



Operational Capacity Workshop

Sofia, Bulgaria
25-26 March 2010

Satisfying the **GMES in situ data** need from a Member State perspective **The Spanish Bottom-up approach**

Antonio Arozarena
Deputy Director
Instituto Geográfico Nacional
General Ibañez de Ibero, 3
28003 Madrid, **SPAIN**

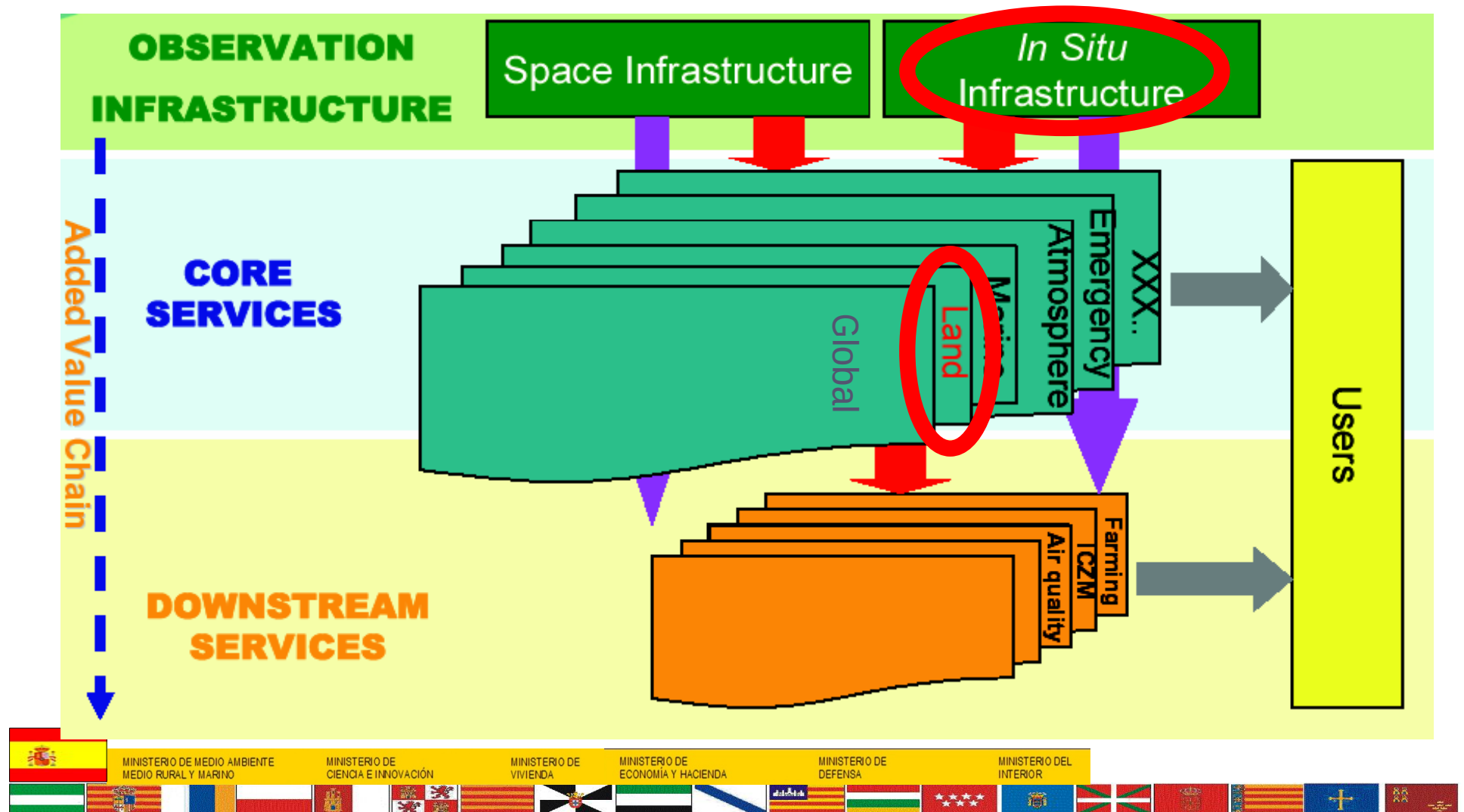


Instituto Geográfico Nacional

- Introduction
- Member States perspective
- Centralised versus Decentralised production
- GMES current situation
- Conclusion

