NordiCHI'06 Workshop

User involvement and representation in e-Government projects

Program Committee

Asbjørn Følstad, SINTEF

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Workshop program

The program contains two single track plenary sessions and two group sessions.
All paper presenters will be allowed a timeslot of maximum 15 minutes. During each presentation, each workshop participant notes up to three questions or comments on post-IT notes. The notes will be used for structured discussions in the following group sessions.

0930-0945 Introduction and presentation

0945-1030 First plenary session
A: The big picture: User involvement and User-centred design in the development process
Arild Jansen: Strategies for user involvement in e-Government projects: What can be learned from the Scandinavian IS tradition.
Henrik Artman/Fredrik Andersson: Communicating the Future business: A procurement organization's understanding of their role in systems development.
Stefan Holmlid/Ann Lantz: Developing e-services in an authority: Different views on design in procurement and system development.

1030-1045 Coffee

1045-1130 First plenary session - continued
B: Obstacles to e-Government service development and use
Jan Gulliksen/Elina Eriksson: Understanding and developing user involvement at a public authority.
Arne Krokan/Solveig Midtbust: Why don't they automate?
Asbjørn Følstad/Petter Bae Brandtzæg: When local usability is not the issue: An example case of e-Government service provision.

1130-1245 First group session.
Group A: Discussion based on plenary session "The bigger picture".
Group leader: Stefan Holmlid.
Group B: Discussion based on plenary session "Obstacles to e-Government service development and use". *Group leader: Henrik Artman.*

1245-1330 Lunch

1330-1340 Plenary summary of first group session

1340-1415 Invited post-lunch key note
Participation in e-Government: Trick or Trade?
Kim Viborg Andersen, professor at Copenhagen Business School, scientific leader of the EU research project DEMO-NET

1415-1515 Second plenary session
C: Representing and involving users through models
Florence Pontico/Marco Winckler: Citizens, stakeholders and designers: Modeling for user diversity.
John Krogstie: Citizens, from consumers to prosumers: e-Government service typologies revisited.
D: How to provide the end-user perspective
Josef Conning: Setting the course and keeping it: Reflections on user-orientation and systems acquisition in IT systems in Swedish health care.
Margita Lundman: Involving disabled users in the development of e-services.

1515-1530 Coffee

1530-1640 Second group session
Group C: Discussion based on plenary session "Representing and involving users through models". *Group leader: John Krogstie.*
Group D: Discussion based on plenary session "How to provide the end-user perspective". *Group leader: Josef Conning.*
1640-1650 Plenary summary of second group session

1650-1700 Wrap-up

Introduction

These are the proceedings from the full day workshop on user involvement and representation in e-Government projects, arranged as part of NordiCHI 2006, an international conference on Human-Computer Interaction (HCI).

The current workshop is the second workshop on user involvement in e-Government projects, providing an opportunity to continue the discussions of the first workshop [5] arranged September 12, 2005, as part of Interact 2005.

e-Government may be understood as "the use of information and communication technology in public administrations combined with organizational change and new skills in order to improve public services and democratic processes and strengthen support to public policies" [3, p.7]. Development of e-Government services continues to be highly prioritized. At the European level, one of the three so called "pillars" of the European Commission (EC) communication *i2010 – A European Information Society for growth and employment* is to making sure that "ICT benefit all citizens; making public services better, more cost effective and more accessible; and improving quality of life" [1, p.9]. In the EC communication *i2010 eGovernment Action Plan: Accelerating eGovernment in Europe for the Benefit of All* [2] five main goals are proposed for European e-Government development by 2010, including (a) that all citizens should benefit from e-Government services, and (b) that e-Government shall contribute to high user satisfaction with public services and significantly lighten the administrative burden on businesses and citizens. The current workshop contributes to these goals through its discussions of user involvement as a vehicle to develop high quality public services.

The workshop includes both presenting and non-presenting participants. A call to participate in the workshop as presenters was distributed to a wide range of researcher and practitioners both within and outside Europe. Participants were invited to submit papers based on their experience and research on user involvement in e-Government projects.

Three main questions were expressed in the workshop call

- High-level strategies for user involvement
- Representation of users and stakeholders
- Effective methods for user-centered e-Government development

All papers submitted to the workshop have been reviewed by two peers recruited from the program committee. 10 papers have been accepted; three with major changes according to the reviewers' comments, seven with minor changes.

The workshop papers are structured in four themes. Each theme will be subject to plenary presentations and subsequent group discussions.

Theme A, "The big picture: user involvement and user-centered design in the development process", includes one paper reflecting the experiences of the Scandinavian tradition and two papers dealing with the procurers role in systems development. Arild Jansen provides a reflection on the near history of Scandinavian information systems research with its emphasis of user participation. His discussion of what we may learn from this tradition with regard to today's e-Government development focuses in particular on the level of participation as well as where and how user participation should take place. Henrik Artman and Fredrik Andersson

present systems development from the perspective of the procuring organization, demonstrating the challenges of the procurers to adequately communicate organizational requirements to the developer. Their presentation includes experiences based on a future workshop methodology. Stefan Holmlid and Ann Lantz describe and discuss how different actors on the procurer's and developer's side perceive each others roles and responsibilities in the design process. Results from interviews with the different actors are presented, showing that the developer expects more active procurers' with regard to organizational and user requirements. The papers on the procurer's role in system development are both based on research activities within the Enforcement Authority of Sweden.

Theme B, "Obstacles to e-Government service development and use" includes papers focusing on obstacles to end user involvement, organizational challenges to service development, as well as obstacles to end-user uptake and use of services. Jan Gulliksen and Elina Erikssen present results from a workshop on attitudes and experiences with user involvement in a Swedish authority, and use these results as a basis on which to discuss factors that may threaten adequate user involvement activities in public sector development projects. Arne Krokan and Solveig Midtbust discuss organizational and technical issues with regard to why government services suitable for digitalization as internet services are not already automated. Results from their case study exemplify the importance of organizational issues, in particular concerning organizational change, as a potential obstacle towards developing electronic public sector services. Asbjørn Følstad and Petter Bae Brandtzæg describe obstacles to use of e-Government services, exemplified by a case in which the uptake of a service of adequate usability is threatened by factors as low visibility of service, insufficient communication of user group definitions, and lack of compatibility between the service and external user groups' work processes. The latter two papers are based on empirical work with two different cases within the Norwegian public roads administration.

Theme C, "Representing and involving users through models" includes two papers that utilize models for quite different purposes. Florence Pontico and Marco Winckler present a model-driven engineering approach to accommodate user requirements and promote user involvement during development of e-Government services. They argue that the use of models may also improve communication between stakeholders in the development process. John Krogstie represents a different utilization of models, where technology for interactive models is discussed as a vehicle for increased co-operation and collaboration between government bodies on one hand and citizens and private enterprises on the other. Interactive models are presented on basis of a critical discussion of the current typology of e-Government services.

Theme D, "How to provide the end-user perspective" is the concluding theme of the workshop plenary sessions. Josef Conning discusses the importance of actively relating development project activity in general, and user-centered activities in particular, to core business and user goals. The need for increased focus on business and user goals throughout the development process is illustrated through examples from previous and current development projects. Representing a design for all-perspective, Margita Lundman discusses how disabled users may be involved in the development of e-Government services, to facilitate the inclusion of all citizens as participating members of society.

The paper presentations will serve as a basis for discussions in group sessions of the workshop. The four thematic groups will serve as a placeholder for discussions related to the four themes presented above. Hopefully the presentations and the work in the group sessions will inspire to continued discussions also after the workshop.

The workshop also includes a post-lunch key note by Kim Viborg Andersen on participation in e-Government. In his keynote Andersen among other things will draw on

experiences from the EU Network of Excellence DEMO-net [4], where one of the key objectives is to integrate current research on eParticipation.

Program committee

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Acknowledgements

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Content

Strategies for user involvement in eGovernment projects: What can be learned from the Scandinavian IS tradition?

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Abstract. The aim of this paper is to take part in the discussions on how experiences from the Scandinavian IS research tradition in information system research may contribute to eGovernment developments and implementations. Although this tradition does not represent a coherent set of principles and methods for system development, they share some common ideas and goals related to user involvement, participatory design and democracy at the work place. Even if some of the most basic ideas are inherent in our understanding of the IS field to day, many of the lessons from the past may have been forgotten. I will thus argue for a greater focus on studying the consequences of various approaches to system design, implementations and use, and that we need study how user involvement is practiced in various types of eGovernment projects and what impact different approaches have had.

Key words: eGovernment development, Scandinavian information system development tradition, participatory design, user involvement

1 Introduction

The Information Systems Research in Scandinavia seminars (IRIS) is celebrating its 30th anniversary next year, and it gathers every year up to 150 participants, including a number of international researchers. The journal (Scandinavian Journal of Information Systems) will publish its 23. edition this year. A number of books have been written, and this research community has had significant influence on the IS field in general.

Scandinavian research projects[1] in system development have traditionally put a strong emphasis on user participation and support for different interests as a strategy for increased work life democracy, and also for the society at large. However, as important goals have been to develop well-functioning, user-friendly and high-quality system. The basic assumption is that one only can achieve long-term benefits by combining these different goals and by

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[1] The intention is not to attribute these views on system development work to the Scandinavian IS research only; this tradition has to day supporters in a number of countries, see e.g. the PDC (Participatory Design Conference) community, http://www.pdc2006.org/

managing the clashes of interests and contradictions that necessary will appear in system development projects.

There have in recent years been great achievements and progress in eGovernment developments and implementations. We have also seen a number of failures. To what extent are the experiences and knowledge gained from research in the past relevant to day? This paper do not aim at answering all these questions, but may hopefully stimulate to a debate on how the knowledge and experiences gained in past Scandinavian IS research effort can contribute to further progress in this new field.

The structure of the paper is as follows. Chapter 2 summarizes the basic ideas of the Scandinavian school(s) of IS research. Chapter 3 visits the debate on the relation between eGovernment and new management forms, followed by a discussion of the role that Scandinavian IS approaches may have in the eGovernment era.

2   Scandinavian traditions in system development research

System developments has, from the outset been an expert-dominated and top-down oriented activity from problem description to implementation, use and maintenance, frequently referred to as "phase-driven" or the "Waterfall" development method. This approach is characterized by system-theoretical thinking, often based a functional analysis of the system to be modeled and designed and implemented. However, it became early clear that this approach had a number of weaknesses.

The Scandinavian tradition in information system research has its roots the early action-oriented research projects and efforts in late 60thies and 70thies. Important inspirations came from the socio-technical research by the Norwegian Industrial Democracy project that started in 1960 as cooperation between the Norwegian Federation of Trade Unions (LO) and the Employers organization (NAF, later renamed NHO). But first of all this tradition is linked to the NJMF-project (Norwegian Iron and Metal Workers), in cooperation with Kristen Nygaard and Olav Terje Bergo [29], followed by the Swedish Demos-project and the Due-project in Denmark [se e.g. 17; 2; 3; 6; 5; 25; 4]. Although these projects had partly different goals and perspectives, they can be characterized as action research, having a socio-technical orientation and strong user- involvement in all phases, and aiming at democratization at the workplace.

These and other projects were the inspiration and empirical background for the textbook "*Professional System development*" by Andersen et al [1], in which they emphasize the relation between development work and management, between process and product and between planning and evaluation, and the need for communication at all levels in the system development processes.

Another important and very interesting contribution is the textbook "*Computer and controversy. The philosophy and Practice of Systems Design*[2], written by Bo Dahlbom and Lars Mathiassen, in which they reflect over the profession of system development and its essential ideas, and not least, discuss some of the fundamental contradictions that is inherent in the practical work. Following from that, they outlined three corresponding paradigms for system development. The first one, *construction,* suggests a rational and analytical strategy, while the *evolution* approach focuses on uncertainty and suggests an experimental strategy for problem solving. In the third approach, *intervention* the problem is no longer given, and development cannot be seen as some thing isolated from the life of the organization, and

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[2]   In the preface to this book, the Scandinavian IS tradition is not explicitly mentioned, but many of the ideas are inherent in this tradition.

accordingly, system development must be seen as an integral part of organizational change. Furthermore and perhaps the most pioneering, they discuss the many dimensions of quality of technical artifacts, as e.g. functional, aesthetic and symbolic quality, and points to the power, politics and ethics in defining quality.

Many of these and other ideas and experiences have been integrated into a comprehensive method: *Object-Oriented Analysis and Design* [26], thus offering common framework with a coherent set of principles, concepts and way of thinking, that is based on knowledge and experience collected outside Scandinavia[3]. The footprints from the pioneering research efforts in Scandinavia in this field are easily identifiable. Another original thinker in this field is Claudia Ciborra. His contributions include among others theory and concepts as improvisation, bricolage and tinkering, drifting, Krisis, etc, see e.g. [12;13].

3   eGovernment and new management forms

ICT been applied for administrative applications for quite a while and even in Norway, computers were used for governmental tasks already in 1957. During the next decades to come, computers and later on ICT including Internet have being used in a large range of tasks; thought the concept of eGovernment was not introduced until Internet was in use. EGovernment is today becoming a global phenomenon that is consuming the attention of politicians, policy makers as well as ordinary citizens.

EGovernment is far more than a technological phenomenon. It is transformative in nature, affecting the management of human, technological, and organizational resources processes. Consequently, the implementation of eGovernment systems will be monumental change effort, which clearly shows that eGovernment to day is qualitatively different from the more isolated ICT-system in the past. The emphasis of eGovernment as a transformational endeavor has inspired some commentators to ask if there is a close a link between eGovernment and the New Public Management paradigm (NPM). New Public Management is a management philosophy used by governments since the 1980's to modernize their public sector. Based on public choice and managerial schools of thought, NPM seeks to enhance the efficiency of the public sector and the control the government has over it.

NPM can among others be characterized by: i) a customer rather than citizen orientation focusing on high quality services that serve narrow interest of the citizens, ii) performance orientation, iii) lean and highly decentralized structures, iv) emphasis on accountability upwards, v)use of divisional structures breaking down former unitary bureaucracies [10]. He claims that this type of reform has a techno-optimistic, analytic flavor which seems to reinforce the effects NPM is having on the organizations throughout the industrialized world.

Homburg [24] has analyzed the use of modern ICTs and especially Internet technologies; from its focus on improving and reengineering internal processes to aiming at the redesign of external relationships in order to improve public administration's accessibility and quality of service provision. He identified 4 different patters: i) markets government, ii) participatory government, iii) flexible government (e.g. virtual organizations) and iv) deregulated government. He thus claims that "underlying to all patterns of practices, is a notion of departure from the classic public administration paradigm. Especially, the notion of decentralization conflicts with public management of strict hierarchy and rules, and

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[3] In these projects and other activities, the Scandinavian IS researchers have drawn heavily on international IS research, as e.g. Thorsrud and Emery [32], Checkland [11], Mumford [27; 28], Borland and Hirschheim [9], Boehm [7; 8], Klein and Hirscheim [22], Parnas and Clements [31], Grudin [21], Greenbaum [19], and many others.

centralization by integration. However, he continues, the means used to achieve this may vary from different contact with citizens, market mechanisms and more organic relationships. His analysis seems to indicate that eGovernment services in practice, in its focus on transformation of the public sector, mark a deviation from the classical public administration paradigm. It shows thus no unambiguous relationship between eGovernment and a specific form of public management, rather that there are many different scenarios or trajectories.

More recent research studies point to that while the NPM wave in public sector organizational change was founded on themes of disaggregation, competition, and incentivization, we now see ICT-centered changes based on reintegration, needs-based holism and digitization [16]. They argue that these new shifts are towards a "digital-era governance", offering perhaps a unique opportunity to create self-sustained change, in a broad range of closely connected technological, organizational, cultural and social effects. Without subscribing to all their claims, it seems highly relevant to discuss how to involve the various groups of citizens in these change processes.

4   eGovernment and the Scandinavian tradition: some lessons from the past

User involvement has always been a crucial part of the Scandinavian approach. However, what can be learned from the experiences in the past. Greenbaum [19] summarizes the main motivations for conducting participatory design as *pragmatic* (improving system design), *theoretical* (e.g. for communication benefits of the involved parties) and *political* (e.g. further workplace democracy). On a more concrete level, these reasons for stronger user involvement are normally given as: i) improving the knowledge upon which systems are build, ii)allowing for experimenting and learning before the solutions are finally implemented and put into use, iii) enabling people to develop realistic expectations and reducing resistance to change, and iv) increasing workplace democracy by giving the member of an organization the right to participate in decisions that are likely to affect their work

However, the way IS systems are being developed and used have been changed during the last 15-20 years, and many will maintain that the above arguments are no longer valid, e.g. because modern system development methods are different from those used in the past, in providing various opportunities for involvement. Internet and Web-based systems tools have changed the way systems are developed. Furthermore, we have a much more knowledgeable and skilled work force related to IT than in the past. There has been a move from internal systems aiming at rationalization to external (customer-oriented) systems aiming at improving the quality of public services, which implies that the users to a large extent are not to be seen as employees, but as citizens. One can also argue that new legislation, such as the Working environment act in Norway, provide means for involvement and participation at various levels.   On the contrary, it can also be argued that greater involvement and participation in all phases of development and deployment are even more necessary now, e.g. because:

1. We see greater changes in organization than before; the traditional organizational patterns are being challenged in that the borders between private and public sector is continuously being challenged.
2. What differs from the past is the change of focus from stand-alone system to large-scale integration of various systems and restructuring, and a shift from focus on the users to consumers and citizens. Systems are getting more and more complex through closer interaction and integration, as basis for radical restructuring of the public sector at large

3. There is an increasingly tendency towards outsourcing and globalization. We thus see new types of conflicts and contradictions, which best can be handled through participation at various levels.
4. The different threats related to digital divide calls for professionals that can support the various groups of citizens that do not have a strong voice on their own.

