

**High Level Seminar for Eastern Europe, Caucasus and  
Central Asia Countries (EECCA) on “Quality in Statistics:  
Metadata”**

27-29 June 2012, Tbilisi, Georgia

---

**Streamlining the Statistical Production in Turkish Statistical  
Institute (TurkStat)**

**1. Abstract**

Lately, streamlining the statistical production system has become one of the most important objectives in TurkStat. According to TurkStat’s institutional point of view, streamlining the statistical production system entails a well structured institutional architecture which encompasses the whole organization, the strategy, products and services, IT systems and processes.

Generic Statistical Business Process Model (GSBPM) has been adopted as a reference model for this purpose and a national version (TurkStat Draft Statistical Business Process Model) has been developed as a draft. The draft model is the basis framework for ongoing process modeling and standardization project and it will be finalized at the end of the project.

Within the scope of process modeling and standardization project, meetings were held with all units producing statistics and the way of their working routines, methods and IT tools were questioned in the basis of related statistical products. Standardization will be the next step of the project.

The paper will describe the background, current status and future plans of TurkStat’s approach on streamlining the statistical production.

**Key words:** GSBPM, Standardization, Statistical production processes, Process modeling, Institutional architecture, TurkStat Draft Statistical Business Process Model.

## 2. Background

Stove-pipe production style has always been considered to be the only way to produce statistics in Turkish Statistical Institute from the beginning. But this understanding has begun to change recently.

In order to meet the increasing demand for high quality statistics, to cope with budget cuts and intensified competition, consequences of globalization and request for reduced response burden increased the awareness of need for renewal in statistical production.

Thanks to this awareness questions started to be asked by the top management:

- What is our production cost per statistics?
- How can we make data collection more efficient and cost-effective?
- Where resources are spent?
- How do we produce statistics? Are there defined or written process manuals/guidelines for statistical production?
- How to develop a statistical metadata system?
- What about the quality? Do we produce high quality statistics?
- How can we provide the quality assurance?
- Do we take into account the user needs?
- Are we successful in delivering our products to end users?

Actually the challenges are common to the statistics community and solutions have been trying to develop by NSOs and international organizations. Nevertheless the major focus is on developing statistical metadata systems and processes.

Thus, the need for standardized, cost-efficient and well coordinated production processes and statistical metadata systems came into light.

Accepting the fact that streamlining statistical production is the target a number of precautions needed to be taken to reach that target:

- Processes should be standardized and a knowledge driven approach should be established.
- Harmonization of products and data integration should be provided by a strong structure of statistical metadata system.
- Organizational structure should become more effective.
- Administrative data should be used as much as possible.

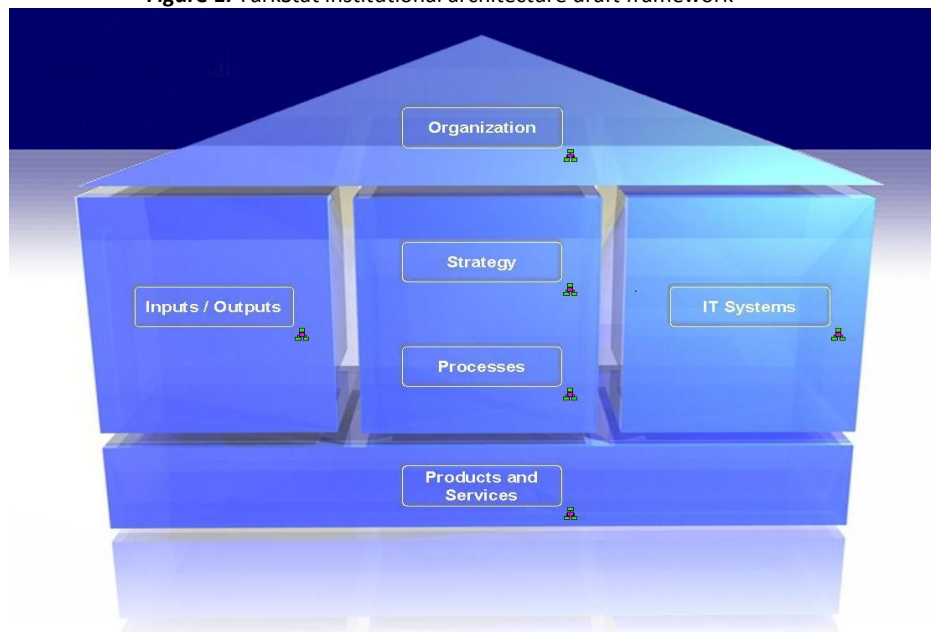
Within the scope of reasons summarized above, process modeling and standardization studies launched in 2010 and establishment of statistical metadata system studies launched in 2011 in TurkStat.

