

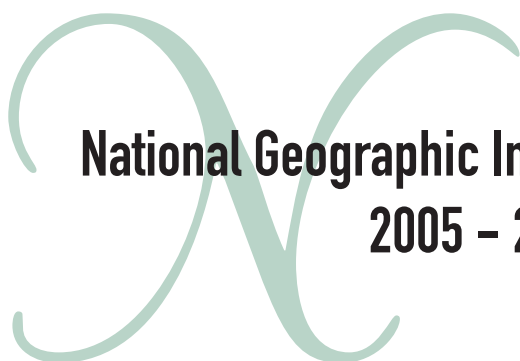


National Geographic Information Strategy 2005–2010

Finnish National Council for Geographic Information



Finnish Government Information Society
Policy Programme



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Title	National Geographic Information Strategy 2005 – 2010		
Abstract	<p>On July 21, 2001 the Finnish Government appointed a council, which among other things was commissioned to take steps to prepare a national geographic information strategy. The council took as its strategic task to advance cross-sector collaboration with the objective of developing a spatial data infrastructure meeting both national and international needs. In 2003 the preparation of a strategy was included as an objective into the Government Information Society Programme.</p> <p>The National Geographic Information Strategy focuses on describing principles, objectives and measures deemed appropriate for the development of a spatial data infrastructure in Finland. A successful implementation of the strategy will result in a more efficient and diverse use of the databases available, the emergence of new services and better access to information. It will also, for its part, provide a good framework for the development of a national information society and for international cooperation.</p> <p>The strategy also takes into account the preparation of the INSPIRE directive (COM (2004) 516) for the establishment of a European Spatial Data Infrastructure.</p>		
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Foreword

Geographic information technology is based on the management and use of spatial data and as such provides a good example of a component of the information society involving activities across sectors at the local, national and international level. Geographic information, i.e. spatially referenced information, is widely used in connection with a variety of functions and services ranging from individual projects, such as the construction of a building or road, to monitoring global environmental processes.

The Finnish National Geographic Information Strategy was prepared as part of the Finnish Information Society Programme initiated by the Government in order to boost competitiveness and productivity, promote social and regional equality, and improve the well-being and quality of life of the citizens through the utilization of information and communications technologies. A further objective set forth in the programme is to keep Finland at the forefront in the production and use of information and communications technology.

Through active collaboration on geographic information the usability of various information sources and services can be significantly improved and thus the daily life of the citizens can be facilitated, the efficiency of the administration increased and the commercial and industrial competitiveness improved in accordance with the Government Information Society Programme. The Geographic Information Strategy prepared by the National Council for Geographic Information describes principles intended to guide the development and maintenance of the Finnish National Spatial Data Infrastructure and the related measures to be taken in the years to come. The strategy also takes into account the preparation of the INSPIRE directive (COM (2004) 516) for the establishment of a European spatial data infrastructure.

Chairman of the council was Jarmo Vaittinen, Secretary General of the Ministry of Agriculture and Forestry, and permanent members were Olli Lopmeri, Ministerial Adviser at the Ministry of the Interior, Antti Kivipelto, Director of Natural Resources Management at the Ministry of Defence, Mikael Kiviniemi, Counsellor at the Ministry of Finance, Risto Yrjönen, Ministerial Adviser at the Ministry of Agriculture and Forestry, Anu Lamberg, Senior Adviser at the Ministry of Transport

and Communications, Heikki Heikkilä, Director of Information Technology and Management at the Ministry of the Environment, Risto Kuittinen, Director General of the Finnish Geodetic Institute, Soile Aatos, geologist at the Geological Survey of Finland, Jarmo Ratia, Director General of the National Land Survey of Finland, Tiina Tuurnala, Director of the Hydrographic Department at the Finnish Maritime Administration, Kari Pakarinen, Manager of Regional Development at the Association of Finnish Local and Regional Authorities, Lea Kauppi, Director General of the Finnish Environment Institute, Antti Herlevi, Senior Technology Adviser at the National Technology Agency of Finland, Marja Tammilehto-Luode, Development Director at Statistics Finland, Riitta Haggren, Development Manager at the Population Register Centre, Matti Virrantaus, Colonel, M.Sc. (Eng.) from the Topographic Service, and Jaana Mäkelä, Director of GIS Solutions at Genimap Corporation.

The National Geographic Information Strategy promotes the objectives aimed at establishing an efficient and competitive information society. The implementation of the strategy should be actively and resolutely pursued.

Helsinki, August 31, 2004

A handwritten signature in black ink, appearing to read 'Juha Korkeaoja', written in a cursive style.

