

Public Data, ICT and Water Governance – The Need for an Information Policy to Achieve the Goal

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Water: a controversial resource


Left Diagram: Interaction of groundwater movement

- Human induced impacts in groundwater:
 - domestic effluent
 - industrial and urban
 - sewage treatment plants
 - salt suit
 - underground storage tanks
- Natural processes:
 - Precipitation
 - Evaporation
 - Transpiration
 - Surface runoff
 - Infiltration
 - Groundwater table
 - Zone of saturation
 - Discharge of groundwater movement
 - Groundwater flow
 - Limestone Aquifer

Right Diagram: 3D Cross-section of a landscape

- ✓ Ground cover and vegetation
- ✓ Conservation farming techniques
- ✓ Riparian vegetation
- ✓ Septic tank location
- ✓ Crops location
- ✓ Water sensitive urban design
- ✗ Crops location
- ✗ Erosion
- ✗ Septic tank location
- ✗ Over-irrigated land
- ✗ Livestock location
- ✗ Salinity scale
- ✗ Riverbank cleared
- ✗ Discharge from street
- ✗ Drainage of acid sulfate soils
- ✗ Livestock location
- ✓ Watering points off river

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WATER FRAMEWORK DIRECTIVE

Water Framework Directive establishes water management under Participatory Governance and integrated model

22.12.2000 Official Journal of the European Communities L 3283

I
(Act whose publication is obligatory)

DIRECTIVE 2000/60/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 23 October 2000
establishing a framework for Community action in the field of water policy


THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION, (1) The declaration of the Ministerial Seminar on groundwater held at The Hague in 1995 recognised the need for action to avoid significant deterioration of freshwater quality and quantity and called for a programme of action to be implemented by the year 2010 aiming at sustainable management and protection of freshwater resources. In the resolution of 22 October 2000

Having regard to the Treaty establishing the European Community, and in particular Article 175(1) thereof,

(14) **The success of this Directive relies on close cooperation, and coherent action at Community, Member State and local level as well as on information, consultation and involvement of the public, including users**

(16) **Further integration of protection and sustainable management of water into other Community policy areas such as energy, transport, agriculture, fisheries, regional policy and tourism is necessary. This Directive should provide a basis for a continued dialogue and for the development of strategies towards a further integration of policy areas. This Directive can also make an important contribution to other areas of cooperation between Member States, inter alia, the European spatial development perspective (ESDP).**

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Role of information

Information plays a key role:


DATA → INFORMATION → KNOWLEDGE → WISDOM

BEST DECISION MAKING

PARTICIPATION

- Access to all data and information under Open Data criteria**
- Information adapted to participatory processes:**
scenario analysis, maps, indicators, cost/benefit analysis, etc.
- Raising awareness actions**

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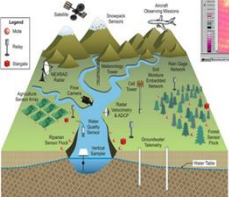
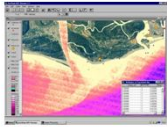
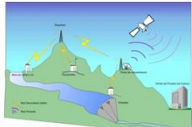
Role of Technology

DATA → INFORMATION → KNOWLEDGE → WISDOM

TECHNOLOGY

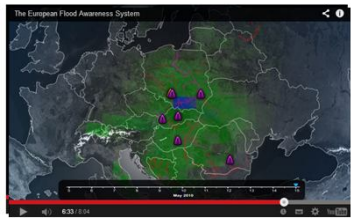
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HUGE AVAILABILITY OF DATA






Sistema Europeo de Alertas ante Inundaciones (EFAS)

Publicado en 22 de diciembre de 2012



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Role of Technology

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TECHNOLOGY

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EXPLOIT DATA TO BECOME INFORMATION (scenario analysis, maps, indicators, cost/benefit analysis, etc.)