I am not arguing that we should return to the ideology-driven debates and actions of the "good old days". But we should critically assess the experiences from the past and use them as inspiration and a knowledge base for new thinking and initiatives.

4.1   User participation, where and how?

Even if we accept user participation, it is not obvious how and where participation best may take place. Marginalization and cultural bias are favoring dominant groups in access and decisions were the important topics in the participatory design activities. And who are the real users? This simple framework may illustrate that there are many different constellation and stakeholders when new ICT-solution are to be implemented:
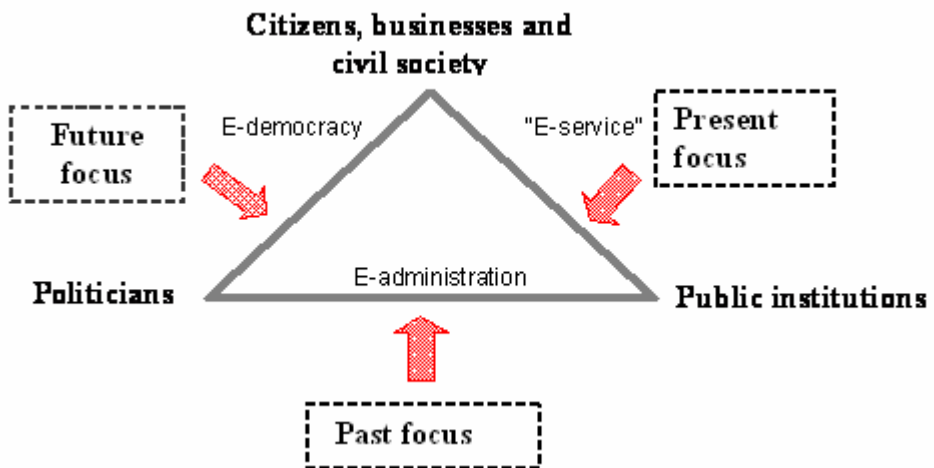
Fig. 1: A framework for eGovernment

Fig. 1 aims at illustrating that while one in the pioneering period mostly worked along the horizontal line, and the users were mostly the employees, the focus to day is mostly on service provision, and the users are outside the organization, primarily as customers. We are now gradually seeing more efforts toward the "e-democracy" dimension, though mostly as small scale experiments, involving various groups of citizens. It is rather obvious that this wide range of projects types require quite different system development strategies, depending on the goals and perspectives. Thus, in the individual projects, we will have to organize projects such that all involved parties will have their voice heard.

Følstad, Jørgensen et al. [18] have studied user involvement in eGovernment development projects in Norway. They found that there seems to be a broad agreement on the importance of user involvement, at least among the project leaders. However, actual user involvement is often conducted according to the participant practice of the industrial democracy, emphasizing formal procedures rather than the processes and methods advocated within the traditions of HCI. The most frequently deployed user involvement is user representation in project teams, rather than e.g. usability tests and user group analysis. One conclusion from the study is that

there seem to be an explicit need of more structured processes for user involvement activities for eGovernment projects.

Oostveen and van den Besselaar [30] discusses different methods for engaging users in systems design, and ask: To what extent can we use lessons and methods from participatory design, as e.g. being active in the specification and design process, to include a variety of political views and social interests in the social-technical shaping of future trajectories of large-scale of large-scale eGovernment systems. They claim, based on experiences from to large projects, that such traditional methods does not apply for various reasons: i) the models and methods are based on small scale projects, ii) the number and variation of user groups are quite different, and iii) it involves not (only) users as citizens and civil servants, but also politicians on various levels. Their conclusion is that a combination of methods from technology assessment approaches with participatory design practice can be successful, but is not yet practiced enough.

4.2   Different levels of participation.

Bjerknes and Bratteteig [4] point to that there are many different arenas of participation and democracy, and they describe these four:

i) The *work situation* level, in which the use of technology depends on the nature of work tasks, and the ICT systems are viewed basically as *concrete tools.* It is possible to influence through participation in the individual development projects, which used to be the traditional type of involvement.

Ii) The *workplace or organization* level, which depends on how different activities are coordinated and integrated in the organization. Focus is not only on individual systems, but their interlinkage and integration, where the information (technology) architecture and infrastructure are designed, including choices of standards and type of software. Important issues will be the degree of (de)centralization (as e.g. in the national wide systems in public sectors as Tax administration, National Health Insurance offices, etc.) To ensure the employees influence on their work organization, it is necessary to address the whole organization.

iii) The *interorganizational level,* in which the focus is on the relation between an organization and its environment, as e.g. the external users (customers), cooperating agencies, private businesses. Important issues are how to design technical and organizational infrastructure, and how changes in the environment can and will affect the internal structure of the organization. In Norway, such examples are cross-sectoral ICT initiatives as common solutions for businesses, collaborative use of registers, the reorganization of National Insurance Administration, Directorate of Labor and social welfare into one unit, the PKI (Public Key Infrastructure) initiatives, etc. At this level, user involvement and participation are complicated issues, involving many stakeholders and interests.

A fourth level, which is not discussed here is the *social or working life* level, which includes the legal framework, relevant institution on a national (or even international) level, addresses questions as availability of infrastructures, education, digital divide etc. .

5   Conclusions – a value-laden research agenda is still needed

My intention with this paper has been to take part in a discussion on how the Scandinavian tradition in information system research may contribute to eGovernment developments and

implementations. It is not argued that the Scandinavian IS tradition represents a coherent set of principle and methods for system development, but that it shares some common ideas and goals related to socio-technical thinking, user involvement and democracy at the work place. Without aiming at raising the whole debate of the emancipatory dimension of user involvement or digital divide in general, I will argue for a greater focus on studying the consequences of various approaches to system design, implementations and use, and in particular study how user involvement is practiced in various types of eGovernment projects and what impact different approaches have had.

I believe that specific challenges are related to outsourcing strategies, where top-down, specification-driven projects are dominating. Referring to Dahlbom and Mathiassen [15], I will maintain that we also need experimental and evolutionary approaches, allowing for "failures" without dramatic consequences. Not least, we need a better understanding of the problems associated with defining quality as an objective and measurable entity, as well as the efforts it takes to change the culture in an organization.

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Communicating the future business:
A procurement organization's understanding of their role in systems development

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Abstract. The Swedish government has required the Swedish authorities to work in a clear delineation between procuring and developing department structures. This has come as an answer to that it has been problematic to understand the responsibility structure in developmental projects especially when usability is concerned. Our research agenda is focusing on the procuring organization and their reasoning and handling of usability. As a consequence the Swedish Enforcement Authority approached us in order to learn and develop a viable procurement organization. The study is based on future workshop methodology and aimed at making the organization aware of both aspects of how they unconsciously understand their current work and as a consequence be prepared to handle certain problems. The paper presents the Enforcement Authority's understanding of the current problems with systems development, their "dream" of a fluent development project, and thirdly how they are to deal with the organizational change in relation to the IT-department. The paper highlights that communicating the organizations objectives with the future business is of utmost importance, but also a problematic goal, for the organization. This is in contrast to ordinary requirements which are focusing on communicating actual system processes or functional requirements. Furthermore, we discuss the implications for other organizations and for models of developing and introducing e-services in authorities

Keywords: Procurement, Systems Development, User involvement, e-service

1   Introduction

The Swedish government has required the Swedish authorities to make a clear delineation between procuring organizations and developer/supplier organizations. Formerly it could be that the developer department held a budget and the responsibility and the procurer department applied for part of this budget in order to make a certain computer system. In the new division between procurer department and developer department it is the former who hold the budget of the development. In effect this means that the procurer department is able to prioritize what the developer department should do and in what order. To this particular department which we study this has meant that they have decided to work more proactively as

a procurer not the least with defining the usability of the system in practice. They became inspired by the writings of Ottersten and Balic [8] and the research of Markensten [6]. Ottersten and Balic argue by the slogan "benefits appear through use" that a system will never be as good as when it is used and that the efficiency in use is of utmost importance for realizing the business potential. Furthermore, they argue that systems development should be organized from the benefits objectives rather than other second order objectives such as project constraints, systems architecture etc. Markensten's research departs from the same outset but takes this a bit further in also providing a sharp line between procurer organizations and developer organizations, often delineated by a contract based on a requirement specification. Most contracts and requirement specifications are based on either very high-level requirements or the opposite where functions are described in every functional detail. Both these forms of specifications obscure how the functions will work in orchestrated practice. Markensten's solution is to provide an evaluated prototype as the foremost requirement document. That is, Markensten argue that the procurer organization should design the prototype, evaluate it in practice and then procure lower level development from a developer organization – that is starting with external design and work through to internal design. This development process is inspired by how architecture is delineated from the actual builder, in contrast to most contemporary IT-development where the architecture, external designer and internal designer is employed by the same development organization/department. We call such developmental strategy a procurement approach to systems development.

1.1   A Procurement Approach to Systems Development

The objective of a procurement approach to systems development in general is to reclaim the procurer organizations role in systems development, which has been severely marginalized in current systems development models which often is based on the developmental aspects of computer design. It is our strong conviction that anticipated benefits, as well as the general work-flow must be owned by the procurer organization as it is their users who will or will not use the system efficiently. Our research has focused on both how different procurer organizations understand and handle systems usability [1; 3], as well as proposing and studying models and methods of how procurer organizations can take a more active role in the development [4; 7; 6].

The more normative part of our research propose a model where the procurer organization is fully responsible for designing a concrete prototype of the envisioned systems following articulated organizational objectives. The model is based on the idea that usability is the link between business processes and technology as depicted in Fig 1.

Business value 👤 ⇔ 🖼	- Business processes - Business goals - Business requirements
Utility 👤 ⇔ 👤	- User goals - User requirements - Different user groups
Usability 👤 ⇔ 🖥	- Information architecture - Interaction design - Visual design
Technology 🗄 ⇔ 🗄	- System architecture - Technical requirements

Fig. 1: Usability as the link between Business and Technology [from 6]

The process of the suggested development model is that the procurement organization should in an iterative and mutual process articulate the business and the user objectives which then are materialized into a concrete prototype. The prototype is then used as an important document in the tender process from which the contractors/developer organizations bid on, and furthermore base their forthcoming development on (see Fig 2).
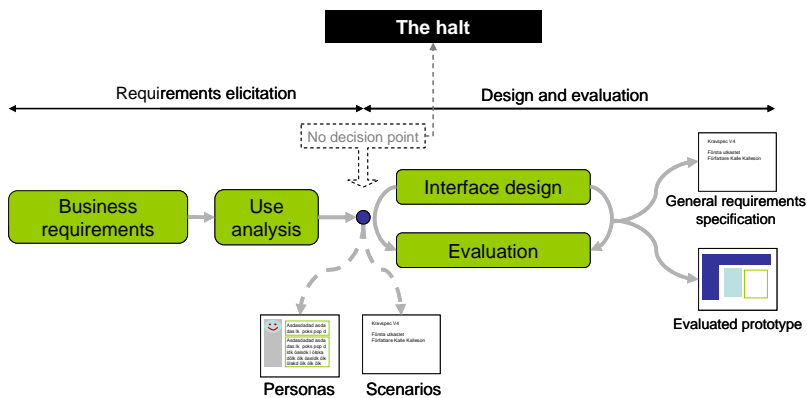
Fig. 2: An example of a procurement approach utilizing Personas and Scenarios as tender documentation [from 7]

By this process we have seen that the procurer organization becomes increasingly aware of their objectives as well as their means for developing a computer system [7]. Furthermore the prototype becomes an important boundary object between the procurer and the developer [9]. Artman and Markensten [2] are also discussing that this process of oscillating between business goals and user goals help the procurer organization to articulate and envision the future system as well as becoming increasingly more secure in their role and the design rationale. At best the process will make evident false beliefs about users or the business processes and there will be time to change before development starts.

1.2   Aim of this Study

The Swedish Enforcement Authority is to develop a system that handles debt relief.

A Debt Relief Act was introduced in Sweden from 1 July 1994. This made it possible to relieve natural persons completely or partly from the responsibility to pay their debts. The act is possible to use when a person is in such an economical situation that her debts can't be paid, even over an extended period of time. Some changes to this act have been proposed and as a result a new act will enter into force from 1 January 2007. This new act will mean a new way of work and the Enforcement Authority has decided to order a new IT-system to support it. The group mentioned in this paper is representatives for the procuring organization who are to acquire this and other IT-system's for the Enforcement Authority.

The general aim was to make the group aware of the palette of problems and situations which they are to handle and also get a gross awareness of how to handle them. Our research interest was to get a wide palette of the problems and how these could be related, to get an understanding of how this organization understand a idealized situation of project, as well as how the procurer organization understand how to get there. Another aim was to examine if a future workshop is an appropriate method for articulating the procurer organizations role in systems development.

2   Method

This study is based on the future workshops methodology [5]. A future workshop aims as preparing a group of people or an organization to concretely handle some future situation. The method is in its generic form comprised of three sessions. The first session is based on problems in the organization, the second on a vision of how the organization would like the situation to be ideally, finally the third session is focused on how the organization are concretely to get close the ideal state. The workshop sessions were spread over three weeks, with a 4 hour session each. The group who followed the workshop all has some responsibility due to the future systems development project. 3 persons followed all sessions, 3 persons followed 2 sessions and 2 persons could only follow the first session. At least 3 of the participants are experienced in systems development and have formerly been working at developer organizations. Others have extensive experience in the procurer organizations business activities.

As for most workshop methodologies the process is based on what the participants come up with and the progress is changed accordingly, therefore the sessions have been intervened during sessions. Although in general we followed a prepared process:

To the first session we had prepared a brainstorming in which the participants were to answer the question "what are the problems in contemporary systems development" with single phrases. The phrases were then presented in plenum and then, based on what the workshop leader could see as the participant's categories, clustered and discussed. After this session we utilized what we call "secret envelopes" which contains concrete problems which sub-groups of peers are to discuss and present within the workshop. The concrete issues were based on interviews made within the greater group and were partly articulated by the interviewers. The next session, a dream session, worked through the questions "what motivates the groups", "what forces are underlying these motivations" and then "how they wanted to be perceived by the IT-department". The content of the brainstorming sessions were not clustered, but instead said to be a basis for the general question of how an ideal systems

development process would look like. The basis for discussing the ideal process was based on concrete contexts in a "secret envelope". The contexts were prepared by the first author and focusing business processes, responsibility and usability respectively. Each sub-group also made a slogan to advertise these dream processes. The third session which meant to concretize the process of getting an ideal process, started with the participants interpreting the slogans and then the subgroups presenting their ideas. Based on these presentations the workshop leader presented a task of communicating to a specific person the groups' intentions with the systems development project as well as the change in the process.

Notes were taken during sessions, but the main part of what has been analyzed for this paper is the products of the sessions. Each session were introduced by the first author who presented the general objectives of the session and the contents/results of former sessions.

3   Results

The results are presented chronologically and thematically following the order of the workshop. As the results include many hundreds of concepts as well as sketches and process descriptions we have had to only present the most important and viable of the concepts.

3.1   The problems with current development

All the workshop participants had experienced, been affected or heard about failed systems development projects within the authority and many concepts came with ease, which became apparent during concept presentations. They clustered their concepts into five categories: Mind ghosts, Strategy, Business processes, Project, and Use situation.

Mind Ghosts. Mind ghosts were problems that mainly are problems within the mind of the people, but have strong imperatives for directing people, as well as, analyzing failures in a; "I told you so"-manner. The questionable competence of both the procurer organization and the developer organization is one of the most strong mind ghosts, which in turn make people lose courage, become powerless and suspicious. The informal power structure within the organization included aspects of prestige as well as hidden agendas which all call for that the members must lobby to the "right" person within the hierarchy. These concepts combined may result in the same consequences as listed above, but also in that decisions may be made on false grounds and that you give false expectations about the system. This category was meant to be very important but also the hardest to get at.

Strategy. The problems of strategy were focused on issue beyond the control of the participants but still processes that are more materialized than mind ghosts. Here issues circled around that the aims of the technology are not clear, few common visions, short-sightedness which all affected everything. Economic issues that the strategic decision makers had no understanding of usability and its relation to money, that strategy has no follow-up or control. Economic issues thus tend to deal more with money than economics in current practice. The last middle category is that the strategy is technology focused, that the IT-department knows best, proposed solutions is often predefined, and there is an unresolved conflict between usability and IT-architecture. The strategy allows the IT-projects to live their own lives as they are not understood. In all, these problems relate to that IT-development is seldom grounded in the business but rather on a budget.

