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WHO ARE THE CITIZENS IN PUBLIC PARTICIPATION GIS

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Abstract

The issue of public participation goes back to the late sixties and early seventies. Local and regional authorities made brochures and posters and arranged meetings to really involve the citizens. Recent advances in GIS and the Internet have improved the technical possibilities for supporting the public participation through PPGIS systems. On the other hand there have been too much focus on many technical aspects of public participation with reduced focus on the citizens. We should not be too fascinated of the technological possibilities and forget the digital divide as well as the value of face to face discussions between the citizens. Equal opportunities to express their opinions and an open debate between people are the basic foundation for democracy. Therefore the design of participatory processes must take outset in the citizens and their knowledge and commitment concerning the issue to be debated. The current paper has presented the results of a survey among actively involved citizens in Northern Jutland County. Our analysis showed a high degree of involvement among *middle-age well-educated males* with a *higher education* and *income above average*. Additionally, the analysis shows that *he* is *political active* and *familiar with the Internet*. This group represents perhaps less than 5% of the adult population. It seems that contrary to the planner's vision of an open debate among all citizens, the result is a debate among a rather limited group. Perhaps, it would be better to actively identify stakeholders among a broader group of citizens, and ask for their opinion. Especially women and younger generations are much more needed in the participatory process. Therefore the county administration must consider these findings to make the participation tools more targeted in the future.

INTRODUCTION

The issue of public participation goes back to the late sixties and early seventies. Local and regional authorities made brochures and posters and arranged meetings to really involve the citizens. However, in these processes, the common method for citizen involvement was through public meetings in which the project and potential impact were presented and discussed. This form of public participation was carried out according to the judgements from various 'experts' and decision makers, whereas a real interaction between the authorities and the citizens were rather limited. Only few people were really involved unless there was a strong opposition against for example a controversial new motorway in their neighbourhood.

Until the nineties public participation continued in the same manner. At that time three important events took place (*Hansen & Prosperi, 2005*). First, there was a growing awareness of the environment and the importance of making the citizens accountable for a sustainable

future. The Conference on Environment and Development (Earth Summit) in Rio de Janeiro in 1992, Principle 10 (*United Nations, 1992a*) and Agenda 21 (*United Nations, 1992b*) both called for increased public participation in environmental decision-making and led to the adoption in Europe of the Aarhus Convention (UN ECE, 1998). Besides, Agenda 21 emphasises the role of geographic information in monitoring and analysing the state of environment globally. This development is further facilitated by the appearance of "symbolic politics" and growing popularity and acceptance of non-Governmental organisations like Greenpeace and World Wildlife Fund (*Castells, 1997*). Second, the emergence of the Internet and its rapid expansion to millions of users facilitates the spread of information at a rate without any counterpart in history – and opposed to for example television – it supports bi-directional communication. The Internet has the potential to advance in one of several different directions. Since most new media technologies are developed with the fuel of commercially gained income, much of the newest technology will not be designed to promote democracy, but will more likely promote commercially driven activities such as Internet gambling and e-commerce (*Castells, 1997*). However, if the users want to embrace the Internet as a tool for democracy then it will happen - but only if the users will see positive results from their actions. This requires a pro-active approach from the relevant public authorities. Third, GIS became a mature technology to be used outside the very technical environments, and not at least the recent advances in Internet GIS have facilitated the use of GIS in public participation. Many opportunities for public participation are laid down in the environmental legal framework and Internet GIS can support and facilitate citizen involvement in environmental planning and decision-making. But simply designating a GIS effort as PPGIS because a non-technical citizen is involved is unfair to the many efforts of non-GIS public participation that seek to enhance the democratic process. On the other hand, being explicit about the domain within which a particular PPGIS effort falls can enhance the credibility, efficacy, and theoretical foundation of such a project (*Schlossberg & Shuford*, 2005).

