Participation, Knowledges and Experiences

Design of IT-Systems in e-Home Health Care

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Abstract
People working in the home health care sector are seldom consulted when development and implementation of ICT is involved and which effects their work practices. This is surprising given the assumptions of participatory design principles that have influenced Scandinavian research and design work. To address this shortcoming, this thesis takes the perspective of the homecare personnel. A central purpose of the thesis is to explore care staff’s participation in, experiences and knowledge of the design and use of ICT in home health care services, with a special focus on care assistants.

The methodological approach for this exploration is based on qualitative methods and interpretive and hermeneutic perspectives applied in four different research and development projects. The empirical material was conducted with focused interviews, undertaken work with focus groups, facilitated workshops, engaged in systematic observations and used the storyboard technique with personnel working in the home health care services. Thus a variety of participatory design methods and techniques have been used. The gathered data has been analysed using different methods: discourse analysis, the cyborg figure, thematic analysis, and reflective analysis. The findings from each analysis complement each other and bring forward different perspectives.

Common assumptions about participatory approaches are that participation improves workplace democracy and increases user acceptance. Nonetheless, it is not that straightforward. This research has revealed that participation involves conscious reflections on when, where, and how the users should participate in the design process. The degree of participation is an issue where the ultimate level is shared collaborative decision-making for reaching effective and high quality systems that supports the work processes. An additional issue in the design process is the quest for official power.

The conducted research confirms that participatory design is difficult and takes time, participation and participatory design techniques that have been used demonstrate the complexity in the work practice and that it is not only to “get the work done”. Further, if the point of departure is taken in (participatory) action research and participatory de-
sign it is possible to intervene in the process and change the direction of a research and development project in order to engage all stakeholders that are involved in the care of the client.

Finally, when applying an appreciative approach, care staff were enabled to value their situated knowledge and how it contributes to the services delivered i.e., they were enabled to reflect on their work, learn, and share together. Findings indicate that by integrating the principles of participatory action research (PAR) in the participatory design (PD) process, the users participate during the full development process, make decisions and take part in the design work. With this degree of participation, the care staff are able to follow the whole process, reach a realistic expectation of what to expect from the designed technology and additionally develop their situated knowledge about the relations between technology and work practices.
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Maria
Vägen kommer när vi vandrar
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Introduction

Information and Communication Technology (ICT) in the health care sector has traditionally been used to support transactions, calculations, storage of data etc. Nowadays, to meet the demands and to maintain an acceptable level of services in health and homecare, ICT is introduced to make day-to-day activities of caring work more efficient. This trend is enabled by the technological developments which have expanded the use of ICT to include support for interaction, mobility and communication (Wiberg, 2005).

The use of ICT within the social care area such as home care is, compared to other branches, low (Jansson, 2005). Further, the purchase and implementation of ICT within the health and care areas in Sweden has been based on technology-oriented standpoints (Bjører, et al., 2003). Those who have purchased the technology have done so from their department’s point of view. In that way, the specifications for the IT-system have been unique to that department’s needs, and not related to the whole organisation and its needs (Essén, 2003; Bjører, et al., 2003). Furthermore, those who have ordered the IT-systems have not always understood the prerequisites in the health and care areas.

In information systems research it is common knowledge that information systems development requires knowledge about work and work organisation (e.g., Bratteteig, 2004). However, although the information systems field is a well established research area focused on systems development since the 1960’s, the area of ICT and home care is fairly unexplored (Koch, 2005). Furthermore, in the Scandinavian tradition of systems design, participatory approaches are a tradition. These are based on the concept of democracy and that the users of technology have the right to influence their own working conditions. If such an approach is taken, knowledge about work and work organisation would be brought into the work of developing information systems. Still, I find that this tradition has not been employed to any noticeable degree when it comes to the work practices of the home care area. If it has occurred it has been limited to representative participation based on managerial or political perspectives (Jansson, 2005).
Participatory design (PD) implies that workers, as users of ICT, should take part in the decisions that affect the design of the system. As Greenbaum (1993, p. 28) states:

“…technology is not developed in isolation… decisions about technology also involves decisions about work content and job design.”

From a participatory design perspective this means that systems design needs to be part of an integrated design that looks on work organisation and work processes and the way technology could be used to support these activities. Such an integrated design process implies that systems designers learn to rely on the expertise of the workers. Simultaneously, the workers learn about the technology, its abilities and limits including usage. Furthermore, research (e.g. Bratteteig, 2004; Bødker, Kensing & Simonsen, 2004) has shown that user participation increases the likelihood that IT-systems will be used according to the designed intentions.

So, besides increasing workplace democracy (Bratteteig, 2004; Elovaara, Igira & Mörtberg, 2006), the pragmatic argument for user participation in systems design is that it makes it possible to establish a mutual learning process. The systems designers need knowledge of the work practice to be supported by ICT and the users need knowledge of the technological options (Bødker, Kensing & Simonsen, 2002). Additionally, since systems design consists of actions and selections that influence people’s everyday working life it is also an ethical activity (Löwgren & Stolterman, 2004). Those responsible for conducting the work are also responsible for including all involved into the design process. This is my point of departure.

To expand on my point of departure I wish to argue that users of technology have the right to influence their own working conditions, conditions that are often significantly affected by the implementation of ICT. Further, it is important to reflect on the user’s situation and needs in the design process, in order to succeed with the implementation. Additionally, it is also important to consciously consider, whom to
include (and by that whom to exclude) in the participatory design process.

The participation in systems design may vary in degree e.g., representative, direct, consultative, and collaborative (Bratteteig, 2004). The ultimate level of user’s participation is shared, collaborative decision-making (Whyte, Greenwood & Lazes (1991). Moreover a gradual shift in regard to user participation, in the Scandinavian tradition of participatory design, can be noted from the 1970s ‘victims needing’ support, to today’s ‘source of inspiration’ (Kanstrup & Christiansen, 2006, p.321). However, in the home health care area, as mentioned above, participation, except by representatives, has not been a tradition. One challenge is therefore how to build on participatory design, were experience of this kind of participation is lacking. Another challenge is to decide and develop methods that are inclusive and bring forward the skills and knowledges of workers which as well permit and enable them to collaboratively design and define the technology implemented into their work practice.

In previous research (Jansson, 2005) care assistant’s expectations, needs, dreams, and notions, on/about ICT and homecare work were explored. People working in this area are seldom consulted when development and implementation of ICT into their work practices take place. Consequently, care assistants experienced that they had no influence over the purchase, development or implementation of ICT into their work. At the same time, care assistants were not able to express their needs when it came to ICT, and responded with silence. However, when they discussed their concrete work and work tasks they could very well express their needs in relation to technologies. Thus, in an appropriate context they could express their needs. Additionally, findings in this research point at knowledge as situated, that is, knowledge is always partial, situated and embodied. This means that knowledge is not the same everywhere but is produced from partial perspectives where history, culture, and places connect in relations to each other. This is termed “situated knowledges” (Haraway, 1991, p. 188). In this thesis I build on this notion of situated knowledges and continue to bring forward care assistants and care staff’s perspective on ICT and
homecare work. This is done by building on participatory approaches that respect the skills and knowledges of these occupational groups.

*The aim of this thesis is to explore care staff’s participation, experiences and knowledges in the design of ICT in home health care services with a special focus on care assistants.*

Information and communication technology (ICT) are not commonly used in the homecare area. However, it is slowly entering the field, but still an area that is fairly unexplored. To make care work more efficient, as is the intention by introducing ICT, it is important to build upon the knowledges of care staff. Therefore, it is important to study the impact of participation, and participatory approaches that bring forward and make visible care staff’s experiences and knowledges. None of this has been extensively researched so far.

**Limitations**

Since more medical assignments are carried out in elderly people’s own home, there are areas that are closely connected to homecare, such as home health care and telemedicine. In the municipality where this study was conducted, the primary care organisation is responsible for medical assignments and the municipality for social care and services. This thesis deals mainly with the services carried out by the municipality. The last few years homecare has also been offered by private businesses. However this thesis only deals with homecare provided by the public sector.

It is socially just to involve the elderly, who receive homecare, in this research, since care staff conduct work in the home of the private individual. However, the primary focus of this thesis is care staff, since the purpose is to explore care staff’s participation, knowledges and experiences in the design of ICT in home health care services.

**Ethical Considerations**

It is important to reflect on how you treat people that participate in a research project. When they agree to participate in a research project
they give their time and trust and this should be respected (Preece, Rogers & Sharp, 2002). All participants that have been involved in the different projects in this thesis have received verbal and written information about the project they were going to participate in. The participants have also been informed about the aim and expectations associated with their participation in the projects in line with the ethical research policy document (2001) at Luleå University of Technology. Further, they have also been informed that they had the right to withdraw whenever they wanted to (ethical policy document, 2001). The MobiHealth and the eHHC project were also approved by the ethical committee at Luleå University of Technology.

Thesis Structure
The overall structure of this thesis is this cover paper and five published articles. The purpose of the cover paper is to provide an introduction to the research area, as well as to bring the parts together as a whole. In Chapter 2, I present the context of health and homecare in Sweden and its relationship with ICT. The frame of reference is presented in Chapter 3 and the empirical research and the evolution of methods from methodology in Chapter 4. In Chapter 5 I give a summary of the papers and the research findings. The research findings and the research projects are then discussed in Chapter 6. In Chapter 7, I present some concluding remarks and reflect on the research process as a whole. Further, research is also presented. Finally, I present a Swedish summary of the thesis.
Health and Homecare in Sweden and its Relationship with ICT

In this chapter, I present a brief description of six things. First how health and homecare of the elderly in Sweden is organised. Secondly the organisation of the specific municipality studied. Thirdly care assistants work practices. Fourthly I describe information and communication technology (ICT) used in the home and healthcare area. Fifthly I give my own view of concepts related to the area of home health care services and ICT. Finally earlier research within the area of ICT and homecare work is presented.

Organisation on a General Level

In Sweden there are three political and administrative levels that operate in the welfare system. The levels are central government, county council and local authority. The levels are represented by directly elected political bodies that have the right to finance their activities by taxes and fees. The central government establishes basic principles for the health services through ordinances and laws. The health and Medical Services Act of 1982 is the most important law. This law lays down that people shall be offered health services of good quality and on equal terms easily accessible to all. The services provided shall respect the patient’s/clients integrity and her/his right to make her/his own decisions. As far as possible the service should also be performed and organised in consultation with the patient/client. There are also other laws that regulate the responsibility and obligations of personnel, health professionals’ qualifications, professional confidentiality and patient records. The detailed regulations have diminished in recent years since the central government is more interested in performance and results of the services than how they are organised (Norén, 2005).

The overall responsibility for care of the elderly in Sweden rests with the State and is provided in accordance with democratic principles. One of the most central principles of Swedish policy for the elderly is that older people should be able to live in their own home for as long as possible, even if they need extensive health and social care (Socialstyrelsen, 2005). Other general principles of the Swedish welfare state
is that health and social care of the elderly is primarily a public sector task and that care should be provided by trained and qualified staff (Regeringskansliet, 2007). In Sweden the local authority, that is, the municipalities, have the responsibility for all service, care and nursing (homecare) when it comes to elderly people, 65 years and older. Local authorities’ responsibilities will increase because, as in many other developed countries and developing countries, the elderly population in Sweden is increasing. This is a phenomenon called ‘population ageing’ (Brown, 2003). The working population is decreasing. The ageing population will lead to greater demand for health and social care. A big part of care and rehabilitation following a disease has moved from the hospital to the private residence (SOU 2004:68) since more and more elderly stay in their own homes.

Homecare in Sweden is organised according to the 1992 reform of elderly care “Ädelreformen” as cooperation between the two administrative levels, namely the County council and the local authority, Municipality. These two organisations are governed by two different laws.; the County council by the Health and Medical Service Act (HSL) and the Municipality by the Social Service Act (SoL). In order to deliver a well functioning health- and homecare, healthcare and social care need to cooperate.

Municipalities have organised their social care services in different ways in Sweden, since the legislation allows them very great freedom to plan and organise their own service (Regeringskansliet, 2007). Therefore, an explanation on how the municipality, where this research was conducted, is organised follows in the next section.

Organisation on Municipality Level

The Division of Social Health has the overall responsibility for homecare in this municipality. The Division is administered by the administering office and is made up of three parts. These are economy, personnel and development units. The Division of Social Health is then organised into four subdivisions, with the different subdivisions being responsible for different services. The four subdivisions are: ordinary living, old-age living, functional impairment, and social services.
There are a lot of people with different occupations involved in the care of the client, such as case workers/process officers, occupational therapists, physiotherapists, nurses, staff nurses and managers. Managers for home care teams are responsible for running and developing the homecare teams, and seeing to it that all the care tasks, approved by the municipality for the client, are carried out. The care assistants undertake social care and also carry out medical interventions such as dosage of medicine, bandaging of sores and dispensation of insulin on the instructions of the primary care staff. District nurses, employed by the county council’s primary care, have medical responsibility for the client and dispense the tasks of medicine dosage, sore bandaging and insulin injection to homecare personnel. Occupational therapists and physiotherapists employed by primary care are responsible for the rehabilitation of the client. Rehabilitation staffs employed by the municipality are responsible for providing occupational assistance to the staff. The municipality also provides an alarm system to elderly persons and persons with disabilities in their ordinary housing. A care resource centre conducts the service and is responsible for the alarm system and care assistants’ responses.

In order to receive social care from the municipality, the individual citizen has to apply for the assistance. A case worker/process officer investigates the assistance needed and makes a decision. In this decision the content, goal and volume of the social care service are regulated. The case worker sends the decision document to the homecare manager, responsible for the town district (unit) where the individual lives. This assistance document is then used by the homecare manager to plan the service and distribute the work among the homecare personnel. The majority of the personnel conducting the care and service in the clients own homes are staff nurses. It is their work practices that are described in the following section.

**Care Assistants**

The caring profession has not changed much in relation to the care recipients during the 20th Century. It is still about handling the different needs of caretakers, practical as well as medical and physical
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(Drugge 2003). On the other hand there has been a distinct change of the work content within care and service work since 1990. The psychological demands have increased and the opportunities to make decisions have decreased.

The homecare personnel’s work consists of contacts with people who are in need of care and support in a variety of situations in their daily life in the private home. In order to be able to manage care in people’s own homes, the personnel need to recognize what the home symbolises for the client, as well as take relatives and other close persons into consideration. The home is a fundamental base to experience independence, privacy, control and comfort (Nilsson, 2001). The personnel have to accept customs and manners specific to the client, since the home constitutes the client’s private sphere (Nilsson, 2001). This is not an easy situation since the resident’s home cannot be ranked as a public place of work, while at the same time a safe working environment for care assistants must be ensured (Berg 1994). Some sort of partnership needs to be developed between the client, who receives the care, and the personnel. When the personnel have carried out the service and care work in client’s home, the personnel go back to their work premise to write reports and conduct administrative tasks that are needed in the care of the client. Hence, the homecare personnel have many different work tasks to perform simultaneously. Therefore the work demands flexibility (Jansson, 2005).

In 2006 there were about 630 households which received care from the homecare service (Nilsson, 2006) in the municipality where my research was conducted. The homecare service is organised into 23 units and belong to the subdivision ordinary living. Each unit has its own budget to administer and has about 20–30 employees. In a prognosis (Nilsson, 2006), the municipality estimates that it needs to employ about 510 person within the homecare area, in the period of year 2006–2015. The municipality offers paid competence building in order to achieve its aim that its employees working within homecare should be educated staff nurses.

There are a variety of ways to organise the homecare personnel’s everyday work. In the municipality where my research was conducted,
the homecare personnel start their day by meeting in the morning at their work premises to report and schedule work that needs to be done. When the personnel have scheduled their work, they travel to the client and carry out social care work and services in the client’s private homes. The homecare personnel have very mobile work since they are travelling (walking, biking or driving a car) back and forth between client’s private homes and their work premises. It should not be forgotten that in thinly populated areas, there are large geographical districts for the personnel to serve. To support homecare work with ICT, mobile ICT solutions are required. Additionally, staff have a complex work. They have a tradition in using technology, such as household technology and ergonomic technology, but they are not used to IT- systems as a supporting tool for homecare work. However, all managers in the municipality use information and communication technology (ICT) to help them with their administrative work. Some, but not all, of the units schedule their work within the system Timecare.

Homecare and Information and Communication Technologies
Today’s challenge for municipalities is to deliver a well-functioning elderly care service. This includes possibilities for the personnel to develop their capacities and capabilities to deliver the best possible care to their patients/clients. To meet the demands and to maintain safe and acceptable levels of service in health and homecare, the traditional way of solving these kinds of problems, that is, by employing more staff, and/or through organisational changes, is not considered to be a solution, since there is a lack of money to finance these solutions and a shortage of educated personnel (Ds 2002:3). To meet these demands, implementation and use of information and communication technology (ICT), as support for caring work, are increasing and regarded as a necessity (Bjører et al., 2003). Seventy three percent of the municipalities in Sweden consider the development of ICT essential, to make homecare work more effective (Kemlén, 2002). Municipalities and county councils in Sweden have different kinds of IT-systems and infrastructure. The different systems are not able to communicate with each other, not even within the own organisation (Jansson, 2005).
The homecare sector is not a great user of ICT and ideas concerning information systems (IS) are generally less well-developed than for example, in the health care sector (Riley & Smith, 1997). With the use of ICT-equipment that is directly connected to hospitals, healthcare of severely ill children and advanced palliative care are already today conducted in the private home and tests with ICT-solutions to create contact between different medical institutions and their patients, have been conducted in different places around the world (Ds 2002:3). Technologies that are used within this area are; mobile technology, sensor technology, remote monitoring and video communication.

The Swedish government’s Ministry of Health and Social Affairs has published a report “IT in Health Services of Tomorrow” (Ds 2002:3). One of the conclusions is that IT-use and other IT-solutions, such as telemedicine, can be a way of making work in the home healthcare sector more attractive to young people, not least to men, since it is very difficult to recruit male personnel to care-related work today. Care is a profession that is dominated by women, that are low-paid and do not enjoy a high status in society (Runesson & Eliasson-Lappalainen, 2000; Berg 2000). All categories of personnel in the homecare sector need basic vocational training. There is a huge demand for increased competence, such as further education and learning in working life (SOU 2004:68). Further, the government also states that it is important to develop information and organisational support within health care, and especially within care for the elderly in municipalities (Proposition, 1999/2000:149).

Development and implementation of ICT which has been conducted within the homecare area in Sweden has often been carried out in isolation and initiated projects are often driven by committed individuals, without support from management (Essén, 2003). The ICT projects within homecare are often very small and scattered in the country and evaluation of the projects is often incomplete. There is a need for larger scale projects that are supported by the Swedish government (Essén, 2003). Implementation and development of ICT is urgently required in order to support homecare and, at the same time, accomplish economic profit demands, long-range planning goals, competence building,
political support and authentic patient/client engagement (Utbult, 2004).

Within the home and healthcare area the purchase and implementation of ICT has generally been based on technology-oriented standpoints. Consequently, IT-systems have been implemented without any adjustments to the organisation’s work processes and operations (Bjører et al., 2003). Specifications for the IT-system ordered have been unique to that department’s needs, and not related to the whole organisation and its needs, since those who have purchased the technology have ordered it from their departments point of view (Bjører et al., 2003; Essén, 2003). Furthermore, those who have ordered the ICT have not always grasped the prerequisites in the home and healthcare areas. The development of ICT in this social context has, up until today, been too technically oriented and not focused on services within the care process (Bjører et al., 2003). Research within the Scandinavian tradition of participatory design, has shown that situating systems development in an organisational context contributes to organisational change (Bratteteig, 2004). Research has also shown the importance of adapting the ICT-application to the user’s whole work-life situation, in order to get acceptance for the technology, but also to return a profit from the investment (Fagerström, 2003). The homecare workers have low status so their views and contributions in developing new ICT are underrepresented. The phenomenon of low status groups articulating their craft knowledge is often overlooked (Jansson, 2005).

ICT related to home healthcare services is a broad term. The term can include anything from decision support at the point of care, clinical robots that are placed into the client/patients homes, e-mail consultations and educational programs for clients/patients, staff, and/or relatives to advanced sensor surveillance (Koch, 2005). A number of different terms are used in the context of healthcare services and information and communication technology (ICT). The next section will therefore consist of concepts and terms used in this thesis.
Concepts Related to Home Health Care Services and ICT

At the beginning of my doctoral studies, I soon appreciated that I could easily get lost in a jungle of words. For example the definition of homecare meant different things in different reports. Therefore, I give my own view of the central concepts I use in this thesis. I have used the same definitions of the concepts in my licentiate thesis (2005) and I still find the definitions useful. Nothing in my recent research has given me a reason to re-define the concepts. Therefore, the concepts: care assistants, homecare service, client and care, are defined as in the licentiate thesis. However, I have added a section about ICT in the context of home and healthcare services.

In this thesis, I use the term care assistants when my focus is on specific personnel. I use homecare personnel when I write about personnel in general. Care assistants are trained staff nurses or assistants to nurses. Care assistants are the occupational group that provides elderly and disabled people with care and services in their own homes. I also use the definition homecare service when referring to the care and services the municipality is providing to its citizens. My current understanding is that the definition home-help-service or home-help is used in the same way that I use homecare service. In the homecare service, care assistants provide the elderly people with service and care. My focus is on care assistants and their day-to-day work. Clients are the persons who receive social care and services in their own homes provided by the municipality. I also use the concepts, clients, patients and care-receiver synonymously.

The problem domain is care, and the professionals are called care assistants. This is how I define the concept of care; according to Concise English dictionary (1995), care means to be concerned about; to provide, and this is how I use the concept in this thesis. In order to concretise what the care assistants provide I quote Simonen cited in Szebehely (1995, p.82):

“care consists of mental work which includes planning and permanent reconsiderations, emotional work which means engagements in somebody else’s problem and manual work which includes the concrete tasks”.
In Sweden, municipalities are responsible, according to rules and regulations, for all services and support that the elderly might be in need of. Hence, the municipalities are responsible for the care of the elderly, while the actual performance of the care is conducted by care assistants.

Since I am exploring care staffs participation, experiences and knowledge’s in the design of ICT in home health care services with a special focus on care assistants, it is important to mention that IT-systems and applications to support administrative work are common within home-care, e.g., software for scheduling care assistants’ work. However, IT-systems are seldom used in operative work with elderly. Information and Communication Technology (ICT), especially mobile solutions, are now entering the field of homecare work. There are many terms used in the context of home and healthcare and ICT, telemedicine is one of the oldest terms used. The term has evolved into telehealth, and the term e-health emerged a few years ago (Koch, 2005). Applications of telemedicine, telehealth or e-health to the home environment are usually described as, telehomecare, HomeTelehealth, or home based eHealth (ibid). In this thesis however, I will use the name of the specific technology used in the projects, e.g. alarm system, mobile alarm system, sensor technology and so on. When I write about technology on a general level, I will use the term ICT or IT-system.

The ICT that has been developed or re-designed in the projects described in this thesis, have been tested in a trial. A 'trial' is defined as a field test of the developed or re-designed technology in the project. The use of the term 'trial owner', refers to people such as doctors, nurses, physiotherapists, or other care staff that have been responsible for the trial, putting it together and implementing the trial.

Earlier Research within the area of ICT and Home Care Work
The area of ICT and home care is relatively unexplored, and therefore the literature in the area is scarce (Koch, 2005). This might be due to the fact that it is a relatively new phenomenon, or that the technology used has not been given priority. Another possible explanation is that
the caring profession is dominated by women and do not enjoy a high status in the society (Runesson & Eliasson-Lappalainen, 2000; Berg 2000). Further, few countries in the world are as organised, and have the same welfare system, as Sweden. The other Nordic countries are similar, but not alike, in how to they organise social care and services for elderly and disabled people. Consequently, most of the research – relevant for my purposes– has been conducted in the Nordic countries, and one example is Orre and Middup (2006) that have studied two homecare groups that have used the same workflow system. In their paper *Spheres of Collaboration: People, space and Technology in Co-located Meetings*. They show how technology that is implemented for efficiency purpose in co-located groups (homecare groups) can have a negative effect on group socialization. Orre (2005) has also investigated how a particular mobile ICT support has been used within an established practice of homecare work. In the discussion of the paper *Keeping Track of Notes - Implications for Mobile Information and Communication Technology in Homecare Practice* he shows a perspective of how homecare practices and technology co-evolves and get enmeshed together. Further, Hedström (2004) has investigated the role of computers in elderly care, which values that have been developed by using IT-systems, and whose values and interests govern the development of IT. She comes to the conclusion that four value areas namely, management, integration, care, and professional values, are related to the computerisation of elderly care.

In Finland Hyysalo (2004) has studied the development of a new technology, *Wristcare*, in social care and social health. In his doctoral thesis *Uses of Innovation* (2004) he has studied the moment when user and designer relations are emphasised in the development of an innovation. The study contributes primarily to the tradition of the social shaping of technology, but also takes on the discussion of the management of technology and innovation studies. Further, Raitoharju (2007) has in her doctoral thesis *Information Technology Acceptance in the Finnish Social and Healthcare Sector - Exploring the Effects of Cultural Factors*, studied whether the Technology Acceptance Model (TAM) is a suitable model to describe IT acceptance behaviours among the personnel in the healthcare area. The result of her study provides suggestions on how IT-managers can take action to enhance the use of IT, and
also personalise IT services applications. Beck (2002a) on the other hand, has been engaged in a study of a Swedish municipality that tried to turn a small town and its surrounding areas into an IT society. She was engaged in examining the effects on people who might be influenced by the initiative, without being the driving force behind it. Part of Beck’s study was conducted at the homecare service in a Swedish municipality. She states that the study conducted in homecare is an:

“….example of the distance of PD from institutionalized practices of employment, accountability, and authority in a Scandinavian local government service.” (Beck, 2002a, p.212).

Hägglund, et al. (2007) have studied the problems of accessing information from health information systems distributed to many locations. They focus on the gap between health and social care. They present the architecture of a mobile virtual health record that is used in real time by both patient/relatives and health care professionals. Moreover, Olve and Vimarlund (2006) are conducting research on how to improve the management of ICT in different areas of the society. In their final report Elderly Healthcare, Collaboration and ICT – Enabling the Benefits of an Enabling Technology, 2006, they present their model for analysis of change when implementing and using technology to support healthcare services for the elderly population. Their model:

“provides a framework for identifying organizational preconditions and consequences, and a structure for economic evaluation of the impact of change on key actors” (2006, preface).

Olve & Vimarlund (2006) state that when a new tool (technology) is introduced their model can be used to analyse, whether and how, the technology should be implemented. The ideas they present have been applied conceptually in a few cases and needs to be tested empirically.

A lot of research about the social care of elderly people has been carried out and Nilsson (2001) has studied the competences that are needed in homecare, since much of the care has moved to the private homes. Nilsson (2001) described the content of the caring competence
as it manifests itself in professional home care. Drugge (2003) has also conducted research within the area with the purpose to investigate terms and conditions for learning in municipal home care service in Sweden. She has focused on the learning process, where the result is a collective knowledge or an attitude to learning. Waerness (1996) has also studied caring work, and has put forward the concept of care rationality. One important purpose in the work of Waerness has been to bring forth hidden aspects of caring work that have been disregarded in organisational research, as well as in the planning of public care. She means that caring work has been made invisible in the debate about the welfare society. Additional research has been conducted by Szembely (1995) who has studied the organisational conditions under which care assistants work, and also the perceptions care assistants in home care and elderly have about care work.
Frame of Reference

The aim of the thesis is to understand and interpret care staff’s participation, experiences and knowledge in the design of ICT in home health care services. My research is based on the hermeneutic view (Andersson, 1979; Thomsson, 2002), which presents ways for interpreting, processing and understanding, by means of closeness and distance to the data. Fundamental in hermeneutics is that meaning is created and can only be understood in a context. The focus is on wholeness, with the parts being dependent on the whole and vice versa (Alvesson & Sköldberg, 1994).

The key concepts in the hermeneutic tradition are interpretation and understanding. Understanding is built on some type of pre-knowledge, i.e., the frame of reference we use when observing a phenomenon. In this regard, thoughts, feelings and pre-knowledge are therefore seen as assets in the hermeneutic tradition. Interpretation is not neutral, since our interpretation builds on our judgments, values and earlier experiences. The assumption in interpretative research is that the interpretation always occurs in a socio-historical context (Kvale, 1996).

