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# MAPS AND GEOINFORMATION ON THE INTERNET OR HOW DO PEOPLE FEEL ABOUT E-DEMOCRACY?

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*What makes a democratic society is not only the denial of unearned privilege but the acceptance of the principle of equal respect and the equal chance for involvement in decision-making which derives from it (Martin Rein 1976)*

*Danish Municipal Internet pages today swarm with examples of geoinformation by way of maps in a more or less active form (from scanned maps to GIS solutions), planning data, demographic data, etc. At first the intentions were to give the citizens the possibility of commenting on planning proposals or other land transactions through the Internet. Later it is the intentions that the citizens shall be able to serve themselves in connection with applications, for example building licences and land and resource utilizations. The mentioned initiatives are part of the e-Government Strategy of the Danish government.*

*This paper will focus on two map and geoinformation services from the Municipality of Aalborg and the County of Northern Jutland, respectively, and three user investigations will be presented regarding both professional users' and citizens' use of and satisfaction with the services as well as the possibilities of dialogues through the Internet between the citizen and the administration.*

## INTRODUCTION

Denmark<sup>1</sup> is in the middle of a development of a digital society which will change current conceptions in both the private life, economic life and the public sector. The country has, like the other Scandinavian countries, experienced enormous changes during the latest 30 years. Distances between citizens, businesses and public institutions have become smaller, partly due to the entire technological development, partly due to the infrastructure of transportation, which makes it easier to get into contact with each other. But Denmark and especially the public sector is also under pressure, among other things because of increased international competition, fewer people of employment age and increased expectations from citizens and businesses.

However, the technology also offers us new possibilities. A great part of the population is already active in a digital network society, which intervenes in all aspects of society. It is maintained that the Danes are among the most motivated in the world to inaugurate new technological possibilities and tools. This is especially mobile telephony, computer diffusion and Internet access. All public authorities and most citizens in Denmark today have access to the Internet, the latter either via own connection, through workplaces or at libraries and other public connections /"IT for alle – Danmarks fremtid, IT og telepolitisk redegørelse, 2002// Key figures on the information society Denmark 2004/. We have also been better educated which has implied that more than earlier wish both greater insight into and influence on the dispositions taking place in society.

In this way the public sector in Denmark has been burdened with many new tasks and challenges, but the national, the county and the local authority structures have not kept up. Many, especially local authorities (municipalities), are simply too small to lift the tasks a modern digital society has to solve. The Danish government therefore does not think that the present county and local authority structure is prepared to handle the great expectations from among others citizens about efficiency, better service and increased democratisation in the public administration.

"The new Denmark" /"Det nye Danmark – en enkel offentlig sektor tæt på borgeren", 2004/ is Denmark's greatest social reorganization in recent times. "The new Denmark" is a comprehensive structural reform /"Aftale om strukture-

form", 2004//([www.im.dk/publikationer/strukturaftale/index.html](http://www.im.dk/publikationer/strukturaftale/index.html)), which will result in larger administrative units by way of partly closing down of counties and establishment of new regions with limited task handling, partly amalgamations to larger municipalities with correspondingly increased task attention. The goal of the government with the new structure is clear, i.e. a simple and more efficient public sector, close to the citizen.

The new regions are in place (13 counties and one regional municipality (Bornholm) turn into 5 large regions) and before the 1<sup>st</sup> of June 2005 the new large municipalities have to be created (it is estimated that 271 municipalities turn into 100 new larger municipalities). The total structural reform has to come into force on 1<sup>st</sup> January 2007 and is expected to cost the Danish state at least 10 billion DKK ~ 1.5 billion Euros.

## **E-GOVERNMENT, E-GOVERNANCE AND E-DEMOCRACY**

E-government is on its way in most EU countries, strongly urged by the EU commission. The visions for e-governance are that digital technologies are systematically used to new think and change organisations and work processes to raise the service quality and efficiency /"*På vej mod digital forvaltning – vision og strategi for den offentlige sektor*", 2002/.

E-government is also standing high on the political agenda in Denmark, and many public resources are set aside to realize the visions /"*Strategi for digital forvaltning 2004-06*", 2004/. Concurrently with the structural reform the scene is laid for large changes in the public sector in the coming years.