All in all, the Internet had the potential of being a strong medium for involving the citizens in decision-making, but in order to design on-line participatory systems, more research about participatory systems is needed. Much of the research until now has focused on technical issues of advanced Internet based participatory systems like PPGIS. Although we should not neglect the importance of more research within this field, very little has been done in the analysis of the public. There is some general ideas concerning the so-called digital divide, but until now there has been no detailed analysis of the citizens background.

The aim of the current paper is to make an overview of the current theories about the public in participatory processes and present the results of a detailed analysis of the citizens actively involved in PPGIS. The paper will be divided into 5 parts. After the introduction we will give short overview of theories and taxonomies on public participation and PPGIS. The third section will focus on the citizens and their role in public participation. The fourth section presents in detail the analyses of the citizens and their backgrounds from two case studies in the Northern Jutland. Finally, we have some concluding remarks and present for you some ideas for following up activities.

PUBLIC PARTICIPATION

Public participation practice is a growing part of spatial and environmental planning. The main purpose of environmental decision-making and thus the main purpose of public participation in this matter are to achieve protection, conservation, and wise management of the environment. This can only be achieved if the proponent properly collects (and acts upon) evidence, opinions and perspectives from all the interested or affected citizens, who are to be fully involved in the decision-making process, and from the earliest possible opportunity.

The level at which the public is involved varies with the relevant legislation, and the attitude of the other stakeholders. Often it just means informing the public of a previously, made decision and asking for comments, which may or may not be heeded. Sometimes it means informed consultation. For public participation to be effective at any level, it requires the public to be well informed and kept aware of the possibility of participation. This requires a pro-active approach from the relevant public authorities.

The public

In its purest form, citizens are all of us. We live our lives; we vote in elections; and we form special interest groups to influence decisions. Most citizens share the desire to own a home, have a car, live in a small community with an unobtrusive local government, and have a job nearby. In this way, the role of government is to create a society that presents for the individual citizen a possibility to live this kind of life. Therefore communication between government and the individual member of society is necessary, because this communication is the only way to develop a society that gives the individual citizens a basis on which to live out their dreams. Furthermore it is the role of government to deal with the flaws that arise from those values: excessive travel, poor housing, the provision of services, and accommodation of regional infrastructure needs.

Ordinary citizens, however, are only part of the network of "citizens" that a government faces. Without belabouring the point, these other "citizens" are other governments, the business community, and the government's own employees or subcontractors. So pervasive is this network of "citizens" that a specific language has grown up to capture these participatory patterns and interactions. G2G refers to government-to-government communications. G2B refers to government to business connections. G2E refers to a government's interaction with its own employees. And, finally G2C refers to how a government is involved with its citizens. G2C is the "usual" arena when discussing citizen participation although clearly it is a partial understanding.

Achieving a balanced representation of the citizens in the decision making process depends on many factors. However, most agree that those citizens who have a legitimate interest should be included in decision-making, but who this would be for a given process is unclear. *Sanhoff* (*2000*) states that those who are most affected by a decision should have the greatest voice in the decision. Despite the fact that the general public should be informed about opportunities to participate, the people who have the most at stake should have the greatest level of involvement. Besides this group the participating public should also include those with technical knowledge (*Sanoff, 2000*) offering assistance in data collection or contribute essential information if the process has technical components (*Sanoff, 2000*). This is often the case in many spatial planning processes – e.g. in environmental impact assessment. Although the citizens possessing power do not necessarily have a legitimate interest in a particular case

they might have the ability to support – or impede – a decision, and therefore they should be considered for involvement.

The identification of potential stakeholders is an essential first step in getting stakeholders to participate. The principles stated above can be reformulated into more operational terms. *Creighton* (1983) developed a set of ways to identify the affected publics by considering the following items:

- *Proximity*: Citizens living near where a project or plan is implemented is more vulnerable than people living in at longer distances from the new project
- *Economic*: Some citizens may experience financial gain or lose dependent on their relationship to the new project
- *Use*: A new regional plan implying the construction of a motorway may limit some people's use of a resource or facility due to for example barrier effects.
- *Social*: A project or policy may threaten a tradition or culture, or it may significantly alter a demographic structure of a community.
- *Values*: A group may be affected only in terms of how an action relates to its values.