Business Processes. Business process is the great category which summarizes all aspects of everyday activities for the authority. Again the aim of developing a computer system is questionable, but also who is responsible and the needs within the organization – the responsible for taking care of the benefits in the business is unclear. The mind ghosts are echoed in that the procurer organization often has an insecurity of systems development. A second aspect of this category deals with business knowledge and communication, as well as complexity of both the business and the computer development when it comes to make more global gains – how should one prioritize? All these problems are directly related to the developed product and related products, and its use. The relation to the IT-department is that they today feel that are lapdogs to the IT-department, but also that that they have made bad requirements specifications, have no routines for requiring developments, and finally that their cooperation often limps.

Project. Under the heading project roles, competence and communication was highlighted which the participants said to be vague. Aims and follow-up of the systems development once again came up as important problems which hampers the project progress. A new concept which tunes in well is that many projects lack high-quality pre-studies. All in all the indistinctness and uncertainty leads to conflicts, discussions, delayed deliveries, and in the end to reinforce hidden agendas (see mind-ghosts). It became evident for the group that indistinct follow-up and control is clearly coupled with vague roles and mind ghosts.

Use-Situation. The use situation undoubtedly hits the most concepts and spanned over both confidence for the project, user-involvement, product design and social affects. Social affects and confidence resembles well in that they deal with that users do not see that their expectations are fulfilled, or even promises are broken, and as a consequence they think "it was better before", the users also get a "I told you so" attitude but also that users think their work has become more stressful and problematic. These aspects has obvious consequences for all projects as their user cooperation becomes hampered by historic failures, but also the business is affected as the systems may not be used, it may take longer time to process and errand and so on.

As is obvious from this re-capitulation of concepts, categories and relations the participants find them selves in a problematic situation which they have to deal with when formulating a new process based on their values and objectives. The "secret envelopes" contained here some concrete problems (ex. "The usability designer is more focused on making the prototype appropriate for RUP than understandable for you. What problems does this elicit?") which two-people subgroups were to relate to the problem inventory.

The inventory came up with these three head themes;

- Roles and communication: Must be more distinct
- Business as usual will be apparent during the project: New models will be hard-won
- Responsibility: The procurer must take more distinct responsibility and not rely on the IT-department

In general the participants thought that they need to be better in communicating their intentions and present a more distinct role repertoire in order to be able to change the procurement process. The group had, in our view, a very complex and thorough understanding of problems in contemporary systems development. The different members of

the group contributed to the problem inventory from each specific view, and through the process many problems became articulated and the group's collective awareness grew.

3.2   The dream of fluent projects

The next workshop session focused on what motivates them and how the participants wanted to be perceived, as well as to sketch and discuss their dream of a fluent project.

What motives them as a group can be divided into three distinctive categories. The first dealt with instrumental goals connected to a project (*well-defined, traceable, accessible as persons, focus on organizational benefits, user-involvement*). All these motives are focused on dealing with the project. The second category dealt cohesiveness of the group (*straight-forward communication, coherence, involvement, awareness, roles, role-model for other authorities*). The third category dealt with attitude within the group (*happiness, have fun, fast-forward*, *seeing possibilities* and *doing good*). They also said they wanted to make a difference and become masters over technology. In relation to their counter-parts, the IT-department, they wanted to be perceived as *responsible, accessible, business competent, engaged, without prestige, clear-cut, professional, focused, confident, consequent, and driving(proactive)*. It is clear that it is an ambitious group who really want to make a change and depart from problems in contemporary IT-development.

These concepts are defining what they wanted to make of the forthcoming systems development project and were taken as the departure for the next task which was to discuss and sketch a dream model of a fluent project in terms of "business development at large", "usability-designers in the process" and "to maintain power over the project" respectively as well as then turn it into a slogan. These general tasks were given to the two-person groups in a "secret envelope".

Business development at large. The group started with a slogan of "with everyday life into the future" and made a descriptive model of how ideas propagate through different stages in a developmental process. The model became burdened by the everyday life of today, and they turned into a model based on a slogan "as fast as the train" and depicted systems development in terms of tracks, different wagons, stations and people getting on and off. Still it was the procurer organization that sat in the front train and steered and controlled the speed and pace.

Usability-designer in the process. Inspired by a famous Swedish author Per-Anders Fogelström who wrote "City of my dreams" one of the subgroups formulated a slogan "the system of my dreams".[4] This slogan were much appraised by the group at large and stood for the concrete situation of the user utilizing the system. The slogan also had a subscript detailing "to gain for all, responsibility for everyone".

To maintain power over the project. "Knowledge and communication is power enough" was this subgroups slogan. They focused on that through communicating their competence and knowledge they would overcome short-sighted economical aspects which may hamper the project. By communication they dreamt of enlightening the economic department as well as the IT-department without monetary respectively technological claims, but rather declaration of use and business benefits.

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[4] In Swedish the slogans become more apt and poetic: "Mina Drömmars Stad" vs. "Mina Drömmars Stöd" .

As was the task all the groups highlighted a project progress where their ideas and their objectives come in first hand and where the end goal, or station in terms of the train metaphor, is gain for all. A dream that is!

3.3   Communicating the future business objectives

The third session was about making a dream come true. The group discussed their slogans and their models. The model that got most attention, as well as, most complementary comments was the train metaphor. The group discussed that there may be several tracks which they may choose between, but also who is the one who set up all the tracks, and what if this steam-train would in the future become an electric train.

Based on their slogans the workshop leader presented this task "Communicate your knowledge of the train journey to the system of your dreams". The group had one hour of preparation, in order to then present their way of dealing with problems in current systems development. During their presentation the authors and another participant played the role of a named person of superior rank.

As it turned out the group had greater problems in communicating their ideas of how to change the systems development process than they expected. The goal was of course that they would through this workshop be prepared both to give a brief of the current problems but also be able to give a straightforward example of how they are to safely take the project home. As such the task failed. However, he group articulated the problem of communicating their objectives and intentions with dividing up the process into two distinctive phases.

4   Discussion

The workshop did in many ways give a great palette of problems in current systems development, as well as a rough idea of what this group would like the process to be. The participants depict a current situation of mistrust, questionable aims of developing computerized processes, users who become stressed or get even more problems as a consequence of new computerized tools, and non-realized benefits in the organization. It is in the history of all these problems that the projects have to navigate and try to take power over the situation. For this group, who had already decided to try a model based in prototyping on the behalf of the procurer organization, the dream is to make a system through a process of which they have control and which they have the power. The main part of the problem as well as their control deals more with social issues, than with technology or the actual implementation of the computer system. This is in consent with both our former research as well as what we think that procurer organizations must do – take strong control of the actual use-situation as well as the organizational development. This particular procurer organization had strong incentives to change their role in the systems development process to a much more responsible and active position. Still even if the ideas are well grounded in the group there is many aspects which have to be resolved. During the sessions distinctiveness and communication got a very important function. Being able to present, inform, instruct or even command both what roles each individual hold, and how different roles are connected both to each other and to the greater process is an important step in defining and re-defining a project where the procurer organization is to take the lead. Still they had problems in becoming distinct in the end. This may of course be a consequence of that it was not a real situation with a real objective, but still to be clear-cut and distinct is not an easy task.

It is interesting that the group seldom made explicit reference to before and after a contract with the developer organization. When prompted they said that this model is so evident in their minds that they have stopped to think about it. In a sense we think that this particular group have made a quick knowledge journey and therefore have problems in anticipating the addressee of the message and thus communicating their intentions.

Based on this study a procurer group must not only focus on systems design, but foremost, on communicating and establishing relevant roles for deploying certain responsibility structures within the project. The specific responsibility that this study has evoked is aspects of user-orientation (including involvement as well as use), business modeling and core benefits of the future system. If this groups understanding at all reverb other procurer groups they must to a greater extent train and model their way of getting to the "system of my dreams".

As for e-service design and for user-involvement in governmental services we have found a great maturity in defining contemporary problems not only for users but also for involving users. Constraints does not only come from strategic, developmental and economical perspectives but also in mind-ghosts of the general user in that they think new IT-services will do no good and therefore there is no use in getting involved. Failures and mistrust has become a vexed circle. According to this study the awareness of this problem is a starting point for taking greater responsibility for the project at large and for usability specifically. We think that future governmental IT-development must to a greater extent involve users as early as possible, which must be in the very beginning of the IT-development process – that is when the procurer organization envisions a forthcoming IT-system and new practices.

The future workshop format seems to have been a good way to formulate the past and the future. The all too common "but that will not work" were never articulated. Although it must be said that this group was a strongly cohesive group, who had discussed their envisioned approach, as well as team work, intensively during the last months, which probably helped processes and the good and friendly atmosphere a lot. Besides the result we must comment on the process of sketching and articulating ones ideas. The subgroups that worked with the dream scenarios all had problems in illustrating their ideas, and it took for some groups several turns in order to let loose and play with the scenario and find metaphors, slogans or other inspirational mind-sets that twist the ideas. As for utilizing our invention secret envelopes as part of the future workshop methodology we think that it has two important benefits. First, by calling them "secret" makes them important and in a sense owned by the sub-group. Secondly, it contained concrete and in some ways provokingly explicit problems which in some cases were directly discarded as unbelievable even if they were based on issues which other participants had taken up during interviews. We think this is a method which would favor further study.

All in all, we think that this future workshop series made the groups' awareness grow intensively and that their understanding of their situation became articulated. We think that the many authorities are in need of reflecting and verbalize their objectives as well as process for getting there. We hope that this will inspire several procurer organizations to take the lead over technology and communicate their important role in any form of e-service development.

Acknowledgements

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Developing e-services in a government authority: Different views on design in procurement and system development

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Abstract. The aim for this study is to understand and describe the ways the different actors describe and understand interaction design, and to identify challenges to balanced and active UCD work. The purpose is also to learn more about how procurers and interaction designers view the procurement situation and how the role of an interaction designer is constructed in such a situation. Ten subjects, representing the procurer organization and the development organization were interviewed. The results show that the enforcement-department is in the middle of a change process, where interaction design will be their responsibility as well as part of their area of expertise. The interviewed interaction designers have a narrow perspective of their work and do not see the complete process from procurement to delivered product or service in which they are a part of. As a result from the organization change they expect to meet more active procurers.

Keywords: interaction design, design process, acquisition, procurement, system development,

1   Introduction

Swedish government agencies are in the midst of several change projects. One is the transformation from a visit- and form-based business to a 24/7 oriented business. One of the drivers in this transformation has been the introduction of a wide range of self-services and computer mediated services. Another transformation, concerning some government agencies, is the requirement that they should clearly distinguish between the procuring organization and the system developing organization, in terms of resources as well as governance. This transformation sometimes is used as a driving force to redefine processes, project governance, and the positioning of roles and activities. This provides a possibility to find alternative ways of employing user-centered methods in e-government projects, whether they concern services, administration or democracy.

The government agency we currently work with have started a change towards such an alternative way. In a new three stage project management model interaction design work is performed by the procuring organization as well as the producing organization. The

inspiration for this change was collected from Markensten [18] as well as Ottersten and Balic [23].

1.1   Interaction design by procuring organizations

Some of the research performed within Human-Computer Interaction (HCI) or interaction design can be read and analyzed from a procurement perspective even though that was not the primary focus for the research performed [e.g. 7; 20; 21]. Moreover, some work has been done regarding government contracting [26]. As such it poses challenges, because of legislation and more or less rigid processes set up for equality purposes. It also poses opportunities because governments employ a lot of personnel, they are large procurers, and sometimes have the moral obligation to act as role models. Literature that focus on procurement [e.g. 16] often highlight economical or legal issues of procurement or on functions rather than functioning.

Most user-centered design (UCD) models and methods, as practiced, rely on the considerate developing organization and that the producer is performing all the user centric tasks. All expects, and wants, usable systems – it seems so obvious that many organizations assume that it does not have to be dealt with or specified until the producer starts to develop the system. It is common that users are mentioned when training is mentioned, when access rights to the potential system are discussed, and in some cases when tests before delivery are described. These assumptions are supported by the fact that literature on user involvement mainly concentrate on the producers' role [see e.g. 9; 24]. The implicit assumption has been that it is the responsibility and task of the developer to ensure that developed systems are usable. The discourse of interaction design is not so obviously directed exclusively towards developers, even though it has been adopted by them, and implicitly assumes a position similar to the position of UCD.

In recent research we have focused on the role of an active procurer in relationship to the development of usable systems [1; 12; 15; 19]. Markensten [18] shows how usability and usability methods successfully can be deployed as part of prospects for request for tenders. He proposes that usability should be seen as the connector between organizational development goals and system development goals. Moreover he suggests that a tested prototype should be used as part of the functional descriptions given by the procurer as part of a contract or a requirements specification. Markensten and Artman [19] and Artman and Markensten [3] describe how scenarios and personas used in request for tenders helped the procuring organization articulate their objectives and motives for developing a system. The prototype, scenarios and personas relates closely to the ideas of boundary objects [25]. In Holmlid [13] we frame a procurement process of an IT-system as a part of a larger service design process, suggesting that user-centered design is an integral part of organizational development and innovation, thus providing a wider design process framework for organizations to connect the organizational development work with the design processes directing the development of technology. Interpreted as a design management process, being an active procurer of usable systems shares some of the challenges posed by Holmlid [14].

1.2   Interaction design by developing organizations

HCI and interaction design focus on the usability and interaction of an IT-system. There is not one definition of the term interaction design and it is often used to cover activities such as usability, interaction, context and design. Working with research methods focusing on analyzing, comparing and evaluating current system designs moving from studying functionality and interfaces of a system towards studying activities and use situations.

In Gulliksen, Lantz and Boivie [10; 11] the designer is described as someone that acts as a mediator, someone that goes between user and developer.

A survey on usability professionals, men in the 40ties with background in computer science or engineering in Sweden is reported in Gulliksen, Boivie, Persson, Hektor and Herulf [8]. One recurring comment from the respondents was that the development process used does not in itself contain any support for usability activities or UCD and the usability perspective was described as severely neglected.

In Boivie, Gulliksen and Göransson [5] an interview study with usability designers, project managers and user representatives is reported. The authors talk about three phases that the usability designer is involved in; analyses, evaluation and design. The way the three phases are presented they can be understood as separate phases placed on the system development process when needed. The usability designer is described as a lonely person. A somewhat negative picture is presented and some usability designers expressed doubts about the impact they have had on the product and on the user situation. What the usability designer did was not really a part of the project. Neither did they have any formal rights to make design decisions.

In Lantz, Artman and Ramberg [17] an interview study with eleven interaction designers representing university, academia, private companies and authorities is presented. The roles described by the respondents were varying from looking upon the role as mainly consisting of working with usability and use to focus more close to graphical design and e.g. branding. Some view interaction design as an area building on HCI and usability, a sequential way of working, normally not focusing on graphical design and aesthetic expressions. Others work from the start to the end of a project in a process that includes problems and possible solutions iteratively, at one and the same time. The interaction role is also by several respondents described as a project leader or the project leaders' right hand.

The view on necessary skills of an interaction designer varies. Some of the respondents present the opinion that an interaction designer has to know the material i.e. programming language and technical aspects. Others say that what is most important is that you can communicate with the different actors around you i.e. all the project members (e.g. programmers, developers, graphical designers, art directors) and of course also the customers and end-users.

According to Arvola [4] the role of the interaction designer includes contemplating and judging a complex situation and from a creative thought composing a design that fulfils the situational, technical, functional, ethical and aesthetical requirements.

Still much of interactive systems design is done in a reciprocal process where internal construction is as much defining ways of what the external design can do, as the opposite.

1.3   Research aim

The aim for this particular study is to understand and describe the ways the different actors describe and understand interaction design, and to identify challenges to balanced and active UCD work. The purpose is also to learn more about how procurers and interaction designers view the procurement situation and how the role of an interaction designer is constructed in such a situation.

2   Results

We performed 10 structured interviews with key personnel of the Swedish Enforcement Agency. Four (2 male, 2 female) were employed by the Enforcement-department, of which none were an interaction designer. Six (3 male, 3 female) were employed by the developing organization. Of the six interaction designers three had moved to other missions and three worked as active interaction designers at the time of the interviews. Each interview took about two hours and was performed in a room at the respondents' work place. The interview that followed an interview guide, was tape recorded and transcribed.

2.1   Context of the study

The Swedish Enforcement Agency has recently employed a new three-stage project-management model, the so called program model. It follows the development towards a clearer delineation between procuring and development organizations undertaken by most Swedish government agencies. The first stage is a stage where the organizational prerequisites for system development are established. The responsibility for this stage lies with the Enforcement-department. The second stage is a system development stage, for which the IT-department is responsible. The third stage is an implementation stage. The three stages are coordinated by program management. We have limited our study to the two first stages in this study.

The Enforcement-department has one interaction designer now working with business development tasks and procurement, while the IT-department has 3 interaction designers.

