

THE DANISH eGOVERNMENT INITIATIVE VERSUS INSPIRE IMPLEMENTATION **Synergy or Conflict**

The Danish eGovernment Initiative Versus Inspire Implementation **Synergy or Conflict**

Jes Ryttersgaard
National Survey and Cadastre, Denmark
Denmark
jr@kms.dk

Abstract

The Danish eGovernment initiative became a reality in 2002. It is based on a mutually binding co-operation involving the Government, regional and local administrations.

The initiative has been very successful. In the latest UN-survey Denmark is number two in the world after the US. The strategy for the period 2007-2010 is titled "Towards better digital services, increasing efficiency and stronger cooperation". The strategy highlights the importance of spatial data and INSPIRE. The strategy is based on structuring of the public sector in a number of domains. The domains will cut across the existing organizational sectors. The individual domain will be governed by a "domain board".

One precondition for a successful implementation of e-government is standards, as well standards for IT-architecture as data standards. The Ministry of Science, Technology and Innovation has set up a structure for preparation and approval of the necessary standards. The standardization activities are based on specific sectors. There is a risk for conflict between the domain and the sector view.

The directive on Infrastructure for Spatial Information in Europe - INSPIRE - became a reality in spring 2007. Member States are obliged to bring into force the laws, regulations and administrative provisions necessary to comply with this Directive by May 15 2009. The first technical implementations shall be in place in 2010.

The e-government initiative is based on consensus. INSPIRE is a legal based infrastructure. The basic idea behind INSPIRE is to support the environmental sectors needs for data and information. In Denmark environmental related data is maintained, handled and used by more than half of the Government Departments.

A comparison shows that the generic content of the e-government initiative and INSPIRE almost is identical, but apparently there is difference in the actual foreseeable implementation order. If the two initiatives are implemented independently there is a great risk for conflict and double-work. On the other hand synergy is an obtainable possibility.

The paper will focus on the challenge to create a political and an organizational understanding and agreement on coordination of the channel strategy and INSPIRE. One of the most urgent goals is to avoid double implementation.

Because INSPIRE has a legal base, it might be an enabler for the further developments of e-government.

Introduction

The Danish e-Government initiative is based on a mutually binding co-operation involving the Government, regional and local administrations. The permanent secretary from the Ministry of Finance has the chairmanship

The INSPIRE directive, the basis for the European spatial data infrastructure, has to be implemented in national legislation at the latest May 2009. INSPIRE will influence legislation, organization and technical development of national spatial data infrastructures.

The two initiatives are based on the same principles and to some extent the same data. But the implementation of e-government is based on agreements and consensus, whereas INSPIRE is based on legislation. A comparison shows that the possibility for creating synergy between the two initiatives is good. On the other hand is the risk for conflict real. Finally the comparison leads to consideration on whether the terms SDI and GSDI are appropriate, or they are barriers for an increased use of spatial data.

The Danish e-government initiative

The Danish e-Government initiative became a reality in 2002. The initiative is managed by a board with representatives from the three administrative levels. In the period 2002-2007 a number of ground-breaking initiatives across the public sector were accomplished, and standards for IT-architecture and data were developed.

The 2007-2010 strategy (Danish e-Government strategy, 2007) is titled "Towards better digital services, increasing efficiency and stronger cooperation". The preface reads as follows: " e-Government has come a long way in recent years. Today digitalization is a natural part of the provision of government services throughout the public sector—and Denmark occupies a leading position internationally regarding e-government development. We need to retain and develop that position. If we are to raise digitalization to a new level, the bywords are prioritization and coordination. The strategy therefore focuses on the gains of digitalization resulting from:

- Digitalization focused on creating improvements in the services to citizens and business,
- Digitalization that enables resources to be transferred from administration to citizen-focused service,
- Coordination and prioritization of digitalization efforts in the public sector through more binding, cross-governmental collaboration at all levels.

The strategy supports long-term development towards cohesive and more efficient digitalization of the public sector. The strategy will therefore provide the individual authorities with a new framework for digitalization efforts up to 2010".

Citizen-focused e-government

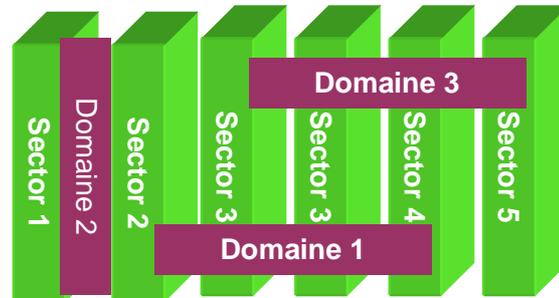
Look at the world with the citizens eyes, neither the governments nor the industries.