Often the term stakeholder is used when discussing participatory processes. A widely accepted, broad definition of a stakeholder is given by Freeman, who considers "any group or individual who can affect or is affected by the achievement of the organisation's objectives" to be a stakeholder (*Freeman*, 1984). The stakeholder concept emerged in the 1960s where it was suggested that, instead of focusing exclusively on shareholders, a firm also should be responsible to a variety of stakeholders without whose support the organisation would collapse. The expansion of the original concept by Freeman resulted in widening the view of the firm from a strictly economic view to a political view, and now a days the term is used everywhere when dealing with participatory processes.

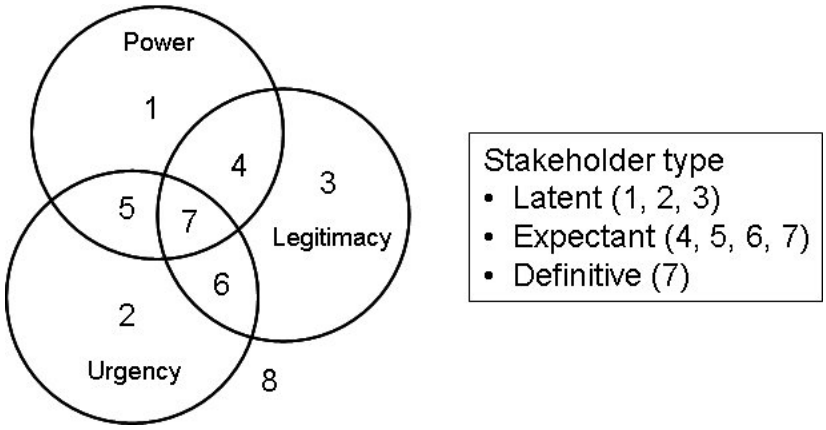

Figure 1: Mitchell's (1997) Stakeholder Typology.

Mitchell et al. (1997) distinguish three variables in the stakeholder-firm relationship that determine stakeholder salience. The first is power (P), which they describe as the ability of one actor to make another actor do something he would not otherwise have done. Power is usually unevenly distributed among actors in a relationship. The stakeholder can have power over the authority, or the authority can have power over the stakeholder. The second variable is legitimacy (L): the degree to which the authority and the stakeholder find each other's

actions "(…) desirable, proper, or appropriate (…). The third variable is urgency (U): "The degree to which stakeholder claims call for immediate attention". Based on these three variables, Mitchell et al. define eight types of stakeholders; see Figure 1.

1. *Dormant stakeholder* (P). This stakeholder has power to affect the decision making process, but its participation is not considered legitimate and neither from the stakeholder nor from the authority the need is felt to participate. Dormant stakeholders should be monitored, however, in view of their potential to harm the process.
2. *Discretionary stakeholder* (L). Discretionary stakeholders do not have the resources to affect the standardization process, and feel no urgent need to participate. They do have a legitimate role in the process, however, which is recognized by the other participants or the future buyers of the standard. In this respect it may be useful to try to involve this type of stakeholder despite its lack of urgency.
3. *Demanding stakeholder* (U). Stakeholders without power and legitimacy, but with urgency towards the issue are referred to as "mosquitoes buzzing in the ears of managers" by *Mitchell et al (1997)*. They will not receive more than a passing attention from authority.
4. *Dominant stakeholder* (P, L). Like the discretionary stakeholder, the dominant stakeholder itself does not see immediate interest in participating, while its participation is considered desirable from the perspective of the planning process. Efforts to involve this type of stakeholder should be stronger, because dominant stakeholders also have the power to affect the final plan. One way of involving this type of stakeholder is by relating the planning process to other issues that are urgent to him.
5. *Dangerous stakeholder* (P, U). *Mitchell et al. (1997)* state that stakeholders that have power and urgency but no legitimacy, will in general take unlawful and sometimes violent action to achieve their objectives.
6. *Dependent stakeholders* (L, U). The dependent stakeholders are important for the general support of a standard and they see the need to participate in the standardization process. In general, little effort will be needed to involve these stakeholders in the process, provided that the dependent stakeholders are aware of the process taking place. However, dependent stakeholders will in many cases lack resources to properly participate in the process.
7. *Definitive stakeholders* (P, L, U). Definitive stakeholders have the power to affect the planning process,, and their involvement is indisputable. Little effort is needed to involve these stakeholders, and in some cases, efforts should be directed to preventing these stakeholders to become too dominant in the process.
8. *Non-stakeholders.*

