

## Infrastructure for Spatial Information in the European Community

# INSPIRE

## From transposition to implementation

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# The Mission of the Joint Research Centre

... is to provide customer-driven scientific and technical support for the conception, development, implementation and monitoring of EU policies.

As a service of the European Commission, the JRC functions as a reference centre of science and technology for the Union.

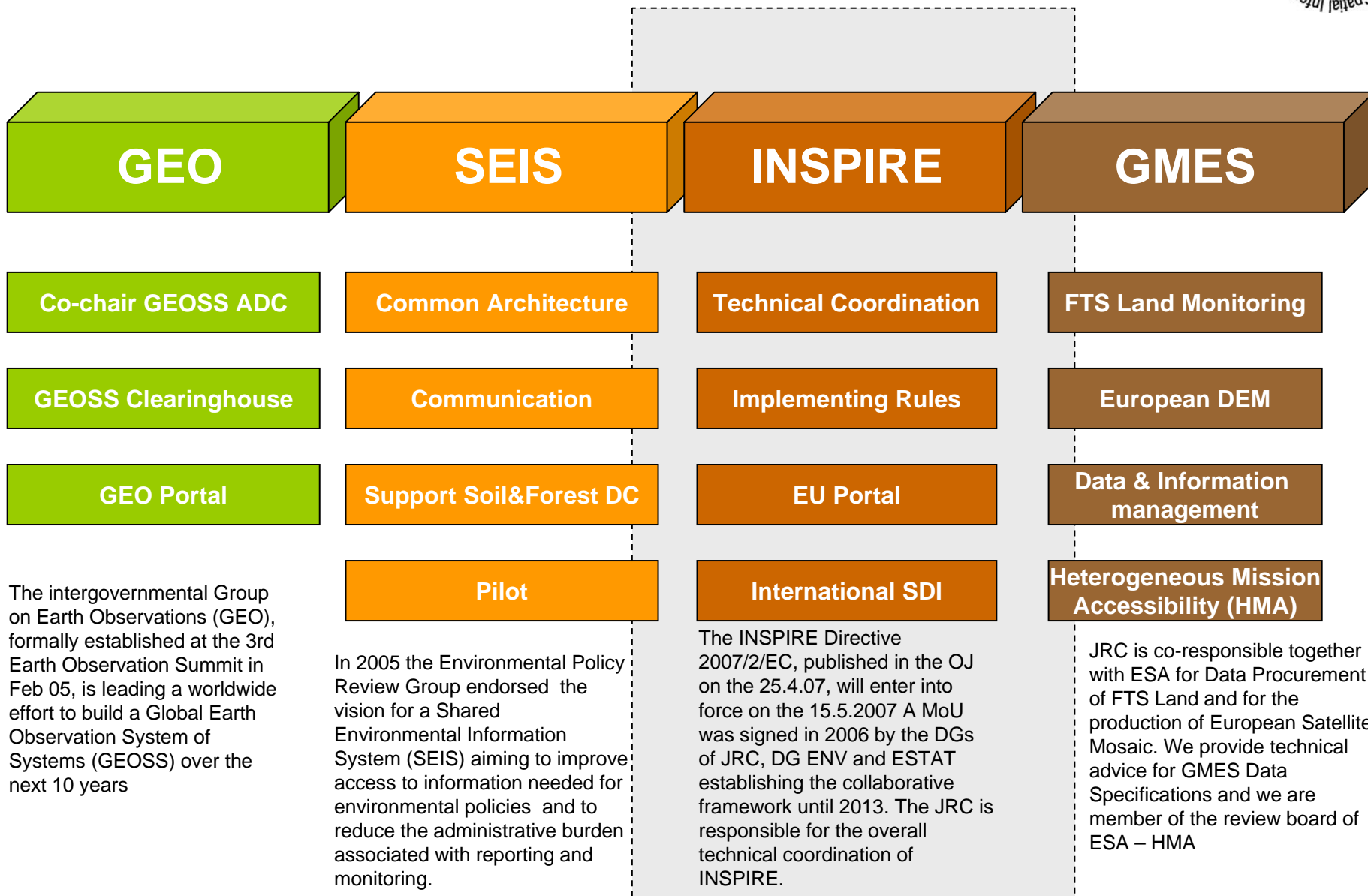
Close to the policy-making process, it serves the common interest of the Member States, while being independent of special interests, whether private or national.





