United Nations Economic Commission for Europe
Statistical Division

Statistical Architecture Models

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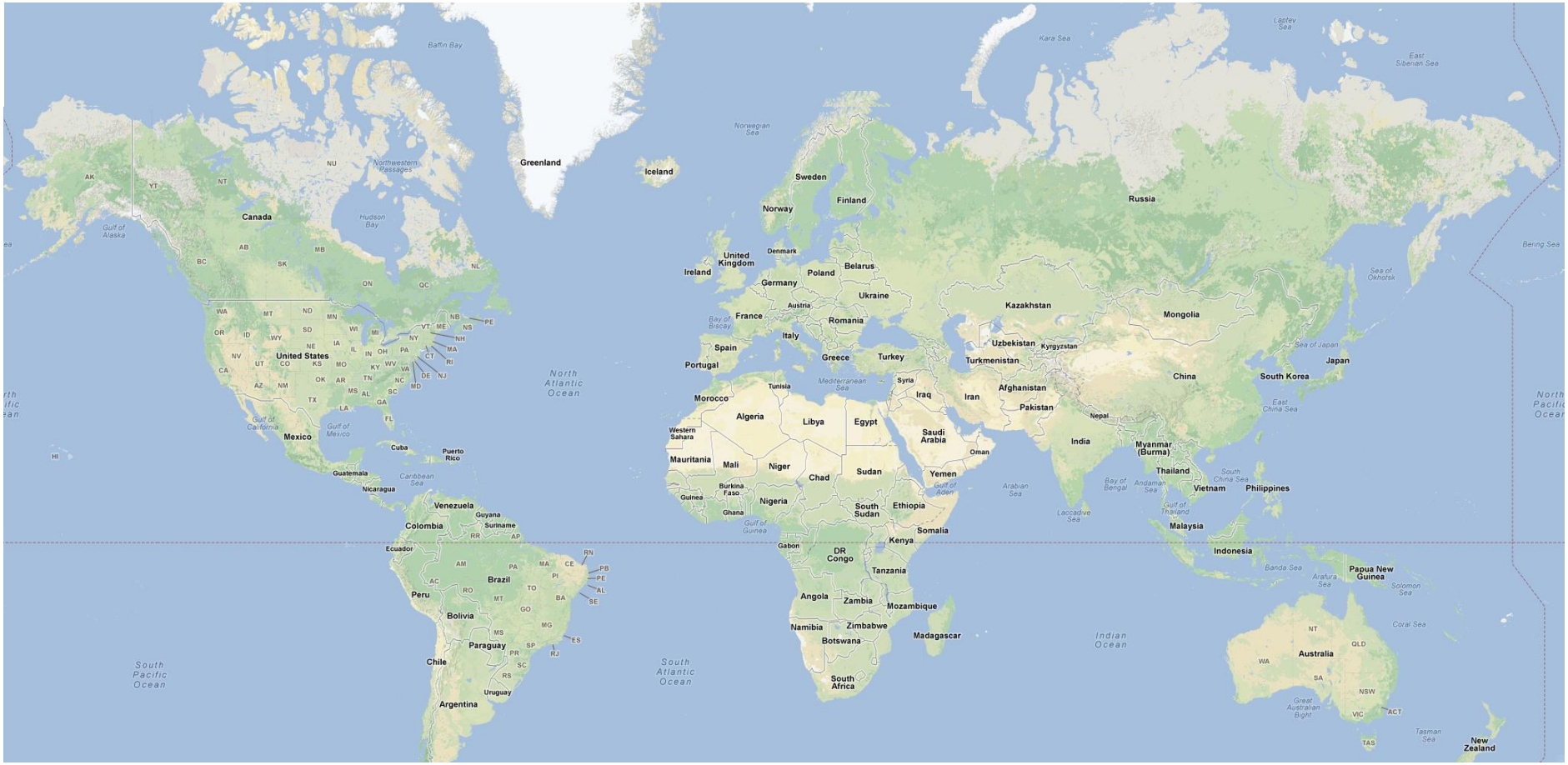
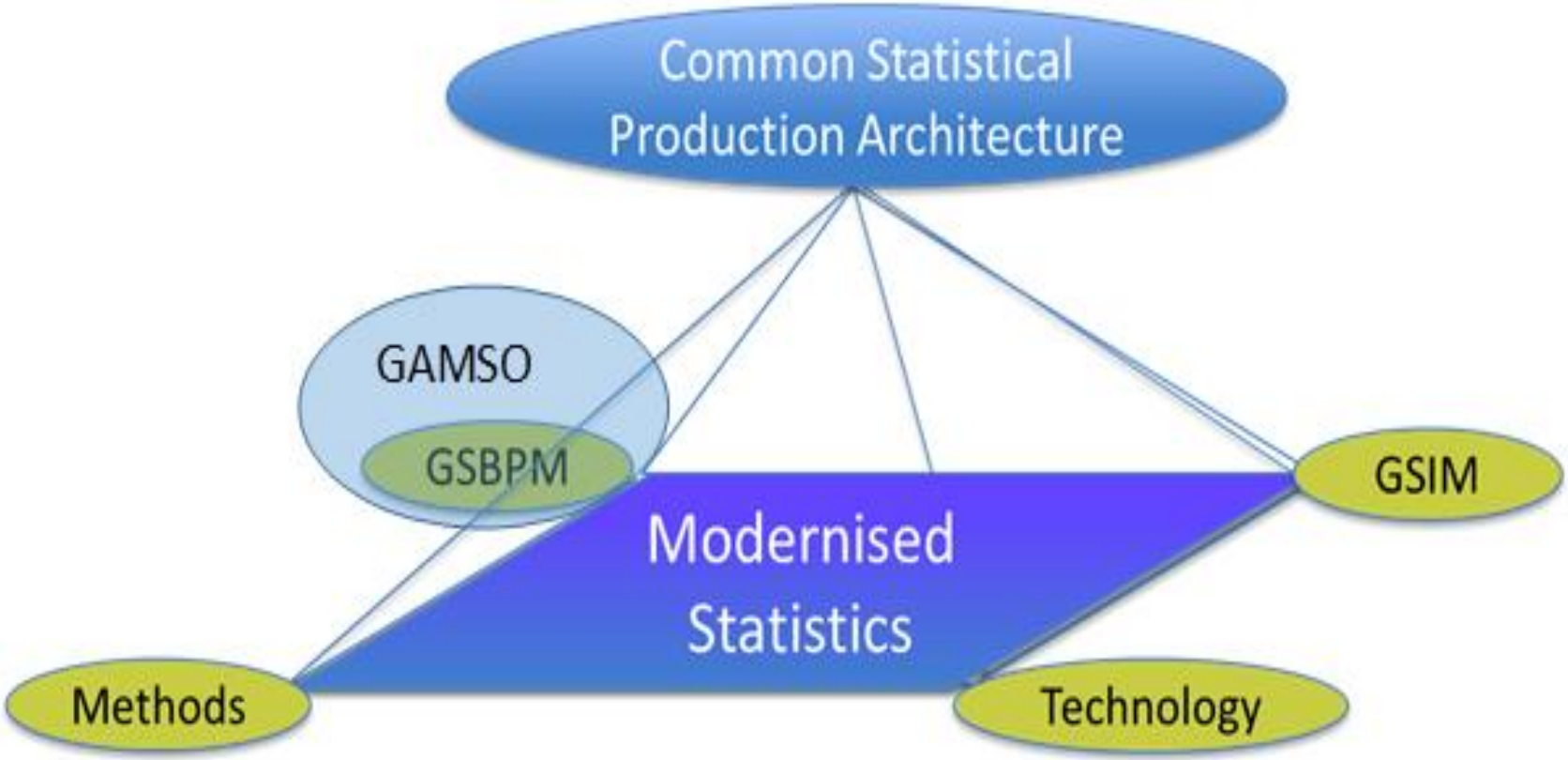
Introducing UNECE Statistics



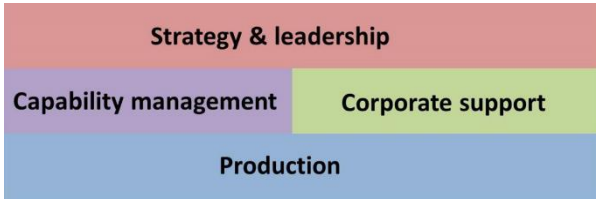
Introducing the HLG-MOS

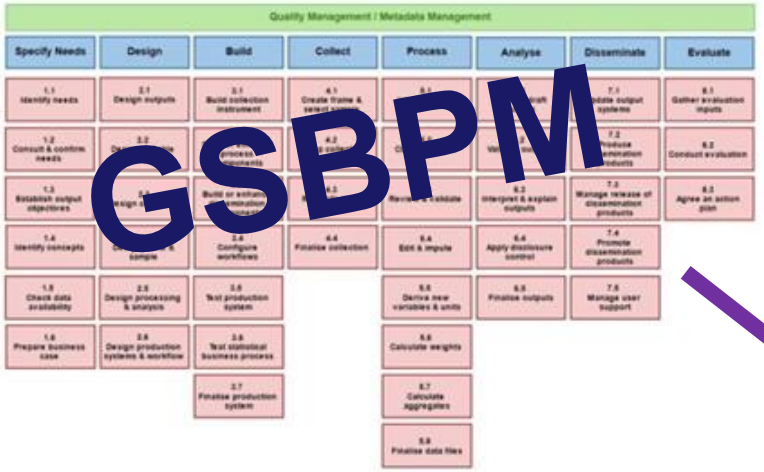
- High-level Group for the Modernisation of Official Statistics
- Created by the Conference of European Statisticians in 2010
- Strategic vision for modernisation
- Annual projects in priority areas
- Activities are voluntary and demand driven

