

Fundamentals of statistical business processes and implementation of GSBPM in TurkStat



December 7-8th, 2017, Ankara

We produce statistics, do we know?

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



These questions were our vital questions and;

- Streamlining the statistical production system has become one of the most important objectives in TurkStat.
- We realised the statistical production system entails a well structured institutional architecture which encompasses the whole organization, the strategy, products and services, IT systems and processes.
- Generic Statistical Business Process Model (GSBPM) has been adopted as a reference model for this purpose and a national version (TurkStat Statistical Business Process Model) has been developed. The model is the basis framework for ongoing process modeling and standardization.

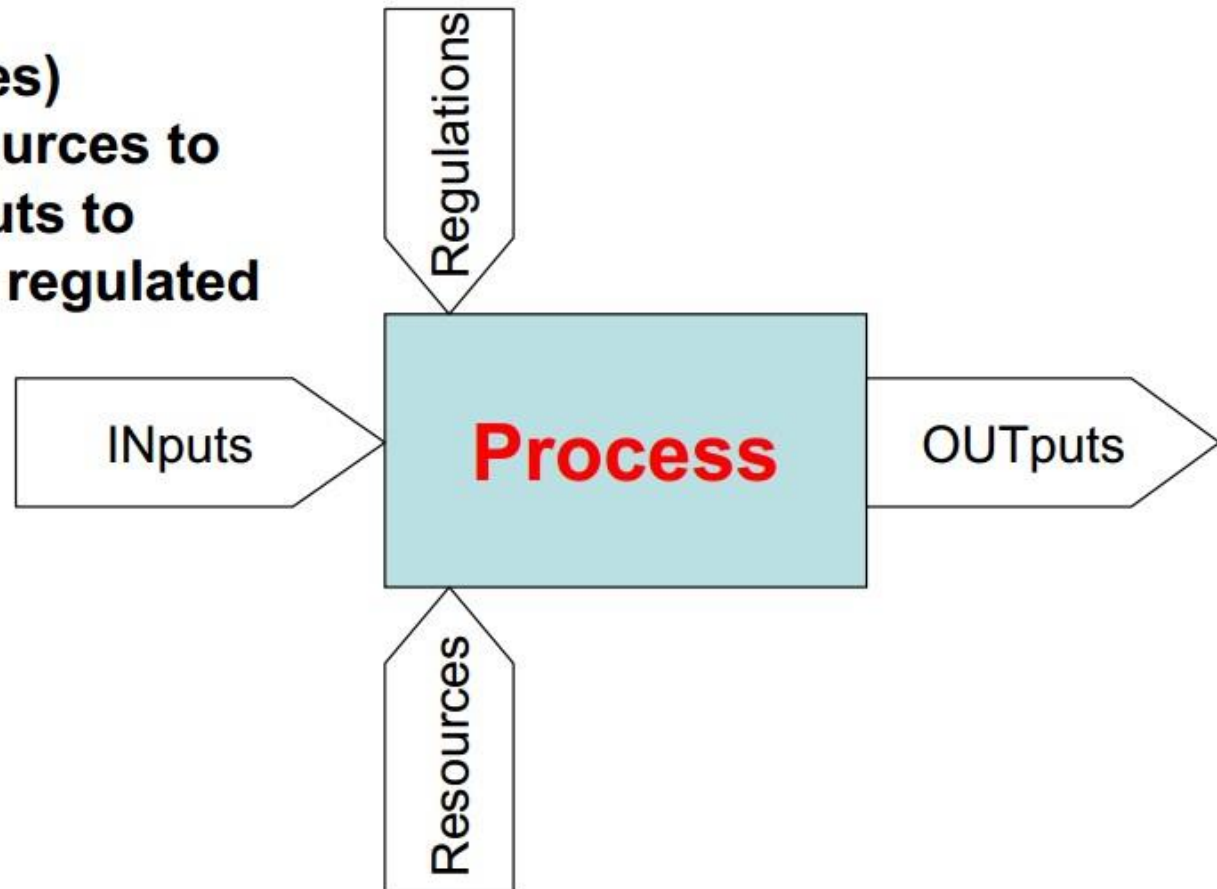
What is a Business Process?



A business process is anything that happens within a company as a collection of related and structured activities that work together to produce a desired service, product or result. Any transaction, order, shipment, interaction or exchange within a company or with customers is made up of many processes.

Process:

= any activity
(set of activities)
that uses resources to
transform inputs to
outputs in the regulated
environment

