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#### **Organization of data collection and sharing, and the management challenges for the implementation of Statistical Data and Metadata eXchange**

### **Implementation of the Statistical Data and Metadata eXchange standard**

#### **Note by the Federal State Statistics Service of the Russian Federation**

##### *Summary*

The statistical data and metadata exchange (SDMX) standard is a data description tool, applied by international organizations for statistical data exchange and also by national statistical services for combining statistical data and metadata of various producers. In order to integrate the state-wide statistical information resources in the Russian Federation and provide access to users, the unified statistical information system (UniSIS) was created. The system uses the SDMX standard for representation and exchange of statistical data. Furthermore, to automate the process of providing data to the international organizations, the Federal State Statistics Service is creating an information system of international statistics, using the technology based on the SDMX standard.

## **I. Introduction**

1. The statistical data and metadata exchange (SDMX) standard is a data description tool, applied by international organizations for statistical data exchange and also by national statistical services for combining statistical data and metadata of various producers. The SDMX standard determines the formats for the exchange of aggregated statistical data and metadata, essential for understanding of how these data are structured.

## **II. Statistical production in Russia**

2. Production of statistical data in Russia is realized according to the Federal Plan of Statistical Works approved by the Government of the Russian Federation. The plan is developed by Rosstat in coordination with government institutions, bodies of authority and management with account of statistics users' needs. Statistical data collection is performed by federal authorities of official statistical accounting (63 institutions). The Federal Plan of Statistical Works includes a list of statistical activities, periodicity of their execution, their characteristics and also defines activities that are done by each authority of official statistical accounting.

## **III. The Unified Interdepartmental Statistical Information System as the source of information for exchange in statistical data and metadata exchange format**

3. The unified statistical information system (UniSIS) was created for the integration of information resources of authorities of official statistical accounting on the country level and for providing user's access to the joint statistical resource. It includes statistical information of all authorities produced in accordance with the Federal Plan of Statistical Works.

4. UniSIS enables receiving reliable and complete indicators of macroeconomic statistics for their effective usage in decision-making and forecasting in all spheres, including analysis of national economy, demographical and social situation.

5. In the formation process of state integrated statistical resource the key role has the organization of statistical data exchange among authorities of official statistical accounting based on common methodology.

6. By formation of state integrated statistical resource the necessity to use obligatory unified methodology and all-Russia classifications was taken into account. In May, 2010 the regulation of the Government of the Russian Federation on "Unified Statistical Information System" was adopted, that approves the "Statute of UniSIS". Other regulatory documents that define how to load UniSIS have been developed and implemented.

7. During the UniSIS development the unified methodological standards of formation of information statistical resources were elaborated. They provide access to resources and an opportunity of complex analysis. Herewith, standards for statistical data sharing and exchange are developed with the help of international SDMX standard. This has created a basis for effective information interaction between authorities of official statistical accounting within the state integrated statistical resource.

## **A. Purpose and functioning of the unified statistical information system**

8. The Unified Interdepartmental Statistical Information System is created for:
  - (a) Combining statistical resources contributing to their effective usage for policy making and forecast purposes;
  - (b) Providing access to users of interdepartmental system to the official statistical information in the electronic form;
  - (c) Providing an opportunity for transmission of official statistical information to the Government information systems.
9. Functioning of Interdepartmental System is based on the following principles:
  - (a) Timeliness, accessibility and transparency of official statistical information;
  - (b) Unification of formats and technologies for presentation of official statistical information;
  - (c) Use of uniform methodology for providing metadata formation by authorities of official statistical accounting;
  - (d) Application of uniform regulatory and reference information, all-Russian classifications of technical, economic and social information;
  - (e) Common organizational and methodological support;
  - (f) Use of electronic digital signature to ensure reliability of information;
  - (g) Integration of interdepartmental system with other state information systems.

