Business Architecture concepts and components: an instrument for standardisation and modernisation

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Istat - Department for data collection and development of methods and technologies for the production and dissemination of statistical information

ESTP Training Course “Enterprise Architecture and the different EA layers, application to the ESS context – Advanced course”

Rome, 11 – 14 October 2016
Outline

1. BA alignment with the main best practices and standards
2. BA components and the standardisation process
3. BA role within NSIs
4. BA Model for the modernisation process
5. Lessons learnt
BA alignment with the main best practices and standards

- The **BA model** illustrated up to now is:
  - consistent with **GAMSO**;
  - aligned with **current actions** carried out both at international and European level (Unece, High-Level Group for the Modernisation of Official Statistics; CSPA; **ESS Vision 2020**);
  - consistent both with organisational frameworks adopted by mature industries (**Service Oriented Architecture** – SOA) and with statistical standards (GSBPM; GSIM).
## An example: the consistency with GSBPM 5.0 (I)

### GSBPM Over-Arching Processes

<table>
<thead>
<tr>
<th>Position</th>
<th>Govern</th>
<th>Influence and collaborate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strategic Planning</strong></td>
<td>Understand national &amp; international trends</td>
<td>Develop strategies for sustainable growth</td>
</tr>
<tr>
<td><strong>Project Management</strong></td>
<td>Determine organizational vision</td>
<td>Prioritize statistical portfolio</td>
</tr>
<tr>
<td><strong>Statistical Programme Management</strong></td>
<td>Determine organizational value</td>
<td>Allocate resources &amp; priorities</td>
</tr>
<tr>
<td><strong>Legal Framework Management</strong></td>
<td>Determine organizational goals</td>
<td>Build &amp; maintain internal consistency</td>
</tr>
<tr>
<td><strong>Financial Management</strong></td>
<td>Determine expectations</td>
<td>Allocate resources &amp; priorities</td>
</tr>
<tr>
<td><strong>Human Resource Management</strong></td>
<td>Determine organizational needs</td>
<td>Allocate resources &amp; priorities</td>
</tr>
<tr>
<td><strong>Quality Management</strong></td>
<td>Establish standards &amp; procedures</td>
<td>Ensure quality &amp; statistical excellence</td>
</tr>
</tbody>
</table>
An example: the consistency with GSBPM 5.0 (II)

GSBPM Over-Arching Processes

- Manage business and performance
- Manage finances
- Manage human resources
- Manage IT
- Manage information and knowledge
- Manage consumers and suppliers

Corporate support

Financial Management

- Financial performance
- Including assets performance
- Services
- Records

Organisational Framework Management

- Manage legislation
- Procurement & skills
- Information security
- Manage information
- Stakeholder consultation
- Manage user rights
- Manage user support

Human Resource Management

- Manage physical
- Manage recruitment

Provider Management

- Facility

Legal Framework Management

GSBPM Phases

- Disseminate

GSBPM Sub-Processes

7.5 Manage user support
An example: the consistency with GSBPM 5.0 (III)
An example: the consistency with GSBPM 5.0 (IV)

<table>
<thead>
<tr>
<th>Develop</th>
<th>Design</th>
<th>Build</th>
<th>Collect</th>
<th>Process</th>
<th>Analyse</th>
<th>Disseminate</th>
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</thead>
<tbody>
<tr>
<td>Specify Needs</td>
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<td></td>
</tr>
<tr>
<td>1.1 Identify needs</td>
<td>2.1 Design outputs</td>
<td>3.4 Configure workflows</td>
<td>4.1 Create frame &amp; select sample</td>
<td>5.1 Integrate data</td>
<td>6.1 Prepare draft outputs</td>
<td>7.1 Update output systems</td>
</tr>
<tr>
<td>1.2 Consult &amp; confirm needs</td>
<td>2.2 Design variable descriptions</td>
<td>3.5 Test production system</td>
<td>4.2 Set up collection</td>
<td>5.2 Classify &amp; code</td>
<td>6.2 Validate outputs</td>
<td>7.2 Produce dissemination products</td>
</tr>
<tr>
<td>1.3 Establish output objectives</td>
<td>2.3 Design collection</td>
<td>3.6 Test statistical business process</td>
<td>4.3 Run collection</td>
<td>5.3 Review &amp; validate</td>
<td>6.3 Interpret &amp; explain outputs</td>
<td>7.3 Manage release of dissemination products</td>
</tr>
<tr>
<td>1.4 Identify concepts</td>
<td>2.4 Design frame &amp; sample</td>
<td>3.7 Finalise production system</td>
<td>4.4 Finalise collection</td>
<td>5.4 Edit &amp; impute</td>
<td>6.4 Apply disclosure control</td>
<td>7.4 Promote dissemination products</td>
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<tr>
<td>1.5 Check data availability</td>
<td>2.5 Design processing &amp; analysis</td>
<td></td>
<td></td>
<td>5.5 Derive new variables &amp; units</td>
<td></td>
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<tr>
<td>1.6 Prepare business case</td>
<td>2.6 Design production systems &amp; workflow</td>
<td></td>
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<td>5.6 Calculate weights</td>
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<td>5.7 Calculate aggregates</td>
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<td>5.8 Finalise data files</td>
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</table>
An example: the consistency with GSBPM 5.0 (V)