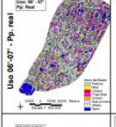
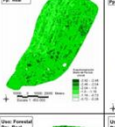
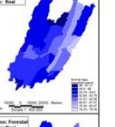
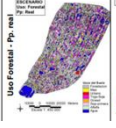
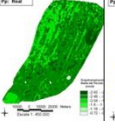
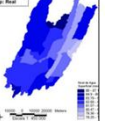
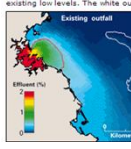
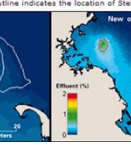
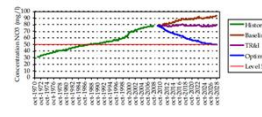
Escenarios	Evapotranspiración Actual Medio del periodo (mm/d)	Nivel de Agua Superficial Medio del periodo (metros)
 Urban 60-70% - 70% forest	 Urban 60-70% - 70% forest	 Urban 60-70% - 70% forest
 Urban 60-70% - 30% forest	 Urban 60-70% - 30% forest	 Urban 60-70% - 30% forest

Figure 3. Model comparison of winter near-surface (2-m depth) effluent concentrations at the existing sewage outfalls and at the new outfall. The red line indicates a concentration of 0.5 percent (200-fold dilution of effluent), which is approximately the level at which nutrient levels released in the effluent are comparable to background variability. With the existing outfall locations, high effluent concentrations are found within Boston Harbor and along the coastline immediately south. With the new outfall location, high concentrations are found only within a few kilometers of the outfall, concentrations are dramatically lower in Boston Harbor, and concentrations in most of Massachusetts Bay (including the region near Stellwagen Bank) are not significantly changed from their existing low levels. The white outline indicates the location of Stellwagen Bank.




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Role of Technology

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TECHNOLOGY

ACCESS TO DATA AND INFORMATION THROUGH ALL DISSEMINATION CHANNELS: CATALOGUES, VIEWERS, DOWNLOAD SERVICES.





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Role of Technology

DATA → INFORMATION → KNOWLEDGE → WISDOM

TECHNOLOGY

COLLABORATIVE AND DISTRIBUTED COLLECTION OF DATA




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Open on-line access: Interoperability of services

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Open on-line access: Interoperability of services


Fracking political map
 E/D
 6TH AUG 2013 • Lawrence Carter & Damsan Kahya
 0 comment(s)

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Type in your post-code or town to find out if a license is granted in your area - oh - and who is your sitting MP (but then you knew that didn't you?)


Key:
 Red: Labour Party
 Blue: Conservative
 Yellow: Liberal Democrats

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SEMANTIC INTEROPERABILITY


Data conceptual and physical model



- Specific requirements for modelling and analysing
- Harmonization of classification and definitions, key attributes, association rules, data types, value domains, topological rules, etc.

In a policentric Information System data are to be produced under standard specifications that take into account main policies requirements and guarantee conceptual integration and comparability.

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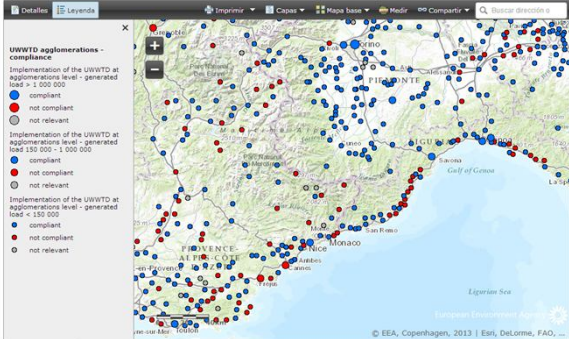


WISE: Example of Sectorial Integration


Definition of data specifications to guarantee comparability, integration and european representation of data for monitoring and reporting WFD implementation .

Urban Waste Water Treatment maps

The map reflects the most recent available information at the EU-level on implementation of the Urban Waste Water Treatment Directive (UWWTD) in EU 27 based on data reported by the Member States (for reference years 2009 or 2010) in 2011.

