

# Process Description and Quality Guidelines – Two Birds with One Stone

Rudi Seljak, Tina Steenvoorden

Statistical Office of the Republic of Slovenia

## ABSTRACT

A systematic and exhaustive description of the statistical process is one of the main challenges that National Statistical Institutes have been facing in recent years. The widely accepted GSBPM model provides a very useful tool to accomplish this task in a standardized manner. The Statistical Office of the Republic of Slovenia accepted the adjusted GSBPM model as the general process model a few years ago. On the basis of this model, detailed descriptions of the processes and sub-processes were prepared, accomplished with exhaustive quality guidelines for proper implementation of each of the (sub) processes. A large number of statisticians actively participated in this project, which resulted in several methodological documents and manuals that will now serve for the standardized description of the survey processes, standardized survey documentation as well as for the development of the standardized software tools and applications. The paper describes the conceptual framework of the whole system, presents the main results of the project and describes how project results are planned to be used in the future standardization of the survey processes.

## 1. Introduction

Preparation of a systematic description of the statistical process is one of the main challenges that National Statistical Institutes have been facing in recent years. Attempts for such exhaustive description have, of course, already been made many years ago, but were mainly performed in a local environment. Lack of the internationally standardized and widely accepted general model was one of the main obstacles for harmonized and coherent products among the different members of the international community of official statistics. Release of the Generic Statistical Business Process Model [1] (hereinafter GSBPM) presented a huge step forward toward the harmonization of all activities that different institutions carry out in this area. This model now provides a straightforward but still very useful generic tool which can be used by different statistical organizations to describe their processes in a standardized manner.

The GSBPM is the result of the joint work of three international organizations: Eurostat, UNECE and OECD. At the initial development the process model used by Statistics New Zealand was used as a basis for GSBPM creation. Version 4.0 of the model, the first publicly available version, was released in April 2009 [2]. The aim of the model is to describe in general terms the different types of production of the statistical results, including sample surveys, censuses, surveys based on administrative data and on other secondary or mixed sources.

The core part of the GSBPM presents the definition and description of the phases and sub-processes of the statistical processes. The whole statistical process is described by 9 phases, further divided into (a different number of) sub-processes. The GSBPM also defines several over-arching processes that apply throughout the whole statistical business processes. Typical examples of such over-arching processes are Quality management and Metadata management. The paper presents how the GSBPM was used at the Statistical Office of the Republic of Slovenia (hereinafter SURS) to accomplish the two very important activities: general description of the survey implementation and creation of quality guidelines for proper implementation of the particular parts of the survey implementation. In the first part of the paper we describe the conceptual framework of the whole system, then we present the main results of the implementation and at the end we describe how project results are planned to be used in the future standardization of the survey processes.

## **2. SURS and description of processes**

The need to have a systematic description of the statistical process was already for some time present at SURS and more or less successful attempts were made to accomplish this task. However, a description of the statistical process was still not considered as a key task and not enough attention was given to this activity. It was believed that the description could be a side outcome of a greater infrastructural project or a matter of a small group of employees that could define the general statistical process. Those attempts failed. The general scheme was defined, but the processes were only partly described.

During the peer review on the compliance with the European Statistics Code of Practice an improvement action was set up to prepare comprehensive quality guidelines that would serve

as guidance for the work and help to monitor the quality of different stages of the statistical process [3].

Failed attempts to prepare a description of the statistical process indicated that a special project should be set up in order to prepare such a document. Taking into account recommendations from the peer review, a decision was made that both tasks – preparation of process description and preparation of quality guidelines – could be successfully combined in one project. A small project group was set up in order to review a general scheme of the statistical process, to define the structure of the quality guidelines and to coordinate the work with other relevant employees within SURS.

The GSBPM was an underlying cornerstone when SURS was defining its own General Process Model. SURS's General Process Model is predominantly in line with the GSBPM model; some modifications in the general model were made in order to better fit the reality of the working process in SURS. The most important change is that one of the GSBPM phases (Build phase) was omitted and considered as an over-arching process. Instead, a new phase was introduced, namely Selection of observation units, which includes sub-processes about the preparation of data sources for sampling frame population, sampling frame preparation, selection of observation units and preparation of address lists. On the basis of the model, a general description of the survey implementation for each sub-process was prepared in order to better define and present the statistical processes [4]. SURS's General Process Model was together with the general description approved by the top management and is considered as one of the standards.

