

**INSPIRATION** – Spatial Data Infrastructure in the Western Balkans



# **INSPIRE**

## **General Introduction & Service Architecture**

**1st National INSPIRATION Workshop Croatia  
November 21-22, 2012**



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# Why INSPIRE?

- EU Sustainable Development Strategy
  - new approach to policy-making
  - more coherence in the Community policies
- Information base - detailed relevant harmonised **spatial information** to significantly contribute to this objective
  - for different policy areas
  - commonly accessible



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# Why INSPIRE?

## Environmental data:

- 90% of environmental data is linked to geography
- Out of 58 data components needed for environmental policy :
  - 32 are multi-sectoral
  - 16 are environmental only
  - 10 are related to other sectors
- These 32 components allow to:
  - link different ENV themes together → policy coherence
  - link with other sectors → integration

Source: EEA



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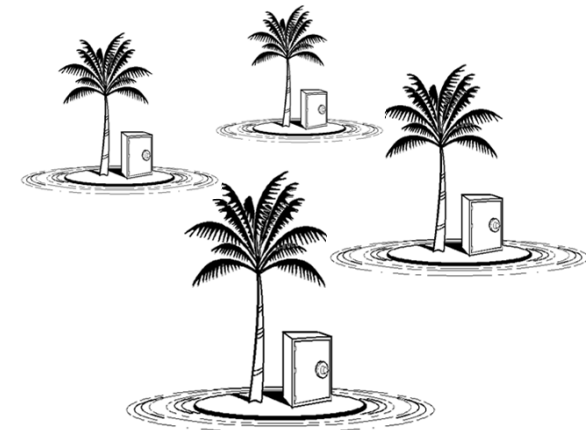




# Why INSPIRE ?

## Situation in Europe

- Heterogeneous data policy
- Lack of coordination
  - across borders and between levels of government
- Lack of standards
  - incompatible information and information systems
- Existing data not re-usable
  - fragmentation of information, redundancy, inability to integrate



Source: EC



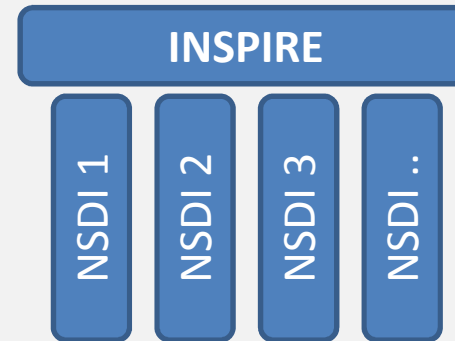
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# What is INSPIRE?

## A system of systems!



- $ESDI = \sum NSD$
- Infrrastructure for Spatial Information in the European Community
- Directive 2007/2/EC of the European Parliament



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# INSPIRE (SDI) Principles

1. Data should be collected once and maintained at the level where this can be done most effectively
2. It should be possible to combine seamlessly spatial data from different sources and share it between many users and applications
3. Spatial data should be collected at one level of government and shared between all levels
4. Spatial data needed for good governance should be available on conditions that are not restricting its extensive use
5. It should be easy to discover which spatial data is available, to evaluate its fitness for purpose and to know which conditions apply for its use.





# INSPIRE Directive

- INSPIRE lays down **general rules** to establish an infrastructure for spatial information in Europe
- to be based on the infrastructures for spatial information established and operated by the Member States (NSDIs)
- INSPIRE does not require collection of new spatial data
- Legally binding for all public institution which are holding or owning data listed in the 34 annex themes

