

Overview of INSPIRE

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SUMMARY

On the background of threes years preparation the Commission of the European Union presented a proposal for a directive on establishing an **IN**frastructure for **SP**atial **InfoR**mation in Europe (INSPIRE) on the 23. July 2004.

INSPIRE aims at making available relevant, harmonised and quality geographic information for the purpose of formulation, implementation, monitoring and evaluation of Community policy-making. The environmental sector has a leading role in this initiative, but it is fully aware of the similarities between the different sectors such as agriculture, transportation, health a.s.o.

The legislative process is started in the Community in fall 2004 and the legislation for an European Spatial Information Infrastructure will presumably be in place 2006/2007. After this the Member States will have two years to transpose INSPIRE into their national legislation. The initial implementations will last for at least five Years.

In the meantime a number of initiatives will be taken to prepare implementation rules for metadata for data, spatial data specifications and harmonisation, network services and interoperability data and service sharing, monitoring and reporting, organisational structures and co-ordination.

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1. INTRODUCTION

During the last decade different promoters have made attempt at creating an infrastructure for spatial information on European. In 2001 an knew initiative was taken in establishing the basis for an **I**nfrastucture for **S**patial **I**nformation in Europe (**INSPIRE**) by DG-Environment in cooperation with Eurostat and the Joint Research Center (JRC) (Bodies of the Commission of the European Community).

After threes years of preparation the Commission presented a proposal for a directive on the 23. July 2004. Among other things the latest initiative was successful because of an Extended Impact Assessment of a number of environmental cases and scenarios. The study showed that a pessimistic estimate of the ratio between costs and returns was in the order of one to seven.

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INSPIRE aims at making available relevant, harmonised and quality geographic information for the purpose of formulation, implementation, monitoring and evaluation of Community policy-making.

Even though the environmental sector has a leading role in this initiative, it is fully aware of the similarities between the different sectors such as agriculture, transportation, health a.s.o.

2. THE INSPIRE PRINCIPLES

From the very start the vision or the principles where formulated. They are still valid.

- Data should be collected once and maintained at the level where this can be done most effectively
- It should be possible to combine seamless spatial information from different sources across Europe and share it between many users and application
- It should be possible for information collected at one level to be shared between all the different levels, detailed for detailed investigations, general for strategic purposes
- Geographic information needed for good governance at all levels should be abundant under conditions that do not refrain its extensive use
- It should be easy to discover which geographic information is available, fits the needs for a particular use and under which conditions it can be acquired and used
- Geographic data should become easy to understand and interpret because it can be visualised within the appropriate context selected in a user-friendly way.

3. SCOPE

Different definitions on infrastructure on spatial information had been brought to light. The proposal for INSPIRE contains its own definition which will be the European definition:

Infrastructure for spatial information means metadata, spatial data sets and spatial data services; network services and technologies; agreements on sharing, access and use; and coordination and monitoring mechanisms, processes and procedures, established, operated or made available.

One could wonder at the fact that standards are not included in the definition.

The infrastructure for spatial information in the European Community shall build upon infrastructures for spatial information established and operated by the Member States.

INSPIRE includes a number of spatial data sets which among other things fulfil the following conditions:

- They are in electronic format.
- They are held by or on behalf of a public authority or a third party to whom the network has been made available.
- They relate to one or more of the themes listed in the proposal.

INSPIRE shall only cover spatial data sets held by or on behalf of a public authority operating at the lowest level of government, when the Member State has laws or regulation concerning them.

Furthermore INSPIRE includes spatial data services relating to the data in the mentioned spatial data sets.

4. COMPONENTS OF THE INFRASTRUCTURE

INSPIRE comprises the following components:

- Metadata for data and services
- Data sets
- Data services
- Agreements on sharing, access and use

INSPIRE do not contain detailed specifications. The proposal appears as a frame work directive. The subsequent implementation requires further decisions that take into account the evolving political, institutional and organisational context and the rapid technological progress in relation to spatial data systems and services.

Therefore it is only possible to give a general description of the different infrastructure components at the moment.

4.1 Metadata for data and services

In the case of INSPIRE metadata include as well metadata for data as metadata for the requisite services.

The Member States shall ensure that metadata are created for the spatial data sets and services comprised by INSPIRE and that those metadata are kept up to date.

Metadata shall include information on the following:

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- Rights of use of spatial data sets and services and, where applicable, corresponding fees.
- The quality and validity of spatial data.
- The public authorities responsible for the establishment, management, maintenance and distribution of spatial data sets and services.
- Limitations on public access and the reasons for such limitations.