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<thead>
<tr>
<th>Specify needs</th>
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<th>Build</th>
<th>Collect</th>
<th>Process</th>
<th>Analyze</th>
<th>Disseminate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify needs</td>
<td>Design outputs</td>
<td>Assemble &amp; configure system components</td>
<td>Create frame &amp; select sample</td>
<td>Integrate data</td>
<td>Prepare draft outputs</td>
<td>Update output systems</td>
</tr>
<tr>
<td>Consult &amp; confirm needs</td>
<td>Design variable descriptions</td>
<td>Configure workflows</td>
<td>Set up collection</td>
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<td>Validate outputs</td>
<td>Produce dissemination products</td>
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<tr>
<td>Establish output objectives</td>
<td>Design collection</td>
<td>Test: production system</td>
<td>Run collection</td>
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<tr>
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<td>Test statistical business process</td>
<td>Finalize collection</td>
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<td>Calculate weights</td>
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<table>
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<th>Develop</th>
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<tr>
<td>Analyze</td>
<td>Disseminate</td>
</tr>
</tbody>
</table>

**Production**

**Manage**

**GSBPM Over-Arching Processes**

- Identify emerging risks & issues

**Quality Management**

**Metadata Management**

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8.1 Gather evaluation inputs
8.2 Conduct evaluation
8.3 Agree an action plan
Activities and the standardisation process (I)

- Each activity should be carried out using **existing standards** (processes, tools, methods, software, etc.) available at the NSI level or outside, or **newly developed** as future **standards** which can be easily reused in different contexts.

- Each activity represents the **starting point** to identify **existing standards** to be used, as well as areas where **new standards** need to be developed (**gap analysis**).
Activities and the standardisation process (II)

**Strategy**

- Strategy brings the relevance of standards at the strategic level of an NSI

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**Capability**

<table>
<thead>
<tr>
<th>Plan capability improvements</th>
<th>Develop capability improvements</th>
<th>Manage capabilities</th>
<th>Support capability implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Identify disruptive factors</td>
<td>• Undertake background research</td>
<td>• Maintain capabilities</td>
<td>• Support strategy development</td>
</tr>
<tr>
<td>• Create capacity for improvement</td>
<td>• Develop detailed capability requirements</td>
<td></td>
<td>• Support strategy implementation</td>
</tr>
<tr>
<td>• Manage capability development</td>
<td>• Outline work breakdown structure</td>
<td></td>
<td>• Support strategy execution</td>
</tr>
</tbody>
</table>

**Corporate support**

<table>
<thead>
<tr>
<th>Manage business</th>
<th>Manage finances</th>
<th>Manage human resources</th>
<th>Manage IT</th>
<th>Manage information and knowledge</th>
<th>Manage consumers and suppliers</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Manage business performance</td>
<td>• Manage financial performance</td>
<td>• Manage human performance</td>
<td>• Manage IT performance</td>
<td>• Manage information performance</td>
<td>• Manage consumer performance</td>
</tr>
<tr>
<td>• Manage change</td>
<td>• Manage change</td>
<td>• Manage change</td>
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</tr>
<tr>
<td>• Manage physical assets, including facilities</td>
<td>• Manage physical assets, including facilities</td>
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**Production**

