

INSPIRE in Sweden - an Important Part of the National Geodata Strategy

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SUMMARY

In June 2006 the government gave Lantmäteriet, together with the Geodata Advisory Board, and in consultation with other affected government agencies and the Swedish Association of Local Authorities and Regions, the task of formulating a national strategic plan for the integrated provision of information within the geodata sector. The plan, with the title a National Geodata Strategy, was presented to the government on March 30th 2007. In Lantmäteriet's annual appropriations directions for 2007 it is stated that a revised version of the geodata strategy should be presented by, at the latest, March 28th 2008.

The basic aim of the National Geodata Strategy is to encourage increased co-operation within the geodata sector. The starting point for the geodata strategy is that the work should support the development of Swedish private sector activities, contribute to the development of Swedish e- governance, make possible an adaptation to new pre-conditions, be steered by consumer demands and being based on well-developed co-ordination between the different players. The work is also one stage in the Swedish implementation of the EC directive INSPIRE.

To realise the intentions of the strategy, eight areas of activity have been identified together with strategic targets, direction and prioritised activities:

- Co-operation in networks as the basis for the infrastructure
- Information structure
- Technical infrastructure
- National metadata catalogue
- Geodetic reference systems
- Research, development and education
- Legal framework
- Financing and price models.

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1. BACKGROUND

The Swedish government has given Lantmäteriet – the National Land Survey of Sweden – a role as coordinator of the national spatial data infrastructure. The responsibility comprises coordination of production, cooperation, dissemination and research and development. The responsibility also includes coordination of the implementation of EC directives related to GI (such as INSPIRE and GMES). Government has also decided to establish a high level advisory board supporting Lantmäteriet in its coordination role. Members of the board include representatives for the Swedish Meteorological and Hydrological Institute (SMHI), the Geological Survey of Sweden (SGU), the Swedish Maritime Administration, representatives for the Swedish Armed Forces, the county councils, the Swedish Association of Local Authorities and Regions, the Sundsvall local authority, the Geographic Information Development Group (ULI), the National Road Administration and the Swedish Environment Protection Agency.

In June 2006 the government gave Lantmäteriet, together with the Geodata Advisory Board, and in consultation with other affected government agencies and the Swedish Association of Local Authorities and Regions, the task of formulating a national strategic plan for the integrated provision of information within the geodata sector. The plan, with the title a National Geodata Strategy, was presented to the government on March 30th 2007. An updated version of the geodata strategy was presented by March 28th 2008.

The targets for the national geodata strategy are: to create a national infrastructure for the geodata sector, to contribute to the development of Swedish public administration and to promote close co-operation between the public and private sectors in order to create favourable environment for the creation of value-added geodata. The Swedish implementation of the EC directive INSPIRE forms part of the work with the Swedish infrastructure for geodata.

2. STARTING POINTS AND VISION

Work for the realisation of the goals of the strategy is based on the following common starting points:

- *Benefits for society* - the strategy should create favourable preconditions for the further refinement of geodata and the creation of value-added products and services, support the development of the Swedish private sector and contribute to strengthening international competitiveness. The provision of geodata will contribute to the development of Swedish e- governance and be a model for the development in other information areas and sectors. The provision of geodata should also utilise existing

solutions concerning e-governance. The strategy is part of the implementation of the INSPIRE directive in Sweden.

- *User demands* - a user perspective which should stimulate the use of geodata on local, regional, national and global levels.
- *Flexibility* - rapid and easy adaptation to the new pre-conditions, new requests and technical development.
- *Co-operation* between different players should be so well developed and carried out in such an efficient way that costs for the use of geodata can be decreased. Networks for co-operation between central and local government and the private and business sectors are an important basis for the infrastructure. The co-operation should be based on voluntary agreements and satisfy the needs of local, regional and national applications. The networks should stimulate the development of services that meet the requirements of individual citizens in both private and public sphere of activity.
- *Reliance* - factors that are important for success are: a common approach and sound forms of co-operation between all who are engaged in this area. Reliance, co-operation and collaboration must be built up across agency boundaries and between players.

