INEGI

Conference on Smart Metadata for Official Statistics
COSMOS
11-12 April 2024 — Paris

Use of Standards and Models to Implement Transversal IT Platforms for Official Statistics

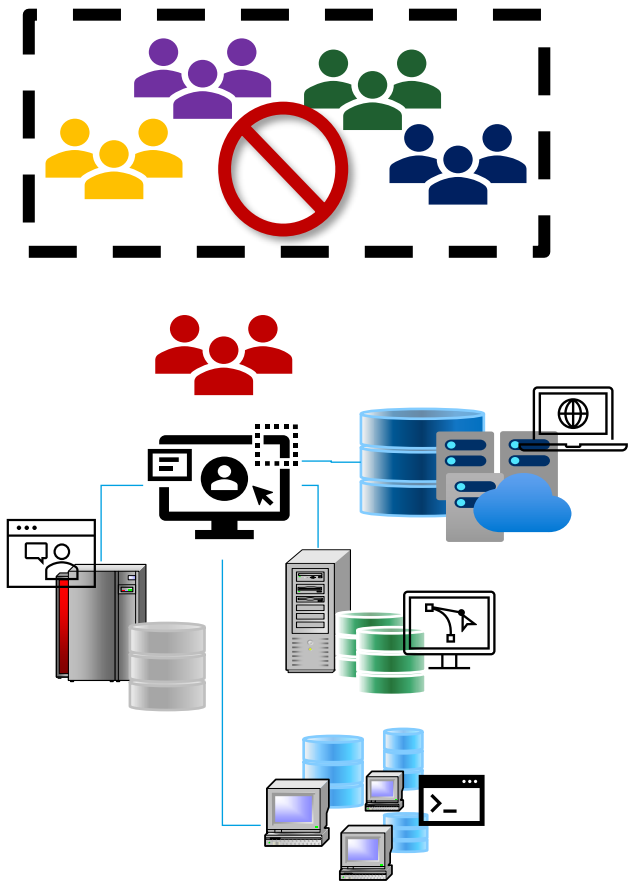
Conference on Smart Metadata for Official Statistics (COSMOS 2024)

Paris, France

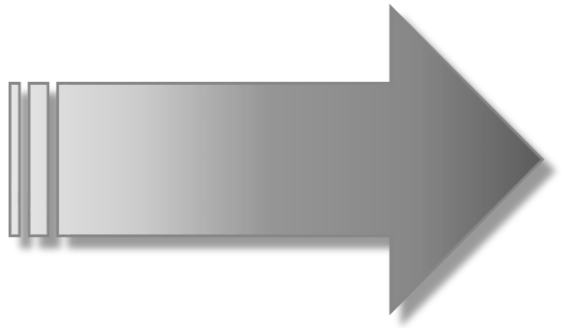
11-12 April 2024

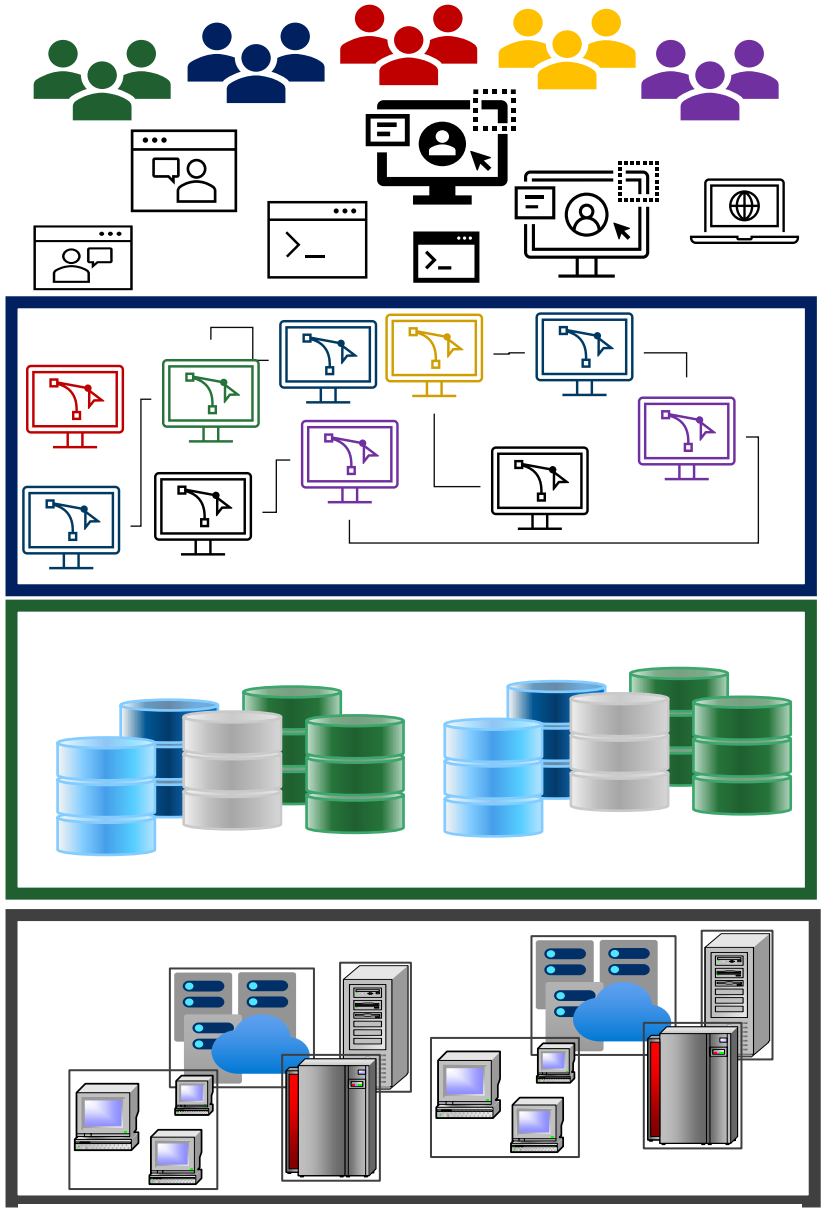
Prepared by:
Juan Muñoz / Silvia Fraustro