Instituto Geográfico Nacional

- Introduction
- Member States perspective
- Centralised versus Decentralised production
- GMES current situation
- Conclusion



Instituto Geográfico Nacional

1. Space

This consists of **space observation infrastructure** which addresses service data needs, specifically through land, atmospheric and oceanographic parameters. This component aims at developing and implementing a **number of satellite missions** known as the Sentinels. It will rely on coordination by the ESA

2. In Situ (including ground-based remote sensing observations)

This relies on a **number of facilities, instruments and tools** which are owned and operated at **national, regional and intergovernmental levels**

3. Services

This will ensure **access to information** covering various thematic areas, from climate change adaptation and mitigation, to security, and **land, marine and atmospheric monitoring**

Instituto Geográfico Nacional

In situ Data Component with high resolution
are produced for many years at:

- Regional level
- National level

Instituto Geográfico Nacional

Reference Data Base of Land Information,
exist in Member States for many years
and it was carried out from:

- Regional
- National
- European
- Global

Instituto Geográfico Nacional

- Introduction
- **Member States perspective**
- Centralised versus Decentralised production
- GMES current situation
- Conclusion

Instituto Geográfico Nacional

It is absolutely necessary and also it is our great opportunity (inside GMES) to collaborate **all together** in order to obtain the harmonized and interoperable **Land Information** from **Bottom-up** approach in order to:



Instituto Geográfico Nacional

- **Avoid duplication** of Spatial Data Information (INSPIRE principles)
- Capture the information at the **most efficient level** (quality and cost)
- Obtain the information at the European level from the **official and legal source** and also with the necessary guarantee of quality (accuracy)
- **Avoid contradictory information** between Europe and Member States
- Using **INSPIRE Directive** to guarantee the final and **real harmonization** between all different Spatial Data Information of Member States



Instituto Geográfico Nacional

- **Technical requirements** defined by **GMES/INSPIRE** and Member States
- **Cost saving** because we produce only one and same information for all Public bodies
- The final production from many States (this is the Spanish case) are in **private sector** by public tender. In this sense there are many different offers from many different European Countries
- **Avoid monopolistically actions** from private sector (distributed tenders)
- Use the European funding **only for internal harmonization** and transformations of data sets in Member States (according with GMES needs)

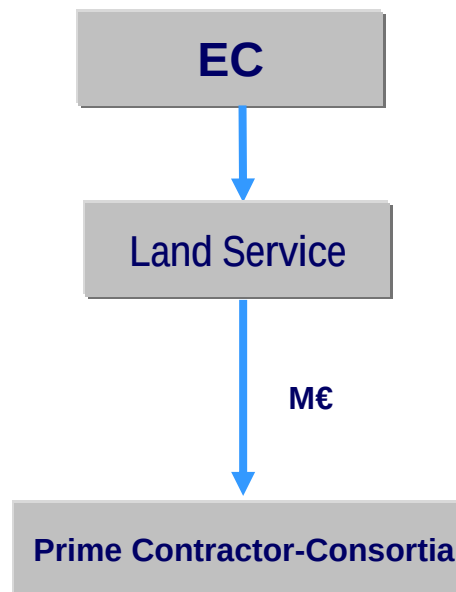
Instituto Geográfico Nacional

- Introduction
- Member States perspective
- **Centralised versus Decentralised production**
- GMES current situation
- Conclusion