Juha Korkeaoja
Minister of Agriculture and Forestry

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1. Background of the strategy

In the last few years the industrialized countries have moved swiftly towards a society where information and information services have assumed great importance, not only in providing a basis for civilization but also as a key production factor and decision-making tool. Various databases and data networks have become pivotal to facilitating the everyday life of the citizens, increasing efficiency within the administration and boosting commercial and industrial competitiveness.

In addition to descriptive register data, many databases also hold spatial data, which can be used to determine the spatial position and the geographic context of a range of objects and phenomena. Databases of this kind are generally referred to as *geographic information*.

The integration of spatially referenced geographic data allows the data to be used, analysed, value added and visualized in a multitude of ways. Accordingly, geographic information is used for a wide range of purposes, such as environmental monitoring, real estate management, agriculture and forestry, land use planning, traffic and transport management, navigation, national defence and market research.

Owing to the advantages offered by the geographic information technology, spatial data are recorded and various geographic information systems are constructed in an increasing number of organisations representing the public and private sector alike. In Finland several hundreds of millions of euros are invested annually in activities where the use of geographic information plays a key role. Several tens of millions of euros are allocated to the acquisition, maintenance and processing of geographic information and to the production of a host of products and services that draw on geographic information. The turnover generated by commercial activities involving the use and application of geographic information is expected to exceed 100 million euros in the coming years. As for the impact of INSPIRE, an initiative for developing an Infrastructure for Spatial Information in Europe, it has been estimated that by improving the availability and increasing the use of data an annual gain of as much as a billion euros could be achieved in Europe.

General technological advances have also provided new opportunities in exploiting geographic information. Geographic information, like other digital contents, can be transferred over



a worldwide data network and even over a wireless network practically in real time. Various terminal devices on offer allow individual citizens to view a wealth of material and to use different services with relative ease. The efficient and multiple use of datasets depends increasingly on whether players and organisations across sectors are prepared to cooperate in order to remove barriers and increase efficiency in data sharing.

On July 21, 2001 the Government appointed a council, which among other things was commissioned to take steps to prepare a national geographic information strategy. The council took as its strategic task to advance cross-sector cooperation with the objective of developing a spatial data infrastructure meeting both national and international needs. In 2003 the preparation of the strategy was included as an objective

into the Finnish Government Information Society Programme.

The National Geographic Information Strategy focuses on describing principles, objectives and measures deemed appropriate for the development of a spatial data infrastructure in Finland. A successful implementation of the strategy will result in a more efficient and diverse use of the databases available, the emergence of new services and better access to information. It will also, for its part, provide a good framework for the development of a national information society and international cooperation.

When formulating the strategy, the council took into account the ongoing preparation of a EU directive (COM (2004) 516) for the creation of a spatial data infrastructure in the community (INSPIRE).

2. General objectives of the strategy

2.1 Aim

The National Geographic Information Strategy seeks to create an effective and efficient information infrastructure that underpins a wide range of functions in society and to thus ensure that core geographic information is available for use in multiple ways for the good of society as a whole.

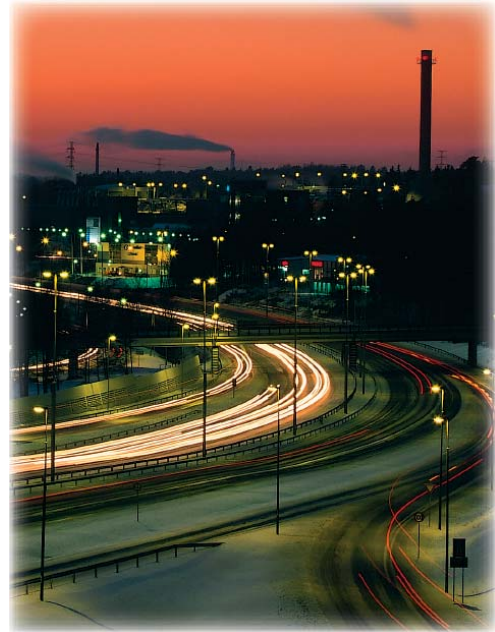
Spatial data infrastructure refers to structures for cooperation, technical solutions, data management principles, data services and human resources, which combined allow core geographic information to be efficiently maintained, disseminated and used throughout society.

An effective national spatial data infrastructure successfully integrates various spatial data activities across sectors, regions and organisations. A national spatial data infrastructure also complements the international network of services, wherefore active collaboration on development at the international and, in particular, the European level is also imperative.

A national spatial data infrastructure is built on a platform of geographic information and information services main-

tained by the public and business sector alike. An effective national spatial data infrastructure on the one hand underpins a number of functions that are carried out by organisations across sectors relying on geographic information and on the other hand depends on the ability and will of these same organisations to maintain the resources and services needed by society and make them widely available.