Problem Statement



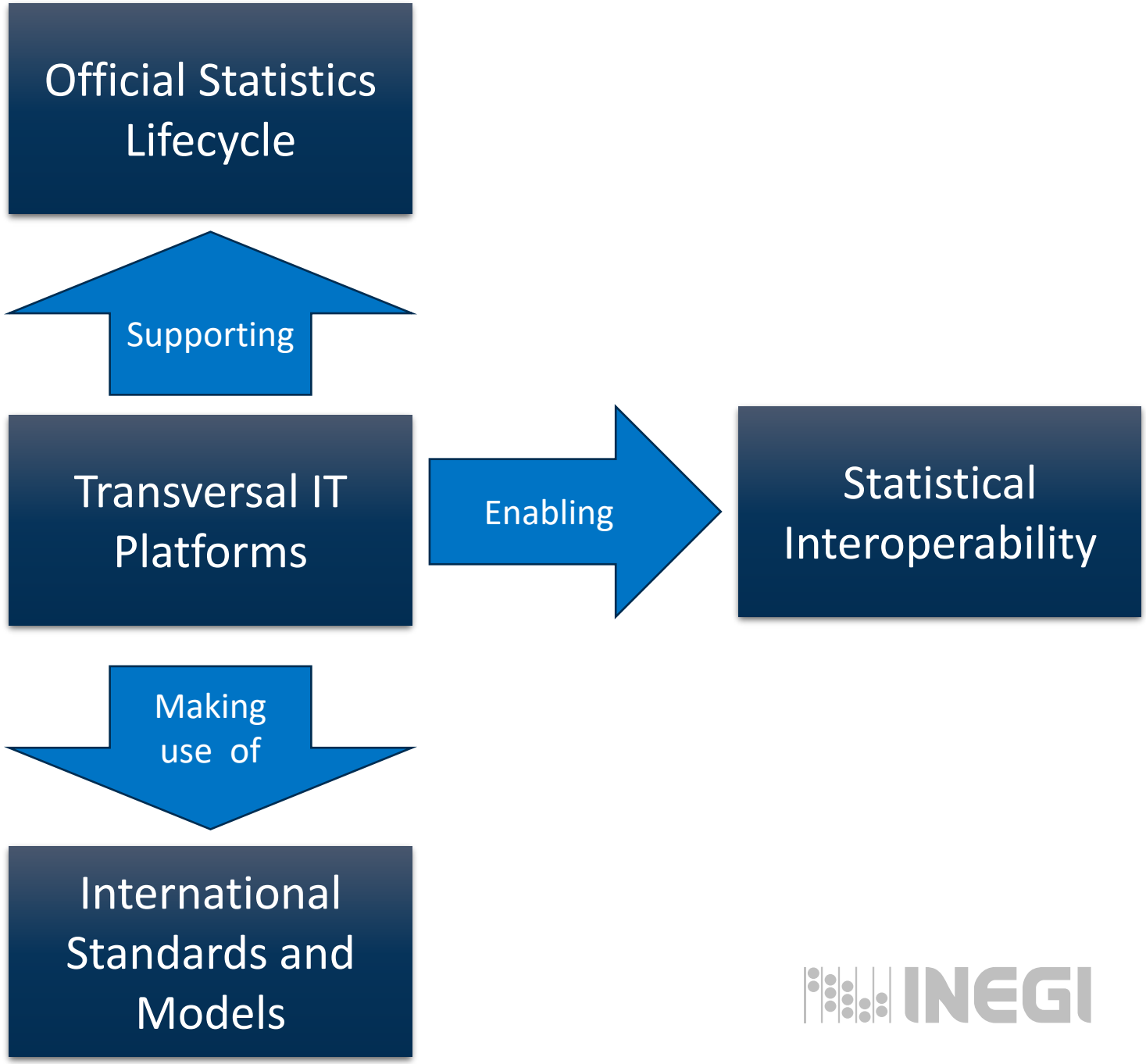
Systems/Data Silos





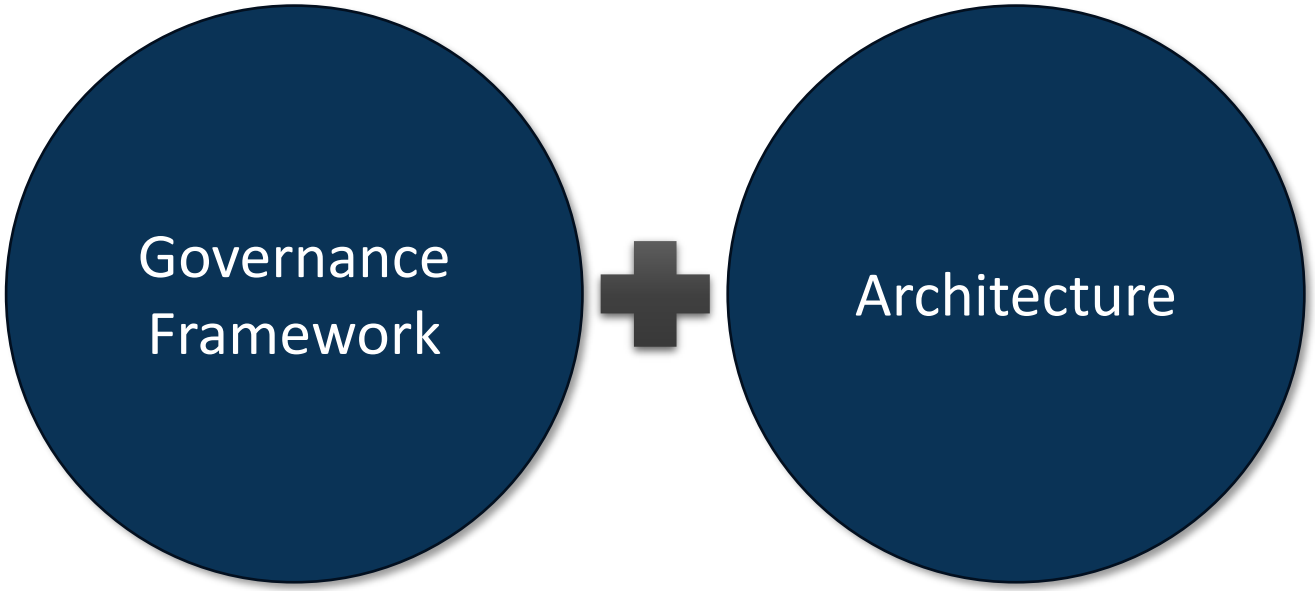
Transversal Platforms

Proposal


Official Statistics Lifecycle
Supporting
Transversal IT Platforms
Enabling
Statistical Interoperability
Making use of
International Standards and Models

Foundations

DATA GOVERNANCE FRAMEWORK FOR STATISTICAL INTEROPERABILITY (DAFI)



THE OPEN GROUP ARCHITECTURE FRAMEWORK STANDARD (TOGAF)

Provides a direction
Promotes and sponsors the change
Clarifies decision rules and solves discrepancies
Sets standards, tools, and technologies

Aligns concepts
Defines components and interactions
Reveals the path and aligns the required efforts

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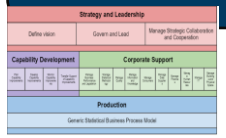
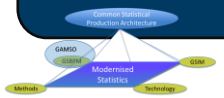
GAMSO