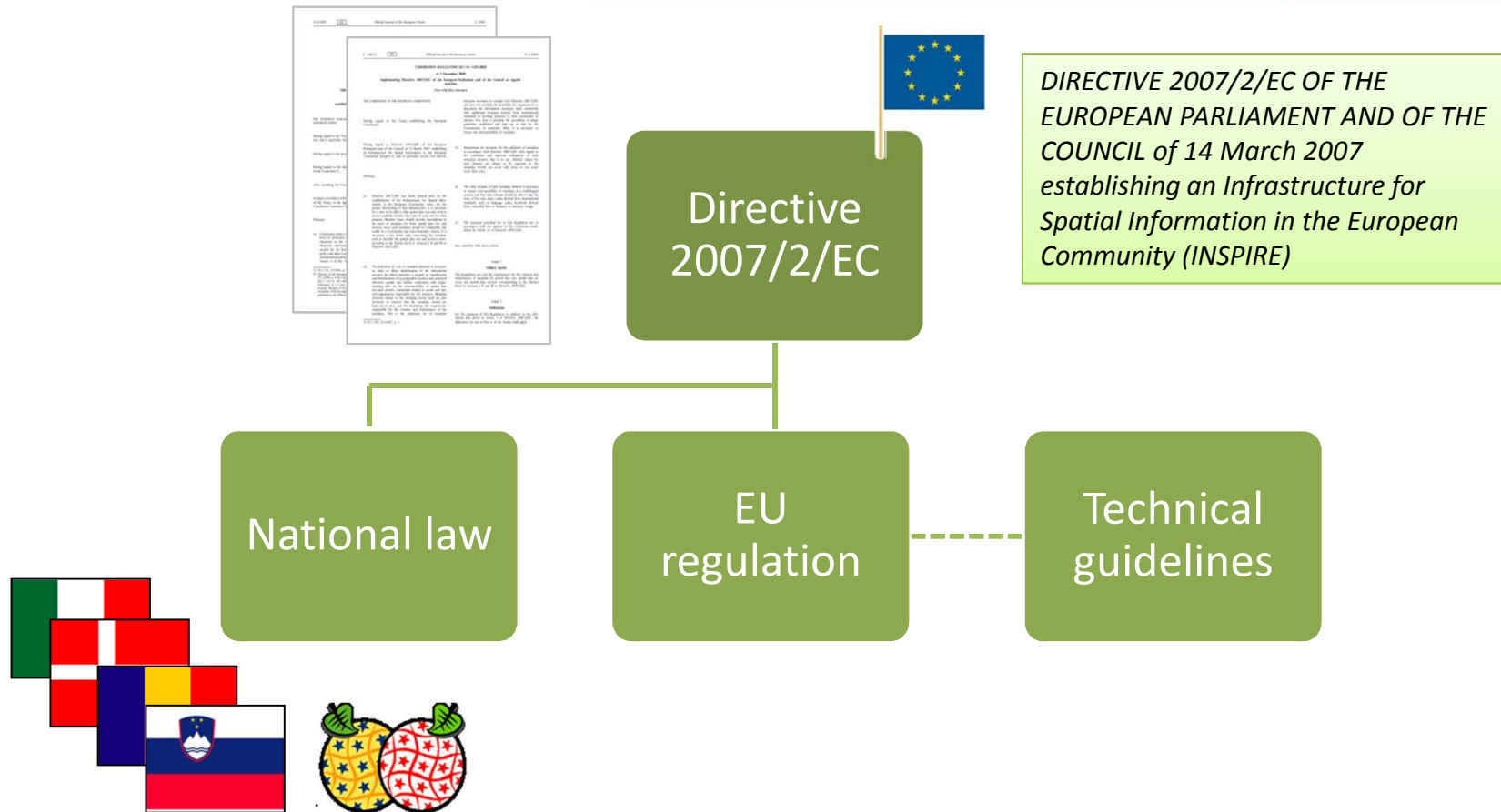


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# Legal Hierachy



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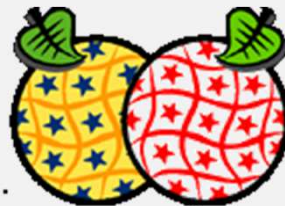




# Legal transposition

- **European directive has to be transposed into national law**

Example Austria



- Geodateninfrastrukturgesetz
  - March 2, 2010 - BGBl. I Nr. 14/2010



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# Implementing Rules

- Implementing rules are EU regulation
  - Directly legally binding for EU member states
- “Implementing Rules” for:
  - Metadata
  - Interoperability of spatial data sets and services
  - Network services (discovery, view, download, transform, invoke) - European geo-portal
  - Data and Service sharing EU / MS
  - Coordination and measures for monitoring & reporting





# Technical Guidelines

- **INSPIRE Technical Guidelines**
  - Specification on much more detailed level than given by Implementing Rules
  - e.g. INSPIRE Metadata Implementing Rules: Technical Guidelines