In this strategy the assessment of development needs relating to the spatial data infrastructure follow the division in the model presented in Figure 1. The model is based on an infrastructure model used in the EU-led INSPIRE initiative.



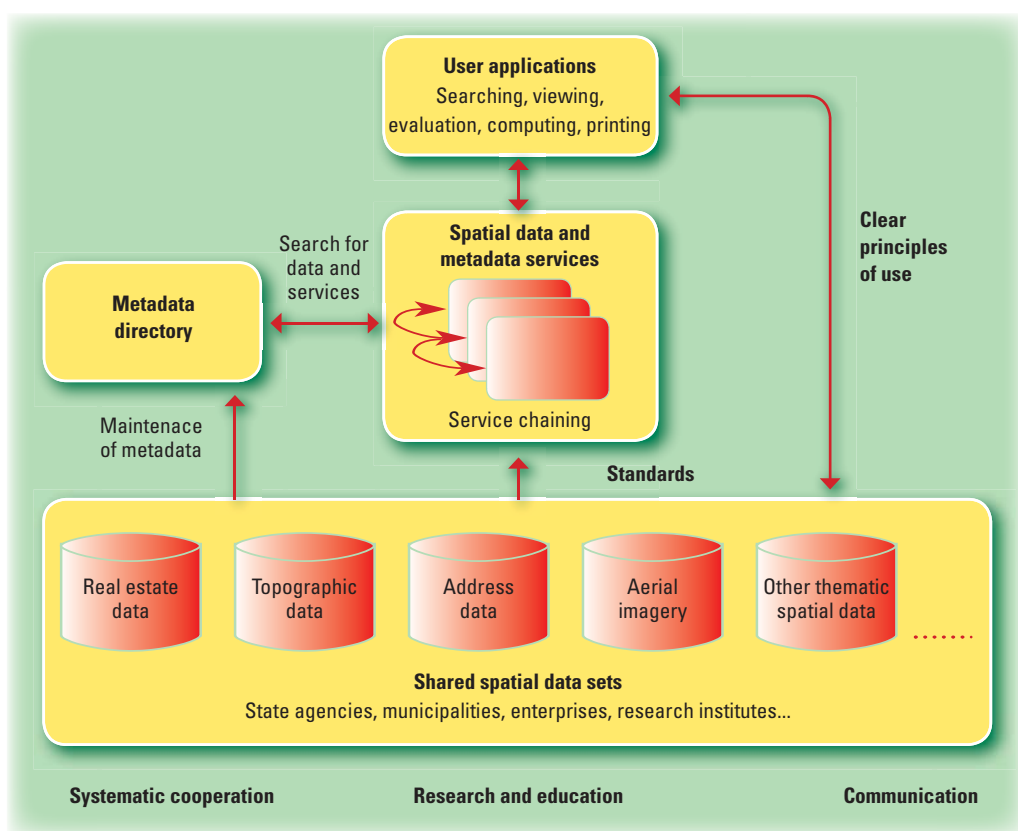


Figure 1. General model of a National Spatial Data Infrastructure

2.2 Targeted outcome

The outcome targeted by the strategy:

Citizens use on a routine basis a multitude of diverse products and services relating to maps, positioning and navigation, as the products and services are easily accessible and moderately priced. The benefits of a spatial data infrastructure that is highly effective are, among other things, safer travelling, time savings and a reduced need for public services.

Public authorities make extensive use of databases and services maintained by other public authorities, as the data information networks employed by the public administration are effective, a transparent and fair pricing policy is applied, and great care is paid by the respective agencies to ensuring the quality and availability of the resources and services. The authorities also have at their disposal services produced by EU bodies and other EU member states. A spatial data infrastructure that is highly effective will translate into, for instance,

more efficient processes, better quality and a reduction of duplicative efforts.

Commerce and industry make extensive use of public databases and services for the purpose of streamlining their operations and producing value-added goods and services, as the data and services are of high quality, readily available and can be obtained at price that is reasonable relative to the purpose at hand or the value-added product or service planned. A spatial data infrastructure that is highly effective will translate into, for instance, more efficient processes, time savings, novel products and a larger market.

Researchers make extensive use of geographic information for analysing various entities, phenomena and

methods, as the datasets are comprehensive, of high quality, well documented and available at a reasonable cost for research purposes. A highly effective spatial data infrastructure will translate into, for instance, higher-quality research, an increased awareness of the impact of various measures, more efficient methods and new innovations.

Public authorities in the EU and in other member states use Finnish data service structures directly to perform their public duties, as the interfaces through which the services are offered have been designed so as to be interoperable. The rewards of a highly effective spatial data infrastructure will be, among other things, more efficient processes and higher-quality governance.