SDMX Governance Bodies

Modernisation Maturity Model



GSBPM

Organization

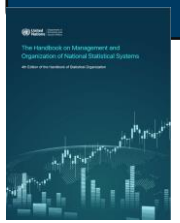
Guidelines

Governance Framework

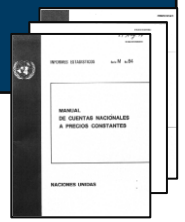
Processes

Principles

The Handbook on Management and Organisation of National Statistical systems

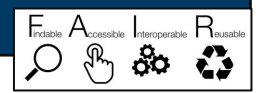


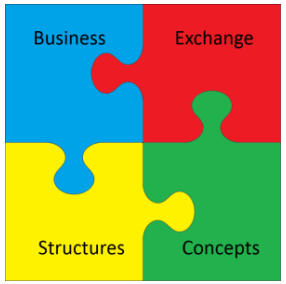
Internationally Agreed Methodologies



DAFI

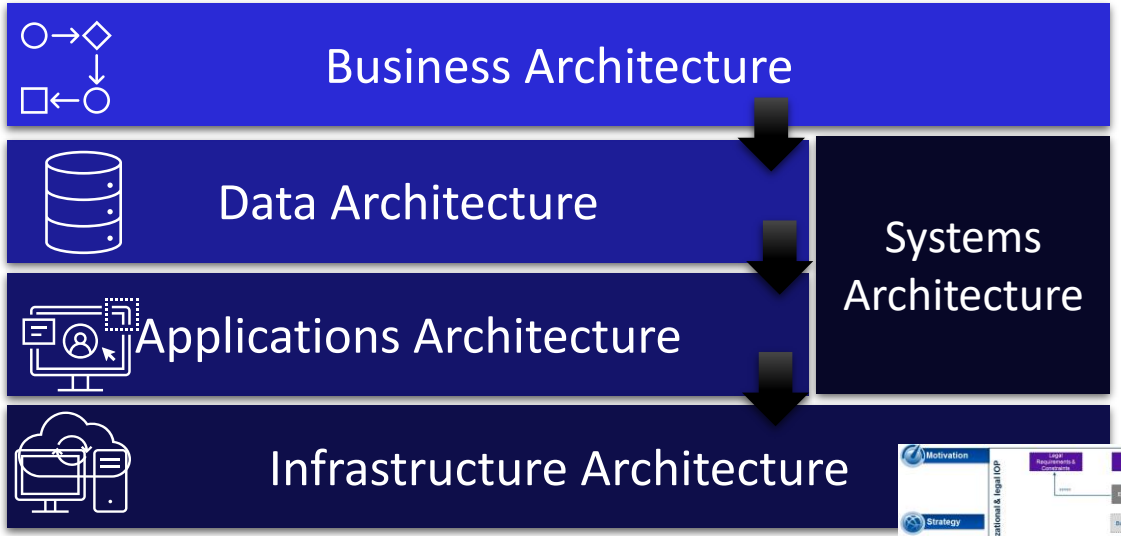
FAIR





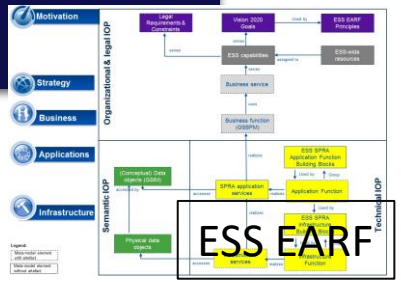
GSIM

Sets a common language

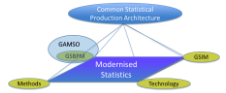


TOGAF

Sets an enterprise-wide integration model (Enterprise Architecture)

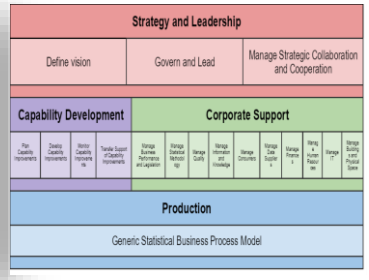


INEGI



MMM

Skills and Abilities to Improve Processes



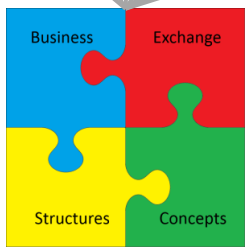
GAMSO

Supporting Activities

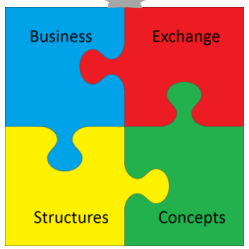
BUSINESS PROCESSES

Specify Needs | Design | Build | Collect | Process | Analyse | Disseminate | Evaluate

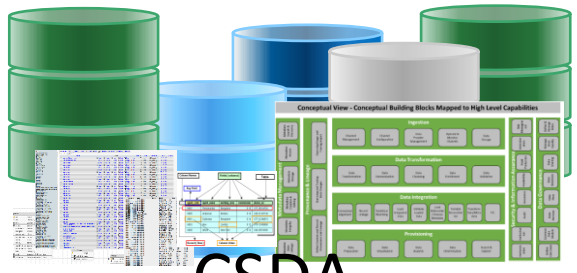
DATA



Inputs GSIM objects



Outputs GSIM objects



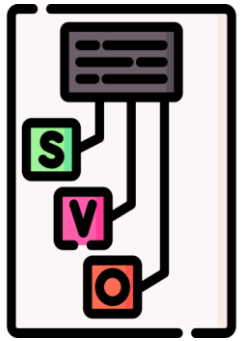
CSDA

Skills and Abilities to Manage Data

Statistical Interoperability

Capacity to share and make use of statistical information among different parties or electronic systems without distortions of its meaning, not needing to communicate to get additional specifications or make ad-hoc adjustments for each specific case.