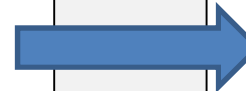
L 326/12    EN    Official Journal of the European Union    4.12.2008

COMMISSION REGULATION (EC) No 1205/2008  
of 3 December 2008  
implementing Directive 2007/2/EC of the European Parliament and of the Council as regards metadata  
(Text with EEA relevance)

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Community,

elements necessary to comply with Directive 2007/2/EC and does not preclude the possibility for organisations to document the information resources more extensively with additional elements derived from international standards or working practices in their community of interest. Nor does it preclude the possibility to adopt guidelines established and kept up to date by the Commission, in particular when it is necessary to ensure the interoperability of metadata.



**INSPIRE**  
Infrastructure for Spatial Information in Europe

**INSPIRE Metadata Implementing Rules: Technical Guidelines based on EN ISO 19115 and EN ISO 19119**

Title	INSPIRE Metadata Implementing Rules: Technical Guidelines based on EN ISO 19115 and EN ISO 19119
Creator	Drafting Team Metadata and European Commission Joint Research Centre
Creation date	2007-10-26



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# INSPIRE components

- INSPIRE as environmental/spatial information system

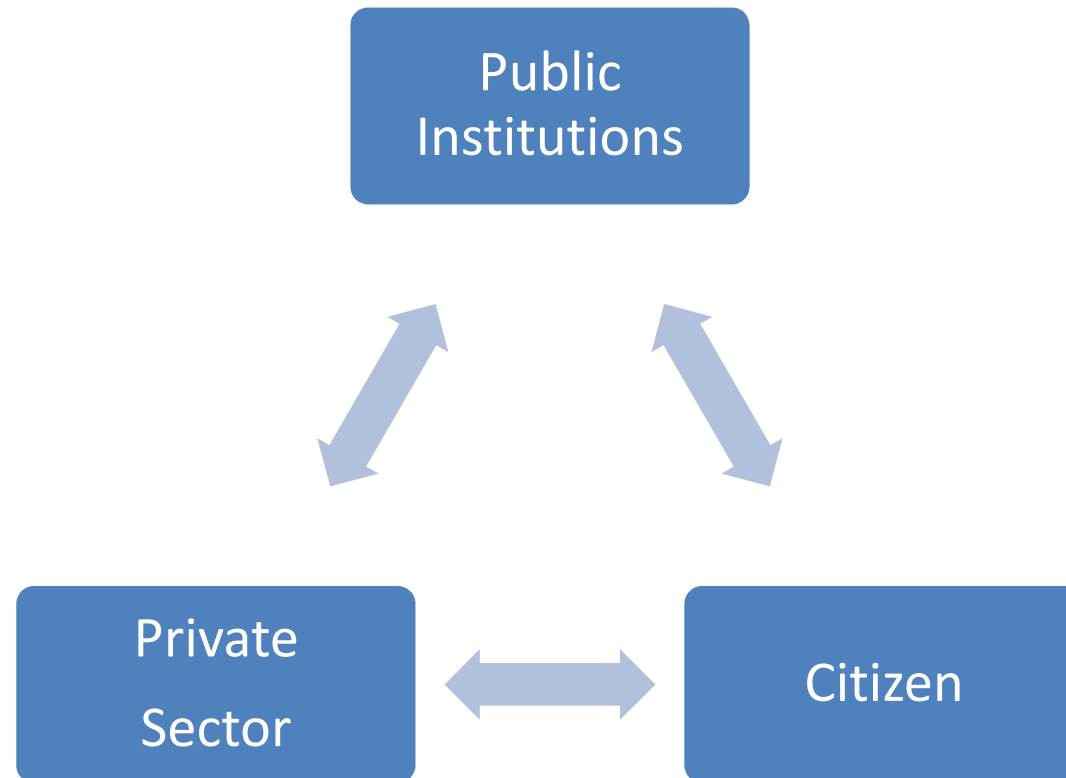


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# INSPIRE Community



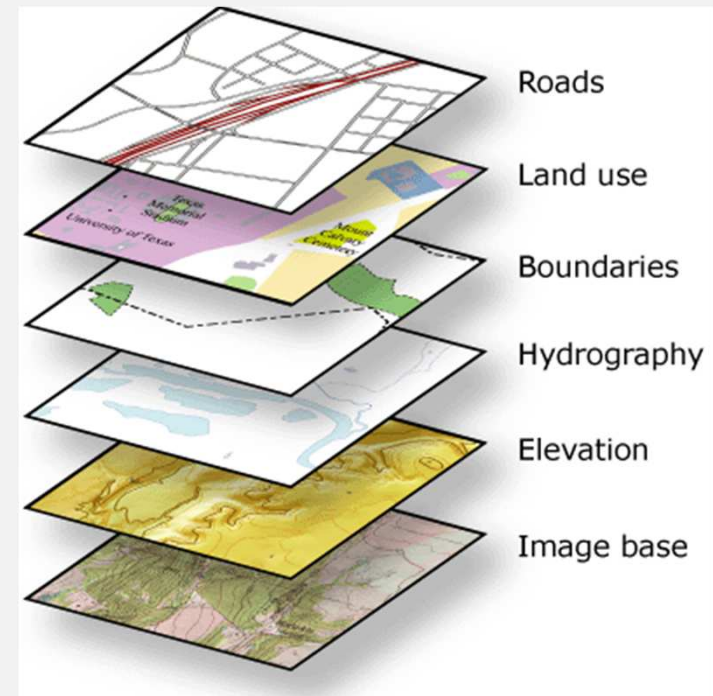
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# INSPIRE Annex I

1. Coordinate reference systems
2. Geographical grid systems
3. Geographical names
4. Administrative units
5. Addresses
6. Cadastral parcels
7. Transport networks
8. Hydrography
9. Protected sites



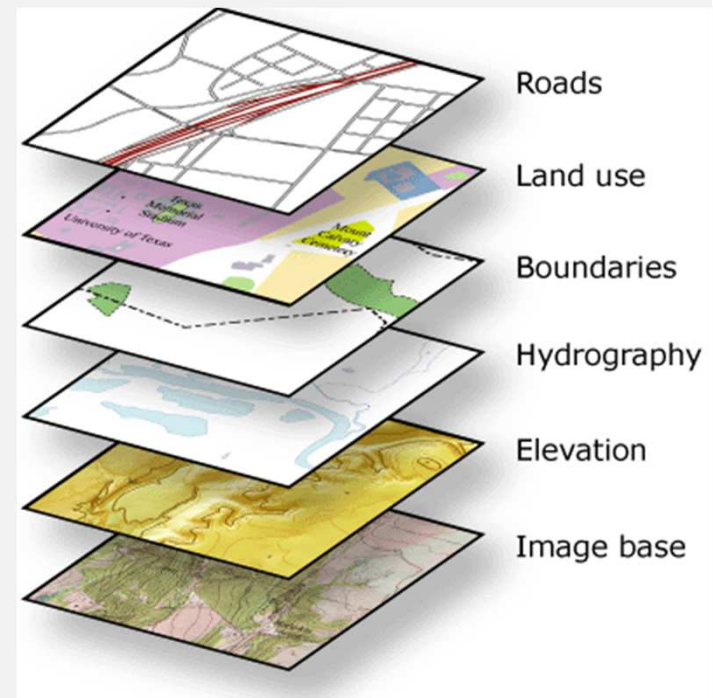
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# INSPIRE Annex II

1. Elevation
2. Land cover
3. Orthoimagery
4. Geology



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# INSPIRE Annex III

1. Statistical units
2. Buildings
3. Soil
4. Land use
5. Human health and safety
6. Utility and governmental services
7. Environmental monitoring facilities
8. Production and industrial facilities
9. Agricultural and aquaculture facilities
10. Population distribution — demography
11. Area management / restriction / regulation zones and reporting units
12. Natural risk zones
13. Atmospheric conditions
14. Meteorological geographical features
15. Oceanographic geographical features
16. Sea regions
17. Bio-geographical regions
18. Habitats and biotopes
19. Species distribution
20. Energy resources
21. Mineral resources







