Swedish Spatial Data Infrastructure
- An efficient network of information resources accessible via the Internet

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Abstract

Spatial information is widely used in the modern society. The information is also produced by many different organisations on national, regional and local level. Efficient production, maintenance and use of the information imply co-ordinated actions between the different stakeholders. In Sweden a national geodata strategy has been set up and based on the strategy the spatial data infrastructure is gradually developed and implemented.

An increasing need for geographic information

Forest fires, storms and floods are causing major problems in society every year. Hazardous goods are transported on roads and railways every day. This is just a few examples describing that almost everything that affects our lives is linked to some aspect of geography. The more we know about the area, the better. The more information we have, the more appropriately we can act, plan and allocate our resources, deal with damage, calculate risks, implement preventative measures and make sure we are prepared.

From drain pipes to a pipeline

However, we often have a problem with the geographic information today. The data is stored in different database systems, are based on different specifications or has undefined quality. It can also be difficult to find data of interest or to get the access rights to such data.

Therefore, it is of vital interest to facilitate for the users to search, find and get access to data needed. And they should only have to go to one single point – the Geodata portal – to find both information about the data resources available, their quality and the usage rights.

The aim of the SDI

The major aims of establishing a well-functioning spatial data infrastructure is to:

- Reduce costs for data collection and maintenance by avoiding duplication of work and establish efficient co-operation between data producers at local, regional and central level
- Improve data quality and consistency – and to implement standardised models to describe data quality

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- Facilitate combination of data from different sources by achieving semantic, technical and organisational interoperability
- Improve access to data, for example by offering Web based services available 24 hours 7 days per week
- Support the development of e-governance and of business being established using data from authorities

The Swedish SDI

The Swedish SDI concept has been gradually developed since 1970's. The Land Data Bank System can be regarded as a forerunner. The system linked cadastral information from different state agencies and the municipalities and made the information easily available.

Today the Swedish SDI is based on a number of important corner-stones. This paper will in short describe some of these, namely the strategy document, the organisation being established to strengthen the coordination and cooperation, the standardisation work, the technical solution (the Geodata portal), and the new model for co-operation.

EU Spatial Data Infrastructure

The Inspire Directive from the European Union creates a common European infrastructure and common rules concerning exchange, sharing, access and use of public spatial data and data services.

The Directive consists of a legal framework describing how to achieve semantic, technical and organisational interoperability

The semantic and technical interoperability creates by rules concerning metadata (data catalogues), data specifications and network services.

The organisational interoperability creates by rules on how to make clear who is responsible for different data themes, and on data sharing between different bodies as well as on coordination and monitoring.

The intention is that all data, except for secrecy or security reasons, will be accessible for everyone.

The geodata strategy

In 2006 the Swedish Government commissioned Lantmäteriet and the Geodata Advisory Board to prepare a strategy for the development of a national SDI. Since then, work has been carried out in close collaboration with a range of relevant organisations.

The strategy describes a clear vision for the future, but also concrete and measurable targets for the short term actions. These action areas are:

- Development of efficient models for cooperation and coordination
- Development of models for structuring of geodata, i.e. to work out data specifications which fulfil a wide range of requirements
- To develop the technical infrastructure with a well-functioning Geodata portal and metadata system
- To establish one single geodetic reference system for the entire country

- To stimulate research, development and education within this field
- To simplify and modernise the legal framework having an impact on the handling and use of geodata
- To work out financing and pricing models that stimulates a wide use of existing geodata

Organisation of the Swedish SDI

The Swedish Government has given Lantmäteriet a clear role as coordinator of the Swedish SDI, including being the national contact point for the Inspire Directive. To support Lantmäteriet in this task, the Government has also appointed 14 persons to form a high level SDI Advisory Board. They represent both producers and users of geodata as well as researchers.