The vision for the national geodata strategy, in a 10-year perspective, is that organisations that manage and use geodata in their daily activities should:

- Create *increased benefits* for society through a national infrastructure for the provision of geodata based on co-operation across organisational boundaries at the lowest possible price.
- Co-ordinate *information resources in a network* and make them available via uniformly structured services and descriptions of the information.
- *Provide services* to public sector administrations, companies and the general public and *satisfy demands* at local, regional, national, European and global levels.

3. THE IMPACT OF EXTERNAL INFLUENCING FACTORS

The work with the geodata strategy has, amongst other things, had a number of special influencing factors as a starting point. For example, the implementation of the EC directive INSPIRE will have a major influence on the building up of a national infrastructure for geodata. Other EC directives and initiatives, such as the directive concerning reuse of public service information (PSI), the directive concerning assessment and management of flood risks, Galileo and GMES (Global Monitoring for Environment and Security) will also influence development within the geodata sector.

The Swedish government intends to increase the efficiency of public sector administration and accessibility through e-governance. In January the 17th 2008 the government, therefore, decided on an action plan for e-governance. The government's action plan for e-governance points out implementation of the EC directive INSPIRE and the development of infrastructure for the provision of geodata as priority issues during 2008.

3.1 The EC directive INSPIRE

INSPIRE, which is the directive for the establishment of an infrastructure for spatial information in the European Union, came into force on May 15th 2007. The source of the directive is the European Commission's 6th Environment Action Programme and it is applicable in areas involving the Union's environmental policies and for policies and activities that can have an impact on the environment. The purpose is to create a legal framework for handling and disseminating spatial information via the Internet. The directive contributes to the solution of several problems which are currently associated with spatial information such as, difficulty in obtaining access to information, varying quality, problems of sharing information between agencies. The directive contains rules for, amongst other things, how technical interoperability can be achieved, that agencies should disseminate spatial information in an electronic format via Net services, that agencies should share spatial data with other agencies, a coordinating structure should be created in every member state. The requirements of the directive have been a contributory factor behind the government's decision to give Lantmäteriet responsibility for co-coordinating activities in the geodata sector, the decision to establish a Geodata Advisory Board, and the formulation of a national geodata strategy.

In INSPIRE, infrastructure is defined as metadata, spatial datasets and services, Net services and techniques, agreements concerning sharing, access and use and mechanisms, processes and methods for co-ordinating and supervision. Spatial datasets in the context of the directive must be in an electronic format, be the property of an agency and relate to one or several of the themes that are listed in the three annexes to the directive.

Examples of data themes which are covered by INSPIRE are:

- In Annex I: co-ordinate systems, administrative units, transport networks and hydrography.
- In Annex II: elevation data, land cover data, orthophoto and geology.
- In Annex III: population distribution, meteorological conditions and oceanographic conditions.

The directive comprises five main areas: the *first* area relates *metadata*. Every member state must ensure that metadata is created for geographic datasets and services. In accordance with the directive, metadata must, among other things, define both the quality and the validity of the geographic datasets, the public sector agency which has responsibility for creating managing, maintaining and distributing geographic datasets and data services and also restrictions which apply concerning access to them by the general public. *The second* main area relates to *interoperability* concerning geographic datasets and data services. Interoperability means that it is possible to combine datasets so that services can work together. *The third* main area relates to the creation of *net services* to facilitate access to datasets. Member states are required to install and operate a net with the following services:

- Search services which make it possible to search for geographic datasets and data services. The criterion for carrying out a search is that it should be possible to use metadata. It must also be possible to show the contents of the metadata.
- Visualisation services which make it possible to view, navigate, zoom in and out geographic datasets.
- Downloading services that make it possible to download and, where possible, have direct access to copies of geographic datasets.
- Transformation services that make it possible to transform datasets in order to achieve interoperability.
- Services which make it possible to access data services.