## GENERAL PROCESS MODEL SURS, 2012

1	2	3	4	5	6	7	8
<b>ANALYSIS OF NEEDS AND REQUESTS</b>	<b>SURVEY DESIGN AND PREPARATION</b>	<b>SELECTION OF OBSERVATION UNITS</b>	<b>DATA COLLECTION</b>	<b>STATISTICAL DATA PROCESSING</b>	<b>DATA ANALYSIS</b>	<b>DISSEMINATION AND STORAGE OF STATISTICAL DATA</b>	<b>SURVEY DOCUMENTATION AND EVALUATION</b>
Determining data needs	Planning of resources and determining the list of activities with deadlines	Preparation of data sources for sampling frame preparation	Preparation for data collection	Editing of administrative data sources	Time series analysis	Updating of outputs	Preparation of survey documentation
Studying of sources	Defining of survey results	Sampling frame preparation	Taking over administrative sources	Micro-level editing	Analysis of adequacy and confirmation of results	Presentation of results	Collection of information for quality assessment
Verification of methodology	Preparation of the methodology for selecting observation units	Selection of observation units	Data collection and communication with reporting units	Integration of data sources	Interpretation of results	Publication	Process evaluation
	Preparation of statistical data processing methodology	Adress list	Data capture	Imputation		User support	
	Organisation of cooperation with other institutions and planning takeover of administrative sources			Deflation		Storage of statistical aggregates	
	Questionnaire design and testing			Weighting		Storage of statistical microdata	
	Preparation of materials for communication with reporting units			Calculation of statistical estimates (aggregation)			
	Pilot survey design and implementation			Macro-level editing			
				Table preparation			
				Statistical data protection			

Along with the model and general description of the model, also a more comprehensive description of the statistical processes was prepared and on this basis the publication Quality Guidelines was structured. Quality Guidelines present a systematic and detailed description of individual parts (sub-processes) of the process of survey implementation, with guidelines and instructions to be followed by survey methodologists in order to achieve the highest possible quality of results. For each sub-process the Quality Guidelines contain:

- **A short description of the sub-process** in question that was prepared on the basis of the general process model.
- **A set of guidelines** that should be followed, so that standardized and effective implementation of the sub-process can be achieved.
- **A set of specific steps** that describe how the individual part of the process is implemented at SURS.

The proposal for the structure of the Quality Guidelines was prepared by the project group and approved by the top management. For each phase and sub-process an owner was defined. At the level of phases, the owners are mainly heads of relevant sectors that mainly cover the topic; their task in the project was to coordinate the content of the whole phase and to balance between different sub-processes. At the level of the sub-process, the owners are employees

that have good knowledge of the practices taking place within the particular sub-process and their task in the project was to prepare the content of the Quality Guidelines for their sub-process. The project group coordinated the whole preparation of Quality Guidelines and thoroughly discussed the content prepared by owners and proposed changes and improvements in order to get a consistent document.

SURS's aim was that the quality guidelines would serve for multiple purposes, for internal and external users. For external users, the publication Quality Guidelines was prepared containing a description of phases and sub-processes and for each of them a set of guidelines. It is publicly available on SURS's website, so more advanced users can get acquainted with the processes that take place at SURS [5]. For internal usage, the publication is presented in e-form on the intranet and complemented with a relevant set of specific steps for each sub-process. For internal purposes, the publication is used at the training courses, for the newcomers and for other employees who would like to find out more about the processes they are not directly involved in or in case they change the field of work.

Besides the definition of the General Process Model and the publication Quality Guidelines, the "third level of products" was foreseen in the project. Some of the sub-processes are very complex and the implementation demands a lot of methodological knowledge. In order to keep the Quality Guidelines balanced, the third level of outputs, called Methodological Manuals [6], was defined as a special publication collection. Each methodological manual is a detailed methodological description of a particular sub-process. So far the following manuals have been prepared: the Style Guide [7], the Quality Indicators [8], the Statistical Data Editing [9] and the Time Series Analysis [10]. The preparation of such a manual is a demanding task that has to be performed by an employee (or a group) with relevant expertise. At SURS we are aware that this is a long-term task, but we still try to achieve the goal to prepare and disseminate a couple of manuals per year. The manuals are on SURS's website available also for more advanced users.

