



Spatial Data Infrastructures

Spatial Data Infrastructures: Introduction

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Outline

- Definition
- Components
- Types
- Standards
- INSPIRE
- Open questions

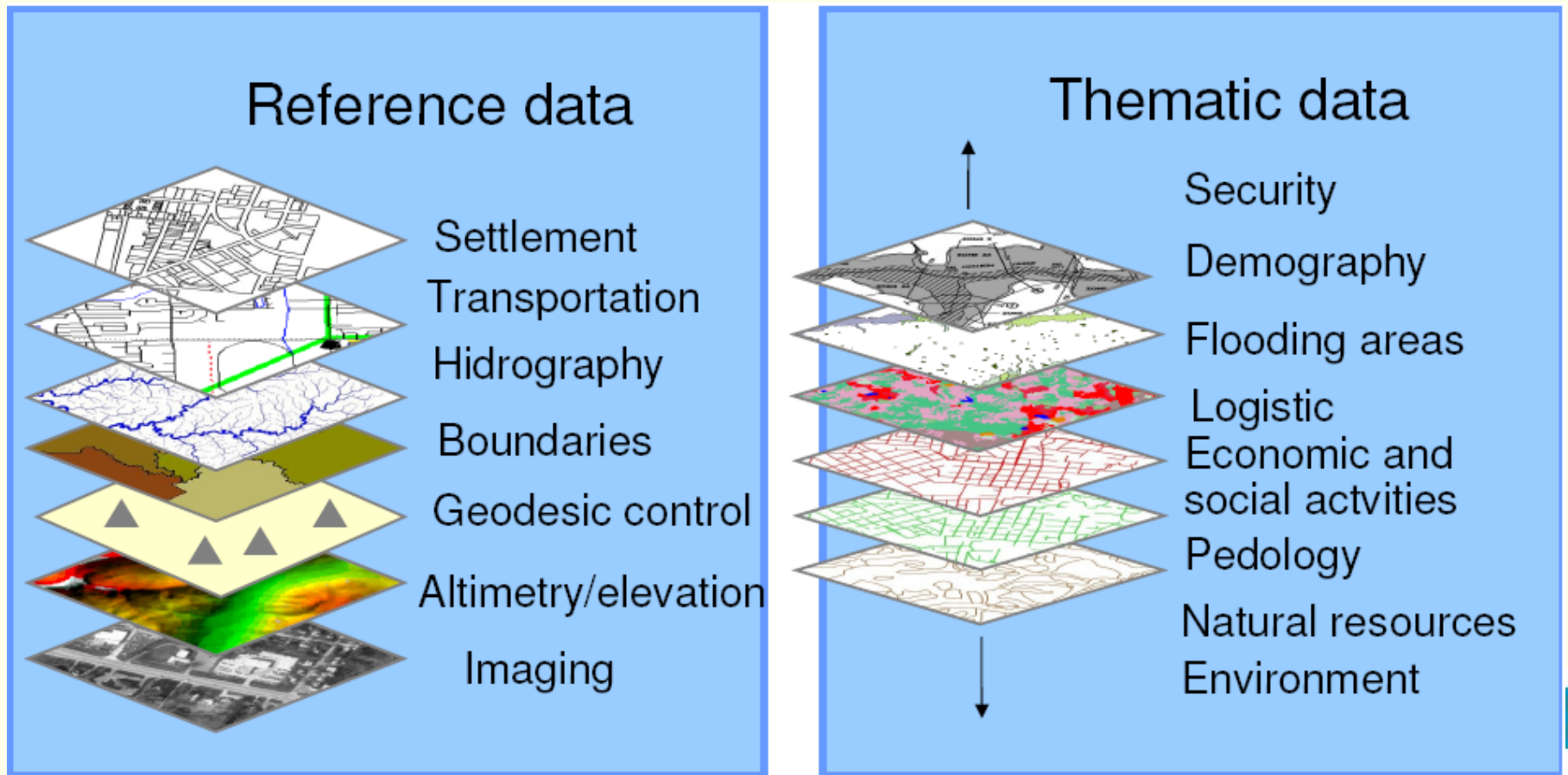
What is an SDI

- SDI is about data sharing and cooperation
- 'INFORMAL' DEFINITION:
The basic arrangements for combining, processing and making available spatial data in forms and ways which meet user needs and capacities.
- 'FORMAL' DEFINITION:
The technology, policies, standards and human resources necessary to acquire, process, store, distribute and improve utilisation of geospatial data' (GSDI Cookbook).
- An SDI differs from:
 - WEB GIS: GIS facilities over the Web
 - GIS with Web facilities: desktop GIS that connects to web servers

Why SDI ?

