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The NSDI Activity in Denmark – A status Report October 2000

Dear Colleagues,

Yesterday only a few had access to mobile telephones. To morrow we will talk about personal navigation. All of us will have access to services difficult to imagine to day. Many of these services will be based on geographic/spatial data and information.

To day is possible to get access to databases containing data representing an actual status of our surroundings. This is not sufficient. People look for experience and adventure. To morrow all information including the historical dimension need to be available.

The traditional paper map is static. Each map sheet represents a snapshot of selected objects at a given time, and "the owner" has an exclusive right to the map and the data the map is based on.

In contrast to this a digital map or better a collection of spatial data is dynamic with the time parameter as a part of the individual data collection.

In "the digital world" we have a situation with different owners of spatial data, many different users and an unknown number of applications. There is a marked for spatial data. But it is not traditional hierarchical marked. We will experience a marked organised as a network with many to many relations.

The users, as well public as private, will take it for granted that it is possible to combine data from different sources. This is a real challenge for all of us.

This implies that the owners of data have at their disposal robust and stable spatial data. There will be a strong need for a general accepted Spatial Data/Information Infrastructure. And at the same time a demand for management and sharing of knowledge

Spatial Information Management as well as knowledge management is a growth field for surveyors.

Within FIG Commission 3 is responsible for Spatial Information Management.

It stands to reason that spatial information is an indispensable part of the basic infrastructure in the individual country. Again and again it is stated that spatial information affects 80% of human decision making.

Spatial Information Management is something overlaying a lot of disciplines. It is not something static. It is a dynamic concept. It changes in line with the technological possibilities and the political and organisational developments in society in general.

But we must never forget that Spatial Information Management is also about human resources and organisational changes. Being involved in spatial information management means to be in center between man and technology.

Commission 3 works through working groups and by bringing people together.

At with events like this seminar:

We offer people from different countries the possibility to share experiences,

We offer people from different countries the possibility to be members of a global network
and

We give people from different countries the possibility to be friends.

Besides there will be an outcome in the form of proceedings that will be available on the web for other professionals, for students etc.

This event would not have been possible without the sponsorship of The Technical Chamber of Greece and the KTIMATOLGIO S.A

The seminar would have been worthless without all the prepared presentations and there would not have been a seminar without the honoured guests from Europe, Middle East and Africa.

The next days will become a memorable part of the commission 3 history.

INTRODUCTION

There is no official policy on Spatial Data Infrastructure (NSDI) in Denmark. On the other hand a number of initiatives lead to a situation where the framework for a de facto NSDI exists. It is a dynamic "de facto" approach constantly reflecting the actual technological and organizational possibilities in the different involved sectors, as well the public as the private. The municipalities and the National Survey and Cadastre, Denmark are key players. At the same time a NGO has formulated a strategy for SDI.

Last year the Minister of Buildings and Dwellings established an advisory committee, Kortraadet, with representatives as well from the private and the public sector as from interest groups. This advisory committee could possibly influence future NSDI activities.

THE PLAYERS

There are three levels in the Danish administration, the state, the counties (14) and the municipalities (275). In this context the directly involved bodies are the National Survey and Cadastre, Denmark (KMS) and the municipalities.

The leading parts in the private sector are the mapping companies, the private surveyors and the companies working in partnership with the various involved public administrations.

The users private or public has a big indirect influence because of their choice of maps, use of co-ordinate systems, etc.

The universities could have a great impact if their curricula reflect the NSDI aspects and components. One university offers a master degree in Geo-Informatics.

GEO-FORUM is a NGO established by an amalgamation of The Danish Society of Photogrammetry, Surveying and Remote Sensing, The Danish Cartographic Society and Danish Academy for Spatial Information.

KMS' Role in Society

The National Survey and Cadastre, Denmark (KMS) is the government authority responsible for mapping, charting, geodata, cadastral registrations and the authorization of licensed surveyors. At the same time KMS is a government research institute for mapping and geodata.

KMS coordinates the public mapping, charting and registration of spatial information.

KMS'S Vision 2009.

The vision consists of four parts.

a. Geographical Information Infrastructure

There must be consistency in data across previous boundaries, both the geographical and the institutional. Important elements of this are co-ordination and standardisation.

b. Nation-wide Collections of Data

Together with co-operation partners KMS will develop, update and present the nation-wide collections of data so that the social benefit is maximised. Both form and quality must be developed to meet future needs.

c. Research and Development

d. The International Co-operation

NSDI INITIATIVES

Referencesystems

All essential registrations public as well as private have a reference to the national map-projection system-34 or the height-system DNN. Over the years the systems have been improved with new measurements and through recalculation, partly financed by the municipalities.

Next year KMS will launch the GPS enabled system 2000.

Mapping

a. National level

The establishing of a nationwide topographic vector database (TOP10DK) corresponding to map-scale 1:10.000 will be completed. The database will be updated in a five years cycle.

The sea-chart production has been digital since 1997.

The cadastral register has been digital since 1987 and the nationwide digital cadastral map-database has been in operation since 1997. The cadastral information has been available for professional users via the web since 1998.

The KMS has entered into agreements with the Ministry of Environment on registration in the cadastral register and maps of three different themes, forest, coastal protection zone and polluted parcels.

