GITS
Geotecnología en Infraestructura Transporte y Sustentabilidad

Geotechnology for Agriculture: A view from regulations and free software.

GEOAGRI

11 de noviembre del 2015

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- Free software vs. Privative software

Agriculture, two aspects: data and software

Agriculture, two aspects:

Data

- **¿What do we need?**
  - **¿Data or information?**
  - **¿Information or knowledge?**
- **¿Do we have what we need?**
  - **¿Enough?, ¿compatible?**
  - **¿documented?, ¿updated?**
- **¿What about the "data quality"?**
  - **¿Do you have quantitative and qualitative criteria?**

Software

- **¿Affordable?**
- **¿Tailored?**
  - **¿Do you spend yearly most of your Budget on commercial software?**
- **¿Technologically independent?**

Common problems with data and information

For data-info rarely it is declared (documented):

- → Dates,
- → Scale,
- → Lineage,
- → Quality aspects

Other words, no metadata culture.

Common problems with data and information

Legal Aspects:

- → Lack of geospatial policies,
- → Scarce technical standards,
- → Existing documents not aligned,
- → Lack of institutional leadership,
- → The interoperability framework is not common for all the government levels,

In other words, the legal framework is weak and incomplete.

¿What is a Spatial Data Infrastructure?

The term “Spatial Data Infrastructure” (SDI) is often used to denote the relevant base collection of technologies, policies and institutional arrangements that facilitate the availability of and access to spatial data. The SDI provides a basis for spatial data discovery, evaluation, and application for users and providers within all levels of government, the commercial sector, the non-profit sector, academia and by citizens in general.

SDI Cookbook. *Version 2.0, 25 January 2004.*

SDI definition:

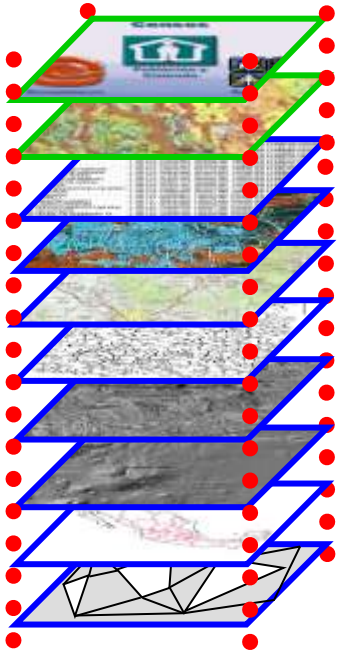
- Means to discover, visualize and evaluating (Metadata)
- Means for accessing data

Geospatial data and attributes

A collection of:

- Policies
- Institutional provisions (Agreements)
- Technologies
- Regulatory framework

→ to facilitate → Availability and access



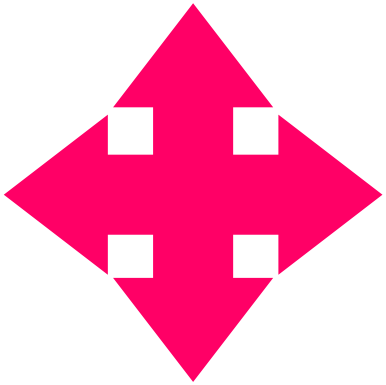
A SDI model:

- Interoperability
- Sustainable budget
- Open data

Policies

Intellectual capital

- Capacity building
- Willingness
- Critical mass of experts



Legal frame

- Agreements and collaboration
- Legal mandate
- Organization Ad-hoc

Technical Scheme

- Technical standards
- Clasification and grouping data
- Delivery mechanisms

The value chain: DIKW

Wisdom

Understanding Principles

Knowledge

Understanding Patterns

Information

Understanding Relationships

Data

Understanding Problems

The value chain: DIKW

The Origin of the "Data Information Knowledge Wisdom" Hierarchy

Nikhil Sharma

[Updated: February 4, 2008]

