GAMSO in context

Denis GROFILS and Jean-Marc MUSEUX
Methodology and corporate architecture, Eurostat[1]
denis.grofils@ec.europa.eu, jean-marc.museux@ec.europa.eu

Abstract: GAMSO (Generic Activity Model for Statistical Organisations) supports the modernisation of official statistics by offering a model for statistical organisations that includes all support activities beyond those that are directly production-related and covered for long by the Generic Statistical Business Process Model (GSBPM). Experience gathered through some first concrete implementation efforts pointed towards the need for some improvements in order to enable a wider promotion as a reference model. Based on some concrete scenarios, namely a proposal for bridging with typical business modelling approaches and an analysis of some use cases specific to official statistics, this paper provides some recommendations for improvement of GAMSO.

1 Introduction

The Generic Activity Model for Statistical Organisations (GAMSO) was developed recently with the objective of providing the community of official statistics with a shared vocabulary for describing all of their business activities, beyond statistical production activities covered for long by the Generic Statistical Business Process Model (GSBPM).

GSBPM includes so-called overarching processes but these were not detailed in a sufficiently structured way to be really useful in practice. In GSBPM, quality management and metadata management are presented as two core overarching processes spanning the whole production phases. Several others such as knowledge management or statistical programme management are enumerated in the specification. GAMSO is conceived as an add-on to GSBPM, where these original overarching processes are supplemented by a more developed and structured model better covering support activities of statistical organisations.

One of the main objectives of GAMSO is the support of international collaboration initiatives in the field of modernisation. The specification lists some of its expected uses such as resource planning, management accounting or the development of capability architectures.

[1] The views expressed in this paper are those of the authors and do not necessarily reflect the position of Eurostat.

Since its adoption in March 2015 by the UNECE, Eurostat has been using GAMSO in various contexts. The following two initiatives are worth mentioning:

- GAMSO is used as entry point to the CROS[2] portal which acts as a knowledge repository for the ESS modernisation initiatives, in particular ESSnets and the like.

- GAMSO is referred to in the ESS Enterprise Architecture Reference Framework (ESS EARF) as a model for describing business activities in relation with the ESS Vision 2020 implementation and linking it with Enterprise Architecture artefacts.

The main difficulties were to associate GAMSO Capability Management category to ESS ongoing activities (governance and projects) and to link the ESS EARF Business Capability Model (BCM) derived for the ESS Vision 2020 with the current specification of GAMSO business areas.

Experience gathered through these first concrete implementation efforts pointed towards the need for some improvements in order to enable a wider promotion of GAMSO as a reference model. Concerns mainly appeared in the following two areas:

- The consistency between business modelling frameworks used in modernisation of official statistics, in particular convergence between GAMSO and GSBPM, and the consistency with related non-statistical standards. It is not always clear how the GSBPM overarching processes are integrated in GAMSO and the practical use of GAMSO in these areas and its mapping to the BCM developed as part of the ESS EARF is not always obvious. This can be due to differences in terminology and gaps with standard concepts of Business Process Management (BPM) and Enterprise Architecture (EA). The first part of this paper will present an analysis of the articulation points of GAMSO/GSBPM with EA and BPM and make some suggestions for bridging structure and terminology among these frameworks.

- The adequate coverage of support activities that are specific to the sector of official statistics and to modernisation: currently the model proposes a broad range of activities that are standard in all organisations (e.g. HR management or accounting) while relatively little focus is given to critical activities more specific to official statistics. Although GAMSO is intended to support modernisation, little visibility seems to be given to activities considered as priority in current visions for modernising official statistics. A proposal will illustrate how some key activities such as quality management, information security and data protection,

[2] Collaboration in Research and Methodology for Official Statistics, https://ec.europa.eu/eurostat/cros/

standardisation and innovation could be more clearly positioned and described in the framework.

As a synthesis from these experiences and thoughts, some concrete tracks for improvement of GAMSO will be formulated mainly concerning the bridging with established business modelling approaches and better coverage of key strategic business areas for official statistics.

2 Reconciling Official Statistics business modelling frameworks

2.1 Terminologies

To illustrate some of the issues related to terminology a comparative analysis of some key terms is performed. The analysis is not performed in full details but intends to provide an idea of a possible approach for analysis and possibly reconciling some of the main business modelling frameworks used in official statistics.