The life nerve in e-governance is electronic case management systems, where all data can easily be found and processed in electronic form. This also applies to maps and geoinformation<sup>ii</sup>. And since about 80% of the data and the information used in the public management can be located geographically, we are talking about large quantities.

The purpose of the digital management is, as mentioned, to increase the efficiency internally in the organisation, including the service of the citizens<sup>iii</sup> and in this way achieve financial savings. At the same time the interplay between the single citizen and the public administrations has to be improved. An ambition is to create transparency in the management by among other things giving the citizens access to see own personal data and follow the progress of own cases. The access to the information must take place independently of time and place. The only condition is that you can log on the Internet.

Democracy is therefore also one of the keywords. But the concept democracy is to be understood broadly in this connection. E-democracy is both about the citizens' influence on and dialogue with the authorities and about the possibilities of having decisions realized. E-democracy can also be described as Public Participation (PP) via the Internet.

The Danish project "e-Government" ([www.e.gov.dk](http://www.e.gov.dk)) was started as a two-year project by the state sector, the counties and the local authorities in 2001. The purpose of the project is to support an improved and more efficient solution of management tasks through the use of information technology. The project is controlled by "The e-Government Board", but the implementation takes place via "The digital Taskforce", which was appointed in 2001 with the purpose of promoting the readjustment to e-governance across the public sector. Under The digital Taskforce more service communities have been created, including "the Service Community for Geodata" ([www.xyz-geodata.dk](http://www.xyz-geodata.dk)). One of the visions of the Service Community for Geodata is that maps, geodata and geoinformation, which as mentioned previously make out an important element in e-governance must be a natural tool for citizens, businesses and public authorities. This may among other things happen through the use of information technology, including use of the Internet as distribution channel. In June 2003 the government and the municipal bodies agreed to extend the project to the end of 2006 which has provided an opportunity to revise the strategy for e-Government. In a report from January 2005 the Service Community for Geodata has put forward a proposal for a common "*Danish Basis Data Set*". The geodata set must be part of a future Danish Infrastructure for Spatial Information /Brande-Lavridsen, Hanne, 2003/

### **E-democracy – possibilities and barriers**

So far e-governance has been more in focus than e-democracy (even though the borderland is fluent). The voices of the citizens can, as you know, not speak without access to relevant information about the topic to be discussed.

The access to the Internet, in the theory for the entire Danish population, has created the technical basis for the Internet to enter as an active agent in the development of democratic processes at local, regional and national levels. The possibilities of the Internet are among other things attached to the fact that the basis for fast access to relevant information can be created and to for example a dialogue between the citizen and the public authorities. Danish citizens may in

principle settle themselves at a PC with Internet access and not only get information on what is happening in the society, but also be better dressed for a dialogue with the public authorities, and at his own pace and when suitable. The question is if the citizens have sufficient IT competence to utilize the possibilities offered or if they at all realize which possibilities they have. I shall return to that.

In connection with the use of the Internet both a pessimistic and an optimistic hypothesis can be stated. The Internet can be regarded as the tool of the pick or the resource-strong people or as the rescue of the democracy. The utilization of these democratic possibilities via the Internet is, however, not unproblematic, as nearly all communication for the time being is in written form. This may be a barrier for the resource-weak citizens who have difficulty in reading and writing. Besides, many do also miss the possibilities of discussing face to face. Therefore I do not think that open citizen meetings, where the citizens can meet physically with politicians and government officials are abolished at once.

## **COUNTY AND MUNICIPAL INTERNET PAGES WITH MAPS AND GEOINFORMATION**

Digital maps and geodata are, as mentioned previously, necessary to realize the goal of the Danish government of an efficient and modern public sector. For this purpose Denmark is in the favourable position that the country is "engulfed" by geographic data and maps.

It is, however, said that the value of maps, partly for in house management purposes, and partly for information of citizens is directly proportional to the accessibility. But the accessibility to the information must be in a form that inspires to use this information. And that is a challenge.