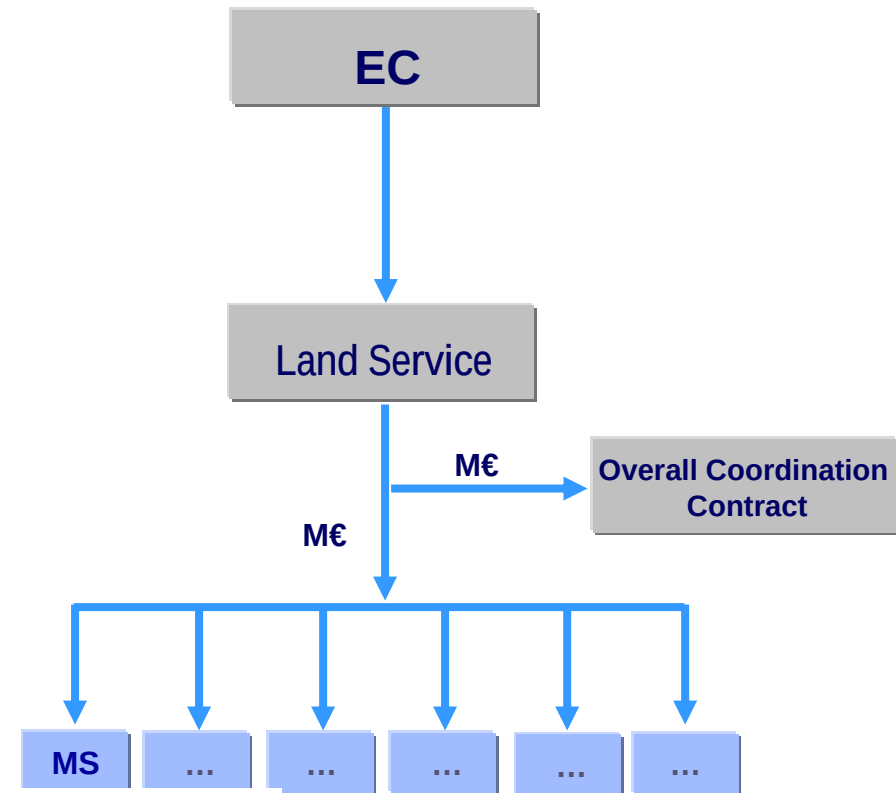
Instituto Geográfico Nacional

Decentralised versus Centralised Approach

Current approach: Centralised



Proposed approach: Decentralised



Member States
National Institutions

Instituto Geográfico Nacional

■ Decentralising:

- EC and Member States agree on common standards and procedures
- National Institutes and Agencies, get European funding for harmonization processes
- One company/consortia is in charge of comparing and integrating the results and quality of work (EU level)
- Member States willing to do so can delegate the work to that company/consortia



Instituto Geográfico Nacional

CENTRALISED

DECENTRALISED

■ PROS:

- Easy to manage: just one big contract
- Homogeneous/comparable results more easily achieved

■ CONS:

- No use of know-how available nationally
- Risk of monopoly and very limited competition
- Different information at different level

■ PROS:

- Optimum use of National resources
- Better involvement of users
- Takes advantage of local expertise
- Synergies with existing National programmes
- Avoid duplication and not satisfactory information for all, in the ambit of EU (R&D)
- More accuracy
- Higher number of contracts

■ CONS:

- More administrative work
- Some effort needed to achieve homogeneous/comparable results