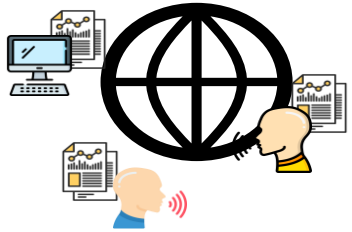
System



Syntactic

Facets (types) of Statistical interoperability

Structural



Semantic

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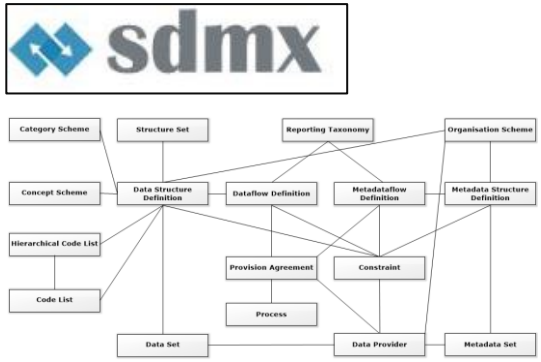
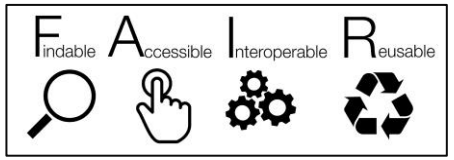
Domains Integration and FAIR Principles



SDMX Information Model

Artefacts that help to enable interoperability and implement **FAIR Principles**



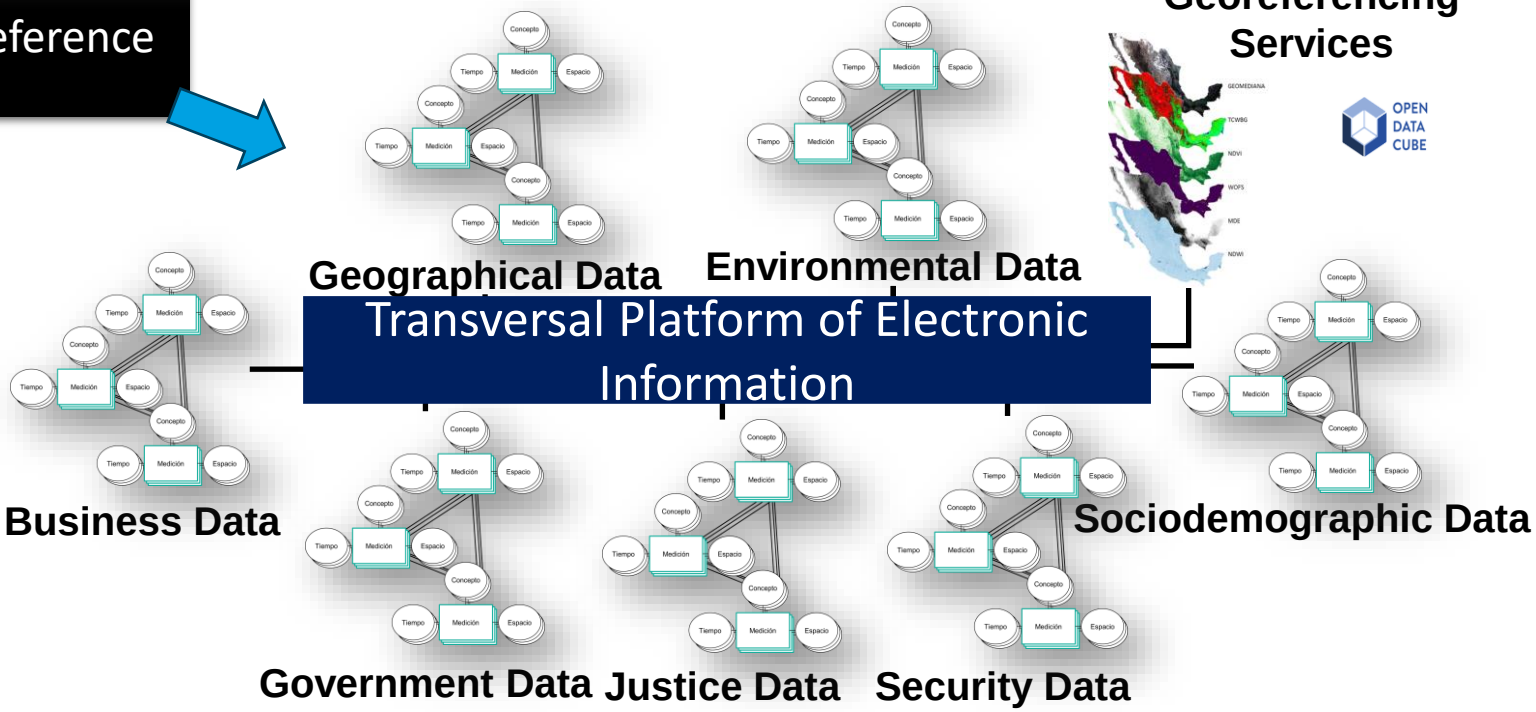
Global Statistical Geospatial Framework
Guide on Geospatial Data Integration in Official Statistics
Merging Statistics and Geospatial Information