A focus on interpretation and understanding implies that language becomes very important and for that reason the participants in the projects have contributed the most important information (data) in my research. I have studied staff in the home health care services by conducting one-to-one interviews, group interviews, workshops, and participant observations of their work practice. My rationale for this is because hermeneutics is dependent on activities that consist of interpretation of text in literal meaning such as interviews, documents, notes taken during participating observations as well as other researchers’ theories, concepts i.e. the discourse sphere of activity (Alvesson & Sköldberg, 1994). Hermeneutics can also be used within the area of meaningful actions with different degrees of complexity, from private individuals’ actions to group activities, organisations, institutions i.e. the practice sphere of activity. Therefore, actions can be interpreted and read as a text (Alvesson & Sköldberg, 1994). The data gathered from interviews, workshops and observations has been interpreted in a dialogue with my experiences, pre-knowledge and established theories in a cyclical process, as in the action research cycle; diagnosing, action
Due to my hermeneutic perspective, values and previous experiences intervene in interpretations of what I hear, read, or see. Therefore, my own background, and the frame of reference that is taken in this thesis is described because it influenced the research and how it was conducted. Further, in qualitative work as in this thesis, good quality means that the reader can understand the background, procedures, and how the analysis has been made, and from that estimate if the interpretation is reasonable (Thomsson, 2002). This means that the researcher continuously needs to document and reflect on their interpretations and choices made during the research process (Ödman, 1986; Widerberg, 2002). It is therefore important for a researcher to be aware of her/his assumptions, and s/he needs to declare what her research builds on so that you, as a reader, can understand and estimate if the interpretations are reasonable. In the following I outline the underlying system or perspectives that shaped my thoughts and practices. That is, the parts and wholeness in the hermeneutic circle, or as bell hooks (2000, p. 19) writes:

"Everything we do in life is rooted in theory. Whether we consciously explore the reasons we have a particular perspective or take a particular action there is also an underlying system shaping thought and practice."

I will begin with a description about my background and experiences, after that theories and perspectives that my research is based on will be described.

Background and Experiences

My interest for the explored area, homecare and technology, in this thesis can be found in my background and previous working life experiences. I have been working as a care assistant for thirteen years, delivering service and care to elderly and disabled people, employed by a municipality in the northern part of Sweden. Depending on these
experiences people often ask me how can it be that I, as a care assistant, became a student in Informatics and Systems Sciences?

I chose to study Informatics and System Science because the programme emphasised that human beings are in focus when information technology is integrated into practice and it also emphasised how information technology can support decision processes and management functions within organisations. I have always been interested in (and worked close to) people and to join a programme where people were in focus together with information technology (IT) sounded exciting and compelling to me. When I started my doctoral studies in 2002 I knew that information and communication technology (ICT) were not commonly used in the homecare area. However it was slowly entering the field. I was curious about, if and how, the homecare personnel participated in the development and implementation of ICT in their work practice. In my licentiate thesis (Jansson, 2005) I explored the expectations, needs, dreams, and notions, care assistants had on/about ICT and homecare work. The outcomes in the licentiate thesis were then diagnosed, actions were planned, taken, analysed, and the learning was specified. The aim of this thesis therefore became one result of the the cyclical process in action research, see Fig 1., that is, to explore care staffs participation, experiences and knowledges in the design of ICT in home health care services with a special focus on care assistants.

Systems Thinking and Soft Systems Thinking

My research is also grounded in systems thinking. Systems thinking was developed as a reaction against mechanistic and reductionistic thinking and was established as a scientific alternative in the mid 1950’s. One characteristic of systems thinking is hierarchical order. This means that every system studied is an element or subsystem in another bigger system at another hierarchic level of systems. A system consists of parts that are related to each other, if one part in the system changes the whole system will be influenced. Thus, the system paradigm is concerned with wholes and their properties (Checkland 1981). Overall, various systems approaches have emanated from systems thinking and moved in different directions. The soft systems thinking approach is one of them and it is closely related to the hermeneutic approach. I have been inspired by and used the soft systems approach since soft
systems thinking takes into consideration that people have various perspectives of the world; thus, they learn about the world in different ways. Further, in soft systems thinking, system models are regarded as models relevant to explore what we, as people, perceive as reality, not models of the world (Checkland & Holwell, 1998). I understand this as a way of saying that reality is individually interpreted.

Soft Systems Thinking is a way to deal with a world that is complex and constantly changing as the home health care area is. Moreover, in a soft systems approach, design is seen as a learning process. Design starts with an unstructured situation and ends up with requirements for change. These requirements are the results of a learning process, where various perspectives are formulated and organised into systems. These perspectives are then debated, communicated and negotiated with the purpose of reaching a common understanding, as well as a shared interest for change. These changes should be both systematically desirable and culturally feasible (Checkland & Scholes, 1990). In this thesis different perspectives of home healthcare services have been debated and communicated through workshops, interviews and group interviews and project meetings in the different projects with care staff, technology and pensioners organisation. In close collaboration we have learned from each other, and created a ground for common understanding and a shared interest for change.

Soft Systems Thinking (SST) is thus one approach, Critical Systems Heuristic (CSH) is another. CSH has also inspired my way of thinking and it has been use in the research especially the parts about relevant system, boundary critic, reflection and emancipation. Ulrich (2003) who has developed CSH builds his theory on the work of Churchman, and particularly what Churchman calls the “sweeping in process” (Ulrich, 1988b) which deals with improvements. Churchman argues that as much as possible should be ”swept in” to enlarge the whole picture (Midgley, Munlo & Brown, 1998). Ulrich’s opinion is that, in practice, we focus on some relevant systems, rather than “the whole” relevant system. In line with Ulrich (1988b) I find it hard to sweep in “the whole” system for home health care services. Instead I focus on the relevant system for home health care services. The perceived relevant system for home health care services is described in chapter Health and Homecare in Sweden and its Relationships with ICT. The process of how
one system in home health care was bounded is discussed and reflected upon in the e-Home Healthcare @ North Calotte (eHHC) project and can be found in paper V.

In practice, when deciding on a relevant system, we choose to see the world as a system, i.e., part-whole relationships defined by different interpretations. This means that we need to involve people in the process of deciding on the relevant system. In this thesis all who are involved in the care of the client, that is, the client, relatives and next of kin, pensioners organisations and also technology developers were invited in the process. When proposing a problem definition or a solution, certain facts and norms are more relevant than others. Which facts and norms to be considered depend on how the system is bounded and according to Ulrich (1987, 1988a, 2001, 2003), the elementary in this process is to understand how a specific statement is dependent on our boundary judgments. Working in the four different projects (see chapter Empirical research and the Evolution of Methods from Methodology) discussing and talking to all involved (described above), an understanding of what facts and norms that were considered to be relevant in the bounded system evolved.

Ulrich also discusses expert knowledge and he argues that experts cannot claim their expert knowledge, since their judgements also depend on values and facts as ordinary citizens do or in this thesis care staff. For example when we work in systems design projects within the home health care sector, the care staff are experts in their work practices and the systems designer expert in the systems design. Care staff and systems designers are experts in different fields. To be able to design systems that support the professional’s work practice, their knowledge and the systems designers’ knowledge is needed. Scholars in feminist science and technology and the participatory approaches that are presented in the following sections also share this understanding. However, I also believe that we as researchers need to take responsibility for science and technological relations (Haraway, 1991; 1997) which brings us to another perspective that also builds my framework, feminist technoscience.
Feminist Technoscience

Feminist science and technology studies or feminist technoscience is an extensive research area. For the aim of this thesis, the relevant part I have delimited is thus; to explore care staffs participation, experiences and knowledge’s in the design of ICT in home health care services with a special focus on care assistants. Technoscience is a concept formulated by Latour (1987). The motive is to include all activities and actors (both human and non-humans), factors and components that are included in the practice of science. The choice to use the concept is that Latour (1987) wants to emphasise the two components that builds the basis for the practice that is ‘science and technology’. The concept opens up for more relevant understandings of the relations between science, technology and society. Feminists expand the concept and ask for whom and for what do hybrids between human and non-humans work (Haraway, 1997). Christina Mörtberg (2000) points out that technoscience can be useful when describing new technologies such as information and biotechnology, because these technologies are crossing borders of different disciplines, and thereby creating new syntheses and applications. Donna J. Haraway (1997) is a feminist researcher within technoscience and I will use her cyborg figure in order to bring forward alternative understandings of ICT and homecare work from the care staff’s point of view. In the welfare society in the planning of public care, as well as in organisational, research on caring work has been made invisible (Waerness, 1996). However, feminist research has contributed to shed light on care as work and Mörtberg (2003) points out:

"feminist research can be used as resources in the creation of alternative understanding of tecnosciences" (2003, p. 57).

The cyborg figure allows us to examine how experiences are situated and located in sociotechnical relations (Haraway, 1991). The cyborg figure is a hybrid between a machine and an organism, a hybrid which makes it possible to keep alive and highlight tensions or contradictions between technological, cultural, and social issues. In this thesis the cyborg figure has been used to examine how care staff’s experiences have been constructed in the sociotechnical world and also how technology, with its power relations and discourses, is intertwined in their every day lives. Further, the cyborg figure has been used to explore situated
bodily knowledges created in the care staff’s every day work situations. When Haraway discusses boundaries, she focuses on the blurring of boundaries between humans and machine in contrast to CSH’s focus on boundaries and testing of where to draw the boundaries. However, as I interpret it CSH’s testing of boundaries is on a practical level and the cyborg figure on the theoretical level. Therefore I do not find a contradiction in using both of them.

Care staff’s knowledges and experiences are in focus in the thesis. Situated knowledges is thus a relevant concept in my exploration. Haraway (1991) developed the concept situated knowledges to replace ‘objective’ knowledge that has been a dominant scientific discourse. Situated knowledges shows that there are simultaneous ways to interpret and understand the reality and that knowledge always comes from something, somewhere, or is produced by someone with a history in a culture and a social practice, that is, it is embodied. A particular body that is located in a particular time and place. Situated knowledge is thus a concept well in line with my hermeneutic perspective. Situated knowledges demand responsibility. We must all account for what we are witnessing, and Haraway (1991, 2000) uses the concept “accountability” to underscore that responsibility is located somewhere (Suchman 2002).

Care staff’s situated and located knowledges need to be considered in the design or re-design of systems in home health care services. Thus the people who are going to use the systems need to take part in the development and the development needs to take place in the specific work practices. Lucy Suchman (2002) has also used Haraway’s train of thoughts and she advocates that translations are always partial. She writes:

“… the requirements for partial translations addresses not only the obvious divide between professional producers of technology and users, but our experience in developing a work-oriented design practice makes clear, the multiple divides within the specialised worlds of both.” (Suchman, 2002, p. 100).

Suchman (2002) means that what is going to be developed needs to be developed in its special environment where it is going to be used, in or-
order to support the practice. A starting point that constitutes the red thread in my thesis and in the empirical work conducted in the projects.

I will also draw upon Haraway’s (1991), point that the cyborg figure brings forward the argument that working out a universal, comprehensive view constitutes a serious mistake that disregards large parts of the reality. This is a standpoint that seems to be in contradiction to systems thinking. When systems thinking evolved the aim was to develop concepts, laws and models valid for systems in general, that could be used or transformed between different fields of science. However, systems thinking have evolved and I do not find it contradictory to use both perspectives; the cyborg figure and systems thinking. Nevertheless, there is a slight difference in that Haraway emphasises that we, as researchers, need to take responsibility for science and technological relations. This is a view that I support. We have to accept the demanding task of reshaping everyday life’s boundaries, partly in connection with others, but also in communion with ourselves and all the dimensions included in ourselves (Haraway, 1991). CSH on the other hand points out that expert knowledge is equal to laypersons knowledge. However, CSH is not against professionalism, and I interpret this as responsibilities lies within the professionalism. In contrast to systems thinking hierarchical order, Haraway prefers the ideological notion of network, which denotes a great variety of places and identities, as well as the possibility to exceed the boundaries when it comes to our own private bodies and the societal body on the whole. To weave together is a task for oppositional cyborgs (Haraway, 1991). Relations between the different parts in a system are of interest in this research, not hierarchical order, because if we change something in one part of the home health care system it will affect other parts of the system.

Empowerment and democratic principles are underscored by Haraway in her explanation of how she understands feminist technoscience (Haraway, 2000). She states:

“…. that democracy requires people to be substantively involved and know themselves to be involved and are empowered to be accountable and collectively responsible to each other” (Haraway, 2000, p. 157).
Situated knowledges, empowerment and participation on equal terms and democratisation have been important in the exploration of care staff’s participation, knowledge and experiences. These concepts are also in focus in participatory approaches, particularly in the Scandinavian tradition of participatory design. These ideas have the potential to build bridges to participatory approaches and other perspectives that constitute the parts and the wholeness in the hermeneutic circle.

**Participatory and Action Oriented Approaches**

An approach that influences my thoughts and practice is the Scandinavian approach to participatory design (PD). My intention in this thesis is to explore care staff’s participation, experiences and knowledges in the design of ICT in home health care services with a special focus on care assistants. In Scandinavia we have been concerned with participation and skill in the design and use of Information Systems (IS) since 1970s. The Scandinavian approach to systems design is action oriented and the design should also be work oriented with democratic participation and skill enhancement. Democracy and user involvement is the base for Participatory Design (PD) and participation is a key element in democracy (Schuler & Namioka, 1993). In the design or re-design of information systems those who are involved in the organizational change should participate in the design process (Bratteteig & Stolterman, 1997), in order to produce feasible designs that help to improve their working lives.

Empowerment, conceived as how people might control their everyday lives, and democracy can also be found in the Scandinavian tradition of participatory design since its main focus has been to democratize working life as well as the design process (Bjerknes & Bratteteig, 1995). A design project creates knowledge of present work practices and knowledge gaps. It also explores the use and different meanings associated with terminologies which can be resolved through cooperative collaboration (Kimaro & Titlestad, 2005). Knowledge is not the same everywhere it is produced from partial perspectives where culture, history, and places connect in relation to each other (Bratteteig, 2004 ; Elovaaara, Igira & Mörtberg, 2006; Jansson, Mörtberg & Berg, 2007). When we reflect upon our own and other’s experiences, knowledge increases and is highly contextual. Hence, we create and recreate
knowledge continuously through our actions and through reflective thinking. Knowledge is often thought of as the property of individuals but a vast amount of knowledge is held and produced collectively (Ghaye, 2007). When people work together such knowledge is created. Experience and knowledge are therefore always, partial, located, and situated (Haraway, 1991; Suchman, 2002).

Participatory Design is a process of mutual learning, where users and designers learn about and from each others (Ehn, 1988; Bødker, Kensing & Simonsen, 2004; Bratteteig, 2004). Hence, a design project creates knowledge of present work practices. PD approaches correspond well (or vice versa) to the earlier described positions, since they all emphasise knowledge, learning, participation and multiple perspectives. How much the users are actually involved in the design process may vary, and in this thesis user participation has varied from representative to collaborative participation. Bratteteig (2004) describes that the degree of participation may vary in the design process and it can range from representative, direct, consultative, to collaborative participation. Nurses and their work practices were in focus in the Florence project (Brattteig 2004). Nurses have also been involved in projects reported in this thesis. But the main focus is on care assistants and their participation. They have participated in the creation of storyboards, workshops, group interviews, project meetings, and also in the decision making process. Link between these projects exist such as female dominated, caring, participation, multidisciplinary, and participatory methods. But there are also differences, with the most obvious being that of technology.

Action and participation is an important part in this thesis and soft systems thinking (SST), critical systems heuristic (CSH), feminist technoscience and PD are all action oriented. As I am a person in the informatics field dealing with systems design, I am also interested in those actions taken to bring about improvements in the development and implementation of IT-systems. In the projects were the empirical research has been conducted, I, as a researcher, strived for that the users of technology should participate and take active part in the design process. Therefore, different kinds collaboration and participatory methods such as workshops, storyboards and group interviews have been used. Action research (AR) is traditionally defined as an approach
to research where the research is based on a collaboration and problem-solving relationship between the researcher and clients, where the aim is to both solve a problem and generate new knowledge (Coghlan & Brannick, 2001). AR is also a form of social research that involves people in a process of change (Svensson & Nielsen, 2006). Implementing IT-systems within the practice of home health care services brings about change for the professionals working in the field. As I have explained earlier, my thinking is in line with CHS thought that layperson’s knowledge and expert’s knowledge are equally important in the process. Thus, the researcher needs to take special responsibility for science and technology relations as Haraway (1991) points out. I have also described earlier that emancipation is an important aspect in my work and action research has strong emancipatory intentions and in the last decades emancipation has come to be positively linked with empowerment (Boog, 2003).

In action research projects, the role of the researcher depends on the project. But the researcher has generally the function of an expert, planning the project, gathering and analysing data. Participation in the research process has often been of a limited nature (Svensson & Nielsen, 2006). My use of action research is more in line with participatory action research (PAR), since PAR is a form of action research that involves practitioners to be both subjects and co-researchers (Agryris & Schön, 1991). In project four we, as researchers, were both subjects and co-researchers and the aim was to seek creative ways to positively engage with clients to maximise their participation in their own care. The outcome of this participatory action research project can be found in paper IV. The core in PAR is that practitioners and researchers work together towards some improvement for the participants, and in PAR, reality is seen as something that emerges out and is constituted in activities and actions (Elden & Levin, 1991). PAR aims at constructing an environment, where participants get and give valid information and are able to make free and informed choices. The freedom to make choices also includes whether to participate or not.

In this chapter I have outlined the frame of reference, the different perspectives that have influenced the work in this thesis. The described perspectives are hermeneutics, soft systems thinking, critical systems heuristics, a part of feminist technoscience, participatory and action
oriented approaches. The perspectives that have been accounted for are closely connected to the methods and techniques that have been used for data collection, which will be described in the next chapter.
Empirical Research and the Evolution of Methods from Methodology

The empirical research that this thesis builds on was conducted in three different projects and a workshop that served as a “kick off” for a fourth project. In this chapter I present the projects, the methods used to generate empirical data and how the collected data was analysed.

Projects

The first project I participated in, as a doctoral student, was the project “Sluta Slappa börja Wappa – Mobila tjänster för vem och till vad?” (Mobile services for whom and for what?) during 2002-2004. The aim of the project was to examine what notions, expectations, dreams and needs are created in different social practices, among users and potential users of mobile technology, and how gender and age were intertwined with their experiences and dreams. These notions, expectations dreams and needs were then confronted with systems designer’s notions and thoughts. The intention with confronting systems designer’s with user’s thoughts and positions was to challenge systems designer’s philosophy and hopefully sow seeds to a more user-oriented service development. The user groups that were involved in this project were, care assistants, public sector middle managers, property maintenance workers, engineers, and ordinary people. Paper I and II in this thesis are outcomes from the project.

The second project, MobiHealth was funded and performed within the framework of EU’s Information Society Technologies (IST) programme during 2002 and 2003. The overall objective was to introduce and trial new services in the area of mobile health, using the public GPRS and experimental 3G networks, based on existing technology (Melander Wikman et al., 2004). The main task of MobiHealth was to deliver dynamic and flexible services to patients/clients and enable health care providers to focus on optimal usability and utility. In the project, a

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1 The project was funded by the Swedish research foundation VINNOVA, Swedish Governmental Agency for Innovation Systems.
MobiHealth system was developed consisting of a Body Area Network (BAN), described in detail in paper III, that is an outcome of this project. This BAN was tested in 9 trials within healthcare in four of the participating countries. The end-users were involved in the development and testing of the MobiHealth system and the system functioned as a decision-support system for the caregivers. The participating countries were Germany, Netherlands, Spain, Sweden, and United Kingdom (no trial was conducted in this country).

The e-Home Health Care @ North Calotte project 2003-2004 (eHHC) was organized as coordinated trials in five municipalities of northern Finland, northern Norway and northern Sweden. The purpose of the project was to offer customer-oriented, empowerment-focused quality service provision in the right place at the right time, which includes competence-building and empowerment. The common basis of the trials was to solve the problems of getting updated information on the present situation of the care of home healthcare clients, services and security situations in the right place and at the right time. Enhanced patient, or client empowerment, was an expected outcome of the project. By mapping the needs of the elderly living at home and by developing and testing the solutions of mobile information exchange in the North Calotte region, the trials were aimed at giving home healthcare professionals, patients and clients and their immediate family members empowerment and competence. Each participant region in the project had their own trial to test ICT in the home health care service for elderly people. In each trial there was a group of ICT and home care experts who were responsible for the planning and implementation process of the trial. The contribution in this thesis is paper number V.

The cooperation with the municipality, in the three previous projects, resulted in an inquiry from the municipality to conduct workshops with homecare personnel. The workshops functioned as a kick off for the fourth project, Ökad kundmedverkan i hemsjälfstän (Increased client participation in homecare) to be run between 2006-2008), where the objective is: How to increase client influence and participation within homecare services? The reflective outcome from these workshops is paper IV.
The Evolution of Methods from Methodology

Since my intention is to explore care staff participation, experiences and knowledges in the design of ICT in home health care services with a special focus on care assistants, I have chosen to use a qualitative methodology. To be able to understand how care staff actually perform, and experience, participation, IT and homecare work I have interacted with care staff in their day-to-day practice. Consequently, I have chosen appropriate methods to generate data, because the qualitative philosophical position is one that is interested in how the social world is interpreted, understood, produced and experienced (Mason, 1996). The aim of qualitative research is to produce understandings on the basis of contextual, detailed and rich data (Patel & Tebelius, 1987; Mason, 1996). Qualitative research is also based on methods that are flexible and sensitive to the context where the data is produced, in this case, the context of home health care services.

Data collection can be described as a cyclical and iterative process as in action research, see Fig 1. In the first project the work started with diagnosing and planning what kind of method/s that would be suitable to use for data collection in the specific context and in relation to the research question. The conclusion was that individual interviews and focus group interviews would be suitable to use. Then the empirical research was conducted, analysed, and thereafter reflected upon, and the learning specified. By doing this, new ideas for collecting data emerged, and the new ideas have been used in the following projects, when suitable in the specific context. The cycle continues through all four projects. The various methods that were used are presented in the following section and in the end of the section a summary of methods and techniques used in is presented in a table, Table 1. I will begin to describe and discuss individual and focus group interviews.
Interviews and Focus Group Interviews
Both individual and group interviews were conducted in the projects. Individual interviews have been conducted in project one, Mobile services for whom and for what? and in project three, eHHC. An interview guide was used in all interviews. The interviews conducted were all semi-structured interviews and that structure was chosen because the participants are able to express their answers more freely (Patel & Tebelius, 1987; Merriam, 1988).

1. Individual Interview Method
The individual interviews in project one, were with five public sector middle managers and the aim was to examine what notions, expectations, dreams and needs they had on mobile technology. The individual interviews\(^2\) performed in project three, were with the head of the unit before and during the trial (see paper V) and with one care assis-

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\(^2\) Individual interviews were also performed in project one with systems designers. However, the data produced are not used in this thesis and therefore not accounted for.
tant using a handheld device (see paper V). The latter was carried out after an observation of her use of the IT-system. In the interviews with the head of the unit, before the trial, the topic concerned what expectations she had of the technology that was going to be implemented and also if she thought that the technology would have impact on her work. During the trial the focus was on how they (both the head of the unit and the care assistant) experienced the use of the technology. At the same time specific areas were discussed. Patel & Tebelius (1987) and Merriam (1988) states that the structure of the interview depends on the aim of the interview. In a structured interview the participant has different alternative answers to choose among, while in an unstructured interview the participants can express their answers freely.

The interview method was used because it opens up the possibility for interplay between the interviewed and the interviewer (Trost, 1994) with the participants telling something in their own words, instead of ticking a box in a questionnaire. In line with Thomsson (2002), I view the person participating in the interview as a participant in knowledge creation, rather than an informant giving away information. Therefore I use the word participants instead of informants. Another argument for the use of interviews are the possibilities to follow-up answers or main points in the conversation and allow the participant to express her/himself in another way if the participant does not understand the question (Mason, 1996) or wishes to amplify their response.

2. Focus Group Interviews

Focus group interviews, another form of interviews, were conducted in project one, two and three. All in all 19 focus group interviews have been conducted in these three projects, with different topics, depending on the project and on the complexity of phenomenon under study. The size of the groups varied from 2-10 people, a size in accordance with what is recommended in the literature (Morgan 1997; Wibeck, 2000). The variation in group size was dependent on different things. In project one, the care assistants worked in groups that were larger than 6 and they wanted to participate in the interviews in the same constellation as when they were working at the care resource centre.
Five focus group interviews were conducted in project one, Mobile services for whom and for what? The participants in the group interviews were selected to participate on the basis that they worked as care assistants at a care resource centre responsible for handling the alarm system. The aim with the focus group interviews was to raise questions and debate about mobile information and communication technology (ICT) in the area of home health care services. The focus group interviews were carried out at the personnel’s work premises since the personnel preferred that the interviews took place there. Each interview lasted between one and a half and two and a half hours and was recorded on tape. The interviews that contained the richest material, according to the research questions, were then transcribed verbatim. The two that have not been transcribed were, however, listened to in the analysis.

Stimulus material was handed out in a meeting prior to the focus group interviews. In this meeting we, my research colleague and I, presented ourselves as well as the aim with the interviews. During the interviews my colleague and I took turns in the role of moderator. The moderator ought to be a person who can be an active listener and also be able to answer questions in an appropriate way (Wibeck, 2000). The stimulus material consisted of two articles, one from the newspaper Dagens Nyheter about mobile technology and elderly care (Koebe, 2002), and the other from VårdalNytt, a newsletter from the Vardal Foundation (Ställdal, 2002). We handed out the material two weeks prior to the interviews in order to raise questions about mobile technology and services, within the care of the elderly, as well as to get a fruitful discussion and to create a mutual point of departure (Wibeck 2000).

Based on the experience from using the focus group technique in project one, the technique was also used in project two and three. In project two, MobiHealth, the aim of the focus group interview was to discuss how the participants experienced the use of the mobile alarm system. One focus group interview was conducted with those who had used the mobile alarm system, that is, with elderly people and person-

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3 A physiotherapist from Health Sciences Anita Melander Wikman
nel. Morgan (1997) recommends that 3 to 5 focus group interviews should be conducted, because a large number of groups provides extensive material that can be difficult to handle, while at the same time, it is difficult to discover patterns and tendencies in less extensive material. Only one interview was carried out in project two, MobiHealth, as there was just one group of users testing the mobile alarm system. However, we still wanted to listen and discuss their experiences of using the mobile alarm system. In general the goal must be to do as many group interviews that are needed in order to provide a trustworthy answer to the research question (Morgan, 1997). Further, Wibeck (2000) states that, in many cases, theoretical saturation will occur, which means that for every group interview conducted, less new information will be produced until the phenomenon under study is satisfied.

The topic for the focus group interviews in project three, eHHC, depended on when they were conducted. The topic in the interviews before the trial (see paper V) was on what expectations the personnel had on the technology that was going to be implemented and also if they thought that the technology would affect their work. During the trial, the topic was on how the personnel experienced the use of the implemented technology. The focus group technique were selected as a method because it is useful when studying content, i.e., what the group was talking about, as well as the interaction within the group (Morgan, 1997; Wibeck, 2000). The main interest was the participants common and culturally established problems and attitudes (Morgan, 1997; Wilkinson, 1998).

In project two the focus group participants were the elderly that tested the mobile safety alarm and the personnel receiving the alarm (see paper III). Since they had worked together during the whole trial they wanted to share their experiences. In project three, 13 focus group interviews were conducted the groups were formed by the person’s occupation. For example 2 district nurses participated in the project and 21 care assistants and they all participated in the project testing the new technology. The care assistants were divided into groups depending on what technology they used, a mobile handheld device or a print out on paper (see paper V) during the trial. As with other types of interviews, focus group interviews can be structured or unstructured
(Wibeck, 2000). The group interviews in all projects were semi-structured as mentioned above.

3. Questionnaire Method

Due to the learning about using interviews as a data collection method in the previous project (as described in the action research cycle), other methods were combined and used in the next projects. In project two and three questionnaires4 were used as a method for data collection. Questionnaires (Melander-Wikman, Jansson & Gard, 2005) were sent out to all participants that had used the Mobihealth BAN in project two. The reason for using a questionnaire in this project was that we wanted to gain knowledge about the extent to which user needs were satisfied when they used the MobiHealth BAN (ibid). The participants had various scientific backgrounds and questionnaires were the only method seen as appropriate enough to be used. Some scholars consider quantitative methods as more valid than qualitative methods (Trost, 1994). However, questionnaires always contain a collection of qualitative elements despite the fact that they are regarded as a quantitative method (ibid).