The story so far



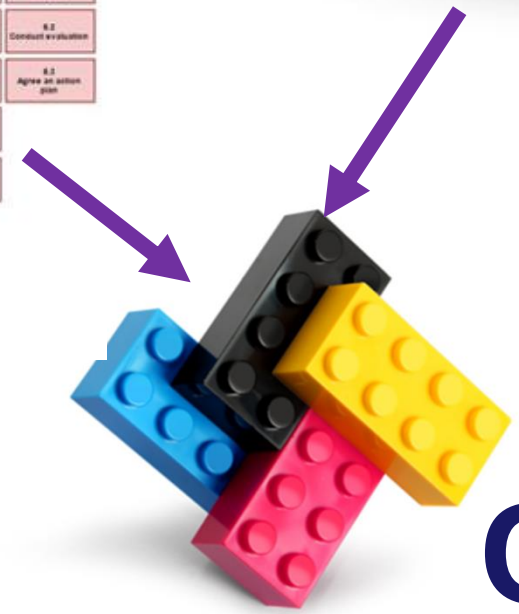
GAMSO





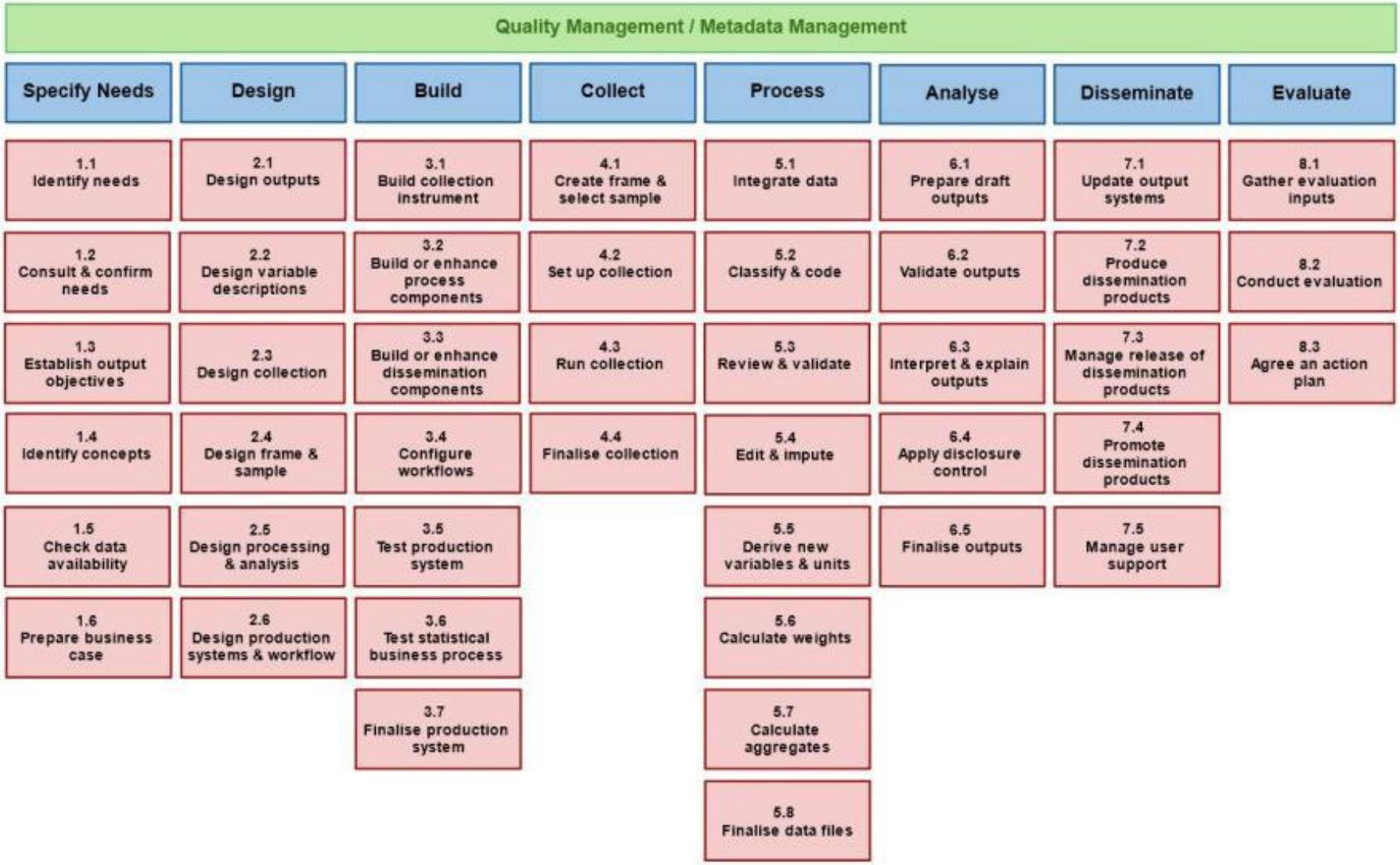
GSBPM

GSIM



CSPA

The GSBPM


Quality Management / Metadata Management
Specify Needs
1.1 Identify needs
1.2 Consult & confirm needs
1.3 Establish output objectives
1.4 Identify concepts
1.5 Check data availability
1.6 Prepare business case
Design
2.1 Design outputs
2.2 Design variable descriptions
2.3 Design collection
2.4 Design frame & sample
2.5 Design processing & analysis
2.6 Design production systems & workflow
Build
3.1 Build collection instrument
3.2 Build or enhance process components
3.3 Build or enhance dissemination components
3.4 Configure workflows
3.5 Test production system
3.6 Test statistical business process
3.7 Finalise production system
Collect
4.1 Create frame & select sample
4.2 Set up collection
4.3 Run collection
4.4 Finalise collection
Process
5.1 Integrate data
5.2 Classify & code
5.3 Review & validate
5.4 Edit & impute
5.5 Derive new variables & units
5.6 Calculate weights
5.7 Calculate aggregates
5.8 Finalise data files
Analyse
6.1 Prepare draft outputs
6.2 Validate outputs
6.3 Interpret & explain outputs
6.4 Apply disclosure control
6.5 Finalise outputs
Disseminate
7.1 Update output systems
7.2 Produce dissemination products
7.3 Manage release of dissemination products
7.4 Promote dissemination products
7.5 Manage user support
Evaluate
8.1 Gather evaluation inputs
8.2 Conduct evaluation
8.3 Agree an action plan

What is the GSBPM?

- **G**eneric **S**tatistical **B**usiness **P**rocess **M**odel
- It shows the different steps needed to produce official statistics
- It provides standard terminology to help statistical organisations
  - Modernise statistical production processes
  - Share methods and components

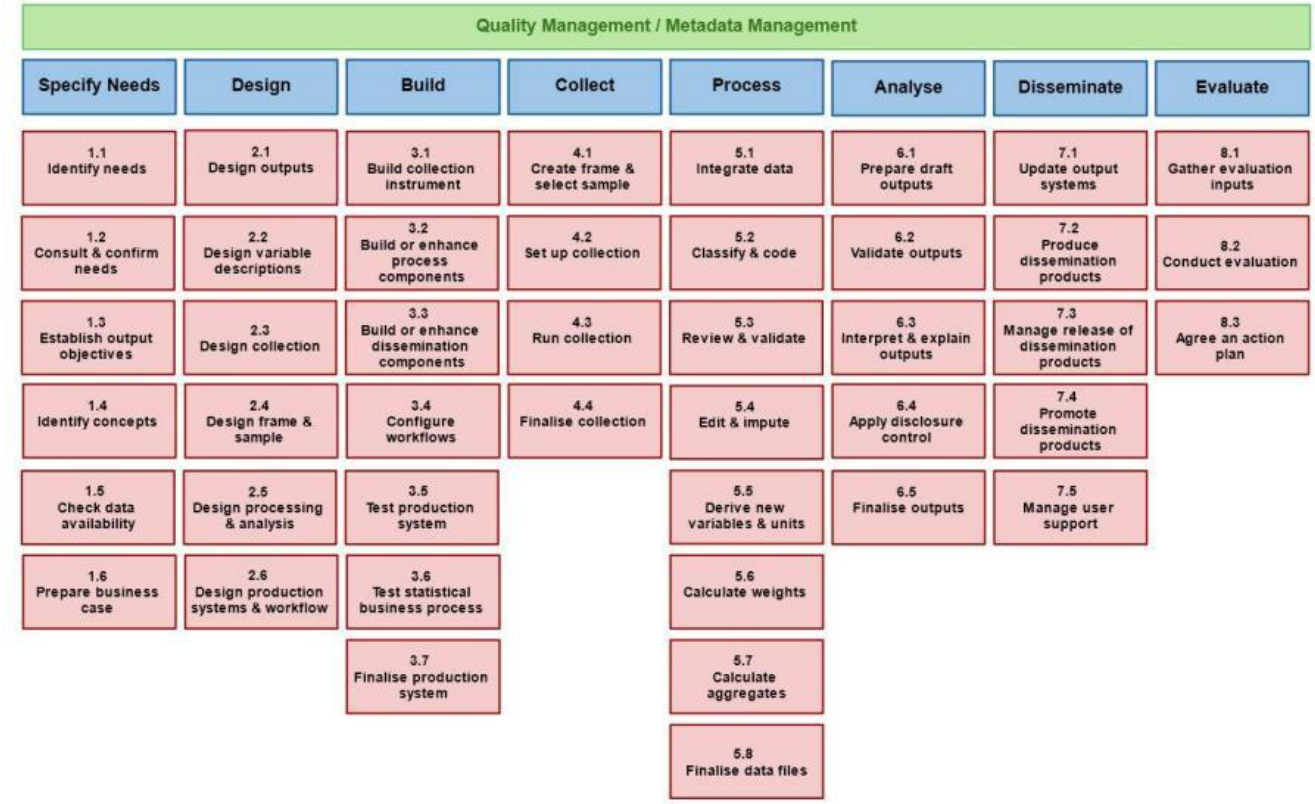
Structure of the Model (1)

Process

Phases

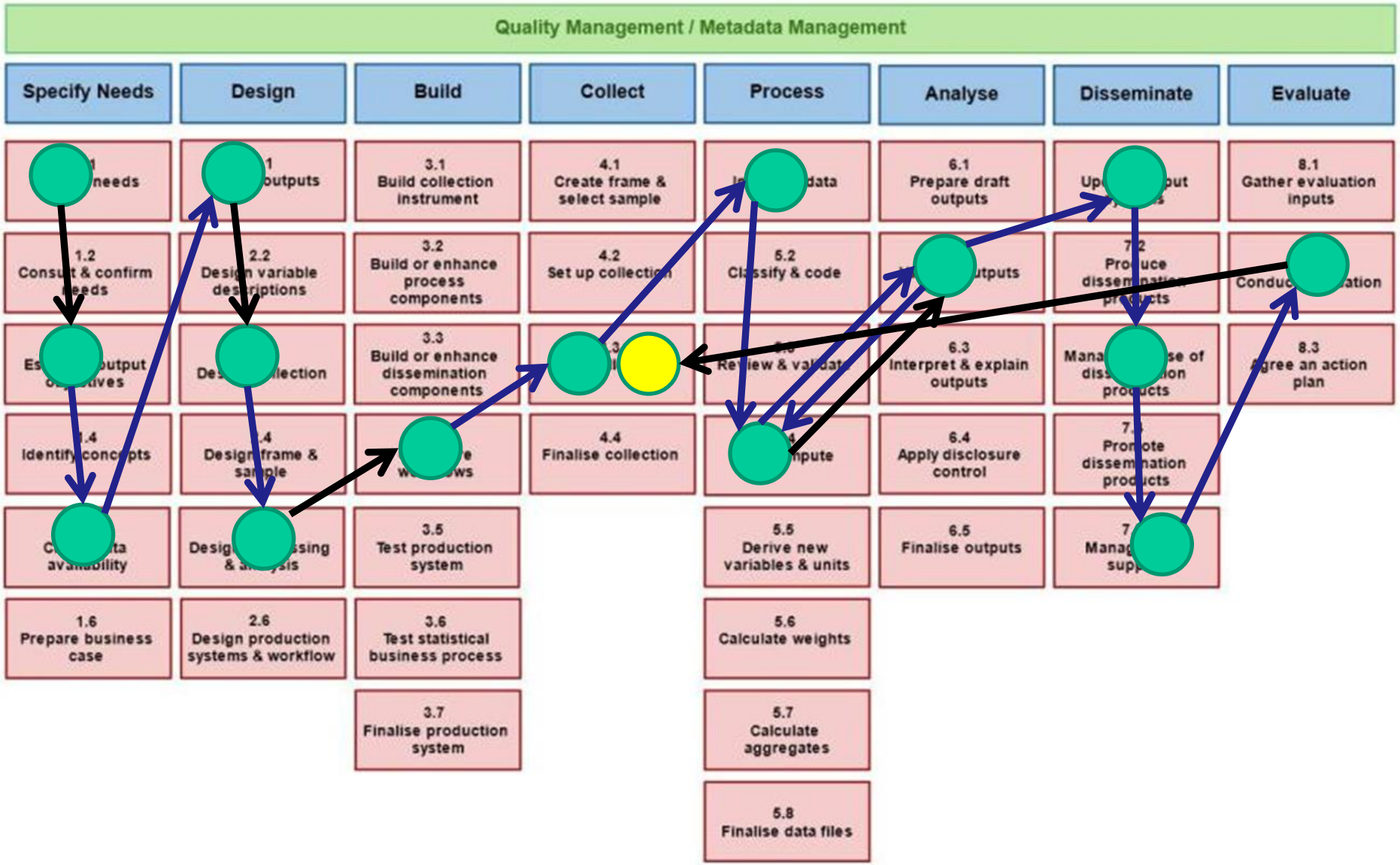
Sub-processes

(Descriptions)