# Scientific support to EU policies

ISO/TC 211 workshop, 28-05-2008





# Objective of this presentation

- Explain what INSPIRE is
- Provide information about the current status of the technical Implementing Rule development



# Outline

- Introduction
- Process
- Status of implementing rule development
- How can you contribute to INSPIRE?



# INSPIRE Directive General Provisions

- 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 does not require collection of new spatial data
- INSPIRE does not affect existing Intellectual Property Rights
  
- INSPIRE is a distributed infrastructure.
  
- Directive came into force 15 May 2007



## 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 – *(required to successfully build environmental information systems)*



# INSPIRE Components

- 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 (policy)
- 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*







# From Commission proposal to Community Directive implementation

- **Preparatory phase (2004-2006)**
  - Co-decision procedure
  - Start of preparation of Implementing Rules
- **Transposition phase (2007-2009)**
  - Directive entered into force **15 May 2007**
  - INSPIRE Committee starts its activities **26 June 2007**
  - Continuation of preparation of Implementing Rules
  - Transposition into national legislation
  - Adoption of Implementing Rules by Comitology
- **Implementation phase (2009-2013)**
  - Implementation and monitoring of measures
  - Continuation of preparation of Implementing Rules
  - Adoption of Implementing Rules by Comitology





# Excerpt from Roadmap (adoption)



ISO TC 214 workshop 28-29-30-31-05-2009

Milestone date	Article	Description
2007-05-15		<i>Entry into force of INSPIRE Directive</i>
2008-05-15	5§4	Adoption of IR for the creation and updating of metadata
2008-11-15*	21(4)	Adoption of IR for monitoring and reporting
2008-11-15*	16	Adoption of IR for discovery and view services
2009-05-15*	16	Adoption of IR for download services
2009-05-15*	16(a)	Adoption of IR for coordinates transformation service
2009-05-15*	17(8)	Adoption of IR governing the access rights of use to spatial data sets and services for Community institutions and bodies
2009-05-15	9(a)	Adoption of IRs for the interoperability and harmonisation of spatial data sets and services for Annex I spatial data themes
2009-05-15	24§1	<i>Provisions of Directive are brought into force in MS</i>
2010-11-15*	16	Adoption of IR for schema transformation and “invoke spatial data services” services
2012-05-15	9(b)	Adoption of the IR s for the interoperability and harmonization of spatial data sets and services for Annex II and III