# INSPIRE Architecture

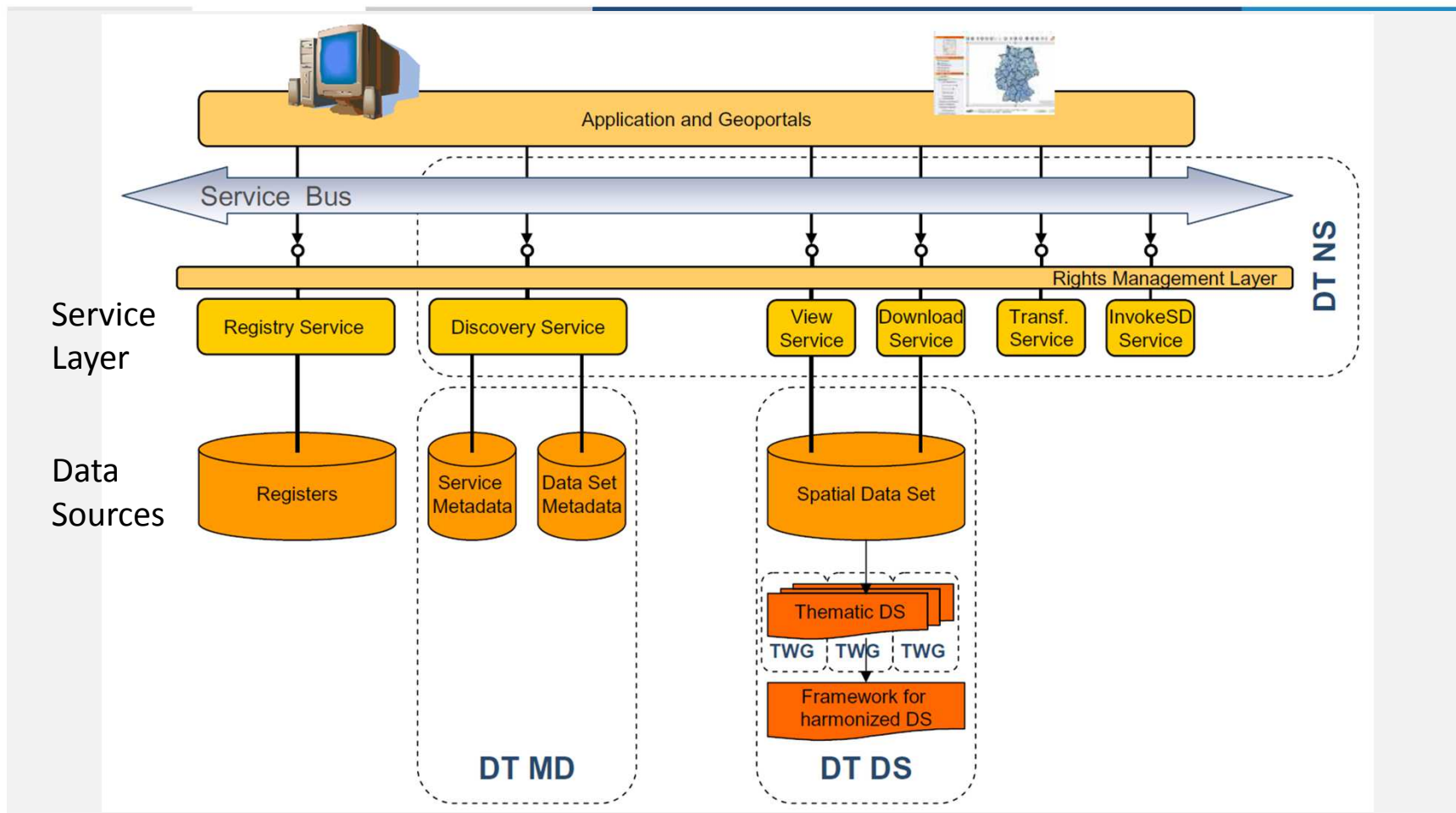
## Basic SDI functions:

- Discover data available
- Deliver data available
  - Broker & Manage
  - Aggregate & Fusion
- D3.5 INSPIRE Network Service Architecture
  - [http://inspire.jrc.ec.europa.eu/reports/Implementing Rules/network/D3 5 INSPIRE NS Architecture v3-0.pdf](http://inspire.jrc.ec.europa.eu/reports/Implementing%20Rules/network/D3%205%20INSPIRE%20NS%20Architecture%20v3-0.pdf)





