The role of R&D projects in the implementation of the INSPIRE Directive in Portugal

Rui Manuel Pereira Reis

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Summary:

- Institutional setting
- Implementation of the INSPIRE directive in Portugal
- The objectives of the research and development projects and the contributions of these projects to the implementation of the directive in Portugal:
    - GIS4EU, Humboldt, Briseide, Euradin, NatureSDIplus
- Conclusions

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The situation in Portugal:

- IGP is the National Contact Point for Portugal
  - Nº 2 of Article 19th of the INSPIRE Directive

- was responsible for the transposition of the Directive into the National legislation
  - Decree-Law Nº 180/2009 from August, 7th

- is responsible for the monitoring and reporting to the EC the situation regarding the implementation of the Directive in Portugal.

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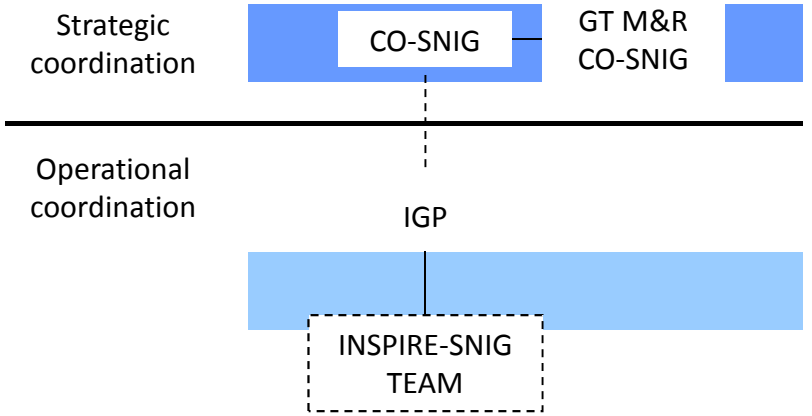
❑ Implementation of the Directive in Portugal:

- a network of entities with formal responsibilities was created (network INSPIRE PT)
  - 10 entities with National scope
  - 26 entities with mainland scope
  - 20 entities in Madeira
  - 1 entity in the Azores



- 10 thematic working groups and 1 transversal WG
  - whose purpose is to assist the data producers in the implementation of the Directive in Portugal

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- GIS4EU: Provision of interoperable datasets to open GI to EU communities (http://www.gis4eu.eu/)

- GIS4EU Objectives:
  - Transform the producers data models into the INSPIRE data model or creation of a common data model when there are no INSPIRE data specifications available.
  - Rules and orientations for harmonization, aggregation and data exploitation for work at European, National, Regional and Local scales

- The main contributions to INSPIRE of GIS4EU are:
  - the participation in the testing phase of the INSPIRE data specifications for annex I themes,
  - the development of a methodology to transform the data coming from the producers into the INSPIRE data model

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- Themes of work:
  - During the testing phase of the INSPIRE data specifications the methodology for the transformation between the data models of the producers and the INSPIRE data model was tested for the three project themes, namely,
    - hydrography,
    - administrative units and
    - transportation

- For altimetry:
  - a common data model for the different datasets from the different producers was created.
  - The objective is to contribute with this data model to the creation of the INSPIRE data model for this theme,

- Data available for testing:
  - 3 National data providers (IGP, VUGK, FOMI),
  - 6 Regional data providers (RLIG, RPIE, RVEN, INSIEL, ICC, RLODZ) and
  - 2 Local producers (MAV, CGE)

  in the 4 themes of work.

  More specifically, the data available for testing was:
  - Local data at large scales: 1/1 000, 1/2 000 and 1/5 000
  - Medium scale data following the Italian DBPrior10K specifications at 1/10 000 scale
  - Generic cartographic data at various (smaller) scales (1/50k – 1/1M)
  - Digital Terrain Models for altimetry

