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NEW CONCEPTUAL AND IT FRAMEWORKS FOR STATISTICS IN THE NATIONAL BANK OF GEORGIA

Contributed Paper

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I.   Introduction

1.   The one of missions of the National bank of Georgia (NBG) is to provide timely, accurate, and useful monetary and financial information to users. The NBG follows with great interest the development of technologies that have a potential impact on the collection, processing and dissemination of statistical information in whole, and of Monetary and Financial Statistics, in particular. Indeed, the information industry is changing rabidly. To be more effective and efficient in meetings its mission NBG has took a path towards web data collection system through the centralization of statistical business process environment. However, Georgia is a small independent country with limited resources (human, financial etc.). Hence, the question is how to deal with this task in a reasonable time period than having comprehensive and flexible, at the same time, information system with an expected long lifecycle.

2.   In this paper we discuss the conceptual and technical approaches developed, and the innovative solution, on which they are based. It illustrates how the well-defined business case helps to find a flexible, targeted and effective solution for statistical business process development in central bank's practice.

II.   Where We Stand Now?

A.   Progress has been made

3.   Following the international statistical standards, NBG made impressive improvements in statistical compilation and dissemination in all areas of statistics under its mandate. With the National Statistics Service (Geostat) and Ministry of Finance (MoF) it participated in General Data Dissemination System (GDDS) in 2006-2010. The commendable progress achieved by the NBG allowed it to participate also in statistical initiatives such as:

    (a)   International Reserves and Foreign Currency Liquidity Template, since April, 2010;

    (b)   Special Data Dissemination Standard (SDDS; with Geostat and MoF), since May 17, 2010;

(c) Financial Stability Indicators, since April, 2012.

4. Much has been achieved in the areas of governance, standard implementation and outreach. Since 2007 NBG has published its statistics through website, as well as through annual printed statistical publications. The website contains detailed Metadata about statistics, produced under NBG's mandate. Moreover, user's survey carried out by the NBG annually demonstrates, that they are satisfied with data coverage, periodicity, timeliness, accessibility, and to a great extent dissemination practices.

B. Weaknesses

5. Meanwhile, statistical business processes in NBG leaves much to be desired. The main problem in this regard is decentralized information system and excel based reporting schema without compliant IT technologies.

6. Under the decentralized statistical system of the NBG the statistical business processes are organized as follows:

	Statistics Area	Responsible Entity
(a)	Monetary and Financial Statistics	Monetary Statistics Division
(b)	Daily Balance Sheets from Banks	Monetary Policy Division
(c)	Monthly Balance Sheets from Banks	Banking Supervisory Department
(d)	Monthly Statistical Reports from Insurance Companies	Non-Bank Supervisory Department
(e)	Quarterly Assets/Liabilities Data from other Financial Institutes, other than Insurance Companies	Non-Bank Supervisory Department
(f)	Daily reporting on Financial Market Operations	Financial Markets Department

7. Because of decentralized and multi-dimensioned datasets data reliability can vary significantly: (a) by sectors, (b) by methodology, and (c) by financial instruments.

8. Data "gaps" in banks' balance sheets are essential. In most cases there is not possible:

(a) Sectorization of the financial transactions;

(b) Residency distinction of the counterpart entities;

(c) Financial flows resulted from revaluation (price and exchange rate changing) and other changes in volume of assets (OCVA).

9. These "gaps" are mostly eliminated through statistical reporting. Nevertheless, that leads to data overlapping. Moreover, given the existing excel based data collection and processing procedures, a scale of reporting burden, routine of data validation, processing and dissemination is quite significant.

10. Decentralized information system, on one hand, and spreadsheet reporting without appropriate IT supporting, on other, make impossible to create a centralized data warehouse. That increases the need of manual intervention and reduces the data production processes efficiency.

III. SebStat: A New Strategic View on NBG's Statistics

A. Maturation of the SebStat conceptual architecture

11. Statistics today is unthinkable without strong IT support for collection, compilation and dissemination of statistics. At present one of the main priorities of the NBG's activities is designing of the modern information model for collection, compilation and dissemination of statistical data. Moreover, central bank statistics need to cover a wide range of financial and non-financial instruments, sectors and sub-sectors of the economy, types of economic activity, geographical areas within and outside of the country. Combining the knowledge of the existing statistical business context, and of inter sectoral relationships with knowledge about statistical requirements today helped us to make strategic decision to elaborate universal informational system, so called SebStat, which is designed for resolving those and other tasks related with monetary and financial statistics compilation, as well as other statistics produced at the NBG, in line with the international standards.