Key features

- **Not a linear model**
  - Sub-processes are not followed in a strict order
  - It is a matrix, through which there are many possible paths


Quality Management / Metadata Management
Specify Needs
Design
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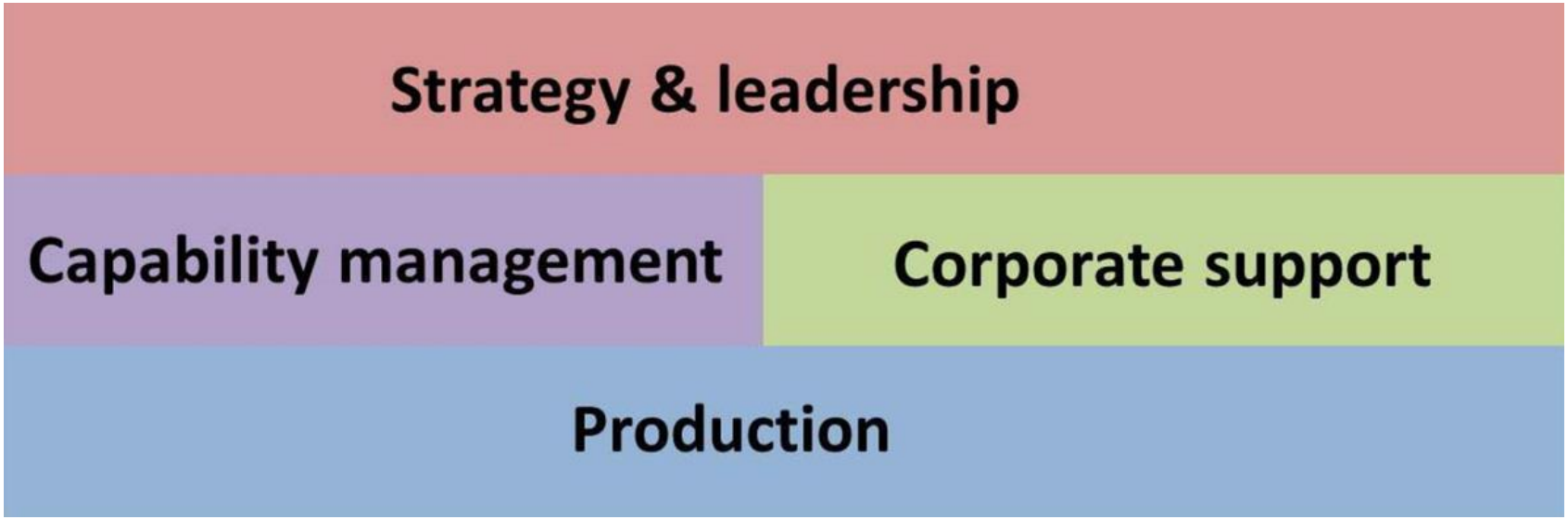
8.1 Gather evaluation inputs
8.3 Agree an action plan
1.2 Consult & confirm needs
1.4 Identify concepts
1.6 Prepare business case
2.2 Design variable descriptions
2.4 Design frame & sample
2.6 Design production systems & workflow
5.2 Classify & code
5.5 Derive new variables & units
5.6 Calculate weights
5.7 Calculate aggregates
5.8 Finalise data files

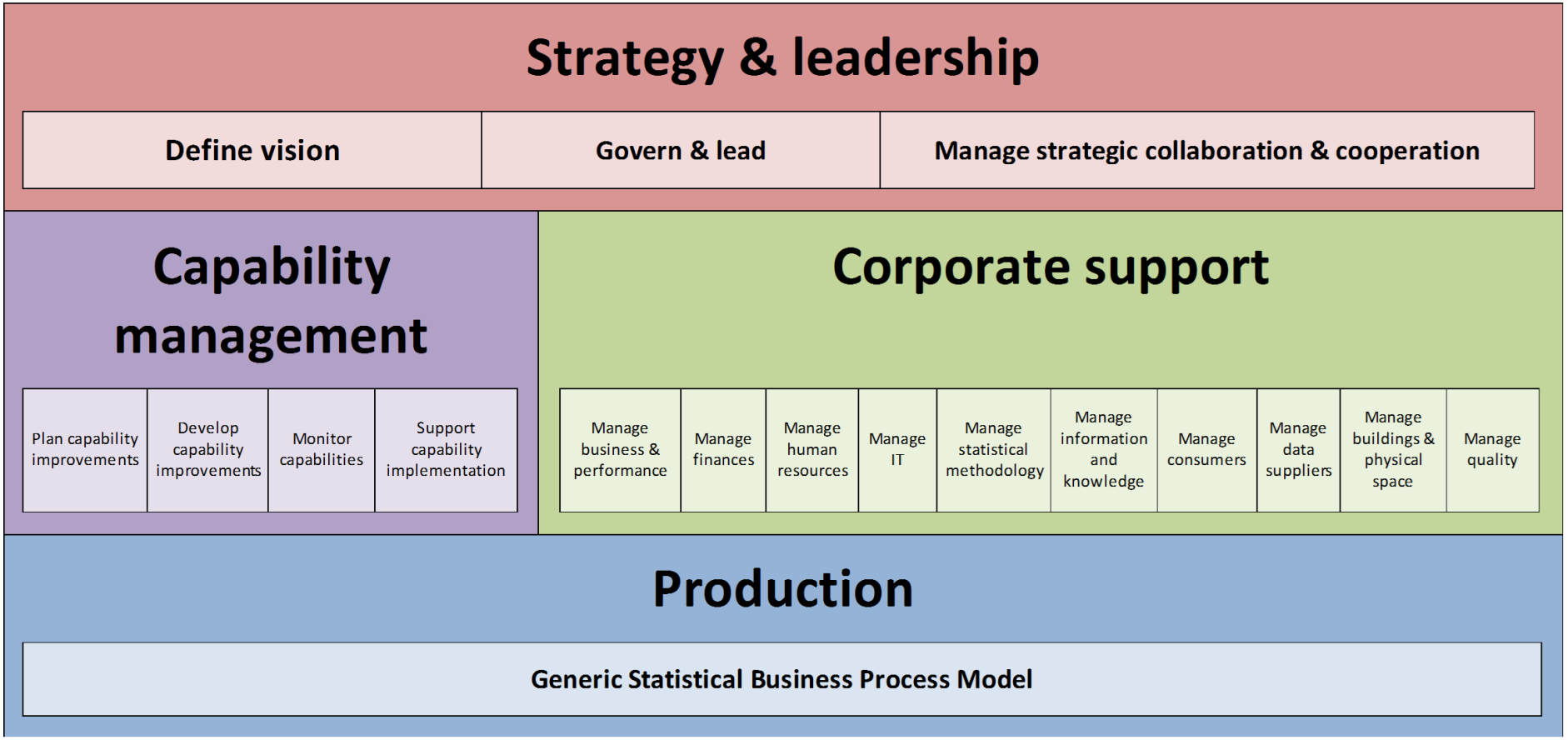
The GAMSO


Strategy & leadership
Capability management
Corporate support
Production

What is the GAMSO?

- **G**eneric **A**ctivity **M**odel for **S**tatistical **O**rganisations
- Released in 2015
- It extends and complements the GSBPM by adding other activities needed to support statistical production

GAMSO v1.0


Strategy & leadership
Define vision
Govern & lead
Manage strategic collaboration & cooperation
Capability management
Plan capability improvements
Develop capability improvements
Monitor capabilities
Support capability implementation
Corporate support
Manage business & performance
Manage finances
Manage human resources
Manage IT
Manage statistical methodology
Manage information and knowledge
Manage consumers
Manage data suppliers
Manage buildings & physical space
Manage quality
Production
Generic Statistical Business Process Model

Uses of GAMSO

- Resource planning
- Measuring costs
- Assessing readiness to implement different aspects of modernisation
- Supporting risk management systems
- Implementing enterprise architecture
- Measuring and communicating the value of statistical modernisation activities

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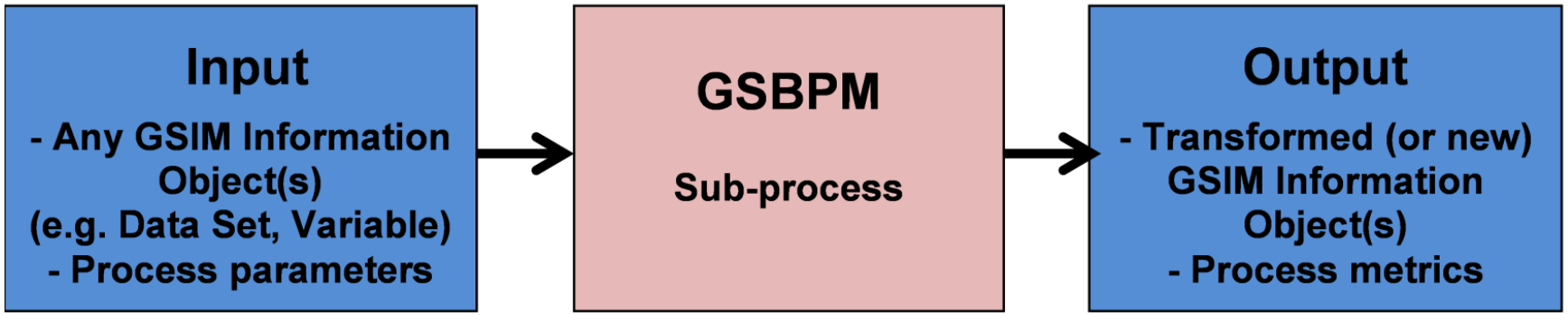
GSIM