INSPIRE/GMES



MINISTERIO DE MEDIO AMBIENTE
MEDIO RURAL Y MARINO

MINISTERIO DE
CIENCIA E INNOVACIÓN

MINISTERIO DE
VIVIENDA

MINISTERIO DE
ECONOMÍA Y HACIENDA

MINISTERIO DE
DEFENSA

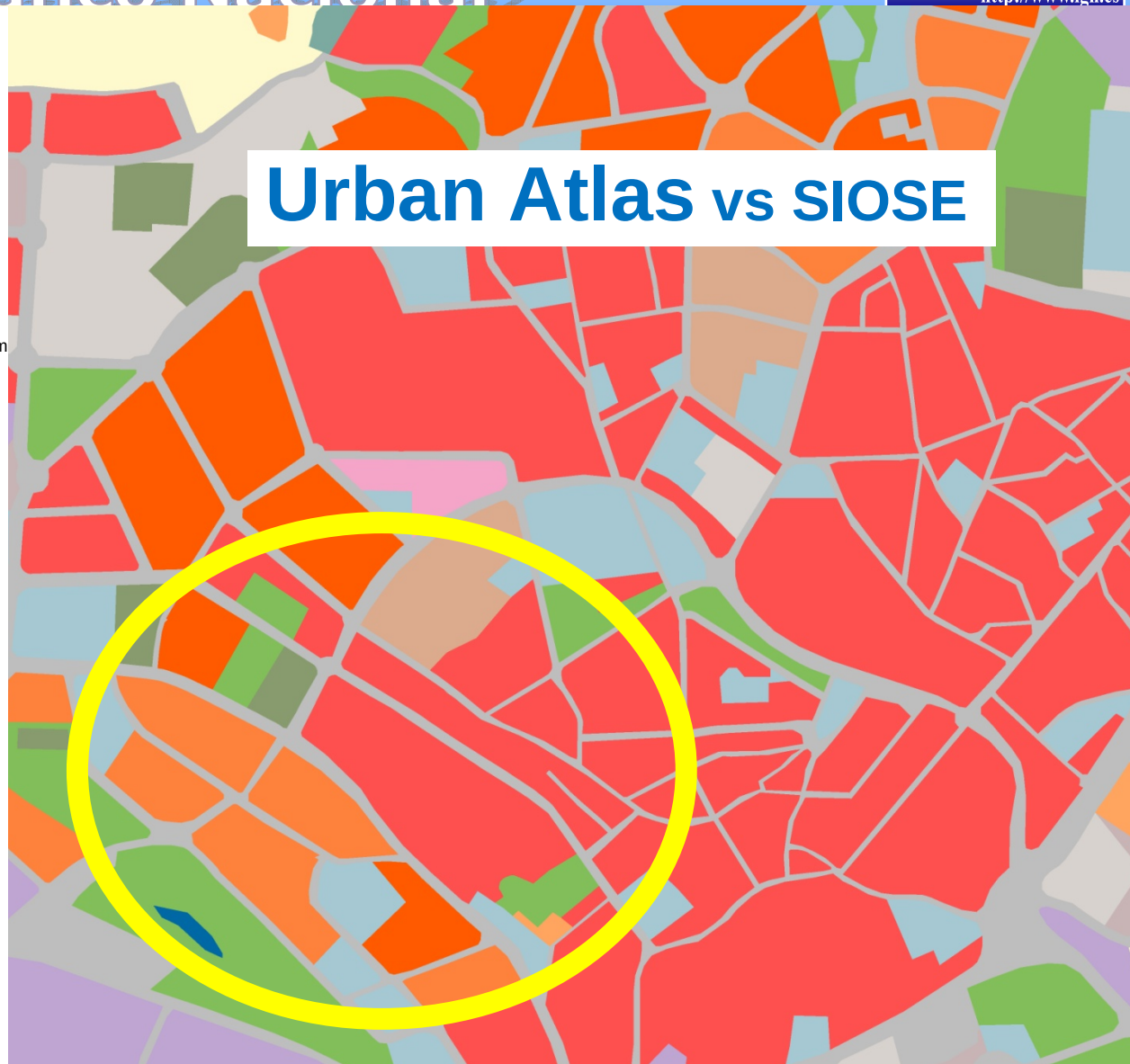
MINISTERIO DEL
INTERIOR



Instituto Geográfico Nacional

- Residential continuous dense urban fabric
- Informal continuous dense settlement
- Residential discontinuous dense urban fabric
- Residential discontinuous medium dense urban fabric
- Residential discontinuous sparse urban fabric
- Residential urban blocks
- Informal continuous dense residential structures
- Informal continuous sparse residential structures
- Industrial areas
- Commercial areas
- Public, military and private services not related to the transport system
- Fast transit roads and associated land
- Other roads and associated land
- Railways and associated land
- Port areas
- Airports
- Mineral extraction sites
- Dump sites
- Construction sites
- Land without current use
- Green urban areas
- Sports and leisure facilities
- Arable land
- Permanent crops
- Pasture
- Heterogeneous agricultural land
- Forest
- Shrubs and / or herbaceous vegetation
- Permanently non-vegetated areas
- Inland wetlands
- Coastal wetlands
- Inland waters
- Marine waters

