Glossary with human-readable views; exploring relationships, context and usage across SDMX versions

Glossary terms in the table

Last modified by Artur on 2025/07/14 10:16

Name	URI	Alternative name	Definition	Comment	Broader	Interchangeable (skos:exactMatch)	Number of mentions of the term
Accounting conventions	https://purl.semanticip.org/linked-data/sdmx/concept/ACC_CONV		Practical procedures, standards and other aspects used when compiling data from diverse sources under a common methodological framework.	This metadata element refers to descriptions of the types of prices used to value flows and stocks, or other units of measurements used for recording the phenomena being observed; the time of recording of the flows and stocks or the time of recording of other phenomena that are measured, including the reference period employed; and the grossing/netting procedures that are used. *Accounting conventions* may refer to whether the data are recorded on a cash/accrual or mixed accounting basis, the time of their recording and the reference period (fiscal or calendar year) employed. The description could also include how consistent the practices used are with internationally accepted standards - such as the Balance of Payments Manual or SNA (System of National Accounts) - or good practices.	Unit of measure, Reference period		0
Accuracy	https://purl.semanticip.org/linked-data/sdmx/concept/ACCURACY		Closeness of computations or estimates to the unknown exact or true values that the statistics were intended to measure.	The *accuracy* of statistical information is the degree to which the information correctly describes the ph… statistical estimates ar… variance (random erro… sures of accuracy (nur… data) or qualitative ass… the major sources of e… pling, non-response, n… of the data, which is d… subsequent estimates	Component, Measure	http://purl.org/linked-	8

Accounting conventions

Last modified by Artur on 2025/08/04 16:06

STATUS
Upload

URI
https://purl.semanticip.org/linked-data/sdmx/concept/ACC_CONV TTL

INTERNATIONAL NAME
Accounting conventions

DEFINITION
Practical procedures, standards and other aspects used when compiling dat…

COMMENT
This metadata element refers to descriptions of the types of prices used to v… time of recording of the flows and stocks or the time of recording of other ph… are used. *Accounting conventions* may refer to whether the data are recorde… calendar year) employed. The description could also include how consistent … SNA (System of National Accounts) - or good practices.

BROADER
Unit of measure, Reference period

NOTATION
urn:sdmx:org.sdmx.infomodel.conceptscheme.Concept=SDMX:CROSS_DO…

NOTE
Recommended representation: String

Used in the following terms: -
Backlinks: -

Tags: Accounting conventions

Comments (0) History Information

CC_CONV

```
@prefix rdfs: <http://www.w3.org/2000/01/rdf-s
@prefix sip-sdmx-concept: <https://purl.semant
@prefix skos: <http://www.w3.org/2004/02/skos/
@prefix swvs: <http://www.w3.org/2003/06/sw-vocab-status/ns#> .

sip-sdmx-concept:ACC_CONV a skos:Concept ;
    rdfs:comment "<p>This metadata element refers to descriptions of the types of prices used to value
flows and stocks, or other <span class=\"wikiexternallink\"><a target=\"_blank\" rel=\"noopener norefe
rrer\" href=\"https://basis.semanticip.org/xwiki/wiki/sdmx/view/Glossary/Unit%20of%20measure/\">units
of measurements</a></span> used for recording the phenomena being observed; the time of recording of t
he flows and stocks or the time of recording of other phenomena that are measured, including the <span
class=\"wikiexternallink\"><a target=\"_blank\" rel=\"noopener noreferrer\" href=\"https://basis.seman
ticip.org/xwiki/wiki/sdmx/view/Glossary/Reference%20period/\">reference period</a></span> employed; an
d the grossing/netting procedures that are used. <em>Accounting conventions</em> may refer to whether
the data are recorded on a cash/accrual or mixed accounting basis, the time of their recording and the
<span class=\"wikiexternallink\"><a target=\"_blank\" rel=\"noopener noreferrer\" href=\"https://basi
s.semanticip.org/xwiki/wiki/sdmx/view/Glossary/Reference%20period/\">reference period</a></span> (fisc
al or calendar year) employed. The description could also include how consistent the practices used ar
e with internationally accepted standards - such as the Balance of Payments Manual or SNA (System of N
ational Accounts) - or good practices.</p>" ;
    swvs:term_status "upload" ;
    skos:broader sip-sdmx-concept:REF_PERIOD,
        sip-sdmx-concept:UNIT_MEASURE ;
    skos:definition "<p>Practical procedures, standards and other aspects used when compiling data fro
m diverse sources under a common methodological framework.</p>" ;
    skos:inScheme sip-sdmx-concept:CROSS_DOMAIN_CONCEPTS ;
    skos:notation "urn:sdmx:org.sdmx.infomodel.conceptscheme.Concept=SDMX:CROSS_DOMAIN_CONCEPTS(2.0).A
CC_CONV" ;
    skos:note "Recommended representation: String" ;
    skos:prefLabel "Accounting conventions" ;
    skos:related sip-sdmx-concept:REF_PERIOD,
        sip-sdmx-concept:UNIT_MEASURE ;
    skos:topConceptOf sip-sdmx-concept:CROSS_DOMAIN_CONCEPTS .
```