On the EU level an INSPIRE geoportal will be established with access to the services of member states. The *fourth* main area relates to the possibility for government agencies to exchange *datasets* between themselves. Member states must take measures to make exchange of datasets and data services between their public sector agencies possible. The terms for data exchange between agencies on different levels within the Union, as well as with players other than public sector agencies, must be regulated. The *fifth* main area relates to organisational issues, primarily concerning *co-ordination*. Member states must ensure that suitable structures and mechanisms are established at different administrative levels for co-ordinating contributions from all those who are interested in the infrastructure for geographic information.

4. WORK PACKAGES

The achievement of the vision and the strategic targets is based on Sweden's international commitments, including the EC directive INSPIRE and PSI, political decisions, including the government's action plan for e-governance and on clearly expressed user demands. The work must take into consideration rapid developments in techniques and that demands, obstacles and possibilities can rapidly change.

Eight work packages have been identified in the geodata strategy. These are, without any order of priority:

1. Co- operation networks as the basis for the infrastructure
2. Information structure
3. Technical infrastructure
4. National metadata catalogue
5. Geodetic reference systems
6. Research, development and education
7. Legal framework
8. Financing and price models

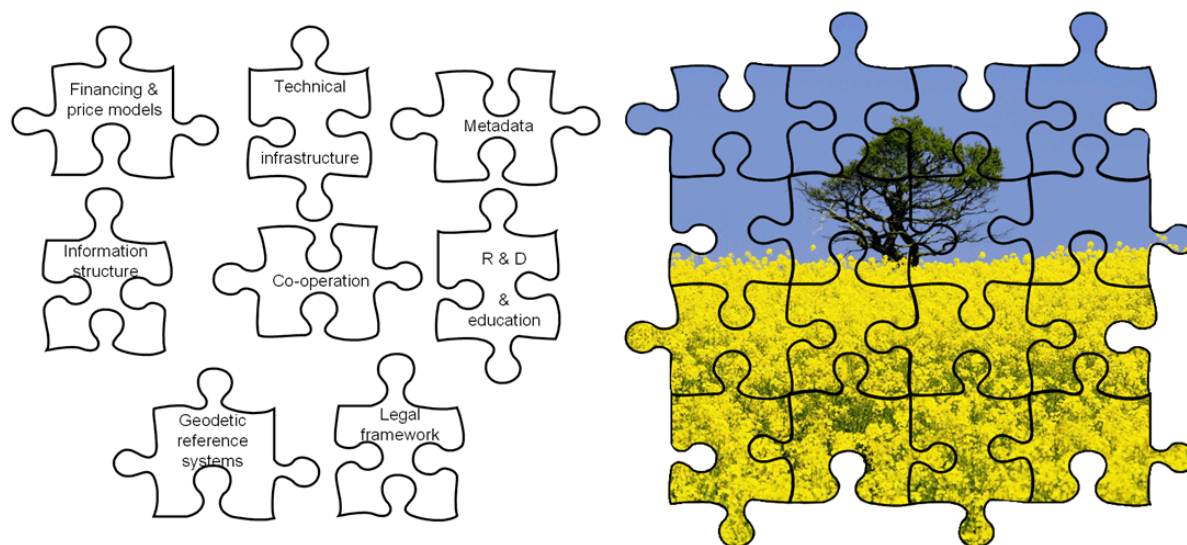


Figure 1. The work packages are puzzle pieces in the geodata strategy. Piece by piece they form the national infrastructure for geodata which, in itself, is a puzzle piece in the European infrastructure for a geodata (INSPIRE).

4.1 The Geodata Project

There are clear links between a numbers of the areas of activity. Those that had the strongest links have been included in a common project – the Geodata Project.

During a period of three years the project will create a general cooperation model and the technical infrastructure for how geodata and services should be made available for Swedish society and Europe. Work on the cooperation model includes organisational issues as well as contractual, pricing and financing issues. The technical and practical implementation of the EC directive INSPIRE will be done within the project. The solution will be developed together with other players who are involved in the provision of geodata.