# INSPIRE Architecture



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# INSPIRE Architecture

- Discovery
  - Article 11(1) (a)
    - establish and operate a network of services for the discovery of spatial data sets and services “for which metadata have been created”
      - Catalogue Services
      - Spatial Data Directory
      - Clearinghouse
      - Geographic Catalogue
      - Geodata Discovery Service





# INSPIRE Architecture

- Discovery
  - Catalogue Service for the Web (**CSW**)
    - discover, browse, and query metadata
    - INSPIRE relevant metadata profile is based on ISO 19115 & 19119



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# INSPIRE Architecture

- Viewing
  - Article 11(1) (b)
    - establish and operate “view services making it possible, as a minimum, to display, navigate, zoom in/out, pan or overlay viewable spatial data sets and to display legend information and any relevant content of metadata”
    - Further requirements are laid down by Implementing Provisions

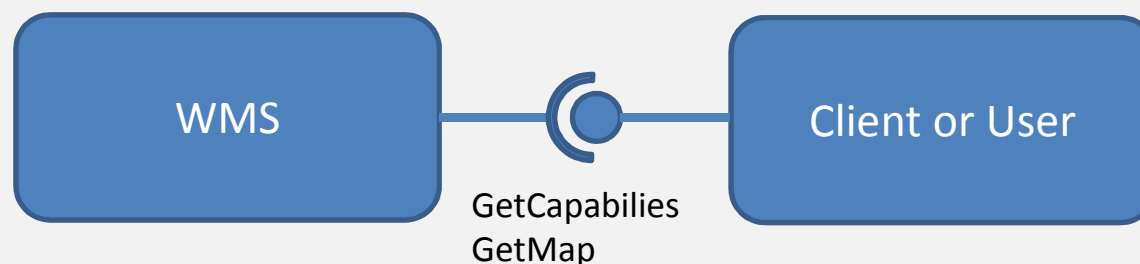
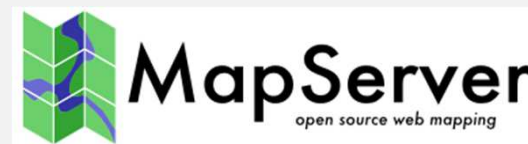




# INSPIRE Architecture

## ■ Viewing

- Web Map Service (WMS)
- Delivers georeferenced map images (e.g. JPG or PNG)



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# INSPIRE Architecture

- Download
  - Article 11(1) (c)
    - Establish and operate a network of “download services, enabling copies of spatial data sets, or parts of such sets, to be downloaded and, where practicable, accessed directly”
  - A download service supports
    - download of a complete dataset or datasets, or
    - a part of a dataset or datasets, and
    - where, practicable, provides direct access to complete datasets or parts of datasets.
    - Gazetteer like services are also covered by a type of download service.A

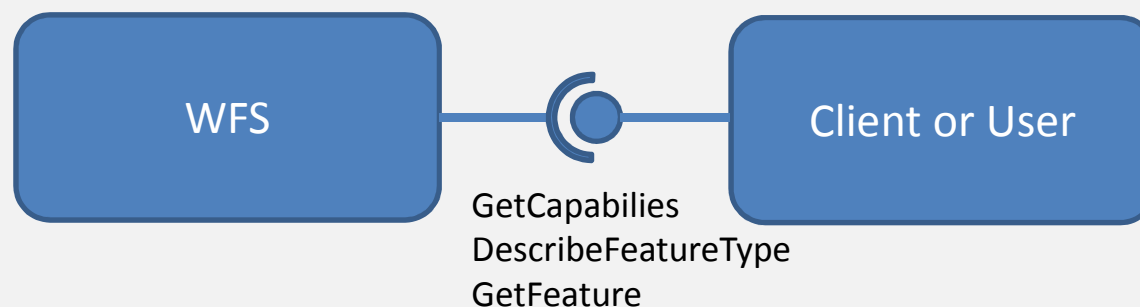




# INSPIRE Architecture

## ■ Download

- Web Feature Service (WFS)
- Delivers geographical features (geometry & attributes)
- GML (INSPIRE requires GML 3.2.1.)



