

The Role of the National Mapping Agencies in Building Europe's Spatial Data Infrastructure

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SUMMARY

Building a successful European Spatial Data Infrastructure (ESDI) or Infrastructure for Spatial Information (INSPIRE) as it is now called, is a fundamental pre-requisite for the development and implementation of policy, for stimulating the private (value added) sector and for improving services to the citizen in general. To realize the full potential of INSPIRE, there are a number of obstacles that have to be overcome. These include the availability of pan-European products harmonized to agreed standards and access to better metadata about available products. However, it is also recognized that it is the 'institutional' rather than 'technical' obstacles that present the biggest barriers. In particular different policies, for example, for pricing and licensing make 'easy' access to data a major challenge.

This paper identifies the policy challenges and the solutions that are being developed to improve access to land and geographic information across Europe. It will focus in particular on the key role that Europe's National Mapping Agencies are playing in the development and implementation of INSPIRE.

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1. INTRODUCTION

Building a successful European Spatial Data Infrastructure (ESDI) or Infrastructure for Spatial Information (INSPIRE) as it is now called, is a fundamental pre-requisite for the development and implementation of policy, for stimulating the private (value added) sector and for improving services to the citizen in general. Implementation of INSPIRE is a major undertaking that requires coordination across a number of 'technical' and 'business' areas.

This paper describes the current vision for INSPIRE, the policy principles that will underpin INSPIRE and the role of EuroGeographics – the Association of Europe's National Mapping Agencies (NMAs) – in facilitating the creation of Europe's Spatial Information Infrastructure.

2. THE EUROPEAN SPATIAL DATA INFRASTRUCTURE (INSPIRE)

The INSPIRE policy vision is, "to make harmonised and high quality geographic information readily available for formulating, implementing, monitoring and evaluating Community policy and for the citizen to access spatial information, whether local, regional, national or international". This vision is illustrated in the diagram at Figure 1.

The INSPIRE implementation will follow a step-wise approach, starting with unlocking the potential of existing spatial data and spatial data infrastructures and then gradually harmonising data and information services allowing eventually the seamless integration of systems and datasets at different levels into a coherent European spatial data infrastructure.

Underpinning INSPIRE are a number of policy principles that will be enshrined in a Commission proposal for framework legislation. The Commission is aiming to have the proposed framework directive adopted in October 2003.