The goal is to improve possibilities for self-service for citizens and business through targeted communication via a channel strategy based on internet, telephone and in-person meeting.

The basis for digitalization is cross-governmental domain areas, managed by digitalization boards. In this context 'domains' refers to large well-defined areas of the public sector where the tasks to be performed in relation to citizens and businesses are delivered by several different authorities cutting across administrative sectors and administrative levels. The domain boards will be allocated responsibility for promoting proposals for cross-governmental digitalization projects.

The public sector will align and attune IT development through both interdisciplinary projects and joint general initiatives. The aim is to keep development costs down and promote a scope for reusing data. In order to ensure the greatest possible IT linkage in citizen and business-based services, the individual authorities will be obliged to adhere to a unified set of requirements and recommendations when new interdisciplinary digital solutions are put in place for use on common public portals.

Standardization One precondition for successful implementation of e-government is standards. The Ministry of Science, Technology and Innovation has developed standards for IT-architecture and core data. In addition a structure for preparation and approval of the necessary standards has been developed. The Ministry has encouraged the different sectors to establish sector standardization committees. A few are active.



Up to now there is no coincidence between the sector view and the domain structure presented in the new strategy.

The Danish Parliament's has decided that open standards for software have to be used in the public sector where applicable, starting in 2008. It will be a priority area to continuously ensure that all digital information which the public sector exchanges with citizens, businesses and institutions should be based on open standards, wherever possible.

Service Community for Geodata (spatial data) The Service Community was established by the e-government management in 2002. The objective was to secure the development of a strategic frame for spatial data in the public sector. The Service Community is responsible for both the overall and the more concrete cooperation on data, access to data, data modeling and prioritization related to spatial data infrastructure to secure coherence across different themes and different levels of administration.

The Service Community has in a substantial way influenced the cooperation between national and municipal authorities in the spatial data domain. The Service Community has taken many initiatives and subsequently brought about agreements on implementation of a number of infrastructure components, among others the public-public-partnership (PUP) project "coordinated mapping of Denmark", standards, etc.

It can be seen as an acknowledgement of the Service Communities achievement when the e-government project published an article with the headline "Geodata – The backbone in effective e-government" in spring 2006.

In line with that, it is positive that the e-government strategy 2007-2010 highlights the importance of geodata (spatial) data and INSPIRE as follows: "The service community for Geodata is devising a framework for the development of geodata in Denmark, ensuring coordination and a cohesive geographical administrative basis cutting across disciplines and administrative levels. In 2007 the EU adopted a directive (the INSPIRE Directive) containing a framework for constructing a joint European geographical infrastructure. This directive will also be the standard setter for essential public data collections in Denmark".

INSPIRE

The directive on **I**nfrastucture for **S**patial **I**nformation in Europe - INSPIRE - became a reality in spring 2007. Member States are obliged to bring into force the laws, regulations and administrative provisions necessary to comply with this Directive not later than May 15 2009. The first

technical implementations shall be in place in 2010, and the last data should be accessible before May 2019.

Environmental and climate problems do not respect frontiers. In order to be able to formulate, implement, monitor, and evaluate European environmental policy and to be able to manage cross-border environmental crises or catastrophes it was decided to establish a European spatial data infrastructure. INSPIRE focuses on environmental policy but is open for use by and future extension to other sectors such as agriculture, transport and energy.

The INSPIRE-directive create the framework for making relevant, standardized and quality assured spatial data available for the member states and the EU-administration and agencies (Craglia, M., and Annoni, A., 2007).

INSPIRE is based on the following principles:

- Data should be collected once and maintained at the level where this can be done most effectively
- It must be possible to combine seamlessly spatial information from different sources across Europe and share it between many users and applications
- It must be possible for information collected at one level to be shared between all the different levels, e.g. detailed for detailed investigations, general for strategic purposes
- Geographic information needed for good governance at all levels should be abundant and widely available under conditions that do not restrain its extensive use
- It must be easy to discover which geographic information is available, fits the needs for a particular use and under what conditions it can be acquired and used
- Geographic data must become easy to understand and interpret because it can be visualised within the appropriate context and selected in a user-friendly way.