The following frameworks are considered:

- GAMSO[3] *describes and defines the activities that take place within a typical statistical organisation. It extends and complements the GSBPM by adding additional activities needed to support statistical production.*

- GSBPM[4] *describes and defines the set of business processes needed to produce official statistics. It provides a standard framework and harmonised terminology to help statistical organisations to modernise their statistical production processes, as well as to share methods and components.*

- GSIM (Generic Statistical Information Model)[5] *provides a common language to describe information that supports the whole statistical production process, from the identification of user needs through to the dissemination of statistical products. It is a reference framework of internationally agreed definitions, attributes and relationships that describe the pieces of information (called "information objects" in GSIM) that are used in the production of official statistics.*

- BPM industry standards and in particular the Business Process Model and Notation (BPMN)[6]. The primary goal of BPMN is to provide a notation that is

[3] http://www1.unece.org/stat/platform/display/GAMSO/Generic+Activity+Model+for+Statistical+Organizations
[4] http://www1.unece.org/stat/platform/display/GSBPM/Generic+Statistical+Business+Process+Model
[5] http://www1.unece.org/stat/platform/display/gsim/Generic+Statistical+Information+Model
[6] http://www.bpmn.org/

readily understandable by all business users, from the business analysts that create the initial drafts of the processes, to the technical developers responsible for implementing the technology that will perform those processes, and finally, to the business people who will manage and monitor those processes.

- TOGAF: *The Open Group Architecture Framework (TOGAF)*[7] *is a framework for enterprise architecture that provides an approach for designing, planning, implementing, and governing enterprise information technology architecture. TOGAF is a high level approach to design. It is typically modelled at four levels: Business, Application, Data, and Technology. It relies heavily on modularization, standardization, and already existing, proven technologies and products.*

The first three can be referred to as official statistics industry frameworks while the latter two are cross-industry generic frameworks. The matrix below lists some main terms used for business modelling in the various specifications listed above and includes the definition of the terms as per the specification. This allows us to see if a terms is used in multiple specifications or not, and if this is the case, whether the definitions are similar or not.

[7] https://www.opengroup.org/togaf/

	GSBPM	GAMSO	GSIM	TOGAF	BPMN
Activity		GAMSO stands for "Generic Activity Model for Statistical Organisations"			An activity is defined in BPMN as "Work that a company or organization performs using business processes. An activity can be atomic or non-atomic (compound). The types of activities that are a part of a Process Model are: Process, Sub-Process, and Task."
Activity area		The top of GAMSO level comprises four broad activity areas: Strategy and leadership, Capability management, Corporate support and Production.			
Business function			A business function is defined in GSIM as "Something an enterprise does, or needs to do, in order to achieve its objectives."	A business function in defined is TOGAF as "Delivers business capabilities closely aligned to an organization, but not necessarily explicitly governed by the organization."	
Business process (or Process)	GSBPM level 0 is statistical business process		A business process is defined in GSIM as "The set of Process Steps to perform one of more Business Functions to deliver a Statistical Program Cycle or Statistical Support Program."		A business process is defined in BPMN as "A defined set of business activities that represent the steps required to achieve a business objective. It includes the flow and use of information and resources."
Process step			Process Step is a work package that performs a Business Process. A Process Step implements the Process Step Design specified in order to produce the outputs for which the Process Step was designed.		
Business service			A means of performing a Business Function (an ability that an organization possesses, typically expressed in general and high level terms and requiring a combination of organization, people, processes and technology to achieve).	Supports business capabilities through an explicitly defined interface and is explicitly governed by an organization.	
Capability		GAMSO defines the notion of capability in the activity area dedicated to "Capability Management".		An ability that an organization, person, or system possesses. Capabilities are typically expressed in general and high-level terms and typically require a combination of organization, people, processes, and technology to achieve.	
Phase	Level 1, the eight phases of the statistical business process;				
Sub-activity		The second level of Strategy and leadership, Capability management and Corporate support are sub-activities.			
Sub-process	Level 2, the sub-processes within each phase.				Is mentioned in the definition of the term activity.
Task					An atomic activity that is included within a Process. A Task is used when the work in the Process is not broken down to a finer level of Process Model detail. Generally, an end-user, an application, or both will perform the Task.