In project three a questionnaire was produced with an aim to acquire information from the health and homecare staff on the level of their skills in using ICT-tools and their need for training, as well as the options open to them for using those tools in their work. Information on the opportunities to use ICT tools was also gathered through a questionnaire from the clients of homecare and from their close persons. All these partners were asked their opinions on information exchange and cooperation in home care, and about their own abilities to influence the care and services.

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4 A questionnaire were also used in project one. However, the data produced are not used in this thesis and therefore not accounted for.
4. Systematic Observation Method

Observations\(^5\) were used in project three, eHHC, because I wanted to gain an understanding of particular work practices and also see what kind of technologies were used and how staff used the technology in the home healthcare services. Another reason for using observation is, the say and do problem i.e. people do not always do what they say they do (Bratteteig, 2004), or they are unable to explain how they do or perform certain tasks in their day-to-day work (Bødker, Kensing & Simonsen, 2004). Observation is a useful method for gaining understanding of present work practices, a proposed new system or technological option (ibid.). I observed one care assistant from the homecare team during a work day, before and during the trial. I also observed the head of the unit during a work day before and during the trial.

The district nurse’s had a heavy workload so no observations were conducted at their workplace before the trial. However, I observed one district nurse on one workday during the trial. During the observations I asked questions about events or tasks that I did not understand. The personnel also explained what they were doing, without me asking. The observation method demands that the researcher is able to see, ask and hear in order to understand what is going on in a particular setting (Holme & Solvang, 1991). I was well known to the personnel because they participated in the project, and they also knew why I wanted to observe them. Thus, my role as an observer was as an active participating observer. However, I did not participate in the care of the client (see Patel & Tebelius, 1987; Holme & Solvang, 1991; Mason, 1996 for a discussion of various ways of observing).

5. Future Workshop Method

In project three, eHHC, future workshops were conducted in order to explore what care staff in homecare perceived as problems, but most of all, what they envisaged and wished for in the future. The project was also built on an action research (AR) approach with a participatory perspective. Therefore the future workshops also aimed at making the project participants more actively involved in the design of the future.

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\(^5\) Observations were also performed in project one. However, the data produced are not used in this thesis and therefore not accounted for.
technology and their work practice. The lessons learned in project one were that the personnel had a hard time to express what kind of technology they wished for. Further, they were not involved in the development or the implementation of ICT in their work practice (Jansson, 2005). Therefore, a future workshop technique (Jungk & Müllert, 1987) was used since it builds on participation and democratic values. Participants work together with a perceived problematic situation aiming towards positive changes.

I and my co-researcher functioned as facilitators, during the workshops. One of us led the workshop and the other observed and documented the workshop. Accordingly, we planned and presented the theme, ICT and Homecare, and how the work was to be conducted during the workshop (phase 1). The first workshop was held with care assistants working in a specific district in the city centre in the municipality where the project was conducted. We used 5 phases: 1) preparation 2) critique 3) fantasy 4) implementation 5) follow-up based on the development of the technique described by Bødker, Kensing & Simonsen (2004).

In the critique phase collective brainstorming was used and the participants were asked to critique their current situation in the work practice, since all negative experiences related to the topic are brought up in this phase (Jungk & Müllert, 1987). Small pieces of paper were handed out and the participants were asked to write down their critique as brief statements or as keywords. There were not any restrictions in how many statements/keywords the participants could come up with. Each participant then presented their statements/keywords and the notes were then attached to a big board in front of the room without any comments. When all participants had presented and attached their notes to the board, the floor opened up for discussion, and the notes were grouped into themes according to discussion and the participant’s directions. The goal is to make the participants aware of the fact they are not alone in their criticism. And also to share experiences of what needs to be changed, and in that way create a common foundation for the next phases (Bødker, Kensing & Simonsen, 2004).
In the fantasy phase the participants came up with ideas in response to the problems, with their desires, fantasies and alternative views. In this phase the participants were asked what forms of technology they would like to have to support their work, and how they would like their work to be organised in the future. The procedures were supposed to be the same as in the former phase. However, the care assistants found it hard to make brief statements/keyword about their imagination/fantasy, so we agreed that they could write down shorts stories about work and technology, if they wanted to. They also worked in small groups since they thought it was hard to work on their own during this task. Sometimes it can be hard to get this phase going (Bødker, Kensing & Simonsen. 2004) because the participants are not used to developing wild ideas, or thinking creatively, or they might be embarrassed or even afraid of looking stupid in front of others. The care assistants were told that they did not have to be realistic. They were also told not to restrict themselves with economic thinking, or thinking that the technology does not yet exist. The procedures then followed as in the critique phase.

When all the notes created in the fantasy phase had been grouped into themes, the brainstorming session was evaluated by a vote ((Bødker, Kensing & Simonsen. 2004, Löwgren & Stolterman, 2004). All participants had five points that they could place on the theme/themes that were their favourite/s, or the ones that they thought were the most realistic ones. In this way the participants critically assessed the probability of getting their change/improvement ideas implemented.

In the follow-up phase in this project, the voting process and the workshop was documented and the written results were brought back to the group with the possibility to make changes or correction, so called member checking (Lincoln & Guba, 1985). Faced with the results from the workshop, we as facilitators, recognized that the work practice and the visions the care assistants expressed, included other occupational groups involved in the care of the client. Therefore, all professionals involved in the care and services of the clients, case workers/ process officers, district nurses, care assistants answering up on safety alarms, care assistants working only night shifts (night patrol) and rehabilitation personnel, were all given the opportunity of defining the need for changes in their working processes and the technologies
needed for these improvements, through these Future Workshops. These workshops were outlined and followed the same procedure as the first one with the care assistants.

6. Storyboard Method

The Storyboard technique has been used in project three, eHHC, and four, ‘Increased client participation in homecare’. The aim with using the storyboard technique in project three was that the storyboards were meant to function as a tool for users (the different occupational groups) to describe the context and the work practice to the systems designer and function as requirement specification (Bødker, 2000) in the project (see paper V). The storyboards starting point in project three, eHHC, were the results from the conducted future workshops with different occupational groups. Based on these outcomes the storyboards were constructed in cooperation with care assistants working in the city centre, care assistants responsible for the alarm system rehabilitation, personnel and a researcher. The district nurses could not participate due to their heavy workload. The intention with the storyboards was an attempt to try to develop an holistic view of the future service. The storyboards were in written text instead of pictures or drawings describing real people performing an action in a specific context and were called scenarios (Carroll, 2000; Benyon, Turner & Turner, 2005).

In project the four, the scenario called Olga’s story was used. Olga’s story was co-written by the authors of the paper (paper IV) prior to the workshop. The story was based on our first hand experience, through earlier research and experiences. The intention with using Olga’s story was to enable front line staff to reflect on their work, share and learn together. Scenarios describe human daily activities, as Olga’s story did, or human encounters that allow exploration and discussion of needs, context, and requirements (Carroll, 2000). The personnel participating in the project were invited to build a storyboard which showed each of the critical incidents selected, from Olga’s story. The personnel sketched the storyboard with crayons and other craft materials.
Table 1 Summary of methods and techniques used in the projects.

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Analyses of the collected data
Five different methods have been used in analyzing the data. By using different kinds of methods, different aspects within each data set are brought forward. In this way, a deeper understanding of the problem can be reached based on different analytical methods.

**Discourse Analysis and Cyborg**
A Foucauldian approach was adopted to interpret the findings and explore how their locations, within the circuits of sociotechnical networks, engender uncertainty with mobile technology. Michael Foucault’s (1994) discourse analysis is built on how people create meaning in their imaginations of reality and in the way it is expressed. The presumption is that it is through language that people produce and show how social reality is imagined and interpreted. Everyone understands that we are not allowed to say just anything, and that not everyone can talk about everything, we cannot talk about something whenever we like. It is important to understand the rules that are taken for granted, to consider what people talk about, and more importantly what they do not talk about.

Donna J. Haraway’s (1991) cyborg was used in order to examine new ways to understand the relationships between technology, science and everyday lives, because it enables development of new knowledge of humans and machines. The cyborg was also used to consider the way in
which care assistants and middle managers made sense of their everyday lives in the networks of sociotechnical relations. The cyborg figure is a hybrid between a machine and an organism; a hybrid that makes it possible to highlight contradictions or tensions between cultural, social, and technological issues. The figure also implies that the boundaries between subjects, bodies, and realities are given new forms.

**Thematic Analysis**

Thematic analysis was used in the eHHC project to explore various forms of participation. Participation as a theme or category in the analysis was selected because the projects starting points were (participatory) action research and participatory design. Participation, the meaning of participation, and how power and knowledge intersect in people’s possibilities to participate, are addressed in the analysis of the empirical material collected in the project.

In the MobiHealth project a thematic content analysis was used, thus, the interviews, the transcribed texts were read several times, with the specific purpose in mind of attaining a feeling for the context. Downe–Wamboldt (1992), calls this thematic content analysis and it is concerned with context, intentions meanings and consequences. The reading followed by an identification of the textual units, also named in the literature as *units of analysis*. The project research questions guided the selection of the unit of analysis (Morgan, 1997). The categories emerged out from the reading of the text itself (Morgan, 1997), and was then used in further analyses to detect patterns or core themes. During the whole process we related back to the original text, in order to perform the analysis close to the text. The participant’s own words were used in the creation of the categories. The categories that were sedimented out of the analysis were not mutually exclusive but they were all related to one another.

**Structured and Reflective Process**

In the fourth project, *Increased client participation in homecare*, all three authors participated in a structured and reflective process. Collective reflec-
tions on what had happened during the workshop were made after each workshop. Hence, the working materials, field notes, storyboards and tape recordings were collected and analysed. The collective reflections focused on (a) the practice of participation (dialog) and intention of participation (empowerment) in the context of home health care services accelerating change. (b) how to reframe traditional views of the relationships between research and practice and, as a consequence, how to open upon new possibilities for understanding on how elderly people’s lived experience can be a positive force for service improvement. (c) The use of storyboard as an appreciative approach to enable home care staff to reflect on their work, learn and share together. Additionally, attention was paid to what was seen, heard and sensed during and after the workshop.

In this chapter I have described the four different projects where the empirical research was conducted. I have also described the different methods used, and how the data collection process functioned as the cyclical process such as in action research. This approach of using three or more methods to validate results is known as method triangulation (Wolfram Cox & Hassard, 2005).
Summary of Papers

In this chapter, a summary of each appended paper is given. Each summary contains a description of the content of the paper, as well as the main findings.

Paper I


In this paper we attempt to develop a critical and pluralistic understanding of gender and technology through exploration of the tensions between visions and embodied knowledge in the social care of the elderly. We explore how information technology (IT) is a means of keeping alive the welfare state and its goal of good care and services for the elderly. We compare the expectations of politicians and managers expressed in IT policies and government Bills with the experiences and expectations of technology care assistants expressed in focus group interviews. Donna Haraway’s (1991), cyber figure is used to examine understandings of social service and care and the transformations that take place in this sector. We concentrate on social and physical aspects i.e., how one is socially situated in a culture and physically in an environment (Adam, 1997).

The government’s intention is to give elderly and disabled people the opportunity to receive care and services that is integrated into their own homes and daily lives (Proposition, 1999/2000:149). To be able to carry out these ambitions, it is very important that municipalities and county councils co-operate, since they have a shared responsibility for old and disabled people regarding medical and health care services. In order to create the necessary conditions for medical and health care

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6 This paper has been presented at the Gender Work Organisation Conference at Keele University, UK, 25th-27th June 2003. The name of the earlier version of the paper presented at the conference was “Push button and Klick”: implementation of mobile technologies in social care.
services, where demands on fairness and effectiveness are performed, a well functioning follow-up of the business is needed. Increased IT-use and other IT solutions, such as telemedicine, can provide work in health care, and create an image of the nature of work that will attract young people, not least men, both in the short and long term (Ds 2002:3). A technological deterministic discourse is evident in the propositions and strategies. These are the expectations politicians and managers express through propositions and strategy documents.

We found that the discourse of care, dominated care assistant’s definitions of their experiences and themselves. The discourse in which they situated themselves appears to prevent them from reflecting upon how technology constrains or liberates them in their work conditions. However, in the discourse of care, they placed themselves in subject positions that gave them a right to talk about technologies when they expressed how their caring work could be more efficient with the use of IT. They exemplified this by needs and demands on up-dated information about their clients, integration of the municipalities IT-systems and also exchanges of information between the primary care and the municipalities IT-systems. However they became silent or seemed to have a lack of words to talk about new technologies. The use of the cyborg shed light on the tensions in the care assistant’s narratives, that meaning is negotiated and that representations of realities are contested within and through discourses (Egeland, 2001). Thus, the co-construction of gender and technology is not uniform but heterogeneous. Sometimes the assistants became silent whilst at other times they articulated their needs and demands.

Furthermore, we also found that care assistants did not define themselves as technologically skilled despite the fact that they use different kinds of technologies such as household technology and ergonomic aid technologies everyday in their work. Care assistants do not share the politician’s visions and dreams of implementing technology within social care, thereby increasing the status of the work when recruiting staff, especially among men and young adults. In the care assistant’s stories, both the division of labour and the prevailing power relations between women and men are integrated. They are positioning them-
selves both socially and physically within existing conditions in Swedish society.

In this paper, we have argued that the IT-policies have showed little understanding of situated knowledge, and that politicians and managers seem to regard knowledge as uniform (Haraway, 1991), since the specific context where the IT-solutions are supposed to be implemented are not considered. The focus group interviews on the other hand showed that knowledge is always partial, situated, and embodied. Thus, the consequences of transferring technology from one area of healthcare to another without taking into account the specific work practices, staff demands and needs, may complicate or risk politician’s old dreams - to offer care and services with the new means, information technology.

In general the public sector in Sweden is in transition and the overall concept used for the changing process is e-government. A realization of the plans will probably not only change citizen’s conditions but also the working conditions and work practices for the employees in the public sector. The results that we report in this paper show how new technologies emerge in visions and hopes and also the importance to pay attention to situated and knowledge created in every day work of care assistants. Policies and high hopes are important but it is also important to listen to lower frequencies for example to care assistant’s voices, situated knowledge, and their emphasis on taking care of people in realizations of old dreams with new means.

Paper II

In this paper we focus on users of information technology (IT), especially mobile telephony. We focus on what people actually say about mobile technology but we also pay attention to what they do not talk about, what we find in the silence, especially with new technology when much can be taken for granted. We also explain the degree for which the discourses of (mobile) technology have become established
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in people’s everyday lives, both work and private, in a way that might challenge the dominance of established work and private discourse.

The research draws on empirical data gathered through 117 semi-structured interviews and interviews with 5 focus groups, comprising between four to eight care assistants in each group and five public sector middle managers at social services departments in the north of Sweden. Discourse analyse was used for analysis of the data.

In this paper we argue that technology is used in different ways, and that some of our interviewees were not able to articulate or to express their wishes and demands in relation to technologies. They do not have a “technological” language. In the interviews with the care assistants and middle managers in home care, we observed that they speak about technology as something they have not focused on or consider the meaning of and they did not define themselves as technologically skilled. Mobile telephones and computers made the job of middle managers easier, but it also speeded up the work, making everything go faster. A part of their job is to work with different technologies. But there is a lack of words and also a lack of interest. Middle managers in home care use a lot of technology in their work such as, computers, mobile phones, fixed line telephones, and fax machines. They described a work situation that had not created involvement between the staff and those who are in charge of the technology.

That technology was something that was useful for all who were involved in the care of elderly and disabled, however, not used to often, was a discussion between the care assistants. Mobile telephones were something that the care assistants needed to have in their work, and also a part of their every day life, but they did not talk about the mobile phone in a particular way. Care assistant thought that technological developments within home care were important, but they did not see themselves as a part of the development. Instead they expressed a top down perspective i.e. it was the top managers who were going to implement new technology in the organisation.

\footnote{The data produced in these interviews are not used in this thesis and therefore not accounted for.}
Further, we argue that the representations of reality reinforce the images of who possesses technological skills and who does not, and that the stories told have intervened in the interviewee’s way of shaping reality by and in prevailing discourses that exist in Swedish society. It was apparent in the middle managers stories that new technology can be described as a new way to control and discipline people, since they had to check their mobile phones all the time in order to be accessible.

Moreover, we discuss the ambivalences and contradictions evident in the interviews. On the one hand there were tendencies to techno-optimism or technological determinism- a dominating discourse in Swedish society- even though the care assistants and middle managers did not possess the words to adequately express their experience. On the other hand they created their definition in the discourse of care. The interviewee’s stories show how mobile telephony and related services are integrated into their every day life and that mobile technology is something which people get used to in the long run. In this article we have listened to the lower frequencies or marginalized discourses in order to draw attention to those who are not necessarily in the forefront of the development of the technologically mediated society and to the meanings created in the silences.

Paper III

In this paper we describe and discuss the development and test of a new mobile alarm system (prototype) with additional functionality such as positioning and monitoring of vital signs. The mobile alarm system was developed in the MobiHealth project 2002-2003 within EU’s *Information society Technologies* Programme. The overall objective of the MobiHealth project was to develop new services and applications in the area of mobile health, promoting the use and deployment of GPRS and UMTS mobile services and technologies. A Body Area Network (BAN) with sensors was developed and physiological data was sent from these sensors via wireless transmission by GPRS and
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UMTS communication system to a monitor at a hospital or primary healthcare centre.

The aim of this paper is to explore the homecare client’s (elderly people) and homecare personnel’s opinions and experiences from a pilot study with positioning services in northern Sweden called the Light-house alarm and locator trial. The trial in Sweden aimed to test this new mobile alarm system with additional functionality such as positioning and monitoring of vital signs which can be used regardless of location. The current alarm system does not allow the clients to be mobile because of the limited range of transmitting the alarm. By replacing the fixed alarm system with a mobile system, the main expected benefit in this trial was to increase mobility and to allow clients to live a more normal life than they did before.

Positioning was used as an extra function for the lighthouse trial and functioned as follows. When an alarm was sent from the client, the position could be viewed both in a web-based PC-application running in the homecare centre and in three additional mobile phones used by other personnel at the centre. It was possible to track down the client’s position by walking with a visible map in the phone with regular updated positions for both the client and the searching personnel from the homecare centre.

Five elderly persons from a pensioners’ organization and two homecare personnel from the homecare centre tested the BAN. The outcomes reported in this paper are based on a focus group interview (Morgan, 1997) and survey. In the survey the MobiHealth Usability Questionnaire that was developed in the project was used. The questionnaire measured different parameters of use of mobile technologies (Melander Wikman, Jansson & Gard, 2005). The result from the questionnaire were analysed according to the methodology (for a detailed description see, Melander Wikman, Jansson & Gard, 2005) developed in the MobiHealth project. The narratives from the focus group interviews was analysed through thematic content analysis (Downe-Wamboldt, 1992). The analysis of the interviews and questionnaire resulted in three main categories: to be supervised, to feel safe, and to be mobile. These three main categories formed a theme: Positioning – an ethical dilemma.
The results showed that the clients that were involved in the trial were positive about the use of the new technology. They were positioned when they used the alarm equipment with the locator but they did not feel supervised and watched. The client’s experience of the technologies possibility to locate her/him created a feeling of freedom and security. The fact that they new that they were positioned made them feel comfortable. Further, the clients found the mobile alarm system clumsy and awkward to wear with too long wires. However, compared to the current used alarm system with a limited range of 10 meters this mobile alarm gave a better opportunity to be mobile and still feel safe according to the clients.

The personnel expressed, that the use of the mobile safety alarm increased the quality of life and satisfaction in their work, especially the locator function. On the other hand the personnel discovered ethical dilemmas in using the locator function on elderly persons. They said that the border between being supervised and experience safety is a hairbreadths difference. The homecare personnel were critical about the safety of the mobile alarm system since GPS was not functioning indoors, and therefore clients could not be located when they were indoors by the personnel. The personnel did not think that the alarm was safe to use and it could not be used without risk.

In this paper we discuss that the modern architecture of the modern society has a close connection to control and supervision that is to discipline people in a particular way by technologies such as positioning services. Further, we discuss how the development of information and communication technologies (ICT) with cameras and positioning systems creates “an electronic eye” that can discipline people to become docile bodies (Foucault, 1977). We also discuss mobility as a dimension of empowerment, and that healthcare professionals not only must create prerequisites for empowerment, but also sometimes they must take it away. Moreover, we discuss that that the clients that participated in this study seemed to be ready to offer the integrity loss that positioning is causing.

The results of this study of a mobile safety alarm showed that the prototype tested made it possible for the clients to move around more and
still feel independent and safe. The mobility was also limited in some situations by the design of the device. For the homecare personnel the system also made it easier to find missing persons outdoors and therefore served as a decision support.

Paper IV

This paper is a reflective account of aspects of our collective concern about developing and sustaining ways that might enable elderly people to feel more empowered to exercise their right of self-determination. The work was undertaken in the context of home healthcare in northern Sweden and the data is drawn from two days of workshop activities with 35 female homecare staff working in the municipality of Luleå, Sweden. The workshop was one outcome of the e-Home Health Care @ North Calotte (eHHC) Project of 2003-5.

The workshops started with two activities and the aim with the activities was to make cooperation visible and create a positive and appreciative atmosphere, to positively frame the whole day. The participants reflected upon their own work practice and how they might improve their work. They then presented a statement that they all could communicate to the other groups. The rest of the workshop was an extended scenario-based learning activity focusing on the question, ‘how we can promote Olga’s health, well-being and independence?’

To visualize client participation in homecare, a hard copy of Olga’s story was presented. Olga’s story was a narrative, co-written by the authors, prior to the workshops. Olga’s story is based on the author’s first hand experiences. Three activities were planned for the workshop under the heading “Promoting Olga’s health, wellbeing and independence”. In the workshops it was felt that everyone involved in the care of the client needed to take participation seriously and one challenge would be to coordinate all involved in the co-constructing, managing and delivering of a care plan. The workshop participants agreed upon the need for active listening; listening to Olga, to see her as an individ-
ual, listening to her needs and wants in the shaping of the care plan together with Olga.

In this paper we are making the assumption that empowerment is desirable and good. However, we are aware that the empowerment process can be misrepresented by vested interests and different value system and that not everyone wants to be empowered. We discuss self-determination and autonomy as dimensions of both, social participation and empowerment, dimensions that are ways clients can maintain some sense of control over their lives. Further we discuss the challenge to create an appreciative space where Olga feels free to express her wishes and needs and where staff listen openly and make their homecare services understandable. The most important thing for self decision-making is information. In this case, information about the nature of available services. One way to support this process of empowerment is the use of information and communication technology (ICT).

Moreover, we reflect and discuss upon the use of ICT in healthcare and homecare and that ICT is seen as a way of improving care specifically, homecare. Many see this new technology as a tool for empowering elderly people and using ICT in this context has a potential to provide care at a lower cost, whilst at the same time, enhance the quality of care. The implementation and use of ICT as a support for caring work is increasing in Sweden. In the workshops, staff talked about co-operation between actors around the service and a need for care planning. They felt that there was room for improvement around the sharing of information, by different occupational groups and that information sharing also has to involve Olga. ‘How can ICT be used by staff and clients in a way that best supports them both and in relation to the client’s particular living situation?’ was an unfinished question in the workshops. One outcome is that much more work needs to be done to determine how client participation, empowerment strategies, and ICT can be woven together in pursuing service excellence. We learnt two fundamental things about ICT. The first was that improving home health-care services might depend on the quality of the interaction between research and practice, the potential for research to inform and transform practice, but also the other way around, the potential for practice to inform and transform research. The second fundamental thing we learnt was that clients accelerating change may
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depend on the genuine, sustained and sincere use of the ‘four practices of open space’ (Owen, 1997) which are, the practice of opening, the practice of inviting, the practice of holding and, the practice of practice.

Further in the paper we reflect and discuss about the need for systems thinking in order to see the whole process not just our little piece of the picture. This took us back to system thinking because, soft systems thinking is essentially the science of how things are connected. The approach gives a holistic perspective, is based on interpretative principles, and considers that people have various perspectives on the world. These perspectives are then communicated, debated and negotiated with the purpose of reaching a common understanding and a shared interest for change. If we want to design ICT that supports homecare staff and their clients, systems that serve their actions, we need to define the system of homecare together. Moreover, we discuss that we need people who can see and promote the interconnectedness of practice, what Fullan (2004, p. 15) calls ‘systems thinkers in action’.

The paper ends with reflections on what we have learnt, that is, that focusing on improving things, things that already works in practice even if they seems to be small and insignificant, creates opportunities for different kinds of conversation and these conversations opens up new possibilities for action.

Paper V


This article focuses attention on various aspects of participation in a research and development project, the Interreg IIIA project e-Home Health Care @north Calotte (eHHC), with a particular focus on the Swedish partner and the conducted field trial. The trial aimed at enhanced quality and precision of information exchange in homecare services by introducing mobile IT system Information and Communi-
cation Technology (ICT) equipment to professional health care workers. The aim in this article is to explore different aspects of participation.

Action Research, Participatory Action Research (PAR) and Participatory Design (PD) served as a foundation in order to increase genuine user participation, empowerment and democracy. A range of research methods and techniques were employed such as one-to-one interviews, group interviews, future workshops (Jungk & Müllert, 1987; Greenbaum & Halskov Madsen, 1993; Bodker, Kensing & Simonsen, 2004), storyboarding, questionnaires, and observations. The initial purpose with using a variety of methods was to create a basis for mutual understanding, learning and participation among the participants. Another aim with using the different methods was to gain an understanding of, if and how, the work practice changed by the implementation of ICT, therefore, interviews, group interviews and observations were performed before and during the trial.

Six future workshops were conducted during the project. The first workshop was held with all 21 care assistants and their manager working in the care team. The results from the first future workshop shed light on the work practice and how care assistant’s visions also included other professional’s involvement in the care of the client. Therefore all occupational groups involved in the care and services of the clients were addressed with a view to defining the need for changes in the working processes and the technologies required for these improvements. Based on the results from the future workshops, storyboards were created together with professionals identified through the workshops. The intention with the storyboards was to get the whole picture of client interactions with health workers in order to create and provide future services. The storyboards outlined, in detail, ideal scenarios for delivering and maintaining the home care service to the client.

In this paper we discuss whether all project members participated on equal terms and whether their experiences and knowledges are considered as equal. Participation and participatory design techniques used in the project demonstrates the complexity in the work practice and that it was not only about ‘getting the work done’. The techniques also demonstrated the necessity to involve all the different occupational
groups that were involved in the care of the client in order to improve the home health care service. Hence the collaboration in the various teams implied new understandings of the health care practice and those involved in the day-to-day activities. The doctoral students modest interventions based on high degree of commitment to PAR and PD challenged the boundaries in the project and also understandings of the homecare practice. This resulted in an understanding so the business firm represented in the project could develop a product more suitable for the homecare area. The shortcomings of cross functional and cross organisational cooperation became also evident through the projects participatory approaches.

Moreover, we argue that the eHHC project had an informal structure. The participant’s responsibilities in the project were not clear on how the project teams should collaborate or the warrants for action. We argue for the importance of defining and allocating the responsibilities from the beginning. Further we argue that participatory approaches are time consuming and challenges position such as “getting the work done”. It was also obvious how the eHHC project was a reflection of the gendered division of labour in Swedish society. Also discussed is what happens when a key-person leaves the project and the responsibilities are not handed over to someone else. Further, we have discussed the need of time for learning and reflection.

We also demonstrate that team collaboration is crucial in order to learn now and in the future depending on that healthcare development in the twenty-first century is demanding. Learning through reflection are necessary but experiences and knowledge will not be shared if the learning is not supported by teams and organisational cultures including underlying structures.
Discussion

The aim of this thesis is to explore care staff's participation, experiences and knowledges in the design of ICT in home health care services with a special focus on care assistants. In the following, I will discuss the findings of my research that originates from data collection, analysis and reflections of empirical material and the projects I have been a part of.

The chapter is arranged in three parts, as follows: experiences and situated knowledges, participatory methods employed, and participation.