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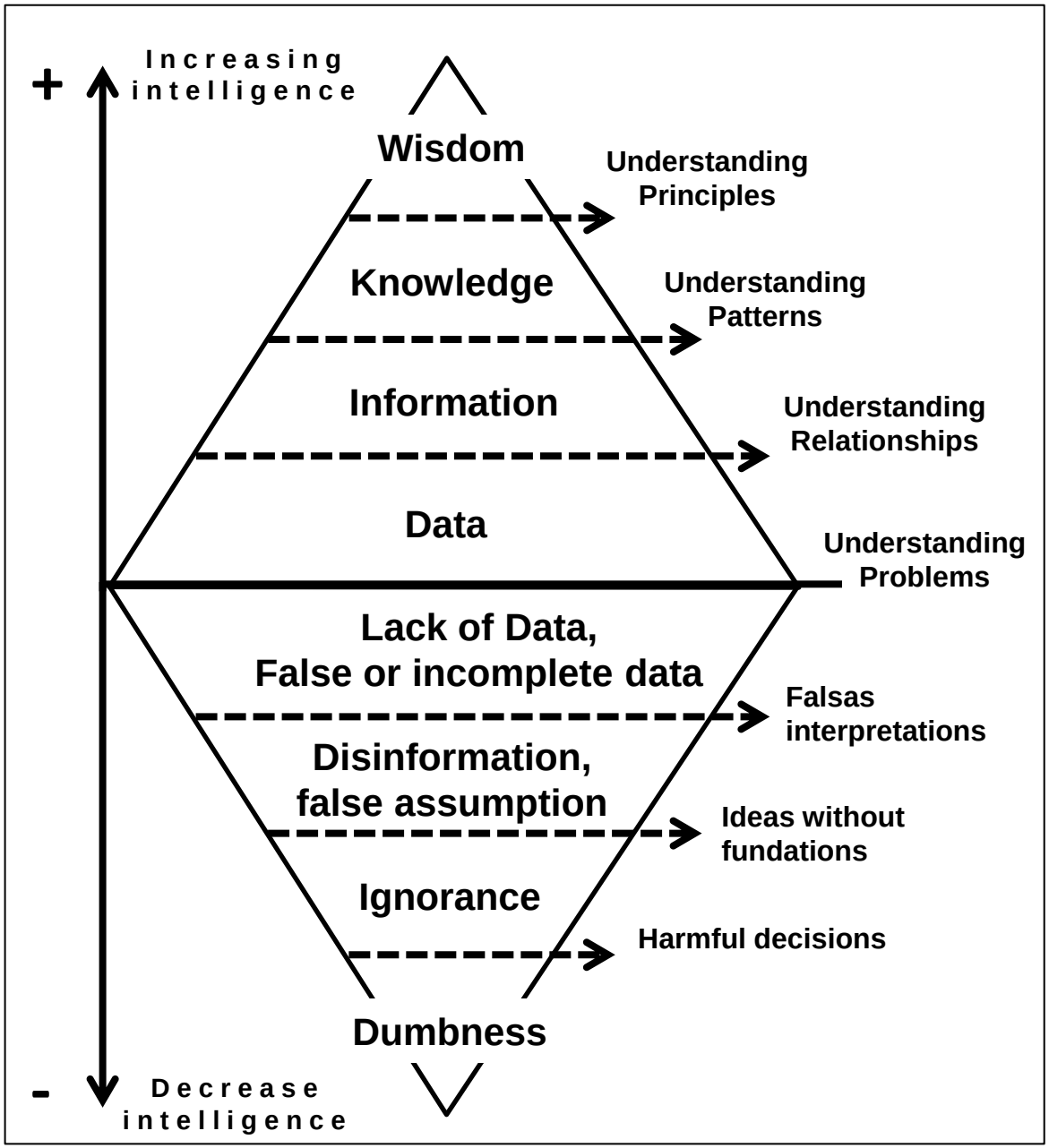
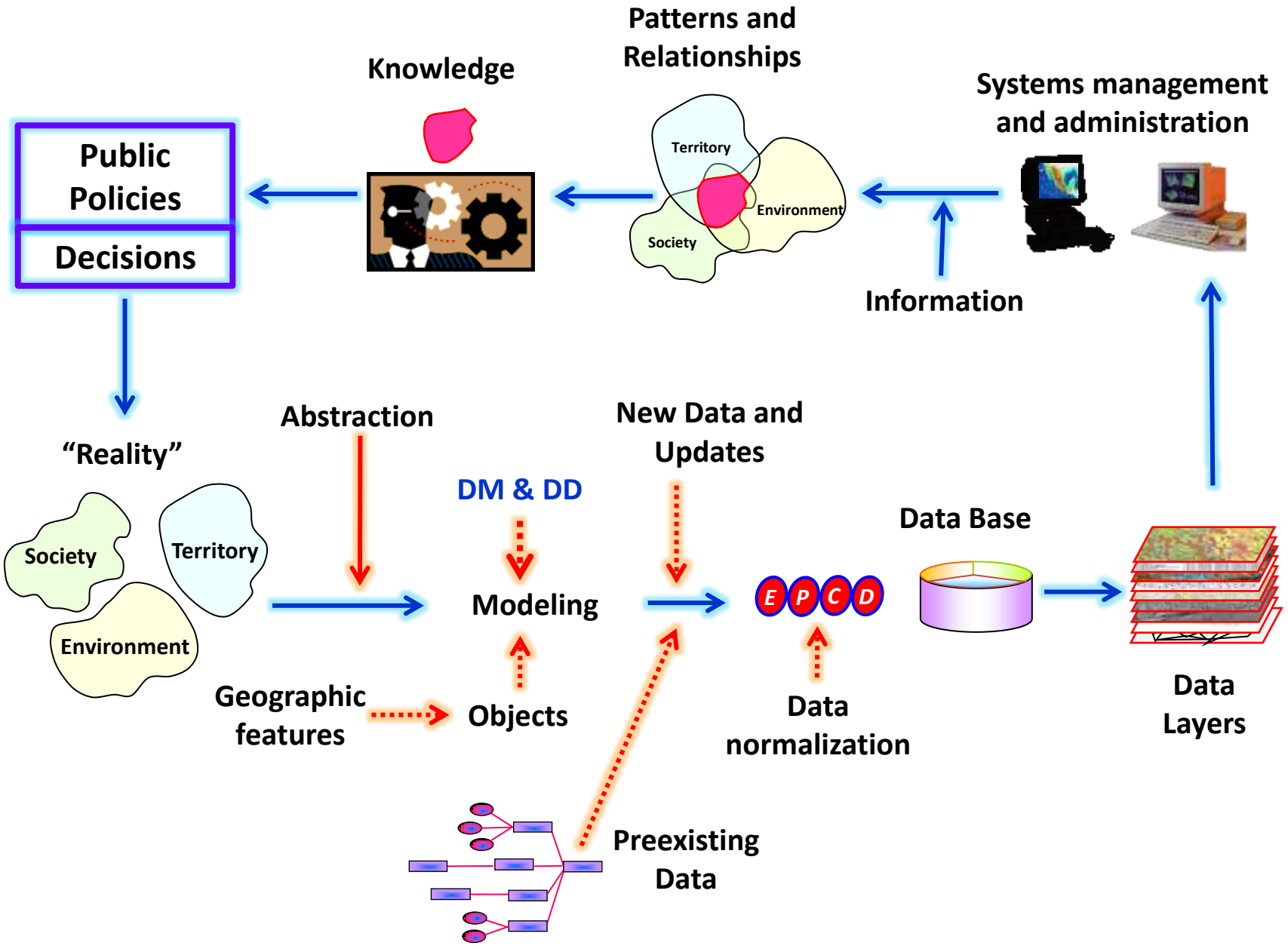
The value chain: DIKW