12. In order to make statistical business process in the NBG more relevance and accomplish standardizing statistics we have used all existing tools, such as:

   (a) Monetary and Financial Statistics Manual;

   (b) Monetary and Financial Statistics Compilation Guide;

   (c) Standardized reporting forms;

   (d) Integrated monetary database;

   (e) System of National Accounts 2008;

   (f) Balance of Payments and International Investment Position 2008;

   (g) Financial Stability Indicators.

B. SebStat: From the most general to the most particular

13. The statistical production, like any other production process means inputs, processing, and outputs. SebStat is an information model focused on these processes. Its goal is to develop and promote methodological and technical standards and procedures, and reduce reporting burden associated with the collection of data.

14. SebStat as an information model addresses one of the key problems facing NBG: Statistical business process efficiency. The aim of the SebStat is:

   (a) to ensure adoption of internationally agreed standards and frameworks for statistical processes and statistical information management;

   (b) to allow standardization and harmonization of statistical business processes in the central bank practice;

   (c) to standardize structure of transmission format and reduces manual intervention;

   (d) to be convenient for supporting clear communications between NBG and data reporters;

15. Thus, the aim of the SebStat is twofold: collection of the relevance statistical data, and automation of the statistical business processes at the NBG. It is a flexible tool to:

(a) describe and define the set of business processes at the NBG, as well as at the financial institutions;

(b) harmonize and standardize descriptions data and metadata;

(c) ensure standard solution for financial institutions for transmission data to the NBG.

16. Our initial approach was to create Information Model for Monetary and Financial Statistics, and build the SebStat Framework using Standardized Reporting Forms (SRFs) structural features:

(a) Use of a balance sheet framework;

(b) Primary breakdown by financial instruments;

(c) Instruments disaggregated by counterpart:
- Residency;
- Sectors;

(d) Breakdown by currency (national, foreign).

17. However, as the development process has shown later there was a possibility to cover other statistical areas (BoP, IIP, FSI, Supervisory data etc.) also successfully by expanding of appropriate dimensions/attributes. That made SebStat framework more comprehensive and convenient enough to applying in the central bank statistical practice.

18. Now SebStat Information model conceptual framework is based on following features:

(a) Use of a balance sheet framework;

(b) Primary breakdown by financial instruments (including: additional information for loans and collateralization of loans, for more detailed analysis);

(c) Instruments disaggregated by counterpart:
- Residency:
    - Residents;
    - Non-residents
        - By countries
- Sectors;
- Type of economic activities;
- Regional breakdown on the national level;

(d) Instruments disaggregated by type of data (stock/flow);

(e) Instrument disaggregated by status (assets/liabilities)

(f) Breakdown by currency:
- National
- Foreign
    - USD
    - Euro
    - (by currencies).

19. Important feature of SebStat architecture is collection of financial flows resulted from changes within a period of time:

- Transaction
- Revaluation
  - Price
  - Exchange rate
- Other changes in volume of assets (OCVA).

However, these features are true only for (a) and (b) Families (see. Par.21 below). For Families (c), (d) and (e) different frameworks are developed.

20.   Meanwhile, we considered the way from the most particular to the most general also. Thus, initial approach was to encode the existing data. The reviewing of the existing data submitted by reporting institutions through a new perspective helped us to re-form it into a new dataset using dimensions and attributes for identifying and describing data. The schema bellow illustrates how the ordinary specific statistical questionnaire can be transformed into a special set of keys identifying different type of data.

Schema 1. Identifying dimensions and attributes for existing data

From this analysis was built a DSD containing the Key Family we want to receive from financial institutions:

Source, Frequency, Instrument, Maturity, Currency, Residency, Interest rate, Reporting date, Value

21.   The table below illustrates the initial approach to create data dimensions/attributes and compliant code lists for existing datasets:

Concept name	Code value used	Concept name	Code value used
Source	Source	Currency	Cur
Frequency	Freq	Residency	Res
Financial instrument	Ins	Additional information on loans	Lop
Data status (Assets/Liabilities)	Sta	Collateralizing of loans	Loc
Data type (Stock/Flow)	Stfl	Interest rate	Ir
Maturity	Mat	Data value	MType

22.   On the base of analysis of derived through such manner keys for all existing datasets, we found that break down of them by homogeneous groups – families was needed. These family groups are five, and each one has a specific responsibility:

(a) Monthly financial and statistical data (FIM);

(b) Daily financial data (FID);

(c) Transactions with foreign currency (FRC);

(d) Money transfers statistics (MTR);

(e) Bank plastic cards statistics (BPC).

23.   Combining the relatively small number of dimensions/attributes, shown above, with prospected ones helped us to build a full code lists up for each family groups separately (schema 2).