Table 1 Comparison of terminology in business modelling frameworks

To some extent the "sparsity" of the table indicates the need to bridge the different frameworks. The following questions can be considered:

- When only one item appears in a row, do we have a particular specific concept or can the concept be merged with another one labelled differently?

- When more than one item appear in a row, are the definitions consistent or should we split the notion into different concepts labelled differently?

- In case different labels are used for a same notion, could we consider a degree of priority of the source, and in particular, should we give more weight to cross-domain sources that to the ones that are specific to official statistics?

This analysis reveals the following:

- The use of the term "process" in GSBPM does not seem to be consistent with its use in BPMN.

- The "activity" referred to in GAMSO may be seen as coherent with BPMN but does not appear very explicitly in GSIM and GSBPM.

- In GAMSO notions of "activity areas" and "sub-activities" do not match directly notions from other UNECE specifications.

- The term "process step" in GSIM is not directly matched to other specifications under consideration and seems to correspond to a BPMN "activity" according to its definition.

- GSIM seems consistent with TOGAF for notions of "function", "service" (but omits the notion of "capability") but not aligned on BPMN for terms related to business processes.

The following more general observations are formulated:

- Official statistics industry frameworks should align as much as possible to BPM and EA cross-industry standards and deviate only when it really adds value for the particular context of official statistics. This would enhance interoperability with other sectors and bring benefits from integrating with a broader ecosystem for example concerning sharing and re-use of semantic or IT assets. Understanding the differences between EA and BPM views of business modelling is perhaps not always straightforward. Here is a tentative explanation:

    - BPM is concerned with the sequence of activity and the flow of information to produce a service or a product for the customer. This

corresponds in some ways to a procedural view of the organisation, explaining how operations are carried out.

- The notion of flow of activity and information is at the heart of the notion of process model.

- Concepts of "process", "activity", "sub-process", "task" and their mutual relations are well established and should be used as much as possible as they are when taking a BPM perspective.

- It is generally recommended to model business processes "end-to-end" which means that they start with a request from the customer and end with the delivery of a product or a service to the customer.

- EA usually uses the notions of "capability", "function", and "service". This view identifies what needs to be done to run the business and considers resources (people, process, technology, etc.) and interfaces needed. This corresponds more to a functional view of the organisation, explaining what an organisation does, which resources are involved, which inputs consumed and which outputs produced. It is sometimes said that capabilities are more related to strategic planning, and as such are relatively aggregated and stable, and are intended to cover current and future state of an organisation. Conversely, business functions are supposed to be more detailed and correspond closely to what a company actually does to run the business. Inputs and outputs of business functions may be described to define corresponding business services.

A deeper alignment and a more explicit relation of Official Statistic business modelling frameworks with these views would simplify the work of using them, in particular when more than one is used which is generally the case. The following approach could be taken to improve consistency:

- Improve process-related vocabulary in GSIM by making it more aligned on BPM and EA standards and explicit relations between them.

- Use these relevant parts of the GSIM model for process information as meta-model for both GAMSO and GSBPM.

- Given that GSBPM and GAMSO do not deal with activity structure (activity and information flows) but rather offer a functional view of statistical business (what is to be done, not how), a question is if they would not better be qualified as capability or function models instead of process or activity models.

2.2 Articulating GAMSO and GSBPM

Although the place of GSBPM is explicit in the GAMSO specification the combined use of GAMSO and GSBPM may be less straightforward than it seems, for instance for the following reasons:

- Overall structure: GAMSO is labelled an activity model structured on the basis of activity areas and sub-activities. GSBPM is a process model broken down into phases and further broken down into sub-processes, with an overarching category.

- Overarching processes: Quality management and metadata management appear both in GSBPM (as overarching processes) and GAMSO (as corporate support activity area) but not at the same level. Other items enumerated in the GSBPM specification as possible overarching processes are scattered across various activity areas of GAMSO.

- Overlaps between GSBPM and GAMSO, with for instance:

    - Consistency between GAMSO "3.1 Manage business & performance" and GSBPM phase 8 "Evaluate".

    - Consistency between GAMSO "3.7 Manage consumers" and GSBPM "1.1 Identify needs" and "1.2 Consult and confirm needs".