The Value Chain:
Data, Information,
Knowlwdge, Wisdom



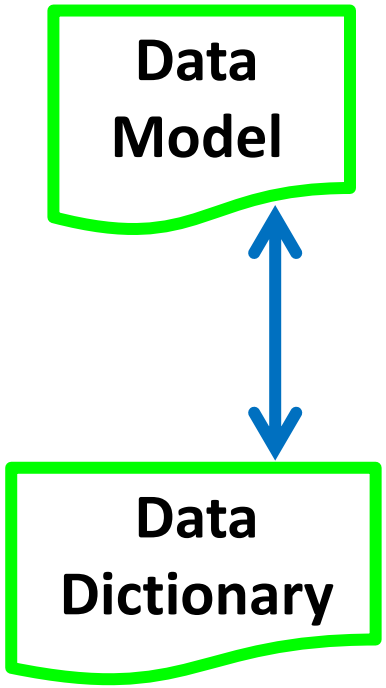

Patterns and Relationships
Knowledge
Systems management and administration
Public Policies
Decisions
Territory
Environment
Society
Information
"Reality"
Abstraction
New Data and Updates
DM & DD
Data Base
Society
Territory
Environment
Modeling
E P C D
Geographic features
Objects
Data normalization
Data Layers
Preexisting Data

The Technical Scheme:

- → Data modeling (Data Model and Dictionary),
- → Classification and grouping data,
- → Data Normalization
- → Technical regulations
- → Data delivery mechanisms

Data Model and Dictionary

El proceso de modelado de datos y los diccionarios de datos



- → **Need to regulate data generation,**
- → **Resolve semantic discrepancies,**
- → **Provide common specifications that regulate the production of data,**

