The Eurostat Process Management Framework

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Introduction

The statistical organisations are facing several challenges: their mission is evolving, the budget and human resources are shrinking and new IT technologies are appearing on the market. They need to improve their rapidity to respond to new user requirements and maintain at the same time high quality products and services.

In this context, managing business processes is an important sign of maturity and efficiency in organisations. Eurostat has decided to launch the project Process Management Framework (PMF) with the objective to build a harmonised documentation of the Eurostat processes, increase the process management maturity and create a pool of competence for business process modelling. This project is strongly linked with the Quality review initiative undertaken by Eurostat.

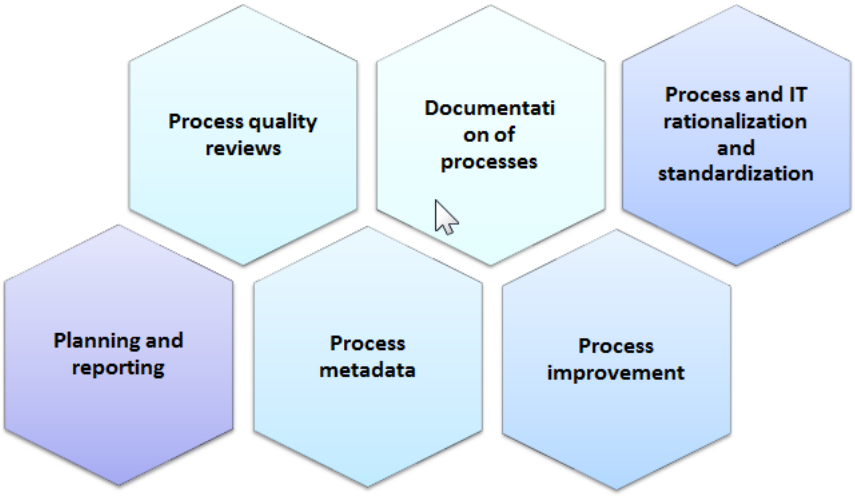
The PMF project timeline is 2016-2019. The first year (2016) has been devoted to develop the methodology and carry out a few pilot projects to test the methodology and assess the feasibility of the project. The final objective of the project is to create a central repository of process descriptions that can be exploited by several stakeholders according to different needs and use cases.

The stakeholders

The stakeholders of the PMF project and a brief description of their identified needs are described below.

Stakeholder (corporate function)	Needs related to process documentation
Strategy and planning	• Planning and monitoring of the annual work programme • Allocation of financial and human resources
Quality review	• Process modelling is part of the process quality review and an essential component of the Quality Framework supporting EFQM (European Framework of Quality Management) • Definition of process performance indicators (under the ESS Code of Practice and Quality Assurance Framework)
Information and Security Officer	• Cartography of all information flows with sensitivity attribute and process owner • Analysis of IT security and impact of IT on business continuity
Process managers (statistical production teams)	• Ability to control end to end process performance • Ensure business continuity in case of staff absence • Good process documentation and links to related process
IT department	• Design, assemble and configure IT systems in a Service Oriented Architecture • Generation of process performance indicators • Document the use of information standards • Llink process documentation with other metadata standards
Internal control	• Reinforce implementation of audit control standard with respect to process management

The picture below describes the main use cases identified by the project:

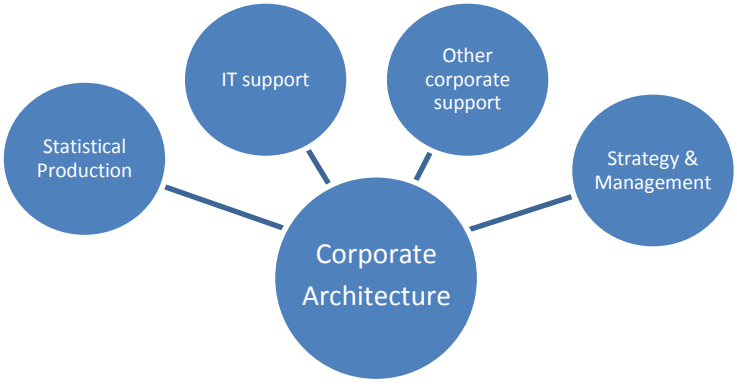


The PMF project steering committee is composed by representatives of horizontal teams and statistical production units. It is chaired by Eurostat unit B1 (Methodology and Corporate Architecture) and A2 (Strategy and planning).

Eurostat has set up a central BPM (Business Process Management) Centre of Excellence team. The team develops the methodology and coordinates activities with the project stakeholders.