Experiences and Situated Knowledges

Users of technology in the development projects had high hopes and expectations on the developed prototype or technology (Melander Wikman et al., 2007). If users take part in the design project the final system might to a higher degree be in accordance with their expectations and needs (Bødker, Kensing & Simonsen, 2004). In the MobiHealth project both care staff and the clients had high expectations on the developed technology. The expectation on the functionality of what would be developed in the project was that it would be similar to a fully developed commercial product. Hence, the expectation was that the mobile alarm system with positioning device would be ready to use during the project. However, this was never the intention by the technology people active in the project. The intention was to develop a prototype that could be technologically tested and demonstrated in order to get further input on possible commercialisation. This is a common pattern in research and development projects whereas in general people not involved in the ICT sector are unaware of.

Such expectations are not surprising since there is a strong belief in ICT, and that it will secure growth and wealth in the society. This belief, in turn, is related to a dominating discourse in Swedish society that technology will lead to something positive for everyone (Mörtberg, 1997; Jansson, Mörtberg & Berg, 2007). The technological discourse was also evident in Swedish propositions and governmental policies were politicians and managers expressed high hopes for offer-

Additionally, politicians and managers showed little understanding of situated knowledges (Haraway, 1991) in government proposals and strategy documents. They do not make special distinctions between different kinds of healthcare, such as hospital care or homecare; they regard knowledge as uniform. In their proposals and strategy documents they suggest knowledge transfer between sectors such as hospital care and social care. Implementing IT is also seen as a way to continuing to offer citizens welfare in terms of care and services when the elderly population is increasing and the working population is decreasing. Hence, the technological discourse is dominating Swedish society (Berg, Mörtberg & Jansson, 2005; Mörtberg, 1997; Jansson, Mörtberg & Berg, 2007).

Although the care assistants and middle managers used a variety of technologies, they became silent or seemed to lack words with which to talk of technologies. Their situated knowledges were mainly defined in the discourse of care, which mean that they defined themselves from the perspective of the client, and therein technology was not explicitly expressed. Accordingly, in the technological discourse care assistants and middle managers placed they themselves in subjects positions where they became silent or defined themselves as technologically unskilled (Berg, Mörtberg & Jansson, 2005; Jansson, Mörtberg & Berg, 2007). These representations of reality underpin the images who possesses the technological skills and who does not. However, when care assistants and middle managers talked and expressed their experiences and knowledge about care work it enabled them to talk also about technology (Berg, Mörtberg & Jansson, 2005; Jansson, Mörtberg & Berg, 2007). Thus, when they discussed client care and how client care could be made more efficient they suggested how technology and use of ICT could be used (ibid). The analysis showed that care assistants are intertwined in relations with the clients, with dependencies on other occupations, with ordinary homecare issues, and with the way social care is organised. Additionally they need to relate to suppliers of the alarm system, databases and finally the visions and dreams of politicians and managers.
Care assistants’ situation involves managing knowledges of their work practices and what is referred to as low technologies (Winner, 1985; Haraway, 1991) and politicians’ visions on implementing new technologies (i.e., ICT) to efficiently offer elderly citizens care and services now and in the future.

Care assistants and middle managers definitions of themselves show how they are a part of the larger society where accounts of women, men, and technology are expressed. Additionally they show how these accounts have intervened in their way of shaping reality by and in prevailing discourse that exist in Swedish society. Use of technology is constituted in various practices but also a matter of who has the right to speak and who has not the right to speak about technology.

Participatory Methods Employed

In the MobiHealth project end-users were involved in the development and testing of the MobiHealth prototype. Two pre-field trials were conducted before the “real” trial of the prototype took place. Each trial was evaluated of which the focus of the pre-trials was on performance, i.e., whether the data sent was received and how it was presented on displays. The evaluation of the final trial focused on user friendliness of the system and data was gathered based on a usability questionnaire (Melander-Wikman, Jansson & Gard, 2005; Melander Wikman et al., 2007).

The aim by structuring the evaluation process in three steps was to create an interactive process between the technicians (designers) that were developing the technology and the users of the developed services, i.e., care staff and clients/patients. The pre-trials were only evaluated from the perspective of the trial owners i.e., care staff, while the final evaluation included both user groups.

Baskerville and Wood-Harper (1998) argue for prototypes as a way to describe the systems design specifications since it is a tangible item. They state that prototypes allow the user to comment on and understand the design. Further the aim with using prototypes is to improve the user–designer communication (ibid). Finally, Baskerville and
Wood-Harper (1998) argue that communication through prototyping has in some forms enabled full collaboration between the users and designers.

In the MobiHealth project the end-users’ experience was needed by the technicians (designers) in order to develop a prototype that could be further developed into a commercialised product. End-user participation was needed to verify the usability of the system and therefore the technicians (designers) were not interested in the actual experiences of all user groups. Their main interest seemed to be to develop a technologically advanced system which they wanted to be verified. Interaction and communication focused the capacity of mobile technology infrastructure and was merely organised in the form of the language of usability issues. This could be a result of the prevailing technological discourse in the project.

In the eHHC project the tested technology consisted of existing products that would be further developed, adapted and integrated to home-care and its ICT systems. This project explicitly built on participatory action research and participatory design. Methods employed were therefore action oriented which enabled participation of various user groups. Below I discuss future workshops, storyboards and focus group interviews as means to bring forward care staffs’ experiences and knowledges.

The aim of using Future workshop in the eHHC project (Jansson, Mörtberg & Mirijamdotter, 2007) was to explore and bring forward what care staff perceived as problems, but most of all, what they envisaged and wished for in the future. In total six future workshops were held, each with different occupational groups. The future workshops were appreciated by the staff since this technique enabled them to formulate perceived problems and collectively express their wishes for the future. They felt that they were listened to when they took part in defining their own future. They felt that their knowledges and experiences were appreciated and valued. Hence, their occupational group became visible.

Star and Strauss (1999) discuss visible and invisible work and the kind of conversations or silences they engender. In relation to this discussion
caring work has been made invisible in the debate about the welfare society (Waerness, 1996). Waerness continues that it is important to bring forth hidden aspects of caring work that has been disregarded in the planning of public care since this proceeds from knowledge based on experience and practice in this specific context. Thus I find that the future workshops contributed to bring forward the knowledges and experiences of caring staff and made their invisible work visible. An additional outcome was that the future workshops functioned as an approach to define system boundaries (Ulrich, 1987, 1988a, 2001, 2003).

Storyboards were used to enable caring staff to analyse and reflect on their daily work together with each others. (Melander Wikman, Jansson & Ghaye, 2006). During the workshop they discussed and shared their experience and their expertise, what they were good at, but also what they would like to improve in their work; they learned from each other. They positively engaged in the process and together they visualised and created storyboards.

The experience of using the storyboarding technique can be compared with Karasti’s (2001). She argues that the role of practitioners in analytic work within PD approaches has been rather inactive. This is odd since in development work analysis is perceived as the activity that involves the user most. Further, she argues (Karasti, 2001, p. 236) that:

" ...more future-oriented and technology-centred techniques may, in fact, have a distorting effect as the focus in them is somewhere else than in every day work."

In her research she shows that the occupational group in question, besides sharing their experiences and expertise, by taking an analytical perspective learned more about their own work themselves. Further, they discovered invisible, taken for granted aspects, when they could look on their work as an outsider. These findings are also confirmed in the use of the storyboarding techniques reported in this research. In using the storyboarding technique as described in the above (and in Melander Wikman, Jansson, & Ghaye, 2006) care staffs analysis resulted in that they learned more about their own work in addition to learning from each other.
Karasti (2001) states that the notion of mutual learning in participatory design approaches differ from the intentional co-analysis of existing work. Mutual learning:

“...does not support explicit analysis of work practices and learning more about it than is already known” (Karasti, 2001, p 236).

The notion of mutual learning is based on the idea that systems designers learn about the practice and the context of use from the practitioners and the practitioners learn about technological options from the systems designers (Bødker, Kensing & Simonsen, 2002), and this is what Karasti (2001) argues against. The outcomes of my research show also that the participants learn about their own practice and their skills. Embodied and situated knowledge is not always visible but becomes visible in activities and doings, that is, in the day-today work (Jansson, Mörtberg & Berg, 1997). Karastis argument is important and also in accordance to my findings but my results shows also the importance of mutual learning since those involved have different lived practices due to their backgrounds. hooks (2000, p. 19) emphasises that everything we do are rooted in theory and “there is also an underlying system shaping thought and practice”. Mutual learning is therefore also a way to understand participant’s way of acting and thinking.

Focus group interviews were also use as a means to bring forward care staffs experiences and knowledges. Even if the aim of each individual focus group differed this method enabled staff to collectively discuss and reflect on the development project and their work practices. This method was also highly appreciated since participants experienced that they learnt about project work, caring work, and different ways of using the technology in the context of caring work. Above all the ability to reflect was appreciated most and this kind of reflective conversations was asked more of (Jansson, Mörtberg & Mirijandotter, 2007)

The Future workshops, storyboarding techniques and focus groups used in this research illustrate that care staffs have simultaneous ways to interpret and understand their work practice. The knowledges that were brought forward by care staffs were situated in the context of care
i.e., work practices which are vital to understand when developing ICT for this particular application area. To be able to develop useful and efficient ICT knowledge about work and work organisation are required (Bratteteig, 2004; Bodker, Kensing & Simonsen. 2004). Further the methods made plain that knowledges are produced in interplay between people, technology, and occupational groups. Additionally knowledges are produced by someone rooted in a history and in a culture in a particular practice (Haraway, 1991; Suchman, 2002). In this case the history and the culture are based in the welfare system of the Swedish society that offers care and service for its citizen by public means.

Participation

Participation in systems design is a difficult issue and there are many questions to be answered; who is going to participate, how will the participation take place, whose knowledge counts, and who decides about the participants’ participation?

Participation according to Thesaurus dictionary (2006) is defined as “the act of sharing in the activities of a group”. Participation in the Scandinavian systems design has a long tradition and can be found in many approaches (Iivari and Lyytinen, 1998). The reason for participation is commonly to share knowledge and experience between systems designers and users which will enable efficient and effective design of the system and acceptance of the technology (Bratteteig, 2004; Fagerström, 2003). Another argument is democratisation of working, life and the design process (Bjerknes and Bratteteig 1996). Thus, the notion of mutual learning is widely practiced in participatory design approaches (Karasti, 2001). However in this research I have found that participatory design and mutual learning are practiced in different ways.

In one project the purpose was to test a prototype for technological usability and possible commercialisation (Melander Wikman et al., 2007). The participation in this project was therefore limited to giving input about the usability of the system by representative participation (Bratteteig, 2004). The methods employed were testing a prototype and respond to a questionnaire. The interaction and communication concerning the users’ experiences were irregular. At hindsight I con-
clude, contrary to Baskerville and Wood-Harper (1998), prototyping did not improve user-designer communication in this case. Also contrary to Baskerville and Wood-Harper (1998), this method did not enable full collaboration nor mutual learning. The notion of user participation varies (Kanstrup & Christiansen, 2006), and in this project the participants were considered more as informants and sources for inspiration than real user participants.

In the other project the purpose was to test mobile ICT equipment that would improve planning including quality and precision of information exchange (Jansson, Mörtberg & Mirijamdotter, 2007). The participation in this project built on the intention to actively involve the users and in the design process, i.e., collaborative participation (Bratteteig, 2004). To actively intervene and work for changes is a possibility in PD and PAR projects, thus, not without exertion, as shown in this project (Jansson, Mörtberg & Mirijamdotter, 2007). Methods chosen supported and encouraged collaboration and aimed at bringing forward situated and embodied knowledges. The interaction and communication evolved to include additional user groups in the design process. The mutual learning especially included learning and reflecting on own work.

By using this kind of approach several issues were brought to the fore. Firstly, it is important to listen to and interpret the lower frequencies and marginalised discourses in order to learn about the work and work practices. I found that care assistants and middle managers seemed to lack words with which to talk about new technologies (Berg, Mörtberg & Jansson, 2005; Jansson, Mörtberg & Berg, 2007). The silence might depend on several reasons, e.g., they do not want to speak because they do not think they have sufficient knowledge, they do not understand the question, or they want to express their resistance (Jansson, Mörtberg, & Berg, 2007). Mörtberg and Stuedahl (2005, p. 143) emphasise that it is important to be “sensitive to what one can find in silences.”

Secondly, techniques used that did not solely depend on language made it possible to express thoughts and visions about work practices and the use of tangible things encouraged participation. Using skills and knowledges other than language enabled expressing issues that
otherwise would be non-articulated. This is also in line with findings by Mörtberg and Stuedahl (2005).

Thirdly, I found that visualisation techniques represented as storyboards further collective participation and collaboration. In the literature storyboarding is often used in conjunction with scenarios (Bødker, 2000; Carroll, 2000; Preece, Rogers & Sharp, 2002; Benyon, Turner, & Turner, 2005). The advantages with the technique are expressed as a powerful method for communication and as a means of co-operation in design teams. In this research, when used as an analytical tool, storyboarding additionally encouraged collective participation (Bratteteig, 2004), and by this, learning about own work.

Fourthly, this project led to that invisible work became visible. Care assistants’ many work tasks became visible by implementing the automatic planning system (Jansson, Mörtberg, & Mirijamdotter, 2007). However making the invisible visible also led to that new work was created that, in turn, became invisible. In this case the planning system required data entry to co-locate information that was paper based and scattered in different files in the organisation. The extent of this work task was not anticipated. Elovaara, Igira and Mörtberg (2006) and Star and Strauss (1999) discuss risks of making invisible work visible; trade offs and balances in regard to for example reducing the work force and automation.

Finally, situated knowledges, empowerment and participation on equal terms and democratisation have been important for me in the exploration of care staff’s participation, knowledges and experiences. Participation based on the concept of democracy is a tradition in Scandinavian systems design and user participation aims to increase the workplace democracy (Bratteteig, 2004; Elovaara, Igira & Mörtberg, 2006). However this research brings forward that user involvement in the design process varies and are not always based on the values of democracy. In the projects included in this thesis the notion of user participation has different meanings and the degree of user participation has varied from representative to collaborative (Bratteteig, 2004).

To emphasise the democratic principles of participatory design, in the continuum of this research the approach was combined with partici-
Further, I argue that participation is not only about users but about all stakeholders involved in a design process e.g., in the eHHC project all stakeholders involved in the care of the client participated and project members (Jansson, Mörtberg, & Mirijamdotter 2007). Participation depends thus on all stakeholders in a design project, how they think, act, and on the notion of participation. However, participation in itself does not automatically lead to democracy or that different perspectives and knowledges are taken into account in a design project. Participatory approaches such as participatory action research and participatory design have been used but are limited in discussions of knowledge, experiences and how asymmetrical power relations in terms of gender are intertwined with the production of knowledge and whose knowledge that counts in a design project. The prevailing discourses in society build on knowledge as uniform and transferable. This leads to that caring staff have difficulties in being heard and to have a voice in Swedish society that is based in their own discourse. Feminist technoscience has then been used to articulated and brought forward alternative understandings of knowledge and experience, prevailing discourses in society, and asymmetrical power relations. The combination of participatory approaches and feminist technoscience have contributed to an understanding that knowledge is always partial, situated, and embodied, an understanding that is important to include in design of IT systems and artefacts in general and home health care specifically.
Concluding Remarks

In the introduction of this thesis I stated that in order to meet the demands and to maintain an acceptable level of services in health and homecare, ICT is introduced to make day-to-day activities of caring work more efficient. Further, I also stated that ICT that has been implemented and purchased in homecare in Sweden has been based on technology oriented standpoints. I argued that people working in the home health care sector are seldom consulted when development and implementation of ICT is involved and which affects their work practices. I found this surprising given the assumptions of participatory design principles that have influenced Scandinavian research and design work. To address these shortcomings I have taken the perspective of the homecare personnel in this thesis with an aim to explore care staff’s participation, experiences, and knowledges in the design of ICT in home health care services with a special focus on care assistants.

To explore the aim I have been taking part in four different research and development projects with different purpose, methods, and results. I have used various kinds of methods and techniques to generate the empirical data and various perspectives for analysis have also been used. In this chapter, I present my findings and thereafter I reflect over the research process as a whole and present future research.

The research conducted in this thesis confirms that participatory design is difficult and takes time. I conclude that participation and participatory design techniques that have been used demonstrate the complexity in the work practice and that it is not only to “get the work done”. In the participatory design process people have different perspectives on participation and sometimes even different goals with participation. Thus, people involved are rooted in different logics depending on their different occupational backgrounds. Consequently they appreciate people’s experiences and knowledge differently. This also influences the processes. Participatory design is not a straight forward process but a process full of tensions and contradictions. Therefore, it is important to discuss participation and strive for a common ground from the beginning in a design project.
I have also showed that if the point of departure is taken in (participatory) action research and participatory design it is possible to intervene in the process in order to change the direction of a research and development project by the involvement of all stakeholders in a work practice. The importance to involve all care staff engaged in the care of the client is dependent on that the care staff had simultaneous ways to understand and interpret their work practice. However, participation in this way was not always reached.

Further I have showed that home health care staff became silent and had difficulties to explain their embodied and situated knowledges and also their demands on new technologies. However the use of participatory techniques, techniques that did not solely depend on language enabled them to express themselves, expressions about their needs and visions. Furthermore, the techniques encouraged collective participation and therefore they learned and gained knowledge about others but also about their own work.

I have also showed that the use of feminist technoscience makes visible asymmetrical power relations e.g. in terms of gender. It has also enabled to shed light on alternative understandings of experiences and knowledge. Participatory approached together with feminist technoscience have enabled to make visible different occupational groups experiences and knowledge. This combination has also facilitated in the creation of an understanding that knowledge is always produced somewhere within a practice with its culture and tradition. Thus, knowledge is not comprehensive but is partial and it is also situated and embodied, understandings that is important to include in the design of ICT- systems in general and in home health care particularly.

The findings in this thesis are important to consider in the public sector in general, since the public sector in Sweden is in transition and the overall concept used for the process of change is e-government. Strong political hopes for the citizens using IT are general visions for the public sector. A realisation of these visions will probably change working conditions and work practices for employees in the public sector, but also for citizens, as e.g., the elderly.
Reflections on the Learning Process and Future Research

First of all, my ambition in writing this thesis has been to describe work and procedures as detailed as possible, so you as a reader can understand the background, procedure and how the analysis has been made and from that judge if the interpretation is reasonable.

To reflect over a process that has just ended is a difficult task, since not enough time has passed to give distance to what has taken place. However, I will try my best and give some reflections over the research and learning process that I have undertaken during the years as a doctoral student.

I have worked in four different multidisciplinary projects. Working together with researchers from other disciplines and all stakeholders in the projects has deepened and broadened my understanding of the studied area; home health care and ICT. The learning and the knowledge I have gained from working in these projects can not simply be described and discuss in a thesis, I have learned and experienced so many things that goes beyond the aim of the thesis.

To conduct project work and at the same time conduct research is not always an easy task because it is full of contradictions one has to deal with. My experience is that research has not always been seen as positive. Research is sometimes, by technology developers from enterprises, regarded as slowing the ICT-development process down. However, staff from the home health care area has always appreciated the work, and I experience that they have openly and willingly participated and shared their experiences in ordinary project meetings, interviews, focus groups, and workshops.

If I would do this again would I do anything differently? At the moment I would not like to change anything. As I have described in the chapter, _empirical research and the evolution of methods from methodology_, data collection conducted in the different projects can be describe as a cyclical and iterative process and I have used a variety of methods and techniques.

The methods and techniques that I have used are maybe to be regarded as ‘traditional’. However, I found the ‘traditional’ useful in the area I
have worked in. Research with an aim to develop PD with new methods has been conducted and in further research I would like to try to use for example prototyping or digital story telling as methods.

In project four, the last project conducted the focus was not on problems or the problem setting in home health care, instead we used an approach from Appreciative inquiry (AI). In further research I would like focus on what people are good at doing and what they want more of instead of problems. However, first the embodied and situated knowledges needs to be brought to the fore, then a focus on what people want more of can be explored.

Finally I will conclude this chapter by stating that: we as researchers and developers of technology are responsible for scientific and technological relations, and it is, therefore, important that we take the responsibility for making all stakeholders and their knowledge part of the design process when implementing or redesigning ICT into home health care services but also in general.
Svensk sammanfattning

Deltagande, kunskaper och erfarenheter: design av IT-system i hemtjänsten.

För att kunna möta efterfrågan på service och för att kunna hålla en acceptabel nivå på densamma i hem- och sjukhusvård i Sverige implementeras informations- och kommunikations teknologi (IKT). Användningen av IKT inom omvårdnadsområden såsom hemtjänst är generellt lägre än inom andra områden som till exempel sjukhusvård.

För att utveckla informationssystem (IS) krävs kunskap om arbetet och hur arbetet är organiserat, vilket är allmänt vedertaget inom IS-forskning. Den skandinaviska traditionen inom systemdesign bygger också på deltagande och demokratiska principer. Detta perspektiv innebär att de som skall använda teknologin har rätt att vara med i utvecklingen av teknologin eftersom införandet av teknologi påverkar arbetet och arbetspraktiken. Trots detta så har denna tradition inte praktiserats nämnvärt i omvårdnadsområden såsom hemtjänst. Den personal som arbetar inom hemtjänst blir sällan tillfrågad när utveckling och implementering av IKT sker för att stödja och göra omvårdnadsarbete mer effektivt (Jansson, 2005). Därför var syftet med denna uppsats att undersöka omvårdnadspersonalens deltagande, erfarenheter och kunskaper i design av IKT i hemtjänst. Fokus har speciellt varit på undersökterskor och vårdbiträden.


Vid analysen av det insamlade materialet användes diskursanalys, cyborg karaktären, tematisk analys och reflektiv analys. Resultatet från varje analys kompletterar varandra och för fram olika perspektiv.

Deltagande och deltagande metoder förutsätt i allmänhet förbättra arbetsplatsdemokratin och öka användaracceptansen, men det är inte så enkelt. Resultaten i denna avhandling visar att deltagande fördrar medvetna reflektioner om när, var och hur användare skall delta i designprocessen. En viktig fråga är, till vilken grad användare skall deltat i designprocessen. För design av IKT som är av hög kvalitet och som effektivt stödjer arbetsprocesser utgör deltagande och samarbete i beslutsprocessen det ultimata deltagandet. En annan viktig fråga i designprocessen är strävan efter officiell makt.

Resultaten i denna avhandling bekräftar att deltagande design är svårt och tar tid. De deltagande tekniker och metoder som har använts visar på komplexiteten i arbetspraktiken och att det inte bara är att ”sätta igång” med arbetet. Vidare så visar resultaten på att om utgångspunkten är deltagande aktionsforskning och deltagande design så är det möjligt att påverka riktningen på forsknings och utvecklingsprojektet så att alla som är inblandade i, som i det här fallet omvårdnad av brukare, involveras i designen.

När en uppskattande (appreciative approach) ansats användes så kunde omvårdnadspersonal värdera och uppskatta sin situerade kunskap och hur den bidrar till den service som de utför, dvs. de kunde reflektera över sitt arbete och lära sig om och av varandra. Vidare så indikerar resultaten att genom att integrera deltagande aktionsforskning i den deltagande designprocessen så deltar användare genom hela designutvecklingsprocessen, fattar beslut och deltar i designarbetet. På detta sätt kan omvårdnadspersonal följa hela processen och få en realistisk förväntan på teknologin som designas och implementeras, samt utveckla sina situerade kunskaper i relationen mellan teknik och arbetspraktik.
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Old Dreams, New Means: An Exploration of Visions and Situated Knowledge of Information Technologies.

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8 In this article reference (Ds, 2002, p.3) should be (Ds 2002:3) and reference (Prop., 1999/2000, p.149) should be (Prop., 1999/2000:149) since they refer to whole documents not specific pages.
Old Dreams, New Means: an Exploration of Visions and Situated Knowledge in Information Technology

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The aim of this article is to explore the tensions and ambivalences of new and old technology and political visions of keeping viable, quality care and services for elderly citizens through the use of new information technologies. The visions of politicians and social service managers of keeping alive the welfare state and retaining its ability to offer quality care and services for elderly citizens are compared with the experiences of female care assistants and their expectations of technology. A feminist figure — the cyborg — will be used in this exploration. We consider how care assistants are integrated in networks of socio-technical relations between humans and non-humans, and the extent to which gender or asymmetrical power relations between women and men intervene in their stories.

Keywords: care assistants, gender, new/old technologies, cyborg, socio-technical relations

Introduction

Many countries are growing increasingly dependent on science and technology, and the contributions of these technologies are consequently becoming increasingly important in people's everyday lives (Haraway, 1991, 1997). This development also includes the introduction of
(information) technology in homecare for elderly citizens (Ds: 2002, p. 3), which we will explore in detail in this article. To understand the potential of a new technology, a critical approach toward existing and potential technologies is needed. This approach seeks to avoid previous problems caused by old understandings and old technologies and help shape understandings of new technologies (Braidotti et al., 1994; Shiva, 1989). In critical approaches it is important to consider how development and use of (information) technology occurs in negotiations between interested stakeholders and participants (Berg et al., 2005; Mörtberg, 2003). One way to consider this is to involve those who are affected by the construction or reconstruction of (information) technology (Bratteteig and Stolterman, 1997). Feminist researchers have focused on the gendering of (information) technology or the co-construction of gender and technology (Lohan and Faulkner, 2004; Wajcman, 2000, 2004). They have contributed to and created critical approaches toward technology and more pluralistic understandings of the relationship between gender and technology.

In this article, we attempt to develop a critical and pluralistic understanding of gender and technology by exploring the tensions between visions and embodied knowledge in social care of elderly citizens. We will argue that technology builds order, but also that asymmetrical power relations between women and men intervene in visions and in how people define themselves, their experiences and their use of, demands on and wishes for new technologies. Many people’s dreams are located and situated in networks of socio-technical relations, irrespective of whether they use the technology or not (Haraway, 1991). The boundaries between humans and machines blur, whereby it is impossible to separate the social, cultural and technical; they are integrated in a ‘seamless fusion of material and cultural’ (Wajcman, 2000, p. 457) relations. The transgression becomes obvious in socio-technical, nature culture and material–semiotic concepts (Schneider, 2005). Thus, the socio-technical is used in science and technology studies that underlie the inseparability of subjects (read people) and objects (read information technology) (see Haraway, 1991).

This article aims to explore how information technology (IT) is a means of retaining the viability of the welfare state and its offer of good care and services to elderly citizens. Firstly, we focus on the visions and expectations of new technologies in homecare, as expressed in IT policies and government bills. Secondly, we investigate how care assistants in a social service department use IT and what they expect from it. We then juxtapose these uses, expectations, needs and hopes with the visions expressed in IT policies and government bills. A recurring issue is how the relationship between gender and technology is intertwined with keeping the dreams of the welfare state alive.

Our findings indicate that a consequence of the growth of IT is in effect a revival of old and new dreams: old dreams offering citizens welfare in terms of care and services and new dreams that seem to shape new understandings
and develop and implement new technologies. These dreams seem to be embedded in the wish of politicians and managers to resolve the inability of social services to recruit young people, especially young men. Yet the narratives of the care assistants demonstrate the consequences of using old technologies. Old technologies decrease the quality of care, placing limits on the lives of the elderly. Although social care staff use a variety of technologies in their work practices, they became silent or seemed to lack words with which to discuss these technologies. They also defined themselves as technologically unskilled. Thus, the findings indicate that gender and technology is constructed in mutual processes.

This article has six sections. Firstly, we present the theoretical framework, then the context, setting and research methods. Thirdly, we discuss political perspectives on IT and elder-care. In the fourth section, the care assistants present stories of their work practices and how they use both old and new technologies. In the fifth section we juxtapose the care assistants’ stories of their work practices in social service with the dreams and visions of politicians and managers, and finally, we present our conclusions.

**Gender and technology — a pluralistic understanding**

People are constituted through their activities in different social practices or through their relationship to the practices. A variety of subject positions exist in people’s everyday lives: the locations in which we position ourselves in or in which we are placed and the positions that provide rights and obligations (Laclau and Mouffe, 1985). Multiple positions exist simultaneously, which means that identities are shaped in tension between various positions, so that identities are fragmented and fluid rather than uniform and fixed (Lather, 1992; Hollway, 1989). Neither gender nor (information) technology is uniform. Multiplicity, or complex understandings, are described by Judy Wajcman (2000, p. 460) as follows:

> We now have a much more complex understanding of gender, of technology and of the mutually constitutive relationship between them. Increasingly, we now work from the basis that neither masculinity, femininity nor technology are fixed, unitary categories, but that they contain multiple possibilities and are constructed in relation to each other.