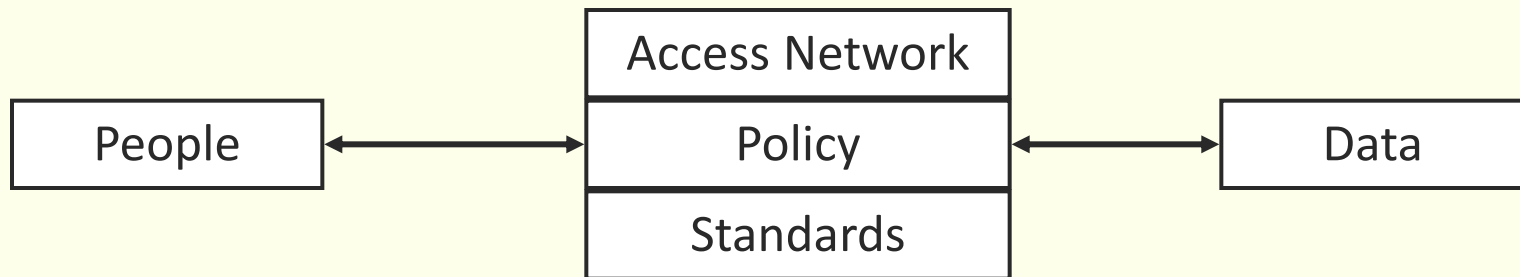
Access and data sharing, Interoperability, Local Management, Portability.

Build once, use many times!



Components of an SDI

Framework of spatial data, metadata, users and tools that are interactively connected in order to use spatial data in an efficient and flexible way.



Source: A, Rajabifard

Development of an SDI

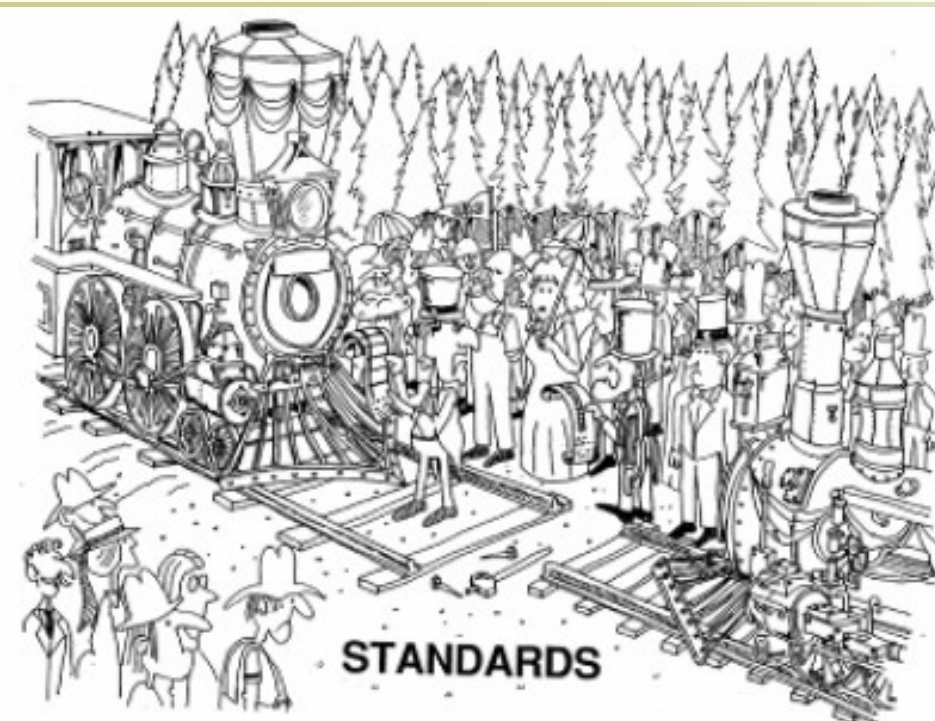
Stage	Stand alone	Exchange	Intermediary	Network
Aspect				
Vision	Focus on individual organisation	Developed with all stakeholders	Implementation	Commonly shared, and frequently reviewed
Leadership	Focus on individual organisation	Questioned	Accepted	Respected by all stakeholders
Communication	Focus on individual organisation	Open between public parties	Open between all stakeholders	Open and interactive between all
Self-organising ability	Passive problem recognition	Neutral problem recognition	Actively helping to solve identified problems	Actively working on innovation