### **3. Different functions of the process model and all the supporting documents**

As stated above, our aim was that the outputs of the project would become a multipurpose tool, used by different groups of employees. We here list only a few areas and activities which are planned to be supported by the developed tools:

- **Educational purposes.** Implementation of different statistical surveys is certainly complex and not always an easy-to-understand process. When new employees at the statistical office begin their career, a lot of training and education is required and needed. So far there has been no comprehensive and detailed document that would be used by the newcomers in order to learn about the whole statistical process and to get a more general view of all the diverse and specific processes within the survey implementation.
- **Standardisation of methods and procedures.** Using the classical stove-pipe approach for many years, different statistical surveys developed and implemented different methodology and procedures for the same statistical sub-process. To make a move toward a more standardized and harmonized approach, a commonly accepted description of these procedures is an obvious basic precondition. To fulfil this basic condition was certainly one of the main goals that the outcomes of our project were targeting.
- **Development of generic software applications.** Transition from the stove-pipe oriented statistical production to more integrated, process oriented production is planned to be carried out in two main steps. The first step of methodological standardisation of the certain sub-process should always be followed by development of the generic software tool which will support efficient implementation of the standardised sub-process methodology. Sharing such generic tools among the different domains inside the same institution as well as among different institutions should certainly be one of the future key goals.
- **Survey documentation.** To make exhaustive and comprehensive documentation of the survey implementation, covering its methodological aspects as well as the aspects of practical implementation, is one of the most important tasks of our survey methodologists. At SURS such documentation has already been prepared for many years, but not in a standardised way by using the standardised template. Creation of a general model for process description and accompanying description of phases and sub-processes provided also a “natural product” for standardisation of survey documentation.

From a more general point of view, the model is planned to be used in the process of standardisation and modernisation of the statistical production by the following 3-step implementation for the chosen statistical sub-process:

- Standard methodology for the sub-process is determined and agreed among the specialists for the certain area. If possible, the standard methodology is described and explained in the Methodological Manual.
- A general IT solution is developed to support the implementation of the harmonised methodology. If possible, the already developed solutions from other institutions or from “open source community” are used.
- The developed IT solution is integrated into the implementation of the (modernized) statistical process for the specific statistical surveys.

#### **4. Future plans**

After the publication of Quality Guidelines, all employees were invited to attend an internal training course on the role of this document for their work. The training proved to be a good approach to inform staff about the new publication and the accompanying tools and to receive feedback on all the developed tools. In the future a more comprehensive training course about the General Process Model, its implementation and consequences of this implementation to the SURS practice will be prepared and included in the Internal Training Catalogue.

After the successful closure of the project for preparation of SURS’s General Process Model and the Quality Guidelines, the decision was taken by top management to establish an interdepartmental, permanent Working Group for Processes. The main tasks of this group are:

- to follow the development of the international standards in the field of general statistical process and propose the implementation;
- to coordinate the updating procedure of the Quality Guidelines,
- to further promote the document,
- to take care that the presentation of the document is user friendly for the employees.

The Quality Guidelines have already been structured in a special section on the intranet. Additional links will be established to the existing instructions, standards and working documents, so that each employee can obtain comprehensive information about the particular sub-process and its implementation standards at SURS. Along with the preparation of this extended view on the intranet, the procedure for updating the Quality Guidelines has already been launched. The list of the owners of phases and sub-processes has been brought in line with the organizational changes within the office and the owners have been given a task to

check the content of the guidelines and, if needed, to update and improve it. Afterwards the proposed changes will be discussed within the Working Group for Processes and with the owners of the phases and sub-process in question. Through the discussion it will be assured that the consensus on the content will be achieved. After the updating procedure is completed, a new version of the Quality Guidelines will be considered to be published online as well; however, internally the agreed changes will be implemented instantly.