INSPIRE Information Flow

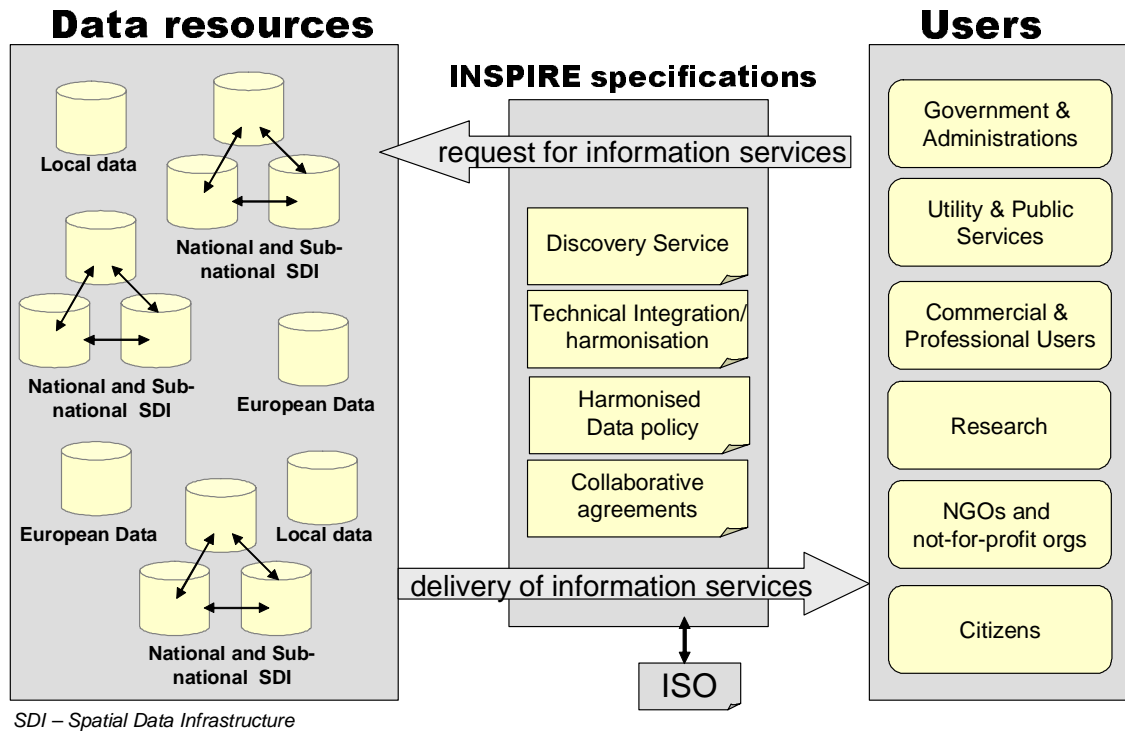


Figure 1 INSPIRE Vision

3. POLICY PRINCIPLES

Underpinning the implementation of INSPIRE are 12 key policy principles:

1. The Infrastructure for Spatial Data in Europe (INSPIRE) shall be built upon a network of National Spatial Data Infrastructures, the installation and operation of which shall be the responsibility of Member States.
2. INSPIRE's technical architecture shall be designed to meet the needs of all producers, users and other stakeholders, through a set of specific applications.
3. Datasets made available through the INSPIRE programme shall be provided to harmonised data specifications and to common standards.
4. Data Quality procedures shall be introduced in order to ensure fitness for purpose and use.
5. Discovery Metadata will be made available at no charge in order to help users identify and locate INSPIRE datasets.
6. Reference Data, the scope and composition of which shall be specified by INSPIRE, will provide the underpinning framework to which INSPIRE thematic data will be referenced.
7. Thematic Datasets shall be specified by INSPIRE according to the requirements of the INSPIRE programme, and made available to common standards.

8. INSPIRE data shall be made available for access and view free of charge by citizens and other users, with delivery, downloading and re-use on harmonised terms and conditions throughout the European Union.
9. Sustainable funding, investment and charging mechanisms shall be put in place by Member States and maintained in accordance with Policy Principle No. 8.
10. Harmonised licensing frameworks will be introduced to facilitate and optimise the sharing, trading and extensive use of INSPIRE thematic data and information.
11. The unimpeded flow of data and information between (a) the Commission and Member States, (b) Member States, (c) local authorities and (d) members of the public shall be assured.
12. Bodies responsible for the co-ordination and management of INSPIRE shall be established at European and national levels. Their powers, duties and responsibilities shall be based on the principles of subsidiarity and proportionality.

4. ROLE OF THE NATIONAL MAPPING AGENCIES

4.1 EuroGeographics

At the national level, the National Mapping Agencies are playing a key role in the development of national SDIs. At the European level, EuroGeographics as the association of Europe's National Mapping Agencies provides the focal point for coordination of NMA activity in the implementation of INSPIRE. To this end, EuroGeographics is active in a number of the policy areas described above.

4.2 Metadata

INSPIRE Policy Principle: Discovery Metadata will be made available at no charge in order to help users identify and locate INSPIRE datasets.

Metadata will be specified and assembled on the Internet to existing, international (ISO) standards. As a matter of routine, INSPIRE datasets will be documented to facilitate their identification, proper management and effective use across the Community, and to avoid collecting or purchasing the same data more than once. To provide an accurate list of datasets held by local, regional, national and EU institutions, metadata catalogues will be compiled. This will include discovery level metadata about content, geographic extent, currency, and accessibility of the data, together with contact details for further information about the data.

Implementation of the above policy statement would clearly deliver major benefits to users by making it easier to identify which data are available where, thus helping to maximise the use of existing datasets. Realising this opportunity will require the effective implementation and maintenance of these metadata services. Experience shows however that metadata services can become rapidly out of date and many data providers are insufficiently motivated or incentivised to invest in making this type of information available in the format (standard) required.

EuroGeographics has developed its own metadata service – GDDD – which provides discovery level information about datasets provided by Europe’s National Mapping Agencies. The next step is to upgrade the service, adopting the ISO standard and implementing a decentralised model in which each NMA is responsible for providing and updating their own information. An additional challenge that will need to be overcome is providing a multi-lingual interface – a major task in its own right.

4.3 Reference data

INSPIRE Policy Principle: Reference Data, the scope and composition of which shall be specified by INSPIRE, will provide the underpinning framework to which INSPIRE thematic data will be referenced.

Reference data provide an unambiguous location for all geographic information and within INSPIRE the following components of reference data are defined:

- The geodetic reference system (both horizontal and vertical);
- Units of Administration;
- Topographic themes including transportation networks, hydrography, buildings and elevation data;
- Orthoimagery;
- Units of property rights (cadastral parcels);
- Addresses;
- Geographic names.

