

# INSPIRE: La Direttiva sull'infrastruttura Europea di dati territoriali

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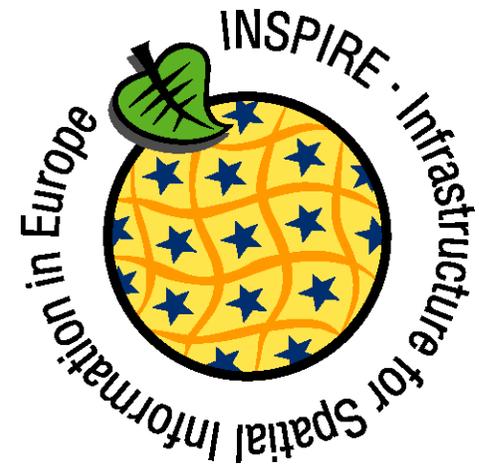
Unità Infrastrutture di Dati Territoriali



# Sommario

- Perche' INSPIRE?
- Il contenuto di INSPIRE
- INSPIRE come processo di aggregazione
- Stato dell'arte: dove siamo ora
- Opportunita'
- Oltre INSPIRE...

## Perche' INSPIRE ?



\*COM(2009) 433 final – “**GDP and beyond. Measuring progress in a changing world.**”

**Environmental changes and challenges:**

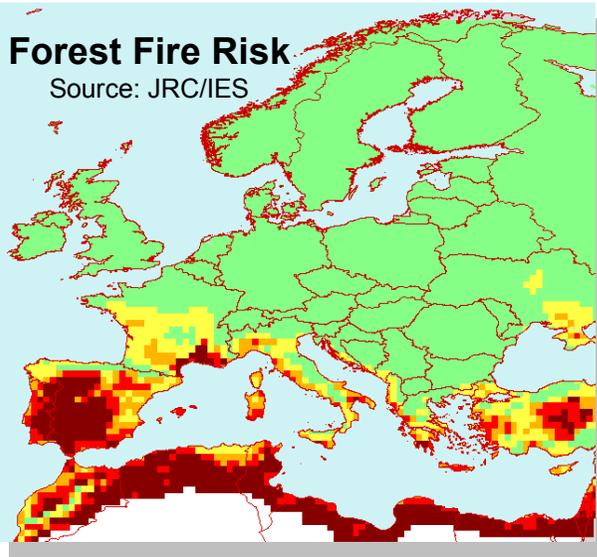
**the need of near real-time information for decision-making**

*Factors including globalisation and climate change are bringing ever faster changes to the economy, society and the environment. **Policy-making requires equivalent information on all those aspects** – even if this goes at the expenses of accuracy – as it has to react quickly to new developments\**

## Conseguenze visibili dei cambiamenti climatici

### Forest Fire Risk

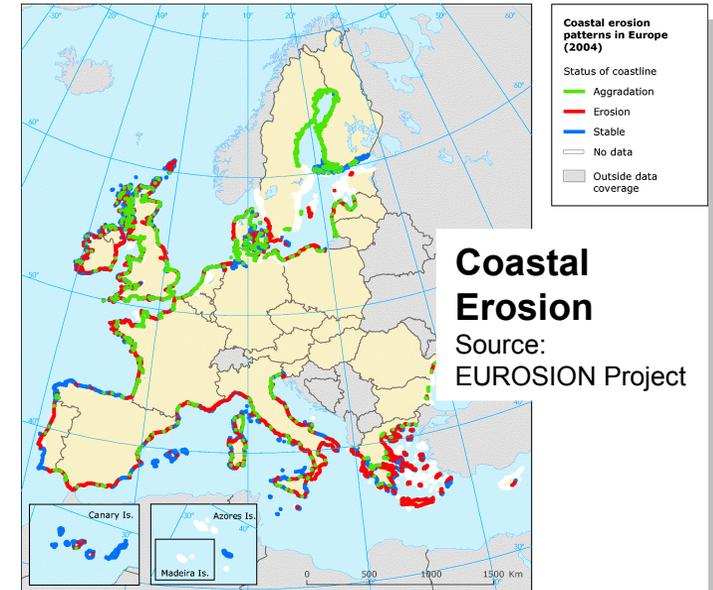
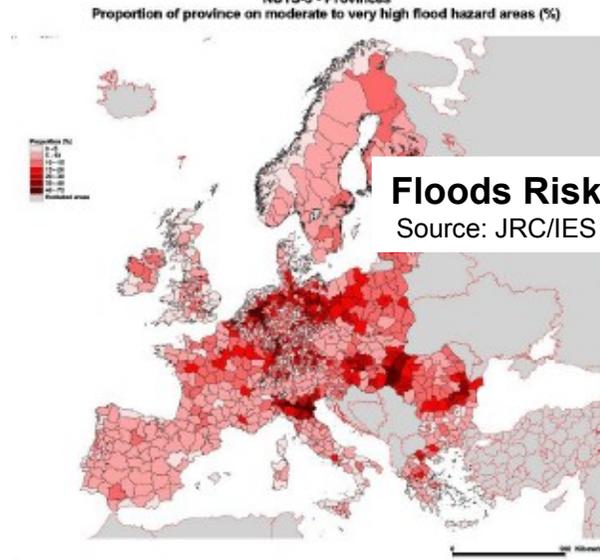
Source: JRC/IES



NUTS-3 - Provinces  
Proportion of province on moderate to very high flood hazard areas (%)