Within the Government, the Ministry of Environment is responsible for the implementation of the Inspire Directive. The Swedish legislation implementing the Directive is rather detailed and points out which organisations are responsible for each of the data themes covered by the Directive. Around 25 organisations have such responsibilities. Lantmäteriet is responsible for the coordination of the implementation of the Directive as well as the monitoring and reporting of the progress. Representatives from the 25 agencies meet on a regular basis in order to plan and coordinate their work.

An important part of the development and implementation of the Swedish spatial data infrastructure has been to create a new model for co-operation between different organisations. The partners of this co-operation have signed an agreement which defines rights and responsibilities and they are represented in annual meetings where strategic issues are decided. More information about this agreement is given later on in this paper.

Standardisation

In Sweden a standardisation programme for geodata was set up already in 1990 within the Swedish Standards Institute. Via this programme Sweden has been active in the international standardisation work (ISO TC 211).

We have also developed a framework and generic standardisation model, which has been used to produce standards for a number data themes, such as transport networks, hydrologic networks, utility networks, addresses and buildings. Lantmäteriet provides chairman for the standardisation project within the Swedish Standards Institute.

Geodata portal

A Geodata portal, which works as a clearinghouse for getting access to a large number of datasets being stored and maintained by the responsible organisation for each data theme, has been gradually developed.

The portal makes it easy to search for, look at and download geodata. It will also support the users when it is needed to transfer data between different coordinate systems or different data models.

In January 2011 a new version of the Geodata portal was launched based on open source software. This version was developed in close cooperation between colleagues from Denmark, Norway, Finland and the Netherlands.

Agreement on co-operation

An important part of the development and implementation of the Swedish spatial data infrastructure has been to create a new model for co-operation between different organisations. The aim is to simplify cooperation between organisations being responsible for provision of geodata, facilitate for all kind of organisations to make use of existing geodata, and to contribute to the creation of new business opportunities within the geodata sector.

From a user perspective, the provision of geodata should be handled as far as possible harmonised and automatic. It must be easy to find the data, to understand the conditions for use and to get access to data on-line.

The new model is implemented by an agreement between the partners. The agreement consists of the following parts:

- Description of management, co-ordination and maintenance of the SDI
- Technical pre-requisites for participation, such as description of which standards should be followed when publishing metadata and network services
- A product catalogue containing information about all available data resources
- Conditions for use, i.e. licensing agreements for different kinds of use, such as for official purposes, for commercial use, for development work or for non-commercial use
- Economic conditions for participation in a data sharing model, which gives access to all available geodata for official use for one fixed fee per year. This licence fee is decided in advance and based on a number of fixed parameters.

In February 2012 around 100 central agencies, county administrations and local authorities have signed the agreement on co-operation. This means that they have a licence to use relevant geographic information within their organisations and for setting up services on the Internet. Today some 200 WMS-services are directly accessible via the Geodata portal and the number is continuously increasing.

Also other data providers than those who have signed the agreement on co-operation can offer their data via the Geodata portal by signing an agreement on participation. By doing so, they can describe their data in the metadata catalogue and make their services accessible via the portal.

Conclusions

The Swedish SDI development has a wide support in society. Representatives from a great number of central agencies, local authorities and private enterprises have taken an active part in the work. The Swedish Government has also given an outspoken support.

Constructive co-operation requires that the forms for co-operation are supported by simple and clear financial, organisational and legal pre-conditions. The benefits from different actions must be made visible.

The Inspire Directive implies great demands, but is also a driving force for the national developments.

It is important to have a long-term approach, but at the same time work with step wise actions and show concrete results.

There is a strong link to the development of e-governance. Swedish authorities are today establishing different kinds of e-services to facilitate communication between citizens and enterprises. Geographic information is often needed as an important background for these services.

The willingness of the actors is crucial. We work hard with information and communication, but also with cost/benefit-analysis in order to show the benefits from different actions.

References

Follow our work on www.geodata.se

From this homepage you can get access to the Geodata portal and also download the Geodata strategy and other related documents.