4.2 Data

INSPIRE focuses on two different categories of data. The first category (annex I and II data) is data for georeferencing data in the second category. They have the status of "multi-purpose" spatial data or basic data. The second category of data (annex III) is the real environmental data. They are needed in order to monitor and improve the state of the environment, including air, water, soil and the natural landscape.

<p>ANNEX I DATA</p> <ol style="list-style-type: none"> 1. Coordinate reference systems 2. Geographical grid systems 3. Geographical names 4. Administrative units 5. Transport networks 6. Hydrography 7. Protected sites 	<p>ANNEX III DATA</p> <ol style="list-style-type: none"> 1. Statistical units 2. Buildings 3. Soil 4. Geology 5. Land use 6. Human health and safety 7. Utility and governmental services and environmental monitoring facilities 8. Classified sites for, in particular, industrial and agricultural production 9. Population distribution – demography 10. Area management/restriction/ regulation zones & reporting units 11. Natural risk zones 12. Atmospheric conditions 13. Meteorological geographical features 14. Oceanographic geographical features 15. Sea regions 16. Bio-geographical regions 17. Habitats and biotopes 18. Species distribution
<p>ANNEX II DATA</p> <ol style="list-style-type: none"> 1. Elevation 2. Addresses of properties 3. Cadastral parcels 4. Land cover 5. Orthoimagery 	

Not all spatial data themes need to be subject to the same degree of harmonization. There are higher demands to the degree of harmonization on the data used for geo-referencing other spatial data (annex I and II data).

The general harmonisations rules for all INSPIRE data and the belonging implementation rules shall ensure the exchange of spatial data sets, the interoperability of spatial data sets and services and, where practicable, the harmonisation of spatial data sets and services.

The implementing rules shall cover the definition and classification of spatial objects relevant

to the spatial data and the way in which those spatial data are geo-referenced.

In addition to the general harmonisation rules there are additional rules for the annex I and II data. The implementing rules of the annex I and II data shall address the following aspects:

- a. A common system of unique identifiers for spatial objects, to which identifiers under existing national systems can be mapped.
- b. The relationship between spatial objects.
- c. The key attributes and the corresponding multilingual thesauri commonly required for policies, which may have a direct or indirect impact on the environment.
- d. The way in which information on the temporal dimension of the data is to be exchanged.
- e. The way in which updates of the data are to be exchanged.

The specific implementing rules for annex I and II data shall be designed to ensure consistency between items of information, which refer to the same location, or between items of information, which refer to the same object represented at different scales.

The implementing rules shall be designed to ensure that information derived from different spatial data sets is comparable.

The target dates for implementing INSPIRE depends on the actual degree of harmonisation already underway within the Community. Annex I data has to be implemented four years and annex II and III seven years after the entry into force of INSPIRE.

4.3 Services

In order to secure interoperability of the INSPIRE data the individual Member States shall establish and operate a network of the following services for the spatial data sets:

- a) Discovery services making it possible to search for spatial data sets and spatial data services on the basis of the content of the corresponding metadata and to display the content of the metadata.
- b) View services making it possible, as a minimum, to display, navigate, zoom in/out, pan, or overlay spatial data sets and to display legend information and any relevant content of metadata.
- c) Download services, enabling copies of spatial data sets, or of parts of such sets, to be downloaded.
- d) Transformation services, enabling spatial data sets to be transformed (mapping of national data to the INSPIRE conceptual model).

Those services shall take into account relevant user requirements and shall be easy to use and accessible via the Internet or any other appropriate means of telecommunication.

To make the discovery service effective, as a minimum the following combination of search criteria shall be implemented:

- a) Keywords;
- b) Classification of spatial data and services.
- c) Spatial data quality and spatial accuracy.
- d) Geographical location.

- e) Conditions applying to the access to and use of spatial data sets and services.
- f) The public authorities responsible for the establishment, management, maintenance and distribution of spatial data sets and services.

To support sharing of data across the member states the Commission shall establish and operate a geo-portal at Community level.

Member States shall provide access to the mentioned services through the Community geo-portal. Member States may also provide access to those services through their own portal.

4.4 Agreements on Sharing, Access and Use

The main objective of INSPIRE is to make available relevant, harmonised and quality geographic information for the purpose of formulation, implementation, monitoring and evaluation of Community policy-making. In addition INSPIRE aims at improving the potential re-use of spatial data sets and services by industry and private users (third parties).