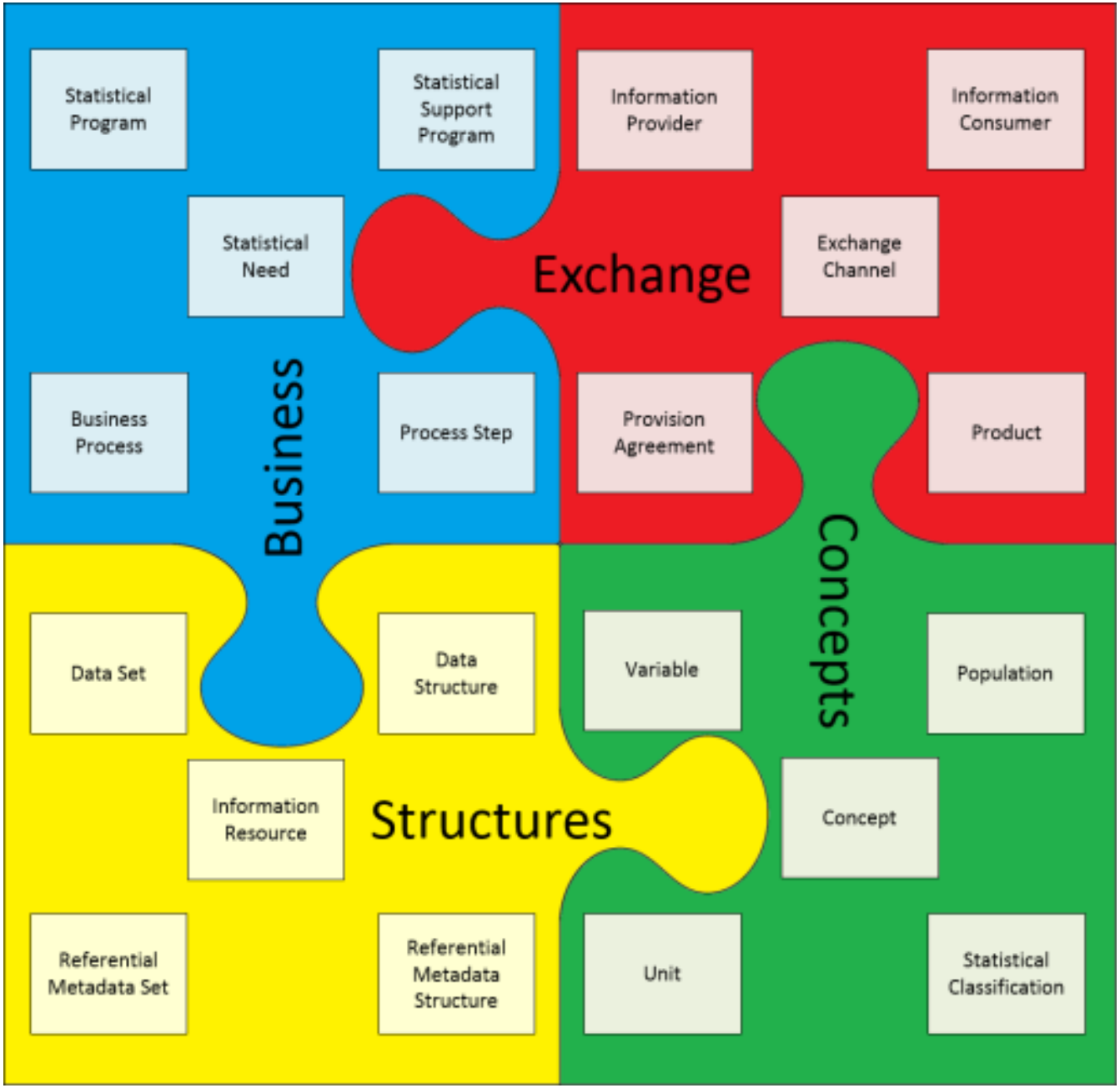
What is the GSIM?

- **G**eneric **S**tatistical **I**nformation **M**odel
- A reference framework of information objects:
  - Definitions
  - Attributes
  - Relationships
- It gives us standard terminology
- It aligns with relevant implementation standards such as DDI and SDMX

GSIM and GSBPM

- GSIM describes the information objects and flows within the statistical business process.




Statistical Program
Statistical Support Program
Statistical Need
Business
Business Process
Process Step
Information Provider
Information Consumer
Exchange
Exchange Channel
Provision Agreement
Product
Concepts
Data Set
Data Structure
Information Resource
Structures
Referential Metadata Set
Referential Metadata Structure
Variable
Population
Concept
Unit
Statistical Classification

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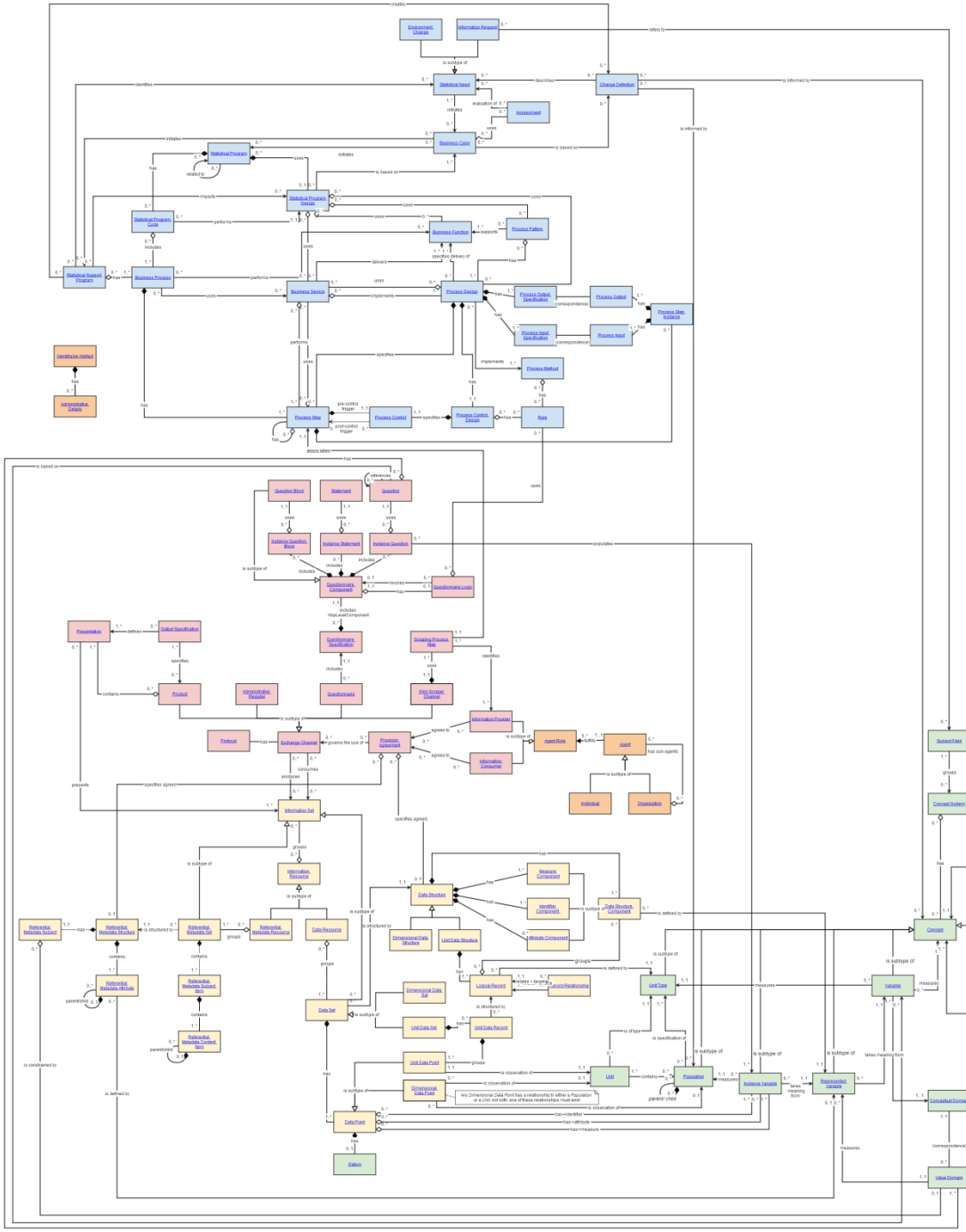
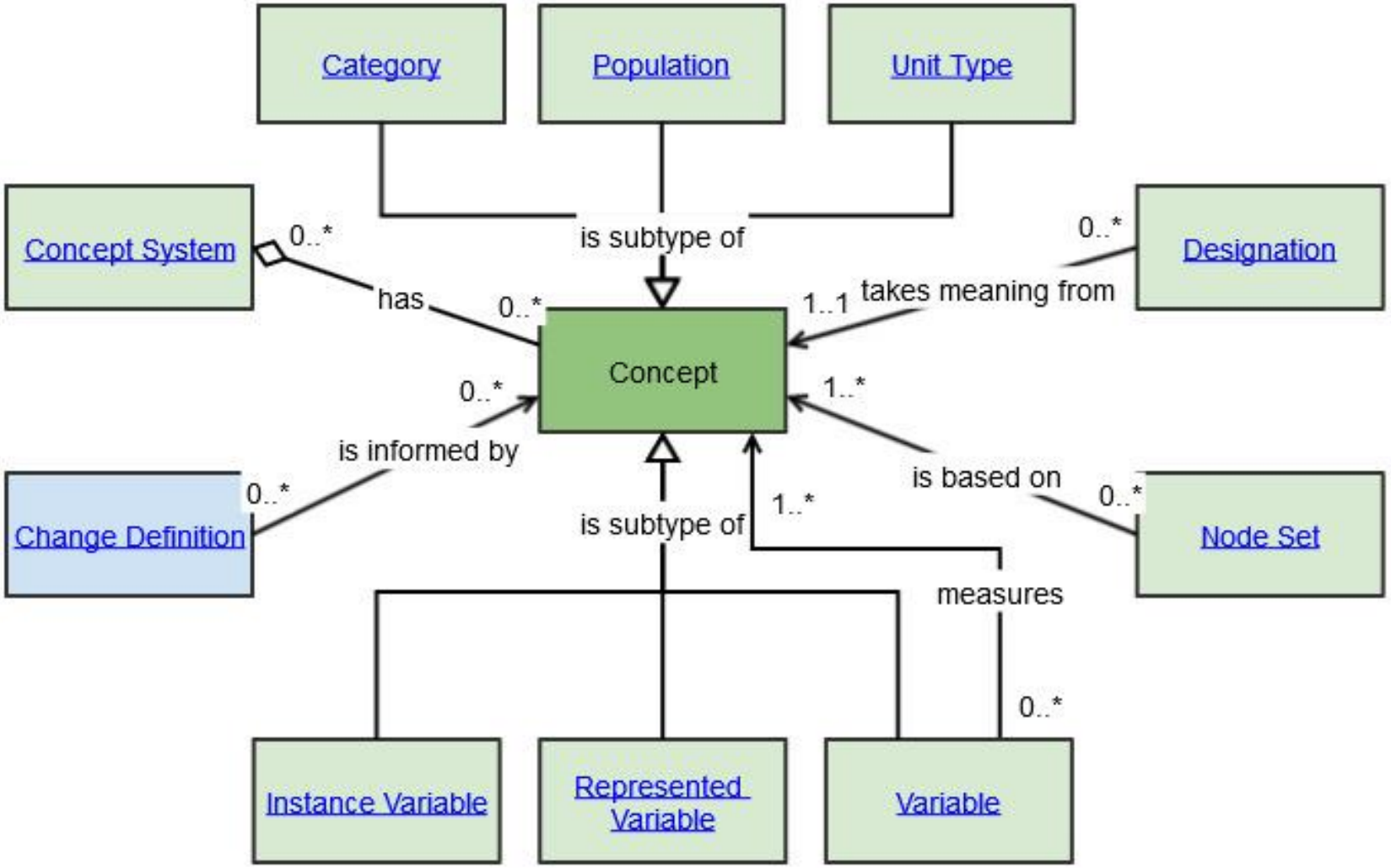
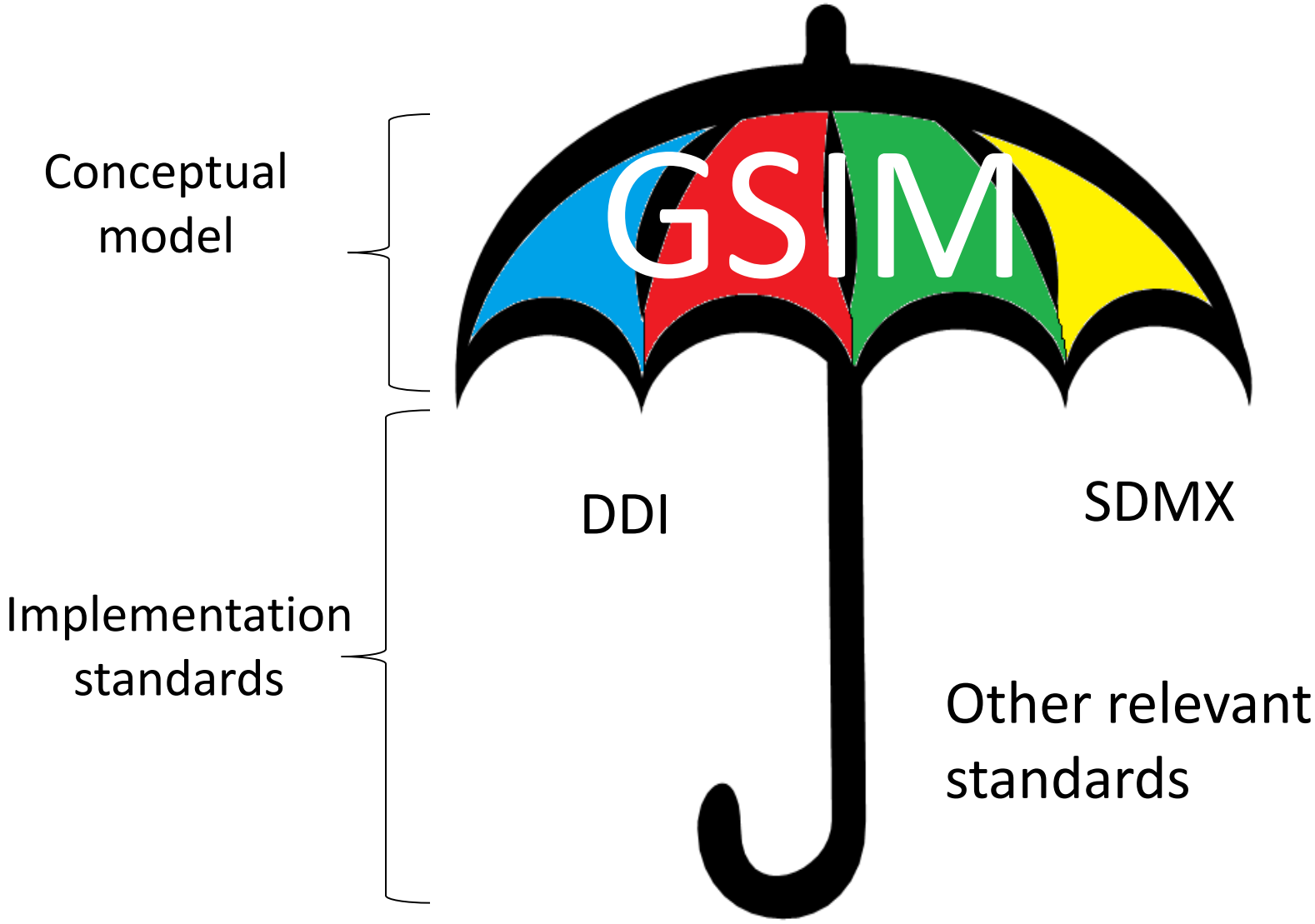