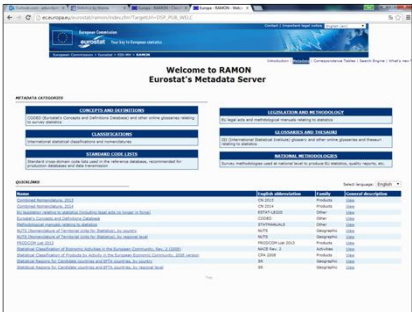


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NORMALIZATION OF STANDARDS ON DATA

EUROSTAT



Territory	(10 ⁶ m ³)	TABLE 3.2: Water use (25) by industrial activities				
		ISIC/NACE				
		2007	2008	2009	2004	2003
Public water supply (16)						
Total manufacturing industry	(15-37)					
of which used by:						
- food processing industry	(15)					
- basic metals	(27)					
- transport equipment	(36)					
- textiles	(17-19)					
- paper and paper products	(21)					
- chemicals, refined petroleum, etc.	(23-24)					
- other manufacturing industry n.e.c.	(15-14)					
Mining and quarrying	(10-14)					
Construction	(45)					
Self supply (27)						
Total manufacturing industry	(15-37)					
of which used by:						
- food processing industry	(15)					
- basic metals	(27)					
- transport equipment	(36)					
- textiles	(17-19)					
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- chemicals, refined petroleum, etc.	(23-24)					
- other manufacturing industry n.e.c.	(15-14)					
Mining and quarrying	(10-14)					



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NORMALIZATION OF STANDARDS ON DATA