3. Vision, values and operating environment

Vision

By the end of the decade a spatial data infrastructure that is effective, well managed and in extensive use will be in place in Finland.

Values

Continuity and quality – by ensuring in the long term that core geographic information is available and of adequate quality, we can create the basic conditions for widespread data sharing and improved services.

Cooperation and responsibility – by committing to systematic, long-term cooperation on information exchange and taking a responsible approach, we can create conditions that promote efficient data compilation and the emergence of effective geographic information services.

User needs and satisfaction – as for the maintenance, management and dissemination of geographic information, we must cater to the needs of different user groups and ensure that the services are equally available.

Operating environment

The spatial data infrastructure is one component of the information society, which basically is made up of a selection of data and services. The information society is guided by a number of more general decrees and recommendations on data compilation, use, management and dissemination. These decrees and recommendations that pertain to specific areas, including data security, software interfaces, service quality and data delivery affect the development and efficiency of the information society and form the general framework for information management. Within this operating environment the development of the national spatial data infrastructure takes place.

The national geographic information strategy has identified a host of development measures necessary for achieving an effective national spatial data infrastructure. It is proposed that these measures be implemented in the coming years and that the requirements following from the general decrees and principles referred to above be taken into account in the implementation.

4. Strategic areas in need of development

Areas of strategic importance in the Finnish National Spatial Data Infrastructure in need of development were defined by use of the general model illustrated in Figure 1 and the various aspects presented therein.

1. Systematic cooperation
2. Preparation and implementation of common recommendations
3. Harmonization and improved maintenance of core geographic datasets
4. Maintenance of metadata and metadata services
5. Geographic information services
6. Principles of use and distribution
7. User applications
8. Research and education
9. Communication

Various parties that use, produce or research in geographic information or offer related training or support services on a large scale were asked to give their opinion on the draft strategy and the guidelines on development contained therein. A final strategy drafted in light of the responses received was subsequently approved by the National Council for Geographic Information.

To facilitate the implementation of the strategy, a development programme for quality management and standardisation was prepared and a survey was carried out to establish the needs associated with the development of the sharing of core geographic information.



For the same purpose a further survey was initiated to determine the state of education and research in geographic information and the needs for development in these areas.

4.1 Systematic cooperation

The development and effectiveness of the National Spatial Data Infrastructure are contingent on whether the organisations responsible for core geographic datasets and services are able to cooperate.

Systematic cooperation requires the establishment of a permanent cooperative body consisting of key actors and players in the field. The cooperative body should be assigned to specify the main guidelines for developing the National Spatial Data Infrastructure, monitor the development process, deal with problems of practical nature, approve principles to be applied by all concerned and to launch initiatives, where necessary. Furthermore, the body should monitor international developments and ensure that international needs are addressed in the development of a national infrastructure.

The permanent cooperative body should be assigned resources for conducting surveys and launching initiatives necessary for developing the infrastructure.

4.2 Preparation and implementation of common recommendations

The efficient and effective use of geographic information depends on whether common standards and recommendations are applied to data compilation, data maintenance and information service. The standards should promote data sharing both on a national and international scale. In addition to recommendations pertaining specifically to geographic information, the management of data resources must also adhere to the principles governing and guiding the information society at large.

The set of national recommendations pertaining to geographic information need to be comprehensive and up-to-date with international standards (the ISO/EN 19100 series, Open GIS specifications etc.). The national recommendations should be published as recommendations for the public administration (JHS recommendations).

Together with organisations managing and maintaining core geographic datasets and other standardisation bodies, the cooperative body for geographic information should ensure that the national recommendations on geographic information are up-to-date at all times.

A condition requiring the application of national recommendations should be included into invitations to tender and development plans relating to geographic information systems and applications.

4.3 Harmonizing and developing the maintenance of core geographic datasets

A prerequisite for the effective use of geographic information at all levels of society is that the datasets are comprehensive and mutually interoperable, possess integrity in logical and technical terms and, above all, are readily available. To achieve interoperability common standards and recommendations need to be applied to the maintenance and management of geographic datasets in widespread use.

Geographic datasets that are used widely throughout society for ensuring the sustained provision of welfare, security and governance and that provide the general basis for positioning are referred to as *core geographic datasets* in this strategy. Core geographic datasets are widely used both individually and combined on the local, national and international level. For these reasons the datasets need to be well managed and generally available, and form a harmonised, integral whole, providing nationwide coverage and facilitating shared use (Figure 2).