A natural solution would be to merge GSBPM and GAMSO into an integrated hierarchical structure, dropping overarching process from the GSBPM and fully including them in the GAMSO add-on. The drawback of this approach is that it would impact GSBPM which is already very widely in use.

Concerning the structure of GAMSO and GSBPM, concepts used as containers corresponding to levels in the models are not explicitly defined in the specifications and could usefully be explained in terms of reference concepts in GSIM.

3 Modelling of some specific business areas

Common modernisation ambitions of official statistics are stated in 2 major international strategic documents, the Strategic Vision of the High-level Group for the Modernisation of Official Statistics and the European Statistical System Vision 2020. The most salient points these vision documents have in common are enhancing customer focus, increasing efficiency and flexibility through standard-based modernisation and energising innovation.

GAMSO currently proposes a relatively broad range of general support activities that are common to most organisations while relatively little focus seems to be given to some critical activities more specifically related to the sector of official statistics.

In the next sections some domains identified as specifically critical to the business of official statistics will be analysed with regard to their representation in GAMSO. This exercise will cover quality management, information security and data protection, standardisation and innovation. The ambition is of course not to go into the details of these domains but to see how they are considered currently in GAMSO and eventually make some proposals on how they could be more clearly positioned and described in the framework.

3.1 Quality management

Typically quality is defined against stakeholders' expectations and based on systematic measurement of quality, repeatability of processes and continuous improvement. In official statistics quality is particularly important because it is often claimed to be one of its main competitive advantages on other actors providing analogous services to the society.

Setup and management of quality frameworks is an important activity for statistical organisations. These frameworks may cover the organisational environment in which statistics are produced (e.g. commitment to quality), the quality of processes (e.g. effectiveness and efficiency) and the quality of statistical outputs which is typically considered as multi-faceted (e.g. relevance, accuracy and timeliness). Numerous specifications exist on quality measure and quality reporting. Some more holistic frameworks also exist to support quality management such as the EFQM[8].

GAMSO considers quality management in various places:

- A sub-activity "3.10 Manage quality" is present in the "Corporate support" activity area and is dedicated to the development and administration of quality frameworks and cross-cutting quality assurance activity. It includes the management of quality frameworks, of quality assurance tools and of quality documentation.

- Other sub-activities of GAMSO can be seen as related, for instance "3.1 Manage business and performance" or "3.7 Manage consumers".

- An overarching process is present in the production activity area corresponding to GSBPM mainly covering process and product quality. Some of the topics covered

[8] European Foundation for Quality Management, http://www.efqm.org/

are also included in the peer GAMSO sub-activity. From the description of this overarching process it seems that:

  - A Plan–Do–Check–Act (PDCA) cycle can cover all levels of the statistical business process (overall production process, specific business process, process cycle, activity).

  - There is close relationship with GSBPM phase 8 "Evaluate".

- Several GSBPM sub-processes can also be seen as impacting more or less directly with quality such as GSBPM "1.1 Identify needs", "2.1 Design outputs" or "6.2 Validate outputs".

Obviously quality management in official statistics is embedded in many parts of the organisation and can hardly be completely bundled in a horizontal function. Nevertheless if the goal of a model such as GAMSO is to address questions such as "How much is spent on quality management in a statistical office?" or "What capability architecture can support management of quality of in statistics?" the current model will most likely be insufficient.

As an illustration, a proposal for having a better model for quality management in GAMSO could be the following:

- Clear overlap between GSBPM overarching process and GAMSO corporate support activity on quality management. Keep one horizontal function for quality management covering "develop quality strategy and frameworks", "perform quality assessment". The name of the activity should be explicit (for example "Manage quality frameworks").

- Flag GSBPM sub-processes that play the most important role in quality management and structure them to enable a distinction of the quality management dimension from possible other aspects. For example

  - Specify needs is obviously important as it touches to definition of quality, for instance sub-process "1.3. Establish output objectives" includes *agreeing the suitability of the proposed outputs and their quality measures with users.* It could be renamed 1.3. Establish output quality to be unambiguously attached to quality management.

  - The Design phase is said *to specify all relevant metadata, ready for use later in the statistical business process, as well as quality assurance procedures.* But this is not isolated in the model, for example a sub-process on the design of quality metrics could be added which would

allow identifying unambiguously this activity as part of the quality management activity.