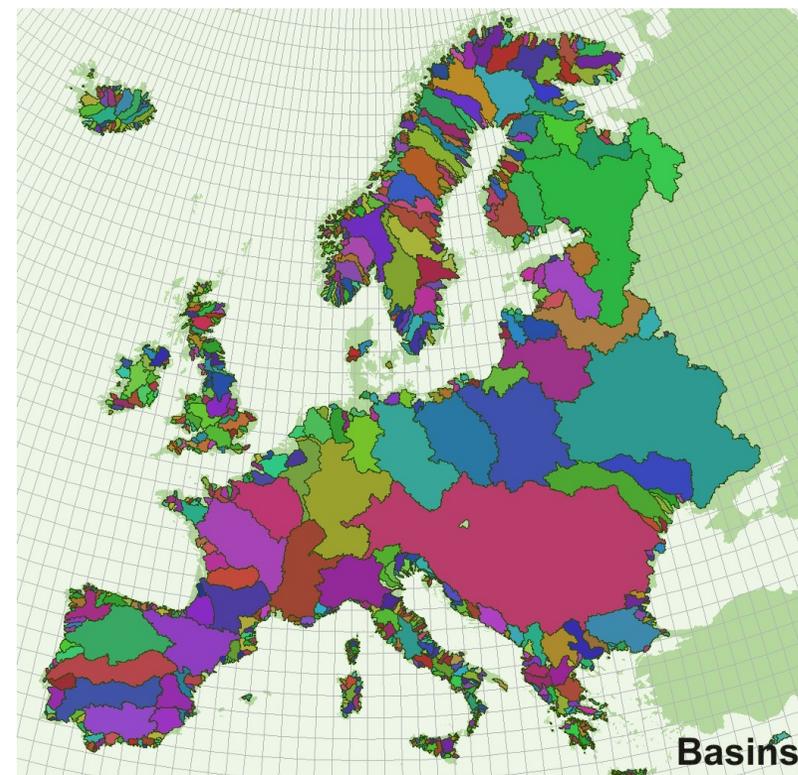
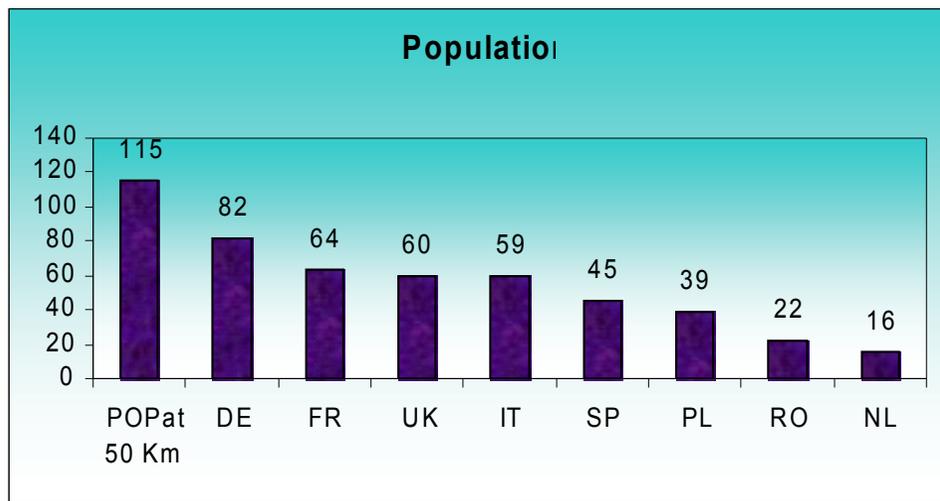
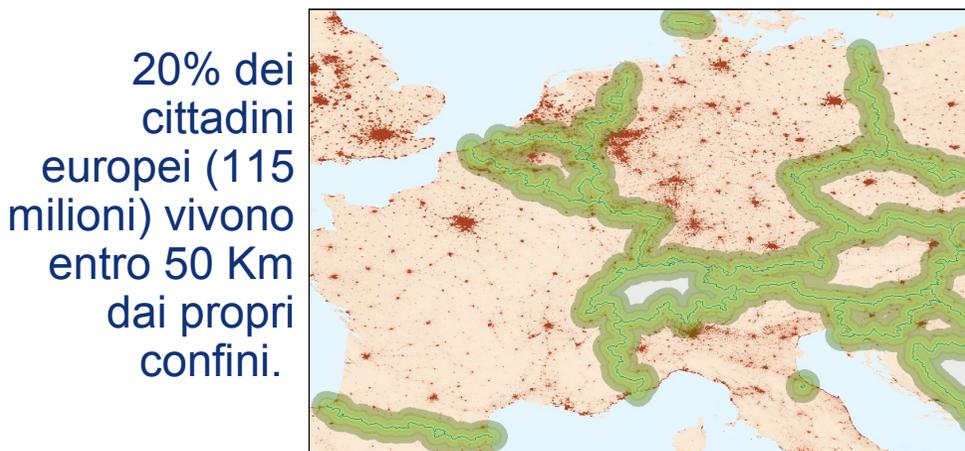
### Floods Risk

Source: JRC/IES



## Perché l' Europa necessita interoperabilità e armonizzazione?

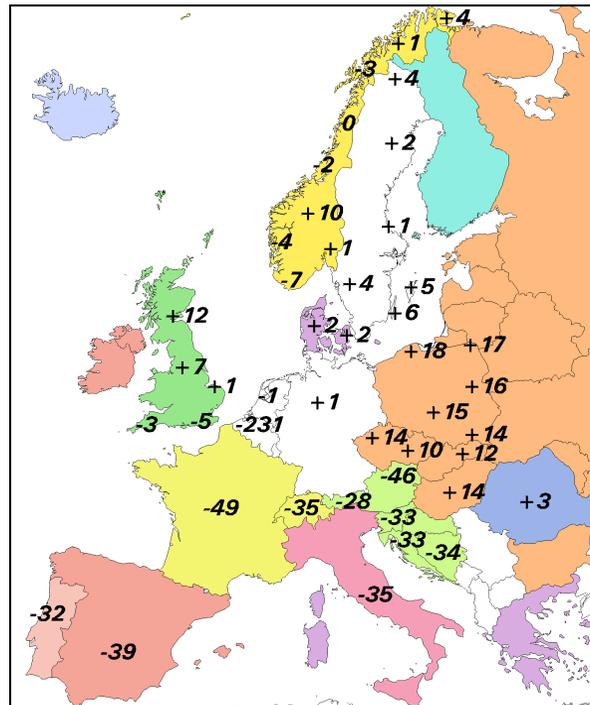
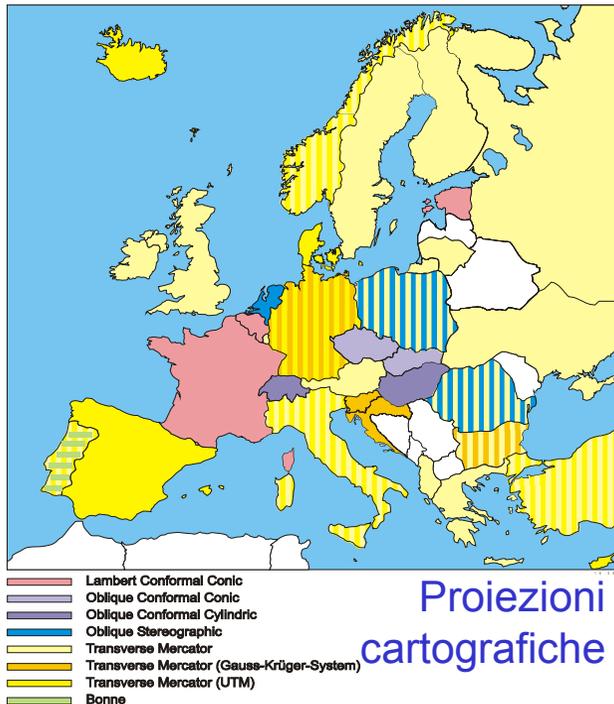
*I disastri naturali ed altri fenomeni ambientali non si arrestano ai bordi nazionali*



70% dell'acqua in Europa è parte di bacini transnazionali !!