The INSPIRE directive has the following very robust SDI definition: "infrastructure for spatial information" means metadata, spatial data sets and spatial data services; network services and technologies; agreements on sharing, access and use; and coordination and monitoring mechanisms, processes and procedures, established, operated or made available in accordance with this Directive.



the infrastructure framework

The definition is, apart from the specific INSPIRE spatial data sets mentioned in the directive, generic. As well the INSPIRE principles as the infrastructure definition is applicable in connection with e-government.

INSPIRE is a frame work directive.The overall and general provisions in the directive, laying down what has to be done and when, will be implemented in Danish legislation in the form of a

law on Infrastructure for Spatial Data. The bill will be introduced in fall 2008. The detailed implementing rules on the "technical" details will be approved over the coming 1-5 years.

Data considered necessary for managing European environmental challenges is in the Danish governmental system dispersed to 10-12 out of 20 Government departments. The comprised data are widely used in Danish administration and not only for environmental purposes. Therefore INSPIRE will be normative for a considerable part of the public administrative data collections and future development of the Danish spatial data infrastructure.

The directive lay down that the European Spatial Data Infrastructure shall build upon infrastructures for spatial information established and operated by the Member States. This Directive determines that INSPIRE shall cover spatial data sets in electronic format, held by or on behalf of a public authority, relating to one or more of the themes listed in the directive.

INSPIRE is based on the idea that the infrastructure for spatial data includes services and data, for use and reuse across the different public sectors. It is necessary to establish a search and distributions system based on network services and portals to make access to spatial data easier and to improve compatibility and interoperability, as well as it is necessary to develop agreements on access to and use of spatial data. INSPIRE will prepare the way for progressive harmonization of spatial data in the member states.

INSPIRE secures knowledge on what data is available where, how to get access and under what conditions.
INSPIRE secures access to seamless and harmonized dataset via standardized distribution networks
INSPIRE gives us a legal framework for spatial data infrastructure.

INSPIRE makes it possible to provide better digital services, easier business- or case processes and better cooperation across administrative as well as national borders. There are many points of resemblance between INSPIRE and the foreseeable development of Danish e-government. The implementation of INSPIRE has to be coordinated with other initiatives to improve e-government to the extent possible.

Danish Infrastructure components

The Danish spatial data infrastructure is in a European context well-developed. The development is based on cooperation and consensus between the various stakeholders and actors. The development is driven by a combination of commitment and technological possibilities.

In the next few years the public sector will be influenced by a development coming from a situation where it was possible to share data, to a point where it is possible to share data as well as functionality across administrative and technological platforms. Future developments will be based on standardized interfaces, exchange of data and interoperability.

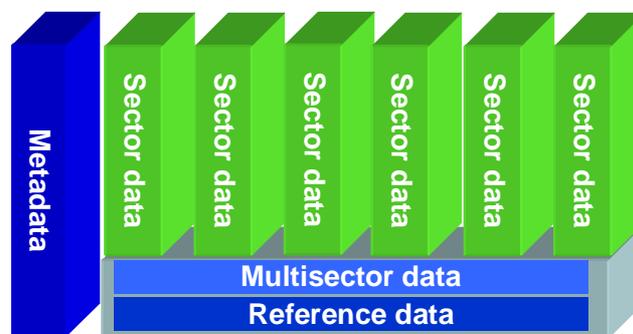
Below is a comparison of the Danish developments and the six INSPIRE Infrastructure components.

Metadata A shared Danish metadata service has existed for more than 15 years. The service do not contain metadata on all INSPIRE data themes. A new version compatible with INSPIRE is developed but not in use. Version 1 of a shared public solution for publishing metadata on services is available. Version 2 is in the process of development.

Spatial data services (interoperability) Combining data (interoperability) from different data collections without loss of information has, according to INSPIRE, to be secured through harmonization of data, either through adapting data sets to new specifications once for all or by transformation on the fly to the new specification in connection with distribution. The word transformation covers geometrical as well as semantic transformation. INSPIRE contains two different rules for interoperability. The first one is simple and at the same time generic, the second is more demanding and only compulsory for data used for georeferencing of other data (reference data).

A Danish specification has been developed and agreed on for a majority of topographic objects. There exist published data models for a number of reference data.

The Service Community for Geodata has worked out WMS and WFS cook-books, and the first GML standard is in the approval process. A major work has been carried out to define reference data, multi sector data and sector specific data. In the final report you will find an illustration of the used infrastructure model.