Participation

After having identified "the public" we need to determine the objective with the participatory process. *Arnstein* (1969) claims, that the involvement of the public in decision-making represents a redistribution of power from the authority to the citizens. She describes the public participation by a 'ladder' with 8 rungs each representing the level of citizen participation. This so-called ladder of public participation has 8 rungs divided into three main groups. The uppermost ladder representing 'citizen power', involves public-authority partnerships in which citizens are in control, or can veto agency decisions.

Based on the Arnstein ladder, *Weideman* and *Femers* (1993) developed a revised ladder of public participation, where the involvement increases with the level of access to information as well as the citizen's rights in the decision-making process. According to Weideman and Femers, the public involvement increases as the authority grant the citizens rights higher in

the ladder, which can only be reached by full filling all the requirements of the lower steps in the ladder. In most cases, the public participation is limited to the right to object, but the current and future information and communication technologies will provide opportunities to helping the degree of involvement to move further up in the public participation ladder.

Inherent in their conceptualisation lies that simply informing the public is a kind of participation although access to information and participation is clearly distinct matters. *Tulloch* and *Shapiro* (2003) explored possible combinations that could exist between the presence and absence of access and participation. They identified 4 different situations: 1) No or low levels of access, 2) High levels of access, 3) No or low levels of participation, and 4) High levels of participation. This resulted in a simplified comparison of participation and access that allowed a quick categorisation of successful and unsuccessful projects into 4 types.

However, we should not forget the users when a public participation process is designed. Although we may have high ambitions for the level of participation, we cannot expect that everyone citizen should be able to evaluate various scenarios or even set up their own alternatives. According to *Jackson* (2001) the following questions are important before setting up the level of participation:

- What is the level of knowledge of a particular issue among stakeholders ?
- What is their degree of commitment?

Jackson (2001) describes the various stages of public involvement by taking outset in the citizen's knowledge and commitment. For uninformed people a one-way information process is appropriate. For other people with awareness of the issue but with insufficient "technical" knowledge an educational effort is needed. Citizens with more knowledge may be called upon for consultation or even discussing alternatives. The ultimate level of public participation is collaborative, shared decision-making. This requires first of all an informed and educated public, and next an authority that is ready to delegate or share the power with the community. Besides being a good guideline for identifying appropriate levels of involvement Jackson's description can be used to explain the numerous unsuccessful implementations of the participatory process.

Internet use, the digital divide and inequality

The open structure and architecture of the Internet provide a rather simple mechanism by which information can be released to the public at relatively low cost for as well provider (the public authority) as the consumer (the citizens). Generally the Nordic countries as well as the United States have been in the forefront concerning penetration and use of Information and Communication Technology (ICT). The statistical offices in the Nordic countries have made a survey in 2002 of the use of ICT in the Nordic countries (*Nordic Council of Ministers*, 2002). For the Nordic countries as a whole 62% of the population has access to the Internet. These figures are among the highest in the world, and only the Netherlands, USA and Canada have an Internet penetration of similar size. Despite the general spread of information and communication technologies, large parts of the world remain technologically disconnected. This so-called "digital divide", threatens to cut off populations from good jobs and the chance to participate in the affairs of the broader society. Among the Nordic countries the digital divide exists but perhaps less pronounced than in other countries. Thus, gender does not have any significant effect on the use of the Internet, but age has more remarkable effects on the