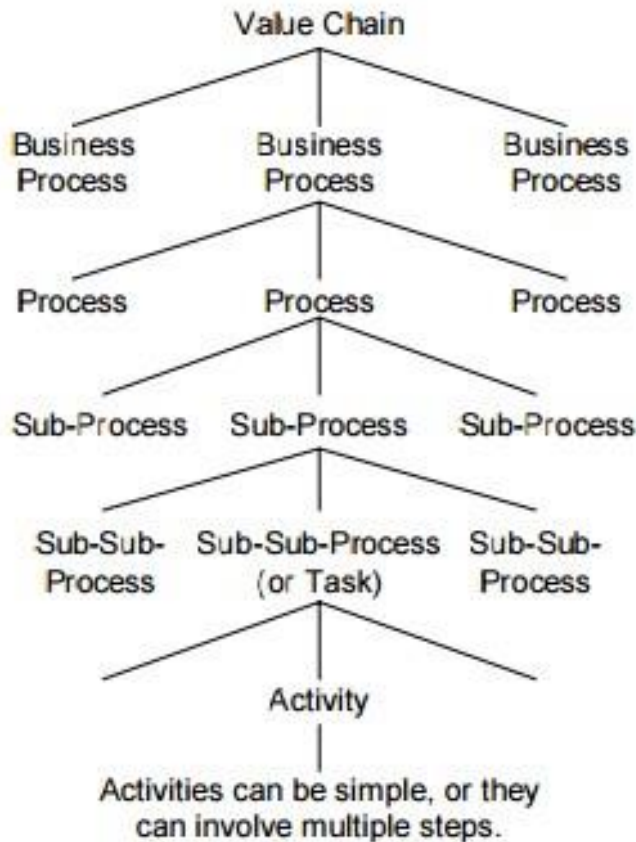


What is a Business Process?



- In order to improve a process, the process must first be identified and modelled so that it can be analysed.
- To identify a process a company needs to work out who is involved, what technology is used, where the process begins and ends and who is impacted by the process.

Business Process Hierarchy



A value chain usually describes a major line of business. An organization has from one to a few value chains.

A value chain is usually decomposed into from 3 to 7 business processes.

Depending on the nature of the business process, it can include a few dozens of processes.

Processes usually contain from 3 to 7 sub-processes.

Depending on the nature of the sub-process, it many contain sub-sub processes and even sub-sub-sub processes to any arbitrary depth. (Sometimes called tasks to simplify things.)

Activities are the lowest level process we show on our diagrams. They are, in essence, the smallest sub-process we want to describe.

Process oriented organization



Process based organizations are different from traditional organizations in several key ways:

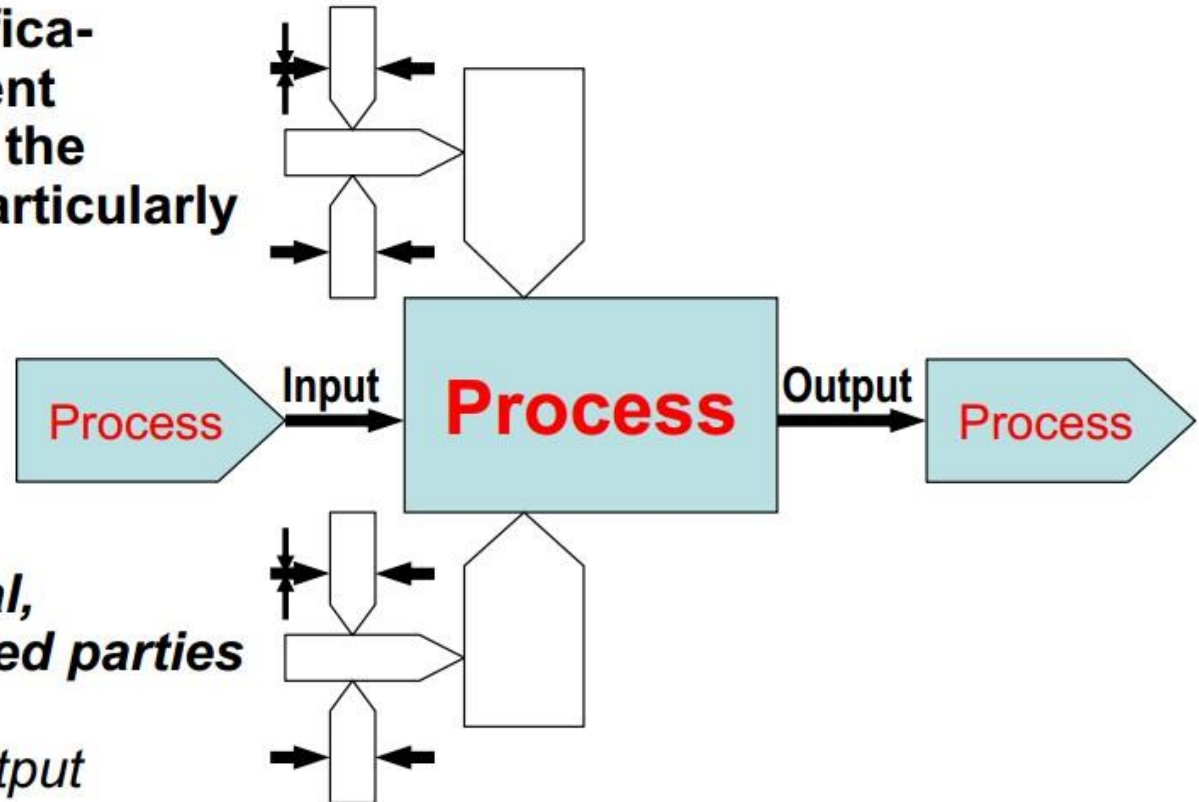
- They design and manage **end to end** business processes rather than tasks
- They measure and manage **process level results** instead of departmental efficiency
- They think in terms of **customer goals** instead of localized functional goals

In such organizations business processes are the central point. From a process oriented perspective, outputs flow between processes, not between organizational units, since output measurement also relates to the processes

Process approach:

= systematic identification and management of the processes in the organisation and particularly of the **interactions** between such processes

*Customers (external, internal) or interested parties generally = the key
their role re input, output*



Process approach in national documents

EFQM / CAF ... assume - you implemented process approach

EFQM - Criterion 5

how organisation **designs, manages and improves its processes,** products and services **to generate increasing value** for customers and other stakeholders.