The targets for the project are to:

- increase the value of the provision of geodata for customers
- increased co-operation within and between public's service administration's and companies
- create flexible business processes
- decrease the costs for the provision of geodata
- increasing growth and competitiveness for companies which provide geodata products and services.

The project comprises two parts – cooperation model and technical infrastructure. The technical infrastructure includes the development of:

- a geodata portal
- a network for making services available
- search and metadata services

4.2 Action plan for implementation of the EC directive INSPIRE

An action plan for implementation of the EC directive INSPIRE has been carried out. The plan contains the time schedules which should apply in accordance with INSPIRE, the activities that must be carried out in order to achieve the purpose of the directive and the responsibility for different actions. An important conclusion is that the time schedule for implementation of the directive is rather tight. Relevant net services must have been established and metadata created by, at the latest, during 2010. The information produced by government agencies that is covered by the directive must have been adapted, or accessible by the use of transformation services, during 2011 at the latest. A problem in this connection is that the involved agencies' in this area, is dependent on the directive's implementation rules. In order to be able to follow the time schedule the agencies will presumably need to begin the work before the implementation rules have been formulated.

Roles and players

In the INSPIRE action plan there are five players, or groups of players, who in different ways have responsibility for the implementation of the directive. The same group of players is involved in the work with and national infrastructure for geodata.

- The European Commission – responsible for the adoption of the implementation rules. The Commission is also responsible for the creation of a geoportal at the EU level, and for the follow up and supervision of the implementation of the directive.
- Parliament and the government – responsible for the inclusion of the directive in national legislation. By delegating to government agencies, the government can ensure that the necessary measures are carried out. The government has given Lantmäteriet, together with the Geodata Advisory Board and in consultation with other involved government agencies and the Swedish Association of Local Authorities and Regions, the task of formulating a national geodata strategy.
- The geodata co-coordinator (Lantmäteriet) – responsible for coordination and supervision of the practical implementation of the directive. In addition, Lantmäteriet as the contact point is also responsible for reporting to the Commission, in accordance with the directive. The Geodata Advisory Board supports Lantmäteriet in its role as coordinator.
- The Geodata Project – responsible for preparing a national geodata portal through which datasets can be made available to government agencies and the general public, in accordance with the INSPIRE directive.
- Government agencies and organisations – responsible for producing metadata and certain services. These bodies are also responsible for adapting services (alternatively

to make transformation possible), datasets and four adapting the technical architecture to satisfy INSPIRE's requirements.