DIRECTIVE 2007/2/CE INSPIRE





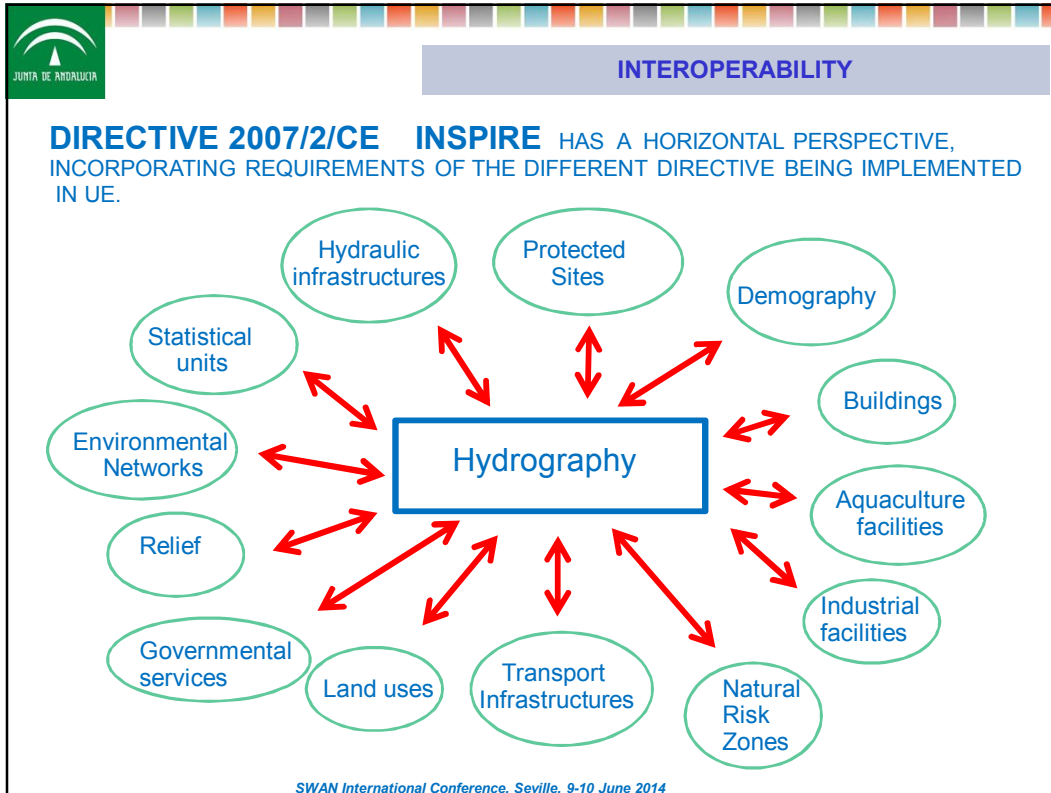


INSPIRE

Infrastructure for Spatial Information in Europe

D2.8.1.8 Data Specification on Hydrography – Technical Guidelines

Title	D2.8.1.8 Data Specification on <i>Hydrography</i> – Technical Guidelines
Creator	INSPIRE Thematic Working Group <i>Hydrography</i>
Date	2014-04-17
Subject	INSPIRE Data Specification for the spatial data theme <i>Hydrography</i>
Publisher	European Commission Joint Research Centre



Current State Balance

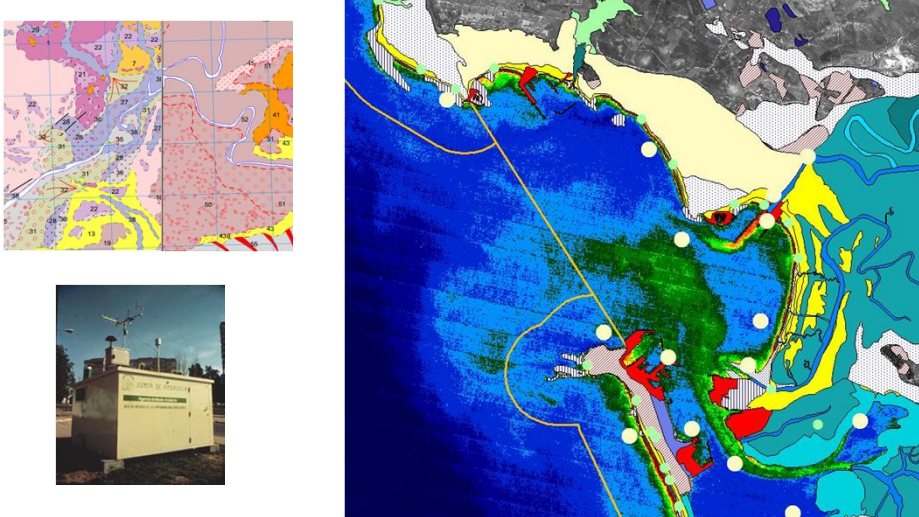
LACK of INFORMATION: Integrated Water Resources Management implies the availability of adequate information for hydro-physical and hydro-social modelling: socio-economic data, calculation of the resource and environmental cost for cost_benefits analysis, real water resources and consumption, reduction of vulnerability to natural risk etc.

- Quality and reliability
- Ease to access
- Regularly updated
- Sufficient and adequate to inform planning
- Detailed and traceable
- Certified

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Current State Balance

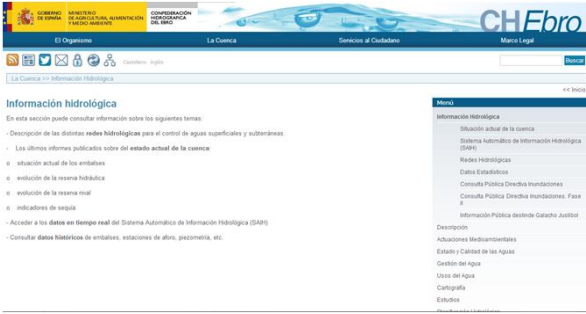
LACK OF COMPARABILITY AND COMPATIBILITY: Data must be comparable and easy to integrate with other datasets as a basis for modelization