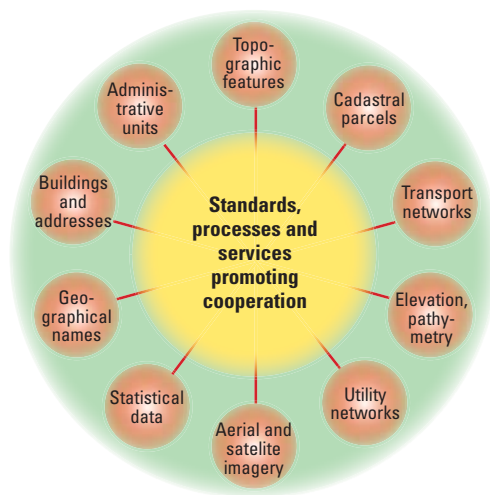


Figure 2. Example of a whole formed by shared geographic datasets.

The core geographic datasets can be broadly divided into *basic geographic information*, which is used widely across different sectors, and *sector-specific geographic information*, which obviously is primarily used within a specific sector.

In many sectors the basic geographic information provides the general basis for positioning and a framework for sector-specific data. Core geographic datasets identified in connection with the drafting of this strategy are listed in Annex 1. The practice of using common standards is expected to spread from the core datasets to other datasets and this will promote the entire geographic information sector and gradually improve efficiency within it.

A clear division of tasks and responsibilities is necessary to ensure that core geographic databases are well managed and meet the needs in terms of maintenance. The roles of administrative organizations (data custodians) engaged in maintaining core geographic datasets need to be clearly defined in the national legislation and in administrative decisions.

The maintenance of core datasets can also be based on systematic cooperation between a number of organisations. Good management involves paying attention to the resources required for the maintenance, thus ensuring continuity in data sharing.

The administrative organisations responsible for core datasets should take it upon themselves to ensure that common standards and recommendations are adopted and, equally, that common processes promoting data maintenance and the development of data services are planned and introduced.

The quality of core geographic information databases should be systematically monitored and the metadata describing the material should be coherent and comprehensive.

4.4 Maintenance of metadata and metadata services

Metadata refer to attribute data describing geographic datasets. Metadata en-

able a user or an information system to assess whether the data concerned are feasible for the intended use. In general metadata describe the scope of the material, classification method, currency, quality, production manner and other aspects pertaining to usability. In this strategy metadata have been divided into general *descriptive metadata*, which are useful when searching for resources and products relating to geographic information, and detailed *metadata enabling a precise evaluation* of the data and the products in question.

Administrative organisations maintaining data resources should ensure that the metadata describing core geographic datasets are comprehensive, current and adhere to the agreed standard. The administrative organisations are also called upon to make sure that standard-compliant metadata are available through the national metadata service.

General descriptive metadata for locating geographic datasets should be made available through a general national metadata service conforming to the agreed standards. If possible, the service should be integrated with metadata services providing more extensive descriptions of databases available in the society.

Detailed metadata enabling the specific assessment and the use of data should



be available as part of the geographic information service offered by an administrative organisation.

4.5 Geographic information services

Geographic information services refer to functions for transferring geographic information or any content changes to systems or applications at the user end. The service can be realized in the form of an automatic service to be used directly through a software interface or amount to the delivery of data on a storage medium, as has hitherto been customary.

The administrative organisations should ensure that core datasets are readily available both through an automatic information service and as an information product separately delivered. It should be possible to draw on geographic information services offered by administrative organisations to develop various spatial data applications. The administrative organisations have the option to charge for material offered

through the services and to require the user to sign an agreement.

The tasks of the cooperative body for geographic information include monitoring the state of the geographic information services and promoting their development by initiating pilot and exemplary projects.

The national metadata service, the general map view service and the online spatial data lending facility should promote the development and use of actual geographic information services. The metadata service should help users find material for different purposes and related data services, whereas the general map view service should give users easy access to general-purpose maps with national coverage and of varying detail for the purpose of viewing. The purpose of the online spatial data lending facility is to provide users with material relating to a specific area, on a trial basis and for a specific time, for the purpose of testing applications and methods.

4.6 Principles of use and distribution

The principles for distributing geographic datasets refer to the decrees and decisions regulating the delivery and pricing of geographic information and the related rights of use. General principles concerning government agencies have been described in the Act on Criteria for Charges Payable to the State (150/1992) and in special legislation. The delivery and pricing of any material also varies depending on the production manner and the importance of the income accrued from charges in funding the activities concerned.

The use and dissemination of core geographic information should be based on coherent general principles that are consistent with recommendations and decrees pertaining to the information society at large. This applies to the use of geographic information by the general public, government agencies, and the research and business community alike. The aim is on the one hand to encourage the use of core resources for multiple purposes and on the other hand to ensure their availability and the development of their quality in the long run.