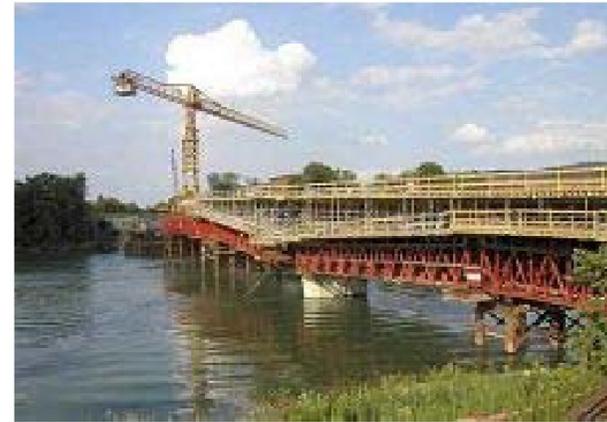
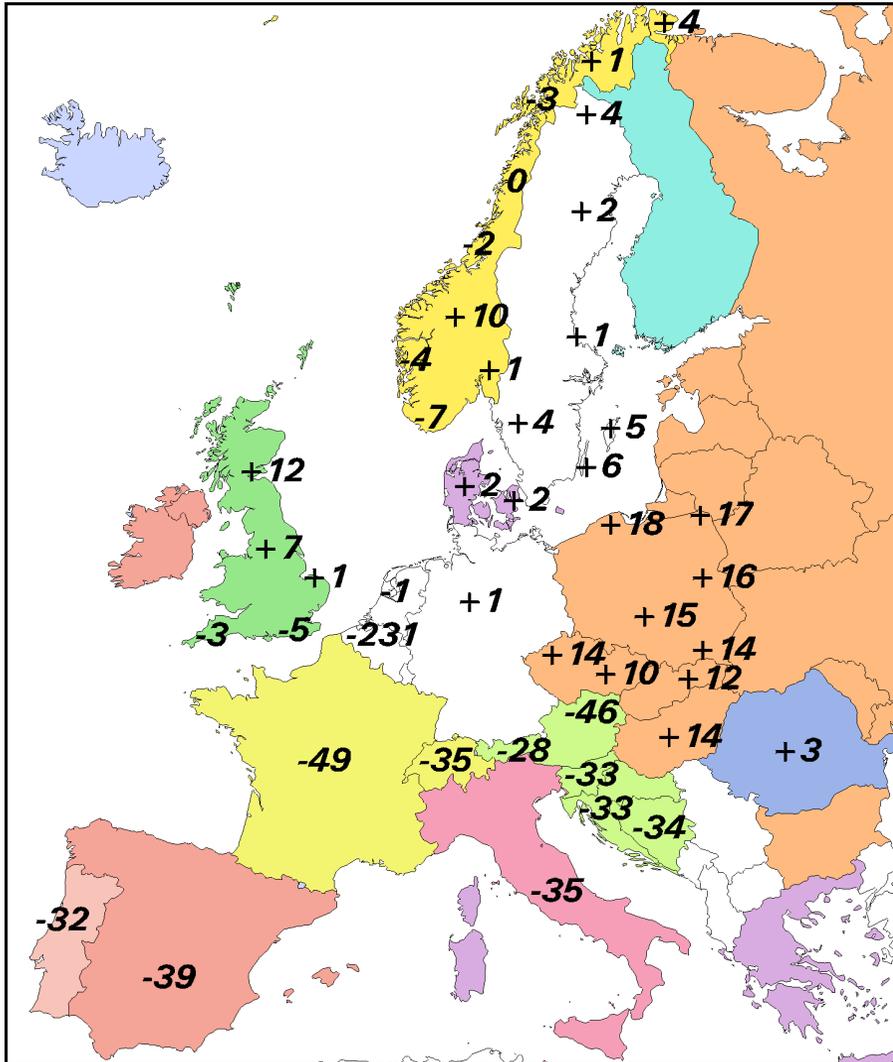
# Armonizzare l'informazione geografica in Europa e' un esercizio complesso

... diverse tradizioni, culture, modelli socio-economici .. *che si riflettono in diverse scelte per la gestione dell'informazione geografica*



Country	Official and national Languages
Austria	German, Slovene (official in Carinthia), Croatian and Hung
Belgium	Dutch 60%, French 40%, German less than 1%
Bulgaria	Bulgarian
Cyprus	Greek, Turkish, English
Czech Republic	Czech (cestina)
Denmark	Danish (dansk)
Estonia	Estonian (eesti keel)
Finland	Finnish (suomi) 93.4%, Swedish 5.9%
France	French (français)
Germany	German (Deutsch)
Greece	Greek (elliniká, the Koine-Demotic version)
Hungary	Hungarian (magyar)
Ireland	Irish (Gaeilge), English (generally used),
Italy	Italian (italiano)
Latvia	Latvian (latviesu valoda)
Lithuania	Lithuanian (lietuviu kalba)
Luxembourg	Luxembourgish (Lëtzebuergesch), French and German
Malta	Maltese (Malti)
Netherlands	Dutch (Nederlands, official language), Frisian (official lang
Poland	Polish (polski)
Portugal	Portuguese (português)
Romania	Romanian (romana)
Slovakia	Slovak (slovensky jazyk)
Slovenia	Slovenian (slovenski jezik)
Spain	Spanish (español - the Castilian version) 74%, Catalan 17
Sweden	Swedish (svenska)
Switzerland	German 63.7%, French 19.2%, Italian 7.6%, Romansch 0.
United Kingdom	English

**23 linguaggi ufficiali**



Die neue Brücke bei Laufenburg

14.01.2004

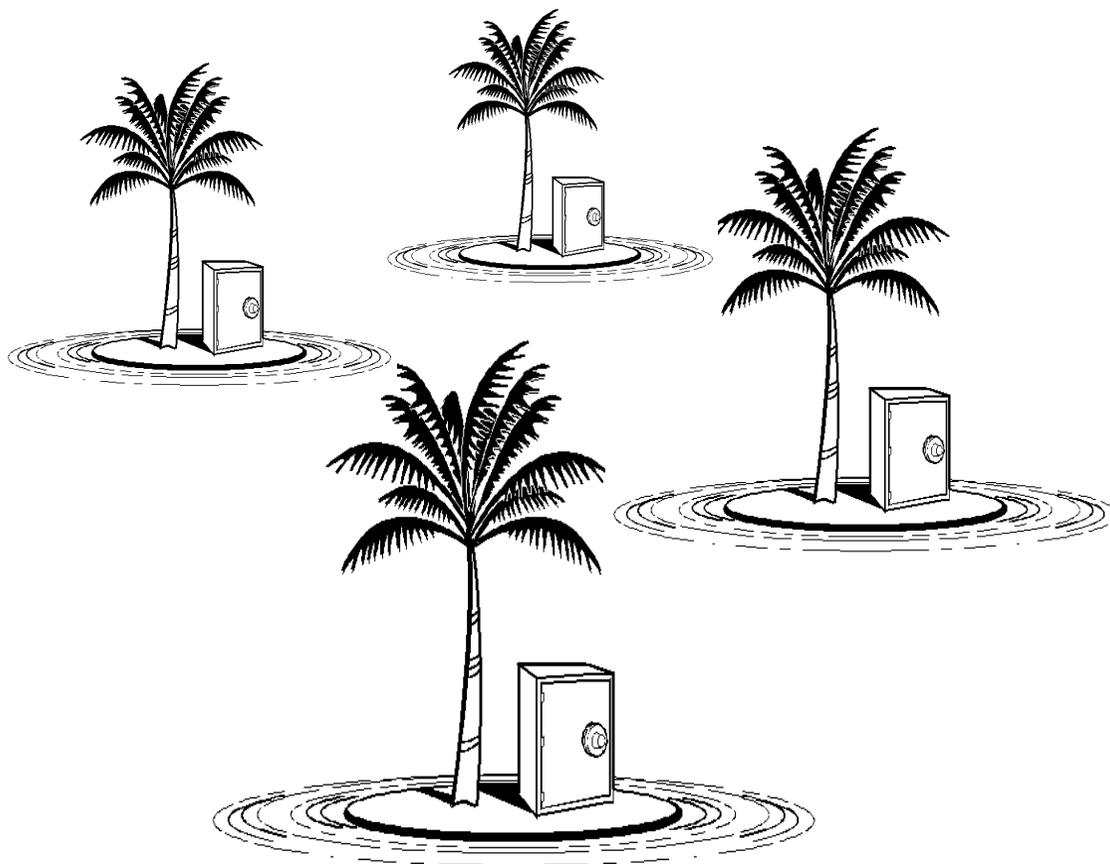
Città di Laufenburg nel cantone di Argau sul fiume Reno.