Connecting Points:

- Conceptual Definition
- Geographical Reference
- Period of Time

Statistical Concept	Description	Concept ID	Version	Representation	Agency
Unit of Measure	Unit in which the data values are expressed.	UNIT_MEASURE	1.0	CL_UNIT_MEASURE	SDMX
Time Period	Timespan or point in time to which the observation actually refers.	TIME_PERIOD	1.0	Observational Time Period	SMX
Frequency of observation	Time interval at which observations occur over a given time period.	FREQUENCY	1.1	CL_FREQ	SDMX
Reference Area	Reporting Country in ISO code (The country, or geographical/political group of countries that the measured economic phenomen on relates to)	REF_AREA	1.0	CL_AREA	SDMX

SDMX Concept Scheme



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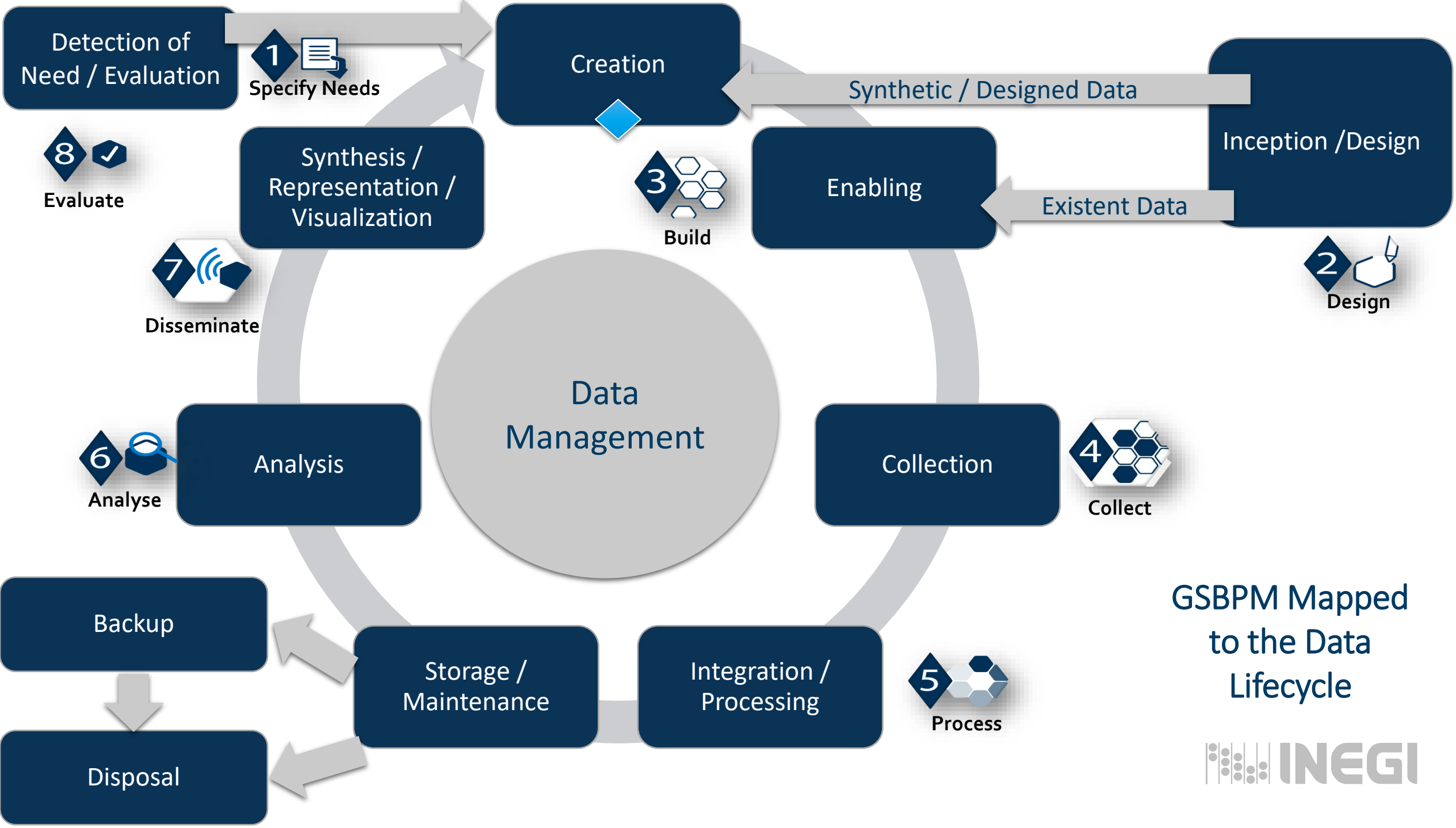
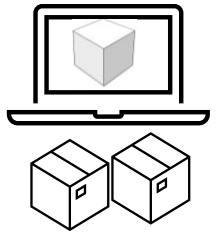