CAF - Criterion 5

how organisation **designs, manages, improves and develops its processes** in order to innovate and support its policy and strategy and fully satisfy, and **generate increasing value** for its customers and other stakeholders.

Process approach in national documents

QMS ISO 9001 ... mandatory introduces process approach!

The organisation shall:

identify the processes needed for the QMS; determine the sequence and interaction of these processes; determine criteria and methods needed to ensure that both the operation and control of these processes are effective; ensure the availability of resources and information necessary to support the operation and monitoring of these processes; monitor, measure and analyse these processes; implement actions necessary to achieve planned results and continual improvement of these processes.

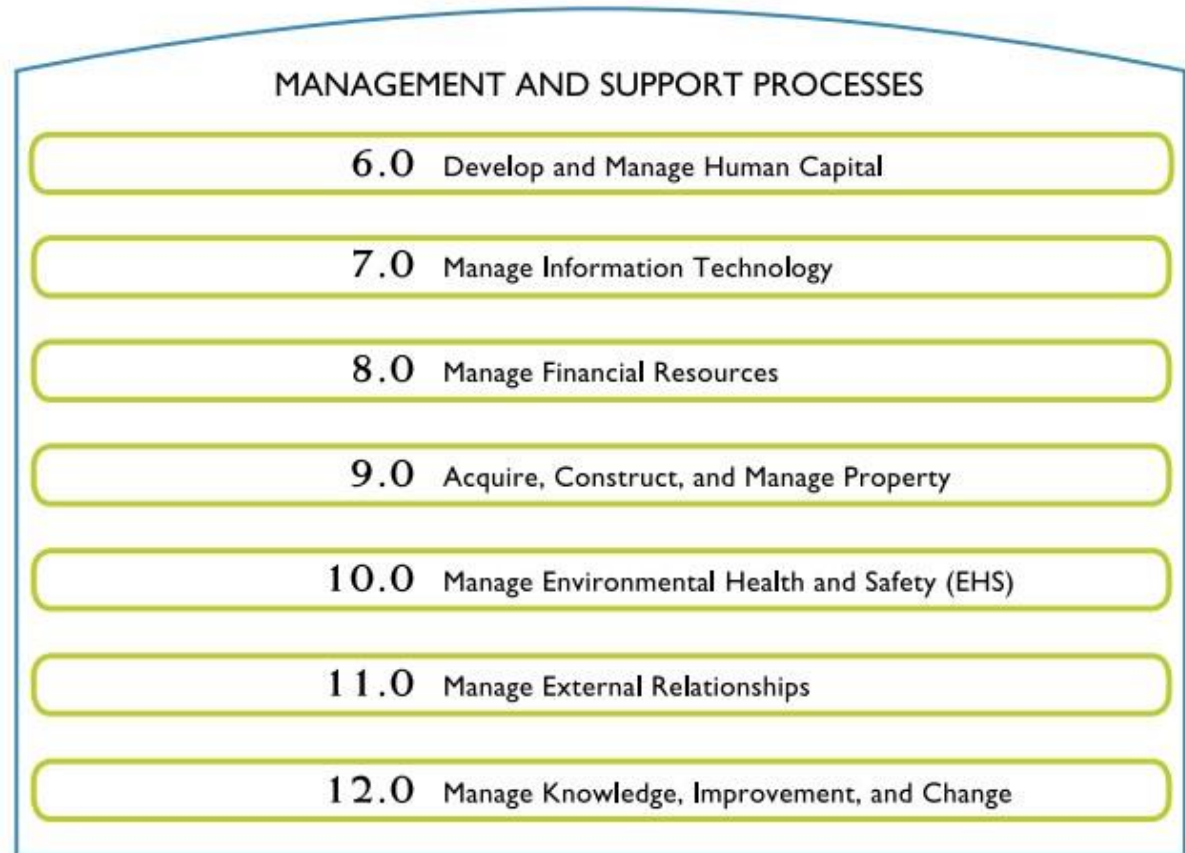
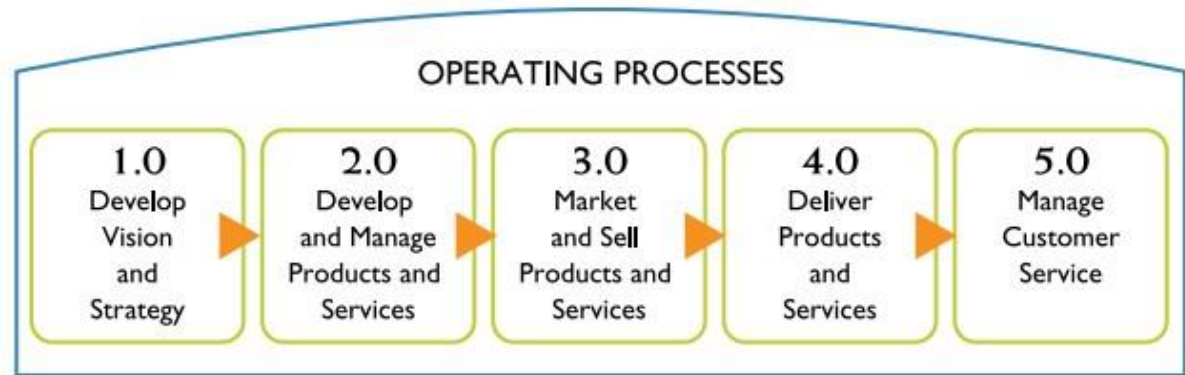
Process approach in national documents