2.2   Enforcement-department

In the middle of something. It becomes obvious in the interviews of the non-designer persons at the enforcement-agency that they are in the middle of a change process. On one hand, the respondents refer to interaction design as design of surfaces, and to some extent as dealing with aspects of product quality or product properties. They refer to GUI-sketches, prototypes and user-testing, but have little or no experience working directly with these. This is hardly surprising as the respondents have not worked with interaction design directly before. On the other hand, the respondents refer to interaction design as a central aspect of successful development projects, in the sense that by working with design the usage of the system will be better. They also claim that there is no question whether interaction design should be part of the first stage of the program-model, although they have problems expressing exactly where in the process it should be integrated, how it should be performed, what the value-added is, and what the concrete results are.

The simplified view of interaction design seem, interaction design as styling, to be their appropriated view, gained through experience and earlier organizational structures, in which where it was not viewed as their responsibility, nor their area of expertise. On a more general level, this point towards a structural problem with viewing UCD as mainly a practice integrated into system development process frameworks, it also points towards the institutionalization effects such a view has had on the expectations on what interaction design brings to the effective development of well-designed systems. The more advanced view, interaction design as process, seems to be procured from the discussions on the newly formed program-model, as well as from the interaction designer employed by the Enforcement-department. The interaction designer is in the process of establishing a role for design and an interaction designer at the Enforcement-department. On a more general level, we expect that

the Enforcement-department will develop a new understanding of interaction design as it becomes integrated into their work-practices.

The Enforcement-department is in the middle of a change process, where interaction design will be their responsibility as well as part of their area of expertise. This renders them a new set of working practices, a new responsibility in relationship to the users and their expectations for good systems, as well as a new relationship to the IT-department and their work practices.

Intra-organizational relationships. Several of the respondents point towards a potential risk with the new program-model and the positioning of an interaction designer in the first stage. They assume that from the 1st stage there will be delivered artifacts, documents and results that the organization responsible for the 2nd stage expects to be their job developing. Furthermore, they expect that these artifacts, documents and results will be enveloped as specification or requirements, thus limiting the space for negotiation of the IT-department. A range of worries were expressed, such as whether the program management would be strong enough to accept the user-involvement from the Enforcement-department, the program management would be strong enough to force the IT-department not to redo the user-involvement work, the new program-model with its emphasis on user-involvement and design in the 1st stage would drive the IT-department further away from understanding the important aspects of the agency's business and values, etc.

The Enforcement-department point toward a higher-order change of initiative and information-asymmetries which they do not feel have been recognized in the overall change process.

2.3   IT department

Intra-organizational relationships. Among the interviewed interaction designers two groups can be viewed. One group, have a narrow perspective of their work and do not see the complete process from procurement to delivered product or service in which they are a part of. Another group, have moved on from working as interaction designers to today working with tasks on the business side or higher up in the hierarchy of the organization. They have more of a helicopter perspective and can describe the process from identifying need to the deliverance of a service or a system. They have the possibility to work for usability aspects and describe that people listen to them more now than when they worked as interaction designers.

The respondents describe working with a number of persons with different roles during an IT-project. Representatives from the business side and from the employees are included in the projects either working directly in the project or as contacted and visited out in the organization. The interaction designers experience having the responsibility for the usability aspects and can often do the activities they suggest should be performed within an IT-project. Within the organization a modified version of the system development model RUP is used. Here the role interaction designer is described and shall be included in the IT-projects. Activities described by the interaction designers are single activities performed within a project e.g. target group description, modeling with users and usability evaluations. The respondents say they work with interaction, with the surface i.e. the GUI and also with the context. In some longer projects an interaction designer can work up till 80% of her work time and follows then the process of the project and perform activities to secure the usability in the product. When asking about how results from a project are followed up they say that it is not clear to them or that they think it is not always done. It is also clear that the target group for

usability aspects most often is the employees working in the organization and not the citizen that is going to be the user of the e-service.

Re-organizing the organization. The respondents describe the re-organization that has started as messy and they do not have a clear picture of what it will lead to in their daily work. Some has expectancies that they will have a better work situation after it has been carried through. They also expect to meet procurers that know what they are procuring and why. Some of the respondents also say that they look forward to meet more active procurers from the business side but they will not have them go as far as presenting a requirements specification consisting of sketches of the GUI, then they have gone too far.

3   Discussion

Given the results reported above the organization we're studying are facing a set of challenges with respect to interaction design's role in the development projects.

   As a pioneer among Swedish government agencies, the organization we studied has decided to give interaction design a new role throughout the organization, and integrate it not only in the system development processes but also in the organization al development processes. It is today not clear to the respondents what this change will mean to their daily activities or how skills can be transformed between the two groups of actors. The role as interaction designer and their influence on the design process should be generic with respect to other organizations. The shift from a traditional development process to a process driven by an interaction design perspective will develop on a case to case basis, and thus be generic in the sense that there will be differences and similarities between cases.

3.1   Managing the transition of information asymmetries

In the traditional system development relationship between a procurer and a developer, the procuring organization knows everything about the business, tasks and processes. The developing organization knows everything about the technology. This is a classical asymmetry, where UCD has been an advocate for institutionalization of process for eliminating the asymmetry with respect to the users and their tasks [6; 22].

   In the organization we study management have decided to more clearly distinguish between the procuring organization and the developing organization [2]. This means that the basic information asymmetry structure becomes pronounced and supported by an organizational construction. Two major differences from a classical case are important to address here. First, the development organization have a long history of user and business-centered work-practices, from being a part of a more integrated development organization than the one being instantiated now. Thus, the development organization already has worked towards balancing some aspects of the information asymmetry. As of today, they possess technology, user, business, as well as design competence to a higher degree than a neutral development organization. Second, the three-stage program model used to integrate organizational and IT-development projects is crucial to maintain both differentiation and integration. The program management thus becomes central for driving the higher order organizational change, as well as requiring change and competence development from participants in the different subprojects.

   Management has also decided to move some of the design work to a point in time before the developing organization is involved. Or, expressed with an integrated process perspective,

extended the time-frame under which design is performed. Given that the procuring organization still have to understand and use interaction design as a core practice in their development projects, and the development organization have both design and user competence, the information asymmetry looks a little bit different. The procuring organization is going through a change process, where they are supposed to integrate interaction design in their processes, with the support of one experienced interaction design. The developing organization on the other hand goes through only a minor change, supposing that they will deal with a new kind of requirements documentation, and refraining from being involved in early stages of analysis. Thus, there will be high pressure on the development organization to appropriate the design practices as individuals and as an organization to be able to deliver what is expected of them between stage 1 and 2 in the three-stage program model. Assuming that there will be pressure caused by efforts to have an effective organization as well as swift changes, they should be given good and competent support for an extended period of time.

3.2 Consequences for user involvement in e-government projects

In the beginning of the article we described two changes that the government agencies are going through. The transformation from a visit- and form-based business to a 24/7 oriented business were mentioned and it is quite surprising that the respondents in the interview study focus on internal users rather than the public. When users are brought up on the agenda they are regarded as internal users i.e. employees within the organization.

The interaction designers in the presented study did describe different levels of working with usability within the organization and that they had easier to get their voices heard when they worked on the business side or higher up in the hierarchy.

The consequences for user involvement in e-government projects seem to be manifold. First, there is the issue for the Enforcement-department to utilize the user-involvement they already perform through their process-analysis and definition work. Second, the Enforcement-department need to appropriate and utilize relevant design practices to transform the knowledge gained through this user-involvement into specifications and other process-related artifacts that may drive a good IT-development. Third, the value-chain between the different stages of the program-model needs to be kept open, so as to allow knowledge gained through user-involvement in different stages can be utilized as a free resource towards the benefit of the whole program, and not for the isolated stage. Fourth, it will require of the IT-department to rely on user-studies performed by non-resident designers, and will allow them to work from a higher ground as a starting point. Getting the most of their own designers will be a challenge.

It is our firm belief that design is one of the best and most valuable ways forward.

3.3 Future research

We will continue to follow the organization studying their development as a considerate design organization, trying to understand how they might take advantage of the new role design is taking in their organizational development. This requires of us to pay interest to how management handles the overall transformation of the organization, how the designers across the organization coordinate and perform their work, what design practices will be developed and appropriated by the procuring organization, and how the integration of design work in the requirements documentation will be handled in negotiation as well as development processes. We will also study the transition between the 2nd and the 3rd stage in the program-model.

Acknowledgments

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Understanding and Developing User Involvement at a Public Authority

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Abstract. User involvement is one of the major constituents of a user-centered systems design approach. However, involving real end users still seem to be one of the major obstacles to systems development projects in practice. This paper reports on our initial experiences in our cooperation with a public authority to increase their effectiveness of user involvement and discussing new ways of involving users. As a start we performed a workshop where we examined the attitudes towards user involvement and discussed the participants' experiences in this respect. Following we will conduct a survey to capture quantitative data on the user involvement throughout the organization.

Keywords: User-centered systems design, user involvement

1   Background

User involvement has for a long time been recognized as one of the major factors contributing to the possibility of building usable systems. This was recognized already by the User-centered design team at IBM [5] and is emphasized as one of the key constituents of User-centered systems design [according to 8]. However, many have reported on the problems occurring when working with user involvement in practice.

The CHAOS-report [10] is one of the few sources that show quantitative evidence of the harsh reality of systems development in practice. In a survey of 280 000 US projects in 2000, only 28% of them succeeded. The rest of the projects failed and were cancelled (23%) or labeled as challenged projects (49%), that is, completed and operational, but over-budget, over the time estimate, and with fewer features and functions than initially specified. The reason most of these projects failed was not lack of money or technology; most failed for lack of executive support, lack of user involvement and lack of experienced project management. These problems can be described as organizational and management problems, and as long as these problems cannot be supported by the systems development processes, the IT project will not succeed.

Another source that discusses the lack of management support is [11] which show that it is crucial to get access to users and get them to take time away from their normal activities. This has also been discussed by Damodaran [3, p. 336]:

"Often the most suitably skilled and experienced people cannot be spared from day-to-day operations to become representatives"

Besides getting hold of users, it must be decided on which level the user should be involved and in which activities. Users can be involved in an informative way (in which they provide and or receive information), in a consultative way (in which they comment upon a predefined service or range of facilities) or in a participative way (users influence decisions relating to the whole system) [4]. By active user involvement [8], we mean that the users actively take part in design decisions influencing their future computer-supported work activities, meaning that we argue for participative user involvement as the most effective way of working.

Many claim that the users must be educated in order to understand and to be fully engaged in the design of software [e.g. 6; 3]. However, by educating users they risk becoming detached from their previous working conditions and start viewing their work and computer support differently.

In Kujala's review of the benefits and challenges with user involvement [9] she argues that very few cases provide any clear evidence that user involvement is in fact beneficiary. Consequently companies tend to focus on user testing for error detection and elimination to show more downstream utility of the methods. However, Kujala's scholarship mainly discusses product development, which differs from our case of in-house development [7] in which the users are prevalent in the organization. Our intention in a longer perspective is to quantitatively show the effects of user involvement by surveying attitudes, methods, and ways of involving the users both before and after our mutual action research project and the workshop described in this paper is one step towards that goal.

2   Research problem

Our research objective is to enhance users' health by increasing the usability of the IT-support at Bolagsverket. One of the identified major factors for doing this is to increase the opportunities for effective user involvement. Before doing that we need to understand the current situation when it comes to user involvement.

Our detailed research problem is:

- How has the user involvement been carried out up until today?
- How has user involvement been perceived by user and developers?

New user-centered methods cannot just be introduced without considering the consequences; the risk is that the organization looses the confidence in the new methods, if these do not lead to improvements immediately. Without the support and understanding of the benefits from the organization, the new methods will not be applied and the project will fail. Hence an additional research problem:

- How can user-centered methods be introduced without the organization loosing the confidence in the methods and without failing?

3   Case details

The Swedish Companies Registrations Office (Bolagsverket) is a public authority, but is not funded by governmental funds; the agency get their income from services provided to the public. The services are mainly to register new companies, as well as changes to existing

companies. The agency handles a vast amount of information about companies and offers the business community to get access to this data for a fee. Much of work has earlier been manually entered to mainframe systems, but one of the overall goals in the organization is to automate large parts of the work procedures as well as making it possible for the public to do their registration electronically. The organization has about 500 employees, mainly civil servants working with registration and information retrieval. The case handling is very complex requiring highly skilled IT-users, working with mainframe systems in parallel with more modern IT-systems. The development of new or existing software is done within the agency. The organization has an extensive process orientation, both in case handling and IT-development.

Users have been involved in the changes of work procedures and software development, but through user support (a concept defined by the organization; användarstöd – in Swedish), which is a part time post held by registration handlers. The user supports are seen as highly skilled users, with good knowledge of the procedure of work. The organization is troubled with high sick rates, and one of the countermeasures to this, is a project, partly funded by the Swedish Development Council for the Public Sector (Utvecklingsrådet) where focus is at computer-supported administrative work and health factors. Our research group has been involved in this project, as researchers and to support the agency's work.

4   Method

The organization in conjunction with our research group arranged a workshop with the purpose of discussing user involvement in their IT-development processes. There where 17 participants in the workshop, they were representatives from the union, procurers, developers, and project managers. Several directors were also present, e.g. director of IT-division, director of administrative division etc. During the workshop, the concept user involvement were presented and discussed in the context of the organization. In the research project as a whole, we have chosen to work according to action research [as described in 1] and in this particular workshop, both authors were present and took active part in the workshop. However the participation were mostly as moderators and collecting data, which we did by taking hand written notes. One person from the organization also documented the workshop and these notes were given to us after the workshop. As researchers we analyzed the outcome of the workshop and had a follow up meeting to make conclusions and decide on future actions with the organization.

5   Results

Following are some of the major problems identified for introducing UCD by the workshop:
- **Support in the general goals of the organization.** It is crucial importance that the general management openly expresses its support and sponsorship for user-centered design and health issues. One of the overall goals in this organization is to automate large part of the registration handling that today is done manually. The IT organization is told to automate and rationalize the work, and this work sometimes contradicts the goal of producing usable systems and a healthy work environment.
- **Lack of time.** Lack of time is one of the crucial obstacles to user involvement. Managers have an obligation to deliver results to the production, and by letting

users be involved in projects the manager risks that the production rates will be lower. Therefore we must create incentives for managers to provide users to development projects or as one from the development group expressed it: "The owner of the resource must give us the time". The workshop concluded that there is a need to specify in which phases users should be involved and to what extent, to minimize the time they need to take away from their original work.

- **Attitude problems.** The workshop concluded that there is a need to make sure that all parties involved understand and appreciate the power of involving users on a more active basis. It must also be made clear in all parts of the organization that it is okay to leave the ordinary work activity to participate in user involvement activities. Another attitude problem is hidden in the citation of the previous bullet, what is noteworthy is that the developer speaks about the users in terms of resources. This could mean that the developer in some ways look upon the case handlers as mere resources and not as highly skilled human beings.

- **Technology oriented language.** The language used in the process of gathering requirements and design often becomes very technical and full of for the user unintelligible abbreviations, which make the users less inclined to communicate their own ideas and needs.

- **Users feeling unseen.** Providing input as a user representative requires recognition to foster further collaboration. This is often not the case. Some users felt disregarded when their ideas were not captured by the organization, "We have so often been told that it [a change in the system] is impossible by the developers and later someone else told us that is possible, but difficult. It makes you wonder - how much more is possible?"

- **Risks with the user support role.** 12 people currently uphold the role of user support within the organization. They have been trained and extensively involved in development projects in which they act as user representatives. In our previous research we have seen users that have become so detached from their work practice that they no longer know how to conduct the work in every detail. This has also been confirmed by this organization that says: "They are more work domain experts than experts on the work practice." However there is a general agreement that the user support role is needed, but that they cannot replace the active involvement of "full time" users.

Following are some of the proposed solutions that the workshop formulated to the identified problems:

- **User pool.** There is a need for an active recruitment method for gathering users that are more representative than user support to be involved in development projects. The general idea was to advertise for a pool of users interested to become actively involved in projects, and to gather an amount of users that could facilitate involvement without risking that the users become too much involved. The interested users should go through a recruitment process with interviews so that they are suitable for the purpose of the user pool.

- **Man-years in the budget.** In order facilitate user involvement in project activities specific man-years corresponding to user involvement must be added in the overall budget of the organization. It does not require any specific recruitment, rather serve as a reminder that time must be taken from the case handling and given to user involvement.

- **Education and lobbyism.** The organization needs to put a lot of effort in informing and education all stakeholders. The management of the organization must be

informed about the benefits of user involvement, and that their active support will matter. User involvement and the notion of a healthy work environment must be made explicit as an overall goal of the organization.

- **Requirement specifications must be less technical.** We must gain increased acceptance among developers for less formal specifications. This must be done in order to increase the understanding among all stakeholders.
- **Concrete advice.** The organization need concrete advice on how to conduct user involvement activities such as user workshops. Methods and processes used in the development of IT should be modified to include user involvement activities.

6   Discussion

In the beginning of the workshop, the workshop leader presented a list of words and abbreviations with explanation in order to create a consensus over their meaning during the workshop. The term user was explained mainly to be the case handlers, that is end users. But even though this was agreed upon, participants' views on users shine through during the workshop. An example is when a developer clearly expressed a view that the users where somewhat of a resource.

User involvement until today has been good in terms of quantity but not in quality. By the role of user supports the organization has in their meaning involved users in the IT-development process. The organization is aware that the user supports have acquired too much of an understanding of the business process and the IT-development process to be good user representatives.