Urban Atlas vs SIOSE





<http://www.ign.es>

Instituto Geográfico Nacional





GOBIERNO
DE ESPAÑA

MINISTERIO
DE FOMENTO

INSTITUTO
GEOGRÁFICO
NACIONAL



Presidencia
Española



2010.E5



<http://www.ign.es>

Instituto Geográfico Nacional



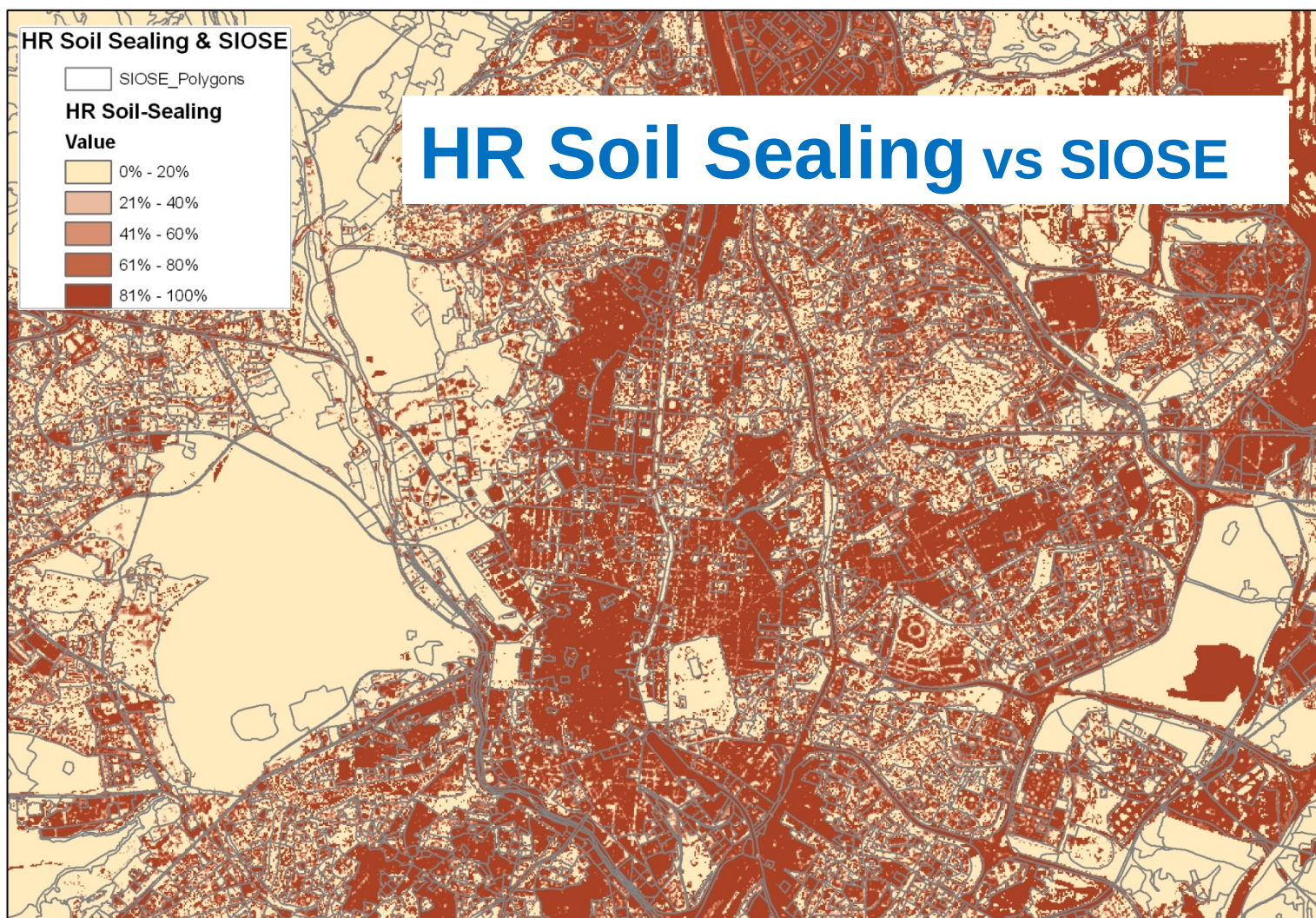
Urban Atlas vs SIOSE: % soil sealing, building and green areas