Network services and technologies INSPIRE implies establishing of services and technologies for searching, viewing, downloading and transforming data. A European portal will provide access to national data collections or national portals.

A number of supply services based on service oriented architecture and the internet has been available for years, par example the Map-supply and the Danish Environmental Portal. The services are widely used. The Map-supply has five million hits every month, mainly for use in public and private applications.

Agreements on sharing, access and use The directive contains general provisions on access to data and specific provisions on data sharing among public authorities. The provisions imply changes of present Danish rules.

There are a few Danish examples on developments in harmony with e-government and INSPIRE intentions. The municipalities and the government have established a public- public-partnership for collecting, storing and maintaining shared topographic objects (the FOT initiative - shared object types) and for running and maintenance of the Danish Environmental portal. The latest example is that four governmental departments on behalf of all departments have purchased a nationwide digital height model.

Coordination and monitoring mechanisms, processes and. INSPIRE demands national coordination.

As early as 2002 a Danish INSPIRE committee was established. The Service Community for Geodata is another coordinating body. The Service Community has established a reference data committee and the Ministry of Innovation has set up several standardisation committees.

Spatial data sets. There is a well-developed Danish system of digital nationwide regularly updated data collections and a system of shared keys. The group of reference data comprises coordinate systems, national grid, a digital height model, cadastral data, all topographic data, charts, land registry, addresses, the building and dwelling register, municipal property register, transportation network, etc.

In addition a large number of the other INSPIRE related datasets are in digital form

Synergy or conflict

In a general perspective it can be stated that there is an essential coincidence between the actual Danish SDI, the e-government and INSPIRE related developments. On this background the INSPIRE implementations seems manageable. But there will be a considerable need for resources, money and brains. Lacking coordination of the different initiatives could imply parallel developments resulting in a shortage of qualified human resources. If that should happen, the legal based INSPIRE projects shall result in delay of the e-government projects.

It is possible to identify examples on similarities and differences that can be considered challenges or barriers for a coordinated development.

Similarities An initial evaluation indicates existence of several identical characteristics.

1. The INSPIRE principles are also valid for e-government.
2. The INSPIRE infrastructure definition could have been the definition of an e-government infrastructure.
3. Both initiatives have a strong user focus.
4. Both initiatives imply knowledge on what data are available where, whether access to the data is possible and that it is possible to combine data without loss of information.
5. Both initiatives demands standards for data, data exchange and the necessary technology.
6. The first component in The Danish INSPIRE portal should be ready for use in May 2010, and the remaining components one year later.

A new version of the environmental portal as well as a new version of a storage and distributions system for shared topographic objects should be available within the same time-frame, and the development of the citizen-portal should be finalized in 2012.

It is not clarified to what extent the different developments could be combined.

Differences The greatest challenges and the greatest risks for conflict are caused by four conditions:

1. There is no guarantee for coincidence between the developments initiated by e-government and the developments laid down in the INSPIRE directive.
2. The e-government initiative comprises all levels of public administration whereas INSPIRE primarily will influence the government departments and institutions.
3. Decisions concerning e-government projects are based on consensus and financial agreements between government, regions and the municipalities. INSPIRE is based on provisions in laws and regulations.
4. INSPIRE is based on actual and future European/global developments. The e-government initiative reflects the national political will to reorganize the public administration in order to release resources and make them available for health care, production etc.

Possibility for synergy A comparison of the similarities and the differences indicates great possibilities for synergy because of the identical demands on standards and technological de-

developments. It is not surprising that many understand INSPIRE as an enabler for e-government developments.

A few years ago the technical cooperation between public agencies and institutions was limited to data sharing. To day there are solutions making it possible to share data as well as functionality across administrative and technological platforms via standardized interfaces, service oriented architecture a.s.o.

The Ministry for Science, Technology and Innovation, responsible for standardisation, is fully aware of this development and the development towards international standards. The Ministry will cooperate with INSPIRE on standardization of data and it-architecture. The cooperation will influence the future e-government activities.

The examples on public-public-partnerships on development, running and maintenance of technological solutions and purchase of data signals understanding of the necessity of cooperation to improve efficiency and make investments more affordable.

It is a challenge to create understanding for shared financing of portals, and distribution systems as well as the need for coordination of the time dimension. One essential reason is that the effects of investments often will be harvested by others than those responsible for the initial investment.