In the workshop the idea of the user pool was born as a way to facilitate the process of the acquiring users to the different development projects. But the discussion was at length held at the need to get the right kind of users and the recruitment process of these users. To become involved as a user in the pool the people in the organization wanted them to be interested, knowledgeable, inclined to change and interested in developing their current work situation and have great communicative skills. In other words, the requirements put on somebody to become a user representative are very high. This might lead to problems finding users and is more a description of the user supports they have today.

However, some of the workshop participants claimed that they feel misunderstood, and that they actually have involved users, but in a more informal way. Neither the organization nor we have recognized this type of involvement in the organization before. Given this we feel the need to deepen our knowledge on actual type of user involvements in the organization.

Generalizability is one of the weaknesses of the action research method, however, as far as we can see in the other research projects we have with public authorities, some of the results reappears, especially the results concerning attitudes [see 2], lack of time and high focus on automation.

7   Future work

Following we will conduct a survey among all the employees of the organization to capture the quality and quantity of user involvement. We suspect to be able to reveal other types of user involvement than traditionally recognized and get further knowledge on the complexity

of the problem. Also we hope that the survey will lead us to future respondents to in-depths interviews on other types of user involvement.

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Why don't they automate?

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Abstract. This paper argues that implementations of eGovernment solutions create both organizational and technical change. It subsequently identifies two major challenges that are important to take into consideration when implementing these kinds of services. The first major challenge is that you cannot disregard existing organizational problems. The second is that you have to change the existing processes, which may be difficult if the change process is not deeply rooted in an open, participative organizational culture.

Keywords: eGovernment, organizational challenges

1 Introduction

While the use of Internet technologies has exploded in the private sector and brought service development to a new level, public sector has in many ways been slow to adapt new possibilities and demands stated by their users. Web2.0 in the private sector is well established and describes the third generation of Internet services, but there are no similar parallels in the development of Internet services for public sector use.

eGovernment and mGovernment are well known areas in the field of science, with conferences and journals of their own, as well as research programs. However, one may wonder why the public services, that on surface level appear rather simple, are not subject to automation and self-service development. Especially when the service is difficult to reach for the users, creates a great deal of hassle and would lead to government savings if it was reshaped by the means of new Internet technologies.

This is the starting point of the paper: We were seeking to find a relatively simple service that would not be too complex to automate, and where both the public and the service provider would benefit from the automation process. One such service, temporary registration plates on motor vehicles was identified in the Department of Roads and Traffic at the Norwegian Public Roads Administration (Statens vegvesen).

We were simply inquiring why this service had not been transformed to the digital arena. Since a marked pressure towards automating services exits, beneficial effects of automation could be more convenient use for the public and increased efficiency in service creation. These objectives stem from the eNorway 2009 plan, launched in 2005, which states that digital services focused on the needs of the individuals must be adapted [4].

The plan has three target areas which are the individual citizen, innovation and growth in business and industry, and the creation of a coordinated and user adapted public sector. These are ambitious goals, as the challenge is not only technological but also addresses the general ability to change work processes, division of work and subsequent coordination as well as other organizational questions.

eGovernment is first and foremost about organizational adaptation and transformation and less about technology. Even though we need new technologies and new interfaces created with inspiration from the private sector, the main challenge is to transform the most valuable resources in public sector; the humans.

Increasingly more individuals are acquiring digital skills and competence by using Internet services in the private sector. E.g. Internet banks are the norm for paying bills, and four out of five airline tickets from Norwegian are sold via their website. Digital skills along with reduced transaction costs and increased convenience are pushing the audience further towards the digital arena, and as digital competence grows along with the trust in ecommerce in general, there will be an increasing pressure on transforming public services as well.

2   Problem definition

When looking upon public sector services, there are obviously many services that could be transformed to the digital arena. We were investigating which factors influenced upon the decision to digitize a traditional service. Are there technological obstacles, such as lack of suitable technologies? Or is the slow eGovernment adaptation rate due to organizational problems? In short: are the reasons for maintaining status quo to be found in technology or organizational matters?

3   Methodical approach

As we had little prior knowledge of this, we chose to undertake a closer analysis of a service that from the spectator's viewpoint seemed rather simple. The handling of temporary registration plates on motor vehicles at the Department of Roads and Traffic, Norwegian Public Roads Administration (Statens vegvesen) was chosen as our study object.

As we had no insight into how this service was organized, who the stakeholders were and which plans that actually was created by the organization itself, we chose an open, qualitative approach to investigate the research questions. Following a partly structured approach, qualitative interviews were undertaken with five informants from different levels and units in the Department of Roads and Traffic. This is a small sample, but the aim of the study was to understand the opinions of some of the main stakeholders of the system, rather than to be able to generalize from our empirical findings. The study should therefore be viewed as a preliminary study.

4   Theoretical perspective

A service may be seen as one or more processes, which are tied together in a given sequence. To understand the chosen services and how this can be digitized, it is important to examine

the manual processes and interfaces. According to Punia and Saxena [5] there are two different classes of processes that must be treated in different ways:

1. Intra organizational processes: a process where all its activities are carried out in one department
2. Inter organizational processes: a process where its activities are carried out by more than one department

Many public departments work vertically with limited coordination, communications and cooperation with other departments. To change an intra organizational process should in principle therefore be easy, since the responsibility of that process lies at one department. On the other hand, inter organizational processes, due to multi-departmental ownership, are often difficult to change. This results in bureaucratic and complex public services [5], so we had to find out whether the chosen process was of one type or the other.

In addition we had to seek to understand how the implementation of eGovernment services in the department would in actual fact take place. Lee et al. [7] describe implementation of eGovernment systems in a four phase model. The four different phases are *catalogue, transaction, vertical integration* and *horizontal integration* (Fig. 1).
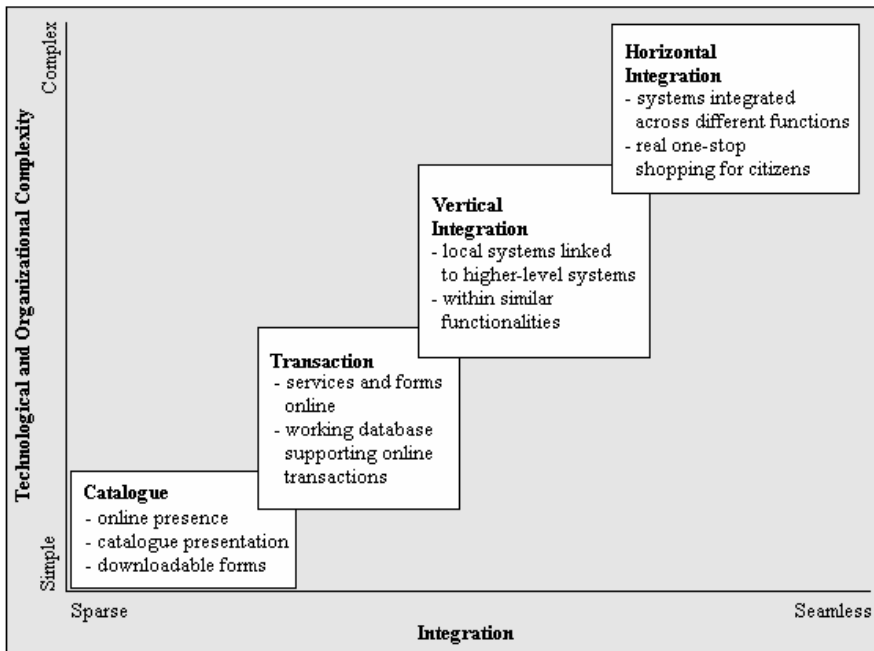
Fig. 1: Dimensions and phases in the implementation of eGovernment solutions [7, p. 100]

Public sector organizations are mostly challenged the same way as private organizations are. However, there are some significant differences between public and private sector organizations. Public sector services are often monopoly services that are characterized by a management perspective rather than a strategic leadership perspective. In the private sector intruders often create new services while this is not possible in public sector. Change has to be rooted in the organization itself.

If businesses in the private sector want to survive, they are dependent on their customer's returns, and they have to be competitive in the long run to remain in business. This is not always the case for public sector services. Prisons and hospitals gain their success if their

"customers" do not return [1]. In this regard, criteria for success are measured differently in public and private sector, since not many private companies wish to lose their customers. Nevertheless, Andreassen and Lunde [1] point out that the public sector cannot disregard user satisfaction as a tool to measure service quality for these services.

Damodaran et al. [3] argue for a holistic sociotechnical approach when implementing eGovernmental solutions. Sociotechnical means that an organization needs to be seen *both* as a social *and* a technical system in open relationships with its environment [2]. This fits with this papers introductory argument, that implementation of eGovernment solutions are both an organizational and a technical change.

5   Findings and discussion

Statens vegvesen has recently been through a major reorganization including a ten percent reduction of the workforce. At the same time the production part of Statens vegvesen was organized into a separate company that has to compete in the free market. The decision to reduce the workforce with ten percent was heavily disputed and led to challenges in the organization. The key challenge was how to get rid of the ten percent and at the same time offer the same services to the customers.

The interviews indicated that there were great regional differences in the success of the reorganization. In one region where nobody was fired the transformation was quite successful. Another region, where a lot of people were fired, was still struggling with the reorganization. In one traffic station where almost 50 percent of the workforce was obtained from temporary staff recruitment agencies, the road administration received a lot of correspondence that was the traffic stations responsibility and the customers complained about reduced service level. The existing intra organizational climate would probably negatively influence the organizations capacity for change, and could then be a partial answer to our research question.

The temporary registration plate service, which is an intra organizational process, is not yet automated. Due to this fact and the services present at Statens vegvesens Internet page we may say that Statens vegvesen is in the middle between catalogue and transaction integration when it comes to eGovernment implementation. One of the aims of eNorway 2009 is to develop eGovernment solutions which correspond to horizontal integration. A successful horizontal integration of eGovernment solutions will require good cooperation and coordination between the owners of inter organizational processes.

At the inter-organizational level the Directorate of Customs and Excise is Statens vegvesens main collaboration partner. Statens vegvesen is responsible for the registers which form the basis for the Directorate of Customs and Excise calculation of motor vehicles annual fees, non-recurrent import fees etc. All the informants answer that this cooperation is in principle working well. But in some isolated incidents the Directorate of Customs and Excise is more difficult to deal with. One informant says that he/she sometimes feels like the Directorate of Customs and Excise looks upon Statens vegvesens registers and systems as subsystems for their own systems. The informants also indicate that the customers often have problems distinguishing between the two departments, and which department that offers the different services. When the departments are mutually dependent on each other, inter organizational relations are very important for service quality and for the ability to perform service development.

It is stated in the Norwegian road traffic law that all motor vehicles must be registered before they can be used on Norwegian roads. There is only one exception from that rule, and that is if the motor vehicles are identified with a temporary registration plate. Registration

plates valid for one or few days can be purchased in traffic stations all over Norway. The buyer of this registration plate is the person responsible for the motor vehicle being safe for driving. The buyer also needs to answer questions such as the route the motor vehicle will be driven, for which period in time it will be used, the motor vehicles identification (original registration number, chassis number etc.). The buyer and the motor vehicles purchase history will also be examined before he/she is allowed the purchase. This is done because these plates are only valid for necessary transportation of the vehicle. The informants also replied that in some cases they needed to use personal judgement to decide whether a person should be allowed to buy the plates or not.

During the interviews it surfaced that some of the traffic stations had struggled with a high sale of temporary registration plates. Steps like increasing the price and more strict loaning routines helped lowering the sales. Statens vegvesens aim is consequently to sell as few temporary registration plates as possible, and to offer the service solely to the customers that need it. Nevertheless this is not a valid argument to disregard an automation of this service. This is in reference to Andreassen and Lunde's [1] statement that owners of suchlike services cannot disregard user satisfaction.

The first version of Statens vegvesens main computer system, Autosys, was developed in 1980. The system has gradually increased as more functions and requirements have been added. This has led to a complex system, as one of the informants claimed (translated from Norwegian to English): "The system [Autosys] is a lot of blots. When they need a new function they just add it to the existing system. For me, even though I'm not an IT-expert, it seems very old fashioned".

All informants except one thought that the service with short time registration plates could be automated. At the same time all the informants stated that the digitalization of the service should not be a replacement of the existing service, but a supplement. This was to avoid an exclusion of customers that are not familiar with digital technology. A condition for digitalization of the service was that a secure electronic identification was used.

Statens vegvesen has an ambitious IT-strategy: "The target is to transform Statens vegvesen to a pioneer public department when it comes to electronic services and the use of information technology" [6]. To reach this target Statens vegvesen is at present developing a new modern computer system that will take over Autosys functions when it is up and running. According to a few of the informants an available online version of the temporary registration plate service is planned to be included in the new system. This information was not known to the remaining informants.

Most of the informants expressed optimism regarding the strategy's purpose. Even so noticed we that some of the informants who were employed at the frontline of the organization meant that this statement was merely an attempt from the management to show that Statens vegvesen was "best in class". Some of the informants also expressed that the management did not understand well enough what was really going on at the frontline. According to them, earlier reorganizations and the one they were in the middle of, tended to occur when management had "felt like" it. The management was responsible for the actions, planning and implementation. Since the management did not understand what was going on at the frontline, the reorganizations usually went wrong.

6   Conclusion and future work

Statens vegvesen has recently been through a conflictful reorganization process. Ten percent of the employees were rendered superfluous in the same context as a new IT-strategy was introduced.

All the processes carried out in connection with the temporary registration plate service lies within Statens vegvesen. The service is an intra organizational process. According to Punia and Saxena [5] these processes are in principle easy to change. During the interviews all except one informant agreed that the service is possible to, and ought to be, automated. To maintain the service level for technology illiterate customers, the old, manual service should be kept up as well.

Why has this not been done already? Is it because of lack of technology resources or are organizational issues more relevant to explain the situation?

Our research indicates that intra organizational conflicts may slow down the implementation of a new IT-strategy, and consequently the digital transformation of traditional service systems. There is also a lack of trust in the organization, as some of the employees indicate that plans are not followed by action.

It is difficult to conclude about the matters of the situation. But the probability that this is an organizational challenge rather than a technology problem is high.

Due to the limited sample of informants further research is needed to identify which factors explain most of the situation.

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When local usability is not the issue: An example case of e-Government service provision

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Abstract. The majority of e-Government services now seem to have reached a level of sophistication where one-way or two-way interaction is established. Also, the volume of interactive services increases rapidly. Even so, citizens' uptake and use of e-Government services apparently lag behind, which means that many interactive e-Government services are not used as much as expected. To shed light on challenges to the success of e-Government services, an example case of online application for driving license is presented. Three general challenges are identified and discussed; all being caused with the service's context rather than the usability of the service: (1) Lack of information about the service, (2) difficulties associated with locating the service, and (3) challenges caused by the service not being compliant with end-users' work processes. User-centered evaluation cases, focusing on the totality of existing e-Government service provision of a given region, are suggested as future work.

Keywords: e-Government, usability

1   Introduction

The ambition of public e-Government service provision is to provide better, simpler and more efficient service provision to the public. This, of course, requires that the individual e-Government services are usable in the sense that they provide *"specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use"* [5, p.2]. Many e-Government services are fairly straight forward; for example are many e-Government basic interactive forms including applications for kindergarten and schools, applications for grant or permits, and audit responses. In these cases the users and goals of the service are easily established. Thus, getting the usability right is a fairly straight forward task. The question then is: Are high usability e-Government services guaranteed success? Will these services lead to the overall goal of providing better, simpler and more efficient services for the public? The answer to these questions is by no means given; it depends on the service context from the perspectives of both the public and the government body.

From the perspective of the government body, challenges to service success may for example be that no efficient way to handle input via new electronic channels have been established. Or that the organization needs time to restructure itself to adapt to the new service structure. Only 52 percent of Norwegian local governments (kommuner) and 59 percent of

Norwegian central government bodies reported in 2004 that projects to establish digital work processes have contributed to change and simplification of work routines [3].

In the present paper we will look at challenges to e-Government service success from the perspective of the end-users, which typically are individual citizens or private industry and organizations. These challenges will be discussed on basis of an example case, an online service for application for driving licence. Before presenting the case example, a general overview will be given of the state of e-Government service provision.

2   e-Government service provision

2.1   Volume and sophistication of e-Government services

e-Government service provision is steadily gaining in volume and sophistication. In Norway, as for many other European countries, practically all government bodies have been present at the Internet for several years. At present government bodies differs with regard to the volume of their total public services that are online, as well as their level of service sophistication.

The City of Oslo is a good example of the volume of e-Government services that may be achieved at present or within the near future. The city has been putting many resources into developing interactive services for the public and has by 2005 launched 290 interactive services. Most of these are interactive forms [2].

Classifications of e-Government service sophistication [1; 4; 9] seem to converge on a differentiation between the following levels[5]:

1.   Information (typically published on government body web site)
2.   One-way interaction (downloads, for example of forms)
3.   Two-way interaction (interactive services and payments)
4.   Transaction (full electronic case handling; horizontal integration within and between government bodies)

CapGemini has recently published the sixth survey on online availability of public services in Europe [9]. 28 countries participate, and the survey provides information on the service sophistication of 20 basic public sector services for citizens and businesses including taxes and VAT, business submission of data to Statistical office, job search, car registration, enrolment in higher education etc.