110 information objects!

Clickable GSIM



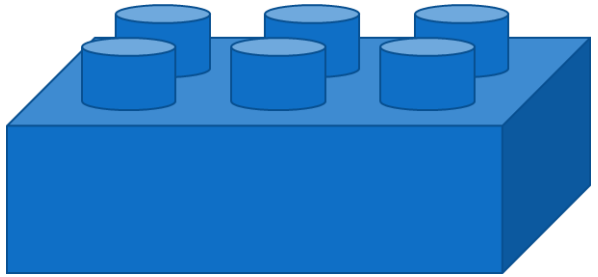

Conceptual model
GSIM
Implementation standards
DDI
SDMX
Other relevant standards

CSPA

the Future of Statistical Production

What is the CSPA?

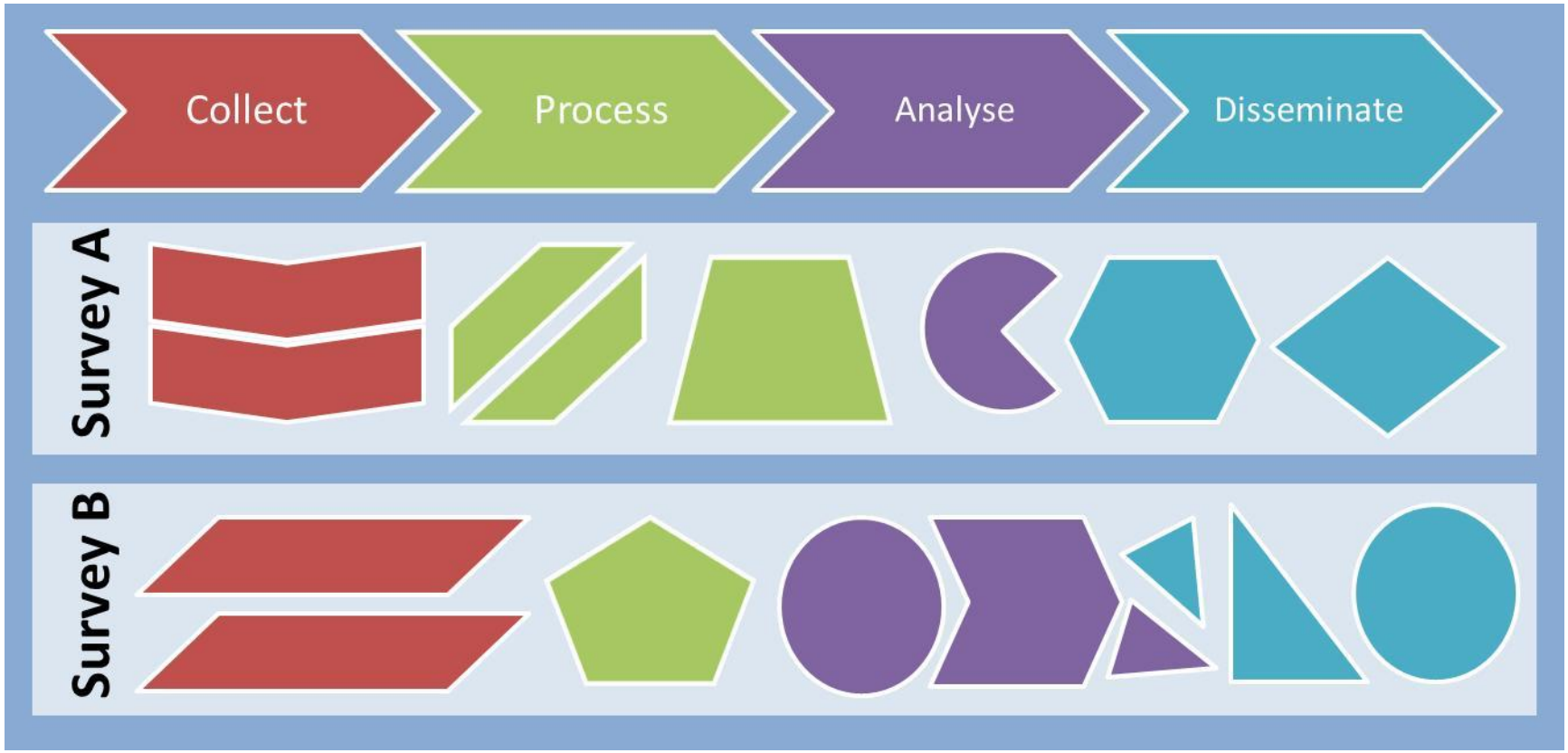
- A template architecture for official statistics
- A set of standard specifications for new statistical components (services) that can be used in a modular way



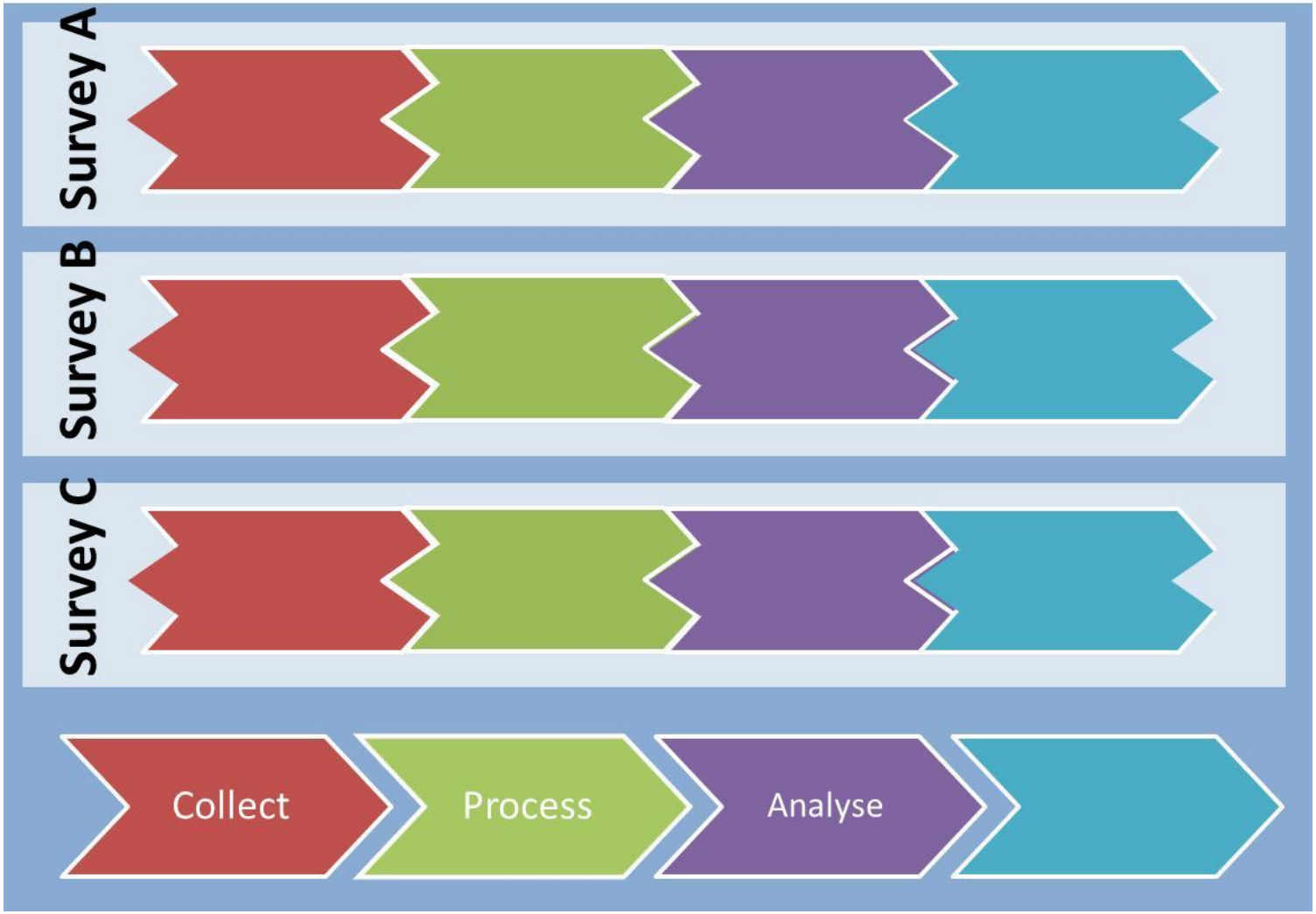
- A new way of developing statistical tools, with sharability as a design feature, not an afterthought

Problem statement:

Specialised business processes, methods and IT systems for each survey / output

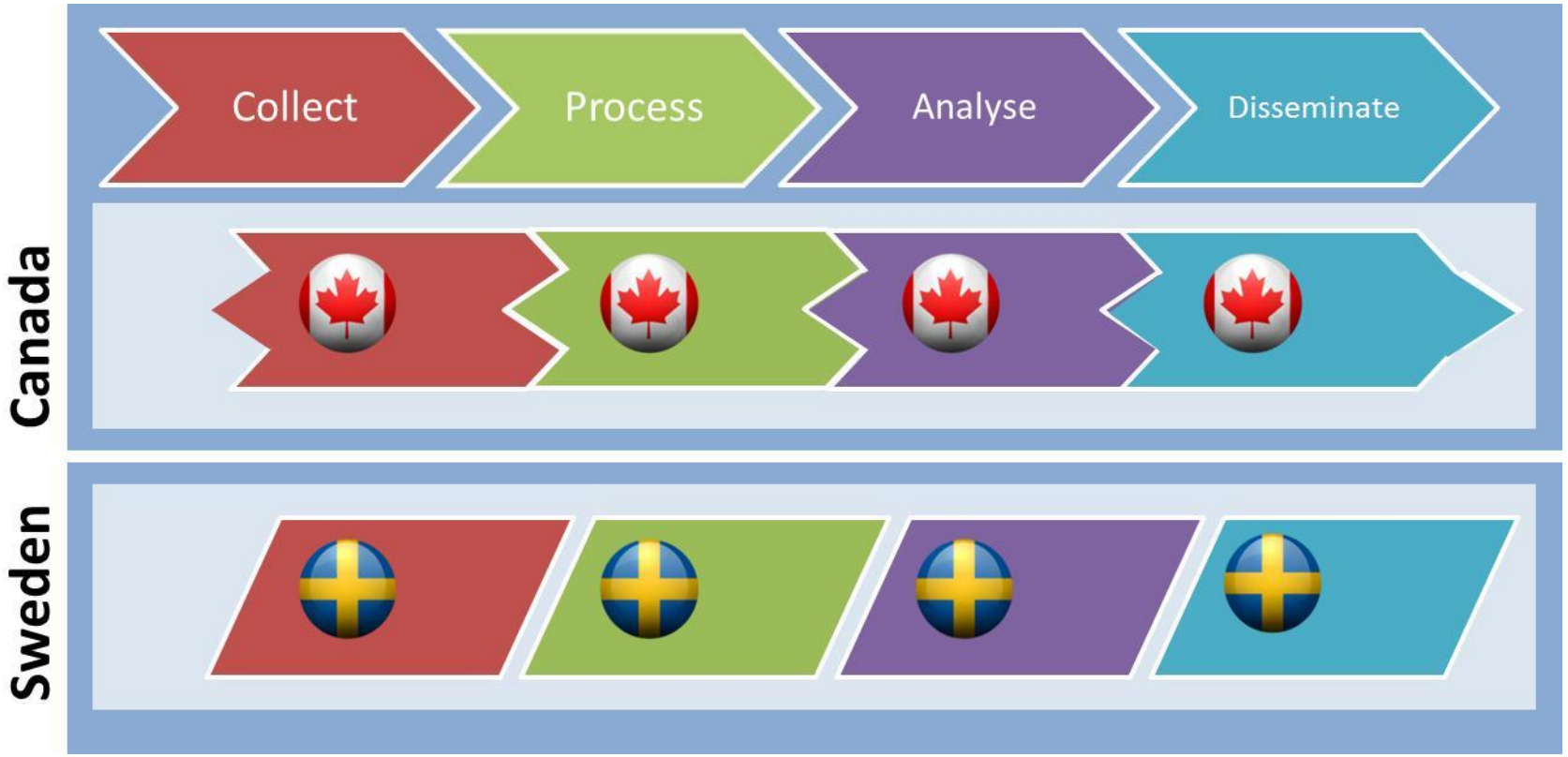


Applying Enterprise Architecture

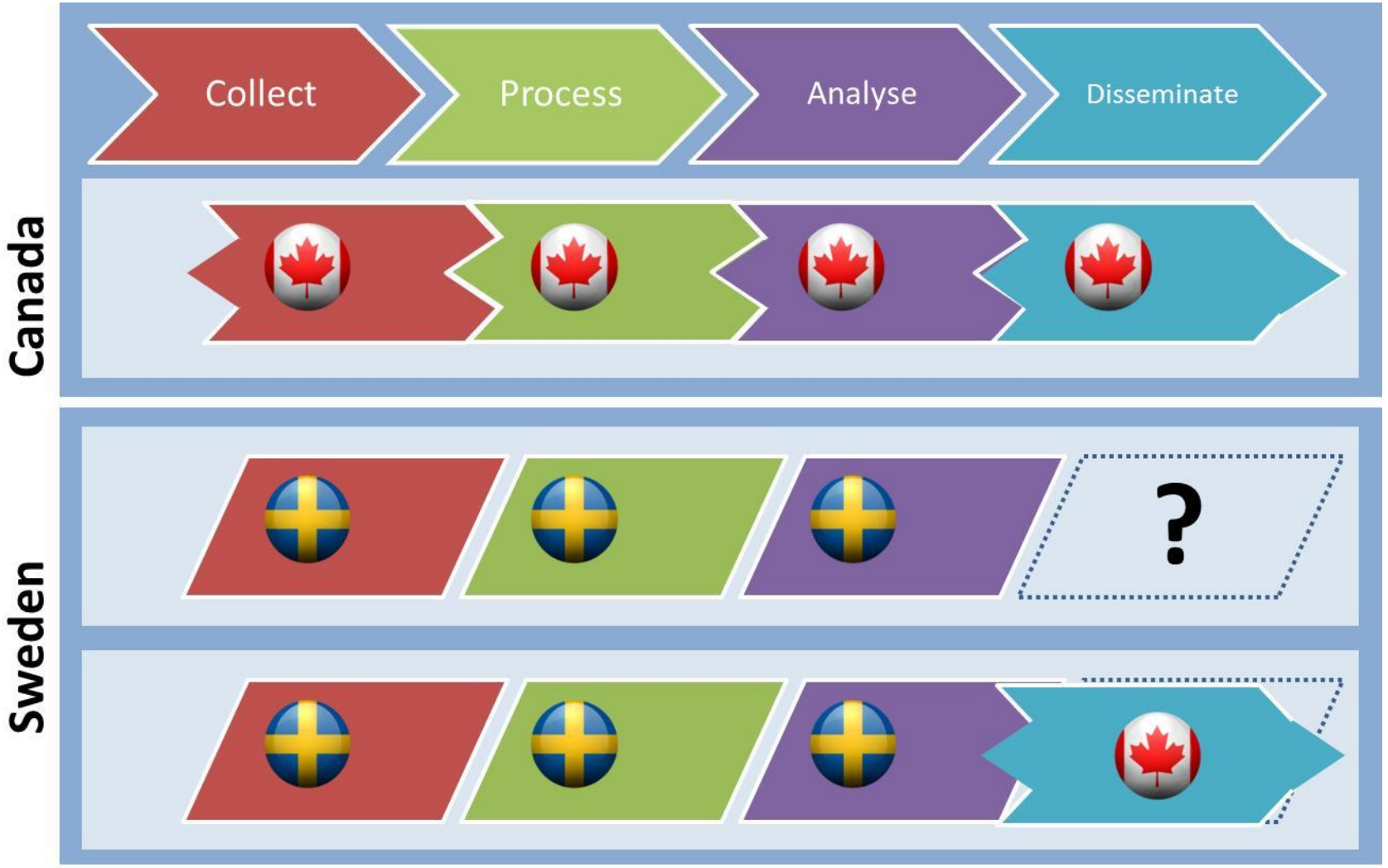


... but if each statistical organisation works by themselves ...

... we get this ...

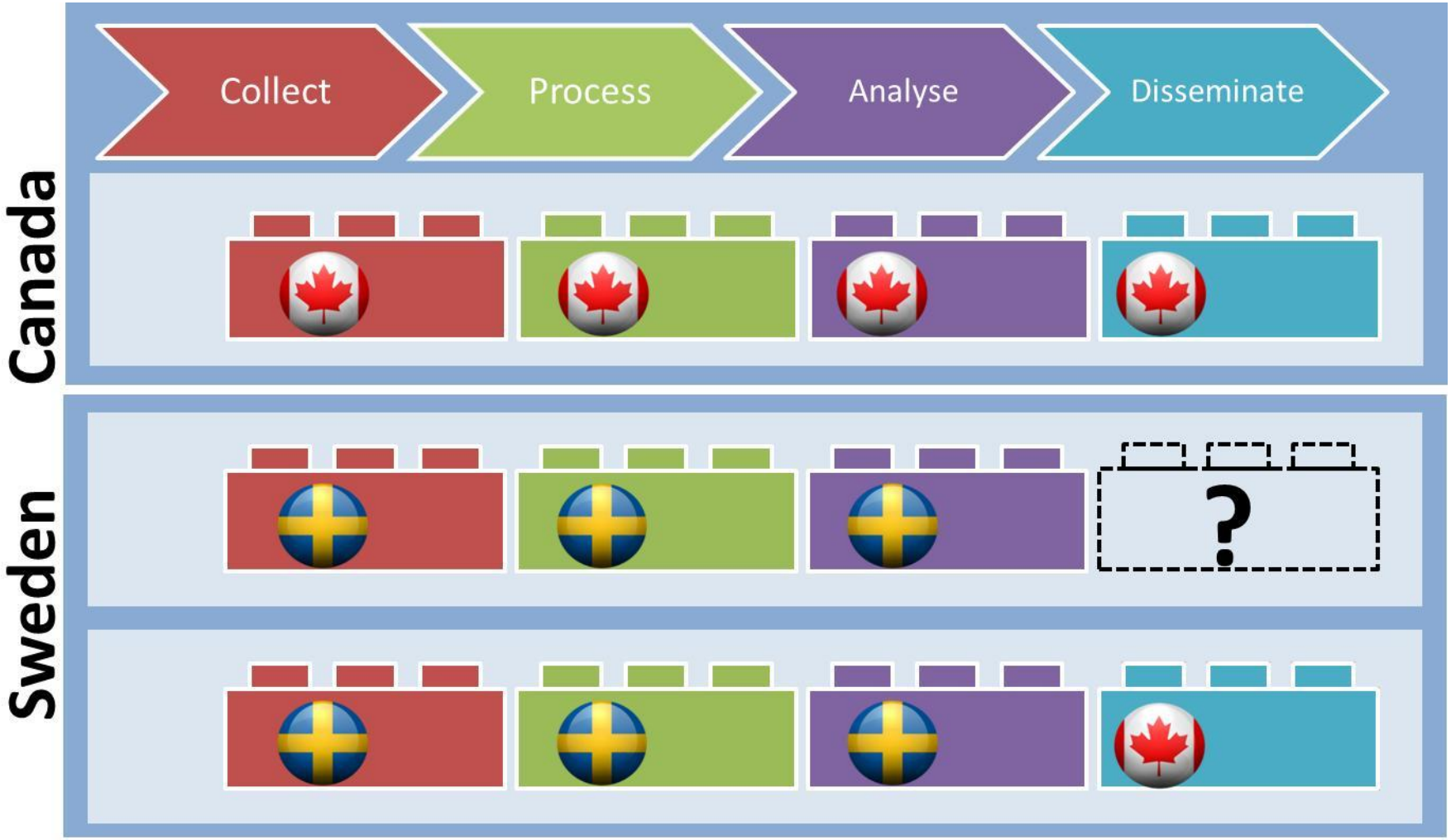


.. which makes it hard to share and reuse!



… but if statistical organisations work together to define a common statistical production architecture ...

... sharing is easier!