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# INSPIRE Architecture

- Download
  - Sensor Observation Service (**SOS**)
  - Delivers observations & geographical features
  - Observation & Measurement (O&M), Sensor Modelling Language (SensorML)
    - OGC & ISO standards
    - Considered by INSPIRE data specifications





# INSPIRE Architecture

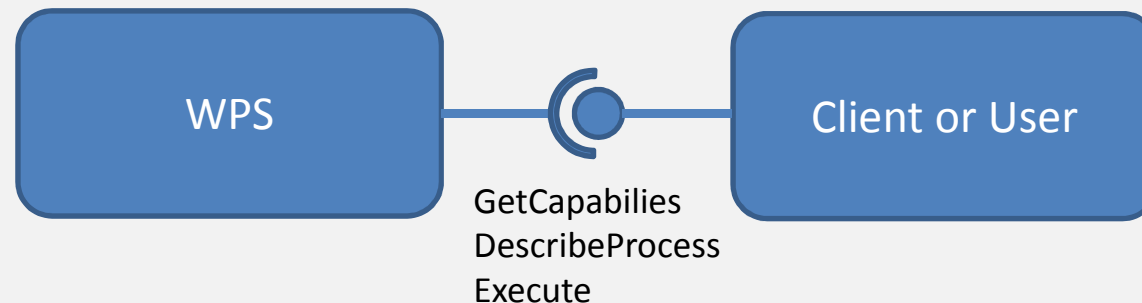
- Transformation
  - Article 11(1)(d)
    - “establish and operate a network of ... transformation services, enabling spatial data sets to be transformed with a view to achieving interoperability”
    - Coordinate transformation
    - Content transformation





# INSPIRE Architecture

- Transformation
  - Management & Aggregation
    - Web Processing Service (**WPS**)
    - Standard Protocol (Input/Output) for invoking Geospatial Processes





# INSPIRE Roadmap



10 years! – that's geological timeframe for IT



- 15-May-2010** Implementation of provisions for monitoring and reporting
- 03-Dec-2010** **Metadata available** for spatial data sets and services corresponding to **Annex I and II**
- 09-May-2011** Member States shall provide the **Discovery and View Services with initial operating capability**
- 30-Jun-2011** The EC establishes and runs a **geo-portal at Community level**
- 19-Oct-2011** Implementation of Regulation as regards the access to spatial data sets and services under harmonised conditions for new arrangements
- 09-Nov-2011** **Discovery and view services operational**
- 28-Jun-2012** **Download Services with initial operating capability**
- 28-Jun-2012** **Transformation Services with initial operating capability**
- 23-Nov-2012** Implementation of Commission Regulation (EU) No 1089/2010 of 23 November 2010 as regards interoperability of spatial data sets and services for **Newly collected and extensively restructured Annex I spatial data sets available**
- 28-Dec-2012** **Download services operational**
- 28-Dec-2012** **Transformation services operational**
- 04-Feb-2013** Implementation of Commission Regulation (EU) No 102/2011 of 4 February 2011 as regards interoperability of spatial data sets and services for newly collected and extensively restructured Annex I spatial data sets
- 19-Apr-2013** Implementation of Regulation as regards the access to spatial data sets and services of the Member States by Community institutions and bodies under harmonised conditions for existing arrangements
- 03-Dec-2013** **Metadata available** for spatial data sets and services corresponding to **Annex III**
- October 2015** **Newly collected and extensively restructured Annex II and III spatial data sets available**
- 23-Nov-2017** Implementation of Commission Regulation (EU) No 1089/2010 of 23 November 2010 as regards interoperability of **spatial data sets and services for other Annex I spatial data sets still in use at the date of adoption**
- 04-Feb-2018** Implementation of Commission Regulation (EU) No 102/2011 of 4 February 2011 as regards interoperability of spatial data sets and services for other Annex I spatial data sets still in use at the date of adoption
- October 2020** **Other Annex II and III spatial data sets available in accordance with IRs for Annex II and III**

Today



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# Beyond INSPIRE?

- Is there an „after“ INSPIRE?
  - Public and private services
  - Environmental policy
  - Remote sensing communities
  - Continues adaptations



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