The survey shows a mean online sophistication of 75 percent for the totality of participating countries. In other words, most e-Government services in Europe within the 20 basic services are on level two or three in sophistication; either with downloadable forms or two-way interaction. The countries with highest online sophistication of e-Government services are Austria, Estonia, Malta, Sweden, and Norway.

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[5] The terms used in the classification are from CapGemini's report on online availability of public services [9]. CapGemini has also used this classification in their previous annual reports since 2001. The eUser classification resembles that of CapGemini, but leaves out the fourth level of sophistication (the highest level of the eUser taxonomy "transactions" is synonymous to the CapGemini category of "two-way communication") [4]. The Norwegian Department of Work and Administration "service ladder" classification from 2001 [1] closely resembles the CapGemini classification.

An important barrier to further increase in e-Government service sophistication is the lack of common security and authentication mechanisms. As for Norway, there has been government initiative to establish a common e-signature service based on Public Key Infrastructure (PKI) [3]. However, this service has proven to be difficult to establish, due to challenges in regard to the establishment of adequate business models. The latest news is that the common PKI portal is not continued, even though all basic functionality has been fully developed [8]. In the short term the situation will be solved with establishing a PIN-code system for access to personal e-Government services [7].

2.2   Use and uptake of e-Government services

General use of e-Government services has been investigated on a European level through the eUSER population survey [4]; eUSER being an EU-financed research and support project. The survey shows that the preferred channel for government contact still is face-to-face meetings; used by 81 percent of the survey participants. Internet or e-mail was used by 17 percent of the survey participants. Among European citizens that are both users of government services and online, about one fourth use e-Government services. However, great country variations exist. In Denmark as much as 36 percent of the citizens use Internet of e-mail in their contact with the government. Also, the Norwegian government reports that 55 percent of all Norwegian taxpayers submitted their income tax statement through an electronic channel in 2005. And, in the same year, 92 percent of all applications for higher education were submitted via Internet [3]. The eUSER survey indicates that users of eGovernment services tend to be *"younger, male and better educated, and have higher socio-economic status and be in employment"* [4].

CapGemini in their service report raises the issue of low uptake of e-Government services among European citizens [9]. Only three of the European countries participating in the online sophistication survey (Iceland, Norway and Sweden) have more than 50 percent of their citizens actually using e-Government services[6], and there is little correlation between service sophistication levels and use. For businesses the situation is far more promising. Six of the participating countries had more than 75 percent of their businesses using e-Government services. And only four countries had less than 50 percent of their businesses using e-Government services.

2.3   Tendency towards standardization and reuse

An increased tendency towards standardization and reuse within e-Government services provision has been clearly visible over the last few years. Standards for user interfaces have been developed and used. Also industrial actors are beginning to develop off-the-shelf solutions for government service providers. A recent example of this tendency is the initiative of the Norwegian Kommuneforlaget who are promoting a standard catalogue of ready-made interactive forms for Norwegian local governments; ready to be implemented in the local government's web site [6]. This tendency implies that it may be easier to develop user friendly services, both because solutions may be developed and redeveloped by a few central actors, and because this may lead to increased standardization in the user interfaces of e-Government services.

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[6] Data on use available for 22 of the participating countries only. (Not available for Denmark, France, Germany, Malta, Spain and Switzerland.)

3 Example case: Online application for driving licence

3.1 The case

Norwegian driving licences are issued by the Directorate of public roads. Driving licences are issued at the Directorates public offices following submission of an application, and booking and successful commencement of a driving test. In order to reduce the workload on the public offices, the development of an Internet service for application of driving licence and booking of driving test was launched in 2004. At present an online service is provided for driving licence applicants within a range of vehicle categories, such as motorbikes, regular cars, tractor etc. However, persons that already have driving license for one vehicle category (for example moped) may not apply for driving licence for cars through the online service; these applicants have to use the traditional channels. Also, at present it is not possible to apply for driving licences for all vehicle categories via the online service. For example is it not possible to apply for a truck driving licence online.

In 2004 a total of 8 percent of the driving licence applications was received through this service. The remaining 92 percent of the applications were submitted through the traditional channels. The goal of the Directorate is that, by 2007, 80 percent of all driving licence applications for car by first time applicants should be submitted trough the online service.

The next development step is to extend the online service to include applications for all vehicle categories.

3.2 Authors' involvement in the case

The authors have been involved in the development of the service through the ongoing research project "Efficiency through user involvement". The development of the service for driving licence applications have been related to the research project as a case in which to investigate and adapt methods for User-Centred Development to the specific characteristics of e-Government development.

During the period between September 2005 and May 2006 the following activities have been conducted:

- Establish leader vision for the service, and related services
- Informal expert evaluation of early running version of the service
- Interviews with driving schools; who are the actors that forward applications and book driving tests today
- Group interviews with driving licence applicants age 18-19
- Web-survey

For the purposes of the present paper no detailed results of the activities will be presented. Rather, the identified strengths and challenges associated with the service from a citizen perspective will be presented below.

3.3 Strengths of the case service

The service is an interactive form where a well defined user group can achieve well defined goals. The user group includes all applicants for driving licence for vehicle categories that are included in the online service, providing they have no previous driving licences.

Intended users' goals for the service are to submit the application and book a driving test. In addition, users are given an overview of all driving schools in the applicant's district. The forms are easy to understand and easy to complete. The only usability problem of note is that no receipt is provided upon submission.

Thus, if a person is within the user group and has found the online form, he or she will most likely be able to complete the submission and booking.

3.4   Challenges for the case service

The service has attached to it some circumstantial challenges that threaten its success. It should be noted that these challenges do not have anything to do with the usability of the service.

First of all, potential users do not seem to be aware of the service. This was evident both from the survey results and group interviews with driving licence applicants. It is interesting to note that the traffic schools, which may be the best way to inform users about the services, not necessarily provide the driving licence applicants with this information. One reason for this may be that some traffic schools do not perceive the service as fully reliable. Ironically, traffic schools regularly using the online application services seem experience it as satisfactory and efficient.

Second, for the driving licence applicants that are aware of the service, it is difficult to know whether or not they are within the limited user-group. For example, if you already have your moped driving licence, you are at present not within the user group. This, however, is not evident for the user.

Third, it was initially difficult to identify the location of the online service. Potential users may not know the name of the government body in charge of driving licences. Also, initially it was rather difficult to navigate to the service from the front page of the Directorate's web site. This latter issue (which is an excellent example of a usability-problem that affects the use of a single service, even though it is not a local usability problem in the service as such) has now been alleviated through a revision of the Directorate web site.

Fourth, the service does not fully comply with how applicants are going about when applying for driving licence and booking their driving test. Today, these issues are mostly handled by the traffic schools, which may distribute and forward submissions as well as handle bookings for driving tests. The booking of driving tests is particularly dependent on the traffic schools, since the applicant is using the traffic school's car when doing the test drive[7]. Thus, the applicant needs not only to book a test drive at the Directorate's public office, but also need to book a traffic school car for the test drive.

4   Discussion

In the present paper it has been argued that many e-Government services now have reached a level of sophistication where one-way or two-way interaction is established. The volume of interactive services seems to increase rapidly, in particular with regard to interactive forms where there also is a tendency to increased standardization and reuse.

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[7] Applicants doing test drives to get a driver licence in Norway are required to use a car with two sets of pedals (so that the person doing the test drive with them has immediate access to the pedals). Such cars are normally only owned by the traffic schools.

However, citizens' uptake and use of e-Government services seems to lag behind, which may mean that many interactive e-Government services are not used as much as expected. To shed some light on challenges to the success of e-Government services, an example case of online application for driving license has been presented. The case is a usable service, the success of which is threatened by contextual circumstances, and on basis of this case a general discussion will be conducted under three headings:

1. Lack of service information
2. Difficult to locate service
3. Service does not comply with end-users' work processes

The example case is not meant as a basis on which to draw general conclusions, but as an exemplification of issues the authors believe to be relevant with regard to the current state-of-the-practice for e-Government service provision.

4.1   Lack of service information

A number of e-Government services seem to exist outside the knowledge of the general public. How this can happen was illustrated in the example case. Such civic ignorance may have many causes. Many government services are used very rarely by each citizen. For example how many times do you need to apply to a kindergarten, register a car, or apply for a driving licence? And when the citizen needs to use a government service, how is she to know whether or not the service is available online?

There are no simple solutions to these questions, even though they highlight the challenges attached to information about e-Government services. In order to make citizens use relatively frequent services like submitting the income tax report, broad information campaigns seem to be valuable. For services that are associated with life events, like application for studies, targeted information campaigns though the environment of the potential user seems to be a good strategy. And for all the other interactive services that are rarely used by each individual user, it may be that a government service portal, where both online and offline government services are presented, may be a workable solution (even though such a solution introduces some extra work since also information about offline services needs to be updated). The Norwegian initiative Min Side ("My Site") is an example of such a portal, but since the portal will only contain links to online government services, it is presupposed that the citizen already knows whether or not the service actually exist as an e-Government service.

4.2   Difficult to locate service

Given that the citizen knows about a particular e-Government service, it may still be that she is not able to locate the service at the Internet. In order to find the service through a search, she needs to know the name of the service (or at least to use search terms predicted by the service provider). In order to find the service through browsing, she may need to know which government that provides the service as well as she may have to be able to locate the service at the government body web site. With reference to the exemplar case, this may prove challenging. And odds are that that many other government web sites represent similar challenges to their citizens: How to locate a given services at the web site? It is of no use to have a highly usable service if no one is able to locate it.

In the future, it may be that all e-Government services are accessible from a single portal like the above mentioned Min Side. Until then a good advice for those responsible of government body web sites is to develop a prioritized list of services that are to be accessible

from the site, and then run usability evaluations to find out whether user can be expected to locate the services.

4.3   Service does not comply with end-users' work processes

A third challenge to an e-Government service may be that it does not comply with citizens' or businesses' established work processes. As was seen in the case of the services for driving licence applications, the work process involving both the driving licence applicants and the driving schools may represent obstacles on the way to reaching the Directorate's goal of getting the majority of all applications submitted online. A similar challenge is seen in applications for building permits where a third party (often the building contractor) handles the application process and communication with the appropriate government bodies. Possibly this challenge is most important where businesses are involved in the use of e-Government services, either as end-users or as third parties assisting the citizen.

This point also illustrates a possible shortcoming with existing classifications of e-Government service sophistication, where the highest level typically is horizontal integration between government bodies. Could it be that for some government services, a higher sophistication level of "government-user integration" is needed? Service sophistication at this level may require that e-Government services are easy to integrate with typical users' work processes and information systems.

5   Future work

It is the authors' hope that the present paper enables a continued discussion of user-centred challenges that are associated with e-Government services, even though the service itself is sufficiently usable. In the project Efficiency through user involvement we will be adapting User-Centred Design methodology to e-Government development processes, and through this work we will address at least some of the identified challenges. Other relevant future work may include of user-centred evaluation cases, focusing on the totality of existing e-Government service provision of a given region, for example the City of Oslo including central government services, to map usability problems related to service contexts as described in the discussion above. Such a mapping would be valuable with regard to assess the magnitude of these challenges to the use of e-Government services, in addition to the possible benefit that could result from design suggestions on basis of such an evaluation.

Acknowledgements

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Citizens, stakeholders and designers: Modeling for user diversity

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Abstract. The ubiquitous use of the Web today made E-Government applications a suitable alternative to improve the communication between citizens and the administration. As government agencies increasingly move towards providing web access to their administrative procedures, the need arises to provide strong Software Engineering support for developing this kind of software. This need is sharpened by the fact that E-Government software is usually mandated to follow very strict requirements in terms of confidentiality protection, accessibility and general usability. In this paper we investigate how a model-driven engineering approach can accommodate different user's requirements and promote user involvement during the design process of e-administrative procedures. Besides citizen involvement, this paper claims the need of appropriate models and methods to promote better communication among all stakeholders involved in the development process of e-Government applications.

Keywords: administrative e-procedures, user interface modeling, user-centered design, model-driven engineering, user requirements.

1 Introduction

Today, the ubiquitous availability of the Web made E-Government applications a suitable alternative to improve the communication between citizens and the administration. Among all E-Government applications, administrative e-Procedures are web applications whose main aim is to automate administrative procedures made them available over the Internet in a remote and flexi time way. E-Procedures present several advantages for both users on the front office side (e.g. citizens, associations, firms and so on) as well as to people on the back office side (e.g. administrative clerks) since they allow to reduce costs of information transfer and treatment. In addition, when notification mechanisms are implemented users are automatically informed about the procedure status (e.g. number of steps remains to be completed, deadlines for procedures, etc) thus reinforcing awareness [9].

However, the development of usable and accessible e-Procedures for a large public is very complex. One of the reasons for such complexity is the fact that development of e-Procedures requires various expertise such as on in administrative processes, laws and regulations, development of Web applications, security for electronic data exchange, and so on. Currently, one of the main challenges to the development of e-Procedure is the lack of appropriate methods supporting the involvement of all these stakeholders. To cope with these topics, a model-based approach comes to mind in order to guide design, facilitate communication

between designers and stakeholders, and verify the coherence of requirements as soon as the models are built. Such model-based approaches have been validated on many types of applications, but lack experiments in the administrative e-Government field, especially in the development of e-Procedures.

This paper suggests that model-driven approaches can help to accommodates the diversity of user's requirements and promote user involvement during the design process of e-administrative procedures.

2   Citizens, stakeholders and designers

Several categories of actors participate in the development of e-Procedures. Hereafter we present a list of the main categories of participants.

Citizens (who must be considered as the primary group of end users) are used as a generic term, in opposition to administration clerks, but it can designate an individual as well as a firm or an association.

Administrative clerks are the agents working for an administration. They are in charge of the treatment of the procedure as well as the answers to citizens' claims. They can be therefore work in front of citizens (e.g. reception and guidance, applications receipts) or not (e.g. archiving, printing and checking of official documents).

Designers are any person involved in design and programming of the software required for e-Procedures: *developers*, *graphical designers*, *domain experts* and so on. Domain experts don't belong to the technical team itself but are responsible for the definition of the administrative procedure, considering its legal competencies and his complete knowledge of the administrative domain. For example, they are able to check if the e-Procedure is in accordance with the current regulation or current administrative practice: this verification is quite crucial for the technical team, but can't be fulfilled by itself.

Each category of participant has its own needs, interests, expectations, behaviors and responsibilities in the use of the application, and sometimes towards the other participants. Citizens and administrative clerks are the targeted audience for e-Procedures and as a consequence their requirements should be taken into account as end-users according to a User-Centered Design process (UCD).

The design team (technicians and domain experts) also get advantage from an assisted specification method: the requirements of flexibility and the possibilities of properties checking directly on the specification are useful for them during the design process, provide them a communication framework, and make available interesting information to insert into design documentation.

3   Modeling e-Procedures: a case study

Specifying e-Procedures needs combination of information about the organization, user tasks, workflow process and data issued from the application domain. Fig. 1 illustrates this by the means of a small case study for the task "enroll a child at school", an activity that could be fulfilled through a web application. Here, Marge (director of the "Fun & Games" child holiday centre) has to fulfill Billy's enrollment. Here is the procedure: 1) Marge consults the town registries to check that Billy lives in this town (or nearby, in a town where there would be no child holiday center), 2) Marge collects and registers some information concerning

Billy, 3) Billy's parents deliver Billy's insurance certificate as well as his vaccines certificates so that Marge can check they are up to date. This procedure eventually takes several times to be fulfilled (e.g. it can be partially realized by phone or by mail).
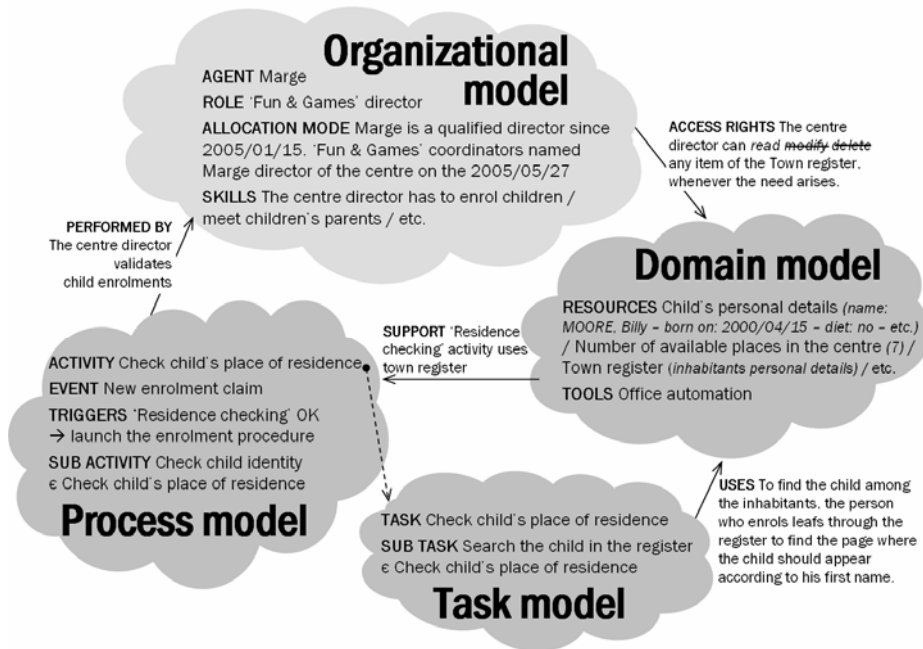

Fig. 1: Case study for enrolling a child at school.