Key Message

- We all have to modernise our statistical production systems
- The marginal cost of doing this in a way that supports collaboration and complies with CSPA is relatively low
- The potential savings from the CSPA approach are high

Statistical Modernization Community

- Launched in 2016
- Open to all statistical organisations who endorse “Statement of Intent”
- No fee, but expectation to contribute
- Partners benefit from collaboration and sharing
- Four main principles:
  - Openness
  - Flexibility
  - Participation
  - Pragmatism

Get involved!

Anyone is welcome to contribute!

More Information

- HLG-MOS Wiki:

www1.unece.org/stat/platform/display/hlgbas

- LinkedIn group:

“Modernising official statistics”

United Nations Economic Commission for Europe
Statistical Division

Human Resources Management for National Statistical Offices in the Post-2015 Period

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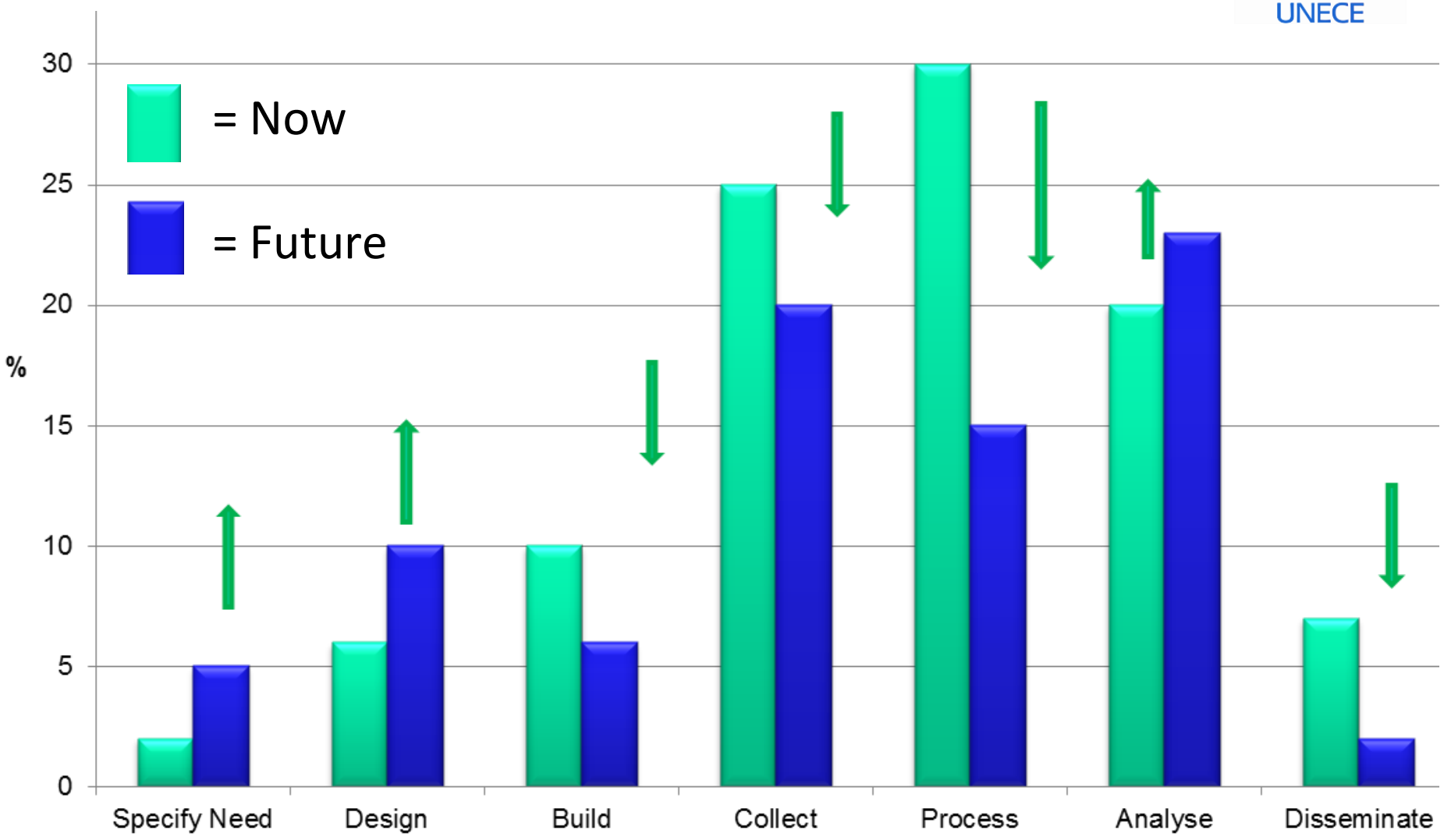
modernstats

What will happen to our resources?



Why?

- Increased automation of processing
- Electronic data collection
- New data sources
- Sharing tools, methods and data

Result: New capabilities will be needed

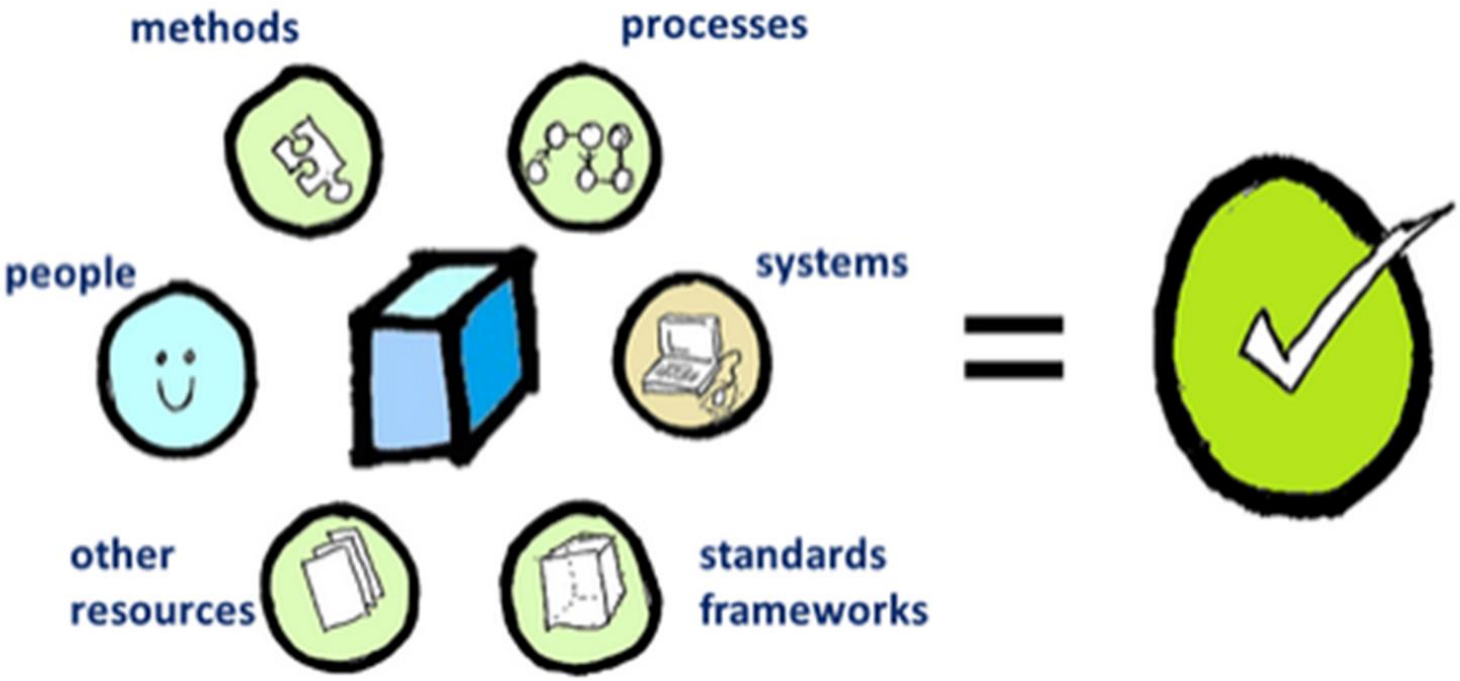
Capability Management

- A **capability** is the ability to perform or achieve certain actions or outcomes

- Capability represents the intersection of capacity and ability

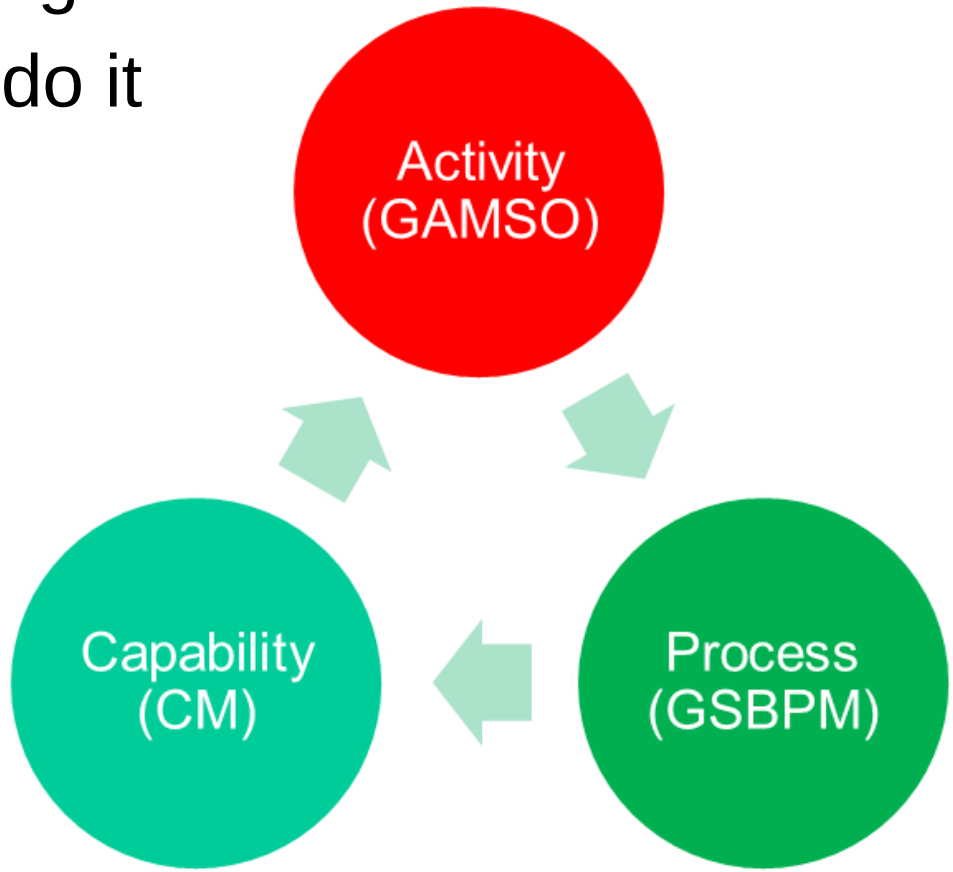
Capabilities: Organisational level

Capabilities require a combination of people, processes, methods, systems and standards



