



# EUROPEAN CONFERENCE ON QUALITY IN OFFICIAL STATISTICS 2024 ESTORIL - PORTUGAL



EUROPEAN CONFERENCE ON  
QUALITY IN OFFICIAL STATISTICS  
2024 ESTORIL - PORTUGAL

## SESSION 3 – GEOSTATISTICS I

Geospatial Enhancements in Statistical Production at Statistics Portugal

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# Geospatial Enhancements in Statistical Production at Statistics Portugal

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## Documenting the statistical business process in Statistics Portugal

### The Statistical Production Process Manual (MPPE) – 3<sup>rd</sup> edition (2020)

Identificação de necessidades Specify needs	Especificações Design	Desenvolvimento Build	Recolha Collect	Processamento Process	Análise Analyse	Divulgação Disseminate	Avaliação Evaluate
1.1 Identificar necessidades Identify needs	2.1 Especificar resultados Design outputs	3.1 Realizar ou desenvolver suportes para recolha Reuse or build collection instruments	4.1 Criar universos, bases de amostragem e selecionar amostra Create frame and select sample	5.1 Integrar microdados Integrate data	6.1 Preparar resultados Prepare draft outputs	7.1 Atualizar sistemas de difusão Update output systems	8.1 Reunir elementos para avaliação Gather evaluation inputs
1.2 Confirmar necessidades Confirm and confirm needs	2.2 Especificar conceitos, classificações e variáveis Design variable descriptions	3.2 Realizar ou desenvolver suportes para tratamento e análise Reuse or build processing and analysis components	4.2 Preparar recolha Set up collection	5.2 Classificar e codificar Classify and code	6.2 Validar resultados Validate outputs	7.2 Elaborar produtos de difusão Produce dissemination products	8.2 Avaliar Conduct evaluation
1.3 Estabelecer objetivos Establish output objectives	2.3 Especificar recolha Design collection	3.3 Realizar ou desenvolver suportes para difusão Reuse or build dissemination components	4.3 Executar recolha Run collection	5.3 Validar microdados Review and validate	6.3 Interpretar e explicar resultados Interpret and explain outputs	7.3 Divulgar produtos de difusão Manage release of dissemination products	8.3 Estabelecer plano de ação Agree an action plan
1.4 Identificar conceitos Identify concepts	2.4 Especificar universos, bases de amostragem e amostra Design frame and sample	3.4 Configurar fluxos Configure workflows	4.4 Finalizar recolha Finalize collection	5.4 Editar e imputar Edit and impute	6.4 Gerar e aplicar confidencialidade Apply disclosure control	7.4 Promover produtos de difusão Promote dissemination products	
1.5 Avaliar informação disponível Check data availability	2.5 Especificar tratamento e análise Design processing and analysis	3.5 Testar sistemas de produção Test production systems		5.5 Calcular variáveis derivadas e novas unidades Derive new variables and units	6.5 Finalizar resultados Finalize outputs	7.5 Gerir apoio a utilizadores Manage user support	
1.6 Preparar processo produtivo Prepare and submit business case	2.6 Especificar sistemas e fluxos de produção Design production systems and workflow	3.6 Testar processo de produção Test statistical business process		5.6 Calcular ponderadores Calculate weights			
		3.7 Finalizar sistemas de produção Finalize production systems		5.7 Calcular agregados Calculate aggregates			
				5.8 Finalizar o processamento Finalize data files			

Statistical Business Process Handbook (e.g., reference to ISO 9001, ISO 27001)

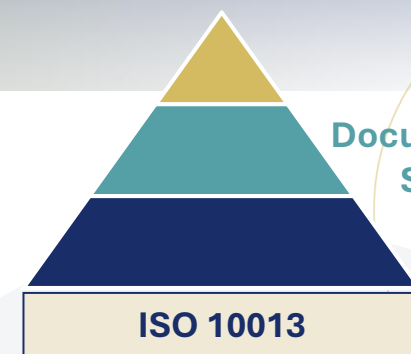


Adopted model (= GSBPM)



Business process matrix  
Main tasks of each sub-process  
(120 tasks in total)

The model is aligned with the GSBPM (V. 5.1, 2019) with the addition of one more operational layer - the business process matrix at the task level



- Phase and sub-process description
- Input data/outputs for the sub-processes and specific documentation to be produced
- Tasks involved, including chronological order, responsible parties and other stakeholders, as well as practical applicability according to the type of statistical activity, type of data source and type of statistical results
- The main tasks are linked to the planning IT application (SIGINE)



## Phase (1<sup>st</sup> layer)

### 2.1 Phase 1 – Specify Needs

#### Organisation and description of the phase

Phase 1 – Specify Needs					
Subprocess 1.1	Subprocess 1.2	Subprocess 1.3	Subprocess 1.4	Subprocess 1.5	Subprocess 1.6
Identify needs	Consult and confirm needs	Establish output objectives	Identify concepts	Check data availability	Prepare and submit business case
1 task	1 task	1 task	1 task	2 tasks	5 tasks

This phase is the first of the statistical production process, with most subprocesses and respective tasks being

associated with the analysis of the feasibility identified and substantiated information needs