use. For example in Denmark, 68 % of citizens aged 16-29 have access to the Internet, whereas the corresponding figure for senior citizens (over 60 years) is 33 % (Nordic Council of Ministers, 2002). A similar inequality is related to education. Nordic persons with only primary education have Internet user rate between 44 % (Finland) and 50 % (Sweden) while academic and advanced professionals have user rates between 69 % and 82 % (Sweden). One important finding in the report from the Nordic Council of Ministers are that if a person lives in a household with children he or she will be more likely to have access to computer and the Internet than those living in households without children. Thus children can be considered as the key to close the digital divide. However, solely relying on Internet based system for public participation may have to potential to strengthen the voice of younger, male, higher-income people who have more frequent access to the Internet, and thus possibly overriding the voice of the poor.

CASE STUDY

The county administration in Northern Jutland (Denmark) have just finalised two major spatial planning efforts with associated public participation. The basic components in the public participation phase included interactive maps, 3D visualisations and an open discussion forum (*Hansen & Kristensen*, 2006). The first spatial planning example is concerned with a new bridge or tunnel crossing Limfjorden – a major fjord separating the county into two separate parts. The Limfjorden splits even Aalborg - the main city in the county. The other example is concerned with the public involvement in the new regional master plan for the Northern Jutland County. The county administration has set up an Internet based communication system for easy adding comments from the citizens to the County Administration. All comments from the citizens were stored in a database, facilitating search and query requests, and the information was organised into a report, which was added to the home page of the County administration. The database contains 151 comments from a wide spectrum of respondents. Remark, that there is no direct stakeholder identification procedure, and that the system is open to all citizens.

First the citizens were divided into various categories and generally the ordinary citizens or groups of citizens made up two thirds of the objections or comments. 29 were from other government bodies (mainly municipalities within the County), 20 comments were from NGO's and 101 were from citizens (91) or groups of citizens (10).

Next we focused more deeply on the citizens, group of citizens and private companies. Based on the address information in the database we added a geographic location to each citizen. Hereby we could analyse the geographic pattern of the respondents. It was clear that the involvement in the plan concerning the new tunnel or bridge across Limfjorden showed a much more clustered geographic pattern with high spatial density in the neighbourhood to the new connection, whereas the responses concerning the new regional plan showed a more scattered pattern (fig. 2). This finding is also in accordance with the above mentioned proximity principle formulated by *Creighton* (1983). This is actually what we expected referring to the NIMBY effect, but by the current study this effect is confirmed by analysing a concrete project.

The primary aim with the current study is to achieve a deeper insight in the involved citizens and their background. Accordingly, we sat up a questionnaire among citizens involved in the participatory phase related to the new connection across Limfjorden. The questionnaire

contained 22 questions focusing on the ordinary citizens in order to analyse their background concerning age, gender, income, educational background. Behind the 91 comments from citizens were 49 individuals, and 39 citizens answered the questionnaire, which was made by telephone interviews in September 2005. The number of answers are absolutely satisfactory - not at least when we recognise the sensitive nature of some of the questions.

