The use of Enterprise Architecture as a framework to fulfill OECD Quality Principles

Julio A. Santaella
President of INEGI
Index

1. Motivation.
   i. Modernization of the NSO’s.
   ii. Commitment to Quality.

2. The Enterprise Architecture Framework (TOGAF).

3. Challenges.

4. Final remarks.
MOTIVATION
Modernization of the NSO’s

National Statistical Offices require a transformation similar to the one seen in the circus industry after the Cirque du Soleil:
Commitment to Quality

- INEGI has always had a commitment to producing high-quality information, produced through the use of strict methodologies.

- In December 2014, INEGI issued an institutional ruling for Quality Assurance of Statistical and Geographical Information.
  - The ruling was inspired by the European Code of Practice and the UN Template for a Generic National Quality Assurance Framework.
  - The ruling triggered a Quality Assurance Committee that provides the governance for projects focused on quality measurement and improvement.
Commitment to Quality

• The commitment to quality and the need to develop a comprehensive framework using international and national practices led to the adoption of *The Open Group Enterprise Architecture Framework* (TOGAF).
TOGAF core concepts

– Enterprise Continuum.
– Principles.
– Development Method.
– Content Metamodel.
– Domains:
  2. Data.
  3. Application.
  4. IT infrastructure.
TOGAF Enterprise Continuum

- **Classifies tools for Architecture development:**
  
  - **Best Practices:**
    - OECD Quality Guidelines.
  
  - **Data:**
    - Data Management Capability Assessment Model (DMCAM).
    - Generic Statistical Information Model (GSIM).
    - Data Documentation Initiative (DDI).
  
  - **Processes:**
    - GSBPM Quality Indicators.
  
  - **Software services:**
    - Service Oriented Architecture (SOA).
    - Common Statistical Production Architecture (CSPA).
    - SDMX Reference Infrastructure.
TOGAF Enterprise Principles

• Standardized description for Data Quality Principles.

• It can incorporate principles from other domains such as:
  – Documentation.
  – Data publication.
  – Prioritization.
  – Evaluation.
TOGAF Architecture Development Method (ADM)

- Provides a general guide to plan and develop architecture domains.
- Separates design from implementation.
- Allows for the prioritization of projects.
- Includes explicit evaluation and analysis for improvement.
- Allows for quick hits in the development of the projects.
The hundreds of information products and processes demand a comprehensive and standardized way of managing and storing documentation.

A metamodel helps define the minimum set of documentation for each domain. It has to be tailored to the needs of every institution.

A metamodel provides consistency by enforcing the relationship among artifacts. For instance: Principles vs. Sub processes, Applications vs. Data Models.
TOGAF Domains

VISION OF THE ARCHITECTURE (Strategic Alignment)

Information Architecture (Data)  Business Architecture (Processes)  Application Architecture  Technology Architecture

OPPORTUNITIES AND SOLUTIONS

PROJECT PORTFOLIO

IMPLEMENTATION GOVERNANCE
PROCESS ARCHITECTURE
Quality Principles can be mapped to the GSBPM

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

**Relevance**
- Coherence and Comparability

**Timeliness and Punctuality**
- Accuracy and Reliability

**User Relationship**
- Sound Methodology
- Non-excessive Burden on Respondents

**Adequate Implementation**
- Statistical and Geographical Standards
- Cost-effectiveness
- Statistical Confidentiality

**Standardized Metadata**

**Accessibility**
Process Architecture

• In addition to the chores, GSBPM proposes over-arching processes to manage:

1. Quality
2. Metadata
3. Data
4. Process data
5. Knowledge
6. Statistical framework
7. Statistical program
8. Providers
9. Customers
Data Architecture

• *Data Management Capability Assessment Model* (DMCAM) provides the basis for:
  – Data Management.
  – Data Management Program.
  – Data Modeling.
  – Data Quality.
  – Data Control.

• *Generic Statistical Information Model* (GSIM) provides the specification and the taxonomy of the data domains. It is the link to GSBPM.
Application Architecture

• **Service Oriented Architecture** (SOA) provides the guide to software development (web services):
  – Representing a specific outcome.
  – Autonomous and reusable by different business processes.

• The **Common Statistical Production Architecture** (CSPA):
  – Covers the statistical production processes defined by the GSBPM.
  – Provides a link between GSBPM and GSIM.
Technology Architecture

• Provides a framework to document hardware and system software.
• Facilitates standardization and evaluation of infrastructure risks.
• Implementing a common Technology Architecture creates opportunities for collaboration between institutions:
  – INEGI has a partnership established with Eurostat and ISTAT for the implementation of the SDMX standard.
WHAT'S NEXT?
Challenges of an EA approach

• Getting support from critical stakeholders.

• Communicating the concept of Quality Driven projects using EA to all levels of the organization.

• Gathering the human resources with the required skills.

• Developing and implementing a program that includes projects that show results in the short run.
Challenges of an EA approach

• Materializing EA projects within the organization. For instance, implementing the GSBPM approach and recommendations in all production processes.

• Integrating statistical and geographical capabilities within the enterprise architecture framework.
FINAL REMARKS
Final Remarks

• The National Statistical Offices need to redefine themselves in order to remain relevant.

• The establishment of an standardized framework streamlines the institutional actions for modernization.

• Frameworks developed by international organizations, such as UNECE GSBPM, promote standardization and a common language to implement and improve the production quality of institutions.
Final Remarks

• International standardization facilitates partnerships with other institutions to develop new frameworks and tools.

• Enterprise Architecture can help integrate and harmonize conceptual frameworks.

• The approach is complex and requires specialized technical and human resources.