The European Statistics Code of Practice ... assumes - you implemented process approach

Statistical Processes

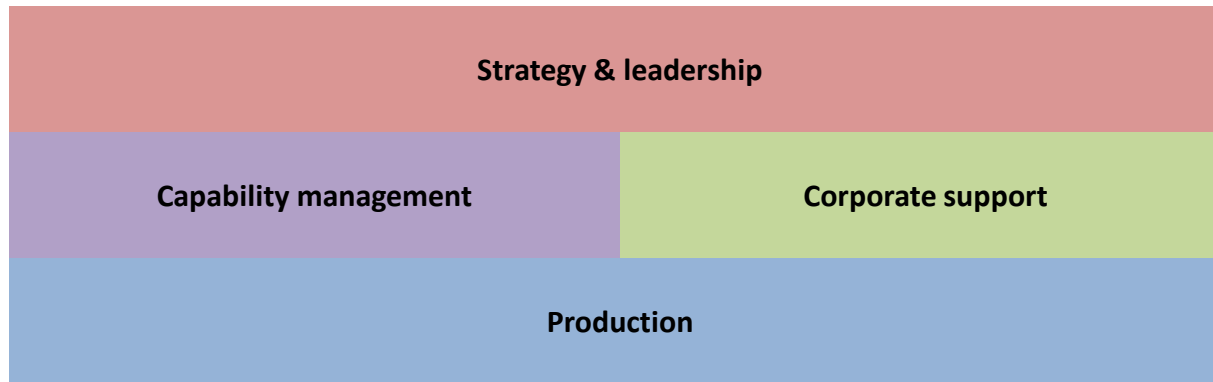
European and other international standards, guidelines and good practices are fully observed in the **processes** used by the statistical authorities **to organise, collect, process and disseminate** European statistics. The credibility of the statistics is enhanced by a reputation for good management and efficiency. The relevant aspects are sound **methodology** (P-7), appropriate statistical **procedures** (P-8), non-excessive **burden on respondents** (P-9) and **cost** effectiveness (P-10).

Classification of Processes (General)



Classification of Processes

GAMSO (Generic Activity Model for Statistical Organisations)



Structure

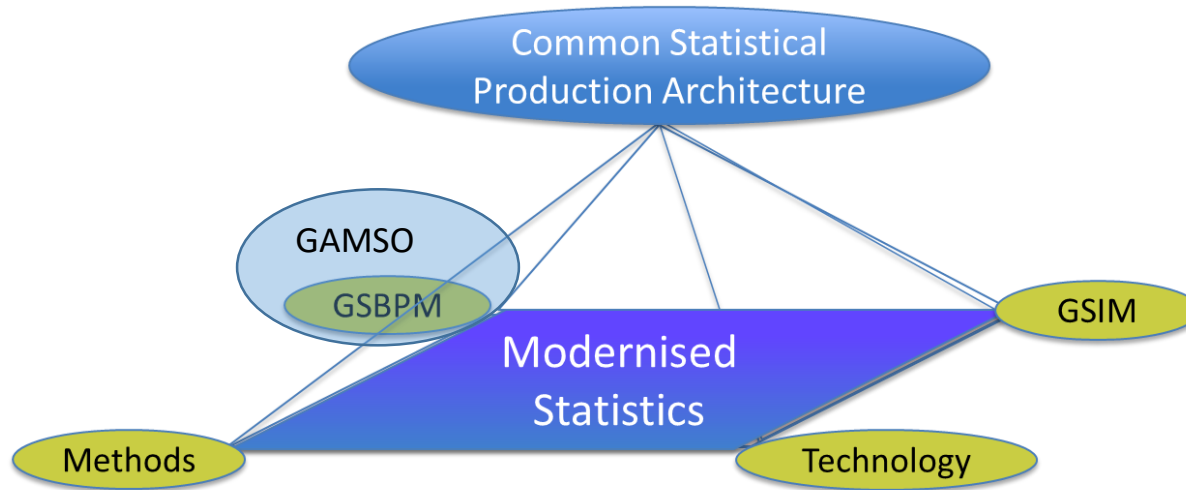
The GAMSO comprises three hierarchical levels.

The top level comprises four broad activity areas: *Strategy and leadership*, *Capability management*, *Corporate support* and *Production*.

The second level of *Strategy and leadership*, *Capability management* and *Corporate support* are sub-activities.

The third level is a textual description of the second level.

The *Production* activity area corresponds to the GSBPM v5.0 where it is described in detail. The over-arching GSBPM processes (quality and metadata management) have a cross-cutting nature and influence GAMSO in different layers.



The position of the GAMS0 in relation to the other models and frameworks needed for statistical modernisation.



Why business processes for statistics production?

- “Industrialisation” and the need for a strategic focus on statistical business processes
- To be able to review statistical business processes (SBPs) at a strategic level in order to – determine their fitness for purpose & value add – improve, integrate, reuse, transform, industrialise, standardise, harmonise
- Each SBP must be described (including modelled) in a manner which facilitates comparison with other SBPs (locally and internationally)
- In order to facilitate standardisation and reuse, SBPs should be described independently of the statistical methods and IT tools currently used to perform them.

Why business processes for statistics production?