EuroGeographics has already made progress in harmonising some of these components.

4.3.1 Reference system

EuroGeographics working with EUREF has successfully defined a reference system for Europe, both horizontal (ETRS89) and vertical (EVRF2000). Work continues to collect the necessary transformation parameters to convert from national systems to the European system. Completion of this work is a significant achievement that provides Europe with an unambiguous and definitive reference system upon which all other reference and thematic data will be based.

4.3.2 Administrative boundaries

Seamless administrative boundaries data for Europe (SABE) already exists. Three versions of the data have been created and a 4th (Census) version of the dataset has just been released, which will include data for 32 Countries.

4.3.3 Topographic data

Small scales topographic data is being created through EuroGlobalMap and EuroRegionalMap. The former is at a nominal scale of 1:1,000,000 and covers the wider Europe; the latter is at a scale of 1:250,000 and is being created for 7 countries only at this stage. Both datasets will be made available during 2003.

4.3.4 Specifications for the future

Both SABE and EuroGlobalMap are created through a 'centralised' process in which national data is passed to a central or regional point for 'transforming' into the European specification. The national and European datasets therefore are maintained independently and to different specifications. In the case of EuroRegionalMap it is likely that the national and European datasets will be the same specification. Thus the data maintained nationally will be more easily brought together at the European level, requiring edge-matching only. This is getting closer to the vision of interoperability described above. However, for a user to be able to integrate other larger scales datasets in the future, further work will be required on data specifications to create 'Eurospecifications' for the different layers of reference data. Harmonising semantic differences will be a major challenge and can be a long and costly process. For example, the development of the specification for SABE – a relatively simple administrative boundaries dataset – took about 2 years.

4.4 Pricing & Licensing

Policy Principle No. 10: Harmonised licensing frameworks will be introduced to facilitate and optimise the sharing, trading and extensive use of INSPIRE thematic data and information.

One of the obstacles to greater use of geographic information, particularly cross border use of data, are the complex and different licensing arrangements that apply in different countries. Although much of the debate tends to focus on pricing levels it is often the licensing terms themselves that can act as a greater barrier to using data. Recognising this challenge EuroGeographics has initiated a project to develop best practice guidelines for pricing and licensing. The starting point has been to assess the differences between the NMAs and from this to develop common terminology and licensing templates.

4.5 Partnership

Policy Principle No. 12: Bodies responsible for the co-ordination and management of INSPIRE shall be established at European and national levels. Their powers, duties and responsibilities shall be based on the principles of subsidiarity and proportionality.

Achieving greater data interoperability can only be achieved through greater organizational interoperability. A number of organizations are active in the development of INSPIRE and all agree that greater coordination and cooperation are needed across Europe, but no clear organizational model has been agreed or adopted to date.

Within INSPIRE a working group is currently reviewing different organizational models that can provide the necessary European coordination. Key issues that need to be addressed include:

- What will be the role of any coordinating body or bodies?
- How can the coordinating body be representative of the key stakeholders?
- How would such a body relate to existing organizations?
- How would member states be represented at the European level – can one individual/organization represent each country?
- Who will provide the funding?
- Who will provide the overall leadership?

Experience within EuroGeographics has shown that new and innovative organizational models and leadership styles are required to successfully coordinate European activities. A ‘network’ model in which all stakeholders share a common vision and have real ownership of the activities designed to achieve the vision is more likely to succeed than a more traditional ‘centralised’ or ‘hierarchical’ model. A key question is whether such an approach can be made to work across Europe for INSPIRE.

5. CONCLUSIONS

The paper has summarized the vision for INSPIRE and the policy principles that will underpin its implementation. The National Mapping Agencies, through EuroGeographics, are active in a number of areas including the development of new metadata services, creation of European specifications for and harmonization of reference datasets, harmonization of licensing terms and improving organizational cooperation. These and other related activities – most particularly the proposed framework legislation for INSPIRE - bode well for the future of INSPIRE. Users can begin to have real optimism that a European Spatial Information Infrastructure that meets their needs will become a reality.

REFERENCES

INSPIRE Data Policy and Legal Issues Working Group Position Paper (available at www.inspire.jrc.it)

BIOGRAPHICAL NOTES

Nick Land was appointed as Executive Director of EuroGeographics – the Association of Europe’s National Mapping Agencies – on the 1st January 2002. Prior to this he worked at Ordnance Survey GB with responsibility for research, market development and international activities.

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