Data Model and Dictionary

Data Model

Characteristics of geospatial Objects

Descriptive Component

- Name
- Definition
- Attributes and attribute values

Spatial Component

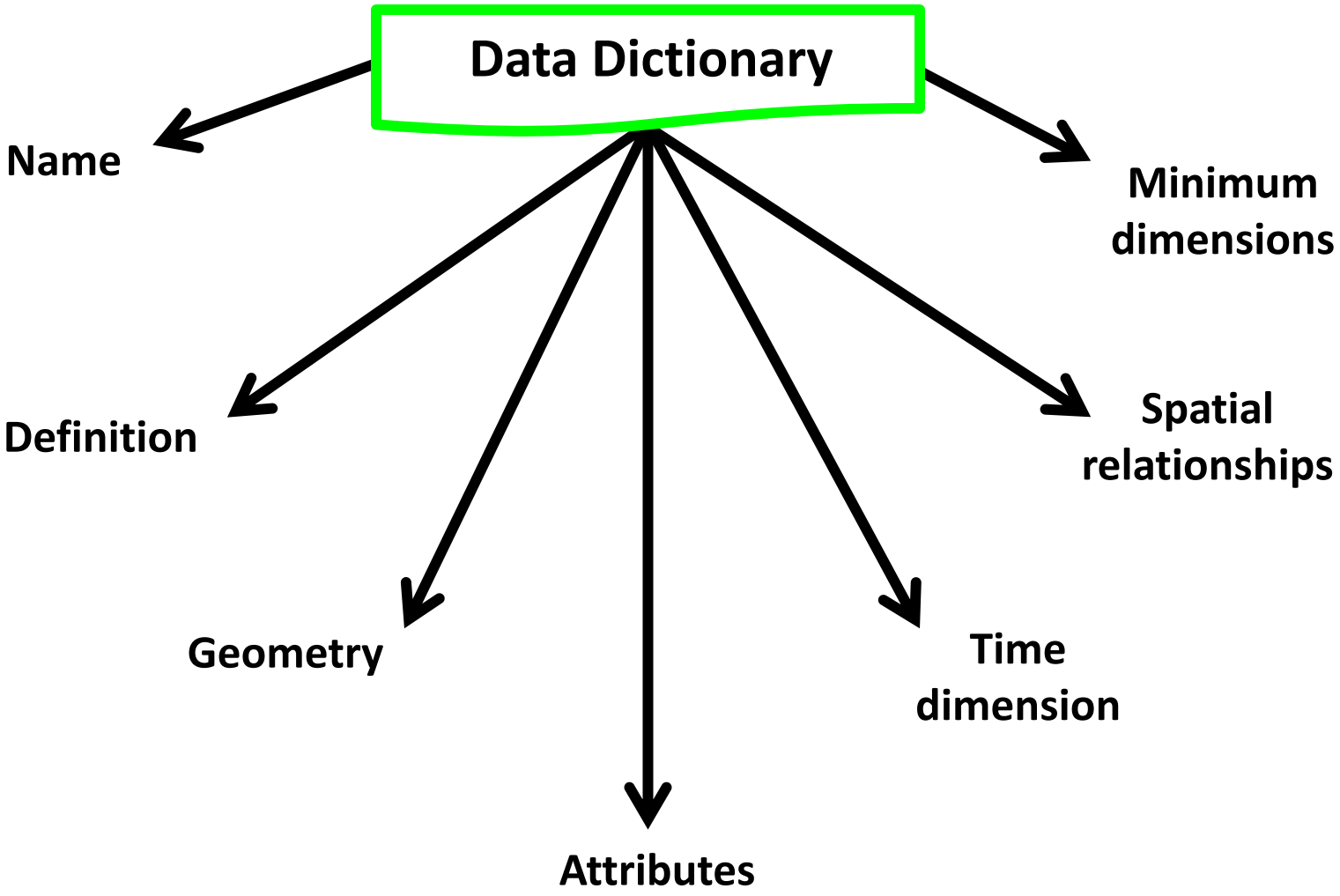
Vectorial representation

- Point
- Line
- Polygon

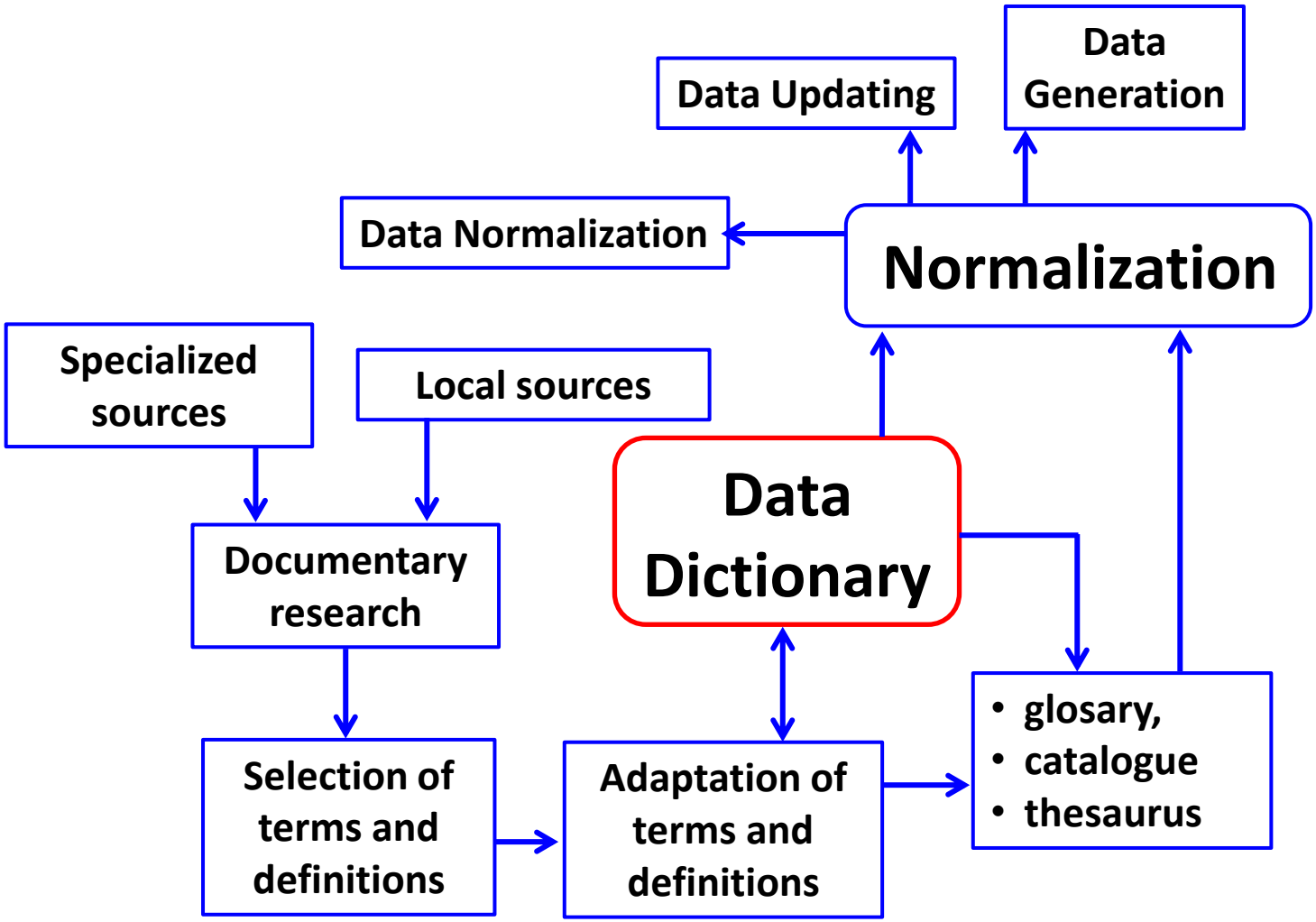
Spatial relationships

- Connection
- Sharing
- Topology