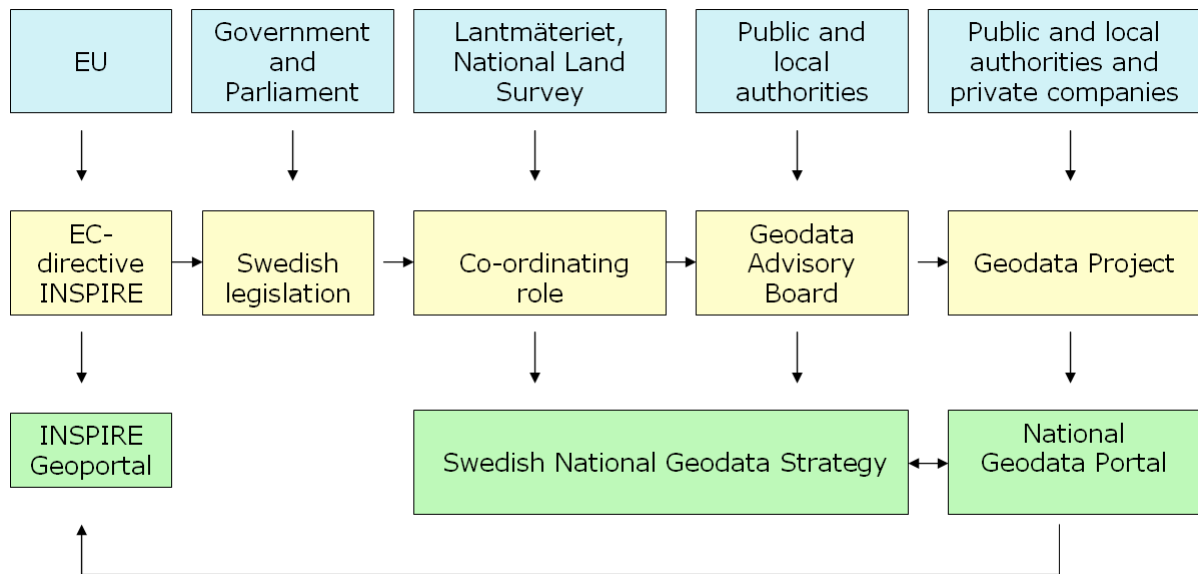


Figure 2 Overview of players, activities/roles and results.

Co-operation in network as the basis for the infrastructure

The national geodata infrastructure comprises a well-developed co-operation between the central government, local government and private sectors which is based on voluntary agreements. Future work will be oriented towards developing co-operation between independently managed organisations which, together, have responsibility for the provision of geodata at the national level. Requirements at local, regional, national and international levels will be satisfied. The platform for co-ordination of the provision on geodata will be developed within the framework of the Geodata Project based on the development of a general co-operation model. The model will describe organisation, division of responsibility and financing. The co-operation model is also an important pre-condition for the implementation of the EC directive INSPIRE.

The information structure

The exchange of information in a national infrastructure for geodata should be based on a homogeneous, general framework with uniform descriptions of the information and services. The framework should include rules and methods for model-based concepts and descriptions of information, as well as rules and method for service-based exchange of information. As far as possible, implementation should be based on international standards and, to the extent that Swedish standards are available, they should be used.

Standardisation in the geodata sector must be co-ordinated with on-going work to formulate implementation rules for the EC directive INSPIRE. INSPIRE contains mandatory

requirements in this sector of activity for government agencies and organisations. Government agencies' datasets which are covered by Inspire should be adapted to meet the directive's requirements or, alternatively, be made available with the help of transformation services. This means that government agencies must develop the necessary data and data exchange models.

One of the activities that has been given priority in the action plan is to define and delimit geodata and services. This task includes proposing which geodata and services should be included in the national infrastructure, based on available definitions and identified user needs. As part of this task a comprehensive questionnaire was prepared and circulated. An initial analysis of the results indicated that the geodata that is needed for the national infrastructure is, to a large extent, the same type of data as is prescribed for Inspire. Although the services that will be developed in accordance with the directive are broadly the same as those required for the national infrastructure, the investigation indicated that a number of other services should also be included.

Technical infrastructure and metadata

The aim is to create an access point – a geodata portal - for the supply of geodata and associated services. The portal will meet the requirements that apply for data services in the EC directive INSPIRE and will form the Swedish node against the INSPIRE Community Geoportal. Present plans are for the first version of the portal to be ready towards the end of 2008 and that the complete portal, with a technical solution that functions together with business models and administrative routines, will be in use by 2010. In conjunction with the development of the geodataportal a proposal for a Swedish profile for the SS-ISO 19115 metadata standard has been prepared. During the year, the profile will be presented for comments prior to approval. The profile will make it possible to create homogeneous metadata in both a national and international context. To provide additional support for creating metadata a set of instructions will be written

Geodetic reference systems

A homogeneous reference system facilitates the production, processing and use of geodata; it also makes compilation of data from different sources easier. For these reasons, a rapid transition to the national geodetic reference system, SWEREF 99 and the height system, RH 2000 should take place. Activities which should be given priority to encourage the municipalities to introduce the new reference systems include, in addition to the provision of information, support and follow-up assistance. So far, the transition to SWEREF 99 has taken place in approximately 40 municipalities and preparations are underway for a change to the new reference system in 130 more municipalities. During 2008, eight government agencies, including the National Road Administration, Statistics Sweden, the National Tax Border and the county councils, plan to adopt SWEREF 99 as their reference system.