In order to make INSPIRE data available for the purposes that may have a direct or indirect impact on the environment, Member States shall adopt measures for the sharing of spatial data sets and services between public authorities. In addition those measures shall enable the relevant users, public and private, to gain access to spatial data sets and services, and to exchange and use those sets and services,

5. IMPLEMENTATION

The adoption of the INSPIRE directive causes two different types of implementation. Firstly the Member States shall implement INSPIRE in their national legislation and secondly the Member States shall implement the technical and organizational measures.

5.1 Implementation in national legislation

Once the INSPIRE directive has been adopted, the Member States shall transpose the INSPIRE provisions into the national laws, regulations and administrative provisions two years after the date of entry into force of the directive.

5.2 Implementation of the technical and organizational provisions

The commission shall establish the necessary organizational structures and the community geo-portal. The Member States are responsible for the implementation of the national organizational structures as well as the establishing of the various network services.

As mentioned before the INSPIRE directive create the framework for the Infrastructure for Spatial Data. After the entry in force of the directive the Commission is responsible for the working out and adoption of implementation rules for a number of activities for instance implementation rules for metadata for datasets and services and implementation rules for exchange of data, interoperability between data sets and data services as well as harmonization of data sets and services.

The commission will secure that interested stakeholders as well as users are involved in the formulation of the implementing rules as well through the Spatial Data Interest Communities as through a network of working groups, public hearings a.s.o

6. TIME TABEL

If the directive enters into force 2006 the implementation will take place between 2007 and 2013. The schedule for adoption of implementation rules can be illustrated as follows:

- 2007: adoption of implementation rules for metadata for data
 - 2010: metadata and services for annex I and annex II dataset
 - 2013: metadata and services for annex III dataset
- 2009: adoption of implementation rules for annex I data
 - 2011: implementation rules for annex I data in use
- 2012: adoption of implementation rules for annex II and annex III data
 - 2014: implementation rules for annex II and annex III data in use

7. FROM IDEA TO LEGISLATION

The INSPIRE initiative was taken DG-Environment in cooperation with Eurostat and the Joint Research Center (JRC) (Bodies of the Commission of the European Unity).

An expert group with participation from the member states, accession countries and representatives of key stakeholders at the local and regional level became a reality late 2001.

The initiative has been developed through several working groups. In the first phase of INSPIRE, six different horizontal working groups were created:

- Common Reference Data & Metadata13
- Environmental Data
- Data Policy and Legal Aspects
- Architecture and Standards
- Funding & Implementation Structures
- Impact Analysis

These groups provided the basic substance for the preparation of the INSPIRE initiative. At the end of 2002 the results were published in six separate position papers.

Hereafter the working groups were replaced with two new working groups to bring their work forward:

- Implementation Strategy
- Framework Definition Support.

In 2003 the Framework Definition Support group became responsible for completion of an extended impact assessment. In line with EU legislation an internet consultation was held in spring 2003.

Against the background of the position papers, the results of the internet consultation and the extended impact assessment the DG-ENV decided to revise the scope and the measures of INSPIRE. This work was finished in spring 2004.

The 23 July 2004 the political process started. At best a EU-legislation will be in place late 2005, more probably in 2006.

In spring 2005 a number of working groups will start preparing the different implementing rules.

8. LESSONS LEARNED

Two years after the entry into force of the INSPIRE directive the Member States in the European Community will have transposed the directive into their legislation. Shortly after the geo-portal will be a reality, and hereafter the set up of the different services will take place.

Why did the latest initiative become a success? It is not possible to give an exact answer. Perhaps because the countries have digitized their datasets now, perhaps because the technology is mature or perhaps because the initiative was taken by a specific sector with specific formulated needs in stead of the community in general. For me it is doubt about that the last statement is valid

The environmental challenges as pollution and floods do not respect boundaries. To be able to monitor, report and analyse the environmental conditions or to manage an actual disaster, data from a number of countries has to be combined in computer models, advanced decision tools and so on. It is obvious has strong demands on a shared Infrastructure for Spatial Information.

The INSPIRE process has allowed contributions from stakeholders and users, and the Extended Impact Assessment has illustrated a sustainable ratio between costs and benefits. The Commission has with a few exceptions demonstrated an understanding of the actual developments in the member countries and the necessity of limiting the amount of datasets to be comprised.

The European approach is useable in a global context.

REFERENCES

<http://inspire.jrc.it/home.html>

BIOGRAPHICAL NOTES

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Head of Informatics, National Survey and Cadastre Denmark.

Chair: FIG Commission 3 (Spatial Information Management) 1998-2002

1968 M.Sc geodesy and cadastral surveying

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