Source: B.C. Kok and B. van Loenen

Types of SDIs

- Global
 - National
 - Regional and Local
 - Thematic
- } Top Down
- } Bottom up

The need for standards



The OGC Specification Program is a formal consensus process to arrive at approved (or "adopted") OpenGIS® Specifications.

OGC® "Making location count"
Open Geospatial Consortium, Inc.

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Standards

- ▼ **OpenGIS® Standards**
 - Cat: eBRIM App Profile: Earth Observation Products
 - Catalogue Service
 - CityGML
 - Coordinate Transformation
 - Filter Encoding
 - GML in JPEG 2000
 - Geographic Objects
 - Geography Markup Language
 - Geospatial eXtensible Access Control Markup Language (GeoXACML)
 - Grid Coverage Service
 - KML
 - Location Services (OpenLS)
 - Observations and Measurements
 - Sensor Model Language
 - Sensor Observation Service
 - Sensor Planning Service
 - Simple Features
 - Simple Features CORBA
 - Simple Features OLE/COM
 - Simple Features SQL
 - Styled Layer Descriptor
 - Symbology Encoding
 - Transducer Markup Language

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OpenGIS® Standards and Specifications

OpenGIS® Standards and Specifications are technical documents that provide the structure and data formats to build support for the interfaces or encodings into the Open Geospatial Consortium and have been developed by two different software engineers who work together without further debugging.

The documents are available at no cost to everyone.

OpenGIS® Standards

Implementation Standards are different from the Abstract Specifications. An interface specification is implemented by two different software engineers in ignorance of each other's interface.

Any Schemas (xsd, xslt, etc) that support an approved Implementation Standard.

Abstract Specification

The OGC Technical Committee (TC) has developed an architecture called the OpenGIS Abstract Specification. The Abstract Specification is used for development activities. Open interfaces and protocols are built and tested between different brands and different kinds of spatial processing software. The development of OpenGIS Implementation Specifications.

OpenGIS® Reference Model (ORM)

The OpenGIS® Reference Model (ORM) provides a framework for...

INSPIRE



- INSPIRE lays down general rules to establish an infrastructure for spatial information in Europe
 - for the purposes of Community environmental policies and
 - policies or activities which may have an impact on the environment.

- INSPIRE to be based on the infrastructures for spatial information established and operated by the Member States
 - INSPIRE is a distributed infrastructure.

- INSPIRE does not require collection of new spatial data
- INSPIRE does not affect existing Intellectual Property Rights

- Entry into force of the Directive: 15 May 2007
- Transposition the Framework Directive by May 2009

Scope INSPIRE Directive

- Spatial data held by or on behalf of a public authority operating down to the lowest level of government when laws or regulations require their collection or dissemination
- INSPIRE covers 34 Spatial Data Themes laid down in 3 Annexes

Why is INSPIRE important ?

- Directive: transposition important
- Base for other legal frameworks and initiatives
 - GMES, SEIS,
- Harmonisation of data: social and economic dimension
- Cost savings
- Step towards integrated, cross sectoral approaches
- Wider use and higher quality of government data

INSPIRE : Key elements

- Metadata
- Interoperability of spatial data sets and services
- Network services (discovery, view, download, invoke)
 - Made available through the European geo-portal
- Data and Service sharing
 - Rules governing access and rights of use to spatial data sets and services
- Coordination and measures for Monitoring & Reporting

INSPIRE is a Framework Directive

Detailed technical provisions for the issues above will be laid down in Implementing Rules

Once adopted, Implementing Rules become European legislative acts and national law in 27 Member States and in some EFTA countries

Open Questions

- Governance
- Promotion of data sharing
- Enabling platform for accessing spatial data and to deliver related services
- Capacity building
- Evaluation and Assessment
- Roadmap for SDI implementation
 - Building an SDI is a long term task

Thank you for your attention !



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