Infrastructure for Spatial Information in Europe (INSPIRE)

Steve Peedell

European Commission
DG Joint Research Centre
Institute for Environment and Sustainability
ESDI Action

Overview

- JRC, European Commission & the INSPIRE Framework
- JRC and geospatial standards
- INSPIRE requirements for standards
- The INSPIRE Roadmap

The European Commission and JRC

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- Principal roles of the Commission:
  - to propose legislation to Parliament and the Council;
  - to manage and implement EU policies and the budget;
  - to enforce European law (jointly with the Court of Justice);
  - to represent the European Union on the international stage, for example by negotiating agreements between the EU and other countries
- Directorates General include:
  - Agriculture
  - Energy & Transport
  - Environment
  - Eurostat
  - Fisheries
  - Health & Consumer Protection
  - Information Society
  - Joint Research Centre
  - Regional Policy
  - Research
- JRC – reference centre for science and technology for the Union

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Structure of the JRC

Joint Research Centre

Staff: 2200 – Budget: 300 million Euro / year

7 Institutes in 5 Member States:

IE - Petten (The Netherlands)
- *Institute for Energy*

IRMM - Geel (Belgium)
- *Institute for Reference Materials and Measurements*

ITU - Karlsruhe (Germany)
- *Institute for Transuranium Elements*

IPSC - IHCP - IES - Ispra (Italy)
- *Institute for the Protection and the Security of the Citizen*
- *Institute for Health and Consumer Protection*
- *Institute for Environment and Sustainability*

IPTS - Seville (Spain)
- *Institute for Prospective Technological Studies*

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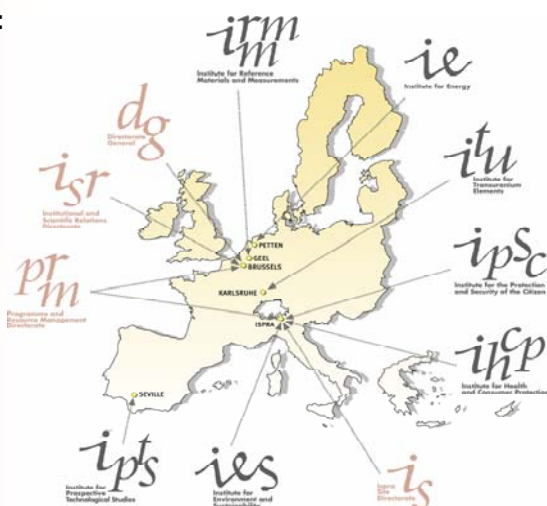
INSPIRE Rationale

- 2002 Memorandum of understanding between the Commissioners for Environment, Research and EuroStat
- *"Currently, exploitation of the potential of GI is hampered by lack of standards, of data and of a coherent data policy. A Community initiative to address these difficulties could unlock a vast potential of information and information services... These would stimulate increased coherence and integration of Community policies."*
- **EC Proposal COM(2004) 516 for a Directive establishing an infrastructure for spatial information in the Community - INSPIRE**

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The European Reality

- Gaps in spatial data
- Gaps in data documentation
- Incompatible spatial datasets
- Incompatible GI initiatives
- Procedural / legal / financial barriers
- Most countries are developing (or planning) NSDI initiatives

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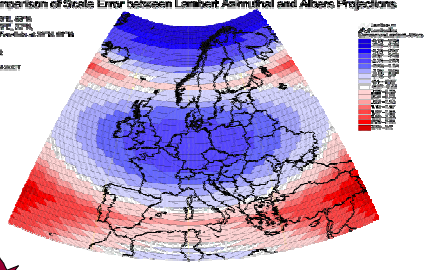
ESDI Concept

GI Institutional framework

GI technical standards

Launched in September 2001
MoU signed in April 2002 by Commissioners Wallström, Busquin and Solbes provides the basis for continued co-operation between DG ENV, EUROSTAT and the JRC for developing the initiative
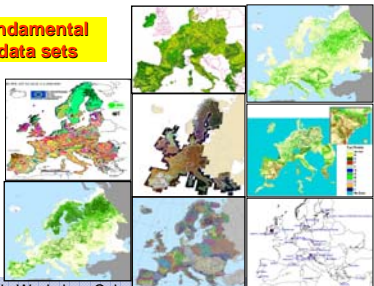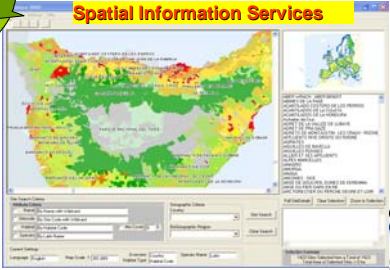
Fundamental GI data sets

Spatial Information Services

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INSPIRE Objectives

- Establish an infrastructure for <u>spatial information</u> in the EU to support:
  - environmental policies and
  - policies that affect the environment,

- Based on infrastructures of the Member States that include
  - <u>metadata</u>, <u>spatial data sets and services</u>; <u>network services</u>; <u>agreements on sharing</u>, <u>access and use</u>; and <u>coordination and monitoring mechanisms</u>, <u>processes and procedures</u>.

