

## **Geographic Information Panel, 16 March 2005**

### **Paper GIP 2/05**

#### **Spatial Data Infrastructure and INSPIRE - Background Paper**

##### **Introduction**

Over recent years there has been much discussion of the development of Spatial Data Infrastructures (SDIs), and an international association (the Global Spatial Data Infrastructure Association – <http://www.gsdi.org>) exists to promote them.

The term SDI is often used to denote the set of technologies, policies and institutional arrangements that facilitate the use of spatial data in a geographical area – which in most cases is defined by national boundaries. An effective SDI provides a basis for

- collecting data once and using it many times, through sharing a common framework;
- identifying the existence and availability of spatial data;
- evaluating datasets, and;
- identifying tools to support applications of the data by users and providers within government, the commercial sector, the not-for-profit sector, academia and citizens in general.

The development of an SDI will be one of the outcomes of the existence of a successful national geographic information strategy.

The benefit of a successful SDI will be a move away from accessing and reconciling data and information across a number of disparate services to improved data management which delivers

- better integration of government and private sector data and services;
- reduced duplication;
- reduced costs for the public and private sectors through access to improved and coherent one-stop shops for land & property, transport, agricultural services etc., underpinned by consistently managed data

An SDI must be more than a single data set or database, ensuring consistency among a range of core geographic information and attributes, sufficient documentation (metadata), a means to discover, visualize, and evaluate the data (catalogues), and some method to provide access to the geographic data. Beyond this are additional services or software to support applications of the data.

To make an SDI functional and effective, it must also include the organisational agreements needed to co-ordinate and administer it on a local, regional, national, or trans-national scale. Although the SDI concept does not include base data collection activities within its scope or the applications built upon it, the infrastructure provides the ideal environment to connect applications to data – thereby influencing both data collection and applications development through minimal appropriate standards and policies.

##### **Worldwide progress**

Many countries claim to be developing National Spatial Data Infrastructures (NSDIs), perhaps as many as forty.

The NSDI in Sweden is highly visible and accessible to the user community through publicly accessible Internet sites. A web portal is presently hosted by the National Land Survey which can be regarded as the executive coordinating body for the NSDI. Much of the information contained in the Swedish NSDI is developed out of previously existing public datasets. As such, the NSDI forms an essential part of the country's Public Sector Information.

The basic components of the Swedish NSDI are:

- Information - different datasets with specific focus on reference datasets that form the foundation on which other spatial data sets are built. Metadata forms part of the information but seems to be less developed;
- Legislative and institutional frameworks;
- Human resources, technical systems and processes;
- Strategies and action plans.

The Swedish approach is one where the national, regional and local levels are closely interlinked, and where there are strong links with cadastral information (property information for taxation purposes). The NSDI is seen as an agent of change in how tasks are carried out in business and government sectors.

In Australia, the Australian Spatial Data Infrastructure (ASDI) is a national framework for linking users with providers of spatial information. The ASDI comprises the people, policies and technologies necessary to enable the use of spatially referenced data through all levels of government, the private sector, non-profit organisations and academia. Key components of the ASDI are the Australian Spatial Data Directory, standards and spatial metadata.

In the United States of America the creation of the NSDI has been approached through the establishment some years ago of the Federal Geographic Data Committee (FGDC), an interagency committee made up of representatives at cabinet level and from federal agencies. In the mid 1990s, a National Geospatial Data Clearinghouse was established. It is available to government, non-profit making organisations, and commercial enterprises worldwide if they wish to make their collections of spatial information searchable and accessible on the Internet using free implementation software developed by the FGDC. In addition, the "Geospatial One-Stop" is a public gateway for improving access to geographic information under the Geospatial One-Stop e-government initiative. The portal is designed to facilitate communication and sharing of geographic information and resources to enhance government efficiency and improve services the public. The current direction and leadership in this area within the United States seems to be undergoing change as the theoretical benefits of the system have not been delivered. Data management issues have been found to be substantially more expensive and difficult, both politically and operationally, than originally envisaged.

Elsewhere in Europe, many other countries are also working towards the creation of an NSDI.

## **Metadata**

One of the key components of an SDI is the provision of metadata. In the United Kingdom, the Glgateway service <http://www.glgateway.org.uk> is funded by ODPM through the National Interest Mapping Service Agreement with Ordnance Survey, and provides a search interface to around 7500 metadata records from 165 organisations. Also, Glgateway provides guidance on metadata standards and free software to allow data providers to easily create metadata records. Other examples of working metadata services are those in Australia <http://asdd.ga.gov.au/asdd/> and Canada <http://geodiscover.cqdi.ca/>

## **INSPIRE**

In July 2004, the European Commission adopted a draft Directive for an INfrastructure for SPatial InfoRmation in Europe (INSPIRE), which is currently being considered by the European Parliament.

The proposal for INSPIRE says that it aims to improve the accessibility and usefulness of geographical information (GI) for environmental purposes at Community level. In particular, by enabling better use of GI in evaluating policy options and in monitoring the implementation of the policies it is expected to contribute to the achievement of better environmental outcomes. INSPIRE aims to make the existing information more readily accessible at Community level by creating a European infrastructure. This will include rules requiring sharing of data among all levels of government and with the public, rules establishing technical interoperability among relevant spatial datasets held at member state level, and requirements on member states to publish information about their datasets and supply them via electronic services.

The Commission believe that INSPIRE should be implemented in Member States such that spatial data:

- Are stored, made available and maintained at the most appropriate level;
- Can be combined from different sources across the Community in a consistent way and shared between several users and applications;
- Can be collected at one level of public authority to be shared between all the different levels of public authorities;
- Are made available under conditions that do not restrict their extensive use;
- Can be discovered easily to evaluate their fitness for purpose and to know the conditions applicable to their use.

Member states currently employ a variety of different technical and organisational means of providing national geographic information, based on their unique history, terrain and infrastructure - physical, legal and social. The challenge for INSPIRE is to improve the accessibility of GI at pan-European level without incurring disproportionate cost, and without impairing the ability of national data suppliers to meet the myriad requirements of users at national and local level.

The United Kingdom Government shares the Commission's views of the importance of geographic information in underpinning the development and delivery of EU policies, but has concerns about the workability of the Proposal as currently drafted. The UK Government engagement on INSPIRE is being led by Defra, supported by Environment Agency and Ordnance Survey.

## **Conclusion**

Many countries commenced the formation of an SDI more than ten years ago. The United Kingdom has discussed it in many forums but to date no formal action has been taken but the building blocks for its creation are now in place. Learning from others around the world demonstrates that benefit to both public and private sector organisations can be gained by an effective but simple SDI formed by the geographic information community but given leadership by Ministers.

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