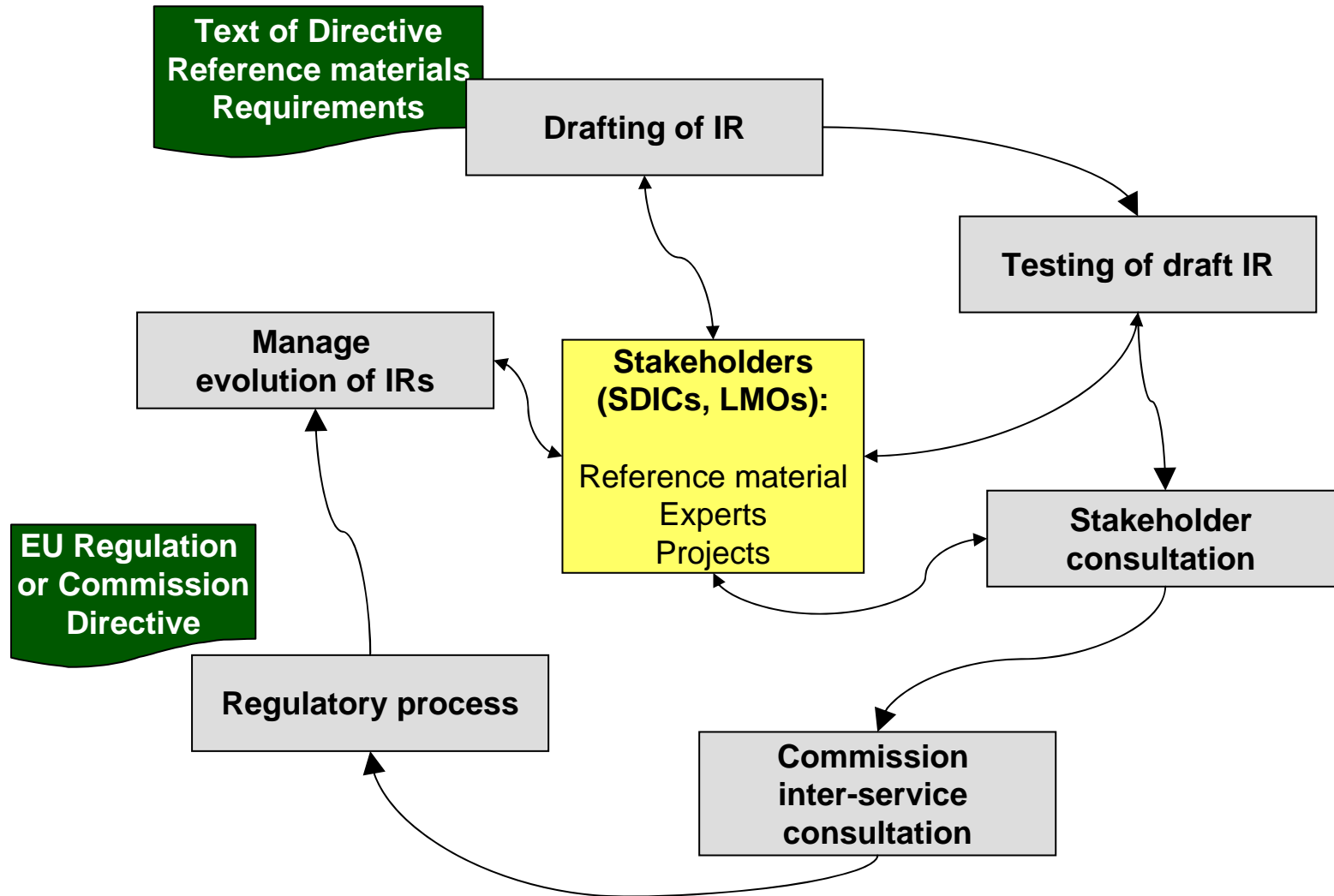
\* = date proposed by Commission



# Work Programme 2007-2009

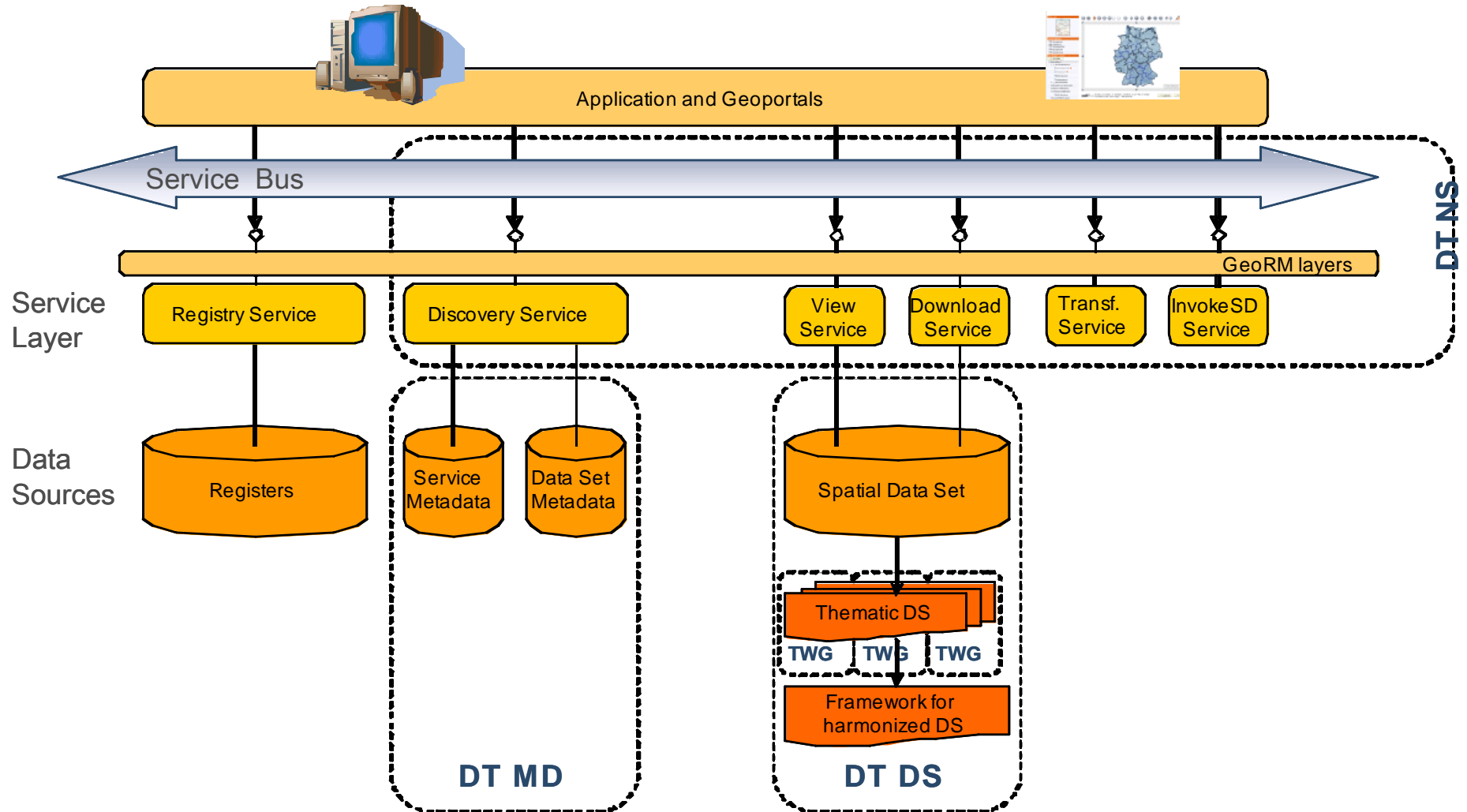
## Implementing Rule development cycle

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# INSPIRE Architecture





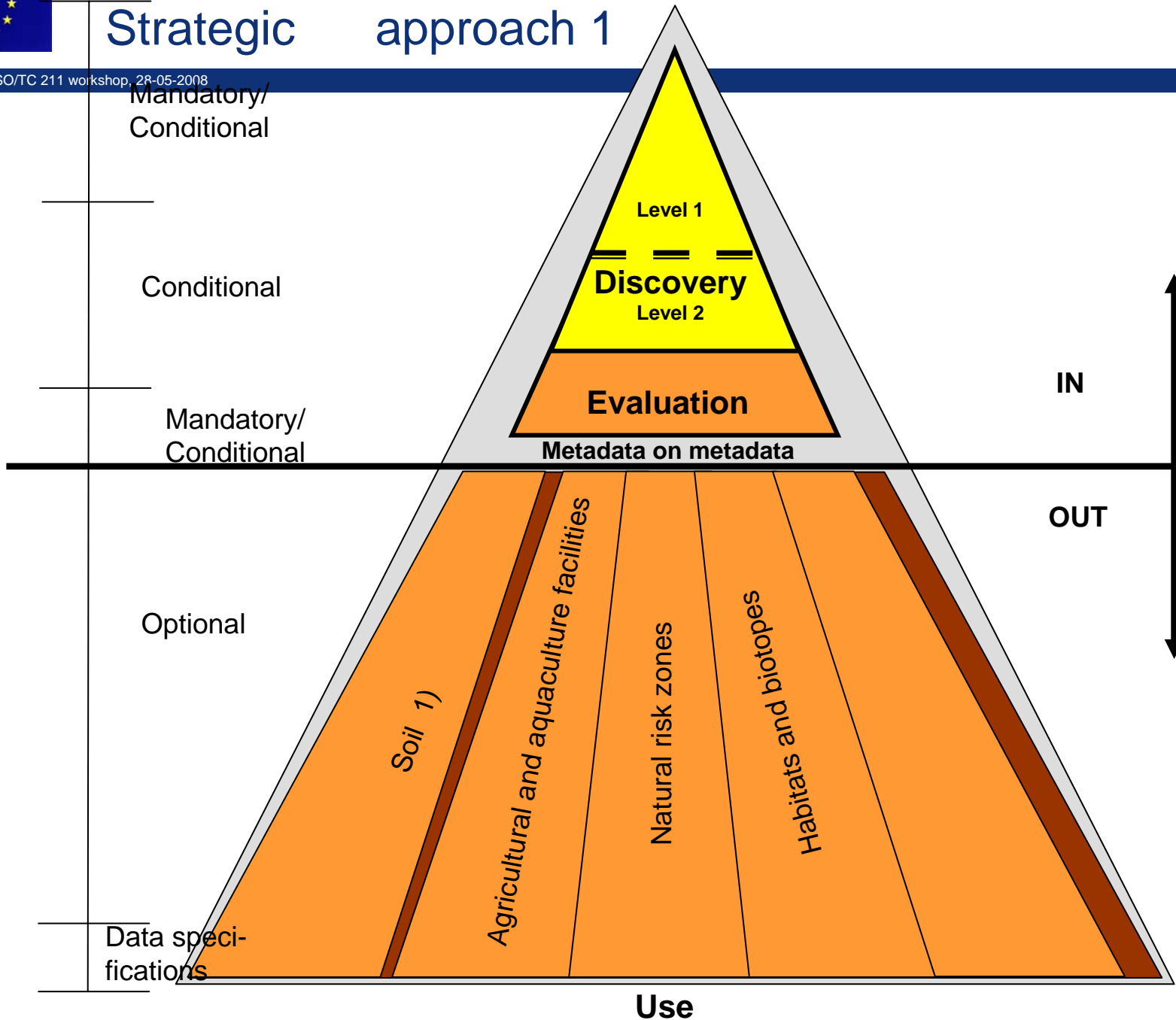
# INSPIRE Implementing Rules for Metadata approved

- INSPIRE Implementing Rules on Metadata approved by the INSPIRE Committee with unanimous decision (323 votes in total, (22 votes not represented)



# Strategic approach 1

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## Stakeholder comments

- 1250 received. Very successful exercise of participation
  - Every comment was answer with motivation and published
  - Key Grouping of comments
  - Distinguish clearly between IRs, and guidelines,
  - Granularity
  - Conformity, quality, time, constraints

## Strategic approach 2

- Separate IRs from Guidelines
- IRs to focus on stable elements (What to do)
- Guidelines to implement based on ISO standards (How to do)



## Key features of the IRs

- Minimum that is required to implement the requirements of the Directive and allow interoperability through standards
- Non-binding guidelines that allow conformance with EN ISO 19115 (data) and EN 19119 (services) + interoperability with e-government through ISO 15836.
- Guidelines can be updated when needed taking into account technological and standards change e.g. revision of OGC catalogue specifications and new CEN work on Discovery of e-government resources.





# Interoperability and harmonisation of spatial data sets and services

- The development of INSPIRE Implementing rules for the interoperability and, where practicable, harmonisation of spatial data sets and services follow a two-step approach:
  - Development of conceptual framework and specification methodology.
    - DS-D 2.5 *Generic Conceptual Model (GCM)*,
    - DS-D 2.6 *Methodology for Specification Development*.
  - Development of data specifications for each data theme
    - Based on the conceptual framework and specification methodology, and based on the INSPIRE roadmap