Activities, processes, capabilities

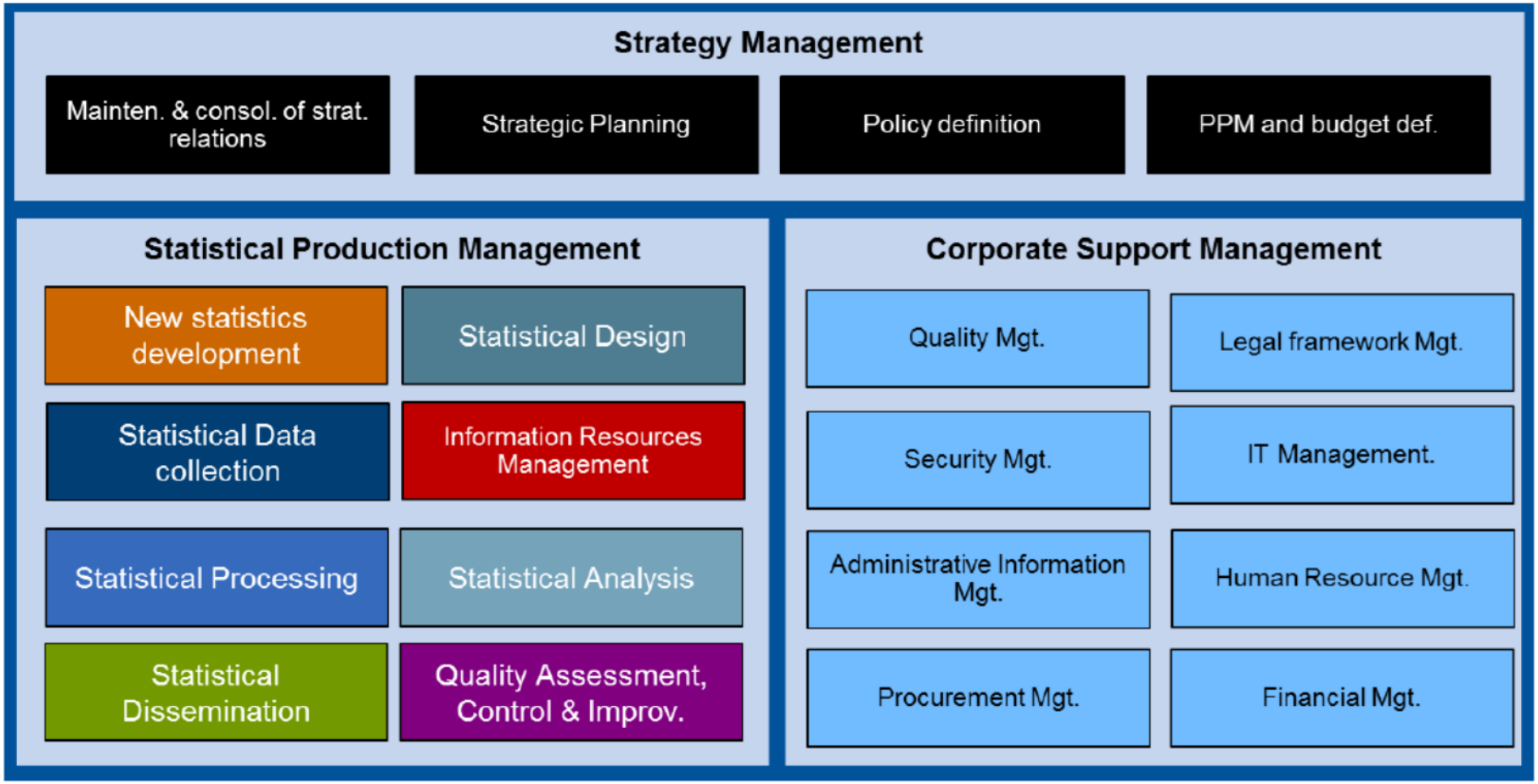
- An activity is something we do
- A process is how we do it
- Capabilities are what allow us to do it



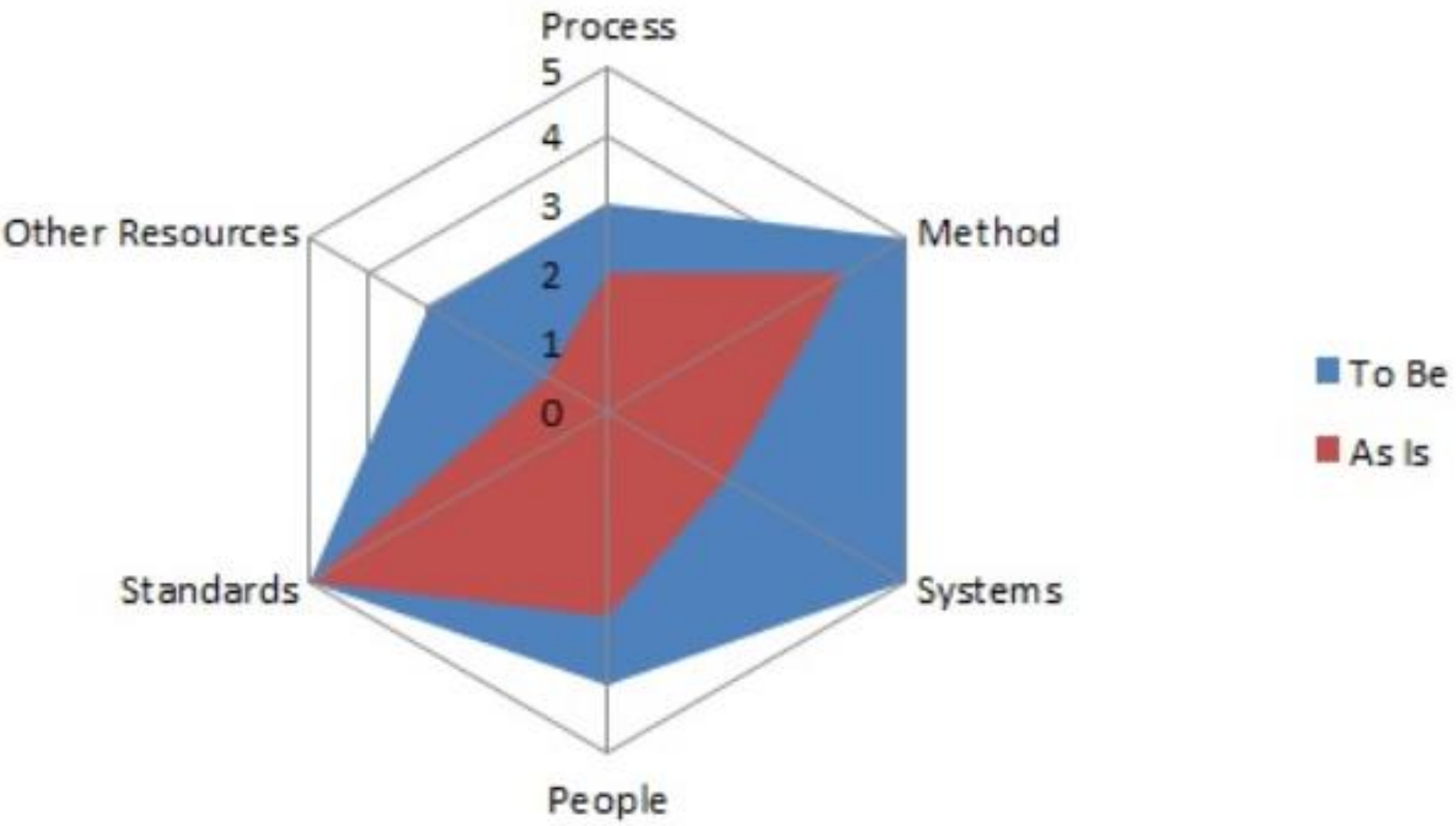
Capability Framework

- Business Capabilities Model developed by ESS Enterprise Architecture Task Force
  - “summarizes the key capabilities required for producing official statistics. It provides a framework to view which capabilities are already sufficiently present … versus those on which development effort is needed”

ESS Capability Model



Maturity by Capability



Capabilities: Individual level

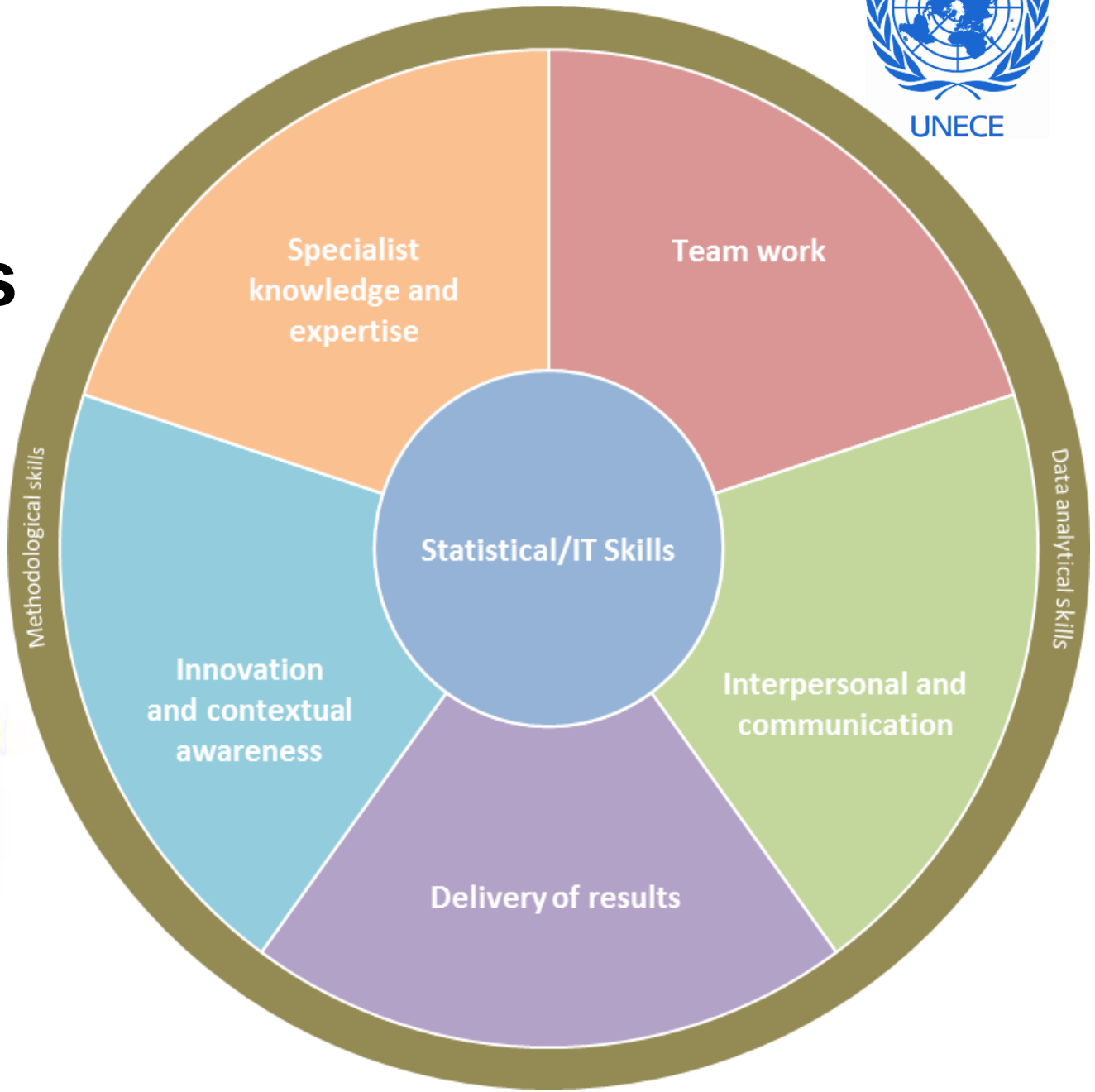
Challenge: To match individual capabilities with organisational need

- Do our staff have the capabilities we need?
  - Now
  - In the future
- If not, develop or hire?
- Do we use the existing capabilities of our staff effectively?

Capabilities: Team level?

- Do individuals have all required capabilities?
- Define and develop capabilities at team level

Big Data: Team-level capabilities



Summary

- Identifying and developing the right
  - individual
  - team
  - organisational

  capabilities is key to statistical modernisation