The Internet (and especially the World Wide Web) offers many possibilities of presentation of maps and geoinformation, according to level of ambition. The information may exist just from exhibition windows with scanned paper maps (passivity) to offers for on-line GIS tools with which the citizens may make simple inquiries and subsequently have the results presented in the form of maps (interaction and transaction). More advanced possibilities of analysis are still primarily meant for more professional users.

All counties have today homepages, where different map services are offered, but not all local authorities have reached that far. The map services offer digital map themes in a more or less active form, from topographic and technical maps, cadastral maps, historical maps and orthophotos to planning themes, environmental themes, population statistics and much more. The map themes can often be combined as required and be visualized by way of a so-called "click map".

The intentions have, as mentioned previously, at first been that the citizens got access to all information about their own property and about what happens or is going to happen in their neighbourhood, municipality or county. But more county and municipal homepages also offer their citizens the possibility of actively participating in the elaboration of for example plans for their local area. I shall return to a couple of examples presently. Later it is the intentions that the citizens themselves shall be able to prepare for example an application for building licence on the basis of the information about restrictions, etc. on their property which is accessible at the Internet. In that connection it should be mentioned that the citizens also have access to various public property registers. Access to some of this information does, however, demand allocation of a digital signature.

### **Two local examples**

I should like to show two examples of Internet services from my city, Aalborg and my county, the County of Northern Jutland, respectively.

Northern Jutland is, I think, one of the areas in Denmark which is farthest ahead with e-governance. This is mainly due to the fact that in the period 2000-2003 Northern Jutland has been appointed by the Danish government as one of Denmark's two IT lighthouse areas ([www.detdigitalenordjylland.dk](http://www.detdigitalenordjylland.dk)). This has, on the background of a bag of money of 170 million DKK from the state (which was later locally supplemented up to 510 million DKK), meant implementation of in all 89 IT development projects within four main fields<sup>iv</sup>, of which "*E-governance*" / "*Det digitale Nordjylland – statusbillede af digital forvaltning i Nordjylland*", 2003/ was one. Two of the projects were "The Digital County Hall" and "The Active Aalborg Map". The project period is now finished, but more of the projects continue on own account, however, now at a reduced pace.

## The Digital County Hall

It is the vision of the County of Northern Jutland that in 2005 the county shall be the most open public administration in Denmark /*Visioner og mål for Den digitale Amtsgård, 2000*/. At the homepage of the county, [www.nja.dk](http://www.nja.dk), you may therefore get information partly about the decision processes in the County of Northern Jutland, for examples agendas and minutes from the meetings in the county council and the political committees, partly information about the many different tasks, which the County of Northern Jutland solves day-to-day. Moreover there are a number of self-service possibilities, which are improved currently. And last, but not least important is the possibilities of dialogue between both professional and non professional users and the staff of the county as well as politicians about the task solutions of the county ([www.nordpol.dk](http://www.nordpol.dk)).

With "The Digital County Hall the county has established an inter-sectorial project which among other things comprises "The Interactive Map of Northern Jutland". The goal of the project has partly been openness, improved efficiency and service improvements in connection with the daily case administration, in which maps and geoinformation form part, partly introduction of new technology with related changes of organisation and work procedures.

The interactive map ([www.gis.nja.dk](http://www.gis.nja.dk)) contains besides topographic and cadastral maps as well as colour orthophotos also the registrations of the county, which implies a reduction of the right of disposal an owner has of his property. The access to the information can be graphical as well as textual, the latter via both address and property or title number. The GIS facilities are limited to switch on or off different thematic layers as well choose alternative background maps see figure 1). It is possible to print maps from the Internet, but not to download data. Also Regional Plans are available on-line.