Before



After

Need for a model : GSBPM

- To define, describe and map statistical processes in a coherent way
- To standardize process terminology
- To compare / benchmark processes within and between organisations – This facilitates collaboration.
- To identify synergies between processes
- To inform decisions on systems architectures and organisation of resources

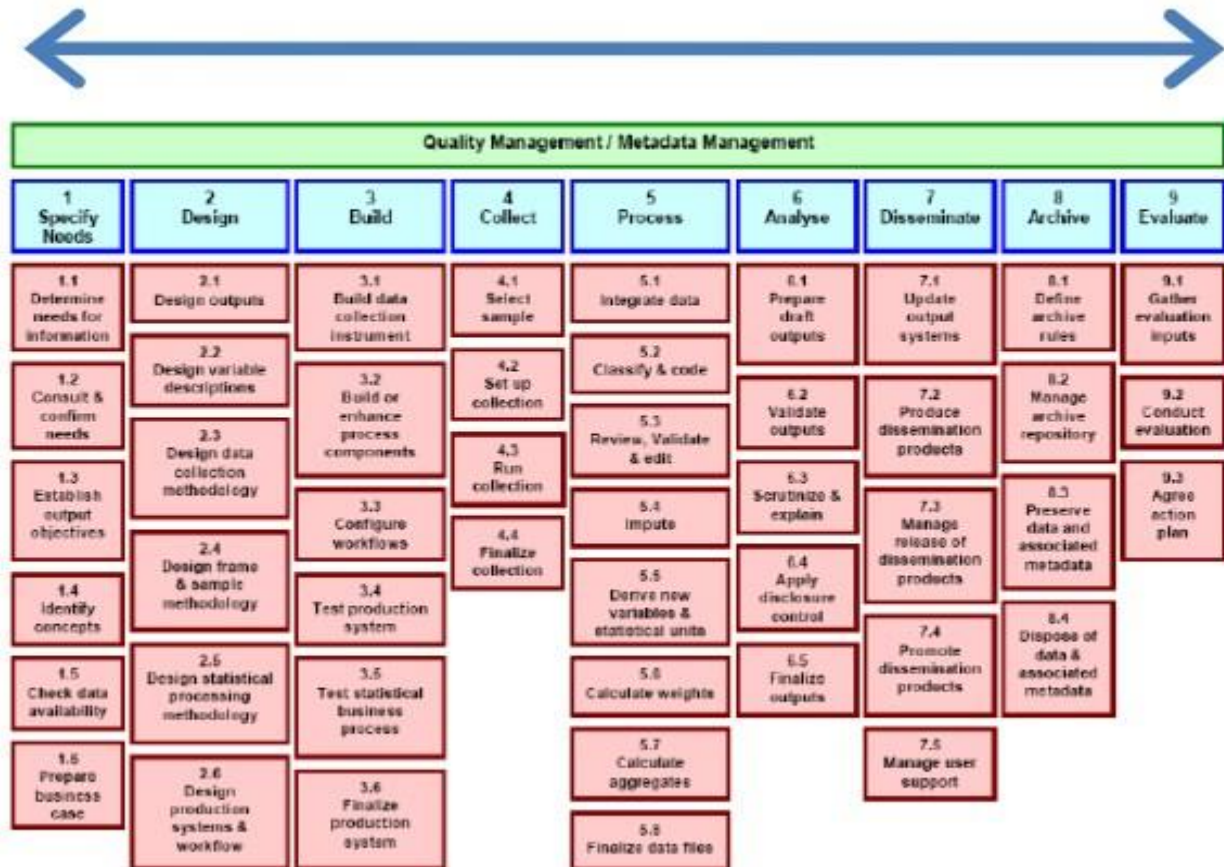
Process

(statistical business process)

Phases

Sub-processes

(Descriptions)



NSO's and GSBPM

- agencies that have adopted GSBPM as is,
- agencies that adopted a version of GSBPM that fits with their agency,
- agencies that have an existing process model that can be mapped to GSBPM
- agencies that do not have an existing process model.

TurkStat has a national version of GSBPM

TurkStat Business Process Model

1.Specify Needs	2.Design	3.Build	4.Collect	5.Process	6.Analyse	7.Disseminate
1.1.Determine need for information	2.1.Design statistical products and outputs	3.1.Build and enhance production system components	4.1.Establish frame and registers, select sample	5.1.Clasify and code	6.1.Evaluate the information for its effect	7.1.Update dissemination systems
1.2.Consult and confirm need	2.2.Design frame, register and sample methodology	3.2.Integrate production system with other systems	4.2.Set up collection	5.2.Micro-edit	6.2.Produce statistics	7.2.Produce dissemination product
1.3.Establish output objectives	2.3.Design data collection methodology	3.3.Test production system	4.3.Run collection	5.3.Macro-control	6.3.Quality assure statistics	7.3.Manage publishing for dissemination product
1.4.Check data availability	2.4.Design process and analysis methodology	3.4. Finalise production system	4.4.Finalise collection	5.4.Imputation	6.4.Examine and evaluate statistics	7.4.Manage user demands
1.5.Determine business plan	2.5.Design production system and workflows			5.5.Calculate weights and derive variables	6.5.Prepare statistics for dissemination	
					6.6.Finalise content	

Business Process in TurkStat

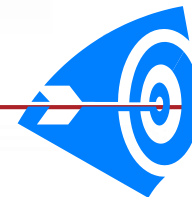
GSBPM has been adopted as a reference model to bring together the metadata that get created in all phases of production. A project started in 2010 in TurkStat to define the processes for all statistical products produced in TurkStat.