Il ponte già costruito crolla. C'e' una differenza in altezza di 54 cm. fra la parte Svizzera e quella tedesca !

Come è potuto accadere ?

I due Paesi usano diversi sistemi di misurazione e non se ne è tenuto conto correttamente nella fase di progettazione <http://www.laufenburg.ch>

## Il contesto Europeo



1. Restrizioni nella Politica di Accesso ed Uso dell'informazione
2. Mancanza di coordinamento
3. Carenze in termini di standardizzazione
4. Non utilizzabilità' dei dati
5. Incompletezza e duplicazione dei dati

## Cosa richiede INSPIRE ?



# La Direttiva INSPIRE 2007/02/EC

INSPIRE stabilisce norme generali per l'istituzione di un'infrastruttura per l'informazione territoriale europea

**basata sulle infrastrutture per l'informazione territoriale create e mantenute operative da ciascun Stato Membro**

*INSPIRE richiede anche specifiche regole di attuazione da adottare attraverso la procedura di Comitologia*

*Quali dati/servizi?*

*... dati gestiti da o per conto della pubblica amministrazione.*

## Annex I

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

## Annex II

1. Elevation
2. Addresses
3. Cadastral parcels
4. Land cover
5. Orthoimagery
6. Geology

*Harmonised spatial data specifications more stringent for Annex I and II than for Annex III*

## 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 & 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

## Cos'è una infrastruttura di dati territoriali (SDI\*)?



Così come la rete stradale rende possibile connettere città diverse, così una SDI rende possibile connettere servizi informativi e database territoriali remoti.



Una SDI facilita l'accesso ai dati ed ai servizi da parte dei suoi utilizzatori



Una SDI rende più facile lo sviluppo di nuove applicazioni e servizi

**\*SDI – Spatial Data Infrastructure**

# I componenti di INSPIRE

1. Metadati
2. Interoperabilità dei dati territoriali e dei servizi
3. Servizi e tecnologie di rete  
accessibili anche tramite il portale Europeo
4. Accordi sulla condivisione dei dati
5. Misure di coordinamento e monitoraggio



The screenshot shows the homepage of the INSPIRE Geoportals. The header features the INSPIRE logo and the text "INSPIRE Geoportals the EU portal for Geographic Information". Below the header is a navigation bar with links for "home", "info tours", "catalogues", and "maps". The main content area is divided into several sections:

- quick links**: A box containing links to "INSPIRE Metadata Catalogue", "INSPIRE Map Client", and "Map of the month".
- INSPIRE Community Geoportals**: A section with a "Welcome" message and a paragraph describing the portal as Europe's Internet access point to geographic data and services. It also includes a paragraph stating that the portal does not store or maintain data but acts as a gateway.
- What's inside**: A section with sub-sections: "Information tours" (with a "more ..." link), "Catalogues" (with a "more ..." link), and "Online Maps" (with a "more ..." link).
- Map of the Month**: A section featuring a satellite map and the text "Interoperability in action".
- News**: A section with several news items, including "24-08-2007 The Methodology for the Development of Data Specifications (D 24-6) published (more...)", "21-08-2007 Call for expression of interest for Seconded National Experts with focus on New Member States, Candidate Countries and non EU countries associated to FP7 (more...)", and "24-07-2007 Call for tender: development and prototyping of INSPIRE technical specifications for air, water, waste and more news ...".
- EVENTS**: A section with several event listings, including "10-12-2007 [Wageningen University and Research (NL)] Course: Geo-visualization in Environmental Research (more...)", "28-10-2007 [Omaha, NE, USA] 2007 International Workshop on Spatial and Spatio-Temporal Data Mining (more...)", and a "more events ..." link.



## European Commission INSPIRE Geoportal



European Commission > INSPIRE GEOPORTAL > Viewer

### INSPIRE View Service Client

[HOME](#)

[Discovery](#)

[Viewer](#)

[Metadata Editor](#)

#### Legislation

[Comitology register for proposal for INSPIRE Implementing Rules for Discovery and View Services](#)

#### Technical

[Draft Technical Guidance: View Services \(Version 1.0\)](#)

[INSPIRE SOAP primer for INSPIRE Discovery and View Services providing simple examples of the proposed INSPIRE SOAP framework and additional clarifications](#)