- In the "Analyse" phase, sub-process "6.2 Validate outputs" is *where statisticians validate the quality of the outputs produced, in accordance with a general quality framework and with expectations.* This could be seen attached to quality management as it is.

- The "Evaluate" phase clearly plays an important role in quality management as it closes the PDCA loop in the current model. Perhaps some specific details on quality improvement could be added and separated from other evaluations, for example "Evaluation of product quality", "Evaluation of process quality", "Plan quality improvement".

- Another possible improvement is to provide the possibility in GSIM to more explicitly identify quality metrics. It is understood that the same information may play different roles in different contexts and that quality-related information cannot always be tagged as such *a priori*. Nevertheless, GSIM defines a class "process output", which is described as possibly being a transformed output or a process metric. A proposal could be to explicit the possibility of having "quality metrics" as process output which would allow distinguishing this sort of information from the other process outputs in the model.

This sort of extensions would allow to more easily isolate activities and information related to quality management. Even if, as said above, quality could be seen as embedded in every part of an organisation, making quality a little more explicit in the model would bring the full range of advantages expected from statistical modernisation to the benefit of quality management, namely: Sharing of expertise and software, development of targeted standards, benchmarking, economies of scale, reduction of costs, etc.

3.2 Data protection

Protection of confidential information on individuals and organisations is a legal obligation for all statistical offices that are generally granted some privileges to collect and access unit level data. These privileges usually go together with some specific additional obligations to protect data beyond the basic privacy protection laws requirements. Trust of the general public and businesses in statistical offices relies among others on the belief that no unit-level information will ever be disclosed. Requirements in terms of data protection and security of statistical information are quite specific and are totally vital in the sector of official statistics.

In GAMSO data protection is addressed in several places

- In the "Corporate support" activity areas
    - "3.4 Manage IT" includes the management of the physical security of data.
    - "3.5 Manage statistical methodology" includes among others the management of confidentiality and the management of statistical disclosure control.
    - "3.6 Manage information and knowledge" includes among others the management of access rights.
- In the "Production" activity areas
    - GSBPM mentions in its possible overarching processes data management which is said to include *process-independent considerations such as general data security*.
    - GSBPM "6.4 Apply disclosure control" clearly deals with data protection as it covers activities carried out to ensure that disseminated data do not breach the appropriate rules on confidentiality.
- Some elements are not really visible such as:
    - The development and maintenance of security and data protection policies and procedures which is probably a part of the "Govern and lead" box of the "Strategy and leadership" activity area.
    - Some aspects can be related to "3.3 Manage human resources" such as culture management, internal communication, confidentiality agreements or trainings.

A solution for making data protection more visible and more consistent in the model could be to promote "develop and implement security, privacy and data protection control" as a separate activity in Corporate Support area including for instance the development and maintenance of security and data protection policies, legal and contractual issues, identity and access management, IT security audits, confidentiality protection and statistical disclosure control implementation and removing all remaining related elements in horizontal activities.

3.3 Standardisation

Standardisation is central to modernisation of official statistics because it is expected to make statistical processes more efficient and robust while at the same time allowing for a more flexible production of statistics. Standards are required to make process components interoperable and support the sharing and reuse of semantic assets, methodologies and software across processes and across organisations. These ideas are at the heart of current modernisation strategies and currently a lot of effort is spent in most statistical offices to support standardisation in various ways.

Standardisation currently appears in various places in GAMSO:

- In GAMSO "Govern and lead" activity area:
    - The "Strategy & leadership" activity mentions in its textual description "publish policies, guidelines and normative documents".
    - The activity "Manage strategic collaboration and cooperation" includes influencing statistical standards.
- In GAMSO "Corporate support" area, the activity "Manage information and knowledge" includes maintaining the policies, guidelines and standards regarding information management and governance.
- In GSBPM "Statistical framework management" is listed in possible overarching processes. This includes *developing standards, for example methodologies, concepts and classifications that apply across multiple processes*.
- Furthermore, GSBPM says that *design activities make substantial use of international and national standards, in order to reduce the length and cost of the design process, and enhance to comparability and usability of outputs. Organisations are also encouraged to reuse or adapt design elements from existing processes. Additionally, outputs of design processes may form the basis for future standards at the organisation, national or international levels.*
- Depending on the definition given to the notion of standard the build phase could also be considered as using or producing standards but this is not indicated in the specification.