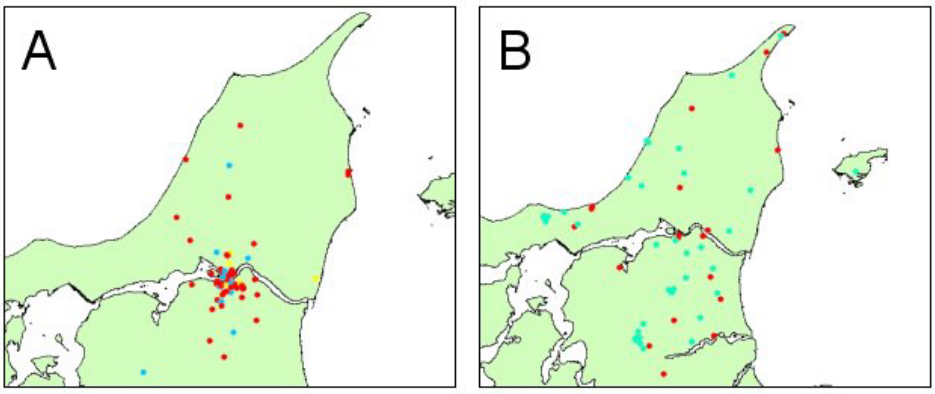

Figure 2: Location of citizens involved in participatory phase.
A) The new connection across Limfjorden; B) The new Regional Master Plan.
Red dots symbolizes citizens, yellow dots symbolizes citizens groups and blue dots symbolizes non governmental organizations (NGOs).

Demography

The most remarkable result is that 82% of the active involved citizens are men, leaving less than one fifth for the female participation. At first sight these figures might surprise because women are generally more concerned about the environment, which was the main concern from most respondents. However, we must not forget that some of the proposals for the new connection across Limfjorden will go through the most prosperous neighbourhood in Aalborg, and might have negative influence on the house prices in that neighbourhood. Perhaps this could explain the remarkable high percentage of male participation. The age distribution of the involved citizens is bell shaped with a peak between 50 and 60 year and a little skewness towards the more mature people (figure 3). This distribution is not surprising because these age classes have generally more time for being involved in such spatial planning issues than younger families with smaller children and their own carrier to take care of. This does not mean that they do not participate in the local democracy, but they will normally focus their efforts in steering boards for kindergarten and schools.

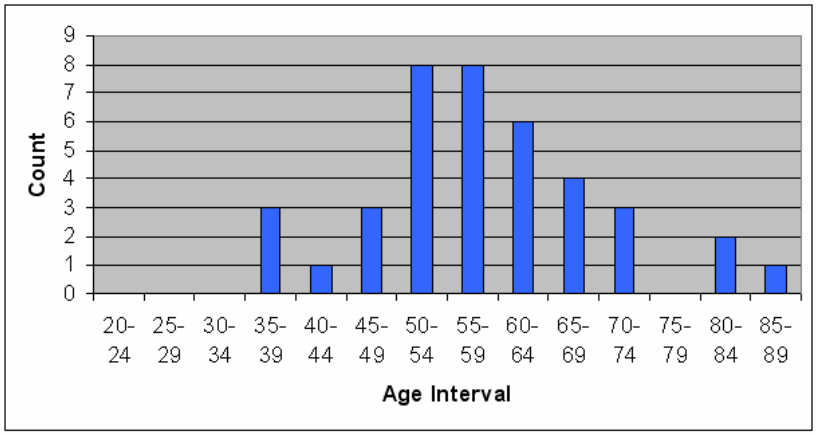

Figure 3: Age distribution for the involved citizens.

Education

Concerning basic education 6 out of 10 of the respondents have an Upper Secondary Education and this fits well with the fact that 59% of the respondents have a medium-length higher education (college) or a university degree (table 1). These figures are significantly higher than national average figures, which are less than 20% for medium-length higher education (college) or a university degree taken together. However, this result is not surprising because citizens with an academic background are generally more active in public participation than others.

	Count	Percent
Vocational training	16	41
Medium-length higher education	5	13
University degree /Master	18	46

Table 1: Educational background.

Social

The survey showed that nearly half of the respondents have a personal income between 250000 and 500000 DKK (33000€ - 67000€). Furthermore one fourth of the respondents have a personal income above 500000 DKK (67000€). Compared to national average incomes this indicates a significantly higher income among the active citizens in Northern Jutland County than for Danish citizens as a whole.