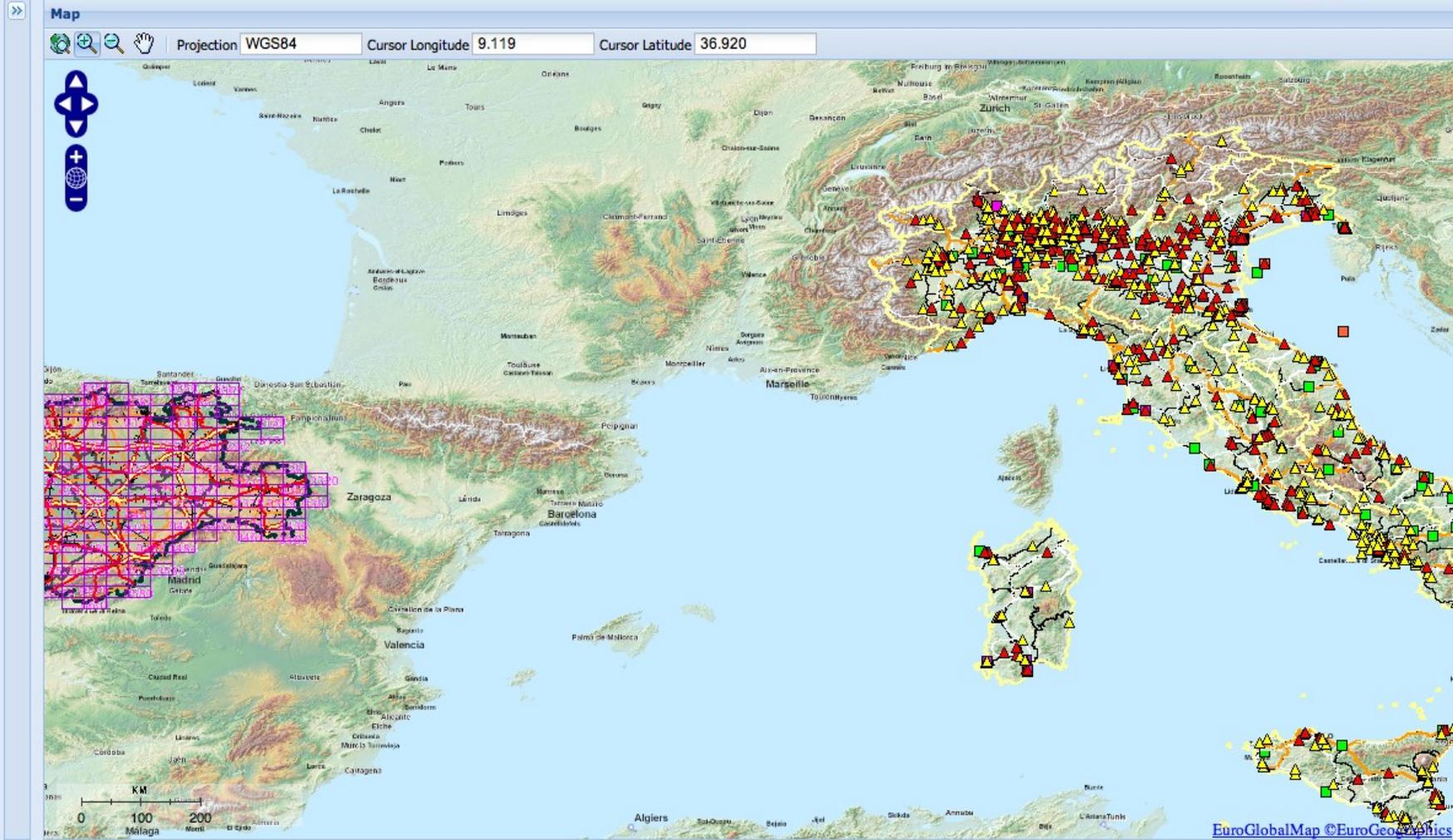
[Proposals for the documentation of the communication of the view and discovery service using the Web Service Description Language](#)

[Technical Report: INSPIRE NETWORK SERVICES SOAP Framework](#)

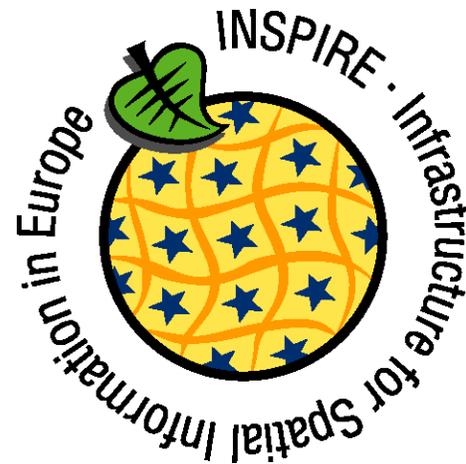
[Technical Report: SOAP HTTP Binding Status - Survey on OGC and ORCHESTRA Specifications Relevant for the INSPIRE Network Services](#)

[INSPIRE Website](#)

[INSPIRE Registry](#)



# INSPIRE come processo di aggregazione



## **INSPIRE come processo**

### **Approccio aperto e trasparente per:**

Formulare il testo della Direttiva

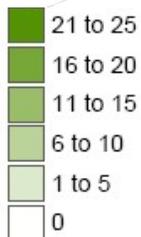
Valutarne l'Impatto

Richiedere l'opinione degli Stati Membri

Mobilizzare gli stakeholders

Fornire materiale per le regole di attuazione

Commentare e proporre revisione ai draft ...



	22-06-2005
Spatial Data Interest Communities (SDICs)	139
Legally Mandate Organisations (LMOs)	89
Proposed Experts	193
Referenced Materials	96
Identified Projects	94

Conferenza AMEM 2009 - Roma



# INSPIRE Stato dell'arte: dove siamo ora



## Policy Development - Regulations

### Approved

INSPIRE Directive 2007/2/EC  
Regulation (EC) No 1205/2008 on metadata  
Decision 2009/443/EC on monitoring and reporting

### Under approval

Regulation on Discovery and View services  
Regulation on Data and Services Sharing

### To be developed

Regulation on data interoperability for Annex I  
Regulation on Download and Transformation Services  
Regulation on Invoke Services  
Regulation on data interoperability for Annex II and III

## Implementation (started in 2009 after transposition)

December 2010 : The EC establishes and runs a geo-portal at Community level

October 2011: Metadata available for spatial data corresponding to Annex I and II

June 2012: Discovery, view, download and transformation services operational

...

May 2019 : Annex II and III spatial data sets interoperable

**Initial Operating Capabilities started in June 2009**

### Adoption

Milestone date	Article	Description
15-May-2007	-	Entry into force of INSPIRE Directive
15-Aug-2007	22§2	Establishment of the INSPIRE Committee
14-May-2008	5§4	Submission for opinion of the INSPIRE committee of IR for the creation and updating of metadata
03-Dec-2008	5§4	Adoption of INSPIRE Metadata Regulation
19-Dec-2008	21(4)	Submission for opinion of the INSPIRE committee of IR for monitoring and reporting
19-Dec-2008	16	Submission for opinion of the INSPIRE committee of IR for discovery and view services
24-Dec-2008	5§4	Entry into force of INSPIRE Metadata Regulation
15-May-2009	24§1	Provisions of Directive are brought into force in MS
05-Jun-2009	17(8)	Submission for opinion of the INSPIRE committee of IR governing the access rights of use to spatial data sets and services for Community institutions and bodies
05-Jun-2009	21(4)	Adoption of COMMISSION DECISION regarding INSPIRE monitoring and reporting
December 2009 <sup>3</sup>	16	Adoption of INSPIRE Regulation on discovery and view services
14-Dec-2009	9(a)	Submission for opinion of the INSPIRE committee of IRs for the interoperability of spatial data sets and services for Annex I spatial data themes
14-Dec-2009	16	Submission for opinion of the INSPIRE committee of IR for download services
14-Dec-2009	16	Submission for opinion of the INSPIRE committee of IR for transformation services
December 2009 <sup>3</sup>	17(8)	Adoption IR governing the access rights of use to spatial data sets and services for Community institutions and bodies
15-May-2012	9(b)	Submission for opinion of the INSPIRE committee of IRs for the interoperability of spatial data sets and services for Annex II and III spatial data themes
June 2012 <sup>1</sup>	16	Submission for opinion of the INSPIRE committee of IR for the services allowing spatial data services to be invoked

### Implementation

Milestone date	Article	Description
15-May-2010	21§1 21§2	Implementation of provisions for monitoring and reporting
30-Nov-2010	15	The EC establishes and runs a geo-portal at Community level
24-Dec-2010	6(a)	Metadata available for spatial data corresponding to Annex I and II
October 2011 <sup>5</sup>	16	Discovery and view services operational
June 2012 <sup>1</sup>	16	Download services operational
June 2012 <sup>1</sup>	16	Transformation services operational
7§3, 9(a)		Newly collected and extensively restructured Annex I spatial data sets available
24-Dec-2013	6(b)	Metadata available for spatial data corresponding to Annex III
January 2015 <sup>5</sup>	7§3, 9(b)	Newly collected and extensively restructured Annex II and III spatial data sets available
June 2017 <sup>5</sup>	7§3, 9(a)	Other Annex I spatial data sets available in accordance with IRs for Annex I
30-May-2019	7§3, 9(b)	Other Annex II and III spatial data sets available in accordance with IRs for Annex II and III