## **B. The unified statistical information system contents**

10. Interdepartmental system consists of software and hardware facilities of central and departmental segments and includes departmental statistical resources, containing official statistical information, formed by authorities of official statistical accounting, and also metadata, handbooks, classifications and other essential information support.
11. Software and hardware facilities of central segment provide:
  - (a) Allocation, uploading and monitoring of departmental statistical resources;
  - (b) Maintenance of official statistical information database;
  - (c) Providing access to official statistical information;
  - (d) Use of electronic digital signature;
  - (e) Integration with other state informational systems.
12. Software and hardware facilities of departmental segment provide interaction of an authority of official statistical accounting with software and hardware facilities of central segment for the purpose of maintenance and updating of official statistical information formation in departmental statistical resource of interdepartmental system.

## **C. The unified statistical information system participants**

13. Participants of interdepartmental system are:
  - (a) UniSIS coordinator;

- (b) UniSIS operator;
  - (c) Authorities of official statistical accounting;
  - (d) Users of UniSIS.
14. UniSIS **coordinator** (Federal State Statistics Service):
- (a) Provides maintenance the registry of official statistical indicators to be included into statistical resources that are part of interdepartmental system;
  - (b) Monitors compilation and updating of official statistical information;
  - (c) Monitors implementation of uniform methods of metadata formation;
  - (d) Monitors implementation of up-to-date versions of classifications;
  - (e) Defines the order of allocation and updating of official statistical information;
  - (f) Interacts with UniSIS operator to provide functioning and development of interdepartmental system.
15. UniSIS **operator** (Ministry of Mass Communication) provides:
- (a) Technical support, administration, maintenance and development of software and hardware facilities of interdepartmental system;
  - (b) Compliance with interdepartmental system safety requirements;
  - (c) Availability to use electronic digital signature when providing official statistical information;
  - (d) Possibility to use for authorities of official statistical accounting on a free-of-charge basis software and hardware facilities of departmental segment.
16. Authorities of official statistical accounting (defined by Federal Plan of Statistical Works – 63 departments):
- (a) Present to UniSIS coordinator a list of indicators, formed in accordance with Federal Plan of Statistical Works, in order to include them in the registry of official statistical indicators;
  - (b) Provide, allocate and timely update metadata;
  - (c) Include official statistical information into statistical resources that are part of interdepartmental system and provide integrity of that information.
17. Developed by Rosstat procedure of information allocation and updating in UniSIS defines:
- (a) Actions of authorities of official statistical accounting on allocation of official statistical information metadata in UniSIS;
  - (b) Providing of official statistical information for its allocation in UniSIS;
  - (c) Allocation and updating of direct official statistical information in UniSIS.

#### **D. Creation of unified statistical information system statistical resource**

18. Creation of UniSIS statistical resource has three major stages:
- (a) Statistical metadata formation in metadata base of Central segment of UniSIS;

(b) Reference data formation (classifications and reference books) in Central segment metadata base of UniSIS;

(c) Statistical data formation in Departmental statistical resources of UniSIS Central segment.

19. Statistical metadata formation (list of indicators) and part of reference data is realized by department in accordance with the common rules.

20. UniSIS Coordinator performs a check of metadata formation uniform technique when departments carry out their work on statistical metadata formation.

21. UniSIS Coordinator performs arrangements on indicator consolidated registry formation from the indicator lists presented by authorities of official statistical accounting and also loads Registry into UniSIS.

22. Each statistical authority performs statistical data formation by itself in its departmental resource of UniSIS Central segment. In order to load statistical data and reference data, a department makes files of particular format using its own hardware. Further using UniSIS software loads these data into Departmental statistical resources of UniSIS Central segment.

23. UniSIS electronic templates of statistical metadata and data of departmental indicators are loaded on UniSIS website.

## **E. Unified statistical information system internet portal**

24. UniSIS internet portal allows users to access to indicators of UniSIS registry. With navigation to sections of Federal Plan of Statistical Works; to authorities of official statistical accounting and contextual search by indicator name is also possible.

25. User has access to indicators and to metadata by indicator (indicator passport). Inquiries are made by choosing of corresponding indicator and its characteristics. Answer contains value of indicator chosen and its characteristics and also indicator passport (metadata).

26. Indicator passport contains the following fields:

- (a) Indicator name;
- (b) Measurement units;
- (c) Periodicity and characteristics of time series;
- (d) Time-series length;
- (e) The last data update;
- (f) Feature (classifications and reference books);
- (g) Methodological notes;
- (h) Department (authority of official statistical accounting);
- (i) Department subdivision;
- (j) Place in the scheme;
- (k) Forms of statistical reporting;
- (l) Contact person.