Frequency of terms mentioned in the table

Last modified by Artur on 2025/07/14 10:16

Term	Number of articles mentioning the term
Statistical data and metadata exchange	157
Data set	120
Data structure definition	117
Attribute	113
Dimension	108
Code list	106
Code	98
Component	95
Artefact	89
Dataflow	87
Reference metadata	76
Structural metadata	74
Measure	72

BENEFITS OF USING IoBP IN CISSTAT

Interactive visualization, navigation and filtering of SDMX codes

Code List Label	URI	Total codes
Accounting entry code list	https://purl.semanticip.org/linked-data/sdmx/code/accountEntry TTL	31
Adjustment indicator code list	https://purl.semanticip.org/linked-data/sdmx/code/seasonalAdjust TTL	197
Administered prices indicator code list	https://purl.semanticip.org/linked-data/sdmx/code/adminPriceInd TTL	8
Age code list	https://purl.semanticip.org/linked-data/sdmx/code/age TTL	212
Age unit code list	https://purl.semanticip.org/linked-data/sdmx/code/ageUnit TTL	5
Air pollutants and greenhouse gasses code list	https://purl.semanticip.org/linked-data/sdmx/code/airPol TTL	26
Breakdown group code list	https://purl.semanticip.org/linked-data/sdmx/code/breakdownGroup TTL	14
Bridging items code list	https://purl.semanti	
Civil (or Marital) Status code list	https://purl.semanti	
Classification of the Functions of Government code list	https://purl.semanti	
Classification of the Purposes of Non-Profit Institutions Serving Households code list	https://purl.semanti	
Code list for concept "Frequency"	https://purl.semanti	
Code list for degree of urbanisation	https://purl.semanti	
COICOP code list	https://purl.semanti	
Commodity code list	https://purl.semanti	

List of elements

Show / Hide filter

Contains in Label:

to 6

Contains in Notation:

15

Filter

Filtered Codes

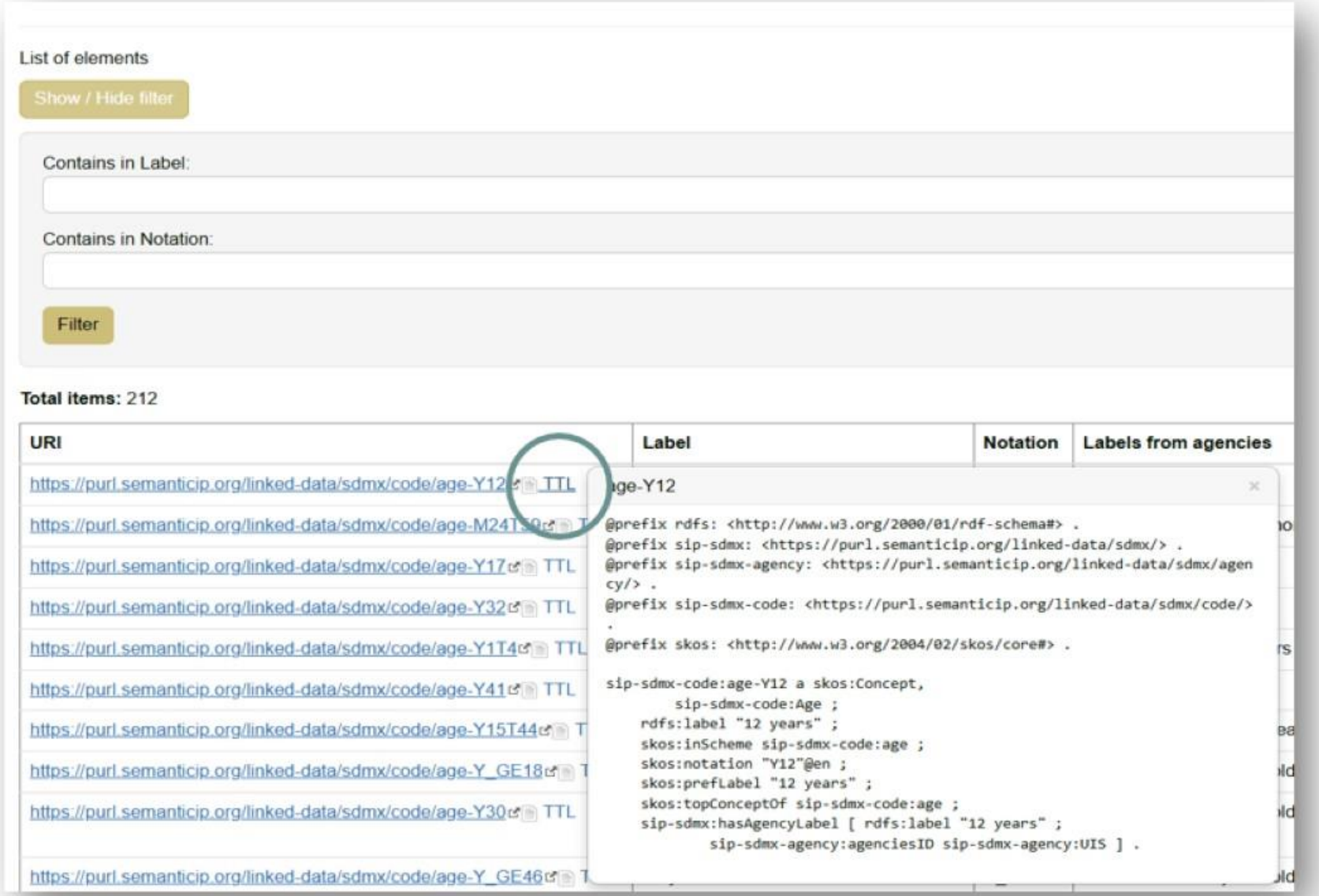
Last modified by Artur on 2025/09/11 17:36

Back to Code List

URI	Label	Notation	Labels from agencies
https://purl.semanticip.org/linked-data/sdmx/code/age-Y15T65 TTL	15 to 65 years old	Y15T65	**IAEG-SDGs**: 15 to 65 years old
https://purl.semanticip.org/linked-data/sdmx/code/age-Y15T64 TTL	15 to 64 years old	Y15T64	**IAEG-SDGs**: 15 to 64 years old
https://purl.semanticip.org/linked-data/sdmx/code/age-Y15T60 TTL	15 to 60 years old	Y15T60	**IAEG-SDGs**: 15 to 60 years old

BENEFITS OF USING IoBP IN CISSTAT

Dereferencing and one-click access to a machine-readable model of the code (TTL)



APPLICATION OF SEMANTIC SDMX IN CISSTAT LOSD

Number of employed population

INTERNATIONAL NAME
Number of employed

SUBSECTIONS
Labor resources

DESCRIPTION OF THE INDICATOR
The indicator characterizes the number of employed people (aged 15 years and older , established for measuring the lab

According to the document Methodological Explanations for Completing Questionnaire No. 14 , the employed populatio
all sectors of the economy. Thus, the number of employed should include persons working in state enterprises and organi
(peasant) households, as well as those engaged in individual labor activity, in personal subsidiary farming and for individu

LINKS TO REGULATORY DOCUMENTS
- Resolution I of the 19th ICLS on statistics of work, employment and labour underutilization
- Methodological explanations for filling out questionnaire No. 14

DATA SOURCES
Form Table 14.1b. Distribution of the employed population by type of economic activity on average per year (persons)