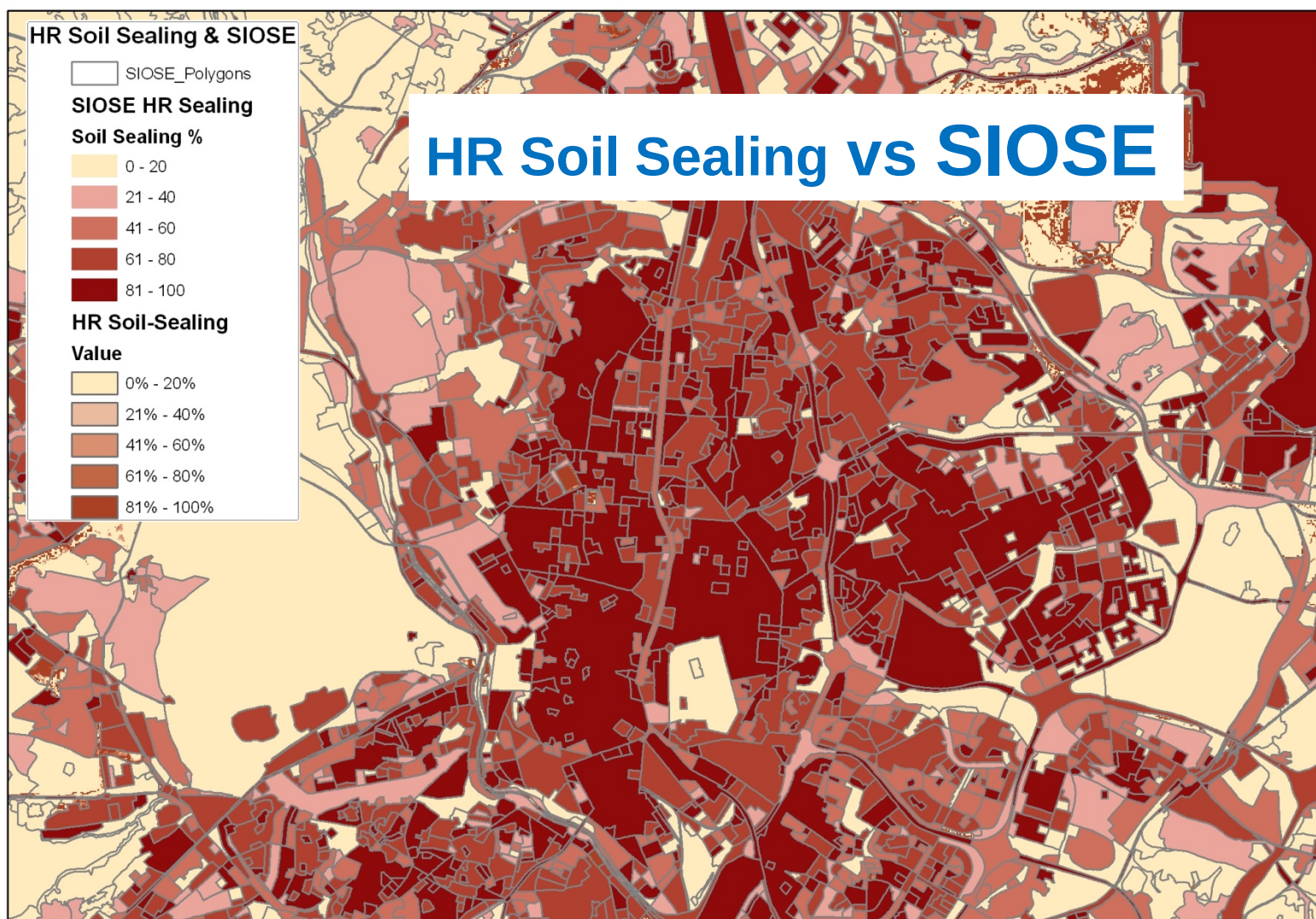
MINISTERIO
MEDIO AMBIENTE



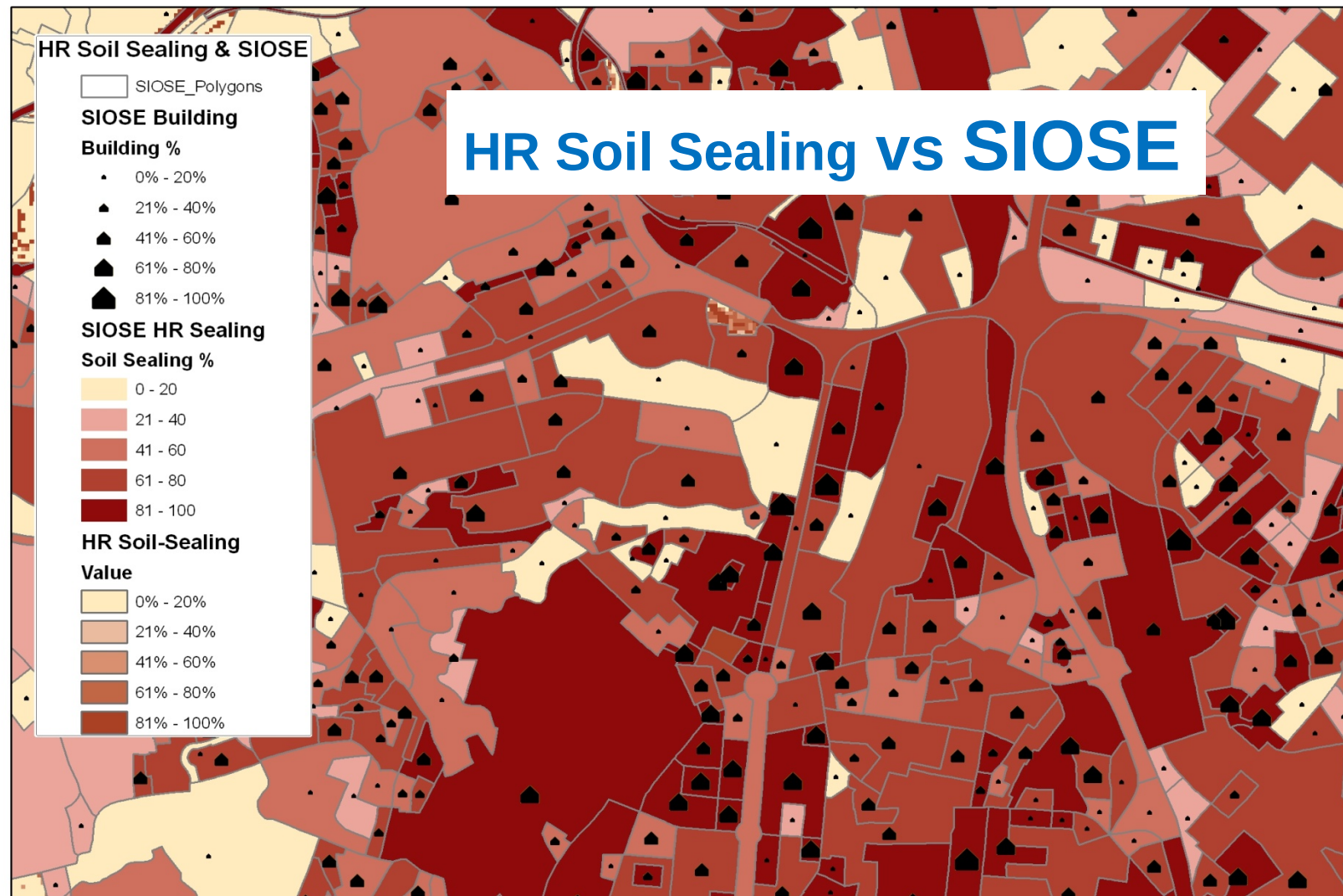
Instituto Geográfico Nacional



Instituto Geográfico Nacional



Instituto Geográfico Nacional



Instituto Geográfico Nacional

- The terrain roughness is higher in PNOA data than INTERMAP
- The accuracy of PNOA is greater than the INTERMAP.
- This comparison is based on Spanish current data by correlation (PNOA). In 2010 will have a DEM with 15cm mean square error

Instituto Geográfico Nacional

In **Spain**, we have demonstrated that the collaboration **Bottom-up** it is feasible,
but it is necessary:

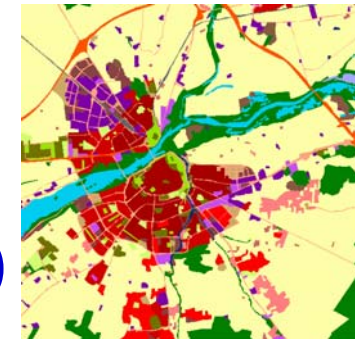
- Clear definition the common requirement
- Dialogue → Consensus
- Imagination