Detection of Need / Evaluation
1
Specify Needs
Creation
Synthetic / Designed Data
Inception /Design
8
Evaluate
Synthesis / Representation / Visualization
3
Build
Enabling
Existent Data
2
Design
7
Disseminate
Data Management
6
Analyse
Analysis
Collection
4
Collect
Backup
Storage / Maintenance
Integration / Processing
5
Process
Disposal
GSBPM Mapped to the Data Lifecycle
INEGI

Technologies

SOA,
Microservices

CSPA

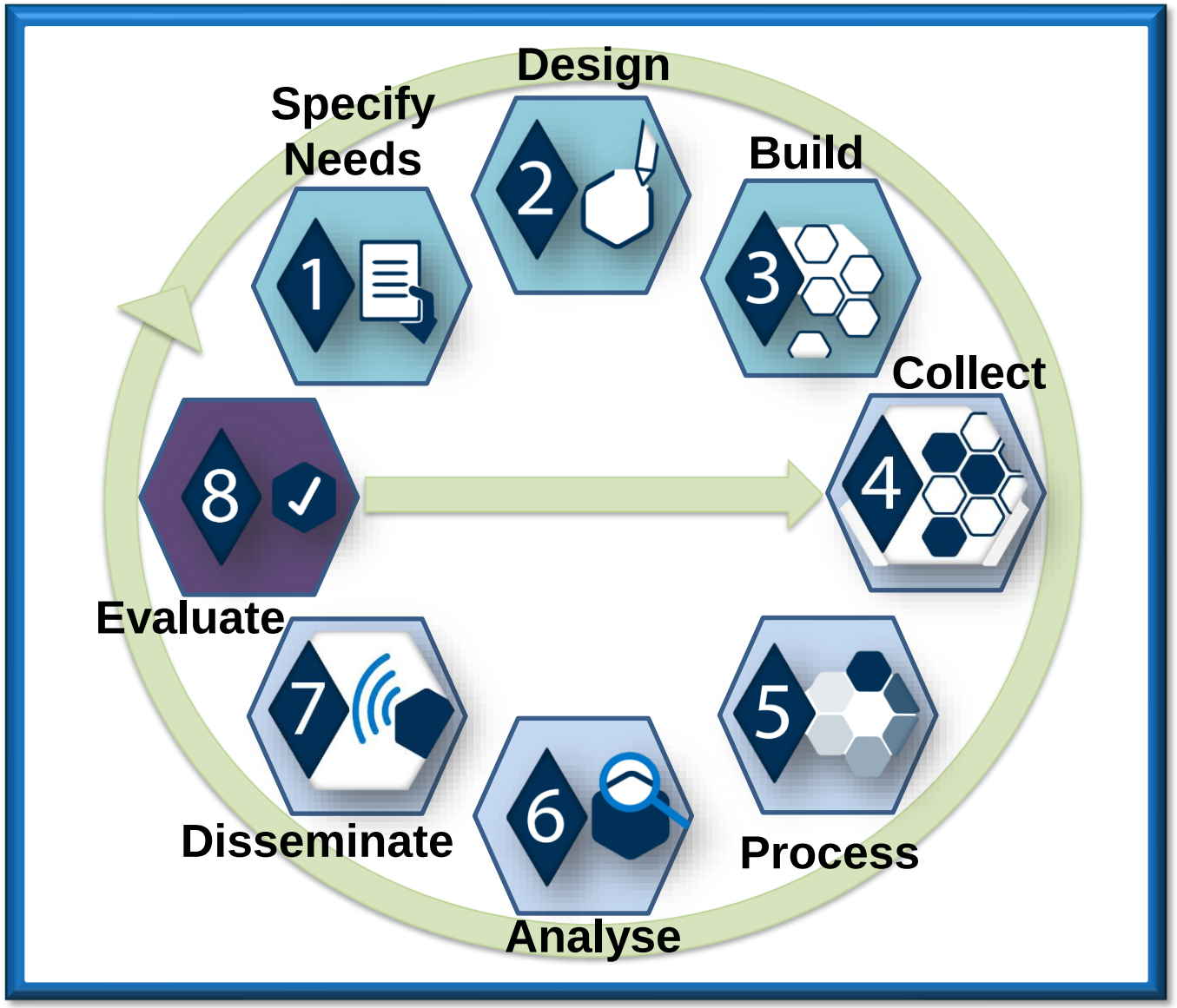
Virtualization,
Containerization

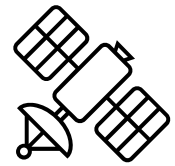


APIs

SOAP, RESTful,
GraphQL,
gRPC, WebSocket,
Webhook

Artificial Intelligence
Data Science
Big Data

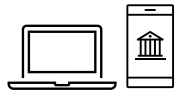




Geolocation:
GPS, Galileo,
Glonass,
Beidou, QZSS,
GNSS

CAWI

CAPI



CATI

Clod
Computing:

IaaS, PaaS, SaaS
Private, Public,
Hybrid

Security Architecture

Business Architecture

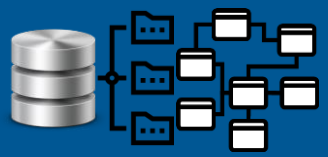
Processes

Cybersecurity TP

Applications Architecture

- Information Systems for Specific Production Support Purposes
- Information Systems TP
- Information Systems for Specific Dissemination Support Purposes

Data Architecture



- Internal and Temporary Databases and Repositories for Production
- Electronic Data TP (Main Databases and Repositories)
- Auxiliary Databases and Repositories for Dissemination

Technological Architecture

- Common Software and Collaboration Services TP
- Communications and Computing Infrastructure TP