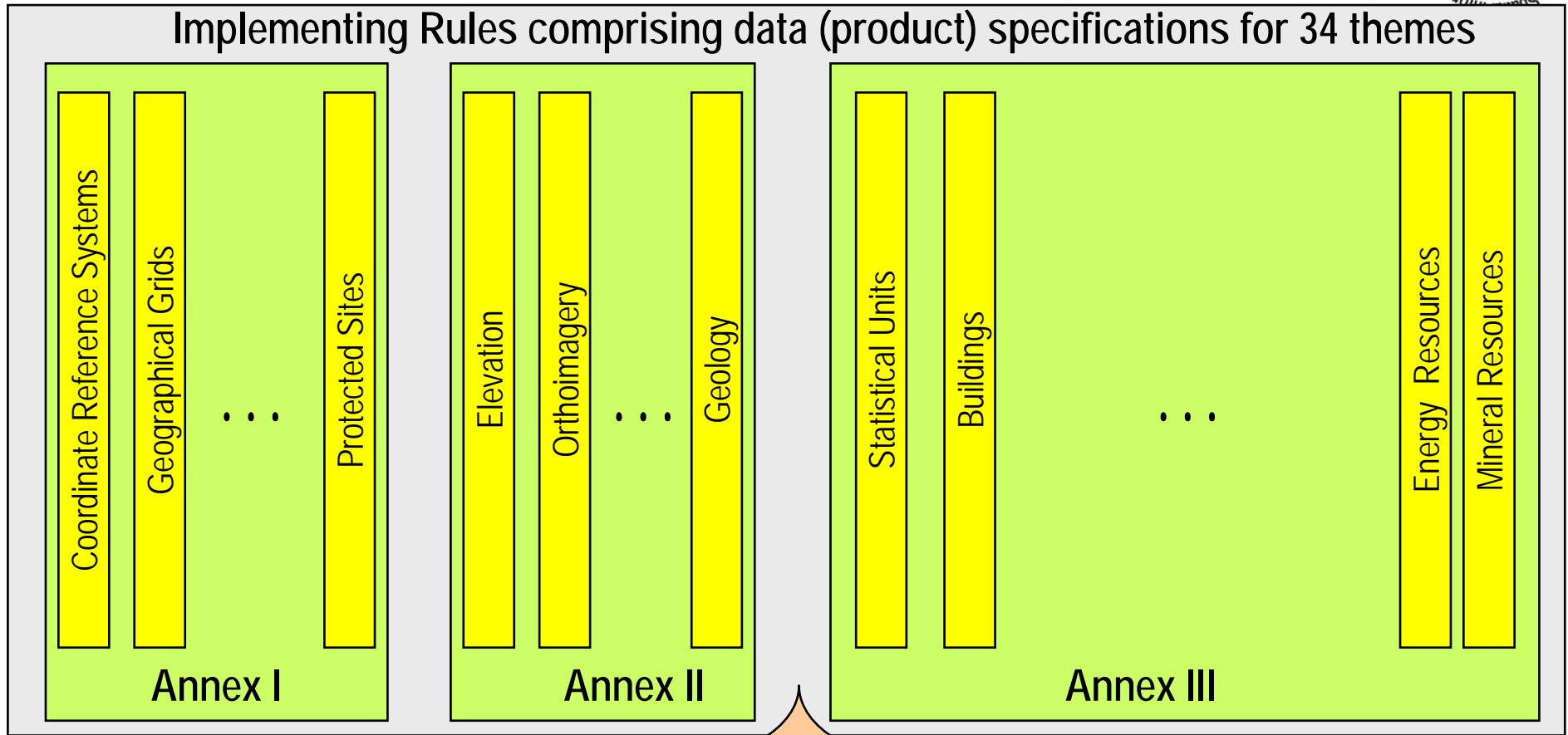


# Data Specifications - Approach

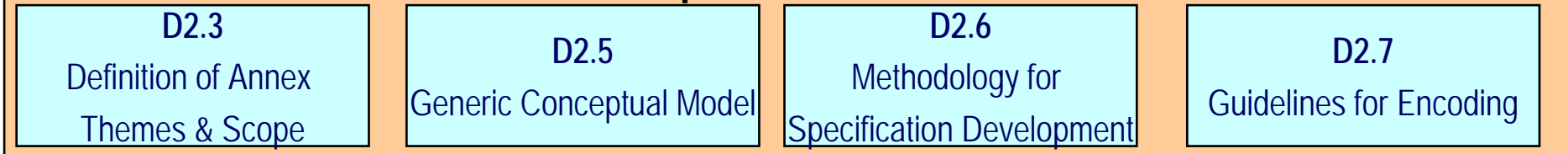
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## Implementing Rules comprising data (product) specifications for 34 themes