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<th>Process</th>
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<th>Disseminate</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Identify needs</td>
<td>• Create material needs</td>
<td>• Establish output objectives</td>
<td>• Refine processes</td>
<td>• Develop, configure, and test systems</td>
<td>• Analyse and synthesise results</td>
<td>• Disseminate outputs</td>
</tr>
<tr>
<td>• Consult with stakeholders</td>
<td>• Create detailed descriptions</td>
<td>• Create output interfaces</td>
<td>• Perform collections</td>
<td>• Assess and synthesise results</td>
<td>• Apply dissemination strategies</td>
<td>• Promote dissemination products</td>
</tr>
</tbody>
</table>

**Manage**

<table>
<thead>
<tr>
<th>Plan</th>
<th>Monitor</th>
<th>Adjust</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Secure project approval &amp; funding</td>
<td>• Monitor project quality &amp; performance</td>
<td>• Develop contingency actions &amp; strategies</td>
</tr>
<tr>
<td>• Track project value, budget &amp; resources</td>
<td>• Monitor project budget &amp; timeline</td>
<td>• Monitor project risks &amp; issues</td>
</tr>
<tr>
<td>• Plan project milestones</td>
<td>• Report project progress</td>
<td>• Communicate corrective actions &amp; revised expectations</td>
</tr>
</tbody>
</table>
Activities and the standardisation process (III)

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</thead>
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<td></td>
<td>• Understand national &amp; international directions &amp; factors</td>
<td>• Develop strategies for achieving organizational goals</td>
<td>• Build &amp; maintain strategic relations, nationally &amp; internationally</td>
</tr>
<tr>
<td></td>
<td>• Determine organizational vision &amp; values</td>
<td>• Prioritize statistical portfolio</td>
<td>• Build &amp; maintain external statistical excellence</td>
</tr>
<tr>
<td></td>
<td>• Determine organizational value proposition</td>
<td>• Prioritize capability portfolio</td>
<td>• Advance inter-agency &amp; international collaborations</td>
</tr>
<tr>
<td></td>
<td>• Determine organizational goals</td>
<td>• Allocate portfolio &amp; programme budgets</td>
<td>• Secure support for statistical &amp; capability portfolio</td>
</tr>
<tr>
<td></td>
<td>• Communicate values &amp; expectations</td>
<td>• Build &amp; maintain internal statistical &amp; professional excellence</td>
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</tr>
</tbody>
</table>

- Evaluating projects on which to invest also on the basis of their use of standards or of their being standards themselves.
Activities and the standardisation process (IV)

- All the activities included in this business line should make use of industrial standards common to general support services across organisations.
Activities and the standardisation process (V)

- Each single activity represents a phase of the Production process in which standards should be applied, in terms of methods, classifications, software, tools.
Activities and the standardisation process (V)

- These activities focus on the life cycle of the capabilities (Methods, processes, standards and frameworks, IT systems and people skills).

- Strategy
  - Position
  - Goal
  - Influence and collaboration

- Capability
  - Plan capability improvements
  - Develop capability improvements
  - Manage capabilities
  - Support capability improvements

- Corporate support
  - Manage business and performance
  - Manage finance
  - Manage human resources
  - Manage IT
  - Manage information and knowledge
  - Manage consumers and suppliers

- Production
  - Specify needs
  - Design
  - Build
  - Collect
  - Process
  - Analyze
  - Disseminate

- Manage
  - Plan
  - Monitor
  - Adjust

- Eurostat
Activities and the standardisation process (VI)

- A subgroup of these capabilities are existing or potential standards with their own life cycle that can be mapped here.
It was officially adopted by the 26th Meeting of the European Statistical System Committee (ESSC), 25th September 2015

It is one of the results achieved by the ESSNets on Standardisation
Standardisation milestones at ESS level

The Hague Conference: *Promoting further standardisation initiatives*

**2009**

*Ad hoc* task forces: on official statistics and standards

ESSnet on Preparation of Standardisation (Stand-Prep)

**2010-2011**

Workshop on standardisation: Setting priorities

ESSnets on Standardisation

**2012-2015**

Sponsorship on Standardisation

**2015 onwards**

World Standards Day: each year on 14 October!
BA process flow to enhance standardisation

- A generic and standardised flow of processes interacting with each other
- It represents an important additional factor for developing/improving, adopting and making use of standards
Impact of BA principles on mainstreaming standardisation

- The most relevant impact of **BA principles** on the overall standardisation process:
  
  ✓ **reuse** of data, metadata, methods, tools and applications, based on **interoperability** and a **Service Oriented Architecture (SOA)**;
  
  ✓ **industrialisation of the statistical processes**, based on the **integration of processes** as opposed to a **stovepipe model**.
Principles with high or medium impacts (I)