Scope of the project - business areas

The process modelling covers all Eurostat core processes (not only the statistical production processes). To this purpose the core processes have been grouped by the following business areas:



Modelling the statistical production processes

The project scope covers all Eurostat processes (not only the statistical production processes). However, the statistical production processes have a particular importance. Eurostat manages a variety of statistical production processes belonging to several statistical domains (about 80).

Eurostat receives the statistical data and metadata from hundreds of data providers belonging to more than 30 countries.

One of the first challenges of the PMF project was how to cope with the above mentioned variety of processes. Similar processes are often executed in slightly different ways and on different platforms due to historical reasons. The adoption of a specific IT tool has also implications on the way the process is implemented and may lead to different practices.

Within the same production domain there can be different treatments leading to deviations from the standard process e.g. due to the variety of data providers, different formats, timeliness etc.

Often the processes are not explicitly defined, and the main sources of information are the persons that carry out the work or the IT programs, but mostly in a way that is not easy to communicate to externals.

Another issue is the possible lack of standardisation in the naming of the activities. In different domains, the same activity can be known with different names, for example the typical activity of data validation can be named data verification, data checking etc.

The Eurostat approach

The business processes are modelled using the standard Business Process Model and Notation (BPMN) version 2.0 [(1)]. The IT tool used to graphically design the business processes is ARIS [(2)].

In order to model all statistical production processes with a harmonised model we have developed a generic statistical process model. The generic statistical process model is a sort of super-process that contains all possible activities that are carried out in statistical production. It is based on the Generic Statistical Business Process Model (GSBPM) [(3)] which has been contextualised to Eurostat taking into account for instance that there is no direct data collection but simply reception of data sent by national data providers.

To model a specific process we start from the generic process and we adapt it to the needs of the specific process, mainly by adding the detailed description of the sub-processes as needed, eliminating the activities that are not used in that domain, or changing the order in which certain activities are carried out.

The generic production process model is organised in levels, where the top level describes the high-level activities of the process (e.g. process, disseminate etc.). If needed, an activity can be modelled at a lower level by creating a more detailed sub-process. The final model has many levels as needed. The number of levels depends in particular by the use case that we want to satisfy.

[1] http://www.omg.org/spec/BPMN/2.0/PDF

[2] http://www.softwareag.com/corporate/products/aris_alfabet/bpa/capabilities/default.asp

[3] https://statswiki.unece.org/display/GSBPM

The 2 top levels of our generic model correspond exactly to the phases and steps of the GSBPM. Further levels are added to describe the operational details as needed. In the process of converting from GSBPM to BPMN diagrams we introduce a precise ordering of the activities. We try to maintain the name of the activity even when a specific process requires changing the order. This may result in a strange naming of activities because in this way, e.g. Step.3 may come before Step.2, however the objective is to use the same name, for the same activity, in all processes because this allows comparing the different processes.

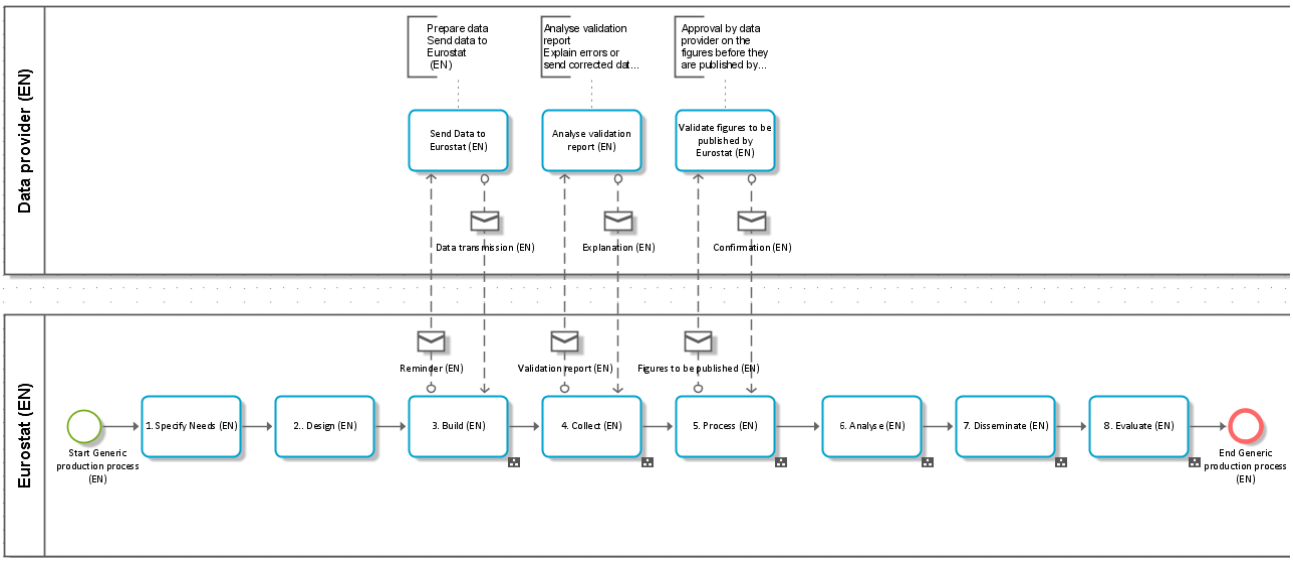
This approach can be efficiently used to describe all statistical domains, and provides an operational way to carry out the modelling, while maintaining a harmonised design of all processes. However a negative aspect is the fact that the process models may contain several levels, while the process managers and the staff working in statistical production tend to understand the statistical process more as a linear process (with only one level).