From the beginning of 2001 the production of maps in scale 1:50.000 will be done on the basis of the TOP10DK database. The digital production line including automatic generalisation procedures is based on an in-house developed application and software from LaserScan.

b. Regional level

Some years ago the counties decided to base their administration and registrations on products from the KMS.

c. The Municipalities

Since the beginning of the nineties the municipalities have had their own "large scale digital maps" corresponding to map-scale 1:500 or 1:1.000 in urban areas and 1:10.000 in rural areas. Often the maps are produced in co-operation with some of the utilities. A great number of these "maps" do not include full topology.

d. The Private sector

The mapping company Kampsax-Geoplan has produced and markets a digital ortophoto.

A group of interested parties has on the background of information and digital maps from the municipalities produced a digital address and road database (DAV).

Co-operation

Over the last ten years the municipalities has established a number of regional "map-groups". These groups negotiate with mapping companies, possible users, KMS etc.

A special base-map committee with representatives from KMS and the municipalities negotiates on procedures for administrative updating of TOP10DK and possible joint ventures on mapping activities. A sub-committee work on unified definition of map objects fx buildings, middle of roads, hydrographic themes etc with a view to avoiding overlapping mapping activities.

Metadata-service

Version 2 of a nationwide METADATA service based on CEN standards has been a reality for 3-4 years. The KMS is responsible for maintenance and development of the concept as well

as the operational environment. The data owners are responsible for registration of the necessary information.

Standards

The KMS represent The Danish Standard Organisation in ISO on the new standards for Geographic Information. It has been almost impossible to obtain active involvement from neither the other agencies nor the private sector.

Since 1983 an interest group has been responsible for development and distribution of a national exchange format for spatial information (the DSFL format) The municipalities have developed a de facto standard for their maps. The actual version is named TK-99. Within KMS data modelling is based on UML.

Education

Aalborg University has established a distance learning program in geo-informatics for post-graduate students.

Research

There are research activities at Aalborg University, the Danish Technical University, Copenhagen University and at KMS. At the moment there are several ph.d. students involved in projects related to NSDI.

One of the exciting activities is an umbrella project in NSDI organized by Aalborg University, Copenhagen Business School and KMS

TRENDS

The Danish NSDI activities is mainly based on co-operation, partnership, voluntarily involvement and development of nationwide spatial products. In the years to come we will see a continuous development of the private sector and establishment of partnership between the private and the public sector on common services and products. We will experience a growing understanding of and interest in standardisation activities, further development of meta-data services, an increasing request for nationwide updated data sets, a demand on a National Road Database, a National Address Register etc.

The trends reflect the organizational and technological possibilities.

THE NSDI ACTIVITY IN DENMARK

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NSDI INITIATIVES:

- **players**
- **reference-systems**
- **mapping**
- **co-operation**
- **metadata-service**
- **standards**
- **education**
- **research**

NSDI INITIATIVES - PLAYERS

The 3 administrative levels:

state (headed by KMS)

counties (14)

municipalities (275)

The private sector

The users

The universities

GEO-FORUM (NGO)

KMS' ROLE IN SOCIETY

The KMS is the government authority responsible for mapping, charting, geodata, cadastral registrations and the authorization of licensed surveyors.

KMS is also a government research institute for mapping and geodata.

KMS coordinates the public mapping, charting and registration of spatial information.

KMS'S VISION

a. The Geographical Information Infrastructure

There must be consistency in data across previous boundaries, both the geographical and the institutional. *Important elements of this are co-ordination and standardisation.*

b. The Nation-wide Collections of Data

Together with cooperation partners KMS will develop, update and present the nation-wide collections of data so that the social benefit is maximised. Both form and quality must be developed to meet future needs.

c. Research and Development

d. The International Co-operation

NSDI INITIATIVES REFERENCESYSTEMS

Common reference systems, used by all players. Partly user financed.

Next year KMS will launch system 2000, a GPS enabled system.

NSDI INITIATIVES - MAPPING

National level:

- TOP10DK
- Digital cadastre

basis for other nationwide registrations:

forrest, coastal protection zone and polluted parcels.

- Digital cartographic production (2001)

Municipalities:

- large scale maps from the early 90's

NSDI INITIATIVES CO-OPERATION

Co-operation with municipalities on administrative updating.

Co-operation on common object definition.

Joint venture on mapping activities

NSDI INITIATIVES METADATA-SERVICE

**Nationwide METADATA service based
on CEN standards.**

Hosted by KMS.

Future developments by KMS

NSDI INITIATIVES - STANDARDS

National level:

ISO standards and KMS

datamodelling, quality and visualisation

Municipalities: TK-99

DSFL (GEO-FORUM): Exchange format

NSDI INITIATIVES

EDUCATION

Post-graduate:

Master in Geoinformatics

RESEARCH

Aalborg University

Copenhagen Business School

KMS

TRENDS.

- **Development of the private sector**
- **Request for nationwide updated datasets**
- **Development of meta-data services**
- **Standardisation**
- **National road database**
- **National address register**
- **Umbrella projects**



SPATIAL DATA INFRASTRUCTURE