Task analysis helps to understand the activity by decomposing user's goals into a set of tasks and sub tasks which must be supported by application. By supporting a user-centered design approach, it helps ensuring that the designed application will be usable [5]. In the context of e-Government, a task model will help defining use scenarios of the application, and therefore answer questions such as "how do I search a child in the town register?" by transforming them into a sequence of this type, strongly dependent on the application:

- Records are paper file: 1) Look at the files starting by the first letter of the child's last name, 2) Search for the child's name in the following pages.

- Records are computerized: 1) Log in the town register application, 2) Fill the appropriate field with the child's last name, 3) Validate, 4) Read the results.

The most widespread task model is CTT (Concur Task Trees) [7] that provides both an intuitive and easy-to-handle graphical notation and a formal task specification that allows simulation (CTTe tool [2]) as well as some generation of the application interface.

Workflow modeling methods should help describing administrative e-Procedures are available in the recent literature [4] [1] and provide information about how to model knowledge and resource sharing above all. Workflow models would help satisfying needs of coordination between people (including their responsibilities and competencies) and resources involved. For example, it would represent "*parents can enroll their children for summer holidays from 1st of May to 25 of June (providing maximum enrolments number is not reached yet).*" Among the numerous currently used workflow modeling notations, BPMN (Business Process Modeling Notation) [12] is noteworthy because of its wide use in the industry and of its strong willing to become a standard notation.

In highly organized domains such as e-Government, rights and responsibilities – to fulfill tasks and to access resources for example – are allocated according to strictly established laws and regulations. A hierarchical structure is observable, where some roles are specialization of other ones, and therefore inherit from their characteristics. This model holds information such as the definition of roles: "*the director of a child holiday centre gives the pedagogical and organizational directions, s/he is responsible of the administrative management of the centre, he is allowed to validate children enrolment, s/he has to maintain confident relations with children's parents, and so on*". An example of hierarchy in the child holiday centre case study would be "*a director holds the same rights as a centre coordinator, plus some other related to his status.*" The way to allocate a role to an agent can appear on this model as well (e.g. "*to access the functionalities allowed to its role, a user logs into the application.*") OMM (Organization Modeling and Management) [3] is an example of object-oriented organizational model. It is involved in a methodology that supports role-based access control in the design of workflow based systems such as electronic commerce applications.

The domain model tells about the entities involved in the procedure, the way they are managed (created, modified and deleted) and the eventual interactions between them. When dealing with the e-Government domain, some critical data is handled, partly because of its personal content that leads to complex regulations to access them, and to secure and encrypted transfers. The frequency of data transfers is another characteristic of e-Government applications, and they can occur between the applicant and the administration (e.g. "*the parents supply the required information and documents to the person in charge of their son's enrolment*") as well as between administration services (e.g. "*to check that the child lives in the town, the director is able to read the town registers that are managed by the mayor administration*"). This field of studies (transversal communication and administrative data management) is highly covered by knowledge management works [10]. As for a particular example of domain modeling method, one of the most famous is the UML domain model ('class diagram') [8] that describes the behavior of abstract objects (*classes*).

4   Discussion

At the light of the case study introduced in section 2, we discuss hereafter how models could increase the participation of the several actors involved in the development process:

As for the design team (domain experts and developers): Designers of the application take advantage of task modeling reasoning because it carries information about what the application has to support in terms of user interactions. At the end of the specification, the application model can be fixed to control and eventually participate automatically in the implementation of the system. Ergonomic recommendations for design are available in the literature [11], and some ergonomic rules can even be checked directly on the navigation model along the design process [14]. This benefits the design team that is ensured that some utility and usability problems are avoided. Furthermore, many tools that support model edition provide simulation as well (e.g. CTTe [2] for task modeling, or SWCe [13] for navigation modeling). This functionality stimulates design ideas and makes communication easier between contributors that are thinking about the interface around a concrete object which is the scenario simulated, no matter what their jargon is.

As for finals users (citizens and administrative clerks): Despite that final users are not directly concerned by modeling methods used during the design process, they can obtain indirect benefits. With little adjustments, process and task models can be used as start points to tools guiding users towards the several stages that have to been carried up to reach the final goal of the procedure, including the stages where he isn't involved. Simulation functionalities

over models – that could not be envisaged without a well-formed specification – adds efficiency to the procedure overview for the user. In the case of the scenario of the holiday centre enrolment application, a parent would be able to handle and interact with a graph that would present the enrolment stages in details (the activities that have been checked and the ones to come). This follow-up puts the user's mind at rest with the correct execution of his procedure by providing him an interactive and intuitive glance on it. hence, a model-based approach for administrative e-Procedure specification improves the feedback to the user, the feedback being a strong and validated advice for a more usable interactive application [6].

5   Conclusions and future work

Since the development process of E-Procedures applications is complex, model-based approach becomes mandatory to ensure reliable and usable applications. In this paper se present some preliminary results allowing us to raise several questions concerning the need of methods and models to support design activity of such applications and to accommodate the diversity of users' requirements. In particular, we show through a small case study how modeling methods affect user roles and how users can obtain relevant information to reach their goals with the application. It is noteworthy that some of the requirements identified in this paper are shared by a large branch of web applications such as e-Commerce, e-Administration (not necessarily e-Government applications), etc. So the contributions of such as an investigation on models can be extended to applications with similar requirements.

This work is part of the ongoing project WebAUDIT whose one of the main aims is to investigate how models can be used as graphical support to discuss and communicate ideas among the development team and end-users throughout the development process. A potential use of models is that some of them (e.g. task model and workflow) can be synergistically combined to provide visual guidance (e.g. trough graphs and simulation tools) to final users throughout the execution of complex e-Procedures [9]. Such visual tools are useful to explain complex procedures to final users, which is made mandatory to a participative design approach willing to include the citizen representation into the development process.

At the present, we have identified some scenarios on which models can be used to improve the usability of e-Procedures. Our ultimate goal is to improve the communication into the design process of such as application and promote the user involvement during the development process through User-Centered-Design.

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Citizens, from consumers to prosumers: e-Government Services typologies revisited

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Abstract. Traditionally, eGovernment services have been classified according to a four step ladder, with increasing complexity, and an underlying assumption that the more complex, the better. In this paper, I argue that this classification is severely limited, in the light of the active role a citizen should be able to play in the society, not only consuming public services, but also being actively involved in producing content in connection to public service provision. Whereas dramatic changes are found in other areas of the IT-world, e.g. in the media where the contributions of individuals are getting just as important as that of traditional organizations, and where so-called Web 2.0 services outperform services made in a more traditional manner, these ideas do not seem to yet have reached the eGovernment sector.

1 Introduction

Two of the most exciting current families of technologies for transforming the World Wide Web can be placed under the headings of "Web2.0" and the "Semantic Web". Each has a separate vision for transforming the relatively static Web, driven by focused content providers and enabled by passive HTML, into a dynamic and largely self organizing entity. While the general vision of the emergence of an organic Web is shared, the details of the two approaches appear to be opposites. While Web2.0 is focused on a free-form, user generated ad hoc content provision and opportunistic social organization, the Semantic Web contains a vision of strict and enforced structure which makes it suitable for automated machine processing. For eGovernment application, we see an increasing interest in semantic web technology to provide interoperable services (see e.g. [1]). On the other hand, user driven approaches as exemplified by Web 2.0 is harder to find, although certain eParticipation initiatives have traces of this.

The conception of the term "Web2.0" can be traced to a conference brainstorming session between the O'Reilly group and MediaLive International [6], who noticed that there seemed to be a number of new, successful services that had began to spread, and which seemed to have certain qualities in common. A hallmark of the successes was that they leveraged user-provided content and collective intelligence through applications that grew more feature rich as more people used them. Together these applications presage an emerging era where the personal computer is superseded by the Internet as an application platform. Many of the ideas and technologies are not revolutionary, or even new. What distinguishes Web2.0 is the unique superimposition of many existing ideas and technologies that collectively usher in a new kind of user experience.

One important hallmark of Web2.0 applications is that they tend to be based around web services so that there is no requirement to install a special application on a client machine. This already introduces a new dynamic to the application space since functionality can change incrementally and with an extremely fast life cycle. This development model is complimented by an architecture in which constant evolution makes sense. This "architecture of participation" is exemplified in P2P networks such as BitTorrent where clients automatically and simultaneously become servers, and the service as a whole improves the more people that use it. Similarly, eBay's services are entirely dependent on the participation of its members, and increasing levels of participation can enable the gradual implementation of feature refinements. Amazon.com is another service where users add value by default: whenever they purchase multiple items, add reviews, add items to the wish list, and in general simply "use" the system, they contribute data which in aggregate can improve the service to other customers by providing recommendations and associations which would otherwise not exist. The web service is then improved to make new use of the accumulating data. The architecture is designed by default to improve the service simply as a side effect of its ordinary use.

This participatory architecture enables the harnessing of collective intelligence by aggregating user data, which is the second main feature of Web2.0 applications. One well-known achievement in this vein is Wikipedia, a brave experiment in creating a collaborative encyclopaedia which, ideally, anyone could contribute to. Amazingly, this manifestation of a radical departure from the kind of authoritarian editorial style on might expect for a reference of this magnitude, have proved to be able to deliver a product comparable to the most venerable Encyclopaedia Britannica. A similar challenge is being laid to traditional news services by the activity of blogging in general, and services like slashdot and digg, in particular. These activities aided by search tools like Technorati together with syndication and other tools like RSS and trackbacks, make it possible for news and opinions to be disseminated and discussed very rapidly.

The Semantic Web, on the other hand, is a much more architected view of the future in which new approaches and technologies play a big part. The vision was outlined by Tim Berners Lee et al. in a Scientific American article in 2001, and presented a view of a future web in which meaning is embedded into resources in a way that is sufficiently explicit for automated computational agents to operate on. In the words of Berners-Lee "the Semantic Web is specifically a web of machine-readable information whose meaning is well-defined by standards: it absolutely needs the interoperable infrastructure that only global standard protocols can provide." [2]. Many of the new technologies and standards that were outlined by Berners-Lee et. al., and which are collectively necessary for a Semantic Web have become widely known and some have made contributions to enhance data processing on the current web. XML is perhaps the runaway success story enjoying widespread adoption, but also RDF is being used as a data model for local web sites and intranets, and Ontologies, sometimes together with description logic reasoners, are being used in smaller scale knowledge based applications.

2   eGovernment services

Public services are provided through a number of organizational entities on different levels (in Norway; Communes, Counties, and State). On the traditional user-side we have two main groups (with large individual differences): Citizens and businesses. Both citizens and businesses have a large number of ongoing or latent processes, many of which include steps where public services are needed, often because of public regulations, obligations to the society or rights as a citizen.

A typology of eGovernment services, illustrated in Figure 1, was proposed by EU some years ago, and is still in use in connection to comparing the eGovernment service provision maturity in different countries [3]. The higher levels indicates a higher level of complexity (and potential efficiency), but are much geared towards the internal integration in government, not taking into account the complexities of the interaction and collaboration between all players, including different citizens and private companies in their interaction with public sector and each other. This point is also raised by Cap Gemini [3] pointing to (and suggesting) extended frameworks for measurement and categorization taking into account developments as the semantic web, web2.0, integrated cooperation between citizens, businesses and governments etc.
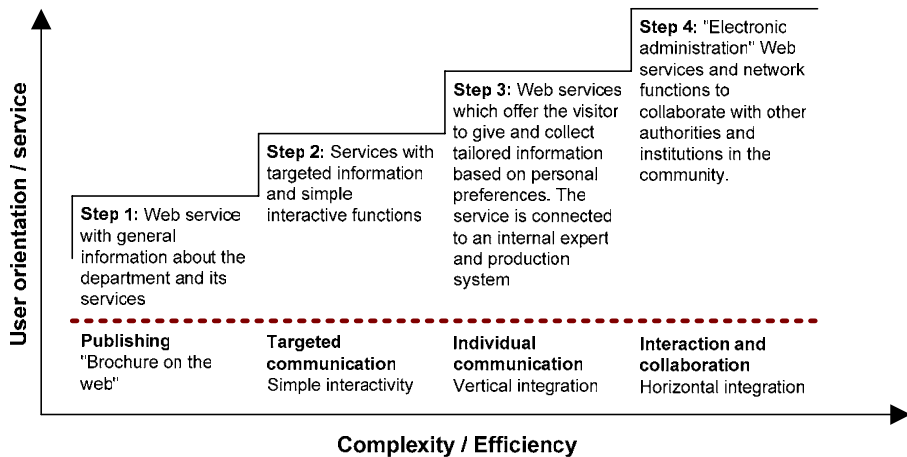

Fig. 1: The service stairs

One alternative view to the service steps is to look at public services along two orthogonal axis; actor-complexity and process-integration

Actor-complexity:

- Is one or more actors outside the public sector involved as benefiting or delivering the service (citizens, business, or community)? An example of a community-service is a common web-area for the parents of the children in a school. Public hearings provide another basis for such a community. If there are many users, it can be differentiated if the users are of the same type, or of different types.
- Is it one or more public sector entity involved in delivering or benefiting from the service?

The process integration among the actors involved can be on several levels

- Information: E.g. information provided by a static web-page from a public entity to a citizen. No process integration
- Co-ordination: At certain point, data and control goes from one actor to another. This co-ordination can be manual or automated. A web-form for providing input can act as a man-

ual co-ordination point, whereas the automatic transfer of data from the accounting system of a company to the tax authorities can acts as an automatic co-ordination point.

- Cooperation: Different actors are involved at the same process step.
- Collaboration: Different actors participate at the same process step to create a common product. An example is the parent organization at the school (in Norway, FAU – Foreldrenes arbeidsutvalg) that together with the school develop information bulletins for all parents, teachers and pupils.

In Table 1, the connection between this classification and the current typology is indicated, showing that large areas are not covered. Interestingly, these are the areas where closer cooperation and collaboration between actors across the public and the private sector is necessary, which is also typical for the Web2.0 kind of applications. Thus this also indicates a need for more work both to provide such services, and making them usable to actually be able to involve citizens as active users and content providers on a large scale. Current developments to provide such an environment will briefly be pointed out in the next section.

Table 1: Public Service typology

Actor complexity vs. Process integration	1 Private Sector – 1 Public Sector	N Private Sector– 1 Public Sector	1 Private Sector – N Public Sector	N Private Sector- N Public Sector
Information	Step 2	Step 1	Step 4	
Manual Co-ordination	Step 2		Step 4	
Automatic Co-ordination	Step 3		Step 4	
Co-operation				
Collaboration				

3 Towards an infrastructure for eGovernment services for cooperation and collaboration

The present approach was originally developed for supporting dynamic networked organizations (DNO) [4]. A DNO is being developed more or less ad-hoc to reach a certain goal based on the resources of several co-operating enterprises. Such networks consist of independent partners, unlike top-down virtual enterprises where the main partner lays down the rules for coordination, e.g. in outsourcing agreements. The partners aim to harvest knowledge from the DNO to be reused in their traditional organization, and in other DNO's. The approach is based on the use of so called interactive models, and model-generated work places (MGWP), which taken over into the eGovernment area for private-public co-operation and collaboration can be translated to model-generated Living Places (MGLP).

An interactive model [5] is a visual externalization of aspects such as tasks, roles, persons, and goals in a co-operation/collaboration that can be viewed, traversed, analyzed, simulated, adapted and executed by users. What does it mean that the model is interactive? First of all, the visual model must be available to the users of the underlying information system at

runtime. Second, the model must influence the behaviour of the computerised support system. Third, the model must be dynamic, users must be supported in changing the model to fit their local reality, enabling tailoring of the system's behaviour. Users thus manipulate and utilise interactive models as part of their day-to-day work.

A model-generated workplace (MGWP) is a working environment for the users involved in the tasks. It is a user platform that provides the graphical front-end for human users to interact with software services supporting their activities.

The living place can be tailored to meet the specific requirements of different roles or persons, providing customized presentation and operation views. This is achieved through model-configured and user-composable services (MUPS). These services make use of the interactive knowledge models to generate context-aware graphical user interfaces. The way the users themselves can change and shape their working environments and the working environment for their peers resembles to a large degree what you also find in traditional web 2.0 technology such as wikis. Thus, we have experience with testing out model generated solutions to support the example collaboration scenario above.

4   Conclusions and Further Work

Interactive models allow networked organisations to control and customize their IT infrastructure through visual modelling of work processes. We have started to also use the approach for the development and evolution of workplaces for private-public co-operation, e.g. to support FAUs. Looking on this relative to the Web2.0 approaches, it can be argued that the modeling-oriented approach is a bit more formal than many of these initiatives, although it should not be regarded as such by the normal user when the underlying infrastructure is first established.