A national version has been developed as a draft.

Business Process in TurkStat

And also, In 2012, a new organisational structure formed within the context of the GSBPM was implemented in TurkStat.

New departments were established and the functions of some of the existing ones changed after the reorganisation.

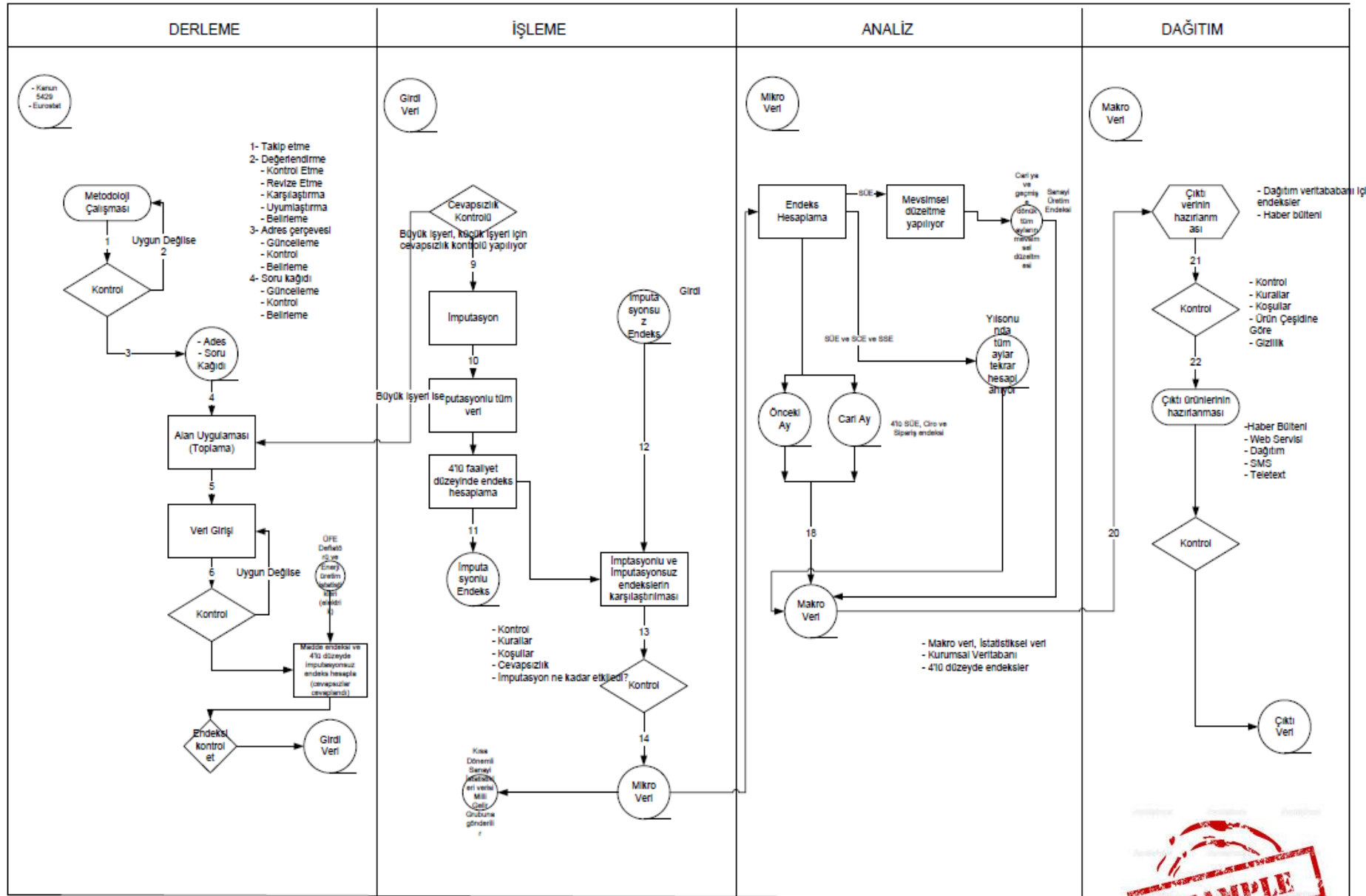


Before Model :

- **Pilot study** : In order to specify the processes in TurkStat, four main operational processes were analysed first (collect, process, analyse, disseminate) :

“Short Term Industrial Statistics, Labor Force Statistics, Crop Production Statistics, Producer Prices, Consumer Prices”





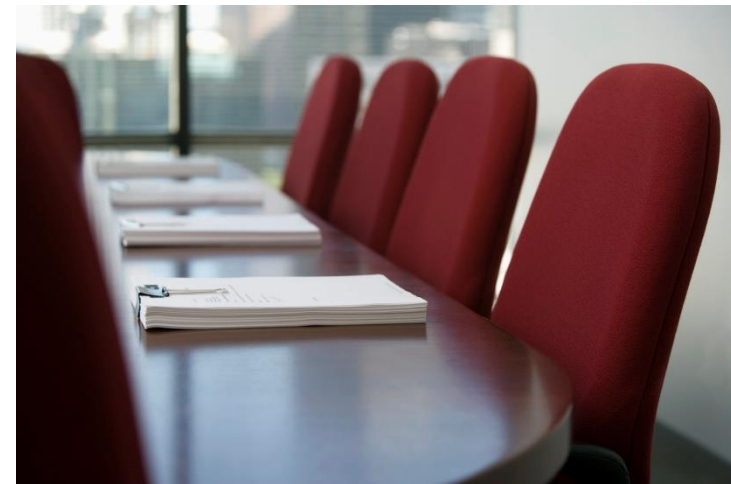
- Process components are determined and an Excel form (process card) prepared