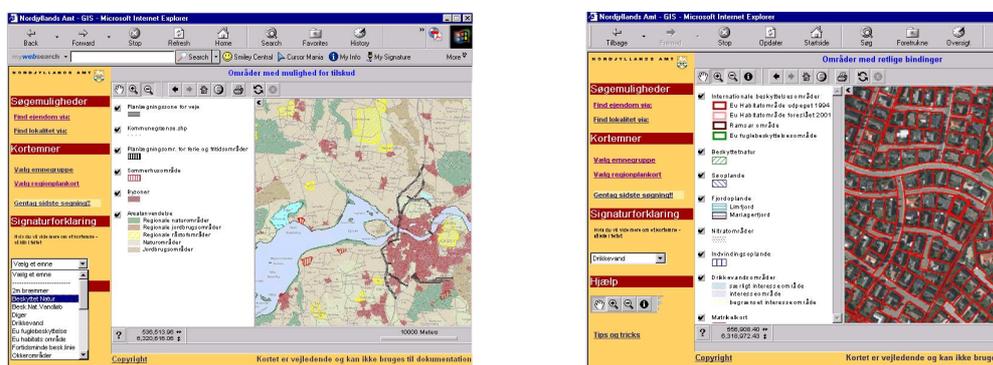


Figure 1 Two examples from "The Interactive Map of North Jutland"

A very ambitious element in "The Interactive Map" is a "3D model" ([www.3d.nja.dk](http://www.3d.nja.dk)) of the whole of Northern Jutland, based on colour orthophotos and an elevation model. All houses in the model are raised on the basis of building heights in the digital topographic map TOP10DK. As the model can be supplemented with tourist information, it is possible to plan a holiday with routes, accommodations, sights, etc., or you can just go for a virtual flight over your property or your town.

That the citizens have got access to maps and geoinformation has, as far as the County of Northern Jutland is concerned, meant that many reactions on planned projects have been received. I should like to mention two.

The 3D model has probably had the greatest success in connection with the discussions as to where a new bridge over the Limfjord should be placed (see figure 2) ([www.3.limfjordsforbindelse.dk](http://www.3.limfjordsforbindelse.dk)). The discussions have taken place in a combination of remarks sent as e-mails to the county and public face to face citizen meetings. The latter is still the preferred.

As an element in the e-democracy development the county has been experimenting with a new form of debate, where central politicians meet at the Internet with a limited group of interested Northern Jutland citizens. 5 county politicians, 5 local politicians, 5 representatives for interest organisations and 15 citizens participated. The 15 places for the citizens were allotted after application on the advertisements of the county. The topic was elaboration of a regional plan amendment for windmill reconstruction.

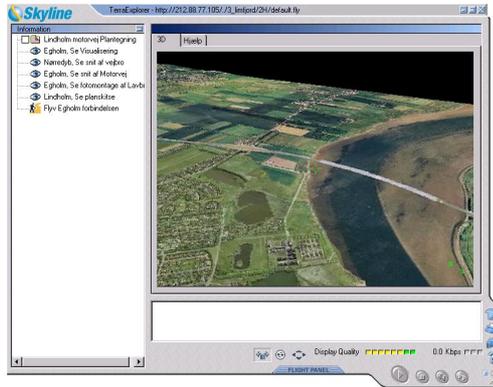


Figure 2. The 3D model of North Jutland with the planned bridge

### The active Aalborg map

The project “The Active Aalborg Map” ([www.detaktiveaalborgkort.dk](http://www.detaktiveaalborgkort.dk)) took off as an Internet service at the beginning of 2002. The purpose was also here to give the citizens, the businesses, politicians and educations 24-hour access to various maps, colour orthophotos, directory functions, property information, population statistics, etc. Moreover, “The Active Aalborg Map” should also be applicable in connection with internal case administration. The municipality hopes later to attain the end that the citizens can make inquiries to the system and on this basis manage certain case administrations themselves. They also hope for an increased dialogue between the citizens and the staff and politicians of the local authority.

The first part of the project did not actually have a direct democratic aim, but was primarily aimed at having different information digitized, including maps, in order thereafter to make them available to both internal case administrators in the local authority and external professional users and citizens. In a later phase it is the plan to give all users the possibility of for example correcting and adding graphic information to the maps and returning it to the local authority. This happens among other things in expectations that local citizens know their local area much better than the people of the local authority.