Metadata describing core geographic datasets on a more general level should be freely available and accessible to all. In addition, the principles relating to the use and distribution of a specific dataset

should be generally and openly available as part of the metadata.

The principles should take into account general guidelines on national data security, risk management and privacy protection.

Administrative organisations managing and maintaining core datasets are obligated to ensure that consistent principles are applied to the use and dissemination of data.

4.7 User applications

User application refers to services and software that allow users to use core geographic datasets maintained by administrative organisations directly over, for example, the Internet.

The National Spatial Data Infrastructure should include applications that enable all citizens, without exception, to easily view and browse the collection of general-purpose maps and the integration of the maps, on common principles, into various public services provided to the citizens on the national, regional and local level.

The general map view service, the metadata service and the online spatial data lending facility should be interconnected and form a portal that to the users appears seamless. The actual user applications are designed with the specific task

and sector in mind and, where feasible, are underpinned by the National Spatial Data Infrastructure.

4.8 Research and education

The level of skills and knowledge should not prevent the introduction of new applications based on geographic information or the efficient development and exploitation of the National Spatial Data Infrastructure.

Education in geographic information should meet the societal needs both in terms of content and quality. Education in geographic information should not only be offered in connection with primary education and degree-based education but also as part of continuing education to ensure that professionals in various fields possess sufficient basic skills in geographic information.

Also, the high level of excellence achieved in basic and applied research must be maintained. Funds should not only be allocated to basic research but also to initiatives exploring the use of geographic information and related needs, quality requirements, information services and other areas that promote the development of a spatial data infrastructure.

4.9 Communication

The use of the spatial data infrastructure is contingent on whether various players are aware of the potential of the geographic information technology, the availability and usability of various services, and the gains to be had from exploiting these.

General awareness of the National Spatial Data Infrastructure and the associated services should be raised through the pursuit of an active communication policy. Various information channels and measures should be employed to ensure that the public perception of the Finnish Spatial Data Infrastructure is complete and up-to-date at all times and to spur the use of the resources and services.



5. Implementation of the strategy

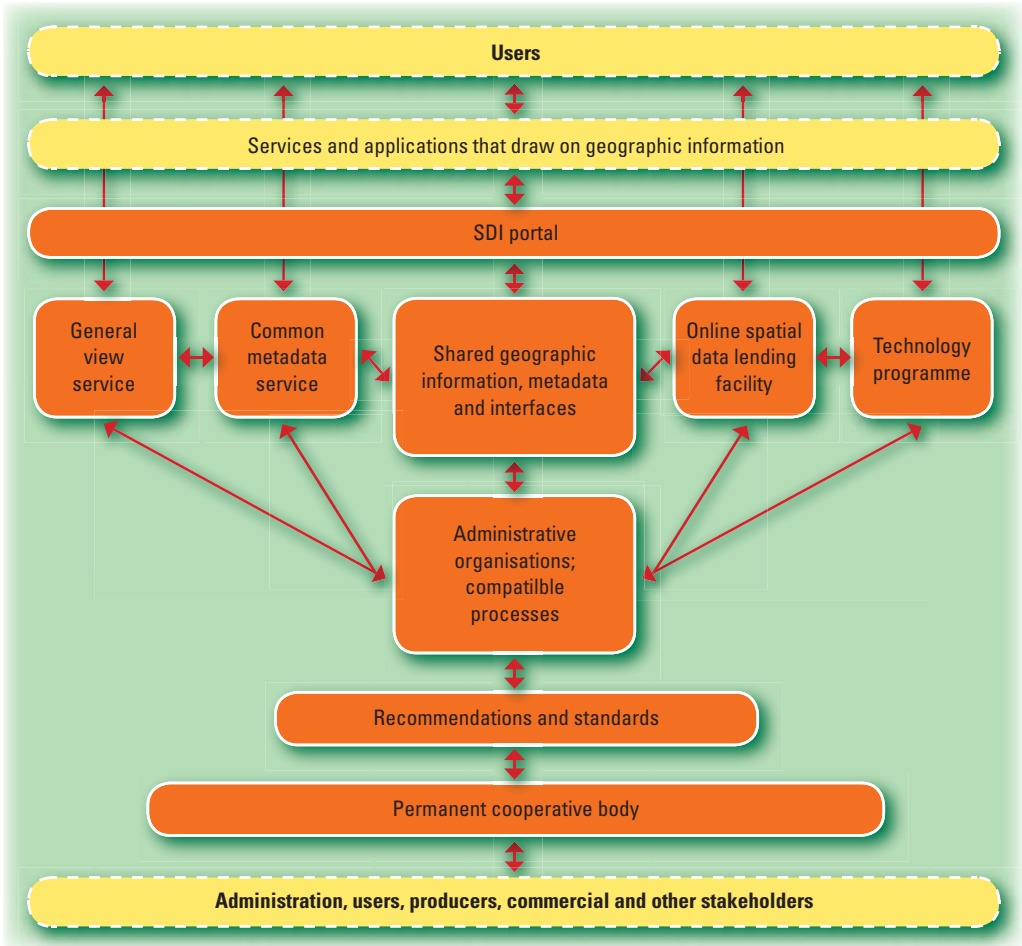


Figure 3. Model of the Finnish National Spatial Data Infrastructure.