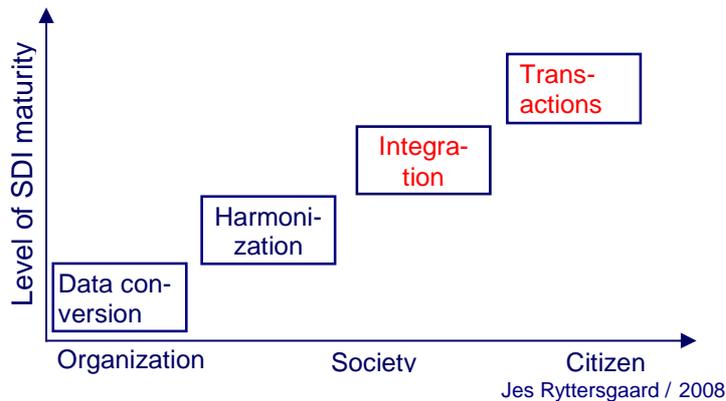
INSPIRE implies a revision of the conditions for sharing of data between public agencies and institutions including cash flow between the involved. A possible financial barrier could be changed to an enabler if the Ministry of Finance is willing to combine the necessary changes with new models for financing infrastructure developments.

Risk for conflict Even though there are so many indicators on possible synergy there is a risk for double work in form of a dedicated INSPIRE implementation without coordination and cooperation with the e-government initiative. As mentioned one reason could be the time dimension another could be the difference in legal and political anchoring.

The fact that it is difficult to create a general understanding of the SDI concept is a major barrier for synergy. Perhaps time has come to start new thinking.

The SDI concept was introduced in the beginning of the 1990s. At that time it was difficult to make it understandable for the mapping agencies and other administrators of spatial and spatial related data that time had come to give up the traditional thinking in terms of specific products. The alternative was to focus on the topographic objects and shared use of the objects. Through introduction of the spatial data infrastructure idea the initiators managed to create a new understanding of this approach.

SDI definitions were developed and refined, but it became obvious that the definition had to be dynamic, because it should reflect the development in the individual country. There are big differences between a basic infrastructure in a country with scarce resources and limited possibilities for drive and a country developed so far that the next step is to introduce a transaction based information infrastructure. At the beginning of this development, the capacity in available technology was so limited that it influenced the definitions. Today GI is handled by mainstream IT-systems and spatial data is a natural part of mainstream data.



Independent of the ongoing development it is still difficult for politicians and decision makers to understand what SDI is about. It is possible to explain that location is a gateway to combining data, just as it possible to explain to a minister that visualisation of information could create transparency and improve the possibility for the involvement of the citizens in the democratic processes.

It is very problematic if we are delaying a development because of our use of strange, foreign words.

The radical solution is to admit that the term SDI is only usable among infrastructure nerds. In stead we should concentrate our efforts on creating a general intelligible definition. We should develop a mainstream terminology, probably in different versions, one for laymen, politicians and high-level decision makers, one for case officers and professional users of spatial data, and finally one for spatial data infrastructure specialists. Perhaps we should go back to well-known words as maps etc.

In addition it is time to consider whether or not Spatial Data Infrastructure is something special, an independent discipline. Probably it is more convenient to talk about Data Infrastructure where spatial data is a natural part of the infrastructure.

As stated above the INSPIRE spatial data infrastructure definition is so generic, that it could be used for data infrastructure in general.

Conclusion

The implementation of INSPIRE in Danish administration will as far as possible be linked to actual developments of the Danish SDI and the e-government initiative. The probability for creating synergy between the different initiatives is good.

But there is a risk for conflict because the initiatives are managed by different organizational and legal structures. On the other hand INSPIRE could, because it has a legal base, be an enabler for the e-government developments including the belonging necessary standardization activities.

The possibility for creating synergy could be improved if the responsible bodies and the persons involved in the INSPIRE legislation and implementation process would "sell the message" about all the INSPIRE related benefits and the coherence between the various initiatives with general understandable mainstream words, examples and pictures.

It would be very helpful if the GSDI-organization would create a generic Data Infrastructure definition in line with the INSPIRE definition, with specific emphasis on the spatial component as a

platform for its future work. In addition the development of a general understandable terminology and vocabulary could be a facilitator for creating better understanding that location is an indispensable element in e-government and similar projects.

Who dare to think about crises-management or homeland security without access to location based information? No one, but it is our job to make it understandable for the different involved parties how it is possible to find, combine, distribute and visualize data without extent use of "strange words".

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