“The Active Aalborg Map” consists of three main parts: “Directory” ([www.aalborg.dk/vejviser/](http://www.aalborg.dk/vejviser/)), “Know your neighbourhood” ([www.aalborg.dk/kdlo/](http://www.aalborg.dk/kdlo/)) and “Municipal development plan” ([www.aalborg.dk/kommuneplan/](http://www.aalborg.dk/kommuneplan/)). In “Directory” you find maps like cadastral maps, technical maps, index maps, historical maps, orthophotos as well as municipal addresses and other municipal themes (see figure 3 left). In “Know your neighbourhood” you can partly see statistical demographic information (themes), partly municipal institutions and other services shown on a map.

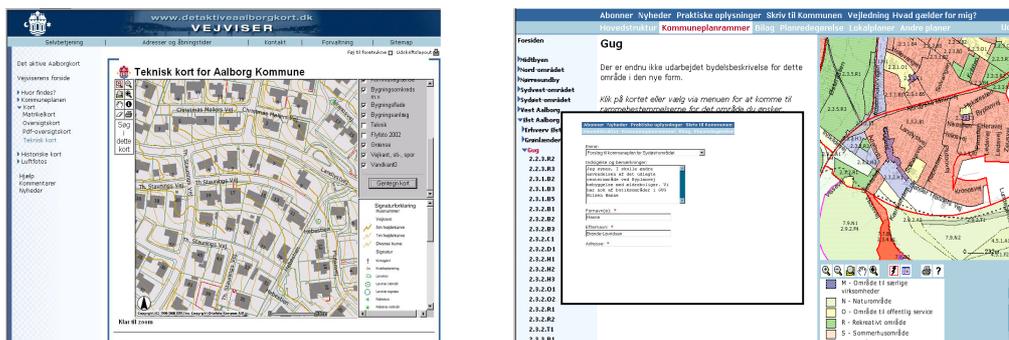


Figure 3 Two examples from “The Active Aalborg Map”

Like in the case of the maps of the county you may use a graphic entrance to the maps or an address, a title number or a property number. In connection with the services there is a short description of the single services so that especially the citizens may gain insight into what they have to do with. It is the experience of the local authority that the map service is much used by among others potential new citizens. Other eager users are estate agents, the voluntary service and the police, the last-mentioned in connection with among other things hunts.

In the map service can also be found the digital municipal development together with digital local plans as well as various detailed development plans ([www.aalborg.dk/kommuneplan/](http://www.aalborg.dk/kommuneplan/)). From the latter homepage the citizens can send direct comments to the local authorities (see figure 3 right). In order to guide in the use of as well the Municipal development plan as the local plans some film spots are produced, which can be played directly from the homepage: ([http://www.aalborg.dk/kommuneplan/global+services/vejledning/vejledning\\_filmspots.htm#](http://www.aalborg.dk/kommuneplan/global+services/vejledning/vejledning_filmspots.htm#))

## WHAT DO THE CITIZENS (AND OTHER USERS) SAY?

The homepages of the County of Northern Jutland and the Municipality of Aalborg are often praised in the media as good and user friendly entrances to information about the working fields of the county and the municipality as well as for the possibilities of dialogue between the citizens and the authorities. The homepage of the County of Northern Jutland has among other things been honoured by the EU as one of Europe's best practice examples within e-governance. The success here is by all accounts due to the fact that the users were involved in the structure of the network service very early /"Den digitale Amtsgård – afsluttende refleksioner", 2004 /.

In a user investigation concerning "The Active Aalborg Map" /"Brugerundersøgelse om den organisatoriske implementering af Det aktive Aalborgkort", 2003/, performed for the Municipality of Aalborg (limited to 176 selected persons, of whom 99 responded), it is pointed out that the external users and the politicians of the municipality are the most satisfactory persons, while the internal users are more critical. The internal users criticize among other things the quality of the maps like the size of the map window. The users were also asked how often they used the map service, and here the average was once a month.

An investigation undertaken by the author in spring 2005 /Brandt-Lavridsen, Hanne 2005/ gives a more varied picture. A questionnaire concerning the citizens' knowledge and use of "The Active Aalborg Map" and other map services was sent out to 67 households. The households were selected in an area, where different age composition, occupation and social status are represented. 39 household answers were returned by way of 84 personal answers (40 men and 44 women), as all persons in the household over 15 years were asked to fill in a questionnaire. Of the 84 persons 14 (7 men and 7 women) did not have access to the Internet.