Thus, the construction of gender and technology should be seen as the result of negotiations of borders and content rather than a foregone conclusion (Ormrod, 1995). Accordingly, the pre-givenness of gender and technology is questioned, because they are constructed and constituted in mutual processes. In explorations of gender and technology it is important to explore this relationship, its representations and interventions, and not to fall back into deterministic concepts, terms and frames for understanding, that is, to
give in neither to technological determinism nor to social determinism (Grint and Woolgar, 1995). Accordingly, it is also important to explore technology as an actor since ‘the invention, design or arrangement of a specific technical device or system becomes a way of settling an issue in a particular community’ (Winner, 1985, p. 27).

Donna Haraway’s cyborg (1991) is a figure that makes it possible to keep the tensions or contradictions between social, cultural and technological issues alive. Haraway emphasizes the ambivalences and contradictions of using the cyborg since the figure can reinforce the power of cybernetics, that is, the increased control, command and communication in science and society since the World War II — a technological deterministic discourse on technology as a means toward progress and modernization. But the cyborg approach potentially challenges the hierarchical dualities in which the images of universality, modernity and progress are created. Thus, it can cast light on how the (re)construction and (re)constitution of gender, ethnicity, age and class are intertwined with the networks of socio technical relations in strategy and action plans and in the care assistant’s images, understandings and values. Haraway emphasizes that the cyborg has been famous and used in numerous settings. Despite this, Haraway (2000, p. 136) still finds potential in the figure. She points out: ‘Cyborg is a way to get at all the multiple layers of life and liveliness and deathliness within which we live each day’. In this article, the cyborg imagery is used to examine understandings of social services and care and the transformations occurring in this sector.

Knowledge and experience are always partial, located and situated (Haraway, 1991; Suchman, 2002). Situatedness consists of a variety of elements, but we concentrate on physical and social aspects, that is, how one is physically situated in an environment and socially in a culture (Adam, 1997). Consequently, situated and embodied experiences and knowledge are the starting points in our use of Haraway’s cyborg figure.

The context, setting and methods

Context

In Sweden, social legislation has made it commonplace for the elderly to receive care and personal service in their own homes, instead of moving to elder-care facilities (Berg, 2000). Today’s challenge for municipalities is to deliver effective elder-care that combines the best care possible with opportunities for the care staff to develop their skills. Since enactment of the Ädelreformen (Swedish elder care reforms; see Hultberg et al., 2005) in 1992, homecare providers have been assigned more medical duties. The demand for competent healthcare staff is also increasing as the elderly become older and more fragile. Yet it is difficult to recruit social care staff in Sweden since the caring profession is dominated by women (who constitute 97 per cent), is
low-paid and has low status (Berg, 2000; Runesson and Eliasson-Lappalainen, 2000). To recruit staff, especially young women and men, politicians and social service managers want to implement new technologies within the care and nursing areas (Ds, 2002, p. 3). In this respect, numerous mobile technologies have been developed or are under construction. These include alarms, communication devices and blood pressure equipment connected to a mobile network.

Today, the care of severely ill children and advanced palliative care are conducted in private homes using IT equipment that is directly connected to hospitals. Tests of new IT solutions that facilitate contact between different medical institutions and their patients, such as those with diabetics and heart diseases, have been conducted in different places around the world (Ds, 2002, p. 3), but testing new IT solutions in social care are not as common. These projects are often small and are driven by dedicated persons, but the evaluation of the projects is often incomplete (Essén, 2003).

Setting

This article is based on empirical research collected in focus group interviews with nursing assistants from social services in northern Sweden. The care resource centre where they work provides support resources for the elderly in ordinary housing and provides direct and indirect support for relatives and those close to the patient, irrespective of whether they are staying in the care resource centre or in their own home. The care resource centre also strengthens the special resources aimed at securing the care chain.

The care resource centre is responsible for an alarm system provided by the municipality to elderly and handicapped persons. The alarm system (old technology) is intended to help elderly and disabled persons residing in their own homes feel safe and secure. At the time of the interviews, the care resource centre served 900 alarm system users. The system consists of a care phone installed in the care recipient’s home and a portable alarm button that recipients can wear on their wrist, around their neck or as a clip. The portable alarm button is used to activate the care phone. When the care centre receives an alarm, a loudspeaker call is connected and the recipient can then communicate with the staff at the care centre. The receiving system consists of a personal computer with dedicated software and a telephone connected to the computer. When an alarm is activated, data on the person sending the alarm is displayed on a computer screen. The data consists of the following information: name, address, diagnosis, whether they receive homecare from social services, how often the service is performed, to which homecare service group the person belongs, the homecare service telephone number, next of kin telephone number and the person’s home key number.

The care staff consists mainly of nursing assistants. Sixteen people work in pairs servicing the alarm system, answering calls and running the service,
which is open 24 hours a day. The care assistants also install the care phones in the recipients’ homes. Besides their responsibility for the alarm system, care assistants have other duties such as operating a newsstand that sells confection and hygiene products. They also schedule their own work using software called TimeCare. Using TimeCare, the assistants personally plan their work hours, time off and vacations six to eight weeks in advance.

Methods

The care assistant interviews were conducted as group interviews, in this case focus groups. Five group interviews were conducted, each consisting of four to eight members of the staff and two researchers and each interview lasted from one and a half to two and a half hours and was recorded on audio tape. All the interviewees were women aged 24–62, with a mean age of 43. The recorded dialogues of the interviews were transcribed verbatim.

The use of focus groups is a research technique in which data is collected through group interaction on a subject decided upon by the researcher (Morgan, 1997; Wibeck, 2000). Working together, members of a group create a phenomenon as opposed to specific individuals. Thus, the interest in a focus group study is directed at the common and culturally established problems and attitudes of the participants (Wilkinson, 1998). Another advantage of group interviews is the chance to study knowledge building; the interplay between members of the group. The results of the group’s interplay can lead to group unity or visible discrepancies.

The first focus group interviews were held two weeks after the initial introductory meeting in which the research was presented and stimulus material distributed. The reason for handing out the stimulus material was to create a mutual understanding of the point of departure and to raise questions and debate about new mobile information and communication technology related to elder-care. During these two weeks, the care assistants had the opportunity to read the stimulus material, since it is important for the participants to digest the information and reflect on their own standpoints or ideas about the subject matter (Wibeck, 2000). The group interviews were held at the care resource centre since the staff preferred it that way.

To approach the old dreams and new means, we will begin with a discussion of some action plans and government proposals.

IT policies and action plans — old dreams, new means

The way humans use technology and how they develop or re-invent it emerges from values, dreams, needs and prevailing social conditions. Despite their being the ones who will give the technology meaning, prospective users
are seldom asked about their needs or expectations (Sejersted, 1999). Swedish society is characterized by technological determinism (Mörberg, 1997; Winner, 1985), which is reinforced by the success enjoyed by the IT sector in the 1990s. Despite the subsequent breakdown in this sector, the success of these technological discourses has influenced ways of being ‘modern’ and participating in the development of ‘high tech’.

In government proposals and action plans, the development and implementation of IT support in homecare is described by politicians and managers. In Prop., 1999/2000, p. 149, health and medical care and its fundamental structure and direction are presented. The government’s intention is to give the elderly and persons with disabilities the opportunity to receive care and services that are integrated into their own homes and daily lives (Prop., 1999/2000, p. 149). Providing the elderly with effective healthcare in their own homes is the main issue and the greatest challenge for health and medical care in the future, according to politicians and managers. The government also states that it is important to develop information and organizational support in healthcare, and especially within care for the elderly in municipalities (Prop., 1999/2000, p. 149). Their vision is that increased use of IT solutions such as telemedicine can provide healthcare jobs and shape an image of the profession that attracts young people and men (Ds, 2002, p. 3). IT is regarded by many as a necessity for meeting the demands of future healthcare and homecare (Bjører et al., 2003). A survey conducted by Carelink, a national co-operative organization for promoting the use of IT in Swedish healthcare, found that 73 per cent of Swedish municipalities believe the development of IT support is essential to make homecare more effective (Kemlén, 2002). Counties, regions, municipalities and private companies in the health sector can become members of Carelink.

IT has been implemented in hospitals and is frequently used for consultations, supervision, diagnoses, education and quality assessment (Ds, 2002, p. 3). In government reports and proposals, politicians describe IT solutions that have been successful within healthcare (Ds, 2002, p. 3). According to them, these solutions ought to be implemented in homecare, transferring technology from one area to another. Yet the specific context of where the IT solutions are supposed to be implemented is not taken into consideration in their plans. In government proposals on IT policies, politicians express their visions about the new technology. This is seen as a way of continuing to offer citizens welfare in terms of care and services. New technology is also viewed as a means of creating efficiency and job opportunities.

Technology use in care assistants’ work practices

In this section, we discuss the care assistants’ use of old and new technologies as described in the focus group interviews and relate it to our theoretical
framework: critical and pluralistic understandings. Using examples from the interviews, we describe the old technology that care assistants used at the time of the interviews. This consists of the alarm system that facilitates elderly people living in their own homes.

Security, sensibility and privacy

The alarm system is based on conventional telephony, and the communication channel established when an alarm is activated is limited to 10 m from the care phone. The care assistants described situations where the centre receives alarms but they cannot communicate with the person who activated the alarm. It is possible for a caretaker to communicate with staff at the care centre through the care phone. But if the care phone is placed in a room other than the one the person triggering the alarm is in, verbal contact is no longer possible because of the limited range. The care assistant must then check the reason for the alarm with a personal visit. When they reach the person’s home and no one is there, they must search for the resident. Sometimes they know where to look because they know the person who triggered the alarm and can guess where to look. At other times when they come to the apartment, the owner may walk through the door and say, ‘What are you doing in my apartment? I haven’t called for you.’ The care assistants must then explain that they received an alarm from that apartment and had to check it out since they could not make verbal contact. The interviewees found this very embarrassing because they felt as if they had violated the person’s privacy. As the wrist alarm is very sensitive, it sets off the alarm with only a slight touch. Care assistants also said they felt uncomfortable when they reached an apartment that was empty: ‘you don’t really know what to expect’.

The interviewees described situations where technology — the non-human actor — organizes their working conditions and the lives of elderly persons (Haraway, 1991, 2000). The examples demonstrate how they are situated between tensions and ambivalence in terms of security, sensitivity and privacy. The recipients use the alarm to feel safe and receive help when needed, but they depend on a limited technology. The technology or staff member intrudes on their privacy due to an overly sensitive button and a limited operation range. Nonetheless, the alarm system enables them to live in their own homes. On the other hand, a limited technology decreases the quality of care and thus places limits on their lives. The subject, our bodies and the outside world are thereby given new configurations. In this context, ‘bodies’ should be understood not only as organic bodies, but also as technological devices, techniques and mediations. The boundaries between humans and non-humans (technology) blur, even though an old technology is used.
Other obstacles in care assistants’ work practices

Another example that illustrates the limitations of the old technology concerns problems with information that is not updated. When an alarm goes off, the care assistant answers the alarm and asks the person who activated it what s/he needs. Since the person’s record is displayed on a computer screen, the care assistants also know when and if the person is supposed to receive help from the ordinary homecare service. If this is due to arrive within a short while and the requested care is not urgent, the care assistant can ask the recipients if they can wait for the ordinary staff member to arrive. The care assistant can also call the ordinary homecare service and check whether they can make a personal visit. In the interviews, the care assistants pointed out that the record was not always up to date, and they were not sure who was supposed to update it. Some of the records were up to ten years old and an elderly person’s health status can change rapidly. As one care assistant expressed it, ‘a lot can happen during the journey’.

To evaluate and follow up the performance of services provided by municipalities and to streamline the work, IT will be a necessity in the future, according to politicians and managers in different municipalities (Kemlén, 2002). Even so, the care assistants interviewed perceived complex organization as a major obstacle to performing their work efficiently (see Jansson, 2005). They often needed to contact other professionals involved in client care, such as district nurses, homecare managers, physiotherapists or other homecare staff, yet it was difficult to ascertain which district nurse or homecare manager served which area and which client. On some days, the care assistants said, they spent a lot of time searching for the right persons to contact. The record system in which information about clients, relatives and other professionals involved is supposed to be collected and stored was not integrated with the municipality’s other IT systems that provide this information.

Another factor complicating the co-ordination is the fact that the district nurses who serve the clients are employed by another organization: the county council’s primary care unit. Having different employers means there is no link between the IT system for primary care and the municipality. All these different IT systems contain bits and pieces of important information about the clients and other persons involved in their care. Integrating these systems is a prerequisite for care assistants to have access to valid and correct information about their clients. This solution would help care assistants spend more time on client care instead of searching for responsible persons, and result in increased efficiency. If communication between IT systems was facilitated, it might also be easier to follow up and evaluate the efficiency of the services provided — something politicians and managers believe is a future necessity. The care assistants need to be integrated in the web of socio technical relations where they must negotiate with other professionals, organizational boundaries and technologies.
At the crossroads of social and technological relations

The technological discourse is obvious when politicians express hopes of offering citizens welfare in terms of care and services using IT. Although development and implementation emerges from visions and dreams, it is in concrete work practices that technology is given meaning; in this study through the situated and embodied knowledge of care assistants. Did the care assistants interviewed share the hopes of the politicians? What kinds of dreams did they express? We discuss these questions in relation to the views of politicians and our theoretical framework.

Situatedness — social and physical positions

In the government proposals and strategy documents, no special distinction is made between different kinds of healthcare, such as hospital care or home-care. They show little understanding of situated knowledge (Haraway, 1991); instead, they regard knowledge as uniform, enabling its transfer between sectors, such as from hospital care to social care. Technology is also seen as the solution to all problems in the area: staff shortages, attracting young people and men, administration, and co-operation between county councils and municipalities, since they share responsibility for elder-care. Technological determinism is evident in government proposals and strategies. Among other things, this discourse reflects a belief that technology should be suitable for every sector regardless of context.

When the care assistants described their work, they always positioned themselves in relation to those who receive the care, thus, the discourse of care dominated in their definitions of their experiences and themselves. They were very concerned with the care of their clients. Technological discourse seems to be marginalized in the assistants’ stories, but the discourse in which the assistants situate themselves seems to prevent them from reflecting on how technology orders their work conditions. The content of the caring professions has not changed much in relation to the care of recipients over the last hundred years or so. It is still about handling the different needs of care recipients — needs that are practical, physical and medical (Drugge, 2003). These needs seem likely to remain important whether new technologies are implemented or not.

Silences and a lack of language

The care assistants enjoyed talking about their work of taking responsibility and caring for the elderly and disabled. They use their sight, hearing and language to understand their clients’ everyday life and needs. Even though the social care staff used a variety of technologies in their work practices, they became silent or seemed to lack the words to talk about new technologies.
New technologies implemented in organizations can lead to a need for a new kind of language — a language that some people are comfortable with and others are not. Thus, it is also important to notice what people do not talk about — what one can find in their silence if the aim is to shed light on various voices, experiences and knowledge in the use and design of IT or in the realization of the visions expressed in IT policies (Berg et al., 2005; Mörtberg and Stuedahl, 2005).

Silence related to new technologies could also indicate that people do not understand the question asked or that they do not want to speak because they do not think they possess enough knowledge. The silences of the care assistants interviewed can be compared with outcomes reported in Mörtberg et al. (2005) that show how property maintenance workers developed a language to talk about a system based on mobile technology. They were able to argue and mediate their experiences and to effect changes and improvements in their work practices because of the mobile system. Humans are at the centre or are the kernel of social care, with social services and care dominated by women. Property maintenance work is male dominated, and artefacts and machines are the kernel, so their work practices have a generally higher status in Swedish society than those dealing with humans. Conditions are not equal for the two practices. Consequently, those involved do not have the same options for acting, influencing or discussing things. These inequalities also govern which and whose kind of knowledge has higher status, or who takes or is given the preferential right to interpret the meaning of new technologies. The differences in the working conditions bestowed on the property maintenance workers accords them the right to talk about technology to a higher degree than care assistants.

The co-construction of gender and technology

Different kinds of technology, such as household technology and ergonomic aid technology, have always been a part of care assistant work (Jansson and Melander-Wikman, 2004). This means they are used to working with technology. Despite this, the care assistants did not define themselves as technologically skilled. Although these women used technology (IT, mobile communication and others), they tended to define themselves as unskilled or non-experts. In a discussion on using the speed-dialing function on mobile phones, one of them said, ‘we have to dial the whole number, and those of us who are not so technically skilled — we definitely have to dial the whole number’. Another example is when care assistants had to phone the suppliers of the care phone. They said,

because when you call these guys they talk a language that is ... well you sit there with your pen and paper and write down what they say. But it’s hard to understand. It’s this technical stuff.
The care assistant stories showed how they are integrated in the web of socio technical relations where gender and technology is co-constructed, such as in the relationship between the division of labour, power relations, women, men and technology. Their self-definition as unskilled risks reinforcing the images of who possess technological skills and who do not (Vehviläinen, 2004).

It is difficult to recruit educated staff to social care and services for the elderly and disabled in Sweden, while staffing requirements are increasing due to an increasing elderly population. In IT proposals and government bills, IT is seen as a vehicle for employing young people and particularly young men. In our focus group interviews it turned out that the care assistants seemed to share political visions about young peoples’ familiarity with IT. But they pointed out that being young is not a prerequisite for familiarity and predisposition toward new technology; some of the care assistants said they do not like or are not interested in working with new technology, and they considered themselves to be fairly young (aged between 24 and 26). According to them, it is the same with technology as with everything else — some like it, some do not, and one should not assume that interest in new technology is related to age.

The interviewees also emphasized that it is hard to make the profession attractive to young people in its present structure. Today’s youth are well informed about salaries in the profession, and they will not work in a low paying sector where working conditions are both physically and mentally very demanding (Runesson and Eliasson-Lappalainen, 2000). The care assistants interviewed would not recommend working in this profession to their children because they think they deserve to earn a good living. Although they expressed professional pride in their work, they could not recommend it to their children.

The gendered division of labour will not change automatically just because men start to work in social care, but research shows it is not unusual for new divisions of labour to be created when men enter professions dominated by women (Berg, 2000; Cross and Bagilhole, 2002). Female dominance in the profession was also discussed in the group interviews. The interviewees emphasized that men are also needed in the homecare sector because ‘when you work in a caring profession, the work is heavy’, but they also pointed out that men would never accept all the required work duties. Their explanation was that ‘women are more flexible than men’ (Berg, 2000). Girls and women are expected to take more responsibility for the wellbeing of others, compared to boys and men (Crawford et al., 1992). Women sometimes respond to these expectations. The responsibilities women are expected to take are reproduced accordingly in the interviews. Both the division of labour and prevailing power relations between women and men are integrated in the interviewee stories, that is, they are positioning themselves both physically and socially in existing conditions in Swedish society.
Conclusion

In this article we explored how IT is seen as a means of keeping the welfare state alive and retaining its offer of good care and services for elderly citizens. We argued that government policies and propositions have high hopes for using new technology. Thus, the technological discourse was obvious in the hopes expressed by politicians for offering elderly citizens care and services using IT, now and in the future. These political intentions to provide care and services to an increasing elderly population might be at risk due to the difficulties of recruiting educated staff to social care and services. In IT policies, the implementation of IT in homecare is seen as a contributing factor to reducing difficulties, thereby raising the status of the profession and attracting young people, especially young men, to the care and nursing area.

In adopting the cyborg figure to interpret the interviews, we showed how the kernel of social care will remain and how its location in socio technical networks constitutes subjects and objects where gender and technology are constructed in mutual processes. We also showed how the care assistants are intertwined with layers of material, social and semiotic technologies. Hence, they are intertwined in relations with the elderly or disabled women and men, with dependencies on other professions, the way social care is organized, suppliers of the alarm system, databases, ordinary homecare issues, the visions and dreams of politicians and managers, and low and high technologies (Haraway, 1991; Winner, 1985).

The interviews with the care assistants also showed how they used old, limiting technologies. Although a limiting technology was used, it was obvious how they and the clients were situated within tensions and ambivalences in terms of security, sensitivity and privacy. The old technology also decreased the quality of care and placed limits on the lives of the elderly. The relations between humans and non-humans create ‘multiple layers of life and liveliness and deathliness’ (Haraway, 2000, p. 136).

Although the social care staff used a variety of technologies in their work practices, they became silent or seemed to lack words with which to talk about new technologies. They also defined themselves as technologically unskilled. Thus, in the technological discourse, the care assistants placed themselves in subject positions where they became silent or defined themselves as technologically unskilled. Rules and obligations create care assistant ideas, values and thoughts, and govern what they are able to speak of and when (Foucault, 1972). But in the discourse of care, they placed themselves in subject positions that gave them the right to talk about technology when they expressed how client care could be made more efficient by using IT. They exemplified this through the need and demand for updated information about their clients, integration of the municipal IT systems and exchanges of information between the primary care and municipal IT systems. Using the cyborg sheds light on the tensions in the care assistant narratives, or that
meaning is negotiated and representations of realities are contested within and through discourses (Egeland, 2001). Thus, the co-construction of gender and technology is heterogeneous, not uniform; sometimes the care assistants were silent and sometimes they articulated their needs, demands and technical skills.

The juxtaposition of the visions and the care assistants’ embodied experiences and knowledge resulted in ambivalences. The care assistants do not believe new technology will raise the status of their work or attract young people to work in care and nursing areas, but they believe young people are more accustomed to new technology than they are. To make the work more attractive to young people and especially men, their profession must raise its status with higher salary levels, while male workers are needed for their profession to achieve a higher status. This shows how the division of labour and power relations between women and men in Swedish society are intertwined with the care assistants’ stories.

The technological discourse dominates political assumptions and solutions that offer an effective and well-functioning social care system, but the care assistants emphasized the importance of caring for people. Hence, they do not share the positive assumptions that national and local government representatives stress in a variety of contexts. Perhaps we are witnessing what is in effect a revival of old and new dreams: old dreams of offering citizens welfare in terms of care and services and new dreams of developing and implementing new technologies to recruit staff.

The specific context in which IT solutions are supposed to be implemented is not considered in the intentions of politicians and managers to transfer technology from hospital care to social care. We argued that IT policies demonstrate little understanding of situated knowledge; rather they seem to regard knowledge as uniform (Haraway, 1991). The focus group interviews, on the other hand, showed that knowledge is always partial, situated and embodied. Yet situatedness does not only mean place, that is, that one is physically situated in an environment or has a standpoint. The concept is more a way to show that knowledge is not the same everywhere, but is produced from partial perspectives where history, culture and places connect in relation to each other. Thus, the consequences of transferring technology from one area of healthcare to another without considering the specific work practices and staff demands and needs may complicate or risk politicians’ old dreams: offering care and service with new means, namely IT.

The Swedish public health sector is not alone in this transition; the public sector in general is involved as well. The overall concept used for the process of change is e-government. Strong political hopes of offering good services to citizens using IT are not expressed only for the health and homecare sectors but are general visions for the public sector. A realization of these plans will probably change conditions for citizens and working conditions and work practices for employees in the public sector. The results reported in this article
show how new technologies emerge in visions and hopes, and the importance of paying attention to situated and bodily knowledge created in everyday work situations, such as with the care assistants. Policies and high hopes are important, but it is also important to listen to lower frequencies, such as care assistants’ voices, situated knowledge and their emphasis on caring for people when realizing old dreams with new means.

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Notes

1. Donna Haraway’s and Langdon Winner’s positions are sometimes contradictory, but we use Winner’s focus on the political issues of technology in everyday life and Haraway’s challenging metaphors and concepts.
2. This research is based on a study funded by the Swedish Agency for Innovation Systems, VINNOVA, a Swedish research foundation. VINNOVA integrates research and development in technology, transport and working life. Its mission is to promote sustainable growth by financing research and technological development and developing effective innovation systems.
3. Stimulus material can be articles, pictures, videos or quotations about the subject under discussion (Wibeck, 2000). In this case, it was an article from Dagens Nyheter, a Swedish daily newspaper (Koebe, 2002), and a newsletter from the Vardal Foundation, VårdalNytt (Stålildal, 2002), which examines research and technology used in elder-care.

References


Emphasizing technology: socio-technical implications

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Emphasizing technology: socio-technical implications

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Abstract

Purpose – This article aims to focus attention on users of information technology (IT), especially mobile telephony. It focuses on what people actually say about mobile technology but also aims to pay attention to what they do not talk about, what is found in the silence, especially with new technology when much can be taken for granted. This latter is, according to Foucault, even more important to understand.

Design/methodology/approach – The research draws on empirical research through 11 semi-structured interviews and interviews with five focus groups, comprising between four and eight care assistants in each group. The interviews were with three women and three men between 25-70 years old, five female public sector middle managers and care assistants from five focus groups at social services departments in the north of Sweden. A Foucauldian approach is adopted to interpret the findings and explore how their locations within the circuits of socio-technical networks engender uncertainty with mobile technology. The present spread of IT reinforces a belief that people are integrated into the circuits of socio-technical networks.

Findings – The findings suggest, on the one hand, that new technologies like mobile communication can be used to organise our everyday lives, whilst, on the other, there are risks with the new technologies, which can discipline discourses.

Originality/value – These issues are discussed from a sociological and informatics perspective.

Keywords Communication technologies, Mobile communication systems, Sweden

Paper type Research paper

Introduction

This article focuses attention on different groups of users of information technology (IT), especially mobile telephony. The article takes mobile communication in both private lives and working lives as the principal object of study. It has two aims. First, to analyse what people actually say about mobile technology, second to analyse what they do not talk about, and what we find in the silence. One question that arises is how gender and technology are constructed in people’s narratives. Another question is the kind of socio-technical[1] implications that this can have for people’s everyday lives.

This is a revised version of a paper presented at the 21st Standing Conference on Organisational Symbolism (SCOS) held between the 9th and 13th July 2003. The authors would like to record their thanks to the participants at this conference, as well as to Jim Barry, University of East London and also the anonymous Information Technology & People reviewers for their critical and helpful comments.
In Swedish society there is a great deal of research into technology, accompanied by a strong belief that technology will secure growth and prosperity, giving rise to a dominant discourse (Mörberg, 1997). Perhaps as a consequence of the growth of the IT sector we are witnessing what is in effect a revival of technological determinism, despite a recent recession – possibly because it is generally assumed that IT will secure economic growth, prosperity and energize Swedish society more generally. For example IT has been implemented in local authorities because it has been seen as having the potential for cooperation and because there are strong hopes that it will help to create good services, to rationalise and make the sector more efficient through the implementation of mobile technologies (Carelink, 1/2002).

It is perhaps difficult to remember, in Sweden as elsewhere, that it is not so many years since mobile telephones moved out of the world of private sector business to become an everyday part of public sector work and leisure. Yet mobile communication, as a part of IT, has quickly become established over the last five to ten years, with Sweden leading the global market as producer of IT and mobile communication, along with both Finland (Oksman, 2001) and Norway (Ling, 2000). The implications are not clear, however, since technology can be seen both positive and negative. It can provide people with opportunities and make it easier for them to get in touch with others, and it can also intrude in peoples’ private spaces. It does not seem to matter if we use or do not use technology ourselves since everyone is surrounded by it, both in public and private, to the extent that it has become a normal part of our everyday lives.

In this article we explain the degree for which the discourses of (mobile) technology have become established in people’s everyday lives, both work and private, in a way that might challenge the dominance of established work and private discourse. We are focusing on what people actually say about (mobile) technology and we pay particular attention to what they do not talk about, the silence.

The article is set out in four sections. The first section outlines the context, issues and perspective. The second section considers the context of change and use of mobile communication. The third presents the findings of our research investigation which draws on semi-structured interviews and group interviews, with men and women between 25–70 years of age and middle-managers and care assistants in social work. Finally, the article offers a conclusion, setting out the social implications of mobile technology for people in their everyday working and private lives.

Context, issues and perspectives
Today more than 90 per cent of the population in Sweden between the ages of 16-75 have a mobile telephone subscription; and they all have them for different reasons (Williamson and Ost, 2003). For example, many parents buy mobile telephones for their children to bring them within easy reach in case of trouble (Ling, 2000). With increasing availability of IT, other opportunities are becoming available in a modern society. We can quickly reach others and be available for others, altering communication. The outcome appears to be more rapid exchange, with communication more informative in character. The use of mobile telephones seems to increase rather than decrease the communication between people.