Generic statistical production process

The process diagrams at level 1 and 2 correspond to the GSBPM steps and phases. Level 3 and 4 are added to model the more detailed levels of the process. All activities have annotations explaining briefly the content of the activity (they not shown here because mainly relevant to Eurostat). Supporting documents can be linked to all sub-processes. We do not store directly a document but rather a link to a document stored on some collaboration space. This is done to avoid the proliferation of copies of the document.

Statistical production process - level 1

The picture below shows the high-level view of the generic production process (level 1). The main actors here are Eurostat and the data provider. Other actors, like the other international organisations, are not shown at this level.



The above diagram shows the messages exchanged between Eurostat and the data provider.

In the first exchange, Eurostat sends a reminder to the data provider. The data provider sends the required data to Eurostat.

A second exchange takes places when Eurostat informs the data provider about the outcome of data validation. The data provider may send a note explaining the origin of some minor problems in the data.

The third exchange happens when Eurostat sends the data back to the data provider for verification (before publishing them).

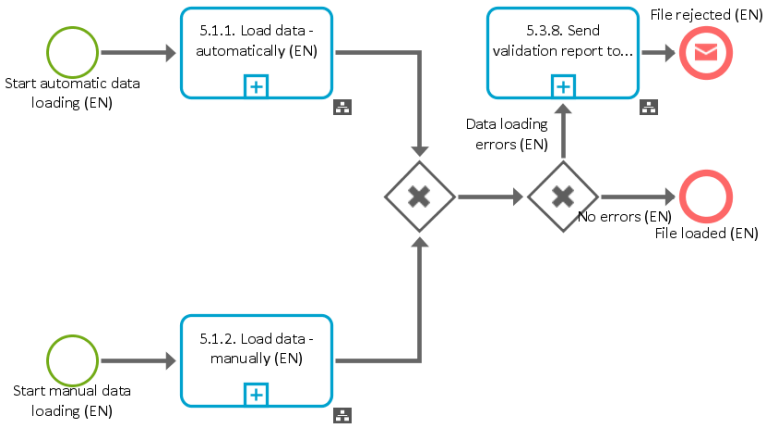
Apart from "Data transmission" the other messages are not mandatory. They do not take place in all domains on a regular basis.

Statistical production process - level 2

As an example of level 2 process diagram, the phase 5 (Process) is described as follows:

Statistical production process - level 3

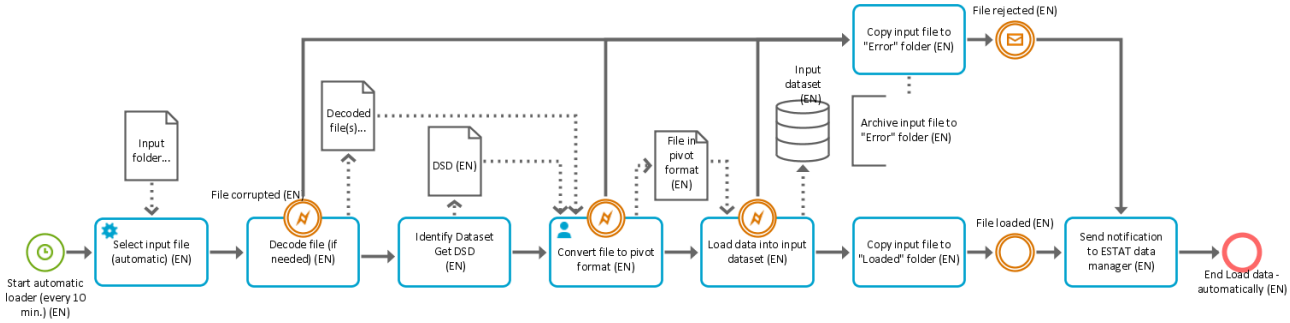
Further levels can be added to model the detailed sub-processes as needed. Below you can find an example of level-3 sub-process underlying the step 5.1:



The automatic data loading is carried out normally for all data flows. The manual data loading is carried out to manage exceptional cases in which either the format or the content of a data file do not follow the rules of the standard process.