### **3. Streamlining the Statistical Production in Turkish Statistical Institute (TurkStat)**

#### **3.1. “Institutional Architecture” as an Approach**

The main objective of TurkStat’s process modeling and standardization project is to establish a standardized statistical production structure, related with a supporting dynamic documentation system of guidelines and handbooks, in an institutional architecture framework (Figure 1).

**Figure 1.** TurkStat institutional architecture draft framework



Strategy and Quality Group (A unit organized under the Strategy Development Department) started to work on process modeling and standardization, in 2010.

#### **3.2. TurkStat Draft Statistical Business Process Model**

An inclusive framework model needed to provide a pattern. Methodological research and pilot studies were conducted to establish a national version of GSBPM.

Why do we need the model?

- To have a well organized road map at the beginning,
- To have a common process terminology,
- To define, model and standardize statistical processes in a coherent way,

- To provide a structure for standardized documentation,
- To provide a structural basis for measuring operational costs,
- To have an opportunity to benchmark or peer review processes with other organizations,
- To ensure jobs not dependant on staff,
- To ensure the transfer of institutional culture to future generations,
- To provide a framework for process quality assessment and improvement.

Implementations of other national statistical offices like; Statistics New Zealand, Statistics Canada, Statistics Norway, Statistics Sweden etc. were our starting point of methodological research for process modeling and standardization.

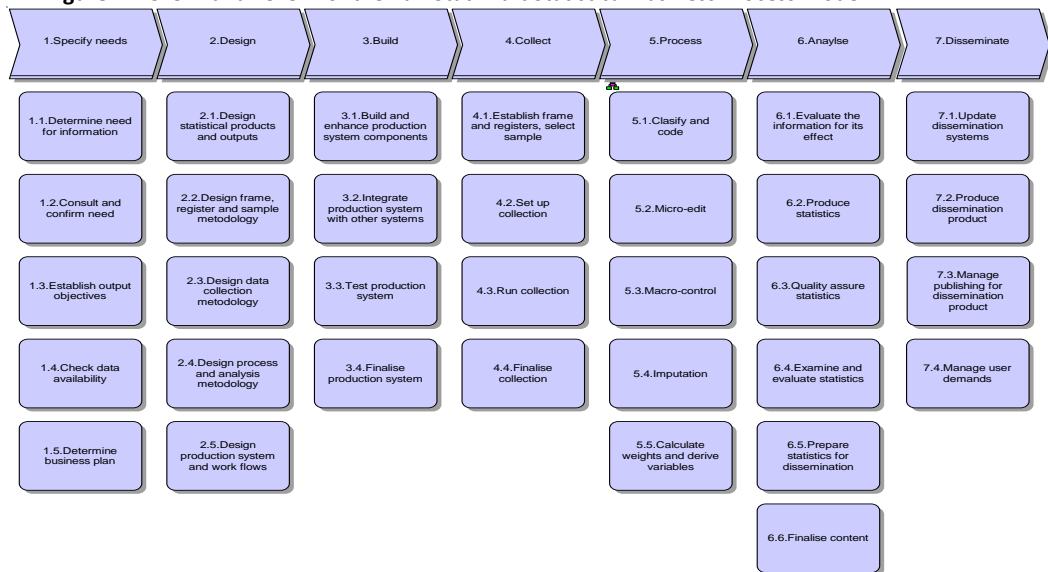
Afterwards, we discovered the Generic Statistical Business Process Model (GSBPM), a reference model for process standardization in statistics production. "The original intention was for the GSBPM to provide a basis for statistical organizations to agree on standard terminology to aid their discussions on developing statistical metadata systems and processes. The GSBPM should therefore be seen as a flexible tool to describe and define the set of business processes needed to produce official statistics" (UNECE Secretariat, 2009).