None of the respondents in the survey was unemployed, but one third were pensioners. Although this status generally implies a lower income level, but half of the pensioners in the survey have a Upper Secondary Education as their basic educational background. Normally, this implies a reasonable standard of living for the retired.

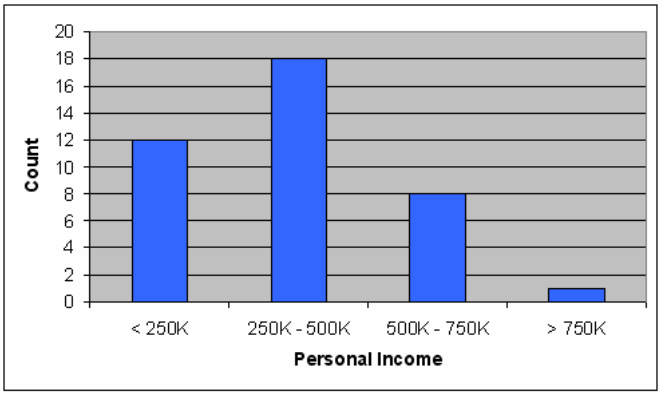

Figure 4: Personal income among involved citizens.

Political activity

At first we were a bit surprised when we analysed the respondent's relationships to the political parties and other Non-governmental organisations. Nearly half (46%) of the

respondents were member of a political party, whereas the same figure for Denmark, as a hole is less than 5 % according to Denmark Statistics. On the other hand it is a fact that politically active people has a strong interest in owing influence on the general development of the society – and this is one way of doing this!

Internet experience
The last parameter to be discussed in the current paper is the Internet experience among the involved citizens. The survey showed that 59% of the active citizens had an Internet experience of more than 5 years, and 28% had Internet experiences of between 3 and 5 years. This means that 13% of the involved citizens can be considered as novice users, but obviously they have already recognised the possibilities of using the Internet as a platform for the involvement in a public consultation phase – and this is a rather positive finding.

Summarising the result of the survey
First we can conclude that in the current case, the active citizens can be described as: a) male; b) middle age – or above; c) higher education; d) above average income; e) political active; and f) experienced Internet user. Perhaps this is not surprising, but at least the strong male dominance is not appropriate for a modern society. Furthermore, the high level of participation among the more mature people can be criticised - we are planning mainly for the future and therefore the younger generations, but they are nearly absent in the participatory process. Therefore the county administration must consider these findings to make the participation tools more targeted in the future.

CONCLUDING REMARKS

Improved decision-making is perhaps the most promising element in e-Government, and the central idea in all decision-making is how to make the optimum solution and how to get acceptance by the citizens. Public participation has been an answer to this challenge since the late sixties, and recent advances in GIS and the Internet have improved the technical possibilities for supporting the public participation through PPGIS systems. On the other hand there have been too much focus on many technical aspects of public participation with reduced focus on the citizens. We should not be too fascinated of the technological possibilities and forget the digital divide as well as the value of face to face discussions between the citizens. Equal opportunities to express their opinions and an open debate between people are the basic foundation for democracy. Therefore the design of participatory processes must take outset in the citizens and their knowledge and commitment concerning the issue to be debated.

The current paper has presented the results of a survey among actively involved citizens in Northern Jutland County. Our analysis showed a high degree of involvement among *middle-age well-educated males* with a *higher education* and *income above average*. Additionally, the analysis shows that *he* is *political active* and *familiar with the Internet*. This group represents perhaps less than 5% of the adult population. It seems that contrary to the planner's vision of an open debate among all citizens, the result is a debate among a rather limited group. Perhaps, it would be better to actively identify stakeholders among a broader group of citizens, and ask for their opinion. Especially women and younger generations are much more needed in the participatory process. Therefore the county administration must consider these findings to make the participation tools more targeted in the future.

This paper is the first result of analysing the citizens in public participation, and the research is currently going on by analysing the survey in more detail. Hopefully we can end up with more qualified guidelines for *doing planning with the citizens*!

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