Of the remaining 70 persons 33 had used the ordinary homepage of the Municipality of Aalborg, while only 11 (5 men and 6 women) had used "The Active Aalborg Map". 40 persons used other map services like the road map and route planning services "Krak" ([www.krak.dk](http://www.krak.dk)) and/or "De gule sider" ([www.degulesider.dk](http://www.degulesider.dk)). Only 6 persons had used the map service (the Interactive Map of North Jutland) of the County. Several mentioned that they had never had knowledge of the offered map services from the municipality and the county, respectively, before they received my questionnaire.

Of the 11 persons who have used "The Active Aalborg Map" one was between 15 and 25 years. The rest was over 50 years. Most popular was the "Directory" service of the municipality, where technical maps, cadastral maps and orthophotos were hits. Only 6 persons had used the service "Know your area" which among other things contain population statistics, etc. while 5 persons (mostly repeats) had looked at the "Municipal Development Plan" which also contains local plans and plan statements.

Of the 11 persons 9 indicated that they had used the map services out of curiosity, while 2 used the maps in connection with their work. 10 persons did, however, indicate that it was not services they used very often. Only a single, very politically engaged person visited the homepages frequently.

The persons were also asked about their satisfaction with the introduction to the map services ([www.aalborg.dk/vejviser/hjaelp/](http://www.aalborg.dk/vejviser/hjaelp/)) and to this 10 persons answered that they thought it was good, while one thought it was inferior. To a question about the degree of difficulty in connection with the use of the services the same 10 persons answered that it was practicable, while the last thought it was problematic.

In spite of the satisfaction about the Aalborg maps from the persons, who had knowledge of and used the maps you may ask yourself if the abundance of maps and geoinformation placed at the disposal of Northern Jutland citizens in reality is a wish from the citizens or only an ambition or technology fixation from the part of the authorities. To be quite honest I believe a little in the latter. As far as I know, no citizens have demanded the mentioned services. It was also noteworthy that it was very limited who knew about "The Active Aalborg Map". If the local authority really thinks they have a good and usable product, they should advertise it a little more.

## THE INTERNET AND THE DEMOCRACY PROCESS

It generally applies in the e-society that the common citizen may have difficulty in filtering relevant information from the information swarm (this also applies to geoinformation) and that they may find it difficult subsequently to interpret the information filtered. So even if the citizens of the day have a greater familiarity with maps in electronic means than previously – and here I among other things think of simple maps like weather maps in TV and urban maps and road maps respectively, then there is a long way to be able to interpret complex thematic maps like regional, municipal and local plans.

You may also ask the question whether the access to maps and geoinformation via the Internet gives the citizens a better motivation to be involved in the decisions about the matters of the municipality to a greater extent. To this I will answer that there is no doubt that the map services are of great benefit to the small number of people who always have and continuously will participate in public debates. But it must still be admitted that people are most interested in what concerns partly their property and local areas, partly their everyday. Here you may ask the question if the use of the Internet of the public authorities contributes to a renewed and more democratic culture towards the citizens

There is no doubt that from the part of the public authorities the Internet and the information made available are regarded as a means to make the common citizens, besides servicing themselves in connection with applications and similar, also participating in debates about what is to happen in connection with the utilization and management of our environment..

Sceptics do in fact maintain that the bliss's of a digital management are to be taken with a grain of salt and that the Internet is only for "the selected" or the resource-strong who know how to use a pc and the Internet in advance. And there may be some truth in it. Experiences from the County of Northern Jutland indicate that the typical citizen debater is a man who is well educated and politically engaged and belongs to "the Internet pick". And his opinion does not unfortunately give a real picture of what the broad population really wishes.

In the democratic process the Internet still has to compete with "old" media like newspapers and TV. Many local politicians take up the attitude that if a message shall reach as many as possible, the old media are the most efficient. The citizens are also, not unexpectedly, divided in their attitude to the use of the Internet as debate forum. Many stress the possibility of an open debate as something positive, but others maintain that there is too much "bungling and bad debate" /Torpe, Lars et. al., 2004/.