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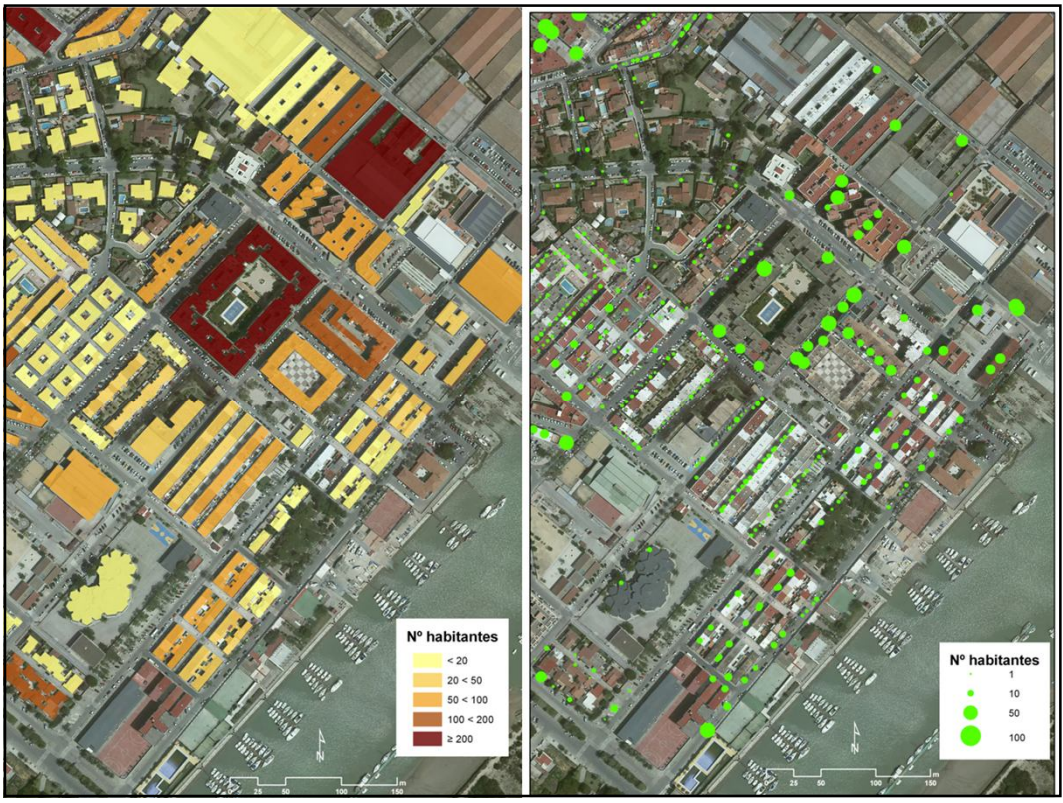
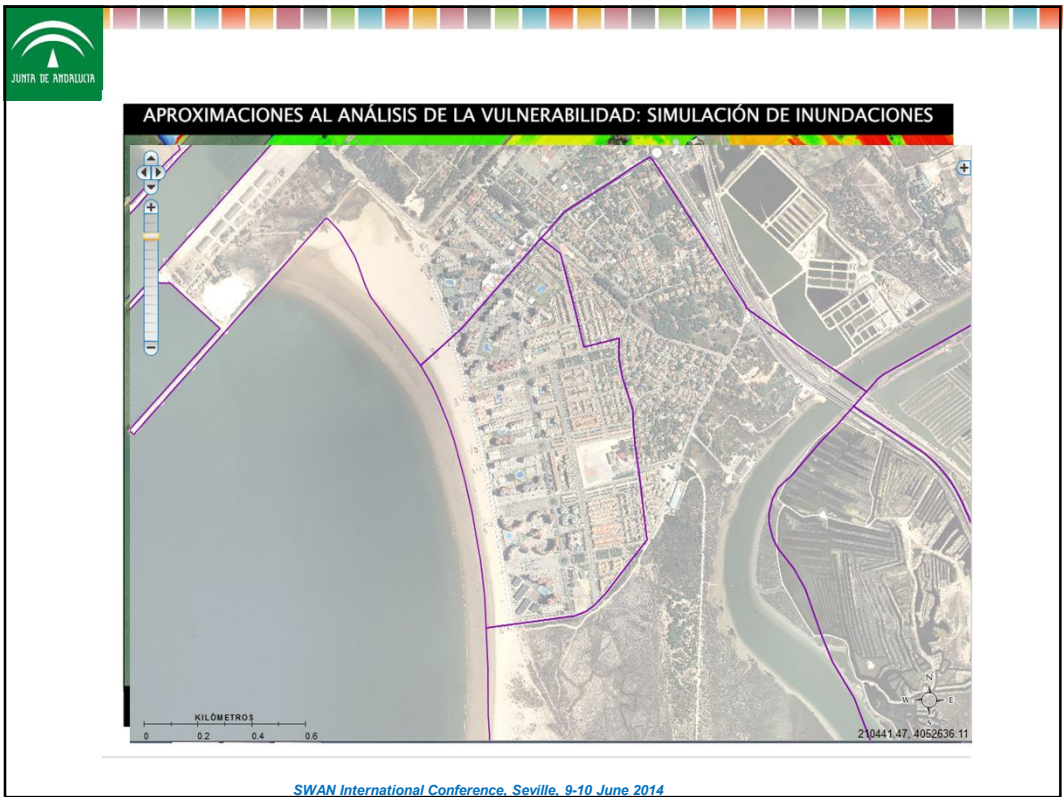
Current State Balance