- This need is implicit in existing EU policy on Agriculture, Transport, Energy, Water, Air, Soil, Landscape…….

- Requirement for greater accessibility to information by the Public
  - Directive on the Re-Use of Public Sector Information
  - Århus Convention

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JRC's Role

- The JRC will take up the role of Scientific and Technical co-ordinator and will be responsible for:
  - the development of guidelines for the technical specification process
  - to assist in the drafting of technical specifications
  - the overall coherence between all technical specifications
  - to help ensure cross-thematic coherence
  - the interlinking with developments in standardisation bodies (e.g. CEN, ISO)
  - the liaison and synchronisation with other relevant international initiatives dedicated to harmonisation efforts in the field of GI (e.g. OGC, GSDI, Digital Earth, UNGIWG…)

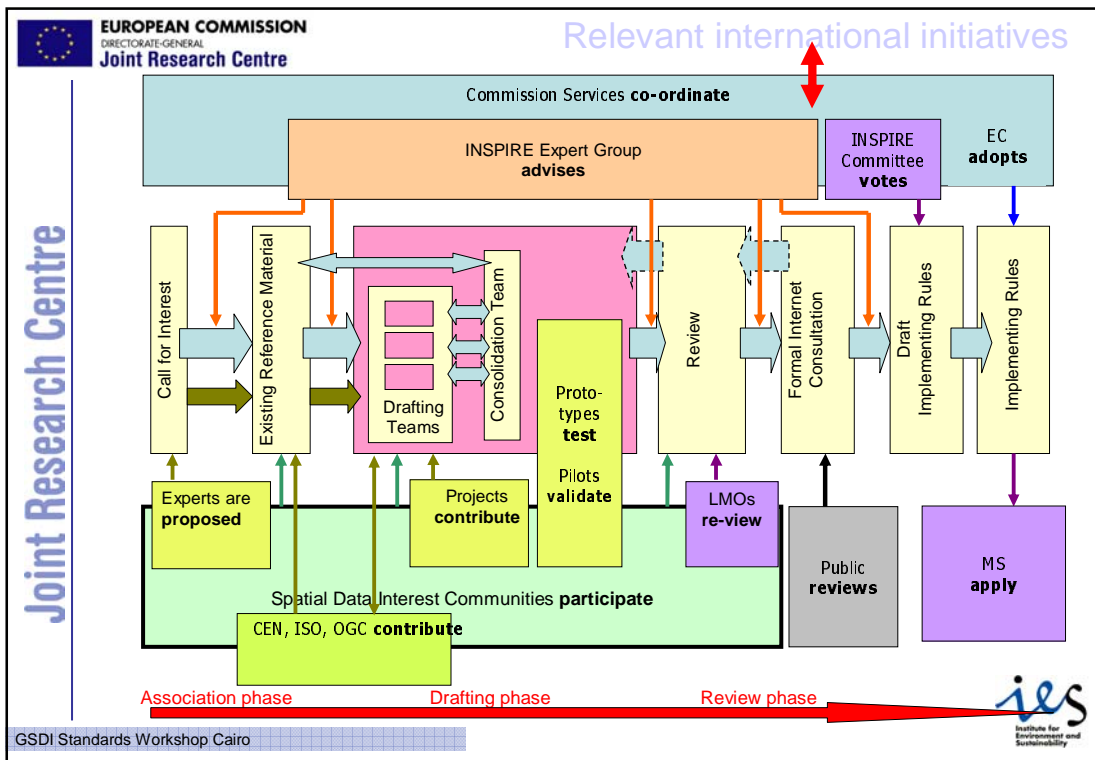**Joint Research Centre**

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The INSPIRE Consensus Process

- The implementation of INSPIRE needs to consider the broader context of existing initiatives which could contribute to ESDI

- The INSPIRE Work Programme should interface with those partnerships and initiatives where relevant and establish synergy

concept of Spatial Data Interest Communities (SDIC)

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Spatial Data Interest Communities (SDIC)

- SDIC bundle the human expertise of users, producers and transformers of spatial information, technical competence, financial resources and policies.

- Many SDIC exist today, generally organised by region, thematic issue or sector (industry).

- SDIC have an interest to better use these resources for spatial data management and the development and operation of spatial information services.