- From BA decision principles:
  - **Take a holistic and integrated view** (n. 7)
  - **Capitalise on and influence national and international developments** (n. 1)

- **Very high impact**
  - The maximisation of usability of available capabilities promotes and facilitates their implementation in production processes

- **High impact**
  - It influences the development of statistical services sharable among different official statistical entities. They are natural candidates to be considered as standards, if they are designed and developed taking into account efficiency and quality requirements
Principles with high or medium impacts (II)

- From BA decision principles:
  - **Deliver enterprise-wide benefits** (n. 2)
  - **Increase the value of statistical assets** (n. 3)
  - **Sustain and grow the business** (n. 6)

- Medium impact
  - Statistical business processes can be improved at a maximum extent by making use of cost-minimising and high quality standards

- Medium impact
  - The adoption of standards has the natural consequence of **greater sustainability**, since in general it ensures a **reduction in costs**
Principles with high or medium impacts (III)

- From **BA design principles**:

  ✓ **Design new for reuse and easy assembly** *(n. 3)*

  ✓ **Adopt available standards** *(n. 5)*

  ✓ **Consider all capability elements** *(n. 1)*

- **Very high impact**
  - Implicit in their definition

- **High impact**
  - The consideration of all capability elements, giving high priority to standards, **naturally promotes their introduction in production processes**
Principles with high or medium impacts (IV)

- From **BA design principles**:
  - **High impact**
    - See n. 1
  - **Medium/High impact**
    - This principle implies the **standardisation of metadata**
  - **Medium impact**
    - People directly responsible for processes are more conservative than outside people (expert in design and optimisation and fully aware of innovative solutions)
      - This separation can indirectly promote and facilitate the introduction of standards in processes

- **Enable discoverability and accessibility (n. 7)**
- **Processes are metadata driven (n. 4)**
- **Foster industrialisation of statistical processes (n. 9)**
BA role within NSIs (I)

- BA provides a **holistic/complete view** of NSIs activities/processes
- It facilitates NSIs to refer to a unique organisational model at the **enterprise level**, overcoming their internal **tendency to replication/duplication**
- It is **cost-efficient** (**reuse of data, methods, processes, tools**)
BA role within NSIs (II)

- It enhances harmonisation and standardisation against stovepipe models characterised by strong heterogeneity (of procedural, methodological and technological approaches), lack of standards and redundancy of data and applications.

- It represents a key tool for implementing standardisation and modernisation.
BA role within NSIs (III)

- It fosters and orientates the activities required to pass from the *as is* to the *to be* situation that is finalised towards modernisation and standardisation, both from an organisational and a production-related point of view.

- Its components naturally point to standards which should be used to facilitate the process of transition to modernisation.
BA role within NSIs (IV)

- It represents a **focus of interest** for NSIs
- Many countries are adopting or evaluating to adopt it in order to operationalise the **ongoing internal modernisation and standardisation processes**
- Istat, for example, is basing its **Modernisation Programme** on the **BA Model** in order to achieve both **relevant production process** and **organisational changes**
- Istat’s Modernisation Programme was officially approved by the **Governing Board** on **January 28th, 2016**
Modernisation external drivers

- International and European best practices
- Changes in the demand for statistical information
- Wealth of information, including innovative sources
- Presence of possible competitors
- Availability of new methodological and technological tools
- Drawbacks of traditional data collection systems (high costs, response burden, lower response rates)
Modernisation internal drivers

- **Organisational silos:**
  - local or vertical know-hows which **do not promote reuse**;
  - duplication and **lack of consistency of solutions**;
  - incomplete **interoperability**;
  - limited capacity to exploit **methodological and technological opportunities**;
  - research and innovation at **local** rather than **corporate level**.

- **Segmentation**

- **Weak governance system:**
  - difficult access to already available general services;
  - huge efforts to obtain services at the local level, generating redundancies and inefficiencies.
Modernisation objectives

1. To enrich the **supply** and **quality** of **statistical information** and **services** for the country

2. To develop a specific policy on **Corporate Social Responsibility**

- To encourage the development and **exploitation of** methodological, technological, and organisational **innovation**
- To increase and reorient the **skills of human resources**
- To reduce **respondent burdens**
- To further improve the **efficiency** and **quality** of **production processes**, while taking into account **budget constraints**
Modernisation core instruments

- The **Foundations**: The **Business Architecture Model**
  - It represents an **umbrella** also for the other instruments