Research development and education

A programme for research, development and education in the geodata sector has been prepared. In the programme the focus is on describing needs in the sector relative to the areas of activity which have been given priority in the geodata strategy. The following strategic goals have been identified:

- The creation of a better national overview and co-operation
- A clarification of where the responsibility for research in the geodata sector lies
- Provide better co-coordinated information concerning the availability of funds for R&D which supports the geodata strategy

- The development of better international co-operation
- The establishment of a testing environment
- The stimulation of development in the private sector
- Make available the necessary competence

Legal framework

One important issue is the legal framework concerning a national spatial data infrastructure (NSDI) and Inspire. The first question is why we need regulations concerning this issues. One important reason is that there are many different interests in society that are affected by the NSDI and Inspire. The regulations are important to guarantee a commonly accepted balance between the needs to protect important interests and the users needs of easy access to the actual information. Issues that we need to take into account are security, vulnerability, integrity and copyright. It is important to clarify the distribution between rights and duties in this field.

The current Swedish legislation on information infrastructure is build upon fundamental principles, like the over 200 years old principle of public access to official documents. This principle constitutes a right for the public to gain access to official documents weather they are in analogue or electronic form. Although this right does not mean that the public authorities have to make the documents available through network services on the Internet.

The Personal Data Act regulates when and how personal data may be processed. This law is the result of implementing the EC-directive on data protection, and is very important to take into consideration in an information infrastructure. Even though most of the Inspire datasets do not contain personal data, there are examples where indirect personal data can be found. For example addresses and property unit designations are considered as indirect personal data in Sweden. Processing of that information has to be in accordance with the Personal Data Act and other superior laws in this area. The laws and regulations on public management, regulate two principles concerning data-sharing. These principles mean that public authorities must co-operate with each other, and give each other access to information unless it is confidential. This applies although there is no obligation to share data through network services.

On October 31st, 2007 Lantmäteriet presented a report listing the changes to current Swedish legislation that would be necessary as a consequence of the implementation of the EC directive INSPIRE. The report concludes that the legislation does not meet the requirements of the directive and recommends that the necessary amendments should be introduced in the form of a special act on infrastructure for spatial information. Current laws consider different interests and have other purposes, for example the purpose of giving a right to the public or protecting personal data. The Ministry of Environment will prepare a proposal for changes to the Swedish legislation based on the recommendations that were made in the report. The Inspire directive affects some current laws and regulations in the Swedish legislation. For example the Secrecy Act that regulates when an official document shouldn't be handed out, must be amended so that it doesn't limit data-sharing according to Inspire. New rules must also be added, or in some cases amended, regulating grounds for limiting public access. Some specific laws that deal with electronic access to datasets which includes personal data must be modified. The new "Inspire act" should define general rules on the spatial data infrastructure, especially rules on public access to spatial data through network services and electronic data-sharing between public authorities.

In addition, an enquiry concerning the need for changes to rules in the legislation which regulate the management and use of geodata has been carried out. The enquiry identified a number of obstacles which can affect, amongst other activities, the use of automated applications for the exchange and use of geodata. A review of the relevant legislation is, therefore, necessary.

Financing and price models

The creation of a national infrastructure for geodata will require investments. Above all, this will be the case regarding the need for financing to cover the costs of implementing the EC directive INSPIRE and for the coordination which will be required in connection with it, such as development, operation and management of the national geodata portal, adaptation of data volumes and services and the necessary investments in IT. The focus of the next stages of the work should, therefore, be on obtaining a clear picture of the investments that must be made to ensure that the implementation of the Geodata Project and the Swedish implementation of INSPIRE are not hampered by financial insecurity.

Future work with the development of price models for geodata should be concentrated, as far as possible, on removing obstacles that could have a negative effect on their efficient use, and to seek to develop homogeneous price models.

REFERENCES

National Geodata Strategy 2008

BIOGRAPHICAL NOTES

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