1-Product Name	2-Job Step/Activity	3-Input	4-Supplier of Input	5-Output	6-User of Output
7-Executer Unit (of job step/activity)	8-Executer Positions (of job step/activity)	9-Number of Executors (of job step/activity)	10-Duration (Min., Max., Avg.) (of job step/activity)	11-Realization Period (of job step/activity)	12-Systems (supporting IT tools)

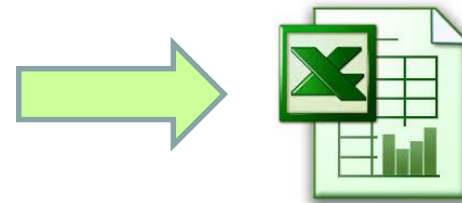
An example of Excel prepared for meetings



- Meetings with producers
 - Approximately 8 months
 - Face to face with 38 groups under 13 departments
 - 238 Excel sheets
 - 20756 job steps



An example of Excel form collected for a product



After meetings with producers;

- Approximately 238 Excel sheets (that means 238 product/service)
- 20756 job steps



The draft model

A “draft” model has been prepared from;

- GSBPM
- NSO samples
- Results of pilot study
- Results (experiences) of the meetings

The draft model

- **Level 1, 7** phases of the statistical business processes as follows: 1.Specify needs, 2.Design, 3.Build, 4.Collect, 5.Process, 6.Analyse, 7.Disseminate.
- **Level 2, 33** sub processes within each phase.
- **Level 3, 106** sub sub processes within each sub process.
- **Level 4,** activities/job steps under sub-sub processes.

1.Specify Needs	2.Design	3.Build	4.Collect	5.Process	6.Analyse	7.Disseminate
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Working with the “Model” : Determining which activity takes place in which 3th level process

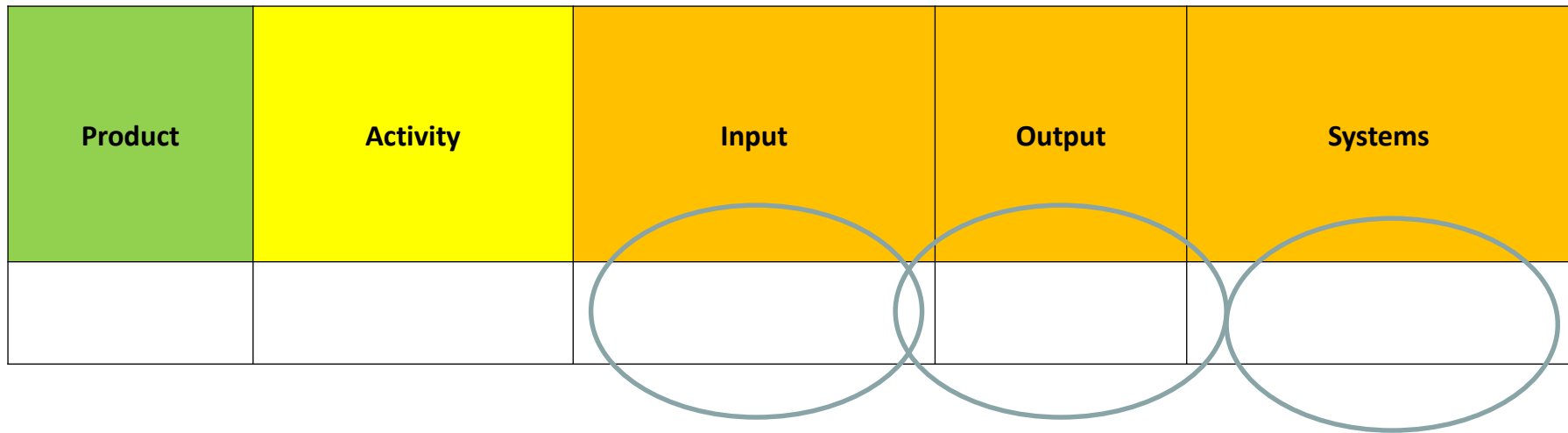
Product	Model No_Level 3	Activity
Population And Housing Census	5 Process	Cross checks are made for the related questions of the questionnaire
	5.2.Micro-edit	
	5.2.1.Run automated control and correction routine	

But, to decide 5.2.1

Is it understandable from only “activity” ?

Product	Model No_Level 3	Activity
Population And Housing Census	5.2.1.Run Automated ???? control and correction routine	Cross checks are made for the related questions of the questionnaire

We must also look at...



5.Process

5.2.Micro-edit

5.2.1. Run automated control and correction routines

Inputs

1. Population and Housing Census Database
2. The Central Civil Registration System (MERNIS)
3. Address Based Population Registration Database (ADNKS)
4. Administrative Records of Social Security Institution and Turkish Labor Agency

Activities

1. Cross checks are made for the related questions of the questionnaire.
2. Controls related to the building and housing section are done.
3. Controls related to the age and gender section are done.
4. Controls related to the migration section are done.
5. Controls related to the marital status section are done.
6. Controls related to the fertility section are done.
7. Controls related to the mortality section are done.
8. Controls related to the disability section are done.
9. Controls related to the education section are done.
10. Controls related to the labour force section are done.