A statistical standard is defined in the ESS as an approved normative document providing for common and repeated use by several actors rules, guidelines or characteristics for the development, production and dissemination of statistics. Standardisation activities will generally include the set-up and maintenance of a

catalogue of standards recommended for used within a certain scope. In the current model activities related to monitoring of standardisation initiatives, selecting relevant standards or evaluating standards and communication of additional requirements to standards bodies are not isolated. Having a more specific representation of these activities in the model would facilitate making comparison between organisations and sharing solutions across domains and processes.

Activities related to standardisation in a statistical office could cover the following:

- Manage and promote the portfolio of standards taking into account the lifecycle of standards. This includes:
    - Identification, evaluation and selection of potentially relevant standards.
    - Promotion of own approaches as recognised standards.
- Assess the fitness for use of standards, ensure representation in standard bodies, contribute to standardisation initiatives, channel requirements from implementation to maintainers of standards.
- Support standards implementation: Communication, training, support, software development.

Clearly some activities are more likely to be carried out horizontally at the level of the organisation while others might be process-specific. A proposal derived from these views and covering the various activities mentioned above could look like this:

- Horizontal activity dedicated to standardisation for instance "Develop, promote and manage statistical standards" covering the maintenance of the catalogue of standards and support to development of standards, support to implementation of standards, relation with relevant standardisation bodies.
- Explicit activities in production:
    - In the design phase: Include an explicit activity on the identification and selection of standards for the design of information and processes.
    - In the build phase: Include an explicit activity on selection of standard re-usable solutions implementing the production process.
    - In the evaluate phase: Include an explicit activity on the assessment of fitness for use of standards, and the reporting on requirements to existing standards or the identification of missing standards.

Such a solution would provide visibility to standards-related activities in businesses modelled according to GAMSO and provide all the associated benefits also to standardisation itself (e.g. benchmarking and sharing of solutions).

3.4 Innovation

Innovation clearly seems to be an area of focus in strategies for modernising official statistics. Activities related to the identifications of trends in technology, methodology or also the observation of competitors often seem to be carried out in a way or another by statistical organisations as well as activities related to evaluation of emerging approaches through prototyping and piloting. This type of activities could certainly benefit from sharing upfront investment and the related risks across partner organisations and this can be supported by providing distinct identity to the main innovation-related functions in business architectures for statistical offices. In GAMSO innovation is not really considered as a distinct field of activity and its relation to the overall statistical production process is not explicit. Some specific business functions related to innovation would find a natural place in the "Capability management" activity area in GAMSO but this in not strongly expressed neither in the structure of the model nor the text of the specification.

The notion of capability referred to in GAMSO is said to be the one of TOGAF explained in previous chapter and GAMSO says *they aim principally at promoting the re-use and sharing of infrastructure (statistical and technical).*The main goal of capability modelling in business architecture is to model what an organisation needs to do independently of particular organisational structures or configurations in terms of applications. A business capability can be defined as *"an ability that an organisation, person, or system possesses"*. Capabilities are typically expressed in general and high-level terms and typically require a combination of people, methods, processes, IT and standards. Business capabilities usually form the basis for further developing business architecture. They represent what the business does and are the starting point for the subsequent detailing of how the business should do what it does to achieve business outcomes. The “how” is frequently expressed in term of business process and activities.

It seems sensible to relate capability management to innovation because this is the place where:

- Capabilities required for achieving targeted long term business outcomes should be identified, and these capabilities are to be supported by proper, possibly innovative, configuration of people, methods, processes, IT and standards.

- Technological or societal evolutions can emerge and provide new business opportunities that translate to the availability of new capabilities.

In the current version of GAMSO the "Plan capability improvements" sub-activity mentions the identification of disruptions, which could be understood as covering at least some of the following types of activities:

- Watch and intelligence activities: Identification and analysis of trends in technology, methodology, market, etc.

- Prototyping & piloting activities, allocation of resources to experiments, setup of sandboxes, etc.

- Possibly other activities related to innovation management such as management of the cultural aspect of innovation, acquisition of specific resources, sharing of information or organisation of challenges and hackathons.