In a Swedish context the goal of equal access is often expressed, as for instance in the Swedish government bill concerning information technology (Bill. Prop., 1999/2000:88) that aimed to shape an information society accessible to all. Yet
access to mobile communication can be seen in different ways. For example, some may not be able to afford, will have little interest in, or will lack technical skills or information about new technology. The use of mobile telephony is something we understand as socially constructed (Berger and Luckman, 1967), eliciting new behaviour in our everyday lives as something we have, to some extent, become used to. We are focusing on what people actually say about technology but we also pay attention to what they do not talk about, what we find in the silence. Our intention is to examine the ways in which people, both in their everyday private lives and at work, use language when they talk and do not talk about their mobile telephony, as well as to establish their needs for mobile communication. Our intention is also to investigate whether mobile technologies and public services, which are used by women and men to a similar extent, have challenged prevailing images and understandings of gender and technology, if women are more interested of the usefulness of technology and men are interested of the technology in itself.

The research is based on empirical studies through semi-structured interviews and interviews with focus groups, four to eight care assistants in each group. We set out to interview eleven people in different positions, six members of the public between 25-70 years old following a snowball method, starting with one person who named another and so on. The middle managers were chosen by a senior manager, who selected them from five different divisions at a social services department in one local authority. We also conducted interview sessions with five focus groups, comprising four to eight care assistants in each group from the same social services department. The interviews were conducted at the interviewees' work places. Five interviews were conducted and each interview took between one and a half and two and a half hours and was recorded on tape. The group interviews in this study were unstructured and stimulus material was distributed among the personnel at a meeting where we introduced ourselves and presented the purpose of the study.

We are aware that the interview situation creates circumstances that can be specific for each particular interview. Each interview in itself has its own discourse, how the interview can be done, what kinds of questions will be raised, and what kinds of answers will follow (Widerberg, 2002). Discourse is more than the study of talk and texts, it can also be described as a way to speak or a practiced language of or how we create our world through language. Discourse is widely used in social theory and associated with the work of Michel Foucault. His development of discourse analysis is built on people's imagination of reality and in the way it is expressed (Foucault, 1994). The assumption is that it is through language that people generate and show how social reality is interpreted and imagined. This is something which is known as genealogy, a strategy that attempts to see people's praxis – what they actually do. Genealogy describes the praxis, what happens, an event and an act. An event means something not deterministic but coincident.

In this respect Barret (1991, p. 126) asks an interesting question: "how is it that one particular statement appeared rather than another?" It is important to understand the rules that are taken for granted, to consider what people talk about and maybe more importantly what they do not talk about. Everyone understands that we are not allowed to say just anything, that we cannot talk about something whenever we like, and finally that not everyone can talk about everything (Foucault, 1993, p. 7) even if the significance of this is not entirely clear.
Foucault, in his first volume of *The History of Sexuality*, raises the importance of focusing on what people do not talk about, the silence itself:

There is no binary division to be made between what one says and what one does not say; we must try to determine the different ways of not saying such things, how those who can and those who cannot speak of them are distributed, which type of discourse is authorised, or which form of discretion is required in either case (Foucault, 1978, p.27).

Another way to consider the discourse of silence is through Tillie Olsen's (1980) discussion about unnatural and invisible silence. Here, an existing discourse, where certain areas are not discussed for example, can be discerned in respect of women's writing. Silence related to new technologies would also seem to be a subject of interest to both sociologists and information technologists. New technologies constitute new means for the administration, organisation and habits of users. It seems to be rather obvious that this leads to a new kind of language where some will feel comfortable with the new vocabulary and others will find it more difficult. If there is no response, it can appear as if they do not know what the questions are about, or that they do not understand the question, or are not prepared admit that they do not understand. We intend to determine the different ways of not talking about technology for instance through registering the laughter of our respondents, their silences, comments on questions, their ignoring of questions, and asking for help from each other. And how those who can and those who cannot speak are distributed, along with which type of discourse is authorised, or which form of discretion is required in each case. This approach has been chosen because it provides opportunities to explore how meaning is given to the world; another reason is that it provides an opportunity to understand the meaning of the context. Dagny Stuedahl (2004) emphasises that silence is created in a mutual process of communication between people. Silences are a response to what has been said but also what is unspoken. Silence can sometimes depend on a lack of words, or that people not want to express their views to a specific question. In this way silences are construed as actions (Stuedahl 2004).

### The use of mobile communication

People design and produce technology for other people with different purposes. Most of us do not ask where the technologies come from and why they are designed in a special way. But the development and use of technology emanates from and remains linked with human values, dreams, needs and circumstances prevalent in society. The designers' visions of the future system are created within discourses, discourses where gender and technology are both (re)conceptualised and (re)constituted since systems designers "act and are inside this world, not some other" (Haraway, 1997), that is, an unequal world (society). Erik Stolterman (1991) contends that visions come into view very near the beginning of the design process before the present domain or situation is analysed. The designers' ideas, values and understandings are intertwined with their visions of the choice of a certain functionality, structure or technology of the future system, service or artefact. But the result, a new IT-system, artefact or mobile service, is not always what the producers expect when they introduce it, people do not always do what the developers expect them to do (Edenius, 1996). The usage of text messages (SMS) offered in the Global Mobile System is an example of an unexpected use of a technology or mobile service.
When the telephone came to Swedish households, everyone in the family came to use it. The telephone was seen as a collective phenomenon. Telephone numbers were printed in a catalogue; open for public gaze, where everyone could look up an address, title, family members and number. The telephone was the first electronic network prosthesis (Stone, 1985) and mobile telephones can be seen as something which are similar but also something completely different to the conventional telephone, because they help to create a different lifestyle, another type of communication.

Mobile telephone ownership and use has become an individual phenomenon. It is something personal to own a mobile telephone: very few people place their number in a catalogue, mostly giving their number to the people they know already and exchanging numbers with new friends. Each person owns his/her telephone, has their own number and pays their monthly bill for their calls or top-up refill card. To have a mobile telephone has been highly privatized and individualized. Men and women have to the same extent access to mobile telephones. However, there are also more people between the ages of 15-44 who have access to mobile telephones compared to older people. Even so, during 2004 the growth of mobile telephone subscribers has been strongest in the groups of users between the ages of 61-75 years, and in this group 76 per cent make use of a mobile phone (Williamson and Öst, 2003). To have a mobile telephone is also about fashion, as with clothes, the discussion being for many about the latest model and all the new technology available in the latest machines. The discussion about fashion seems nonetheless to be more common amongst the young, becoming an important instrument for them to define their personal space (Oksman, 2001).

People use their mobile telephones practically everywhere and everyday, both in private and at work as well as for business and pleasure. Mobile telephones can be something which attach to one’s salary as a benefit because the job demands the employees to be available, with the cost much higher compared to a fixed line telephone connection. In Sweden there are different rates levied for the use of a mobile telephone: lower rates if calling at specific times and lower rates for frequent use. There is also a better price for the calls if the user has a contract involving monthly payment instead of having a refill card, which is more expensive. Even so, it is not always possible to use the mobile telephone. There can be problems of use for instance it is sometimes impossible on an underground train system, or because the signals disturb other technology, for example in airplanes. Yet it is so common today to use mobile telephones that it has become upsetting for many people, in situations where it is regarded as impolite not to switch off the mobile telephone as in cinemas. When mobile telephones were introduced it seemed as if there were no restrictions as to where and when people could use them, but restrictions in public places are becoming more and more commonplace.

Mobile telephony = a part of everyday life
In interviews with people between 25-70 years old a number of different views were expressed concerning the use of their mobile telephones; how much they knew about technology and in what way they used it. Some of them used their mobile telephones because they just wanted to be available for their family and they hardly knew anything about the technology. Others used their mobile telephones as something their social and working lives rested on. One woman, 55 years old, used her mobile telephone
like an ordinary telephone. The only extraordinary thing she could do was to send SMS
messages. The response from her was:

My brother gave it to me, because he bought a new one, and he told me how to use it. I have a
refill card, and I know how to use that. I cannot say I know much more since I got the mobile
telephone, I have learnt to send text messages, my daughter showed me so I'm doing that a
lot.

This woman had never thought she was going to own a mobile telephone; and when
she got one it was more by chance than choice because her brother gave it to her. She
did not know what kind of mobile she had and she was not familiar with the
technology. She was aware of mobile telephones because her children had owned them
over the previous 10-15 years and understood the need for them. But she had not found
any reason why she should buy one. She did not turn down her brother's offer however,
because she thought it might be useful to have a mobile telephone. Her response was
that it was a coincidence, following Foucault (1994) who describes changing discourses
as a coincidence rather than something people plan to do consciously.

A 70-year old man had bought his first mobile telephone and then several different
models from the same company, but had also changed brands in later purchases. He
knew what he had, mainly as he explained it because his grandchildren had informed
him about the technology and how to use it. He was not sure if any manual had been
given to him when he bought the mobile telephone. The mobile telephone was for him
like a fixed line telephone – but mobile. He did not express more about the technology
than the previous woman had, but he discussed the technology and used technical
words, and expressed interest in different brands but, like her, was not sure how to use
it. He was also, like her, dependent on people around him who knew how to use a
mobile telephone. Unlike her he had established a technological language, and was
positioning himself in a technological discourse, something he had established in his
daily social life with friends and relatives.

A 37-year old woman bought her mobile telephone when her son moved to his own
flat. She wanted to be available for him if he needed her. She did not use her mobile
very much, finding it most useful when she was travelling, indicating that she did not
know much about the technology. She had no interest in understanding it either, and
talked about the mobile telephone as useful for her purpose. She described the mobile
telephone as a tool, and compared it with her car. She understood how to drive but she
was not interested in the technology in itself. It was the same with her mobile phone,
which was something that facilitated her social life.

None of these three respondents paid much attention to the kind of mobile telephone
they had. There were a whole range of different reasons why they used them in the
way they did, including lack of interest, lack of money, and lack of technological skill,
but also a lack of information about mobile telephones. The technology was not of
interest and they obtained the information they needed from other people, especially
from the younger generation. They did not search actively for information; instead
they were given it by relatives and friends. The younger generation, who had been
brought up with mobile telephones, had established a technological discourse (at least
some of them had), a discourse these three were also now involved in. But their use of
mobile telephones seemed to be in a similar way related to the use of the fixed line
telephone, except for the use of text messages.
In one way it was as if they had understood and broken the code around the new mobile technology, because they did not see it as something odd or strange, mobile telephony had just broadened their social availability, and this new technology had become a part of their everyday lives. At the same time they used the mobile telephone but not all of its potential. Maybe that is the reason why they did not express any specific dreams or expectations concerning mobile technology. Consequently they defined themselves and expressed their experiences from within the discourse of technology.

A woman, 28 years old, bought her mobile telephone when she was 25 and had her first child. She bought her mobile telephone mainly because she wanted to reach and be available for her family. She did not call anyone during the first year, she just had the mobile telephone for emergency calls. Today she used the mobile telephone in different ways, she used it everyday and had the telephone numbers of others. She used it as an alarm clock, and sent text messages daily to both friends and family:

Today it is necessary to have a mobile phone partly because it is not possible to call from public telephones, they hardly exist today.

This quote shows how new technology affects those in society in a very concrete way. With fewer public telephones, the need for mobile telephones increases. Mobile telephones have led to social changes in society. One 25-year old man always had his mobile telephone switched on. He had the telephone numbers to others kept as information in his mobile. The mobile telephone was a part of him and his friends complained if he did not have it switched on. His social life was dependent on his mobile and he was cut off from his friends if something happened to it. He had kept the same number over the last ten years so that everyone he knew could call him. He did not have access to a fixed line telephone, and lived under circumstances that made it easier for him to communicate through his mobile. He did not mention brands but described what he had, explaining that he made use of his mobile as an alarm clock, watch, calculator and somewhere to keep messages and telephone numbers.

A man working in a small business who was 47 years old, who used his mobile telephone more frequently because he needed it for his job, expressed a similar view. He had given a lot of attention to the kind of technology he needed and what was important was how useful it could be for him in his work. He used his mobile, even when he had a fixed line telephone in the same room, because:

I have all the information in my mobile: telephone numbers, text messages, names, pictures and all kind of other information.

These quotes have been chosen because they show how the mobile telephone has become something more than a fixed line telephone. It does not matter that the cost is higher for the mobile telephone. Their use of mobile telephony shows not only how they are dependent on the network of socio-technical relations but also how they reinforce these networks.

The mobiles of our respondents were more than telephones, functioning as aids to scheduling. They used their mobile telephones like social prosthetics (Stone, 1995), where the boundaries between between human and machine (technologies) are unclear, even disputed (Haraway, 1991). These three had established a need for the technology. The mobile telephones had become a personal assistant for all of them, which had, in
turn, disciplined their social lives. They showed perhaps above all else how intertwined they had become with the socio-technical networks of which they were a part as the use of this technology grows.

The silence of technology in care work

The interviews with both middle managers and care assistants concerning IT and its use provided interesting insights into their work and how they created meaning in their work practices. Their work was related to people, old and disabled. There is a predominance of women working in social care in Sweden, around 95 per cent at all levels (Berg, 2000). One interesting thing with the interviews was that the staff were responding to something they did not seem to feel they were a part of, leading to the realisation that in these interviews as well as in the focus groups there was a silence about technology. They talked about their work, about caring for people, but did not express or explore how they felt about their use of mobile technology.

The interviews with five middle managers, all women, illustrate how each of them had similar views about their job as stressful but interesting. To work with people gives them satisfaction in their work. One of the middle managers outlined the way in which she had been introduced to her new workplace:

Here is your office and here is your fax machine and you know how to use the computer and this is your mobile telephone, you have the right to make private calls for 25 [Swedish] crowns, if you call more you have to pay for it.

That was her introduction to the IT at her new job, nothing more. According to her none of her colleagues had any introduction to their mobile telephone, fixed line telephone, fax machine or computer; they were all expected to understand how they functioned. In the information from their managers there was no distinction between fixed line telephone and mobile telephone, they were simply treated in the same way. They had, during the previous five years, become more dependent on technology, especially through computers, electronic post and different computer programmes, there being about seven to eight systems. These helped them to plan the work schedule and organize the budget, to pay salaries and to document investigations which they conducted in respect of elderly and disabled clients.

All managers had their own mobile telephones allocated by their employer and they were allowed to make private calls up to 25 Swedish crowns each month; over that they had to pay for their own calls. All of them turned off the mobile telephone at the end of the day, because they all knew the risk if they did not, an increasing levels of stress. Reference was made to a manager, a colleague of theirs, who became burned-out; possibly related to the fact that she never turned off her mobile telephone. They were all in charge of many staff and frequently in contact with them. They all felt they needed a mobile telephone. The answers to some of our questions were as follows:

Interviewer: Do you use your mobile telephone a lot?

Middle manager: Often, very often [laugh].

Interviewer: Does it mean everyday?

Middle manager: Yes, many times each day, I do not call so much but others are calling me, it is calling all the time.
Interviewer: Who are they?

Middle manager: Staff and clients ... people who want to apply for job and they have got the number from someone at my workplace and people from other local authorities.

Interviewer: Has your employer given you any restrictions in the way you can use your telephone?

Middle manager: I don’t know. I haven’t thought about that. We are not supposed to make private calls; we have to pay if we call for more than 25 [Swedish] crowns each month.

One manager indicated that the most important thing for her was to be available for staff. When she was in meetings she always checked her mobile to see if someone had called her. She also used her mobile telephone as a back up. When she was engaged on the fixed line telephone she had her mobile telephone beside her, so that she could always be reached. For her this governed her working life acting as a disciplining technology; moreover her mobile telephone acted like a social prosthetic.

One of them said:

I feel that the technology makes my job much easier but there should be more education—about something which does not happen.

In saying this it can be understood that she did not have enough knowledge about the different systems that she was dependent on to do her job in an effective way. It can also mean that she believes that the technology can help her even more in her job in a way she does not quite understand. Computers and mobile telephones had made her job easier but had also speeded up the work, with everything having to go faster. She wanted more time with her staff and with the elderly and disabled, for whom she cared, but felt she was more and more becoming an administrator.

When the managers were asked who took decisions about technology, they did not know. Some of them believed it was the management group together with the IT-group and the training group, but they were not sure. All the decisions came from their top managers and the managers we interviewed did not know if implementation of new technology was based on political decisions. What they described was a work situation that had not created involvement between the staff and those who are in charge of the technology when it had been introduced into the organisation.

The care discourse dominated, with the technology discourse marginalized in the managers’ practices, even though the technology discourse in Swedish society was dominating in general. Categories like time and place were blurring since the managers used their mobiles to become accessible during meetings and when engaged on the fixed line telephone. Although the demands had increased, due to the usage of IT and mobile services, the managers drew a line between work and leisure by turning off their mobile when not on duty.

Expectations and imaginations of IT

The interviews with the female care assistants provided some interesting insights into how they related to IT. In the focus groups the main discussion concerned an alarm system used by the elderly and disabled in their homes. The questions were how they used them, what they thought about this, and also about their expectations of IT. Each focus group consisted of four to eight members of staff, with the interviews taking
between one and a half to two and a half hours. In this article we have highlighted the
way they discussed mobile telephones. To have a mobile telephone seemed to be a
luxury for some of the care assistants we interviewed, but at the same time it was
something they felt they needed in order to do their job. They did not have their own
mobile telephone as the managers did; rather they shared it with others.
There was a lack of words when we asked if they used the technology through
computers instead of mobile telephones:

Care assistant: Not always and then we have to dial, and we who are not so technically skilled
– we definitely have to dial [laugh].

The question is if the reason for their definition of themselves as not technically skilled
was because they saw themselves first and foremost as care assistants with no
technical skills, and especially not as technologists with technological skills. It
transpired that they had a mobile telephone mainly to enable other people to reach
them, because they worked during the night and traveled between different clients who
needed their help. The relationship between power and knowledge was obvious in the
care assistants’ definitions of themselves as not technically skilled. Hence they seem
not to take/have the right to talk about technological skills, and when there is a lack of
words it seems to be easy to surrender to a non-technical gendered language. The
social care staff use their sight, hearing and the language, in order to understand an
individual’s everyday life and needs. The managers as well as care assistants enjoyed
talking about their work, to take responsibility and care about the elderly and disabled.
It was difficult for the care assistants to imagine and express what kind of technology
they might need and use in the future. However, when we discussed their concrete
work and work tasks they were able to articulate their expectations and needs.

In Sweden it is still more expensive to use a mobile telephone compared to a fixed
line telephone, indeed one minute on a mobile telephone can cost up to 100 times more.
This seems to affect the way people communicate with a mobile telephone. It is
important to have and use one but not necessarily important to discuss issues and
engage in long chats, at least not when it is privately owned. The care assistants
describe their use of mobile telephones in the same way:

We use it when we need to call the service groups and inform them that we are going to help
someone.

They added that the telephone bill was expensive because they called to each other’s
mobile telephones, an important way to communicate with each other. Yet their work
had become so much easier because of the mobile telephones:

It took nearly one year before we got the mobile telephones, so we could call the district
nurses, and we could not reach them anyway. We have to reach them if someone gets acutely
ill, because a district nurse has to come.

What this appeared to mean was that whilst they had the technology they also had
problems in reaching the district nurses. This was because they acquired their mobile
telephones before the district nurses, who are employed by the Health County Council,
received theirs, and that there was limited the communication between these two
groups even when they started to use them. This was because it took time to become
familiar with the technology. The ensuing frustration was understandable as they were
dependent on the district nurses to help them with the patients.
The discussion between these care assistants was that the technology was something useful for all who were involved in the care of elderly and disabled people but that it should not be used too often, except where there was an emergency. The technology could help to increase the communication according to them, as:

A lot of us have a bad conscience because we leave our relatives in public homes.

... They did see the mobile telephone as something important, something they needed to have. But on the other hand they did not talk about the mobile telephone in a special way:

Yes we have a mobile telephone, and we use it to call each other. When we call the groups it is also on the mobile telephone, we are only a short time in the office where we can use the computer and the fixed line telephone.

Today most of the care assistants have a mobile telephone in this particular local authority. What they have experienced is that the use of mobile telephones has increased, more of them have become used to mobile telephones, and the equipment has become a necessary part of their everyday lives. It gives them freedom to have a mobile telephone, but they also discuss the size of the mobile:

A smaller apparatus which I can have in my pocket and it is my own, it will immediately give me a freedom.

What this interviewee wanted was not to share the mobile telephone with others; she wanted to have the same benefits as the managers. She also thought it was something the managers should develop for younger staff. They all mentioned that there would be more demands on technology in the future from them as users. When the younger generation became dependent on care they would be used to dealing with technology like mobile telephones and picture telephones, and would ask for them if they were not there. They did not see themselves as a part of these developments, instead they expressed a perspective from above, and it was the top managers who were going to implement new technology in the organization.

They were also aware that more and more people were coming from other countries unable to speak Swedish and felt there should be some kind of technology that could help with translation. They expressed an optimistic view about the possibilities of technology, but they also felt that their imagination limited them.

Concluding thoughts
In this article we have argued that technology is used in different ways, and that some of our interviewees were not able to articulate or to express their wishes and demands in relation to technologies; they do not have a "technological" language. But we have also shown that mobile technology has had social implications for people, who have experienced changes their habits and their way to communicate. Mobile technology has had an impact on people's way to speak and relate to one another, and some of them use mobile technology as a social prosthetic, they have become dependent on the technology for their social life. From the evidence presented here it appears that whilst they do not question the technology, at the same time they have created space for their own definitions. The discourse seems to be that technology will lead to something positive for everyone. The question is whether that always happens. Mobile telephones
have become individualised phenomenon, and to use and own a mobile telephone has been highly privatised, but also something very much open to public gaze. The reason advanced for use is often related to availability. When people decide to have or not to have a mobile telephone or, like the woman who got her mobile telephone by coincidence, they position themselves in the existing discourse in society. There are different things that are discussed, including the cost of the calls, the lack of information, usage, the expectations from employers and companies.

The interviews with women and men between 25 and 70 years of age showed differences in their understanding and use of technology. The women talked about being available for their children, something that the men did not mention. The younger man talked about his mobile telephone as a part of him, something his social life was dependent on. Ideas about mobile telephones seemed to reflect stereotypes of women as caring and concerned about other people, as well as the stereotype of men as the ones who were more comfortable with the technology as a tool for their work and something to explore and play with. Although mobile telephony was part of both women’s and men’s daily lives, the gender division between women as caregivers and men as interested in technology was reconstituted.

In the interviews with middle managers and care assistants we have seen how they speak about technology as something they have not focused on or considered the meaning of. One part of their job is to work with different technologies but there is a lack of interest and also a lack of words. Most of the interviewed managers and care assistants did not define themselves as technologically skilled. Although these women used IT and mobile communication they tended to define themselves as non-skilled or non-experts (see also Vehviläinen, 2004). These representations of reality reinforce the images of who possesses technological skills and who does not. But the interviewees’ definitions also show how they are part of a larger society where stories about women, men, and technology, are told. And they further show how the stories have intervened in their way of shaping reality by and in prevailing discourses that exist in Swedish society.

Computers and mobile telephones made the job of the middle managers and the care-assistants easier but it also speeded up the work, with everything having to go faster. When we asked questions about technology they gave short answers. They did not seem to feel that technology was the core element of their job. Their expectations, imagination and needs for mobile technology were socially created, and were not expressed in an overenthusiastic way. Instead they were seen more as a part of their everyday lives, where information technology had been something they needed to manage their work. New technology was implemented from above and it was taken for granted that the employees should understand how to use it. New technology can also be described as a new way to control peoples’ minds – as just another technological tool – reminiscent of Foucault’s discussion of technologies of power and disciplining panopticism (Edenius, 1996). This was obvious in the middle-managers stories of how they checked their mobile phones in order to be accessible all the time when on duty, even during meetings.

Thus, technologies are also “ways of building order in our world” (Winner, 1985, p. 30). The respondents acted within various relations and orders that they negotiated and (re)created in the development of the technologically mediated society in which they live. The mobile telephones have changed our interviewees’ way to communicate.
The use of mobile telephones is mainly based on short conversation of an informative albeit fragmented character. The fixed line telephone is maintaining and fostering another kind of communication, more stable and cohesive. Yet what also seemed to be intertwined with the definitions of IT and mobile communication was what we will call "techno-optimism", a belief that technology can give solutions to problems we have in a society where it is increasingly difficult to maintain close contact with people. This is perhaps especially so in the younger generation who will be involved in the changes in the future, partly because they are brought up with the so-called high tech (Gergen, 1991). They build up a tacit knowledge, sharing their experiences between each other. They are the ones who constantly take part in new technologies and create an everyday knowledge of high tech, and are in the forefront of implementing the new technology in society (Ling, 2006). In today’s technologically mediated society it is easy to forget how the older generation have experienced the development of revolutionary technologies during the twentieth-century like electricity, telephones, railways, cars and airplanes. Today these technologies are seen as low technology. Technologies like IT and mobile telephony are however seen as fast and tend to speed up communication between people. They also have a tendency to render communication both more informative and fragmented.

The younger generation have been brought up with mobile telephony and some of the older generation have become dependent on the younger generation to help them understand and use the technology, partly because they do not understand or read the manuals but also because it is a new way to communicate which is changing everyday life for just about everyone. Many people – especially the younger generation – are at ease with high tech, they use their mobile telephone even if they have a fixed line telephone in the same room, because they have all the information in their mobile handset, telephone numbers, text messages, names, pictures and other kinds of information. These groups never discuss the cost of having a mobile telephone, one reason being that it appears they do not compare the mobile telephone with a fixed line telephone.

The interviewees draw attention to the blurring of borders between humans and machines. Donna Haraway's (1991) cyborg is a hybrid between an organism and a machine, a notion that implies that the boundaries between subject, bodies and realities are given new forms of configuration. Embodiment means, apart from organic bodies, also technological artifacts, techniques and mediations. Our interviewees seemed to use their mobile telephones as a social prosthetic to function socially. If we consider the social prosthetic with a cyborgian approach it becomes obvious how hybrids/prosthetics can work for some but not for others, as we have seen from our interviews (see also Star, 1991, Haraway, 1997). However, the technology also caused silences since the interviewees were not able to articulate their wishes and expectations. Use of technology is socially constructed but it is also a matter of who has the right to speak and, thus, who can speak about technology and who cannot. This echoes Donna J. Haraway's warning voice about the new technologies. From one point of view there is a risk of reinforcing domination and inequality, whilst from another point of view opportunities are provided for new and better living conditions. This is evident in the ambivalences (or contradictions) in our interviews. On the one hand the middle managers and care assistants created their definition in the discourse of care. On the other hand there were tendencies to techno-optimism or technological
determinism — a dominating discourse in Swedish society — even though they did not possess the words to express their experiences. We consider silences or hesitations as actions, thus, one has also to listen to silences not only to those who possess a language to articulate technological issues.

Mobile technology is something which people get used to in the long run, and the interviewees’ stories show how mobile telephony and related services are integrated into their everyday lives. The incorporation of technologies in peoples’ everyday lives could be interpreted as a process of domestication whereby technologies and services are tamed and cultivated (Mansell and Haddon 1996, Silverstone et al. 1992, Lie and Sørensen 1996). Yet this image or metaphor of technology runs the risk of portraying the developers of IT as modest witnesses without responsibility for the kind of technologies and services they design (Haraway, 1997). But the connotation of control may also engender a vision of activities in a society that emphasises technology as cyber-cowboy (see Vehviläinen, 2004), or an understanding that technologically skilled persons consist of a certain group of men who possesses the core expertise. We have, therefore, not used the idea of domestication in our analysis but listened instead to lower frequencies (silences) or marginalized discourses in order to draw attention to those who are not necessarily in the forefront of the development of the technologically mediated society, and to the meanings created in the silences.

Note
1. The concept socio-technical is used in accordance with science and technology studies as an expression of the relations between humans and non-humans, see for example Haraway, 1991.

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Further reading


The Lighthouse Alarm and Locator trial – A pilot study

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The Lighthouse Alarm and Locator trial – A pilot study

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Abstract. An important factor for health is the possibility to be active and mobile. To make this possible various kinds of support are needed. Integrating geographical information systems technology and user experiences is important in the development of more user-friendly positioning devices. The Lighthouse Alarm and Locator trial aimed to test a new mobile alarm system with additional functionality such as positioning and monitoring of vital signs which can be used regardless of location (in hospital, at home). The system was tested by elderly persons from a pensioner organisation and home care personnel answered up on the alarms. After the tests qualitative interviews were performed with the two groups. The results showed that their experiences of the new mobile alarm system could be described in three main categories: to be supervised, to feel safe and to be mobile. These categories formed a theme: Positioning – an ethical dilemma. The clients’ mobility was perceived to increase. The personnel did not think that positioning was ethical but the clients (elderly) did.