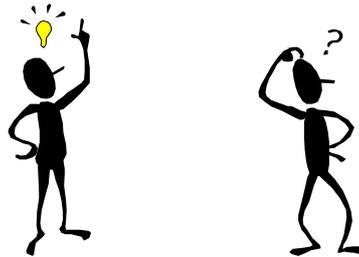
The modest participation in debates via the Internet may also be seen in the light of the fact that the electronic form of debate is still so new and does not fill much in the universe of the citizens. An investigation in connection with "The Digital Northern Jutland Project" concludes that a goal-oriented education of the citizens in the use of the electronic services has to take place to make visible the advantages to the citizens. An investigation from April 2005 carried out by the opinion poll firm "Megafon" shows that the Danes still prefer to queue or call instead of using self-service solutions via the Internet, when they want to get in contact with public authorities. So I think we must admit that there is a long way to the visions of the government about the Internet as a 100% source of information and self-service shop for the citizens of the country.

## CONCLUSION

Denmark has many balls in the air for the time being. There is no doubt that both the structural reform and e-government in Denmark will demand new adaptations both internally in the public administration and externally in connection with communication and dialogue with the citizens and the businesses. In spite of my present pessimism I believe that the usefulness of the information, including maps and geoinformation, which already is or will be accessible to the citizens, will increase as new generations of computer and Internet users grow up. The population simply has to go through an IT ripening process. And when it is over, the network will in my view contain a clear democratic profit as regards increased information to the citizens, better possibilities of utilizing this information and with those also increased possibilities of attitude to both central and local questions.

But in a few years the new large municipalities are facing great challenges concerning their homepages. The map services of the old counties have partly to be integrated in those of the new large municipalities, and partly the homepages of the old municipalities must be joined. And of course the many different homepages and map-based web services build on different technologies and data storing formats. There is no doubt that quite a lot of money has to be used to harmonize the mentioned services in the new structures, but I can also fear that this is a problem the solution of which will be of inferior importance. The ideal would be to discard the old Internet services and start afresh on the basis of the

ideas outlined in PPGIS (Public Participation GIS)<sup>v</sup> and PPVis (Public Participation Visualisation)<sup>vi</sup>, respectively. Here it is among other things recommended to consider the needs, wishes and abilities of the users to a greater extent in connection with the development of digital map services for e-governance. We must, however, also be realistic. The present Internet services with maps and geoinformation have cost a lot of money to build up so they will not be discarded right away. But in connection with the harmonization it will be suitable with large or small adjustments. We should preferably reach the point where the citizens get some good AHA! experiences instead of some bad WELL! experiences, when they use map and Geoinformation services on the Internet.



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## FOOTNOTES

<sup>i</sup> With an area of 43,080 sq. km Denmark is the smallest of the Scandinavian countries. The great majority - about 85% - of the country's 5,3 million inhabitants lives in towns or urban areas, and approximately one third of the total population lives in the metropolitan region of Copenhagen.

<sup>ii</sup> Geodata/geo-information is often used as synonym of geographic data/geographic information or (geo)spatial data/(geo)spatial information. Data is raw facts (numbers, letters etc.). Information is adapted and structured data. Maps are visual forms of geo-information

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<sup>iii</sup> By citizen service is meant that reports, payments, applications and other communication with the public administration can be handled digitally. All communication internally in the public sector has to take place digitally. At the same time the public administration must in all fields use digital technologies in connection with case administration and other administrative tasks

<sup>iv</sup> The four main fields were: E-governance, Competence and Education, IT business and IT infrastructure.

<sup>v</sup> PPGIS – see e.g. [www.urisa.org/Journal/APANo1/carver.pdf](http://www.urisa.org/Journal/APANo1/carver.pdf) and [www.ccg.leeds.ac.uk/agocg/section1.htm](http://www.ccg.leeds.ac.uk/agocg/section1.htm)

<sup>vi</sup> PPVis – see e.g. [http://go.owu.edu/~jbkrygie/krygier\\_html/lws/ppviz.html](http://go.owu.edu/~jbkrygie/krygier_html/lws/ppviz.html)

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Other Information: <http://www.land.aau.dk/~hbl/>