Infrastructure for Spatial Information in Europe (INSPIRE)

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Overview

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

- 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

Structure of the JRC

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
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.”

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
INSPIRE Objectives

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

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

- 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
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, UNGWG…)

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)
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.

Relevant international initiatives

- CEN, ISO, OGC contribute
- INSPIRE Expert Group advises
- INSPIRE Committee votes
- EC adopts
- Call for Interest
- Existing Reference Material
- Drafting Teams
- Commission Services co-ordinate
- Spatial Data Interest Communities participate
- Experts are proposed
- Projects contribute
- Proto-types test
- Pilots validate
- LMOs re-review
- Public reviews
- MS apply
- Relevant international initiatives
JRC’s role in GI standards development

JRC Convener of CEN/TC287
JRC currently co-chair of ISO/TC211-OGC Joint Advisory Group

INSPIRE and GI standardization initiatives

- 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).
INSPIRE and GI standardization initiatives

- 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.

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
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

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
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
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

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
Network services in the proposed Directive

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

INSPIRE Position Papers

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

EU GeoPortal & Distributed GI Services

Various providers of Geographic Information

Cascading or aggregating further services
The Prototype Portal

INSPIRE: Infrastructure for Spatial Information in Europe is an initiative launched by the European Commission and developed in collaboration with Member States and associated countries. It aims at making available relevant, interoperable and quality-assured information on spatial data, services, and metadata, which is currently fragmented across Europe.

The INSPIRE Geoportal is Europe’s Internet access point for spatial data and services. From here, you can search for spatial data, services, and register.</p>

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

INSPIRE Roadmap

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<tr>
<th>Milestone</th>
<th>Milestone</th>
<th>Description</th>
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<tbody>
<tr>
<td>2007</td>
<td>X</td>
<td>Entry into force of INSPIRE Directive</td>
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<tr>
<td>2007</td>
<td>X+3m</td>
<td>Establishment of the INSPIRE Committee</td>
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<tr>
<td>2007</td>
<td>X+1y at latest</td>
<td>Adoption of Implementing Rules for the creation and up-dating of the metadata</td>
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<td></td>
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<td>Adoption of Implementing Rules for <strong>network services</strong></td>
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<td>Adoption of Implementing Rules on third parties use of the upload services</td>
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<td>Adoption of Implementing Rules for monitoring and reporting</td>
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<td>Adoption of Implementing Rules governing access and rights of use to spatial data sets and services for Community institutions and bodies</td>
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<tr>
<td>2009</td>
<td>X + 2y at latest</td>
<td>Adoption of Implementing Rules for the use of spatial data sets and services by third parties</td>
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GSDI Standards Workshop Cairo
Thank you for your attention!

INSPIRE:
http://inspire.jrc.it