Keywords: Home care, mobility, positioning, safety alarm

1. Introduction

In Sweden the average lifetime is increasing, which not always means an increased health in the population but may increase the demand on rehabilitation services, in hospitals and particularly rehabilitation services in the client’s homes [17]. An important factor for health is the possibility to be active and mobile. To make this possible various kinds of support are needed. A variety of technologies and services have been developed and implemented in order to reinforce elderly people’s well being and conditions. However, the new technologies are not always adapted to prospective users’ particular demands and needs in terms of functionality and usability.

Utility is the question of whether the functionality of a system or service can do what is needed and usability is the question of how well users can use that functionality [12]. Usability applies to all aspects of...
a system or service with which a person might interact, including installation and maintenance procedures. It is not a single one-dimensional property of user-interface. It is associated with dimensions such as learnability (to be easy to learn), efficiency (to be efficient to use), memorability (to be easy to remember), permit a low error rate so that users make few errors during the use of the system and satisfaction (pleasant to use) [12]. Usable is an adjective synonymous with “fit to use, functioning, operational, serviceable, and valid and working”. Usability concerns fulfilment of functional requirements [15]. Within the MobiHealth project usability was defined according to ISO 9241-11: Guidance on Usability [1] as; 

“the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use”.

Usability includes accessibility aspects as well as prerequisites for performing daily activities in the environment at target. It also includes subjective perceptions of how well the design of system or service enables functioning and well-being from the users’ perspective [18].

Integrating geographical information systems (GIS) technology and user experiences is important in the development of more user-friendly positioning devices. Useful positioning devices need to be developed to support users in their daily tasks from risk assessment to prevention programmes. Institutions and home care organisations may benefit from the technological integration of GIS, the Web, handheld and mobile global positioning systems devices.

The aim of this paper is to explore the homecare clients (elderly people) and homecare personnel’s opinions and experiences from a pilot study with positioning services in northern Sweden called the Lighthouse alarm and locator trial.

2. The research context and setting

Within the EU’s “Information Society Technologies” Programme, the MobiHealth project was carried out during 2002 and 2003. The overall objective of the MobiHealth project was to develop new services and applications in the area of mobile health, promoting the use and deployment of GPRS and UMTS mobile services and technologies. The main task of MobiHealth was to deliver a flexible and dynamic service to patients and health care providers. Within the MobiHealth project 9 trials were performed within healthcare. The objective was to send physiological data from sensors in a Body Area Network (BAN) and via wireless transmission by GPRS and UMTS communication system to a monitor at a hospital or primary healthcare centre. The different pilots/trials ranged from sending data from an emergency situation, monitoring chronically ill patients by sending ECG from a person’s home, monitoring complicated pregnancies or registering physical activity on persons with Rheumatoid Arthritis. All trials were heterogeneous in design in terms of number of patients (clients), the care givers/professionals involved and the purpose of using the MobiHealth system. In the project the partners used a participatory approach, i.e. the end-users were involved in the development and testing of the MobiHealth services. Two field pre-trials were conducted in order to create an interaction process between technicians and end-users. The purpose of each pre-trial was to gather information from the trial owners and to determine their experiences gathered from using the BAN. This experience was used as a basis for the technicians to further develop and design the BAN. Another purpose of the pre-trials was that the trial owners could get acquainted with, and test, the BANs and the user manual developed during the project. Throughout December 2003 and January 2004, the MobiHealth system prototype was tested in pre-trials in Spain, Germany, The Netherlands and Sweden. The purpose of these pre-trials was to evaluate the performance and user-friendliness of the equipment; and to provide data to the
system providers for the final trials of the MobiHealth system in January and February 2004. The trials were developed in a step-wise process in interaction between researchers, technology developers and end-users. All the technologies were under development.

2.1. The Lighthouse Alarm and Locator trial

The trial in Sweden aimed to test this new mobile alarm system with additional functionality such as positioning and monitoring of vital signs which can be used regardless of location (in hospital, at home). The main expected benefit of using the MobiHealth BANs in this trial was to increase mobility and to allow clients (elderly) to live a more normal life than they did before. The current system in use does not allow the patients/clients any freedom related to mobility because of the limited range of transmitting the alarm by using radio waves. That implied that the client was trapped at home or in their room at the home care centre. By replacing the fixed alarm system with a mobile system the client (elderly) could move freely anywhere. Additionally positioning and vital signs were monitored. At the care resource centre the alarms were shown in a computer application. Positioning was used by a GPS receiver sending the positioning data via Bluetooth to a separate GPRS telephone, which showed the position in a map. When an alarm was sent from the elderly person the position could be presented both in a web based PC-application running in the homecare centre and in three additional mobile phones used by other personnel at the centre. It was possible to track down the elderly person’s position by a visible map in the phone with regularly updated locations for both the elderly person and the searching personnel from the care centre.

The Lighthouse is a care resource centre located centrally in city in Northern Sweden. The Lighthouse creates support resources for the elderly in ordinary housing, provides direct and indirect support for relatives and those close to the client irrespective of whether they are staying in the Lighthouse or are in their own home, and may strengthen the resources aimed to secure the care and rehabilitation chain. Connected to the care centre is a reference group with representatives from different pensioners’ organisation. This group is functioning as an advisory board to the centre.

Two BANs were available and the sensors used were activity (through a mobility sensor), marker (alarm button) and 3-lead ECG as well as manual input (Figs 1 and 2). The alarm went off either by pressing a button on the MBU, or when the drop-or inactivity signal (based on the mobility sensor) was...
activated. The software application, PortiLab2 on the monitor at the Lighthouse care resource centre, displayed vital signs of the test persons (elderly persons), and the type of alarm (manual or drop) and the place on a map where the test person was located. This made it possible for the caregivers at the home care centre to answer up on the alarms correctly. In this trial the alarm and position was also sent via SMS to the caregivers.

2.2. Positioning

Positioning was used as an extra function for the Lighthouse trial and was developed as a separate system from the MobiHealth BAN. An Emtac GPS receiver was used to send satellite data via Bluetooth to a GPRS enabled mobile phone, a SonyEricsson P800 phone (see Fig. 3). While continuously obtaining new positions a map image with user preferred zoom and orientation was retrieved via GPRS from an online map service provided by Cartesia [3]. For storing and distributing position data between different users in the test, a location-aware platform was used [13]. With position data from others involved in the test the user had the option of selecting which positions to display on the map and then centre the map on these positions, which would in turn optimize the zoom and area factors of the map to fit the selected positions. To further increase the usability, the personnel itself was positioned and displayed as selectable options on the map, hence it was a simple manoeuvre to fit the personnel and the client
(elderly person) on the same map image and then use the relative positions to easier navigate and finally locate the client (elderly person).

The positioning function was verified to work well together with the BAN. When an alarm was sent from the test person (elderly person), the position could be viewed both in a web-based PC-application running in the homecare centre and in the three additional mobile phones used by the other personnel at the centre. It was possible to track down the test person’s (elderly person) position by walking with a visible map in the phone with regularly updated positions for both the client (elderly person) and the searching personnel from the homecare centre.

Since the positioning system was not integrated into the BAN it was not possible to utilize the alarm sensors in the BAN to activate the positioning, hence the positioning was left running at all times. With better integration it would have been possible to leave the positioning off while everything was fine and just activate it as the alarm was activated. This would save battery and possible also increase the sense of privacy.

3. Methods

Elderly persons from the pensioners’ organisation and home care personnel were selected as test persons for the study. The home care personnel were told to reflect upon the use of the mobile technology from the clients’ (elderly person’s) perspective.

The outcomes reported in this paper are based on empirical data conducted by a focus group interview and a survey. Focus group interviews are used to explore how participants in a group, together, create a phenomenon [10]. The method is useful when the aim is to examine people’s experiences and understandings of a phenomenon. Focus group interviews are conducted with a small number of people, four to six, who meet with the aim to discuss a given topic decided by a researcher [10]. In the survey a questionnaire was used, the MobiHealth Usability Questionnaire, that was developed in the MobiHealth project to measure different parameters of use of mobile technologies [7]. The parameters were derived from propositions concerning usability, empowerment, activity, mobility, participation and ethical considerations [8]. The result from the questionnaires were analysed according to the methodology (for a detailed description see [7]) developed in the MobiHealth project. The result stated in the questionnaires from each trial was gathered. Thereafter the commonality between trial as well as differences was analysed.

The narratives from the focus group interview was analysed through thematic content analysis [4]. The interview was read several times with the purpose in mind to get a feeling for the context. After that, text units where identified, still with the purpose as a guideline. The text units where formed into categories, which then formed three main categories. From the main categories a theme was crystallised like a read thread. The theme was Positioning – an ethical dilemma.

3.1. Ethical considerations

The range of the alarm system’s coverage is a safety factor. Therefore an emergency might occur and go undetected. There was an ethical imperative to safeguard against this happening. Therefore a person was allocated to each test subject permanently during the trials to avoid this, and vulnerable patients were not addressed so as subjects, 5 members from the care centre’s advisory board of pensioners were chosen (see subjects above). A further ethical consideration was the fact that, when positioning was used, a person might feel that they were being watched and interfered with. This and other questions were fulfilled adequately, including written consent. The committee of research ethics at Luleå University of Technology approved the study.
4. Results and discussion

The analysis of the interviews and questionnaire resulted in three main categories: to be supervised, to feel safe and to be mobile. These three main categories formed a theme: Positioning – an ethical dilemma. The result will be presented and discussed under the same headings. The result showed that freedom of mobility seemed to increase. The personnel did not think that positioning was ethical but the clients (elderly) did.

4.1. To be supervised

In this pilot test the elderly persons involved were positive about the use of the new technology. They were positioned when they used the alarm equipment with the locator but they did not feel supervised and watched. However, the fact that they knew that they were positioned made them instead feel comfortable. The elderly persons were not doubtful about a general use. In the interviews the elderly persons expressed that they thought that it is right and proper to use the positioning device in the future when the prototype is fully developed to a product. One of them expressed: “It maybe would be possible to find old people if they disappeared from a pensioner’s home”. The results of the test showed how elderly persons thought a technology such as the prototype tested could improve their quality of life and life satisfaction. One test person (elderly) said that the fact that she could be found with the help of the positioning option if she got lost, made her feel safe. She said: “If I should need to use this I would be positive, that is Life Quality”.

The elderly persons were asked to reflect on the use of positioning. In the interview they pointed out that it was important to discuss the service with relatives, personnel, and the (elderly) client before the positioning was decided. One test person (elderly) expressed this in the following way: “Who shall decide? Is it you yourself that can decide if you will have an alarm or not? Or is it someone else?” The interviewed were of the opinions that if an old person is able to decide, then s/he is the one to make the decision. But if s/he has got dementia e.g. it could be the care personnel at the care institution who should decide if positioning is needed. But it would still be best if a relative could be involved in the decision-making. Another test person (elderly) reflected upon that the technology was maybe a way for the municipality to save money, and was afraid that social contacts could be lost.

Elderly person’s acceptance of information and communication technology (ICT) and telemedical solutions are increasing because they acquire technological skills and qualification to a higher degree, consequently, their use of Internet is increasing [2]. Elderly people have in fact seen a lot of technology come and go and they therefore often have a relaxed attitude to the possibilities that new technology offers [14]. Is this an explanation to the interviewed elderly person’s positive attitude to mobile safety alarms with positioning? Another explanation could be that the elderly persons involved in this experiment/test were thinking of other elderly persons with limited functions using this new technology and not from there own needs and experience [14]. In the Swedish society there is a strong belief that ICT will secure growth and prosperity, as well a mean to keep alive the welfare state and its offers of good care and services for elderly citizens [6,11]. Thus, technological determinism dominates the Swedish society. A discourse that also governs at intervenes in peoples’ stories like the conducted focus group interview.

The personnel also expressed, that the use of the mobile technology that was used in the test would increase the quality of life and satisfaction in their work, especially the locator function. On the other hand, when they reflected upon the use of the mobile technology from the clients’ (elderly persons’) perspective, the personnel discovered ethical dilemmas in using new technology, especially the positioning function.
One care assistant expressed that “Some test persons feel safe when they are supervised; some test persons wonder a lot about it. Who is supervising? What kind of data can the personnel get?” They also discussed that the border between being supervised and expire safety is a hairbreadths difference. “You might easily feel overdriven.” Foucault [5] discusses how different kinds of supervision and registrations are the modern society’s way of disciplining people to become docile bodies. Disciplining technologies are used to get control and to create conformity, thus “the surveillance society” of today can be compared with Bentham’s Panopticon [5]. Panopticon is the ideal prison, formed as a circle with the cells in the outer circle and a surveillance tower in the middle. The aim with this design was to use only one guard to control and supervise all the prisoners. The prisoners are constantly aware of the guard’s presence regardless if there is a person in the tower or not; the prisoner is subjected to surveillance without seeing anyone. The development of ICT with cameras and positioning systems creates “an electronic eye” that can be rationalising this. We are all leaving “electronic footprints” because of all new technology we are using. Every time we use a mobile phone or a credit card logs are left that are kept in different databases [19].

4.2. To feel safe

The technology used in the pilot test showed a person’s location when s/he was walking out in the woods. Through the positioning the locator could easily find the person independently of where s/he was located. The interviewed elderly person’s experience of the technologies possibility to locate her/him created a feeling of freedom and security. One interviewed pensioner said: “Now you can let next of kin go out in the forest, pick berries, because if they get lost you can find them through positioning.” There was total consensus among the elderly persons, that this kind of technology was needed and safe. They were not afraid when using this new technology. “If it works- Positive to technology that can help”. But one person said that “human values are important”. Compared to the current used alarm system with a limited range of 10 meters this mobile alarm gave a better opportunity to be mobile and still feel safe. The care assistants (personnel) were critical about the safety of the system as GPS was not functioning indoors, so when the elderly persons were indoors they could not be located by the personnel. “It functions out door. Give signals for help”. The sensors functioned 50% of the time. They did not think that the alarm was safe to use and it could not be used without risk. “More development is needed” was one comment from a care assistant.

We have already discussed how “the electronic eye” can discipline persons [5]. This discipline can create a feeling of safety. But the fact that one is supervised does not automatically promise that one will be safe. It demands that someone is there on the other side watching ready to act in case the person is in need of help. The architecture of the modern society has a close connection to control and supervision that is to discipline people in a particular way by technologies such as positioning services [5].

4.3. To be mobile

The test persons(elderly) found the prototype clumsy and awkward to wear with too long wires. The wires made it difficult to dress for outdoor activities. “It is clumsy. It limits the mobility. Should if possible be made smaller and more pliable”. “In wintertime with outdoor clothing the freedom of mobility is highly restricted”. When travelling the test persons thought that there were many things to remember to bring and they also said one had to be cautious when putting on the safety belt in the car because the sensors could come off from the sensor box. “Clumsy while getting in and out off the car”. There was not a problem in driving the car while wearing the alarm equipment and this made the test
persons feel free to leave their homes. This was in contradiction to the current alarm that, because of the limited range, made it impossible to go outside the house even to collect the morning paper and still feel safe.

The care assistant (personnel) and the nurse used a mobile telephone and software application as their technical devices. On the mobile telephone the map for locating persons was visible except when the test persons were indoors. They described that they could locate the elderly test persons during the test. “The GPS have functioned best, but the map could be more accurate”. One care assistant (personnel) commented the design of the alarm and stated that “I have noticed how important it is for the test persons that the alarm equipment is discreet and do not make any sounds to others outside the home”.

Mobility is a dimension of empowerment, which is prerequisite for elderly person’s possibilities to participate in society. Participation is involvement in life situation [21]. Elderly persons do not want technical products that characterises them as old and is connected with sickness and dependence. Using a traditional safety alarm can decrease the elderly person’s flexibility and hinder them to live a normal social life [16]. The result of this study of mobile safety alarm showed that the prototype tested made it possible for the test persons (elderly) to move around more and still feel independent and safe. The mobility was also limited in some situations by the design of the device. Perhaps this kind of mobile technology tested in this pilot can enable elderly persons to become more independent, self-determining and mobile. For the care assistants (personnel) and nurses the system also made it easier to find missing persons and therefore served as a decision support.

4.4. Positioning – An ethical dilemma

In analysing the findings a theme developed from the three categories To be supervised, To feel safe and To be mobile. This theme was “Positioning – an ethical dilemma”. While the elderly persons did not identify any hinder or dilemmas in being supervised, the care assistants and nurse did. The care assistants and nurse who participated in this pilot test thought that it was right to use this kind of technology and proper to position people as a tool within healthcare but after reflecting upon it from the elderly person’s perspective, they though it was unethical. Empowerment and aging can sometimes be a problem. Healthcare professionals not only must create prerequisites for empowerment they sometimes must take it away. Restricting freedom is always a dangerous step but sometimes it is best for all involved [20]. In this study the elderly persons seemed to be ready to offer the integrity loss that positioning is causing. Instead they felt they will get more freedom of movement and a feeling of safety. The elderly persons in this experiment reflected upon future use and visions about how the prototype would function as a fully developed product. They experienced limitations in mobility, limitations due to the design of the device.

The main task of MobiHealth was to deliver a flexible and dynamic service to patients (clients) and health care providers with a focus on optimal utility and usability. In this study usability includes accessibility aspects as well as subjective perceptions of how well the design of system or service enables functioning and well-being from the users perspective [18]. The results showed that all users could see a need for a mobile system and they had high expectations from the start. The system which was delivered and tested in field trials was not up to the expectations of the users. A lowering of expectation was noticed among the users (especially the elderly persons that acted as test persons), probably coming from a unrealistic belief at the start that the system delivered should be a fully developed, commercial system that was completely stable, which was not the case. Initial problems with technical support did not contribute to a feeling of confidence in the system; later on this support network improved and an environment of mutual cooperation towards development and integration created higher confidence.
Despite this initial disappointment, by project end all users agreed that a product of the kind delivered in prototype form would be very useful, if made more stable.

A question to be asked is whether in the future it is realistic to use distance monitoring in a community. When this question was addressed to the telecom company that was one of the Swedish partners in the MobiHealth project, the answer was positive (personal communication Kjelleryd 2006-08-29). He said that the permanent safety alarm system already has thousands of clients as users and that there are already an organisation answering these safety alarm calls in Sweden. If mobile safety alarms are introduced the technology is constantly improving and the bandwidth needed is already there. If the monitoring means that the alarm is going off if something remarkable is happening then it is no problem taking care of this. The problems with wrong alarms are already there and staff are used to handle this so if a mobile alarm will cause wrong alarms this will be solved (ibid.). Our opinion is that more research must be done around reasons for wrong alarm and also in what situations persons are using safety alarms. The safety alarms should also be constructed to fit individually to different needs. A mobile safety alarm should not be answered up by a medical doctor as first receiving instance. The main thing is that the alarm is taken care of at once and if intensive care or medical care is needed the call will be rerouted (personal communication Kjelleryd 2006-08-29). This would be in line with how some elderly persons would like this service to be [9]. A remaining problem also confirmed by representatives from the telecom companies is the problem associated with with battery supply. The existing batteries need to be reloaded too often and this decreases the safety as you need to be close to a reloading device (personal communication Kjelleryd 2006-08-29). This knowledge needs to be taken in to account by the developers of safety alarm technology. Another problem is related to the presently available sensors (size, weight and reliability of the electrodes). This makes us think that concerning the safety alarms, the most important sensor is a drop sensor and not a sensor for registration of ECG. The main objective when using a safety alarm is getting a quick contact that can put your need forward to the right competence needed.

There was a close interaction between researchers, technology developers and end-users during the whole study. The subjects were members of an advisory board of elderly persons that the community uses to interact and communicate with concerning all kinds of questions in the community when opinions from an elderly forum are needed. The evaluation questionnaire underwent a process of iterations with agreement from all participants from the technical, medical and evaluation side, which led to a fine-tuning of the methodology; from a large number of respondents from different fields to fewer respondents, and from a set of detailed questionnaires and interviews, logbooks, field notes and diaries, to just questionnaires and limited interviews and field notes. This was carried out in very close cooperation with trial owners and technical partners, in weekly meetings throughout the project. The process could be called “a development by users-process” with participation from all parts and freedom to express ideas, beliefs and ethical considerations. The elderly persons that were research persons in this experiment reflected upon future use and visions about how it would be as a ready developed product. The experienced limitations in mobility that came from the design of the device were their contribution in the developing of the prototype.

References

Reflections on an appreciative approach to empowering elderly people, in home healthcare

Anita Melander Wikman, Maria Jansson and Tony Ghaye
Reflections on an appreciative approach to empowering elderly people, in home healthcare

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This is a reflective account of aspects of our collective concern about developing and sustaining ways that might enable elderly people to feel more empowered to exercise their right of self-determination. This work has been undertaken in the context of home healthcare in northern Sweden. In this paper we put three espoused values ‘under pressure’ from client, professional (homecare staff) and research perspectives. We also explore three aspects of the pictorial landscape of homecare (see Figure 1). They are the notions of client participation, empowerment and ICT. The living data for this paper is drawn from two days of workshop activities with 35 homecare staff working in the municipality of Luleå, Sweden. The workshop was one outcome of the e-Home Health Care @ North Calotte (eHHC) Project of 2003–2005. We conclude with some collective reflections about: (a) the practice of participation (dialogue) and an intention of it (empowerment) in the context of clients accelerating service change; (b) how to reframe traditional views of the relationships between research and practice and, as a consequence, open up new possibilities for understanding how elderly people’s lived experiences can be a positive force for service improvement; and (c) the use of storyboards as an appreciative approach to enable frontline staff to reflect on their work, share and learn together.

Workshops for the non-oppressed

We hope Paulo Freire, were he still alive, would not be too disapproving of this term, the ‘non-oppressed’ (we thank Chambers, 2004, for first placing the phrase on the page). We were to work with professionals for two days, not elderly people. So we had an opportunity to invite them to creatively confront and re-examine their current ways of working. In the cooperation that developed during eHHC-project, we were asked by one of the heads of the Homecare Service in Luleå, and the head of case workers/process officers, to plan two days of workshop activities to explore home healthcare practice, with two groups of their staff. Planning took several months. At one meeting, with the writers of this paper, the challenges ahead began to crystallize in this way:

Anita: This is going to be fun, I think. But quite a challenge. The population in Sweden is ageing, so this means that we have to think hard about the quality of life of older people, their well-being, sense of independence. Generally how we support and assist them in their daily living. To do this we need to listen to what they have to say.

Maria: But what do you mean by ‘support and assist’? And who is the ‘we’?

Anita: I think we can understand ‘support and assist’ if we look at them in a broad way and relate them to quality of life. For example like the emotional support older people might need from others, to feeling safe and secure and in touch with their social environment. We also need to think about how older people might be assisted by non-invasive technologies, not threatened by them. What do you think Maria?

Maria: Well I feel there are a lot of assumptions made about the use of technology and the interests it serves. We know the Swedish Government’s ambition is to give elderly people the opportunity to receive care and services in a way that is naturally integrated into their own home and daily living. I know we agree that ICT support is essential within homecare. But we have to make sure that it’s the right kind of technology, doing the most appropriate things for and with elderly people in control, not just technology that does things to them.

Anita: We have to ask them what they want! We have to ask them what they feel their needs are, what they would like and want. What would wish for even! For me it’s about empowerment. How elderly people become more empowered and
how we, as professionals, health and social care workers, can respond most appropriately to what they say.

Tony: I guess this is fundamentally about daring to ask older people the question ‘what do you feel you want’, isn’t it? So how far do you think we could plan a workshop that embraces all of this given we’ve got a range of homecare staff, two different groups, for two whole days?

Maria: Well what are the key things? Empowerment, client’s being asked, involved. I suppose we could call this participation, client participation, ICT ...

Tony: Decision-making ...

Anita: Values ...

Tony: How homecare staff see their roles and responsibilities maybe?

Maria: So where do we go from here?

Tony: I know you’ve used storyboards before in your research work. Could we possibly think of using this method in our workshops?

After time we framed the challenges ahead of us like this:

1. To try to make each day’s workshop an ‘appreciative intervention’ (Bushe, 1998; Cooperrider & Whitney, 2005). This meant bringing to each group the most helpful example of an elderly person’s experience that we could find (see Olga’s story, Figure 5). An experience which would connect with the work of staff from the homecare sector.

2. To provide plenty of opportunities for teams of homecare staff to collectively reflect (Ghaye, 2005) and explore the discourses associated with client participation, empowerment and the use of ICT.

3. To give the ‘mind a hand’ by utilizing one aspect of visual methodology (Rose, 2001) namely the use of storyboards, to understand the social relations, professional interactions and subjective agendas of homecare staff.

4. To focus on the visual and participatory elements of meaning-making in order to better understand how the future (for Olga) unfolds from present family and professional relationships and patterns of power with homecare staff.

Establishing an appreciative disposition

At the start of each day’s workshop we invited homecare staff, some of whom knew each other well, to engage in two activities in order to acknowledge that an appreciative disposition (Ghaye, in press) towards each other, their clients and their service would be needed throughout the day. The three of us, as facilitators, had known each other for four years. Anita’s field is physiotherapy. Maria’s is information systems and Tony’s is educare. We began in a circle inviting homecare staff to get into pairs. We joined in this activity as well. Our invitation was:

Spend five minutes discovering something of the best about your partner. Use the time you have to discover something you most appreciate or admire in them. We will then be inviting you to share this appreciation with others in the room. So please check out with your partner, how far they are OK with what you will say!

This activity was a way of trying to positively frame the whole day. It was a way of (re)grounding relationships (Chaffee, 2005). What was shared was astonishing,
powerful, insightful, believable and humorous. One woman said, ‘I’ve been working with Sonia for 10 years and I still can’t find anything positive to say about her!’ When the slightly nervous laughter died down she said, ‘Seriously. I want to say that Sonia can do things that I can only dream about. She is sensitive, creative and very good at her work’.

The second activity was even more interactive. All staff had to work together to achieve success. Eight string circles, of different sizes, were laid out onto the open floor. Our invitation was. ‘When I say “now”, please choose a circle and go and stand inside it, making sure both feet are inside the circle’. For the first two rounds, there was more circle space than was needed for staff. They were spoilt for choice. Then for the next seven rounds, the instruction was the same, but one string circle was taken away each time. As choice diminished, homecare staff had to make key decisions about where they were going to stand and with whom. They had to be creative in the way they made sure both feet were inside the circle. When there was only one string circle left the instruction was, ‘Now there is no more choice. Come together here, making sure both of your feet are inside the circle’. Some rushed into doing what they had done before. But they soon appreciated that they had to act differently if they were to achieve the task. They had to listen carefully to what was said. There simply was not sufficient room inside the circle for doing things the same way. Creative discussion, active listening, trial-and-error, partnerships were all in evidence. When they solved the problem there was spontaneous applause, a valuing of a ‘job well done’.

Working from the ‘positive present’

We built on from appreciative circle work by encouraging homecare staff to reflect upon their own practice. We provided them with two coloured pieces of paper (see Figure 4). On the blue paper we asked staff to write down how they might improve in their work. On the yellow piece, we asked them to state something that they felt they were very good at, in their daily work. We encouraged them to forget being modest!

- ‘Sad face’ translation: Lowering the demands on myself and listening to my body. Stay at home from work when I am sick. Not do things that are other people’s work. Who owns the problem?
- ‘Happy face’ translation: Listening to and positively affirming staff/client. To be present in meetings with the client.

Figure 2. Appreciative pairs activity with homecare staff
Reflections on empowering elderly people

Figure 3. Appreciative circles activity with homecare staff

Figure 4. Reflection-on-practice sheets
In small groups of four–five people they then discussed what they had written on all the pieces of paper. Each group then brought one blue and yellow piece of paper to the front, something the whole group could relate to, and presented them to others. Table 1 sets out some of their responses. When each group had presented, we were able to ask the question, ‘Do any common themes emerge from these reflections?’

So, what did we learn from this activity?

Anita: Working together with people, both clients and staff, seems to demand but also create energy. It is important to create a culture at work that helps in this balance so that staff, in their ambitions to create good homecare services, will not be drained of energy. I learnt that if you listen and learn from others, from what they are good at, this can help you create a positive strategy at work.

Maria: I learnt that we are very good at talking about what we like to improve but not so good at talking about what we are really good at. Therefore, it is important that we can have workshops like this, appreciating each other’s knowledge and learning from each other.