<sup>1</sup> Date proposed by the commission

<sup>3</sup> Under scrutiny by European Parliament and Council

<sup>5</sup> Date depending on entry into force of measure

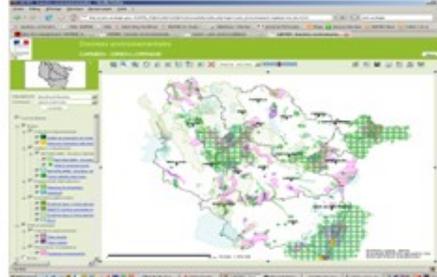
# Implementazione di INSPIRE negli Stati Membri

(June 2009 – source INSPIRE Committee members)

Country	Transpose	Coordination			Implementation	
		NMA	ENV	Other	Centralised	Federated
Italy	☺		✓			✓
France	☺		✓		✓	✓
Latvia	☺			✓	✓	
Slovenia	☺	✓	✓		✓	
Hungary	✓		✓		✓	
Germany	☺		✓			✓
Lithuania	☺	✓			✓	
Estonia	☺		✓		✓	
Spain	☺			✓		✓
UK	☺		✓		✓	
Austria	☺		✓			✓
Iceland	☺	✓			✓	
Finland	✓	✓			✓	
Netherlands	✓		✓		✓	
Cyprus	☺			✓	✓	
Denmark	✓		✓		✓	
Norway	☺	✓			✓	
Ireland	☺		✓		✓	



Italy: EIA application integrated in EU-geoportal



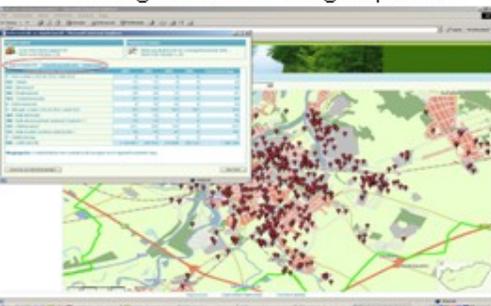
France: CARMEN environmental info system



Latvia: IACS-LPIS view services



Slovenia: real estate market value register



Hungary: OKIR environmental info system



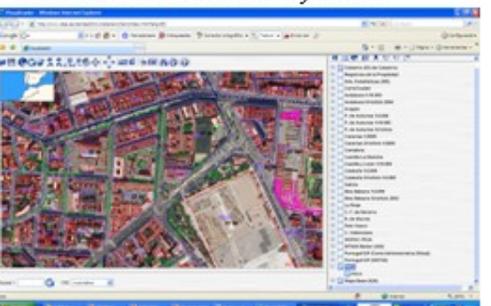
Germany: GDI-DE organisational structure



Lithuania: LGII discovery service



Estonia: road and traffic information systems



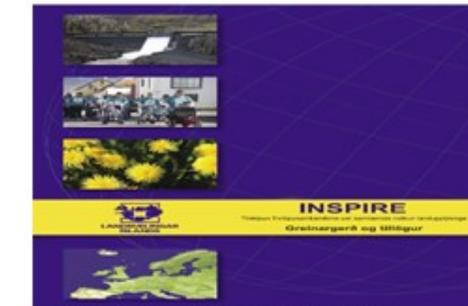
Spain: interoperable Cadastre



UK: Geohub Northern Ireland



Austria: 9 states, 1 geoservice



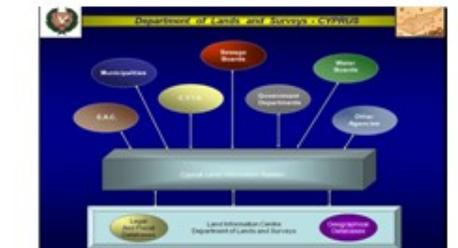
Iceland: getting ready for INSPIRE



Finland: open source viewer



Netherlands: Space for GeoInformation



Cyprus: National Land Information Systems



Norway: Norge Digitalt

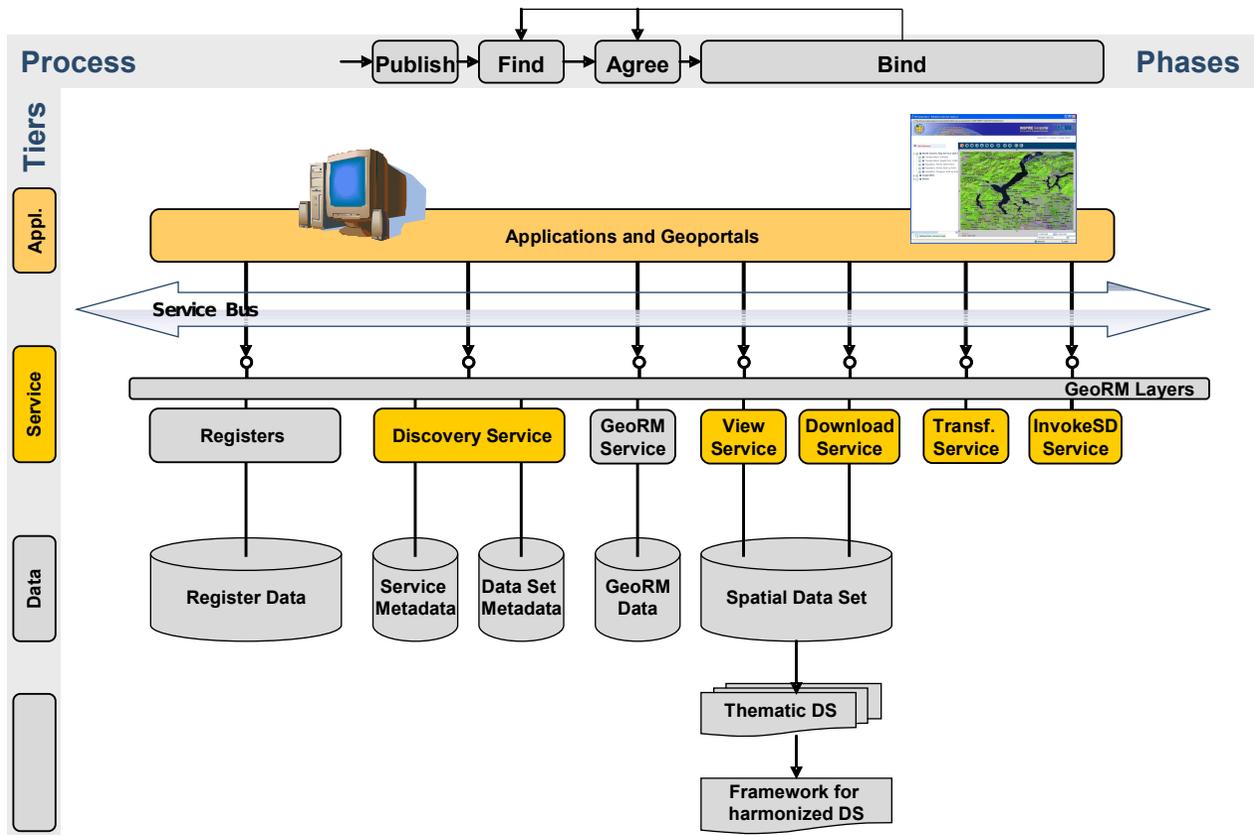
# Opportunita'