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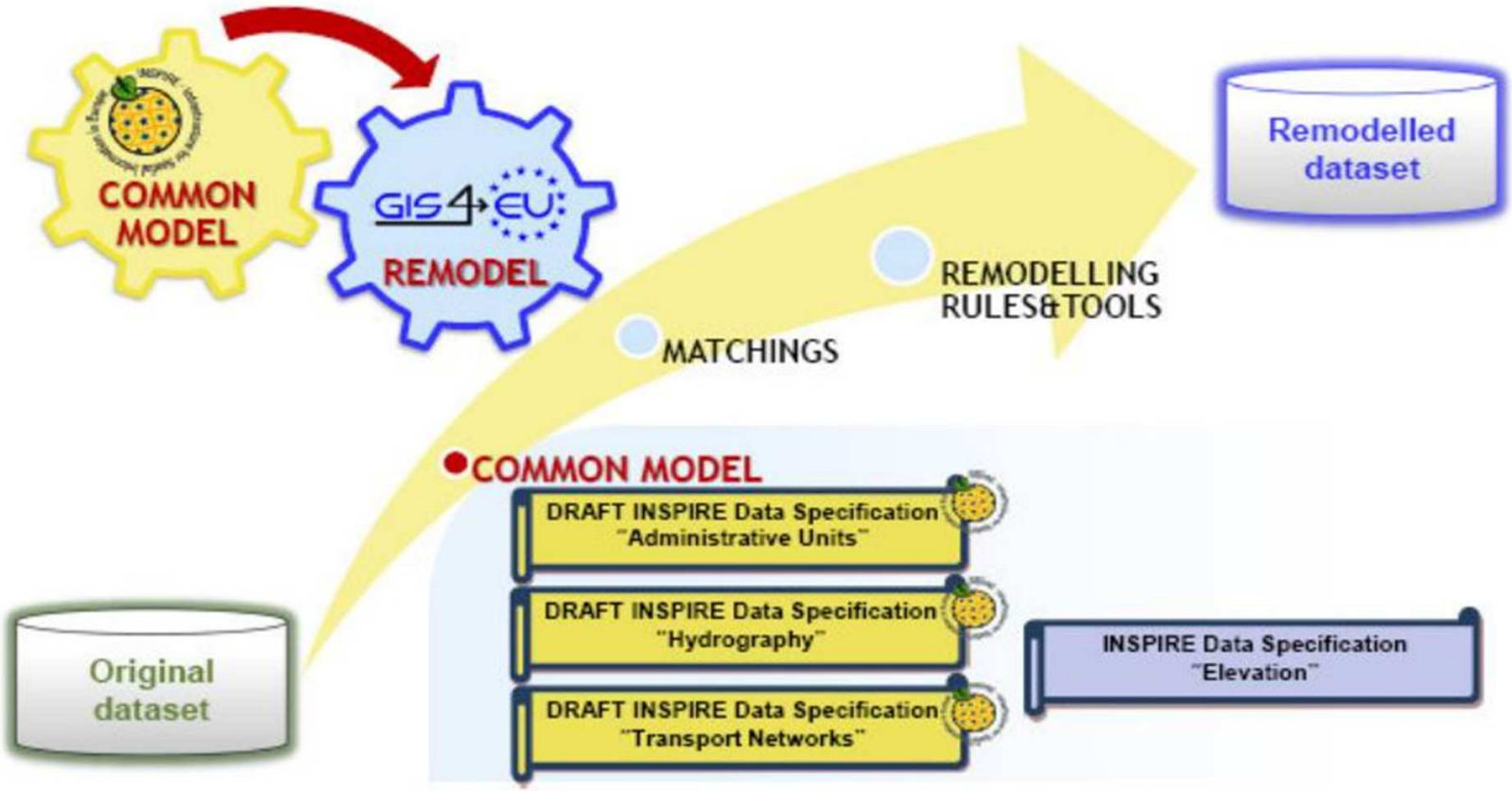
- Harmonization process:
  - Data documentation and description, includes:
    - the creation of metadata
    - the definition of features, attributes and code lists, together with
    - the creation of UML diagrams describing the relations between features.
  - Remodeling process:
    - the transformation of the producers' data models into the INSPIRE data model.

Remodeling process:


COMMON MODEL
REMODEL
Remodelled dataset
REMODELLING RULES&TOOLS
MATCHINGS
COMMON MODEL
DRAFT INSPIRE Data Specification "Administrative Units"
DRAFT INSPIRE Data Specification "Hydrography"
DRAFT INSPIRE Data Specification "Transport Networks"
INSPIRE Data Specification "Elevation"
Original dataset

- Humboldt: Development of a Framework for Data Harmonisation and Service Integration (http://www.esdi-humboldt.eu/)
- Humboldt Objective:
  - To develop an architecture for data harmonization and service integration in the terms of the INSPIRE directive and taking into consideration the objectives of GMES (Global Monitoring for Environment and Security).
- The Humboldt Framework:
  - a collection of software programs and services that include the functionalities needed to the harmonization process.
  - In its development the results of research and development are used as well as the results of other projects, the best practices available and the international standards.