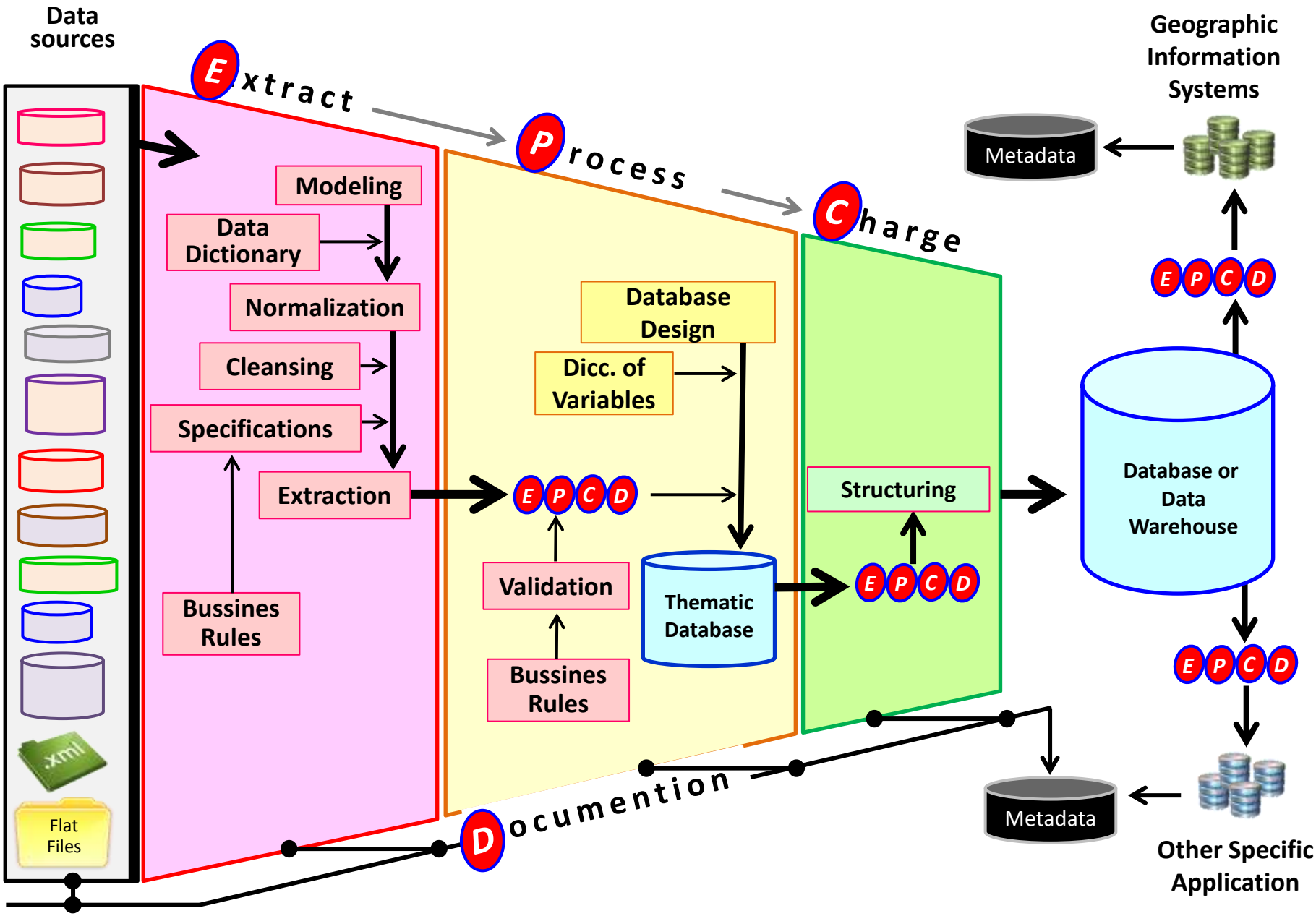
Data Model and Dictionary



Data Model and Dictionary

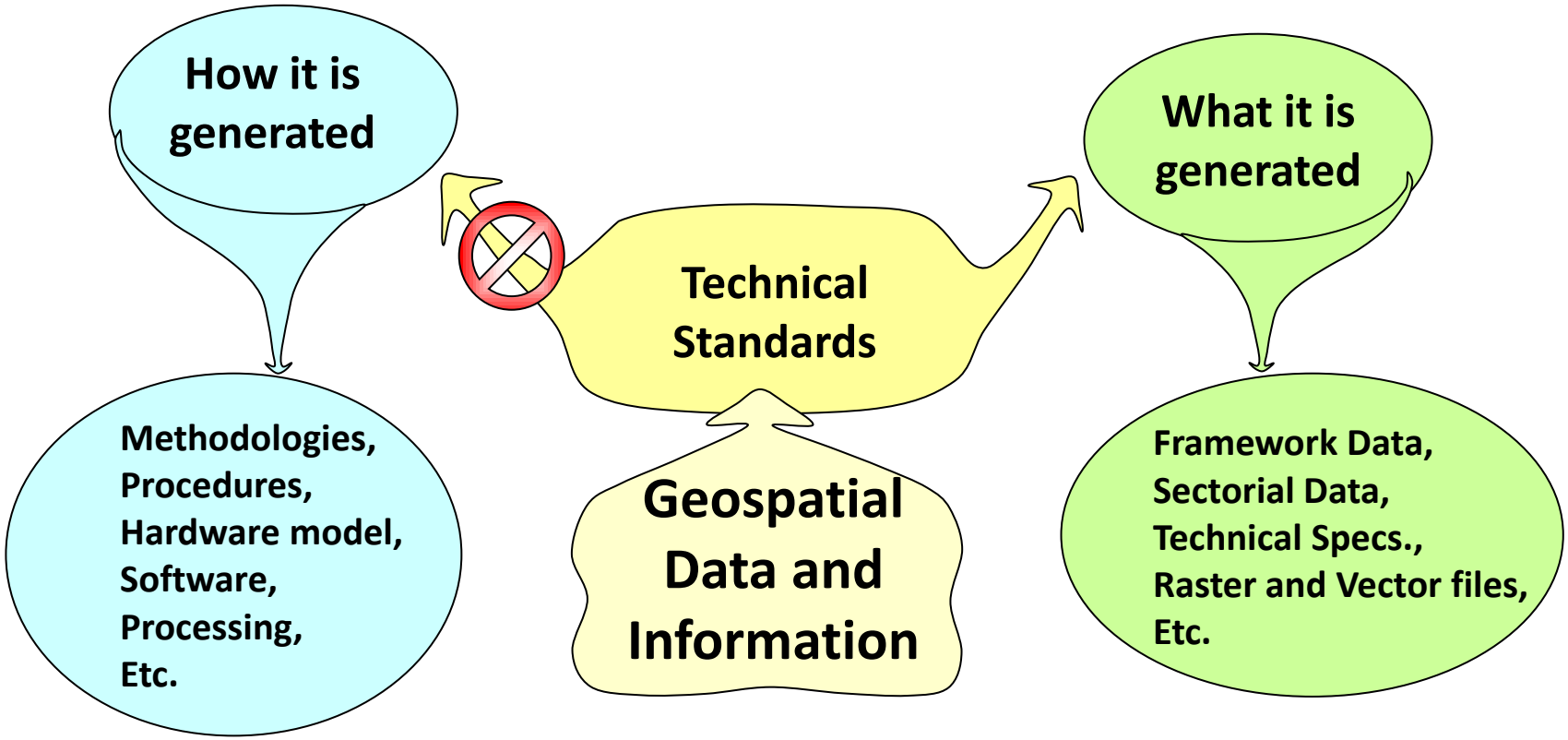


Data Normalization



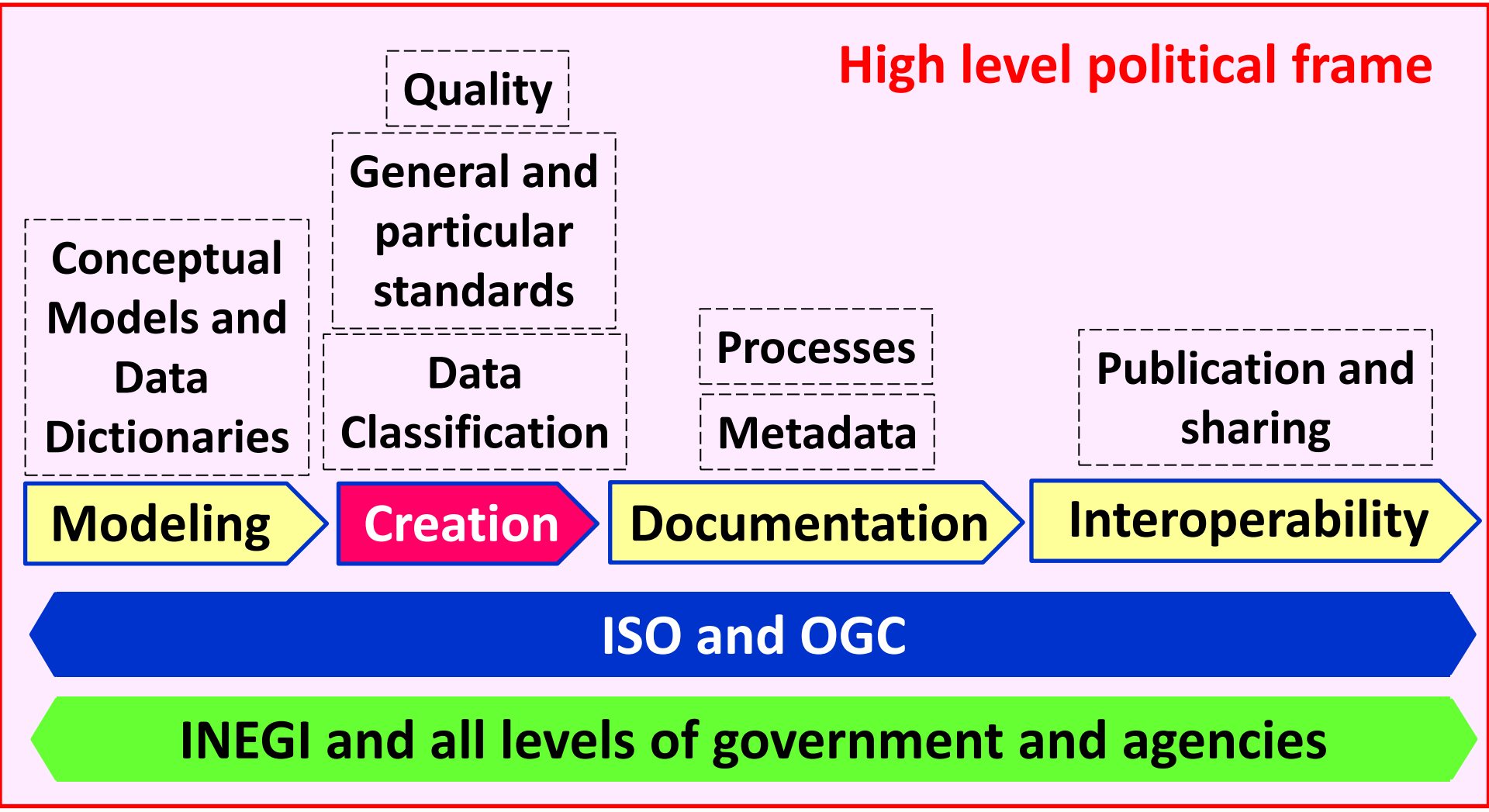
¿Standards what for?

→ **Standards applies to the characteristics to be obtained a product or service, not a tool or method. A standard should include the "numerical specifications."**