# ...be INSPIREd...

# Servizi e tecnologie di rete

- Discovery and View
- Download
- Transformation
- Invoke



## Services Oriented Architecture

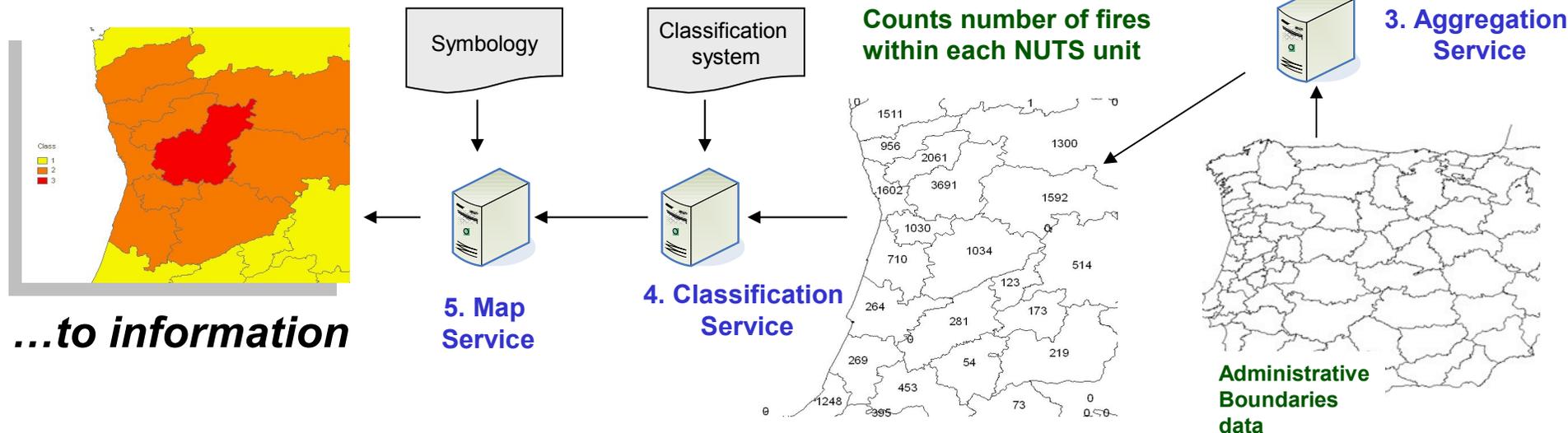
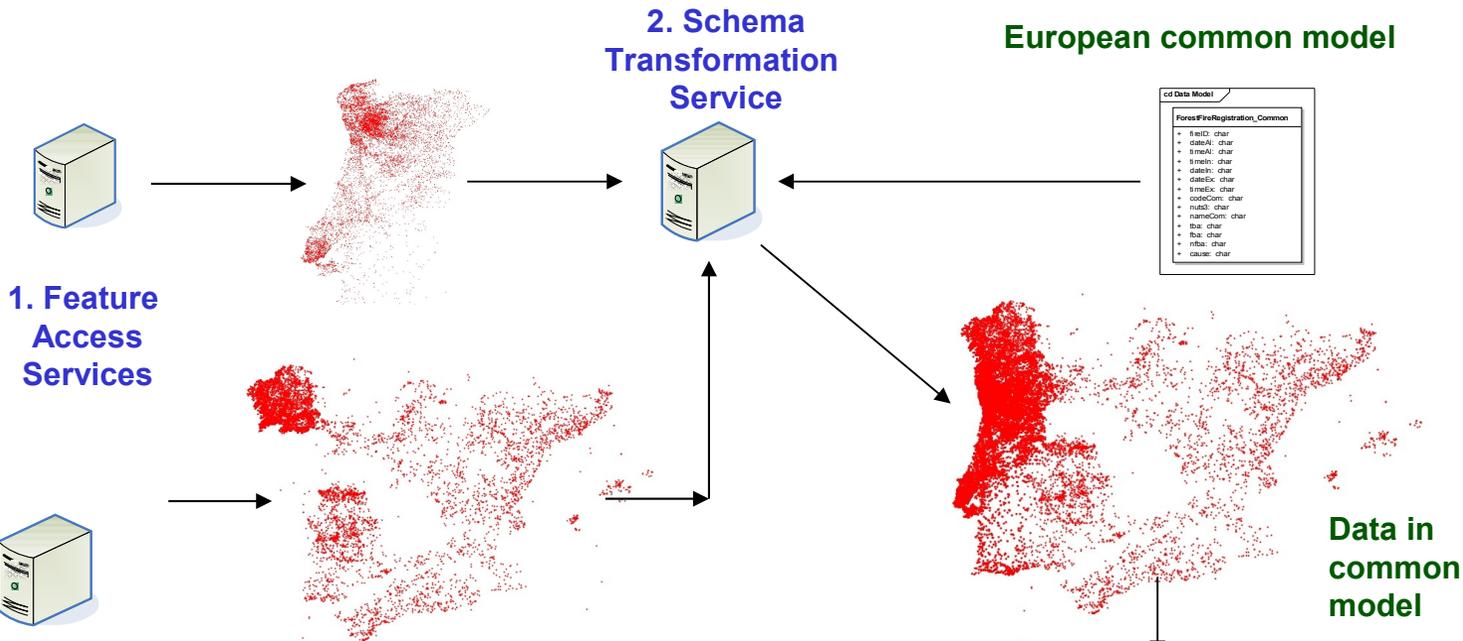
## Portuguese data

	ANO float8	JNE float8	NUT varchar	Tipo varchar	Codigo varchar	n. rd	Distrib varchar
1	2004	170809	PT11070909	Florestal	TM904317		Vila Real
2	2004	30120	PT11020130	Florestal	DM4043		Braga
3	2004	121303	PT14021303	Florestal	AT90419		Portalegre
4	2004	50307	PT12100207	Florestal	BI2041		Castelo Br.
5	2004	111317	PT13011317	Florestal	RO2042		Lisboa
6	2004	111315	PT13011315	Florestal	RO2044		Lisboa
7	2004	110904	PT13010804	Florestal	RO2047		Lisboa
8	2004	111503	PT13020103	Florestal	RO20410		Lisboa
9	2004	111101	PT13020601	Florestal	RO20412		Lisboa
10	2004	151001	PT13030701	Florestal	RO3044		Setúbal