27. All fields (except for “methodological notes”) of indicator passport are in the authorities’ indicator list and, accordingly, in UniSIS registry. Indicator passport fields are formed automatically when loading indicators list of authority of official statistical accounting. UniSIS software allows editing indicator passport fields in accordance with access rights.

28. For the automation of works on coordination and monitoring of UniSIS information content, special software has been developed, that produces a report on the state of UniSIS information resource on the current date. Report provides information on each authority of official statistical accounting. All report sections contain corresponding indicator lists. That allows performing in on-line mode necessary actions for deviation offset.

29. Now UniSIS is functioning in the mode of loading of data and metadata by authorities of official statistical accounting. Along with that using already loaded UniSIS resources, the portal of government services disseminates official statistical information in automatic mode (<http://www.gosuslugi.ru/>). On that portal any user may get information including statistical data and metadata (indicator passport) from UniSIS on request without registration.

30. Free user access (without registration) to UniSIS will be available after acceptance of UniSIS by state commission.

#### **IV. Providing the Russian statistics data on request of international organizations**

31. For automation of providing the Russian statistics data on requests of international organizations and also for publication of international statistics Rosstat designs the Information Statistical System of “International Statistics” (ISIS) that utilizes statistical data and metadata exchange techniques on the SDMX basis.

32. ISIS is designed for statistical information exchange between Rosstat and international organizations, using unified open standards of data and metadata dissemination and modern informational technologies.

##### **A. Purposes of Information Statistical System of “International Statistics” design**

33. ISIS must provide:

(a) Implementation of data and metadata exchange technologies into the process of data provision upon the requests of international organizations and also international statistics data dissemination using SDMX standard;

(b) Automation of data provision process on international organizations requests (filling questionnaires) and also publication of international statistics data;

(c) Forming of information resource that contains international statistics data with possibility of its extension;

(d) Reduction of time for preparation of informational materials and inquires containing data on international statistics.

## **B. Information Statistical System of “International Statistics”tasks**

34. In order to succeed the above mentioned purposes ISIS must realize the following tasks:

- (a) Use of technology for automated bilateral data and metadata exchange with international organizations based on SDMX standard;
- (b) Automatic filling of electronic questionnaire with Russian statistics data on the basis of existing information resources and Unified Interdepartmental Statistical Information System (UniSIS);
- (c) Formation of unified information resource of international statistics in Rosstat IT system;
- (d) Processing and dissemination of international statistics data in automatic mode;
- (e) Automatic loading and updating of data from information resources of international organizations in SDMX formats;
- (f) Loading and updating of unified information resource on international statistics;
- (g) Creation of metadata system that provides links between international statistics indicators from various sources and national statistics indicators, adjustment to existing information resources of Rosstat and UniSIS;
- (h) Automatized preparation of informational materials and inquires containing data on international statistics.

## **C. Information Statistical System of “International Statistics”subsystems**

35. Taking into account the above mentioned tasks the following functional structure in ISIS is planned:

- (a) Subsystem of presentation of Russian statistics data to international organizations;
- (b) Subsystem of processing of international statistics data;
- (c) Subsystem of work with metadata and adjustment to Rosstat information resources;
- (d) Administration subsystem.

36. The system will have an open module structure with possibilities to expand functions.

## **D. Information Statistical System of “International Statistics” implementation results**

37. With ISIS implementation the following results must be achieved:

- (a) Automation of process for preparation of informational materials for books containing international statistics;
- (b) Creation of information resource on international statistics in Rosstat IT system and automatic data loading of international statistics from information resources of

SDMX-initiative member-organizations by a certain list of statistical information with necessary periodicity;

(c) Users of Rosstat IT system will have access to information resource on international statistics.

38. Module of interaction with Rosstat and UniSIS information resources will become a significant component.

39. Carrying-out of the work focused on implementation of statistical data and metadata unified exchange standard will facilitate improving efficiency of Rosstat internal work, avoid duplication in data and metadata exchange by means of up to date information technologies application, join the ranks of leading statistical organizations in this area.

40. ISIS creation date is December 2011.

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