## **5. Conclusions**

SURS accepted the adjusted GSBPM model as the general process model a few years ago. On the basis of this model, detailed descriptions of the processes and sub-processes were prepared, accomplished with exhaustive quality guidelines for proper implementation of each of the sub-processes. A large number of statisticians actively participated in this project, which resulted in several methodological documents and manuals that will now serve for the standardized description of the survey processes, standardized survey documentation as well as for the development of the standardized software tools and applications.

At the moment SURS is in the phase of long-term transition from the domain oriented production, based on the classical stove-pipe IT solutions, to the process oriented production that would be based on the generic and “easy to reuse” IT solutions. The model and accompanying documents that were developed in the project presented above turned out to provide a necessary basic tool to launch this transition and they are planned to play a crucial role in the further development.

## **6. References**

- [1] UNECE. (2013), Generic Statistical Business Process Model GSBPM (Version 5.0, December 2013). Available at: [http://www1.unece.org/stat/platform/download/attachments/97356247/GSBPM%205\\_0.docx?version=1&modificationDate=1387861584474&api=v2](http://www1.unece.org/stat/platform/download/attachments/97356247/GSBPM%205_0.docx?version=1&modificationDate=1387861584474&api=v2) (24.4.2014).
- [2] UNECE. (2009), Generic Statistical Business Process Model Version 4.0 – April 2009. Paper presented at Joint UNECE/Eurostat/OECD Work Session on Statistical Metadata (METIS) Available at: [http://www.unsiap.or.jp/sqm/sqm6/1\\_GSBPM.pdf](http://www.unsiap.or.jp/sqm/sqm6/1_GSBPM.pdf) (12.5.2014).

- [3] Eurostat. (2007), Peer review on the implementation of the European Statistics Code of Practice, report for Slovenia. Available at:  
[http://epp.eurostat.ec.europa.eu/cache/ITY\\_PUBLIC/PEER\\_REVIEW\\_SI\\_2007/EN/PEER\\_REVIEW\\_SI\\_2007-EN.PDF](http://epp.eurostat.ec.europa.eu/cache/ITY_PUBLIC/PEER_REVIEW_SI_2007/EN/PEER_REVIEW_SI_2007-EN.PDF) (12.5.2014)
- [4] SURS. (2012), Description of Statistical Survey Processes. Available at:  
[http://www.stat.si/doc/pub/List%20of%20processes%20ANG\\_8\\_3\\_2012.pdf](http://www.stat.si/doc/pub/List%20of%20processes%20ANG_8_3_2012.pdf) (12.5.2014).
- [5] SURS. (2012), Quality Guidelines. Available at (only in Slovene):  
<http://www.stat.si/doc/pub/Smernice.pdf> (24.4.2014).
- [6] SURS. (2012), Methodological Manuals. Available at (only in Slovene):  
[http://www.stat.si/publikacije/pub\\_metodoloski.asp](http://www.stat.si/publikacije/pub_metodoloski.asp) (24.4.2014).
- [7] Klasinc, S. et all. (2012), The Style Guide. Methodological Manuals. Available at (only in Slovene): [http://www.stat.si/doc/pub/Slogovni\\_prirocnik.pdf](http://www.stat.si/doc/pub/Slogovni_prirocnik.pdf) (14.5.2014)
- [8] Seljak, R. (2011), The Quality Indicators. Methodological Manuals. Available at, only in Slovene: <http://www.stat.si/doc/pub/Kazalniki%20kakovosti.pdf> (14.5.2014)
- [9] Seljak, R. (2013), The Statistical Data Editing. Methodological Manuals. Available at, only in Slovene: [http://www.stat.si/doc/pub/Urejanje\\_podatkov.pdf](http://www.stat.si/doc/pub/Urejanje_podatkov.pdf) (14.5.2014)
- [10] Golmajer, M. (2013), The Time Series Analysis. Methodological Manuals. Available at, only in Slovene: [http://www.stat.si/doc/pub/Desezoniranje\\_casovnih\\_vrst.pdf](http://www.stat.si/doc/pub/Desezoniranje_casovnih_vrst.pdf) (14.5.2014)