Form Table 14.10. Economic activity of the population/labor force (people)

DATA COLLECTION METHODOLOGY
The labour force survey is conducted according to the methodology of the International Labour Organization (ILO) in ac

The data are collected using forms Table 14.10 and Table 14.1b , which are completed based on data from the Labor Fo

Recommendations for filling out are presented in the document Methodological explanations for filling out questionnaire

VALUES FOR THE PERIOD
Average for the period

UNITS OF MEASUREMENT
Human

PERIODICITY (FREQUENCY) OF DISTRIBUTION
Annually

FREQUENCY OF COLLECTION
Annually

THE SYSTEM OF CLASSIFIERS
1. Reporting period
2. Types of economic activities (NACE Rev. 2)
3. Floor
4. CIS countries
5. Level of education
6. Age group
7. Employment status

CIS countries

Description

URI
http://purl.cisstat.org/Common/vocabs/country/1.0

SOURCE
The CIS Country Directory (hereinafter the Directory) is prepared on the basis of the Classifier of Countries of the World (hereinafter, the CIS CCM). The Directory is linked to the elements of the SDG reference area code list (SDMX) , using the Interoperability Basis Platform . Links have been established with the elements of DBPedia , EU Vocabularies , GeoNames , OASIS GeoLang TC .

PURPOSE
The reference book is used in statistical data sets that contain data across the CIS countries.

STRUCTURE
The directory structurally consists of a list of elements, each of which includes blocks: identification, description and URI.

Identification includes a three-digit numeric code, two-letter and three-letter ISO codes, and the URI of the element. Description includes the names of the countries that are part of the CIS. URI includes related external URIs.

The Handbook also shows the composition of the CIS.

The list of countries presented in the Directory includes countries (territories, regions) from Table 1 of the CIS CSM.

DESIGNATION
C

Directory in RDF fo

COMMONWEALTH OF INDEPENDENT STATES

URI : http://purl.cisstat.org/Common/vocabs/country/1.0#CIS

Digital code : 172

Equivalents :

https://dbpedia.org/page/Commonwealth_of_Independent_States ,

https://purl.semanticip.org/linked-data/sdmx/code/area-172 ,

https://purl.semanticip.org/linked-data/sdmx/code/area-R14

DISCUSSION. SDMX SEMANTIC GAPS

SDMX

IoBP

Missing links between related code lists

- Code lists from different agencies (e.g., CL_AREA from IMF, ESTAT, UNSD, SDMX, UIS, IAEG-SDGs) are not semantically connected, despite overlaps

Lack of descriptions, purposes, and sources for code lists

- Code lists lack description, purpose, and source. Users cannot interpret code semantics without additional references

Limited glossary semantics

- XML-version of glossary only uses RELATED_TERMS, which does not reflect full relationships between terms

Inconsistent source references

- In the XML version of the SDMX Glossary, most concepts are linked to sdmx.org as the only source. In contrast, its HTML version points to concrete sources, including SDMX, SIMS, and DQAF (IMF) documents. It prevents correct RDF mapping without expert involvement

Semantic “loops” in concept definitions

- Some concepts are defined through other concepts, requiring expert correction to resolve circular references

Unused glossary terms

- 83 of 229 glossary terms do not appear in any published SDMX documentation (v2.1, 3.0, 3.1)

IoBP FOR SDMX SEMANTIC TRANSFORMATION

SDMX

IoBP

Our proposal: enhancement and semantic transformation of SDMX in collaboration with SDMX developers

Bridging semantic gaps — jointly transforming SDMX components into the Semantic Web environment, consolidating the efforts of international initiatives (EU SDMX Registry, ShowVoc, IoBP and others)

Alignment and enrichment — Expert collaboration to refine and enrich glossaries, code lists, and semantic links across agencies

Advancing glossary and code lists — enhancing definitions, applicability, and linking for practical use in LOSD

Iterative review of semantics — jointly assessing and improving RDF models to deliver reusable semantic assets

Automating generation and publishing of unified code lists, enriched glossary terms, and RDF/TTL assets with increasing semantic quality

COMMUNICATION

ANY QUESTIONS?

We are open for cooperation

mail to