- SDIC, through their activities drive the demand for spatial data and spatial information services .
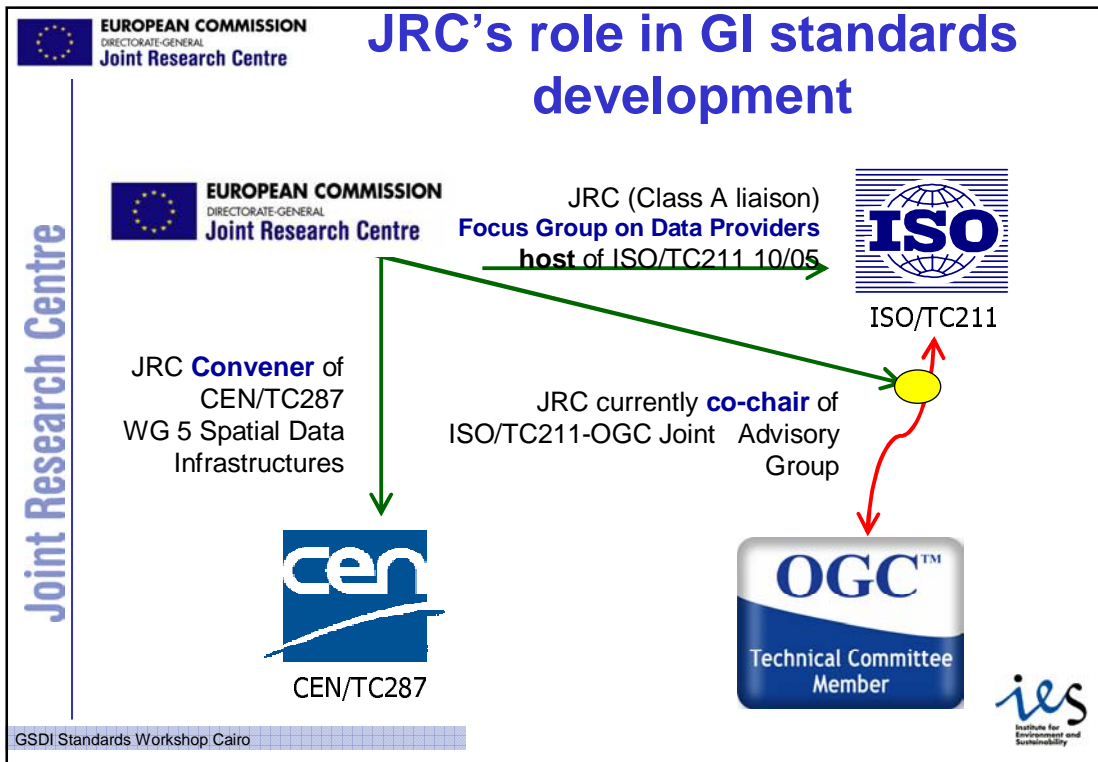
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JRC's role in GI standards development

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JRC (Class A liaison)
Focus Group on Data Providers
host of ISO/TC211 10/05

ISO

ISO/TC211

JRC **Convener** of
CEN/TC287
WG 5 Spatial Data
Infrastructures

JRC currently **co-chair** of
ISO/TC211-OGC Joint Advisory
Group

cen

CEN/TC287

OGC™
Technical Committee
Member

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INSPIRE and GI standardization initiatives

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- Interoperable spatial data and spatial services achieved by all stakeholders adopting and implementing common standards and specifications (IR)
- The more the software industry supports these standards in its products, the easier and more cost-effectively the implementation of INSPIRE
- Currently three industry-supported GI consensus building processes
  - ISO/TC211
  - European Committee for Standardisation (CEN) with TC287
  - OpenGeospatial Consortium (OGC).

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INSPIRE and GI standardization initiatives

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- The value of the contribution of the above-mentioned organisations to the GI community is recognized
  - Their standards and specifications will be considered as reference material
- Involvement of CEN, ISO, and OGC in the development of the draft Implementing Rules
  - direct by way of linking these working groups to the Drafting Teams
  - indirect by way of SDICs, LMOs, and projects.