5.1 Finnish Spatial Data Infrastructure

The implementation of the National Geographic Information Strategy is based on a model (illustrated in Figure 3) of the Finnish Spatial Data Infrastructure. The content of the model

has been defined in the above strategic guidelines.

5.2 Programme for the development of the Finnish Spatial Data Infrastructure

The programme for developing the Finnish Spatial Data Infrastructure

describes the measures deemed necessary for achieving an effective Finnish national spatial data infrastructure by the end of the decade. The required steps have been divided according to the specific areas concerned.

Systematic cooperation

Step S1: The Ministry of Agriculture and Forestry shall extend the mandate of the National Council for Geographic Information and make it a permanent cooperative body for geographic information. The composition of the council and its tasks shall be separately specified. The council's ability to initiate measures in line with the strategy shall also be improved.

Preparation and introduction of common recommendations

Step R1: The permanent cooperative body shall initiate the amendment of the set of national recommendations on geographic information in 2004 and ensure that the recommendations are up-to-date. A recommendation for the public administration (JHS recommendation) shall be published, covering any areas of interest where agreements between data producers are called for or which in other respects are crucial to the implementation of the geographic information strategy. When drafting the recommendations, the cooperative

body shall pay attention to international standards.

Step R2: Administrative organisations maintaining core datasets shall promptly introduce the new national recommendations in accordance with a common agenda. Also, the administrative organisations shall ensure, among other things, that the object and data models for core geographic datasets have been defined in line with the national recommendations and initiate the harmonisation of object and data models in the case of geographic datasets containing references to common real-world objects.

Harmonisation of core geographic datasets and maintenance development

Step H1: The efforts to harmonise datasets with the intention of enabling efficient data sharing shall first be directed to core datasets (i.e. basic geographic information), which are most widely used, and to the development of the maintenance. The permanent cooperative body shall ensure that basic geographic data are defined and that the requirements to be fulfilled by these are determined by the end of 2005. The modelling methods used for core geographic information shall be consistent with the common standards and the data shall be sufficiently interoperable in terms of content and quality.



Step H2: The ministries shall clarify and strengthen the role of core geographic datasets and the administrative organisations concerned in the legislation and administrative decisions. The ministries shall also consider the measures relating to harmonisation and the development of cooperation recommended in the programme in their management-by-results and their medium-term planning.

Step H3: Administrative organisations maintaining core datasets shall introduce the individual identification of objects in cases where there is a continuous transfer of changed data from one organisation or application to another. This shall also apply to generalised datasets.

Step H4: Administrative bodies maintaining core datasets shall ensure that quality monitoring during the produc-

tion and quality assurance of finished material are carried out and that an auditing capability is maintained. The results on quality shall also be included in the metadata and product data.

Step H5: The processes for collecting and maintaining geographic information shall be developed in collaboration with local government and commerce and industry.

Maintenance of metadata and metadata services

Step M1: The permanent cooperative body and the National Land Survey shall jointly define a national metadata service, and the latter shall also take measures to arrange for the provision of a national metadata service as planned. This step shall be initiated in 2004.

Step M2: Administrative organisations maintaining core datasets shall apply the new recommendations on metadata and ensure that the metadata describing core geographic datasets are comprehensive, up-to-date and meet the agreed standards. These measures shall be carried out within three years from the completion of the standards. For basic geographic information the time limit is, however, one year.

Step M3: The administrative organisations shall ensure, for their part, that the

descriptive metadata are up-to-date and available through the national metadata service.

Geographic information services

Step G1: Administrative organisations maintaining geographic datasets and associated services shall take measures to launch software interfaces compliant with the recommendations. These measures shall be carried out by 2008. For basic geographic information the time limit is, however, the end of 2006.

Step G2: The permanent cooperative body shall continue to investigate the need for a clearinghouse providing geographic information and the manner of realisation, and decide in 2004 whether a service of permanent nature should be arranged. The need for a test environment for a service that offers material relating to geographic information for

research and product development purposes through an interface meeting international market standards and anticipating future advances in the field shall be looked into, as should the feasibility of such a venture.

Step G3: A map viewing service for the general public, a national metadata service and a spatial data lending facility shall be integrated into a seamless whole.