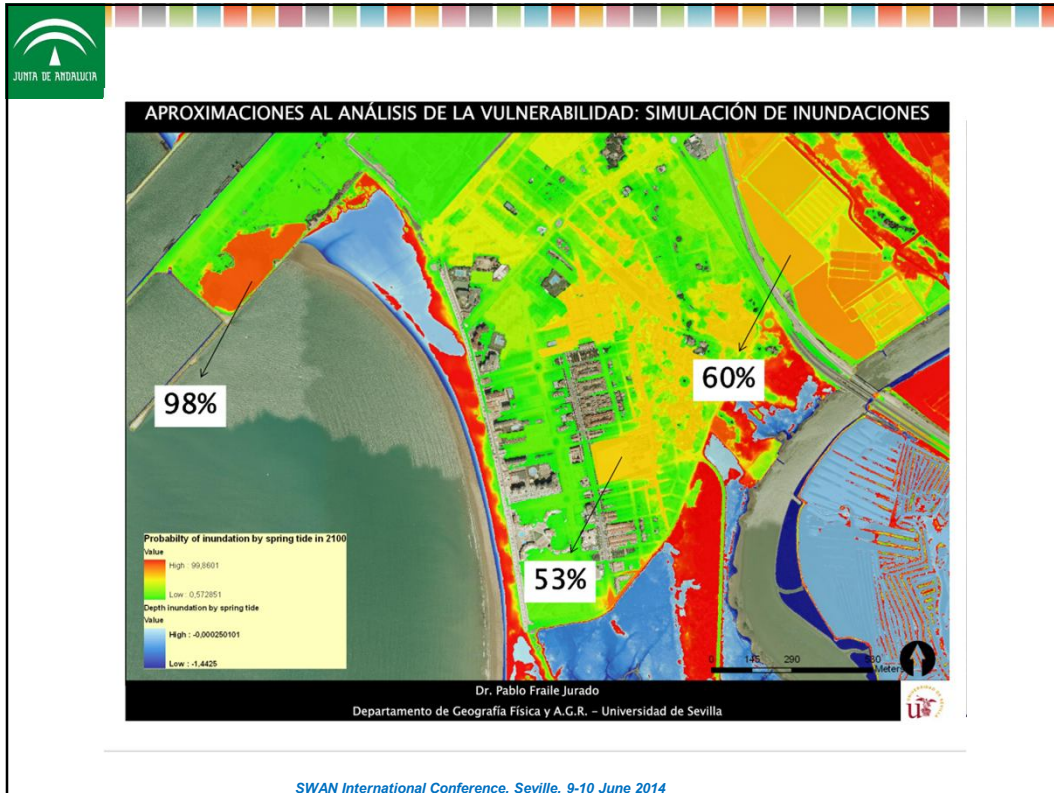
INSUFFICIENT DATA ACCESSIBILITY BY MEANS OF INTEROPERABLE SERVICES




- Scarcity of Catalogues
- Few interoperable services
- Poor use of standards
- Few downloading services
- Absence of access to significant datasets

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 JUNTA DE ANDALUCÍA

CONCLUSION

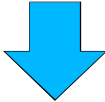
Natural Resources Management Policies have developed into integrated models, whereas data and information production remains as a sectorial responsibility.