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INSPIRE and GI standardization initiatives

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- Examples of European standards (ENs)
  - EN ISO 19101:2005 Geographic information - Reference model
  - EN ISO 19105:2005 Geographic information - Conformance and testing
  - EN ISO 19108:2005 Geographic information - Temporal schema
  - EN ISO 19107:2005 Geographic information - Spatial schema
  - EN ISO 19111:2005 Geographic information - Spatial referencing by coordinates
  - EN ISO 19112:2005 Geographic information - Spatial referencing by geographic identifiers
  - EN ISO 19113:2005 Geographic information - Quality principles
  - EN ISO 19114:2005 Geographic information - Quality evaluation procedures
  - EN ISO 19115:2005 Geographic information - Metadata

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INSPIRE and GI standardization initiatives

- The following CEN documents are under development:
  - prEN ISO 19106 Geographic information - Profiles
  - prEN ISO 19116 Geographic information - Positioning services
  - prEN ISO/TR 19120 GI - Functional standards
  - prEN ISO/TR 19121 GI - Imagery and gridded data
  - prEN ISO 19125-1 GI - Simple feature access - Part 1: Common architecture
  - prEN ISO 19125-2 GI - Simple feature access - Part 2: SQL option
  - CEN TR Standards, specifications, technical reports and guidelines, required to implement Spatial Data Infrastructure
  - prEN ISO 19111 GI - Spatial referencing by coordinates

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INSPIRE Proposal Overview

- **I. General Provisions**
- **II. Metadata**
- **III. Interoperability of spatial data sets and services**
- **IV. Network services**
- **V. Data-sharing and re-use**
- **VI. Coordination and complementary measures**
- **VII. Final provisions**

  - **Long term – transposition and implementation 2007-13**

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Metadata requirements in the proposed Directive

- To create comprehensive metadata of:
  - spatial data
  - spatial data services
- To keep metadata up to date

Interoperability of spatial data in the proposed Directive

- Harmonised data specifications
  - Annex I, II, III:
    - definition and classification of spatial objects
    - geo-referencing
  - Annex I, II:
    - common system of unique identifiers for spatial objects;
    - relationship between spatial objects;
    - key attributes and corresponding multilingual thesauri;
    - how to exchange the temporal dimension of the data;
    - how to exchange updates of the data.
- Specifications for exchange of spatial data
- Conformity with specifications through adaptation or transformation

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Introduction

**Thematic Scope
Annex I - II**

Annex I
- Coordinate reference systems
- Geographical grid systems
- Geographical names
- Administrative units
- Transport networks
- Hydrography
- Protected sites

Annex II
- Identifiers of Properties
- Elevation (including terrestrial elevation, bathymetry and coastline)
- Land cover
- Cadastral parcels
- Ortho-imagery

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Introduction

**Thematic Scope
Annex III**

- Statistical units
- Buildings
- Soil
- Geology
- Land use
- Human health and safety
- Government service and environmental monitoring facilities
- Production and industrial facilities
- Agricultural and aquaculture facilities
- Population distribution - demography

- Area management/restriction/ regulation zones & reporting units
- Natural risk zones
- Atmospheric conditions
- Meteorological spatial features
- Sea regions
- Bio-geographical regions
- Habitats and biotopes
- Species distribution
- Oceanic spatial features

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Network services in the proposed Directive

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- Upload services;
- Discovery services;
- View services;
- Download services;
- Transformation services,
- Invoke spatial data services

INSPIRE Position Papers

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- Architecture & Standards
- Reference Data & Metadata
- Environmental Thematic Coordination
- Data Policy & Legal Issues
- Implementing Structures & Funding

Ongoing standardisation - framework

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EU GeoPortal & Distributed GI Services

European Geo-Portal

Thesauri & Translation

Gazetteer

Gaz

WFS WFS WMS WMS WCS WMS WCatS WCatS

GI Services

Cascading or aggregating further services

Various providers of Geographic Information

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The Prototype Portal

Technical vs Data Interoperability

Timeline

- From Commission proposal to Community Directive implementation - 3 phases:
  - Preparatory phase (2004-2006)
    - Co-decision procedure
    - **Preparation of Implementing Rules**
  - Transposition phase (2007-2008)
    - Directive enters into force
    - Transposition into national legislation
    - INSPIRE Committee starts its activities
    - Adoption of Implementation Rules by Committology
  - Implementation phase (2009-2013)
    - implementation and monitoring of measures

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INSPIRE Roadmap

Based on the hypothesis
2 years for co-decision process

Mile-stone	Mile-stone	Description
2007	X	Entry into force of INSPIRE Directive
2007	X+3m	Establishment of the INSPIRE Committee
2007	X +1y at latest	Adoption of Implementing Rules for the creation and up-dating of the **metadata** Adoption of Implementing Rules for **network services** Adoption of Implementing Rules on third parties use of the **upload services** Adoption of Implementing Rules for **monitoring and reporting** Adoption of Implementing Rules governing **access and rights of use to spatial data sets and services for Community institutions and bodies**
2009	X + 2y at latest	Adoption of Implementing Rules for **the use of spatial data sets and services by third parties**
2009	X + 2y	Adoption of Implementing Rules for **harmonised spatial data specifications** and for **the exchange of Annex I spatial data**

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Thank you for your attention !

INSPIRE:

http://inspire.jrc.it