TP: Transversal Platform

MPEG | Modelo del Proceso Estadístico y Geográfico

INEGI´s Statistical and Geographic Process Model (MPEG) is an adaptation of GSBPM

Standardized Evidences from the Production Process

PTRACKING Evidence Registration System

Evidence Record Templates

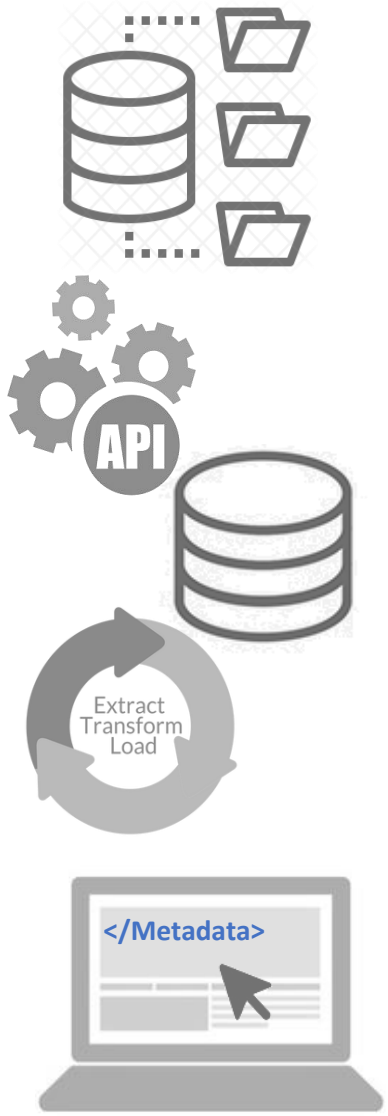
PTIE Transversal Platform for Electronic Information

Integrated Metadata DataBase

Metadata Consultation Systems

- **National Metadata Network**
- **Data Flows SDMX - DSD**
- **Metadata Distribution Center (geogr aphic)**
- **Open Data View of IPI Programs**

INEGI´s Site | **DWH** | **Data Lake** | **Reports**



Conclusions

- A high-level governance framework is an indispensable condition for achieving the goals of enterprise-wide projects.
- Transversal platforms represent a concrete option that contributes to achieving FAIR principles.
- It is desirable to achieve the objectives of the FAIR principles as they promote features that facilitate better information management and the implementation of better information services to satisfy the user’s needs.
- The existent standards and models from the official statistics community complement the general ones to design specialized environments that support the processes related to the statistics life cycle.

THANK YOU

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INEGI Informa

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