## Conceptual Framework





# Data specification: progress

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- The Data specification Drafting Team is responsible for the developing and maintaining the conceptual framework
- Data specifications of the theme will be developed by the Thematic Working Groups composed from domain and GIS/IT experts

Specification component	Based on	Status
Definition of the Annex Themes and Scope	INSPIRE position papers Selected reference materials submitted by the SDICs and LMOs	Comment resolution phase. Final document to be ready in February 2008
Generic conceptual Model	ISO 19101, 19103, 19107, 19108, 19109, 19110, 19111, 19112, 19115, 19123, 19126, 19131, 19136, 19139, ISO/IEC 19501, OGC 06-103r3	Comment resolution phase. Final document to be ready in February 2008
Methodology for specification development	Methodology developed by the RISE project Selected reference materials submitted by the SDICs and LMOs	Review phase by the SDICs and LMOs. Final version is expected in April 2008
Guidelines for encoding	ISO 19118, 19136, 19139 INSPIRE Generic Conceptual Model	Review by the SDICs and LMOs to be started in November 2007. Final version expected in June 2008
Data specifications	ISO 19131. Materials of the INSPIRE conceptual framework. Relevant reference materials submitted by the SDICs and LMOs.	To be stated early 2008. Specifications ready in 2009 for Annex I and 2012 for Annex II



## Data specification: progress

- 8 Thematic Working Groups have been set-up to address the 9 Annex I data themes
  - Coordinate reference systems and Geographical grid systems
  - Geographical names
  - Administrative units
  - Addresses
  - Cadastral parcels
  - Transport networks
  - Hydrography
  - Protected sites
- Kick-off on 14 and 15 February 2008
- First draft INSPIRE data specifications in September 2008
  - Stakeholder participation in testing



# Network Services

- **General issues to address:**
  - Architecture
  - Technical protocol
  - Right Management
  - Service metadata
  - Multilingualism
- **Discovery and View services**
- **Download services**
- **Transformation services**
- **Services to Invoke spatial data services**



# Network services status: progress



- An INSPIRE Architecture is proposed to integrate INSPIRE services, e-commerce and DRM components,
- INSPIRE services shall be Web Services (W3C) using the SOAP protocol to exchange messages, and WSDL language to describe the services -> reviewed by SDICs/LMOs

INSPIRE Services	Based on:	IR Status
Discovery services	OGC Catalogue service, with the ISO Application Profile : OGC CS-W 2.0 ISO AP	Draft IR has been reviewed by SDIC / LMO
View services	Web Map Service : ISO 19128 WMS 1.3	=> Final draft: Spring 2008
Download services	- OGC Web Feature Service (ISO 19142), - OGC Web Coverage Service, - HTTP File download	Draft IR to be reviewed by SDIC / LMO => Final draft: June 2008
Transformation services	Functions of a Web Processing Service (OGC WPS): - Coordinate transformation services	Draft IR for a SDIC / LMO review early 2008 => Final draft: June 2008
	- Schema transformation services	First draft during 2008
Invoke services	- Chaining services : BPEL (Business Process Execution Language form OASIS)	First draft during 2008



# EC obligations: the INSPIRE geo-portal



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## Article 15

1. The Commission shall establish and operate an Inspire geoportal at Community level.
2. Member States shall provide access to the services referred to in Article 11(1) through the Inspire geo-portal referred to in paragraph 1. Member States may also provide access to those services through their own access points.