24.   Hereby we approximated to the data Structure Definition (DSD) principles used by SDMX concept. Concept Oriented Guidelines (COG) code lists were used available for the dimensions (e.g. Frequency, Sector). In the absence of COG code lists, we developed specific code lists ourselves (e.g. Additional Information on Loans, Collateralizing of Loans, Interest Rate, etc.).

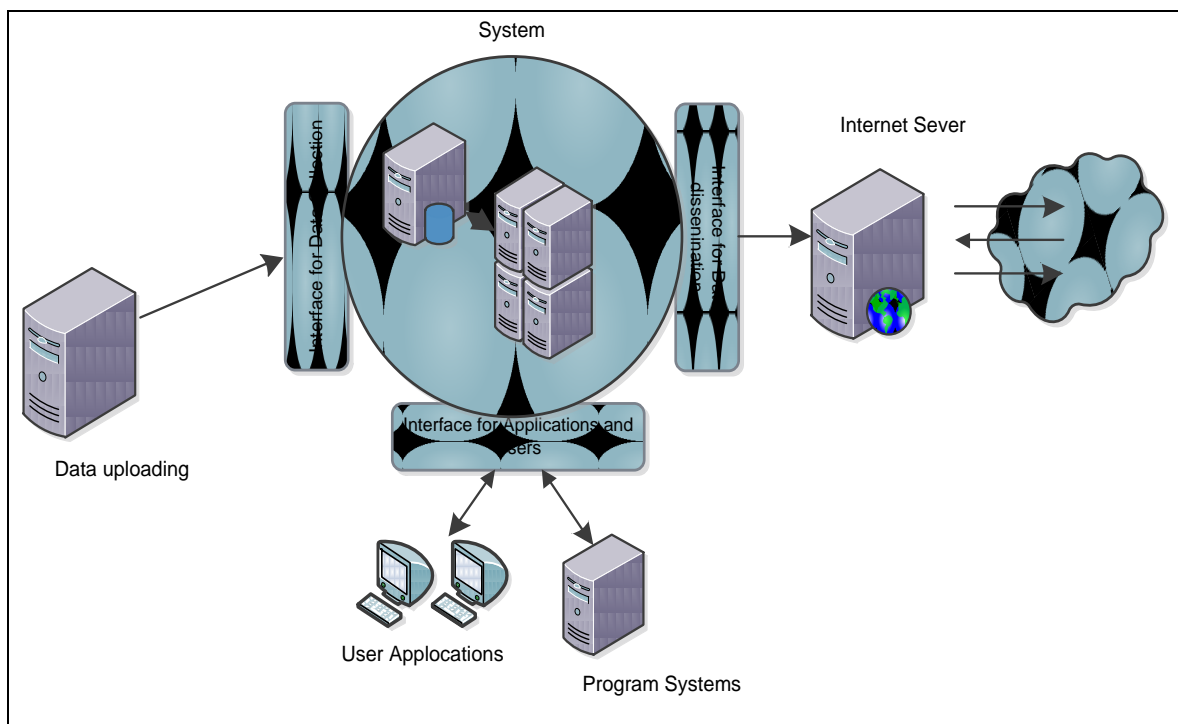**Schema 2. Code List creation principles**
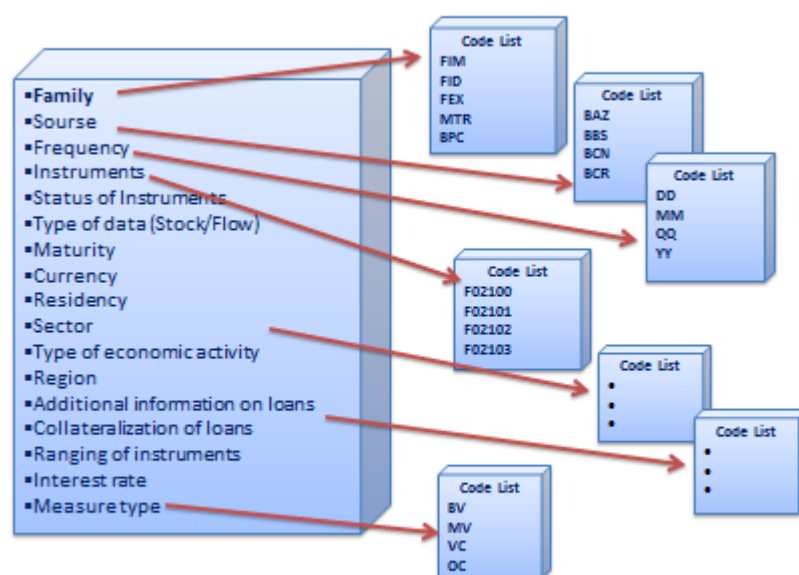
C. Institutional Scope

25. A key aspect of our approach has been to think about how we could ensure institutional coverage and have relevance data for monetary and financial statistics compilation purpose. One of the greatest advantages of SebStat is that its conceptual framework allows collect and aggregate data from different financial institutions without any additional efforts. The problem is easily solvable through expanding of "Source" code list by appropriate elements.