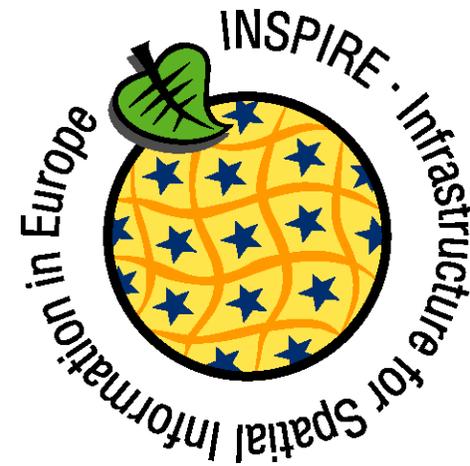
## Spanish data

	EP varchar	DIE varchar	DAS varchar	KOIN varchar	CMHKOS varchar	LON float8	CPLA1 varchar
1	2	11	01	001	2415	24.255566	4056
2	2	11	01	001	2421	24.35	4056
3	2	11	01	002	2426	24.433333	4058
4	2	11	01	002	4056	40.933333	2423
5	2	11	01	009	2403	24.05	4046
6	2	11	01	020	2420	24.333333	4054
7	2	11	01	021	2406	24.1	4054
8	2	11	01	021	2408	24.133333	4052
9	2	11	01	021	2408	24.133333	4053
10	2	11	01	022	2414	24.233333	4048

**From Data.....**



# Oltre INSPIRE

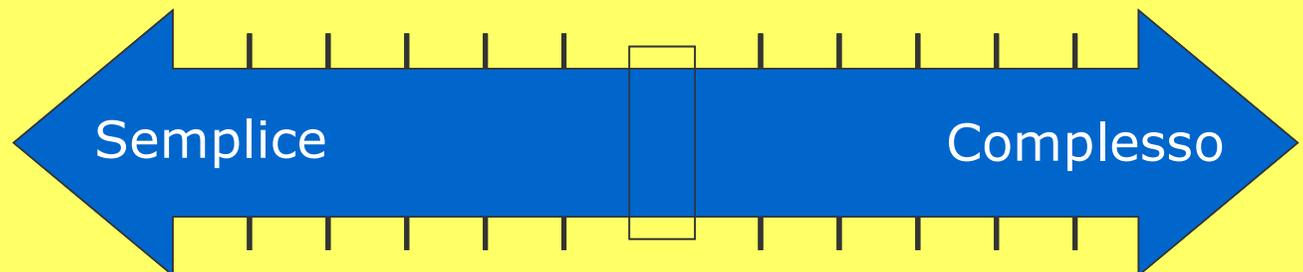


## INSPIRE ...

- Non richiede raccolta di nuovi dati...
- Non obbliga a mantenere archivi storici ..
- Non copre tutta l'informazione geografica ma si limita ai dati necessari per le politiche ambientali..
- Non coinvolge direttamente il settore privato.....
- Stabilisce un livello di interoperabilita' "accettabile" da tutti gli stati membri secondo criteri pesati di costi/benefici

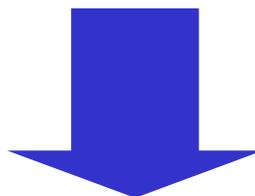
### **"The Balance Challenge"**

Quale livello di interoperabilita' e' piu' appropriato?



## Da INSPIRE verso la nuova Generazione di Digital Earth

Lo sviluppo di una SDI utilizza ancora un approccio top-down orientato al produttore dei dati.

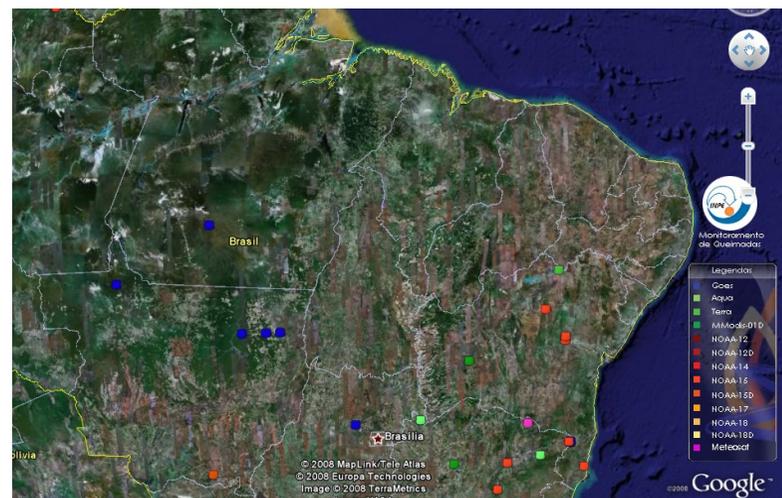
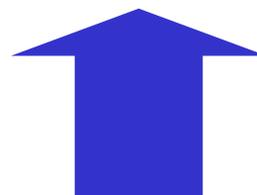


Come unire questi due approcci?

Come possiamo costruire l'infrastruttura oggi (INSPIRE) in modo che resti aperta agli sviluppi di domani?

Quale dovrebbe essere la nostra visione per la nuova Generazione di Digital Earth?

Neogeography e Web 2.0 utilizzano approcci bottom-up tipo social network, in cui gli utilizzatori diventano anche produttori dell'informazione



# Setting the agenda...



The screenshot shows the homepage of the International Journal of Spatial Data Infrastructures Research (IJSDIR). At the top left is the JRC logo. Below it are navigation links: HOME, ABOUT, LOG IN, REGISTER, SEARCH, CURRENT, ARCHIVES. A secondary navigation bar includes: EUROPA | European Commission | JRC | IES | SDI | IJSDIR | Archives. The main heading is "International Journal of Spatial Data Infrastructures Research" in red. Below that, it says "Vol 3 (2008)" and "Table of Contents". Under "Editorial", there is a link for "Next-Generation Digital Earth: A position paper from the Vespucci Initiative for the Advancement of Geographic Information Science" with a blue "ABSTRACT PDF" link. The authors listed are Max Craglia, Michael F. Goodchild, Alessandro Annoni, Gilberto Camara, Michael Gould, Werner Kuhn, David Mark, Ian Masser, David Maguire, Steve Liang, and Ed Parsons, with the page range 146-167.



International Journal of Spatial Data Infrastructures Research, 2008, Vol. 3, 146-167.

## *Editorial*

### **Next-Generation Digital Earth\***

**A position paper from the Vespucci Initiative for the Advancement of Geographic Information Science**

Max Craglia<sup>1</sup>, Michael F. Goodchild<sup>2</sup>, Alessandro Annoni<sup>1</sup>, Gilberto Camara<sup>3</sup>, Michael Gould<sup>4</sup>, Werner Kuhn<sup>5</sup>, David Mark<sup>6</sup>, Ian Masser<sup>7</sup>, David Maguire<sup>8</sup>, Steve Liang<sup>9</sup>, Ed Parsons<sup>10</sup>

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[massimo.craglia@jrc.it; alessandro.annoni@jrc.it]

<sup>2</sup> University of California at Santa Barbara [good@geog.ucsb.edu]

<sup>3</sup> National Institute for Space Research, Brasil [gilberto.camara@inpe.br]

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# **Grazie per l'attenzione**



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