Outputs

1. Inconsistent and inaccurate records
2. Building and housing part edit results
3. Age and gender edit results
4. Migration part edit results
5. Marital status part edit results
6. Fertility part edit results
7. Mortality part edit results
8. Disability part edit results
9. Education part edit results
10. Labour force part edit results

Previous Process

4.4.2. Prepare data for processing



Resources

Human Resources	Expert, Statistician, Computer Operator
Fiscal Resources	-
System Tools	SAS, Excel
Suppliers	Population And Migration Statistics Group, Information Technologies Department
Users	Population And Migration Statistics Group

Some analyses

- ✓ Product Analyse
- ✓ Data sources Analyse
- ✓ Relationships Analyse
- ✓ Duration Analyse
- ✓ Systems Used
- ✓ Input/Output Analyse



Some results

- Change in organisational structure
- Some special workflows
 - Dissemination
 - Census
 - Frame for the surveys
- The list of statistics produced
- Classification of activities, services and products
[\(CSA\)](#) [\(TÜHFS\)](#)
- Coding of activities, services and products

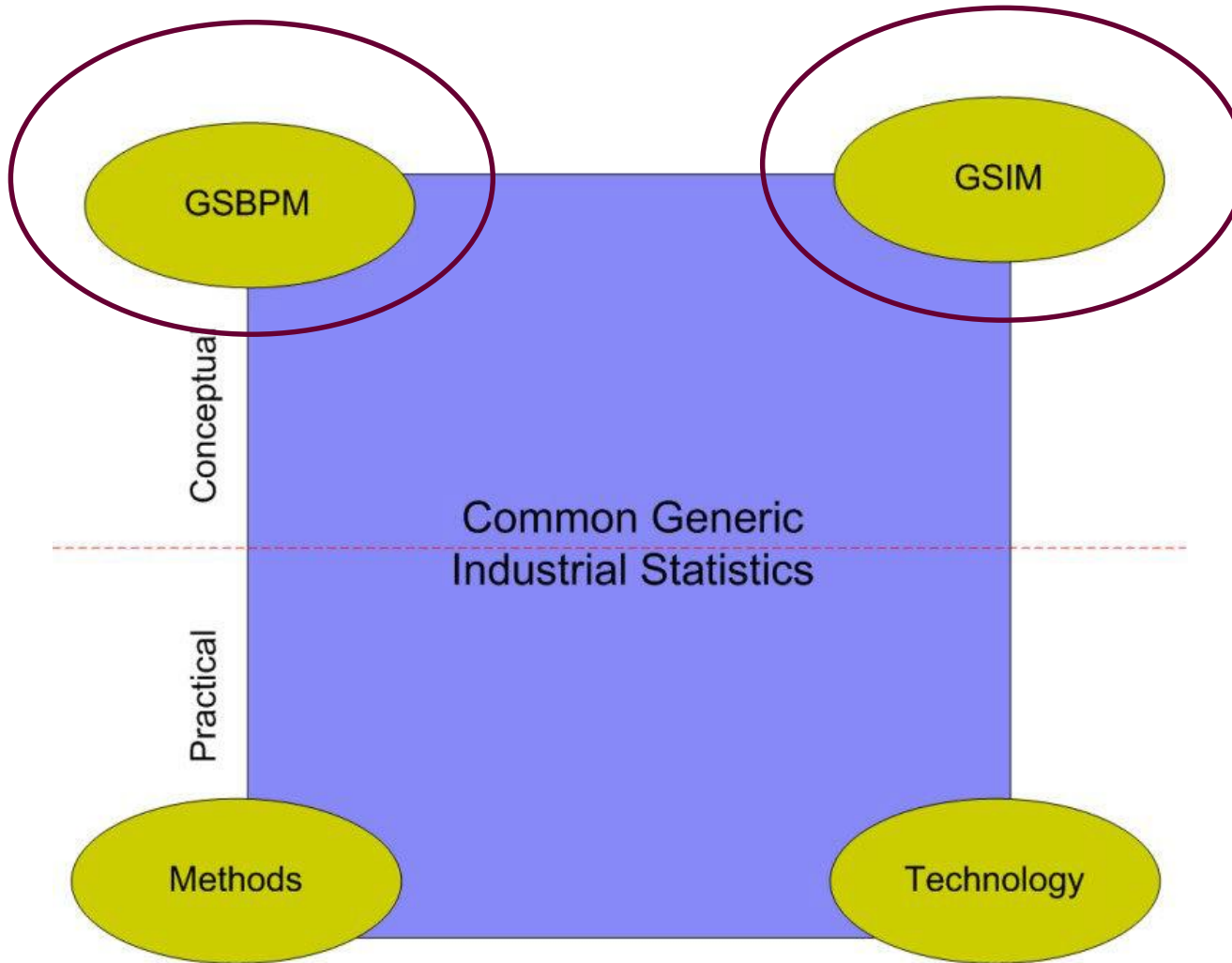
Some results (cont.)

- Data sources list of statistics
 - Brief list of administrative sources
 - Brief list of questionnaires
 - Resource utilization analysis
- Questionnaires are coded.

But, the question is;

- Without a system is it sustainable?
- Only documentation is enough?





HOW?