The screenshot shows the INSPIRE Geoportal website interface. At the top right, there are links for "about us" and "Important legal notice". The main header features the "INSPIRE Geoportal" logo and the tagline "the EU portal for Geographic Information". Below the header is a navigation bar with links for "home", "Info tours", "themes", "catalogues", and "maps".

The main content area is divided into several sections:

- quick links**: A sidebar menu containing "Internal Links" (Metadata Catalogues, Do your own map, Frequently asked questions) and "External Links" (INSPIRE, European Commission GI & GIS Webportal, Geographic information in support of Environmental Policy, Europa, GEOSS Clearinghouse).
- INSPIRE Community Geoportal**: A central section with a "Welcome" message and a paragraph describing the portal as Europe's Internet access point to geographic data under the INSPIRE Directive. It also includes a "Map of the Month" section for "VHR satellite imagery" with a "see the map" link and a satellite image.
- Portal Entries**: A section with "Information tours" (describing the portal's purpose and tools), "Themes" (helping users discover geographic information), and "Catalogues" (searching for geographic information).
- News**: A section listing recent events and publications, including awards and consultations.
- EVENTS**: A section listing specific events, such as "2007-07-16 [Fiesole, Italy] Vespucci summer School 2007: Week 2. Spatial Data Infrastructures: Research and Practice" and "2007-07-04 [Porto, Portugal] 13th EC GI & GIS Workshop".
- Online Maps**: A section for searching, viewing, and creating personalized maps.



# Current Status

## Prototype Development

- Under the responsibility of JRC
- Open to joint developments with stakeholders
- Test drive International standards and specifications
- Valuable resource of experiences
- Support INSPIRE DTs
  - provides a test platform for the development of the INSPIRE IRs

## Current Priorities

- Metadata
- Discovery services (catalogue interoperability)
- View services





# Metadata State of Play Compliance Testing

- The document contains an inventory of existing solutions for compliance testing and interoperability checking of metadata taking into account the draft INSPIRE metadata implementing rules under the assumptions that the metadata will be available in the XML format following an INSPIRE metadata schema definition file
- This survey has proved that users can find, at present, different solutions as on the software market of commercial products as in the freeware source areas. These solutions can address the main requirements related to management (including validation and interoperability) of metadata resources.



# Services State of Play Compliance Testing

- The document contains an inventory of existing solutions for compliance testing and interoperability checking of services, the assumption being that the services are web services.
- According to the evidence collected it seems that any software solution that will have to consider the INSPIRE requirements for web services and their interoperability cannot abstract from the “state of play” of a SOA architecture and its evolution. The problem with a “standard” SOA stack is that the well-defined and accepted “layers” associated with TCP/IP and OSI don’t exist.



## Data State of Play Compliance Testing

- The document contains an inventory of existing solutions for compliance testing and interoperability checking for data taking into account the draft INSPIRE data specifications conceptual model (D2.5), the first draft of the INSPIRE Methodology for the development of data specifications (D2.6) and the first draft of the data Specifications Guidelines for the encoding of spatial data (D2.7), with a particular attention paid to checking compliance with “application schemas” as defined in the previously mentioned documents.
- The solutions, platforms and software packages investigated will need more time to adjust to the INSPIRE final requirements and get in tune with the involved standards.



# How can *you* contribute to INSPIRE?



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- Highest involvement of key stakeholders through the Spatial Data Interest Community (SDIC) and Legally Mandated Organisations (LMO) concepts
  
- Are you involved in a network representing producers, transformers and users of spatial data that falls within the scope of INSPIRE?
  - Register as a Spatial Data Interest Community!
  
- Has your organisation a legal mandate for one or more aspects of INSPIRE?
  - Register as a Legally Mandated Organisation!

- Keep informed
- Review deliverables from the Drafting Teams and the Thematic Working Groups
- Propose experts
- Submit reference material
- Testing of draft specifications

<http://www.ec-gis.org/inspire/>



[inspire-info@jrc.cec.eu.int](mailto:inspire-info@jrc.cec.eu.int)

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**Thank you for your attention !**



**.....to know more come to the 2nd INSPIRE Conference,  
Maribur, Slovenia, 23-25 June 2008!!**