These preliminary characterisation tasks are

However, the assumptions of these activities

to methodological changes that were the basis

The objective of this phase is to support decision

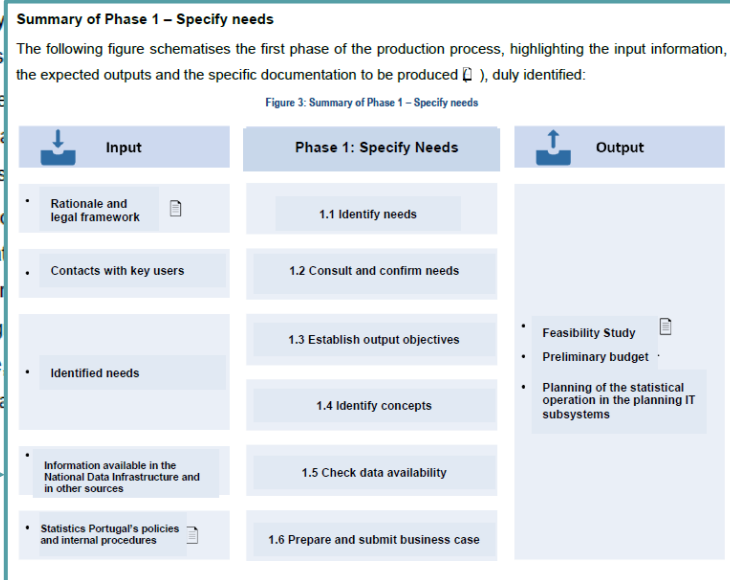
the implementation of a new statistical operation

dialogue between organic units, culminating in

proposal for a new statistical operation, design

the "Feasibility Study" is preliminary in nature

the main technical and resource components



Summary of the  
phase with  
input and  
outputs

## Sub-process (2<sup>nd</sup> layer) and Task (3<sup>rd</sup> layer)

### Subprocess 1.1 - Identify needs

The "Identify needs" subprocess is the first subprocess associated with the design of a statistical operation, having identified a relevant task to characterise it. This is a task prior to the conduct of a new statistical operation, comprising the contextualisation of the operation, namely regarding the legal framework, as well as the identification of the main users and their needs. The output of this task constitutes information to be integrated in the "Feasibility Study" (implemented in subprocess 1.6 - "Prepare and submit business case") and later in the Methodological Document (implemented in subprocess 3.7 - "Finalise production systems").

This subprocess is entirely associated with new statistical operations.

Matrix structure  
at the task level

Table 2: Main tasks of the "Identify needs" subprocess

Task no.	Task description	Responsible	Stakeholder	Applicability				Statistics: Primary/ Derived	SIGINE Task Code	SIGINE task	Notes and remarks
				Statistical operations:		Administrative source	Statistics:				
				New/ Ongoing	Exhaustive						
1	Define the context of the statistical operation, including the rationale and legal framework, the information needs, as well as the main users	DM		New	Yes	Yes	Yes	Primary statistics Derived statistics	351	DESIGN - Definition and planning	<p>Information to be included in the feasibility study and methodological document</p> <p>Categories associated with information needs (point III.2 of DMET): legal obligations; direct request for information; outputs of user needs surveys; information needs of other statistical operations; specific contract/protocol with an external party; other.</p> <p>Categories associated to the main users (point IV.5 of DMET): users of the National Statistical System; other national users; EU users and other international users.</p> <p>Task related to the definition of objectives (subprocess 1.3) and the design of outputs (subprocess 2.1)</p>



## Geospatial development in the statistical production matrix (2.0 version)

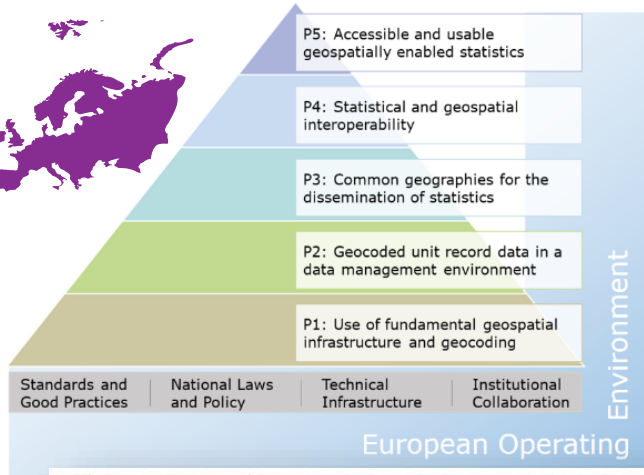
- 8 out of the mapped 120 tasks (6.67%) included notes and remarks embodying geospatial aspects, namely related to the **Geographic Information Infrastructure (IIG)** capabilities and functional requirements:

Task no. 11	Task no. 15	Task no. 17	Task no. 30	Task no. 31	Task no. 32	Task no. 44	Task no. 51
Plan the statistical operation in the supporting IT systems	Identify the methods and modes used and functional requirements for collecting and receiving micro-data	Specify the functional requirements for the integration of micro-data in the NDI	Specify the functional requirements for integrating the data in the DW and for supporting data processing and analysis	Specify the functional requirements for disseminating statistical information	Specify the requirements of the IIG to meet production needs (e.g., geocoding)	Enable the IIG according to the specified requirements	Select the sampling frame from the specified reference frame and analyse its quality
1.6 - Prepare and submit business case	2.3 – Design collection	2.3 – Design collection	2.5 - Design processing and analysis	2.1 – Design outputs	2.6 – Design production systems and workflows	3.4 – Configure workflows	3.4 – Configure workflows



## Preliminary results from the geospatial enhancements in the MPPE update

**(2024)** In the **task matrix**, resulting from structural changes, adding a new lens and implementing innovations



GSGF Principle	Requirement			Recommendation		
	Nr.	Name	Nr.	Name	Description	
P 1	1.1	Use data from National Spatial Data Infrastructures	1.1.1	Use authoritative and INSPIRE compliant geospatial data and services	Any geospatial information used to geospatially enable or display statistical content for geocoding, or to produce statistical content, should preferably be built on data and services.	
P 1	1.1	Use data from National Spatial Data Infrastructures	1.1.2	Implement unique identifiers and lifecycle information	Following INSPIRE and UN-GGIM: Europe Core Data specifications, the use of information is recommended, in order to describe the temporal characteristics (between versions). Use of unique and persistent identifiers and lifecycle information, thus facilitating integration of geospatial and statistical information.	
P 1	1.1	Use data from National Spatial Data Infrastructures	1.1.3	Define roles and responsibilities of organisations involved in production of geospatial information	The different roles and responsibilities of various organisations involved in production of geospatial information should be defined through formal protocols, agreements and Memorandum of Understanding. Custodian should identify the most relevant stakeholders for a geospatial data source. Multi-organisational statistical integration within the design and production of statistical indicators for monitoring and evaluation of progress and methodology. Eurostat	
P 1	1.1	Use data from National Spatial Data Infrastructures	1.1.4	Ensure data is available in a machine-readable format	Geospatial information should be available in a machine-readable format, such as GeoJSON, KML, or Shapefile, to facilitate integration with other data sources and systems.	

GSGF Principles						
	Total	1	2	3	4	5
<b>Requirements</b>	<b>18</b>	3	5	2	4	4
<b>Recommendations</b>	<b>66</b>	12	20	9	13	12

Task no.	Task description	Responsible	Stakeholder	Applicability				Statistics: Primary/ Derived	SIGINE Task Code	SIGINE task	Notes and remarks	GSBPM Phase	GSBPM Subprocess
				Statistical operations:		Survey	Administrative source						
				New/ Ongoing	Exhaustive								

**129 Tasks**



## Preliminary results from the geospatial enhancements in the MPPE update

- 45 out of the mapped 129 tasks (34.9%)

### Principle 1

- 23 tasks

#### Recommendations:

- 1.1.1
- 1.1.2
- 1.1.3
- 1.1.4
- 1.2.1
- 1.2.2
- 1.2.4
- 1.3.1
- 1.3.2
- 1.3.3

### Principle 2

- 26 tasks

#### Recommendations:

- 2.1.1, 2.1.2,  
2.1.3, 2.1.4
- 2.2.1, 2.2.2,  
2.2.3
- 2.3.1, 2.3.3,  
2.3.4, 2.3.5,  
2.3.6
- 2.4.1, 2.4.2,  
2.4.3
- 2.5.1, 2.5.2

### Principle 3

- 9 tasks

#### Recommendations:

- 3.1.1
- 3.1.2
- 3.1.3
- 3.1.4
- 3.1.5
- 3.1.6
- 3.2.1
- 3.2.2

### Principle 4

- 6 tasks

#### Recommendations:

- 4.1.3
- 4.1.4
- 4.2.1
- 4.2.2
- 4.2.3
- 4.3.1
- 4.4.2
- 4.4.3

### Principle 5

- 7 tasks

#### Recommendations:

- 5.2.1
- 5.2.4
- 5.3.1
- 5.4.2
- 5.4.4

### All 5 Principles

- 1 task (1.1 Identify needs)
- 2 tasks (1.6 Prepare and submit business case)
- 1 task (3.6 Test statistical business process)
- 2 tasks (3.7 Finalise production systems)
- 1 task (6.2 Validate outputs)





## Main conclusions

- More extensive and detailed geospatial enhancements in the MPPE
- Develop and document considerations on the geospatial (data) requirements and technical specifications (e.g., administrative data and emerging data sources)
- Define overarching quality management activities handling the geospatial components across the statistical production process
- Transpose the Requirements and Recommendations and the supporting materials of GSGF Europe to the national case (e.g., geospatial indicators and assessing the statistical-geospatial maturity level)

## Future work

- Ongoing development of the update and enhancement of the MPPE with formal geospatial considerations across the different statistical operations (e.g., lessons learned)
- Guiding documentation and related in-house materials for standardised geospatial statistics and moving forward with the GSGF Europe implementation (e.g., improvement actions)



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