- Three main **Pillars**:
  - Design of production processes through the **System of Registers**
  - Centralised **Corporate Support Services** (separated from production)
  - Sound and structured **Governance**
Additional instruments

- Design and development of an integrated system for managing human resource skills and expertise

- Redesign of the Institute’s organisation, in order to reduce internal fragmentation

- Creation of a system for the Institute’s Corporate Social Responsibility

- Accommodation of all Istat’s employees in a single building
### Relevance of the Instruments

<table>
<thead>
<tr>
<th>OBJECTIVES</th>
<th>Main Objectives</th>
<th>Intermediate Objectives</th>
<th>Specific line of action and special Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implementing the Institute’s Business Architecture model</td>
<td>To enrich the supply and quality of statistical information and services for the country</td>
<td>To encourage the development and exploitation of methodological, technological, and organisational innovation</td>
<td>Creation of a system for the Institute’s Corporate Social Responsibility</td>
</tr>
<tr>
<td>Design of the production processes through the system of registers</td>
<td>To develop a specific policy on Corporate Social Responsibility</td>
<td>To increase and reorient the skills of human resources</td>
<td>Accommodation of all Istat’s employees in a single building</td>
</tr>
<tr>
<td>Centralisation and consolidation of corporate support services</td>
<td></td>
<td>To reduce respondent burden</td>
<td></td>
</tr>
<tr>
<td>Strengthening of governance mechanisms and coordinated management of the Institute’s activities</td>
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The System of Registers

- Notable advantage in terms of **reduced costs** and **response burden**, while ensuring quality, timeliness and completeness
- Large potential because **different registers can be linked together** on the basis of clearly defined keys
- Organised **governance mechanism** to define clearly responsible persons
- **Base registers** contain the identifier of the statistical unit
- **Satellite registers** contain thematic variables derived from administrative sources or surveys
Centralised Corporate Support Services

- Consolidation of the Institute’s **cross-cutting Support Services** (technical, scientific and administrative - methodology, information technology, data collection and dissemination, human resources, legal affairs, asset management, accounting) to enhance:
  - **effectiveness/quality**, as a result of a standardisation of processes and solutions;
  - **efficiency**, as an effect of **overcoming stovepipes** in conducting processes, so as to facilitate reuse;
  - **productivity**;
  - the integrated System of Statistical Registers enriched with single, controlled, and **standardised information**;
  - innovative activities with the **saving of resources obtained**.
Sound and structured governance

**Strategic Planning**
(Decisions taken within the President’s Steering Committee)

**Operational programming**
(Decisions taken within the Committee for Operational Programming)

**Service for planning and strategic coordination**

**Service for the coordination of corporate support services**

### Quarterly activities

- Proposals to the Governing Board:
  - Strategic objectives
  - Resource macro allocation
  - Incentive policies

- Decisions on:
  - Innovative projects
  - Current projects
  - Risk management
  - Use of resources (economic, human)
  - Policies for the acquisition of goods and resources

### Current activities

- Support to strategic planning:
  - Definition of strategic objectives
  - Definition of the portfolio
  - Definition of derived plans
  - Performance, risks, etc.
  - Definition of macro economic-financial coverage
  - Policies for the acquisition of goods and resources

- Support to operational programming:
  - Requirement collection
  - Definition and negotiation of Service Level Agreements
  - Resource micro allocation
  - Production of reports
  - Risk management

### Monthly activities

- Monitoring report analysis
- Decision on possible escalation to the President’s Steering Committee (in case of emergency)
The new organisational structure

President’s steering committee

Director of DCPS

Director General

Director of DIRM

Director of DIPS

Department for Data Collection and Development of Methods and Technologies for the Production and Dissemination of Statistical Information - DIRM

Directorate General - DGEN

Directorate for Human Resources

Directorate for Administrative Affairs

President

Governing Board

Independent performance assessment body

Committee for the management of the system of registers

Committee for operational programming
Lessons learnt (I)

- The BA model:
  - fosters the **standardisation** of processes, approaches and solutions;
  - represents **the support to overcome silos**;
  - is the **trigger** of the **modernisation** process.
Lessons learnt (II)

- The resulting **centralisation of corporate support services** (separated from statistical production) facilitates the **maximisation of effectiveness and efficiency**

- This has a **positive effect** also on the exchange and flexibility of **human resources** that result increased by enriching their professional level through a **broader array of experiences**