"Short Term Industrial Statistics, Household Budget Statistics, Crop Production Statistics, Producer Prices, Consumer Prices" were selected statistics/products for pilot study. Process maps were drawn, work flows were produced during the pilot studies and the draft statistical business process model was finally established.

The model comprises of three levels enumerated below:

- Level 1, seven phases of the statistical business processes as follows: 1.Specify needs, 2.Design, 3.Build, 4.Collect, 5.Process, 6.Analyse, 7.Disseminate. (Figure 2)
- Level 2, the sub processes within each phase. (Figure 2)
- Level 3, the sub sub processes within each sub process.
- Level 4, activities/job steps under sub sub processes. (Figure 3)

Figure 2. Level 1 and Level 2 of the TurkStat Draft Statistical Business Process Model

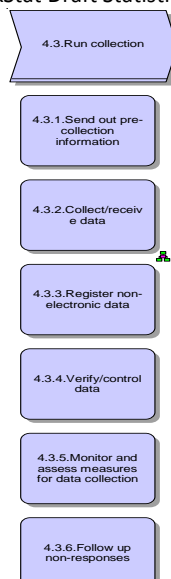


The draft model (See above, Figure 2) was created by Strategy and Quality Group in order to put a framework for guidance. GSBPM provided the basis for the draft model; nevertheless it was mostly influenced by the model developed by Statistics New Zealand and Statistics Norway.

First two levels are mostly generic but the third and especially the fourth level is certain for TurkStat. Level 3 and Level 4 are unlikely to be sufficiently generic for different organizations because of the different approaches and methods on doing business.

Level 3 was presented descriptively in GSBPM but transformed into sub sub-processes in TurkStat Draft Statistical Business Process model (See below, Figure 3).

Figure 3. Level 3 of the TurkStat Draft Statistical Business Process Model

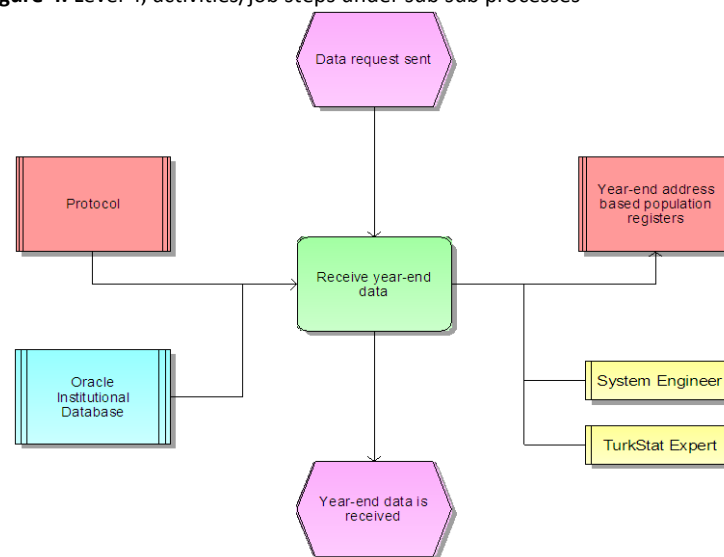


Level 4 describes the activity level of the draft model. Each sub sub-process contains a number of clearly identified attributes at Level 4 (See below, Figure 4), including:

- Job Step/Activity
- Input
- Supplier (for input)
- Output
- User (of output)
- Systems (supporting IT tools)
- Executer Unit (of job step/activity)
- Executer Positions (of job step/activity)
- Number of Executors (of job step/activity)
- Duration (Min., Max., Avg.) (of job step/activity)
- Realization Period (of job step/activity)

The activity/job step (green box), input (red box on the left), output (red box on the right), supporting system/tool (blue box on the left) and executers (yellow boxes on the right) are shown as an example in the figure below (See below, Figure 4) from Level 4 of the draft model. Purple boxes represent starting and ending events for an activity. Every line and arrow has a meaning. For example the “System Engineer” object represents the position with the role of “IT responsibility”. The role is defined with the line which connects position object to the activity object.

**Figure 4.** Level 4, activities/job steps under sub sub processes



Every object (See above, Figure 4) has a glossary in the system which contains further attributes for related objects and enables continuity and flexibility through processes. The structure makes it possible to evaluate the processes from countless aspects and highest level of detail.

Generic descriptions of data and metadata definition, management, and use throughout the statistical production processes are also required in the basis of conceptual (categorized repositories of common statistical information objects: statistical unit, population, variable and

classification), structural (information objects that identify and describe the data) and production (production elements that are distinguished according to their functions in the modelling and design of statistical production systems: component, rule and schedule) metadata.

Metadata are generated and processed within each phase of the model, there is, therefore, a strong requirement for a metadata management system to ensure that the appropriate metadata retain their links with data throughout the model.

Research Softwares Team (A unit organized under the Information and Communication Technologies Department) started to work on establishment of statistical metadata system, in 2011.

#### **4. Experiences**

Since the work on streamlining the statistical production has been performed under two separate headings as “process modeling and standardization” and “creation of a statistical metadata system”, experiences should also be summarized under two separate headings as parallel.

Here are some important experiences from process modeling and standardization studies:

- Commitment and continuous support of the top management with a holistic perspective is needed. Because it plays vital role in breaking the resistance of staff.
- The draft model has become very useful in transfer of the approach to the staff while it provides a structure to assess the knowledge and capability that already exists within TurkStat.
- There is an intensified relationship between production processes of different statistics and lack of documentation makes it harder to understand this complexity.
- “Process modeling and standardization” and “developing a statistical metadata system” are not just an issue for information technologies.

#### **5. Future Plans for Development**

The major focus is on creating an institutional architecture by finalizing the draft statistical business process model integrated with a strong statistical metadata system at present, which would also provide a strong infrastructure for quality management system.

TurkStat is committed itself to the development of the statistical production system. The effort made so far has created a great perception on the need of a development on statistical production processes and statistical metadata system.

Furthermore, TurkStat's renewed statistical production system would be a leading model for other producers of official statistics within the scope of Official Statistics Programme<sup>1</sup>.

## 6. References

Turkish Statistical Institute. (2012, 01 05). *Official Statistics Programme 2012-2016 (General Information and Tables)*. Retrieved 05 17, 2012, from <http://www.turkstat.gov.tr/rip/rip.pdf>

UNECE Secretariat. (2009). Generic Statistical Business Process Model. *Joint UNECE/Eurostat/OECD Work Session on Statistical Metadata (METIS)* (pp. 1-2). METIS Steering Group.

---

<sup>1</sup> "The Official Statistics Programme, based on the Statistics Law of Turkey No 5429, has been prepared for a 5-year-period in order to determine the basic principles and standards dealing with the production and dissemination of official statistics and to produce reliable, timely, transparent and impartial data required at national and international level. A programmed period for the Turkish Statistics System has been launched with The Official Statistics Programme 2007- 2011" (Turkish Statistical Institute, 2012). See <http://www.turkstat.gov.tr/rip/rip.pdf>