Statistical production process - level 4

5.1.2 (automatic data loading) is further decomposed in a sub-process at level 4:



Process automation

A great benefit that is expected from the process modelling is the ability not only to document the process but also to run the process and to collect information on the actual execution of the process steps. In the future we expect that the statistical processes are run automatically by an IT process manager that executes the single process steps by calling the respective IT sub-systems and generate process execution metadata. The basic functionalities of the IT process manager are to execute the steps of the process and to monitor the status of execution.

Ideally the IT process manager should be able to execute existing IT sub-systems (building blocks), in this way it is possible to reuse them and to minimise the development costs (only the interfaces must be adapted).

Linking processes to staff

A further step forward is to link the processes to the staff allocated to each process (or step) in such a way that a person (after user authentication) can ask the system: Please tell me the tasks I can carry out today. This would be very useful especially when, due to unexpected absence, a colleague replaces another colleague and has to understand (and also to be enabled to use the IT privileges of the other colleague). In addition, the system could be able to suggest who can substitute a colleague, and who the superior (person) is when a sensitive operation requires the authorization or approval of a superior (for example, to disseminate data that do not pass all validation rules).

Process log

Essentially, the status of a process can be stored in log table having the following information: process-id, step-id, responsible, time-start, time-end. When a step is finished the system derives the next step to be executed, and who is the responsible.

In general, the status of execution of a process can be described as (executed step X by N, next step is Y by M). In the case of the statistical production processes, the monitoring is more complex because what is described as a single statistical process is repeated many times: within a production cycle, we treat the data provided by many data providers, and for all needed reference periods.

Therefore we need to add this information to the log table: process-id, step-id, responsible, time-start, time-end, data-provider, reference-period.

The data stored in the process log can be used to compute different kinds of process indicators, for example the average elapsed time for end-to-end elaboration, bottlenecks etc.

Lessons learned

Based on the experience of the PMF project, some aspects deserve the attention.

Involvement of all staff

There is a need for a strong involvement of all staff, in particular the persons working in statistical production, and how this can be secured despite the severe time constraints related to the statistical production. The commitment of senior managers is essential to explain the purpose of the project and to motivate staff to co-operate with the central BPM Centre of Excellence team.

Provide benefits for the staff working in the statistical process

As the staff must make an effort they must see the advantages. It is clear that a good process description is useful not only at corporate level but can bring advantages also for the persons working on the field: for example the process modelling helps newcomers, persons that must replace a colleague unexpectedly, team leaders. Process modelling can also very useful when we want to adapt the process to new requirements, like exploiting new data sources and providing new statistical products.

Training

Process management becomes a new competence required for all staff. Providing good training courses is essential, both on general Business Process Management and more specifically on Business Process Management applied to statistical production.

Level of details

The level of details in the process modelling must be chosen carefully with respect to the identified use cases. A high level description can be drafted quickly but its usefulness is limited. On the other hand, the effort needed to build a very detailed modelling can be costly and not needed in all cases.

Links to other initiatives

Modelling a production process requires the cooperation of the staff working in statistical production. One opportunity to minimise the efforts required to the staff is to associate the modelling work to other initiatives. For example, the creation of a business process model is mandatory when a statistical domain is planning a migration to a new IT tool, because the modelling is part of the analysis phase. In this case we model the *as is* process and the IT department models the *to be* process.

Keeping the process models up to date

The maintenance of the process models should be part of the corporate planning and reporting activities. This ensures that the process description is kept up to date. Otherwise the process description may become soon obsolete and therefore not useful or even misleading.

Standardisation of the processes

Similar processes can be executed in different ways due to historical reasons, or even due to different IT environments that lead to different practices. The creation of a repository of process models allows analysing all processes and finding commonalities and differences. In turn this may result in potential improvements.

Process indicators

The process indicators measure the efficiency of a process. Those indicators can then be used for proposing and implementing process improvements, in particular related to the execution of selected important tasks. This aspect is strictly related to the IT tools used in statistical production. The IT tools can easily provide the process data about the duration of a process or a single step, and aggregate them for building more complex performance indicators. Otherwise the process data can be collected manually (e.g. the staff can manually provide the start time and end time of each task) but this solution is very difficult to be put in practice.

Another aspect to consider is that the process modelling is used to measure the performance at department level, or team level, and is not related to the performance of single persons. This is important because to avoid that the staff perceives the system as a way control their work and their performance.