Instituto Geográfico Nacional

- Introduction
- Member States perspective
- Centralised versus Decentralised production
- **GMES current situation**
- Conclusion

Instituto Geográfico Nacional

- **Operational phase**, current status:
Ongoing operational activities
(ej. Corine/LandFTS precursor and Urban Atlas)



- 1) Two Preparatory Actions (2008 PA to Emergency Response and 2009 PA for Reference Data Access and provision, ITT Jun de 2009)
- 2) GIO -> **GMES Programme and its Initial Operation** (2011-2013) COM(2009)223 Adopted by the EC, co-decision process in progress

2014+ : **GMES** fully operational and defined

Instituto Geográfico Nacional

1) Two preparatory Actions (2008 PA to Emergency Response and 2009 PA for Reference Data Access and provision, ITT Jun of 2009)



EUROPEAN COMMISSION
ENTERPRISE AND INDUSTRY DIRECTORATE-GENERAL

CALL FOR TENDERS No ENTR/2009/27

*Implementation of an Initial GMES Service
for Geospatial Reference Data Access*

Open procedure,
OJ 2009/S 114-163740 of 17/06/2009

SPECIFICATIONS



Instituto Geográfico Nacional

1) Two preparatory Actions (2008 PA to Emergency Response and 2009 PA for Reference Data Access and provision, ITT Jun of 2009)



EUROPEAN
ENTERPRISE

Task 2 Spatial data content, spatial data harmonisation and spatial data preparation

A. Reference data content:

In this work package the bidder will propose and justify a series of spatial data objects, organised according to the data theme content for hydrography and elevation as identified in Annex I and II of the INSPIRE directive,. The reference data aimed at in this contract have to be either :

No ENTR/2009/27

*Implementation of an Initial GMES Service
for Geospatial Reference Data Access*

Open procedure,
OJ 2009/S 114-163740 of 17/06/2009

SPECIFICATIONS

MS have this information
DUPLICATION?



MINISTERIO DE MEDIO AMBIENTE
MEDIO RURAL Y MARINO

MINISTERIO DE
CIENCIA E INNOVACIÓN

MINISTERIO DE
VIVIENDA

MINISTERIO DE
ECONOMÍA Y HACIENDA

MINISTERIO DE
DEFENSA

MINISTERIO DEL
INTERIOR



Instituto Geográfico Nacional

2) There are 5 components proposed in GIO-*GMES* *Programme Initial Operation* (2011-2013):

New opportunity for GMES/MS

- Emergency service
- **Land monitoring services** (Periodic LC/LCC Pan-EU, local component, Global systematic monitoring)
- Development of the Operational Services
- GMES Space Component (operation of Sentinel)
- Data Access

Instituto Geográfico Nacional

Member States+GMES collaboration:

- Define Data policy requirements and reference and auxiliary data licensing for National uses
- Define Technical Specifications for GMES products and Services according to National requirements in close connection with European requirements
- Choose data production model for each GMES product or service:
Bottom up or Top Down
 - When Bottom Up option is chosen:
 - Define production calendar according to European and National requirements.
 - Data production.
 - Ensure data specification conformity by National quality control processes.
 - When Top Down option is chosen:
 - Validate final product.

Instituto Geográfico Nacional

European Road Map proposed

1st. step → Obtaining by consensus from EC and Member States, common requirements, standards and procedures

2nd. step → Define and obtaining **by consensus the necessary images**

3rd. step → Encourage and to assist the **production at least in those** Members States that they are producing with this principles

Instituto Geográfico Nacional

- Introduction
- Member States perspective
- Centralised versus Decentralised production
- GMES current situation
- Conclusion

Instituto Geográfico Nacional

- The Earth Observation (EO) is a **complex system** that combines various technologies/procedures and agreements of different users and requirements.
- GMES is a great opportunity to demonstrate the potential that Member States have developed in EO, from bottom-up approach with the EC (basic principle of INSPIRE).
- **Spain** is ready **to take the needs of GMES** (in situ component) from now, in all its aspects and determinants of quality, timetable and data policy.
- The **IGN** precisely to facilitate the necessary data base of the EU Institutions (EC, EEA, JRC, EUROSTAT, ESA) has develop during last 6 years, in conjunction with the rest of the Spanish Public Administrations, an **integrated and collaborative production**