Experiences from public and private sector on this approach indicates new challenges for full participation, challenges which does not seem to be looked on in detail yet in the traditional usability literature. It might for instance be an issue that the higher involvement will be difficult to master for certain citizens, and that a new digital divide appears, between those that only consumes, and those which also produce.

Acknowledgements

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Setting the course and keeping it

Reflections on user-orientation and systems acquisition in IT systems in Swedish health care

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Abstract. The conclusion in this paper is that information technology projects in the Swedish health care domain could benefit from user-oriented approaches to systems acquisition. I present some examples from my own experiences in the domain and suggest that user-oriented approaches could reduce potential problems in systems acquisition, IT governance and project execution.

Keywords: e-Government, user-orientation, systems acquisition, health care

1   Introduction

Often it seems usability efforts are not properly applied in the procurement and development of IT systems [6; 5]. In my experience and as I will exemplify in this paper, this holds for the Swedish health care area as well. I will discuss some identified reasons for this and suggest some possible solutions.

In the health care area, a vast number of users – physicians, nurses and administrative staff – use complex IT systems on a daily basis [3]. These systems present a great amount of critical patient data and a great amount of critical patient data is entered into them. It is very important that these systems are highly usable, for obvious reasons.

Still, health care systems in general have many usability problems and it seems that these kinds of issues have often been neglected in the development of health care systems [2]. Users are forced to work with systems that would likely be considered non-usable by many usability professionals, as I – as a usability professional myself – will give some examples of. Problems like complicated interfaces and the non-compatibility of the many systems that have to be used in parallel cause a substantial increase in overtime hours and stress-related symptoms.

2   Experiences from the health-care domain

The examples and reflections discussed here are mainly based on my experience as a practitioner, not on research results.

2.1 Lack of usability focus

In several systems the user interfaces are unreasonably confusing, which for instance substantially increases both the risk of making errors and the time needed to perform tasks. One example is the variety of non-compatible systems that have to be used in parallel. In a recent project in a major hospital I observed that, in order to transfer a patients lab result from the web-based lab result system to the patients electronic health record, users had to collect the lab result from the lab result system and write it down on a piece of paper and then enter the hand-written data into the electronic health record. A technical issue made it impossible to keep the two systems open at the same time, so copying-pasting was not an option. Instead, users had to log out from the electronic health record in order to open the lab result system and then, when the lab result was noted on the piece of paper, log out of the lab result system and re-login to the electronic health record. This procedure was repeated several times every day.

The question one asks is, of course, why this apparent lack of usability focus has come to exist in a domain where immediate access to correct and unambiguous information is of absolute importance. The answer may well be buried in a mix of inadequate knowledge of how to produce relevant requirements and procurements, and the apparent lack of sufficient IT governance and project execution [1; 4; 8].

2.2 Problems regarding the procurement process

The first issue concerns the procurers. They often have medical background and while they might be very successful in the medical field and even knowledgeable about procurement processes [3], they might not have the competence needed to properly identify whether existing IT systems meet the business and user goals, or to translate such goals into a requirement specification for a new IT system.

A recent and noticed case could serve as an example of this. Uppsala County Council based the decision to acquire Cambio Cosmic on the fact that another county council had recently acquired that particular system. When the system was delivered and introduced, it turned out that it did not at all correspond to the expected business effects or the needs and goals of the users. As a result, the system was left unused. The decision to acquire the system was clearly not based on identified business and user goals and the supplier in this case merely delivered what they had been asked to deliver (aside from a number of technical problems).

There are also numerous cases where decisions have been made based on poor judgement or prestige. In Stockholm County Council, some competitiveness has been noted between care givers, due to the previous decentralized organizational structure. For instance, when Danderyd Hospital acquired the health care system Melior, another hospital within Stockholm County Council – Karolinska Hospital – decided to acquire anything but Melior (eventually BMS). Since then, however, the organization has been centralized, decreasing the risk of such competitiveness.

2.3 Problems regarding IT governance and project execution

The second issue concerns IT governance and project execution. As mentioned earlier, procurers within health care organizations often lack in knowledge regarding business and user goals and how to properly use these in procuring processes or in requirement specification procedures. A more general problem, that needs to be addressed on an IT governance level, is that often such goals are not even identified or considered [7; 6].

Another problem that has been noted, at least in Stockholm County Council, is the very limited transparency of decision-making processes. With transparent IT governance it is well established who is responsible for a decision, what the decision is and why the decision was made [3]. As mentioned earlier many decisions are based on irrational factors, and in addition to this, there are many cases where the decision-maker is unspecified.

Continuously in IT development, new ideas and questions arise and alternate routes emerge. In these cases decisions have to be made regarding what to incorporate and what to disregard, or what direction to choose in general. Sometimes it can be hard not to make bad decisions, and sometimes bad decisions could easily be avoided but they are not, due to poor judgement or prestige.

3   Discussion

In order to acquire usable IT systems and to avoid making bad or irrational decisions – deliberately or not – when developing them, some means of steering IT projects would be useful.

I suggest that business and user goals could constitute such means. Identifying and defining these goals gives a starting point in the requirement specification phase and means to control the course the project is taking during the development phase. I will restrain from describing methods for identifying and defining business and user goals, however, such methods are thoroughly described in Ottersten & Balic [9] and Markensten [5].

On an IT governance level, it is important to make sure that business and user goals are incorporated in IT projects. In addition to their advantages in the procurement phase and on a project execution level, these tools also contribute to solving the transparency problem. Specified business goals and personas are very evident and easy to distribute within an organization; they clearly communicate the goals in the light of which all decisions should be viewed [6]. Decisions become easier for everyone to evaluate and irrational factors become easier to identify.

On a project execution level, when an issue has to be considered, it needs to be considered in its relation to the business and user goals. For instance, if a new feature is considered, one needs to investigate if it is coherent with the business goals and if it would help the personas to achieve their goals.

Using business and user goals properly would not solve all, but most likely some, of the problems. Obviously there are deeper issues both in the procurement field and in the IT governance and project execution areas that need further investigation, but I believe a user-oriented method that provides such effective means of controlling and steering IT-projects are useful on both operative and strategic levels, and could help create considerably more useable IT systems for the health care area.

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Involving disabled users in the development of e-services

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Abstract. Among users of public e-services are people with disabilities. Involving disabled users in development work requires special methodology considerations. This paper gives examples of such considerations, applicable when collecting information from disabled future users of e-services. The paper is based on results from a three year Swedish project on user involvement within the Information Technology field. The project is called "Bättre tillsammans", which translates "Better together" in English.

Keywords: User involvement, disability, ICT, eInclusion

1 Introduction

Public sector e-services should give access to all public sector services with good quality, independent of time and place. Such services should facilitate contact between governmental agencies and citizens. Many users of public sector e-services are persons with disabilities. Like all other citizens, people with disabilities need usable interactive electronic services to receive support and to take on their responsibilities in society.

1.1 User Groups

It is estimated that approximately 10 to 20 per cent of the population in Europe have a disability [1]. This includes persons with visual impairments, hearing impairments or deafness, speech and language problems, motor impairments or cognitive impairments. Within the context of e-services, people with these disabilities may have problems reading or writing or using images. Other problems have to do with perceiving sound based information or handling keyboards, mice or other input devices. There are also problems related to the comprehension of complex and abstract information, problems related to the ability to concentrate, remember, navigate and locate information.

Generally speaking, people with disabilities make use of e-government services for the same reasons as everybody else. It can, however, be claimed that certain groups of disabled people can be more dependent on such services than people in general. What is convenient to most citizens might be essential to certain groups of disabled people.

1.2 The Principle of Design for All

Design for All means designing mainstream products and services to be accessible by as broad a range of users as possible. Inclusive design or Universal design are other expressions for

similar approaches. The European Commission and many EU member states support the principle of Design for All through policies and research [2].

An increasing amount of public sector e-services are web based. W3C/WAI Guidelines, presently Web Content Accessibility Guidelines, WCAG 1.0, provide international guidelines for an accessible web. Members states of the European Union have agreed to adopt these guidelines for use in the public sector. This is an example of practically applying the principle of Design for All.

1.3 Rationale for User Involvement

Involving future users in the design process of a product or service is likely to lead to improved end results. The degree of usability (according to ISO 9241-11) increases, and chances are strengthened that user needs are met. This is a question of effectiveness and result oriented work processes. Involving users is also a matter of democracy. The end user should be given the right to influence the technical solutions he or she will have to live with.

According to United Nations Standard Rules on the Equalization of Opportunities for Persons with Disabilities, "it is of utmost importance that persons with disabilities and their organizations are consulted on any development projects designed for people with disabilities. They should be directly involved in the development, implementation and evaluation of such projects." It is also stated that the needs and concerns of persons with disabilities should be incorporated into general development plans and not be treated separately [3]. In a Resolution on e-Accessibility of 2003 by the European Union [4] it is pointed out that people with disabilities must be empowered to take increased control over the development.

2 A Project on User Involvement

There are many arguments in favour of involving end users in ICT development work. But how can this become a reality? What methods are effective if the end user is a person with a disability? With these questions as the starting point, a project on user involvement in the information technology field was initiated in 2002 by the Swedish Handicap Institute, SHI. The project, which has been called *Bättre tillsammans* ("Better together" in English) has been run by SHI in collaboration with Swedish disability organizations and two centres at KTH, Royal Institute of Technology in Stockholm: The Competence Centre for User-Oriented Design, CID and the Centre for Speech Technology, CTT. The work was completed in 2006. Seven of the following studies have been conducted within our project: [6; 7; 8; 9; 11; 12; 13].

3 Methodology Considerations

When applying user oriented methods in development work or in usability tests, available methods might have to be modified or new methods developed in order to permit participation by disabled users. Previous work in the area can be exemplified by the USERfit project [5]. Establishing a dialogue with users implies the provision of accessible information as well as accessible feedback to participants. In the following sections, a few examples of methodology considerations which have been found or developed within the above mentioned project *Bättre tillsammans* are summarized. The presentation is based on a compilation by Gauffin, Lundman and Udd [6]. Many of the issues might seem self evident, but since many

researchers, engineers and interaction designers of e-services never meet disabled end users, mentioning a few examples seems adequate. Not being aware of the need for special considerations when collecting information from certain user groups might lead to a lower response rate, difficult to interpret by the responsible researcher/designer.

3.1 Preparations

Providing physical access to the premises where the design team will meet is of course a matter of importance. If participants use wheel chairs there is need to consider this, but also, if possible, to try to avoid using special arrangements or entrances. This is a matter of showing respect for all participants. Induction loops for participants using hearing aids need to be tested for accuracy. If needed, such equipment can be rented on a short-term basis.

It is common knowledge that participants in usability tests might feel at risk of "failing" and therefore being exposed to critique. Participants with disabilities, e.g. people with reading and writing difficulties, can be especially sensitive with regard to this. These users can have negative attitudes towards tests from experiences of previous failures, a fact which needs consideration.

It is important to avoid disturbances, e.g. to avoid distracting information in meeting rooms. Persons with neuropsychiatric conditions might easily be disturbed at sudden changes of plans. Providing information reasonably well in advance about changes of time schedules, meeting places, etc. is essential.

When collaborating with disabled users, there is often need for a significant amount of extra time. In a study by Gauffin and Lundman [7], Swedish researchers reported *time* to be one of several critical factors that would facilitate or hinder collaboration with disabled users within the information technology sector.

3.2 Collecting Information

Interviews. There are means to facilitate personal interviews with people with speech and language problems as well as people who uses other forms of communication than speech, e.g. sign language. In Sweden a number of services are available, e.g. "TeleTal" and "Taltjänst", which can facilitate conversations with people having speech problems. Using these services, the interaction is supported by a third person, whose role is to clarify speech which is difficult to comprehend. Sign language interpretation services are also available for face-to-face meetings as well as for distant meetings. Relay services where spoken telephone conversations are translated into writing and vice versa are available in many countries. This type of support could be of use when interacting with hard-of-hearing people or people with speech problems in telephone interviews.

People with learning disorders may also act as a resource in development work. Göransson [8] has shown that users with learning problems might benefit from discussing concrete suggestions instead of abstract reasoning. There is also extensive knowledge on how pictures and easy-to-read material can be used to increase comprehension of information for this group.

In her master's thesis, Francke [9] has discussed methods for evaluating products within a user centered iterative development process when the users have dyslexia. She proposes a few modifications of evaluation methods:

- use oral together with simple written invitations to take part in development work;

- provide oral instructions;
- use interviews or group discussions instead of written inquiries;
- use observations with retrospective evaluation instead of observations with "Think aloud", due to risk of cognitively overloading the user.

Group Discussions. As mentioned above, Francke has pointed out that group discussions might be especially beneficial for people with dyslexia. On the other hand, it is known that group discussions can be very tiresome for people with hearing impairments. Barret and Kirk [10] reports of experiences from focus groups with elderly people with cognitive deficits. The authors point out the need for special techniques when interacting with groups with cognitive problems. Forgetting the threads of discussion is not uncommon, but negative effects can to some extent be avoided if individual participants are encouraged to finish the different parts of a discussion and not letting themselves be interrupted.

Workshops. The development of meaningful products and services starts from knowledge about everyday life of the user. A workshop methodology developed by Westerlund and Lindqvist [11] has proven to be a valuable tool to inspire users with disabilities to identify common problems of everyday life. The methodology also includes discussions regarding potential technical solutions, possibly in the form of new or improved products or services. Simple materials and techniques are used to visualize the problems and solutions discussed. The process is documented with a video camera. The resulting video clips, called "Reality Based Video Prototypes", can be used to discuss user needs together with e-service designers and companies.

Web Based Methods for Group Discussions. "Virtual focus groups", where participants have access to webcams have been reported by Ingrids [12]. This kind of group discussion at a distance provides a means of interaction between participants who prefer spoken interaction to written communication. Young people with reading and writing problems as well as signing teenagers took part in the trials in this study.

Written Postal Inquiries. Using written inquiries will likely create problems for many user groups, e.g. people who are born deaf. It is often wrongly assumed, that written enquiries are appropriate means to collect information from deaf people. For people who are born deaf, sign language is their first language. Many deaf persons have problems using written language, and will most likely not respond to postal inquiries (or web based written inquiries). Also, people with dyslexia and other forms of reading and writing problems, as well as people with visual impairments find it difficult to respond to written postal enquiries [6]. There are efforts to adapt written inquiries to better suit people with disabilities. The instrument "Pict-o-Stat" is an example of this. Using this technique, written questions are accompanied by Pictograms to facilitate comprehension and responses by people with learning disorders. This type of questionnaire is distributed electronically, but is still only available for specific life areas [6].

Observations with "Think aloud". In her thesis work, Gansved [13] conducted user studies together with people with severe visual impairments. She accompanied visitors with visual impairments to different museums in Stockholm in order to understand the information retrieval strategies of the users. The museums were chosen as examples of public exhibit areas, where information services might be needed. She found that observations, together with video captioned "Think aloud" comments, worked well in the situation. Francke, on the other hand [9] points out that "Reflected evaluations", might work better for people with certain

cognitive disabilities. It is evident that non speaking people can have problems taking part in sessions where observations are accompanied by a "Think aloud" approach. Even in the presence of effective communication devices difficulties may remain, and specific measures might be needed [6].

3.3   Significant Others

In the previously mentioned study by Gauffin and Lundman [7] it was reported that Swedish researchers have identified the presence of "significant others" as an important critical factor to facilitate, but sometimes to hinder (see below), collaboration with disabled users. Significant others, e.g. personal assistants, clinical staff, teachers or family members, were reported often to have been most helpful to facilitate disabled users' participation in research and development work. It was, however, also reported that such significant others at times could play too dominant roles.

3.4   Methods for Elderly people

Elderly people are important users of future e-services. This is reflected in the new strategic framework adopted by the European Commission: i2010 – European Information Society 2010 [2]. Within this framework the Commission proposes to launch flagship ICT initiatives on key social challenges. Among the initial priorities are the needs of the ageing society.

Among recent research in this area are studies by Sjölinder [14]. She has shown that elderly people might benefit from adapted computer interfaces. There are also guidelines for making user studies among elderly people published by the Swedish National Board of Health and Welfare [15]. These guidelines include techniques for collecting information from elderly people, e.g. using telephone interviews as an alternative to face-to-face interviews, since many elderly people are unwilling to receive strangers in their homes.

4   Conclusion

Involvement of disabled users in the design process of e-services requires special knowledge and adapted work processes. A great deal of progress can, however, be made with fairly simple means. Increased attention to the user needs is important in order to develop e-services that are accessible and usable to all.

The awareness of the disability perspective needs to be strengthened, and the knowledge gained must be communicated to wider circles. Most of the studies mentioned in this paper have been published and can be downloaded from the web site of the project *Bättre tillsammans* [16]. Some of the studies have also been presented at international and national conferences. The aim is to continue to disseminate the results to relevant study programmes at universities, as well as to governments and development organizations. Of special importance is to include this knowledge in the education of students and provide opportunities to learn and reflect upon the disability perspective in the development of e-government services of tomorrow.

Acknowledgements

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