Principles of use and distribution

Step D1: The permanent cooperative body shall establish consistent principles for the use and distribution of core datasets and for data security. It shall also determine by the end of 2005 how these principles impact on the funding of the maintenance of core datasets and services.



User applications

Step U1: The permanent cooperative body shall ensure that the general public has at its disposal a service that enables easy viewing of the collection of general-purpose topographic maps. The service should draw on up-dated data and underpin, on uniform principles, public services offered on the national, municipal, regional and local level.

Step U2: The permanent cooperative body shall on a regular basis assess the state of the geographic information services and user applications and, where required, take action to provide new applications for general use.

Research and education

Step RE1: The permanent cooperative body shall on a regular basis set out to determine the state of research and education in geographic information and, where required, initiate development measures. The cooperative body shall also encourage international interaction and collaboration on research in geographic information.

Step RE2: The permanent cooperative body shall initiate research projects and surveys to determine the state of the National Spatial Data Infrastructure and areas in need of development.

Step RE3: The permanent cooperative body shall open negotiations with the National Technology Agency of Finland (TEKES) and the Academy of Finland on specific technological and research programmes pertaining to geographic information and related applications.

Communication

Step C1: The permanent cooperative body shall define a national web portal for geographic information and establish the funding needs and options. This step shall be initiated in 2004.

Step C2: The National Land Survey shall on a regular basis publish an independent magazine on geographic information.

Step C3: The National Land Survey shall be responsible for arranging, on a regular basis, a national geographic information fair for the general public.

5.3 Implementation and follow-up of the development programme

The development programme will be implemented in stages through the allocation of research funds as considered appropriate, specification of the management-by-results principles and exploitation of additional resources allocated to the development of the information society. It is also proposed that

funds generated from geographic datasets within the public administration be used to a greater extent for developing and maintaining geographic information services.

The most urgent initiatives that should be launched are the following:

- updating the set of national recommendations on geographic information (several publications);
- clarifying the role and responsibilities of organisations managing core geographic datasets (publication, guide);
- issuing instructions for maintaining metadata and metadata directories (publication);
- defining, developing and launching a national metadata service (electronic web service, publication);

- defining, developing and launching a clearinghouse providing geographic information (electronic web service, publication);
- defining, developing and launching a web portal (electronic web service).

The permanent cooperative body is obligated to monitor the implementation of the strategy and update the development programme in response to progress made and any needs revealed.

An annual follow-up report describing the implementation of the strategy will be prepared and the strategy itself will be revised no later than in 2008. As part of the implementation of the strategy, a close watch should be kept on international developments and developments relating to the European spatial data infrastructure.



Core geographic datasets in Finland

Geographic datasets widely used in connection with various activities in society and providing a general basis for positioning are referred to as *core geographic datasets* in this strategy. These datasets should be well managed, generally available and form a seamless, comprehensive whole enabling shared use.

The core geographic information can broadly be divided into *basic geographic information*, used widely across sectors, and *sector-specific geographic information*, which obviously is primarily used within a specific sector. The basic geographic information provides a general basis for positioning. Core geographic datasets are widely used both individually and combined on the local, national and international level.

Basic geographic datasets*:

Basic geodetic data

- Geodetic system (I)
- Control points

General topographic data

- Elevation (II)
- Bathymetry (I)
- Shorelines (I)
- Basic topographic data

Basic administrative register data

- Real estate data (II)
- Buildings data (III)
- Demographic data (III)
- Commercial entities and places of business (III)

Place names and addresses

- Addresses (II)
- Geographical names (I)

Remotely sensed data

- Aerial orthoimagery (II)
- Satellite imagery

Sector-specific core geographic datasets*:

Traffic networks, shipping routes and other infrastructure data

- Transport networks (I)
- Safety device data
- Flight obstacles
- Energy supply networks and other cables and mains

Data on the administration, use and protection of areas

- Administrative units (I)
- Protected (I) and restricted areas (III)
- Planning data (III)
- Land use (III) and land cover (II)

- Ancient relics, shipwreck data, archaeological data

Soil and bedrock data

- Geophysical measurements
- Bedrock (III) and its composition
- Soil (III) and its composition

Hydrological data

- Ground water data
- Beds and basins (I)
- Catchments (I)

Statistical data

- Grid material, grid models (I)

Environmental and natural resources data

- Natural environment data (III)
- Polluted land, dumping sites
- Agricultural data
- Forest data
- Weather and air quality data (III)

* Dataset that according to the EU-led INSPIRE initiative should be harmonised (COM (2004) 516, proposal for a directive). The labels I, II and III refer to the proposal's annexes describing spatial data themes.

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