D. Standardization of IT applications and infrastructure

26. The benefits that we will get from SebStat depend in great part not only its conceptual framework, but from software architecture also. The process of accessing the system from the respondent is as follows. The respondent's transactions are encrypted by SSL.

    (a) Login by entering the ID and password;

    (b) Upload the data;

    (c) Save the data in electronic form;

    (d) Send the data to System;

    (e) Receive conformation of the acceptance of the data (after appropriate validation procedures).

Schema 3. SebStat: Information flows and software components

System

Internet Sever

Interface for Data collection

Interface for Data dissemination

Interface for Applications and Users

Data uploading

User Applocations

Program Systems

E.   Benefits from SebStat Development

27.   SebStat provides a harmonized set of statistical concepts and terminology which is applicable across all statistical domain produced under the NBG's mandate (Monetary and Financial Statistics, Balance of Payments Statistics, Financial Stability Indicators and Balance Sheets data).

28.   The SebStat offers a number of opportunities for improving data management, provides a common platform for further development and implementation of standards for statistical data and metadata. It is a tool for knowledge and skills transfer to the financial corporations. SebStat allows financial Institutions use it not only for data submission, but for own research and analysis also. At the same time, SebStat will be sufficiently flexible to cover swiftly innovations at the financial markets and reflect them properly in the monetary and financial statistics.

29.   SebStat helps both data providers and data producers to better understand their business from the methodological point of view as well as from technical one. Hence, it helps to increase the level of professionalism, on one hand, and improve the data quality, on the other.

30.   More efficiency gains:

   (a)   More time for data analysis and data quality checks;

   (b)   Lead to reduce development and maintenance costs;

   (c)   Flexible for reflection new developments and innovations in financial sector;

   (d)   Capable of improving scope of reporting institutions;

   (e)   Capable to be adopted to several circumstances with little or no modifications;

   (f)   Easy to share experiences and software.

F.   Banks Involvement

31. The work of implementation of SebStat in the banking sector is currently in its start-up phase. Since the November 2010 we had have 3 joint preparative meetings and 31 individual ones with banks representatives. The goal of meetings was to explain banking specialists importance of automation of data reporting processes, conceptual framework and main architecture of SebStat, benefits drown from implementation of new statistical software. In consultations so far, the NBG has found very strong support within the banking community for the changes we are proposed.

32. One of main priorities of the SebStat project management is to keep stakeholders up to date on the project. Banks are supported with short- and medium term plans, and with an appropriate guidelines and operating procedures for key tasks in a language clearly understood for all them. We found that documented frequently asked questions submission to all of them is also very useful. In order to identify links between new and old code lists of financial and nonfinancial instruments correctly appropriate bridge table is also provided to the banks. The work progress is subject of regular monitoring by the NBG and corrective actions are undertaken if needed.

IV. SebStat from the Further Development Perspective

A. Can SebStat develop step by step?

33. As noted above SebStat is a comprehensive information model representing an innovative approach to developing statistical business process at the NBG. From the beginning it was recognized that it would be implemented step by step. On the first stage, we are focused on banking sector. The table below shows SebStat implementation schedule by Families and financial institutions:

Families / Financial Institutions	Banks	Microfinancial Corporations	Insurance Companies	Other Financial Institutions
FIM	End of September, 2012	End of 2013	End of 2014	…
FID	End of October, 2012	X	X	…
FRC	End of November, 2012	X	X	…
MTR	November, 2012	End of 2013	X	…
BPC	November, 2012	X	X	…

B. The Main Challenges

34. The main challenges to implementation of SebStat Information Model are overwhelmingly related to lack for resources (both human and financial). This is true for NGB as well as for most of the financial institutions.

V. Conclusion

35. The transformation of current statistical practice that NBG has begun is a very significant change for the organization. The SebStat is a medium-term, sufficiently comprehensive and ambitious project. However, as the saying goes, the end justifies the means and we hope it would be true for our case also.

36. SebStat has an innovative conceptual framework. It helps to:

(a) Collect data from different financial institution though standardised format and unified mechanism;

(b)   Collect data for different statistical areas purposes;

(c)   Ensure web data collection through the centralization of statistical business process environment;

(d)   Have information system with an expected long lifecycle.

37.   The SebStat is the step toward in satisfying new demands for statistical information, while seeking at the same time to reduce the burden on respondents and optimise productive processes. If we achieve these goals we will achieve better decision making support for NBG and the rest of community.