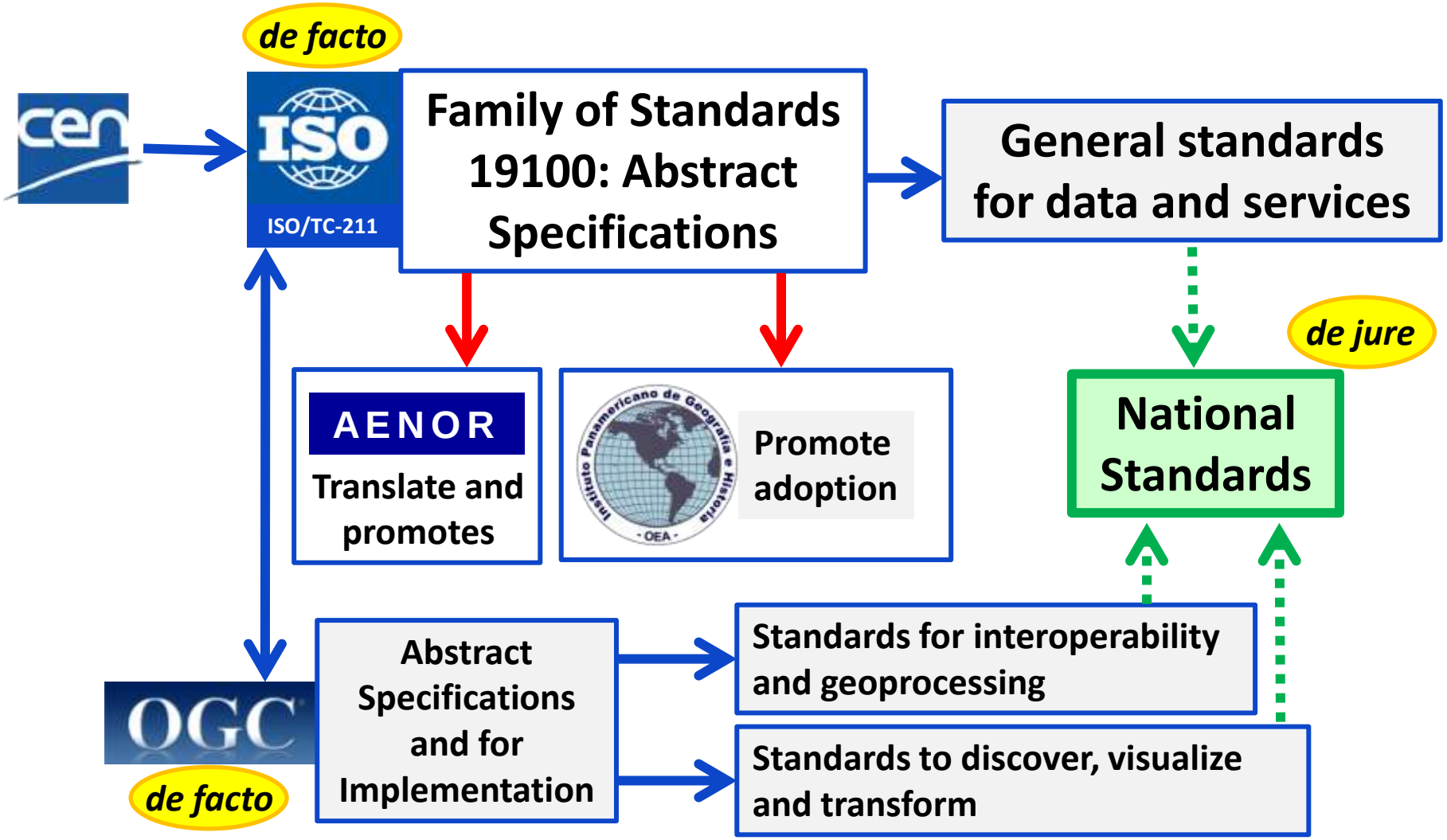


¿ What is standardisation and what for?

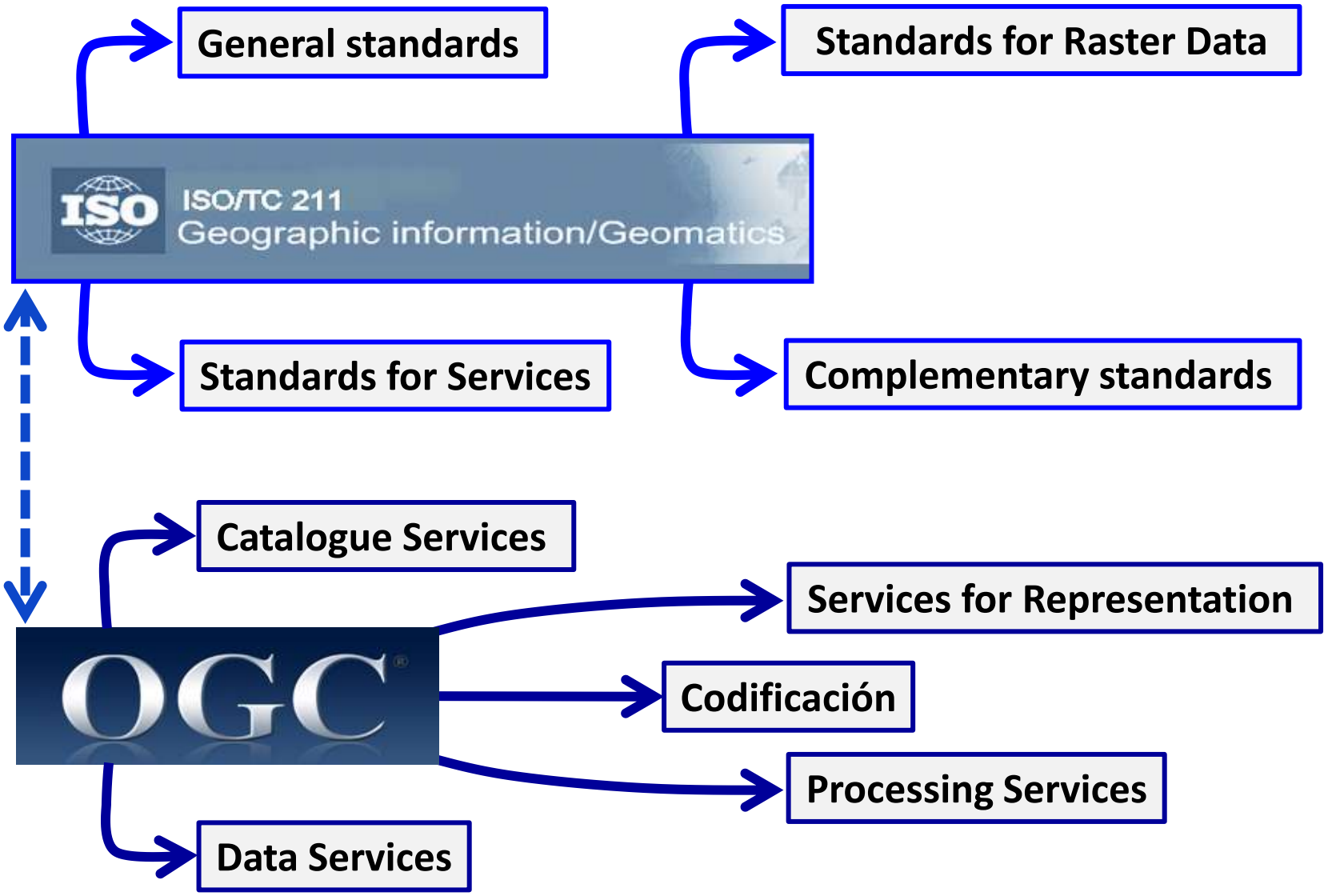
¿What should be standardized about geospatial data?



ISO and Open Geospatial Consortium standards



ISO and Open Geospatial Consortium standards



Free and Open Code software:

Open Developers:

Thank you for your attention

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