The Humboldt Framework:

- Several open source software tools and services were developed in the project (http://community.esdi-humboldt.eu/), namely:

  - The Humboldt Alignment Editor (HALE), an application that helps during the process of mapping and transforming between databases and application schemas
  - The Humboldt GeoModel Editor, which can be used to develop rich Conceptual Models
  - The Workflow Design and Construction Service, a web service that delivers executable geoprocessing workflows for data harmonisation
  - The Conceptual Schema Translation Service, a Web Processing Service for transforming data from one application schema to another
  - The Edge Matching Service, a WPS that deals with inconsistencies in geometry.

The Humboldt Scenarios:

- An essential part of the project are the scenarios because the project is intended to answer the needs of diverse application areas related with GMES. There are nine scenarios intended to be a testing platform for the harmonization of data and services. The scenarios are:
  - Atmosphere, Border Security, European Risk Atlas, Forest, Ocean, Protected Areas, Sustainable Urban Atlas, Transboundary Catchment, Urban Planning

Contributions to INSPIRE:

- Intends to be a platform for testing the INSPIRE implementing rules and to
- Develop and implement new methodologies and tools to support the data specification and harmonization processes

- Briseide: Bridging Services and Information for Europe (http://www.briseide.eu/)

- Briseide Objectives:
  - Development of geowebservices integrating temporal series.
  - Improve the integration, access and analysis of information which characterises the evolution of a certain spatial reality.
  - To support, using the tools developed, the understanding of the problems associated with the integration of geowebservices with the analysis of the evolution of the study areas.
  - Integrate the developments in web GIS open source applications.

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Development:

- The project results will be applied, tested and validated using the INSPIRE relevant themes.
- The pilot operational phase will last 12 months and a prototype is being developed in Portugal called “Indicators for Environmental Quality to reach Urban Welfare – IQ2U”.
- Used data is environmental (air and water quality), statistical (housing and demographic), vector (PDM, COS, CAOP, urban limits) and orthophotos.

Contributions to INSPIRE:

- the project will evaluate the use of different datasets to deal with urban landscape evolution and it’s impact in environmental quality in order to promote more effective land use planning approaches.
- this will help to understand to what extent the INSPIRE Directive as been relevant for information dissemination and access, namely related to land use planning

❑ **EURADIN:** EURopean ADdress INfrastructure

EURADIN
European Address Infrastructure

- Euradin aims to contribute to the INSPIRE implementation but focuses specifically on the harmonization of European Addresses.

- The objective is to:
  - propose solutions for the interoperability of addresses,
  - facilitate an effective access to addresses by means of a Pilot European Gazetteer Service, and to
  - reuse and exploit this information as a common European product.

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❑ **EURADIN:** EURopean ADdress INfrastructure

EURADIN
European Address Infrastructure

- Contributions to INSPIRE:
  - allocate experts to Drafting Teams
  - submit reference material as input to the Drafting Teams
  - register a project to test/revise/develop the draft Implementing Rules
  - participate in the review process
  - implement pilot projects to test/revise/develop the draft Implementing Rules
  - contribute to cost/benefit analysis of the draft Implementing Rules
  - contribute to awareness raising and training

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- NATURE-SDIplus: Best practice Network for European SDI in Nature Conservation (http://www.nature-sdi.eu/)
  - Objective:
    - to establish a Best Practice Network of geographical information for nature conservation, to stimulate the community of nature conservation stakeholders at improving the harmonisation, the exploitation and the access to their datasets.
    - NATURE-SDIplus aims to improve harmonisation of national datasets and make them more accessible and exploitable, therefore contributing to the INSPIRE implementation.
    - INSPIRE data themes :
      - Protected Sites (Annex I),
      - Biogeographical regions, Species Distribution, Habitats and biotopes (Annex III)

Conclusions:

- Each project, on its own way, contributed to the implementation of the INSPIRE directive either by:
  - creating software and services to help in this process or by
  - creating a workflow for mapping the data from the producers into the INSPIRE data model.
  - the evaluation of common metadata profiles and data models for certain data themes (e.g. Nature conservation)
  - harmonization at European level of certain data themes (e.g. Addresses)
  - participate in the testing phase of the Data Specifications
  - allocate experts to Drafting Teams
  - create reference material as input to the Drafting Teams

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Conclusions:

- The participation of Portuguese entities in R&D projects related with the implementation of the Directive plays an important role in the dissemination of the issues involved and of the best practices in this area.

- The know-how acquired with the participation in these projects is transmitted to the data producers in the TWGs created in Portugal with the purpose of assisting in the implementation of the directive.

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Thank you

Contact:

Rui M. Pereira Reis

Instituto Geográfico Português

Rua Artilharia Um, 107

Lisboa, Portugal

email: rui.reis@igeo.pt

telephone: +351 - 21 381 9678