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Need for migration to a decentralized model of Information production

Integrated Policies require Policentric Information Systems.



DECENTRALIZED MODEL FOR DATA PRODUCTION&DISSEMINATION



- DATA PRODUCTION SHOULD BE SHARED AND COORDINATED
- DATA SHOULD BE PRODUCED ACCORDING TO AN INTEGRATED VISION
- DATA TO BE DISSEMINATED ACCORDING TO OPEN DATA AND INTEROPERABLE CRITERIA

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The Need for a Policy on Public Information

A commitment at the highest governmental level is essential to implement this change.



Pascual Madoz

GENERAL STATISTICAL COMMISSION OF THE KINGDOM (1856): Demography, Production, Taxes, Territories.

TERRITORY MEASUREMENT ACT (1859): National Geographic Institute, National Topological Map

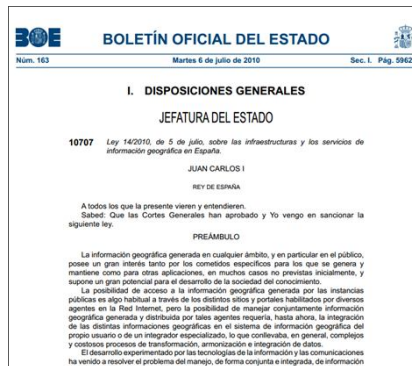


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The Need for a Policy on Public Information

A new legal framework laying down specific objectives, coordination mechanisms, procedures and responsibilities is required to achieve an integrated model for data production and dissemination.



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The Need for a Policy on Public Information

Mandatory and clear distribution of responsibilities among departments and public bodies (the closest, the best: guarantee of access to certified information).

Planning: reflection on the basic datasets to be produced and the basic requirements of the main policies to be fulfilled

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The Need for a Policy on Public Information

Provision and maintenance of a set of specifications on data and services, to guarantee interoperability and neutral technological accessibility.



OGC Standards


Below is a list of OGC Implementation Standards:

Implementation Standards are different from the Abstract Specification. They are written for a more technical audience and detail the interface structure between software components. An interface specification is considered to be at the implementation level of detail if, when implemented by two different software engineers in ignorance of each other, the resulting components plug and play with each other at that interface.

Any Schemas (xsd, xslt, etc) that support an approved implementation Standard can be found in the official OGC Schema Repository.


Document Title (click to download)	Version	Document #	Editor	Date
OGC Web Services Common Standard v. 2.0	2.0	11-050	Jim Greenwood and Barbara Turner	2011-01-02
OGC Web Services Common Standard v. 2.0.1	2.0.1	11-057	Jim Greenwood	2011-01-10
OGC Web Services Common Standard v. 2.0.2	2.0.2	11-058	Jim Greenwood	2011-01-10

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The Need for a Policy on Public Information

Clear definition of data dissemination obligations: interoperable services, catalogues, licenses, legal terms and conditions of use, certified information, etc.



Ura Sistema de Información del Agua

The screenshot shows a web-based GIS application. On the left, there is a legend titled 'Detalle de capas' with a list of layers including 'Integración aguas subterráneas', 'Redes de agua', 'Redes de saneamiento', and 'Redes de agua potable'. The main area displays a map of a rural landscape with various colored overlays representing these data layers. The top right corner shows the date '01/06/2014' and the time '12:00'.

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CONCLUDING REMARKS

“In the way to perfection, not moving forward is to step back”

Saint Teresa of Ávila, “Way to Perfection”, 1583



Teresa de Jesús

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