Innovation-related activities are carried out both at the level of an organisation through some form of cross-cutting research and at the level of particular processes where new ways of doing can emerge for various reasons. This is explicit in GAMSO where the description of the "Develop capability improvements" item tells us that c*apability improvements in the context of a single statistical business process are included in the Production activity area*. Making these activities appear distinctly in the GSBPM could allow connecting explicitly process level activities and organisation-wide cross-cutting activities related to capability management and innovation. A possible solution for better representing this in the production area of GAMSO could be to introduce an activity covering the consolidation of requirements for capability improvements in the Evaluate phase of GSBPM.

The main suggestions for integrating innovation in GAMSO would be the following:

- Make more explicit the role of capability management in innovation and clarify the scope of the notion of capability in relation with business architecture and application architecture.

- Make explicit in the "capability management" area activities related to research, intelligence and evaluation activities for business methods, technologies, standards, etc.

- Introduce activities related to expression of requirements for capability improvements in the production area, for instance in the Evaluate phase of the GSBPM.

4 Conclusions

GAMSO aims to describe and define all the activities that take place within a typical statistical organisation. The model intends to provide a common vocabulary and framework to support international collaboration activities, particularly in the field of modernisation.

GAMSO is a relatively recent initiative and was conceived as an add-on to GSBPM. While it is appreciable that its development did not impact GSBPM which is a much more widely used specification at the moment, this development approach by essence does not allow removing all inconsistencies and overlaps between GAMSO and GSBPM. Furthermore, questioning the structure of GAMSO also brings questions on the structure of GSBPM, considering the landscape of business modelling frameworks inside and outside of the sector of official statistics.

The relevance of a model that covers completely statistical organisations beyond pure production activities is recognised and the development of models going in this direction seems to be clearly a need when aiming at international collaboration for modernisation but also when performing process and quality improvements in National Statistical Organisations (NSO). The need to complement these generic frameworks with artefacts that guide modernisation of NSOs was at stake in the ESS with the development of the ESS EARF and the BCM.

Even if it is clear that a model such as GAMSO is the result of significant and consensual process involving many partners worldwide and represents a compromise among many different points of views, GAMSO is actually at a turning point where it has to demonstrate its value with respect to GSBPM for statistical organisations that have concentrated for long on statistical production and its ability to articulate with new approaches emerging in NSOs like EA and BPM approaches.

The following tracks for improvements are suggested in this context:

- Overlaps between GAMSO and GSBPM should be avoided, in particular considering GSBPM overarching processes. The current GAMSO specification attempts to provide some hints on how to tackle this issue but confusion seems to remain. It looks natural in a longer term that both models are merged and integrated and overarching processes of the GSBPM be replaced by the more detailed models proposed in GAMSO. The development of a consistent model for the whole statistical organisation would most likely bring changes current versions of both GAMSO and GSBPM.

- A better alignment in terminologies used in GAMSO and GSBPM, with GSIM and even more with cross-industry frameworks for enterprise architecture or

business process management should be aimed at. The conceptual base used in GAMSO/GSBPM should be more explicit and for instance could make better use of GSIM as a meta-model. In this view it could be proposed to requalify the models as business function models rather than activity or process models. The use of terms capability, function, service, process, and activity should be as far as possible consistent with EA and BPM cross-industry standards.

- Generic corporate support functions seem to be over-represented compared to more specific support functions that could be identified in strategic vision documents. A suggestion is to group generic corporate functions into a category such as "General corporate support" and more specific horizontal functions, as encountered in strategic vision documents and modernisation programmes, in another category that could for instance be labelled "Cross-domain statistical support". This category could cover for example domains used as illustration in this document: development and management of quality, information security and data protection, standardisation and innovation.

First attempts to implement GAMSO in the context of European Statistical System where not so successful. These attempts notably concerned the structuration of the CROS portal according to GAMSO, and the mapping with the ESS EARF and in particular the BCM. It is believed that a model such as GAMSO could in principle serve as a cornerstone for the modernisation of official statistics worldwide but experience gathered through these first concrete implementation efforts pointed towards the need for some improvements in order to enable a wider promotion as a reference model. The first revision cycle of GAMSO has started and it is hoped that this article can provide some useful input to this work.