Tony: I learnt that we need to develop reflective activities that are uncomplicated and enjoyable for frontline staff to engage with. Activities that are inclusive, participatory and as non-threatening as possible. Ones that don’t take too much time to do, but which have the potential for high yield. In other words through dialogue, we amplify, not only what concerns us, but what creates energy and joy in our daily work.

**How can we promote Olga’s health, well-being and independence?**

The rest of the workshop placed the experiences of elderly people, as health homecare clients, front and central. Prior to the workshop, the three of us co-wrote the story of Olga based on our first hand experiences. Olga is 79-years-old. We presented a hard copy of Olga’s story to homecare staff. They read through it individually and

**Table 1. Some reflections on practice by homecare staff**

<table>
<thead>
<tr>
<th>Something I feel I can improve in my work (blue sheets)</th>
<th>Something I feel I am very good at in my work (yellow sheets)</th>
</tr>
</thead>
<tbody>
<tr>
<td>.... To stop putting up boundaries in my work and not take over others’ responsibility</td>
<td>I am good at listening to my colleagues</td>
</tr>
<tr>
<td>Listen to myself, trust my own judgment</td>
<td>I am good at listening to people having a hard time</td>
</tr>
<tr>
<td>Delegate more</td>
<td>To listen! Reach out to people</td>
</tr>
<tr>
<td>Structure my work better</td>
<td>Empathy</td>
</tr>
<tr>
<td>Try to keep better documentation</td>
<td>.... To create a good atmosphere and be encouraging</td>
</tr>
<tr>
<td>I’m not sure!</td>
<td>I am good at organising my work</td>
</tr>
<tr>
<td>Express myself better</td>
<td>I am good at finding solutions to problems</td>
</tr>
<tr>
<td>Be able to handle conflict better</td>
<td>Planning &amp; structuring</td>
</tr>
<tr>
<td>Not trust people too much</td>
<td>Do not know!</td>
</tr>
<tr>
<td>Give feedback</td>
<td>I have patience in my work</td>
</tr>
<tr>
<td>Be able to plan for better cooperation between different kinds of professionals</td>
<td>I am able to stay calm in different situations</td>
</tr>
</tbody>
</table>
privately. We invited each person to try to identify up to eight significant incidents in Olga’s story. In groups of four–five they then discussed their thoughts. All groups spent time discussing the phrase a ‘significant incident’.

Meet Olga

Olga is 79 years old. She lives in an apartment on the 2nd floor in an old house with no elevator. She has been a widow for 2 years. She misses her husband, Ernst, very much. Olga has a best friend who lives 1 km away. She enjoys holidays with her friend. She has one daughter who lives in the South of Sweden. Olga was a teacher until 1990. She likes reading and plays the piano. Normally she is a happy and positive person. Olga likes to be independent and likes to take pride in how she looks. She attends church every Sunday.

But now things in her life are changing.

On Friday January 27th Olga slipped while she was shopping with her friend. She hit her head and badly sprained her ankle. She was taken to hospital and treated for cuts and bruises to her head and torn ankle ligaments. She also became confused. Olga cannot remember much about the incident or much about her hospital treatment.

She was sent home by taxi at 6pm. She was discharged so quickly there was no one there to meet her. The driver helped her to climb the stairs to her apartment. Homecare services were not there to assist her because they did not know that she had been discharged from hospital.

Olga spent most of the weekend on her own. She phoned her friend to bring some groceries and to help her wash. Her friend asked why homecare services had not visited yet. Olga’s ankle was very painful.

On Monday morning, at 9.30am, homecare services and a handling officer visited Olga. They discussed her situation and told her what services she could receive. Olga did not really understand what they were talking about. They were giving her a lot of information. Olga had lots of questions to ask them. But they had to leave at 10.30am. Olga really wanted to have a shower. But she was afraid she would slip. She decided to wait until a nurse arrived. But she did not know what time the district nurse would get to her apartment. No one seemed to know.

At 11.00am a physiotherapist and an occupational therapist arrived. Olga did not expect them. They started to move her furniture to make it easier for Olga to get around her flat. They talked to each other while Olga sat in a chair. They were very kind to Olga but she did not feel in control of what was happening to her apartment. She used to know where everything was. It was being moved for her own safety, but not with her consent. She felt out of control. They said her big bed had to go. This was the bed she and Ernst got as a wedding gift. The therapists stayed with Olga for 2 hours. They helped her to make some lunch before they went.
One hour later the doorbell rang again. Olga was resting. It kept ringing. She opened the door to a strange man. He said that he had come to fit a safety alarm for her. Olga did not recognise him and did not know what to do. But she felt powerless to say ‘no’ and let him into the apartment. He started work. Olga’s daughter had asked the man to install the alarm but had not told Olga about this. He quickly explained how the alarm worked. Olga was not really concentrating.

10 minutes later the district nurse arrived. Olga felt safer now because the nurse was there. She still wanted to have a shower but not when the man was working in her apartment. So she said nothing. The nurse checked her cuts on her head and looked at her ankle. Olga was told to rest her foot and to stay warm inside. She must not go shopping or visit her friend until she was stronger. Olga was now feeling depressed.

At 4.30pm Olga was alone again. The telephone rang. It was Olga’s daughter. She asked Olga lots of questions and wanted to know who was taking care of her. But Olga could not remember the names of everyone and got frustrated. Her daughter promised to visit her as soon as possible. But she had to wait for her husband to take time off work to look after the children before she could fly to Norrbotten from Stockholm.

In the evening Olga was visited by 2 friends from the church. They were very comforting and tried to cheer her up. But Olga was now very tired and just wanted to go to bed. She said goodbye to them at 9.00pm. By 9.30pm she was in bed and fast asleep. She did not sleep well.

One Month later

Olga has met many different carers and received lots of advice and information. All the people are very kind but Olga does not always agree with them. Homecare like to organize which days Olga will do her laundry and the best time for her to order groceries. Sometimes Olga feels frustrated because she wants to go to the shops herself and choose her groceries. She also wants to buy some new clothes and visit her hairdresser.

Olga is frustrated because she wants to get outside and have more exercise. She thinks this will help her ankle to get stronger but the nurse is concerned that she may injure herself again. Olga does not want to upset the nurse.

Olga has to see a physiotherapist 3 times a week. She travels by taxi. This is expensive and it is a difficult journey. Sometimes Olga cancels her appointment because she does not want to travel. Her friend visits her and rubs her legs but Olga does not want her friend to feel responsible for her.

Homecare keep Olga’s apartment very tidy but sometimes Olga cannot find things. She asks her daughter to put things back in their old place, when she visits. She hopes homecare will not notice.

The day now took on its own momentum. After much discussion about what the group wanted to regard as incidents in Olga’s story that were ‘significant’ in one way or another, they were invited to:
Reflections on empowering elderly people

1. Build a storyboard which showed each of their chosen significant incidents. (We provided staff with a straightforward definition of a storyboard as a series of drawings, showing the sequence of actions/incidents and people involved.) Our storyboard activity was informed by work in the field of visual methodology (Rose, 2001).

2. To name each incident and to do this, clearly and briefly, above each segment of their storyboard. This said something about what the incident was perceived to be about.

3. And below each segment of their storyboard, to label each incident with a dominant emotion. This would be something about how staff thought Olga was feeling as she lived through the incident.

We provided everyone with a range of art and craft materials, of various colours, dimensionality and textures. Paints, colouring pens and crayons were also provided. Each group had the freedom to choose how they wanted to build their storyboard. The last general instruction was, ‘In building your storyboard, please think about clarity and communication. When you have finished, we will invite each group to move around the room to appreciate others’ storyboards. So they need to be self explanatory’.

After the review of others’ storyboards we asked staff two questions.

1. What was the most important thing you learned from looking at other storyboards?

2. Now you have seen other storyboards, is there anything you would want to add or change in your own storyboard?

Interestingly comments fell into two broad categories, deficit-based and strengths-based. The former is about what staff felt was missing in their storyboards. This included comments about less than ‘good’ practice. For example, ‘We forgot to include that the daughter was worried’ and ‘We rumble in. We are so ambitious and we want so much to do a good job that sometimes we forget to take the thoughts and
feelings of the individual into account’. The latter is about what is right, good, appropriate and what staff would want to generate more of. For example, ‘We thought about wholeness. We wanted to know about Olga’s life before, the kind of life she had and to get away from starting with the disease’. As facilitators we learnt a great deal about the challenges of shifting a discussion from evaluation to valuation. We felt that not only does this bring a shift in spirit but also significant increases in more trusting and open relationships amongst staff.

For this paper, we have chosen one storyboard as an illustration of the work completed by one of the groups of homecare staff. This is shown in Figure 7. Underneath this is Table 2, which names each significant incident and how staff thought Olga might be feeling.

In terms of what matters most and to whom, we invited staff later to reflect again on Olga’s story and their storyboards. Specifically how far they felt Olga’s needs were or were not being met. This was the precursor to the development of a positive improvement plan. As facilitators we shared, with staff, 10 of Olga’s ‘wants’. They were:

1. I want to be able to walk.
2. I want to be able to look after myself.
3. I want to be involved in decisions made about me.
4. I want to be safe.
5. I want the help I need at home.

Figure 7. One group’s storyboard
Reflections on empowering elderly people

6. I want the best support I can get at home.
7. I want to feel free and be able to go outside, if I want to.
8. I want my family and friends to come and see me.
9. I don’t want to be in pain.
10. I don’t want to fall again.

In envisioning a better future, comments principally centred around participation, self-determination, empowerment, coordination of services, the role of ICT and active listening. For example:

We need to make sure that Olga feels like a real participant in the care chain (cooperation, compassion, being looked at, taking part in, etc) and respected. If we really respected her she would have had the opportunity to participate in her discharge from hospital (she was discharged so quickly there was no one at home to meet her) and about her pain. She should have been listened to. She, herself, should have had the opportunity to say how she was feeling. Someone needed to have asked her what she wanted or needed.

Putting our espoused values ‘under pressure’

Olga’s experience and the reflective learning workshop process gave us much to reflect upon. For example, how far staff felt able to live out, in their practice, three of their espoused values. These were:

1. To actively listen to and learn more about who we work with and care for, by systematically, collectively and publicly reflecting on our practice.
2. To utilize knowledge and insight, derived from such listening, to strive to improve the quality of life of elderly people in the north of Sweden.
3. To weave together, for the benefit of homecare clients, research and modern information and communications technologies so that they may actively participate in and manage their own care.

Table 2. What the storyboard in Figure 5 says

<table>
<thead>
<tr>
<th>Picture number</th>
<th>Our name for the incident</th>
<th>How we thought Olga might have felt</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Olga’s life before the incident</td>
<td>Olga is content and feels good</td>
</tr>
<tr>
<td>2</td>
<td>Olga slips</td>
<td>Olga is lonely and in pain</td>
</tr>
<tr>
<td>3</td>
<td>Olga is taken care of</td>
<td>Olga is dejected and thoughtful</td>
</tr>
<tr>
<td>4</td>
<td>Olga’s home is refurbished by the staff who have ideas of what is best for her</td>
<td>Olga has no control</td>
</tr>
<tr>
<td>5</td>
<td>Many want to talk</td>
<td>Olga is tired</td>
</tr>
<tr>
<td>6</td>
<td>Many want to decide</td>
<td>Olga feels trapped and does not want to trouble anyone</td>
</tr>
<tr>
<td>7</td>
<td>Olga wants to decide</td>
<td>Towards freedom and independence?</td>
</tr>
<tr>
<td>8</td>
<td>‘The well-being of Olga’</td>
<td></td>
</tr>
</tbody>
</table>
At the end of each day’s workshop we asked ourselves, ‘What have we learnt today?’ We reflected together for a couple of hours. We also asked staff to write down their responses to the following statements and to leave them with us. The first was about usefulness and was action-oriented. ‘As a result of today, the most important thing I am going to do now is …’ The second was about enjoyment. ‘How far have you enjoyed today?’ So what did we learn? What appreciations have been deepened, challenged?

**Mapping the ‘rough ground’ of home healthcare**

In his book *Educating the reflective practitioner* Schön (1987) uses the metaphor of the swamp and the high ground. ‘On the high ground, manageable problems lend themselves to solution through the application of research-based theory and technique. In the swampy lowland, messy, confusing problems defy technical solution’ (p. 3). Without doubt life in the swamp, with the ‘messy and confusing problems of practice’ can lead to powerful opportunities for learning. But we have a choice. To climb and stay on the high ground or to descend into the swamp. In the context of homecare in the north of Sweden we came to appreciate that there may be a more appropriate metaphor to illuminate what it was we were trying to achieve with homecare staff in order to further improve services for older people. It was Wittgenstein’s metaphor of ‘rough ground’, captured in the Derek Jarman film (1993) of the Viennese-born, Cambridge-educated philosopher Ludwig Wittgenstein (1889–1951). In essence the metaphor is all about ‘friction’. When we try to walk on slippery ice, where there is no friction, we are unable to do so. We fall over. If we want to walk, we need an amount of friction. In the film, Wittgenstein’s image of the ‘crystalline purity of logic’ is set in contrast with the ‘rough ground’ of what we actually say and do. As the film unfolds, a young man dreams of reducing the world to pure logic. It’s a dream of a world purged of imperfection and Schön-like indeterminacy. The world becomes a landscape of gleaming ice. But this world, perfect though it might appear to be, is uninhabitable because it is a landscape without friction. As an older person, the man begins to appreciate that roughness, ambiguity, error and indeterminancy are not imperfections. They are an important part of what actually makes things work! He begins to dig up the ice to uncover the rough ground. But he can’t sustain this. He yearns for the ice where everything appears radiant and absolute. Unable to live on the rough ground he ends up marooned between earth and ice, at home in neither! We learned that empowering elderly people in home healthcare meant that all involved had to discover and know what constituted the ‘rough ground of practice’. In the spirit of learning through reflection, we needed to confront the question, ‘How can we (the professionals) walk alongside older people, on this rough ground?’

So how far were homecare staff prepared to discover more of the ‘rough ground’ of their own practice? These were some of their written comments left with us.

*We want to continue to understand the clients with their needs, ask questions, and have a sensitive ear for their needs. Discuss at the workplace that the client always should be in centre.*
I will try to have a sensitive ear and focus on the human being.

In my daily work with clients and personnel/staff, comment upon and listen to what clients really want, ask him/her in more detail about what s/he means.

Homecare clients accelerating change

So how can client experiences, like Olga’s, help create changes in homecare services that matter to older people? We learned that we needed to critically and creatively reflect on what clients say and then try to respond positively to what we come to know. But we appreciate that this might sound like a seductive rhetoric. Too much ice and not sufficient roughness! Simply changing administrative procedures, in themselves, did not seem to be enough to improve the service. Similarly simply asking staff to work together, in even better ways, seemed not to tackle some of the underlying issues in Olga’s story. We began to sense that real improvement might only occur when accountabilities changed. So we began to think, ‘To whom do individual homecare staff feel accountable? To their clients, their profession, team leader or head of service? Some of these. All of them? To others? In what order?’

We came to more fully appreciate that much depended upon working with the triad of participation, empowerment and modern technologies.

Reflection 1. ‘Olga did not feel in control of what was happening’

Here we reflect briefly upon some aspects of client participation that arose in the workshops. It is a phenomenon that is multifaceted and includes experiences of participation as well as goal-oriented actions (Almqvist et al., 2004). Participation is influenced by many factors, particularly the interplay between the individual and the context in which the individual is embedded. To improve homecare services, it was felt that everyone involved needed to take participation seriously. In discussions, staff talked about loss of control as a significant incident in Olga’s story. The reason for Olga’s loss of control was explained by homecare staff as Olga’s lack of participation in the planning and decision-making processes of her homecare. One of the suggestions to solve the problem was that Olga ought to be participating in the process from the start. For example, when she was discharged from the hospital. One of the staff wrote down on a note, ‘I think Olga’s experience would improve if she felt that she was met as the leading character’.

Staff agreed that if Olga was listened to, she could tell staff how she wanted her care to be and what she needed. The challenge would then be to coordinate all involved in co-constructing, managing and delivering her care plan. The importance of actively listening to the client, when planning services, developed as the ‘positive core’ (Cooperrider & Whitney, 2003) of good homecare practice. But what does it mean to be a participant in shaping the service you receive from society? Does it mean that you can have your voice heard, that you are asked, or something different? During the workshop, participation became closely aligned with notions of how homecare services were actually experienced. About how the service was made understandable to clients.
which was linked with how homecare services were organized (Larsson, 2004). So much discussion revolved around how best to enable clients to exercise their right to participate individually in the planning and implementation of their healthcare. Also how improvement in homecare services could best address real client needs, taking into account, through a genuinely open and democratic process, their expectations about health and health care. A power-related issue was how the client’s voice and choice could decisively influence the way in which home health services were designed, managed and implemented.

Participants in the workshops came to a consensus around the importance of being active listeners to the clients’ needs and wishes and to see each as an individual. In the discussions the question ‘Who should be listened to?’ was brought up. ‘The relatives are steering. They want certain things very much. So whose needs should we listen to?’ The participants expressed a fear of being used or perhaps manipulated by clients’ relatives. Participation is not just a question of our right to something that is already there (the service) but also a question about who we want to be and how we want to create our own (future) identity (Larsson, 2004). Our post-workshop reflections were forward looking, focusing on ways of increasing the capacity of staff to continually listen to clients and how to create genuine, co-learning opportunities with them.

Reflection 2. ‘They said her bed had to go. Olga felt out of control’

Here we reflect briefly on the notion of empowerment (Rodwell, 1996; Duvall, 1997; McDougall, 1997) and the ways it is used in healthcare. Why? Because it is linked with the process of enabling people to increase their control over and improve their health. In this paper we are making an assumption that empowerment is ‘good’ and ‘desirable’. Having said this, we are aware that not everyone wants to be empowered and that the process of empowerment can be distorted by vested interests and different value systems.

In the section above we described one process that might enable Olga to gain more control over her situation. Appelbaum et al. (1999) suggest that relations that are empowering are relations that enable individuals to have a secure and valid sense of identity, meaning and reality. Additionally empowerment, as a process, not a commodity, has an ethical dimension (Stainer & Stainer, 2000) in this paper, because it embraces what’s right and best for Olga. In the workshop, the staff agreed that it was not ethical to take away Olga’s bed, although this was meant to give both her and the staff better space, while moving around in her home. Olga’s big bed was intimately connected with her emotional needs and her identity. So this issue is also related to self determination and autonomy and more generally related to social participation (Renblad, 2003). Self-determination and autonomy, as dimensions of empowerment, are ways clients can retain some sense of control over their lives. In ‘a helping partnership’, people are enabled to choose, to take control over, and make decisions about, their lives (Rodwell, 1996). This process values all those who are involved. In discussions at the workshops, staff said that clients do not necessarily express their wishes. ‘Few say: “I want…”’. You have to create a dialogue and read between the
Reflections on empowering elderly people

lines’. This was also found in the research by Wikström (2005). Many clients have wishes and needs that they never bring forward to staff. The client–carer situation often quietened them. Sometimes quietness has to do with a lack of knowledge of what services are available. Olga has to make her needs and wishes explicit and staff have to make their homemcare services understandable. The challenge is to create an appreciative space where Olga feels free to express her needs and wishes and staff listen openly. In building their storyboards, staff learned from each other that you have to look for wholeness and learn about the kind of person Olga was before the accident. ‘We want to add the loss of her husband. Her independence before the accident. She wanted to take a walk. Her own wishes’. The past is clearly not irrelevant.

In many first world nations, lifestyles and opportunities for elderly people are continually changing and expanding (Bond & Corner, 2004). Social activity is seen as a prerequisite for quality of life, even though this reduces with age because of illness, impairment and disability. Quality of life can be defined in many ways. One way of defining it is that it refers to the possibility and the right to be active, to participate, to belong and to be treated as an equal (Renblad, 2003). The factors that older people highlight as important are the same as other groups; their own health, independence, mobility, emotional wellbeing, material circumstances, their home environment, social contacts, religion/spirituality, leisure activities and their relationships with family and friends (Bond & Corner, 2004). Arguably it is very important to enable older adults to have a positive view of themselves, sense of self and identity, a good feeling of self-control and spiritual well-being. These impact on relationships with family and friends. Keeping the ability to be physically active influences our likelihood to stay healthy (Fiatarone Singh, 2004). Research shows that regular physical activity can minimize the physiological changes that aging leads to, maintains psychological health and well-being, increases life length and decreases the risk of several of the most common chronic diseases (Fiatarone Singh, 2004). We collectively reflected on better ways of listening to Olga’s wish to be more active and mobile and together with her, construct services that promote this. One way to support the process of empowerment is the use of information and communication technology (ICT). Arguably the right to information about the nature of available services, is of the utmost importance for self decision-making and supports the principle of more empowered individuals.

Reflection 3. ‘The man came to fit the safety alarm. Olga felt powerless to say no’

Here we reflect briefly on the notion of the roles of modern technologies. Information and communication technology (ICT) is often at the centre of today’s workplace transformation (Bjører et al., 2003). The use of ICT in healthcare, and homecare specifically, is seen as a way of improving care. Using ICT in this context has a potential to provide care at a lower cost and, at the same time, enhance the quality of care for people with illness and disability, in their home, in the future. The claim about more cost effective care is still to be proven (Proposition 2004/05:175). Through an increased use of forms of ICT, it is expected that people will have more possibilities to take an active part in their own healthcare. In the context of living in the north of
Sweden, technology-supported, distance-spanning home healthcare is obviously very important. Many see this new technology as a tool for empowering elderly people. The general line of thinking is that with better communication with the care givers, and more and better information about their own condition/s, it will be more possible for older people to stay at home and retain a good quality of life.

Different assistive technologies (ATs) that clients use in their homes already exist (Miskelly, 2001). The safety alarm that was installed in Olga’s home is an example of a common assistive technology in elderly care. Olga was upset because she had not been participating in the decision to install it. Instead it was her daughter that wanted it and ordered it, maybe for her own safety (cf. Melander-Wikman & Jansson, 2006). There are several projects where ICT has been used to provide older people, their family and carers, with information, education and support in relation to their caring situation, particularly to improve client independence and autonomy (Magnusson & Hanson, 2003; Sävenstedt, 2004). A key question is, ‘In what ways could ICT most usefully support Olga and her daughter?’

In the near future many professionals in Swedish homecare will reach retirement age and new staff must be recruited. To meet service demands, the implementation and use of ICT, as a support for caring work, is increasing (National strategy for e-health: Swedish Government Offices, 2006). The government in Sweden therefore hopes that new technology will make work in homecare more attractive and efficient. Until now, due to long traveling distances and the nature of the work, contacts and information flows between different caregivers has been problematic. ICT might be the solution to these challenges. It is regarded as a necessity by many (Björer et al., 2003). In the workshops, staff talked about a need for ‘care planning. Co-operation between actors around services. … Follow up of services …’. and so on. If homecare staff had been able to use ICT in their work more effectively, the coordination of services for Olga, might have been better. Staff felt there was room for improvement around the sharing of information, by different occupational groups and that this should also have involved Olga.

In Sweden there is an increasing emphasis on client-centred elderly care services. Within this, there is an implicit assumption that technology will be supportive of this. In the National strategy for e-health in Sweden (Swedish Government Offices, 2006) things are joined up thus:

A feature of ongoing development work is the gradual transformation of the system’s relationship to patients. In the past, the emphasis has been on improving and enhancing the efficiency of care services on the basis of assessment by care professionals of how an efficient operation should be run, and on an organization-based view of efficiency and appropriateness. The new approach, gradually adopted over the last few decades, is based on citizens’ and patients’ actual needs and emphasizes the value of active patient participation. Development and reform measures must first of all be assessed on the basis of whether and how they help improve conditions for those affected by them. (Swedish Government Offices, 2006. p. 7)

An unfinished question in the workshop was, ‘How can ICT be used by clients and staff in a way that best supports them both and in relation to the client’s particular
living situation? Since the late 1990s increased emphasis on client participation can be seen as a means of modernizing services, at least in the case of the Nordic countries. Governments are committed to create public services that are coherent, accessible and responsive, rather than organized for the provider’s convenience. The emphasis on client participation, means that clients need to know their rights and their responsibilities and feel secure in front of authority, in the form of healthcare workers. Clearly much more work needs to be done to see how client participation, empowerment strategies and ICT can be woven together in the pursuit of service excellence. So what else were we learning? At least two fundamental things. First, that improving home healthcare services might depend upon the quality of the interaction between research and practice. An openness to the potential for research to inform and transform practice, and vice versa. The issue is not simply one of research utilization. Secondly, clients accelerating change may depend upon the sincere, genuine and sustained use of the ‘four practices of open space’ (Owen, 1997). In summary these are:

1. **The practice of opening.** This is about opening hearts. About creating opportunities to really listen to and learn from client experiences. A willingness to be open to the possibility that ‘we’ don’t always know best!
2. **The practice of inviting.** This is about inviting connection. About creating spaces to explore how client experiences help achieve a vision of high quality homecare services.
3. **The practice of holding.** This is about supporting collaboration. About how we work together to support desirable change and improvement. Providing space and time, maybe for further workshops, where clients and professionals can work and learn together.
4. **The practice of practice.** This is about making a difference. About moving from rhetoric to action. About seeing things through, sustaining, realizing and making talk of better services, real. What is crucial in this practice is that those who can, acknowledge and reward those who are working towards building a better service.

So what did homecare staff feel about taking action? What were some of their responses to, ‘As a result of today, the most important thing I am going to do now is …?’

- I will take with me the experience about the equal importance of the team’s different components and also try to listen even better to the clients I meet in order to try to understand the actual need and be able to do an even better job.
- I hope that I will be able to pass the whole day on to my staff. I wish that they also could have a day like this. I hope that I won’t forget to see the “whole person.”
- I will talk with my two co-workers and prepare us for the project Client Participation in Homecare Service.

**Systems thinkers in action**

During each workshop there was much talk about connecting, integrating and joining up homecare practices for the benefit of clients. Olga’s experiences generated a lively
debate about how best to co-ordinate services around her needs. Also discussions about the content of the storyboards revealed how we sometimes tend to focus on ‘our bit of a bigger process’. Collectively we learnt that if we want to improve services for homecare clients we have to improve our understanding of homecare, not just as a service, but as a system. Since a system consists of parts that are related to each other, if one part in the homecare system changes, the whole system will be influenced by the change (cf. Checkland and Scholes, 1990). We realized that improvements in services might require systems solutions (NHS, 2005).

Soft Systems Thinking is essentially the science of how things are connected. It is a way to deal with a world that is complex and constantly changing (Checkland & Scholes, 1990). A soft systems approach gives a holistic perspective that cannot be defined simply in terms of its parts. Often we have to look ‘upstream’ and across the different elements of a service to understand the ‘problem’ in a specific part of it. Further, in soft systems thinking, system models are regarded as models relevant to explore what we, as people, perceive as reality, not abstract models of the world (Checkland & Holwell, 1998). Thus, soft systems thinking is based on interpretative principles. They take into consideration that people have various perspectives on the world. Moreover, in a soft systems approach, design of ICT is seen as a learning process, where various individual perspectives are formulated and organized into systems. These perspectives are then debated, communicated and negotiated with the purpose of reaching a common understanding, as well as a shared interest for change. These changes should be both feasible and culturally desirable (Checkland & Scholes, 1990).

If we want to design ICT that supports homecare staff and their clients, we must find out the meanings they attribute to their perceptions of the world. Then we can understand which action or actions they regard as reasonable and purposeful. To support homecare staff and clients with technology and to create information systems that serve their actions, we must first define the system of homecare together.

Senge (1990) popularized the notion of systems thinking in bringing about effective change in organizations. More recently the work of Fullan (2004) draws our attention to the possibility that, despite what Senge claims, ‘we have made no gains in conceptualizing, let alone promoting, systems thinking on the ground’ (p. 8). Fullan believes that little has been done to promote the ‘in action’ part. He goes on to assert that what is needed is ‘systems thinkers in action’ (p. 15). Essentially these are people who can see and promote the interconnectedness of practice. So we began to formulate this question: ‘How can we enable homecare staff to develop a “literacy of the system”? One possible way to do this we felt was to create opportunities for work-based learning where staff interacted with others, beyond their own immediate work situation.

Appreciating practice and the practical

The reflective learning process embedded in the workshops was about and for the improvement of practice. Practice as a fascinating, sometimes frustrating, complex
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lived reality for homecare staff. The centrality of storyboarding engaged their perceptiveness, passion and eloquence. It also developed their relational knowledge as staff co-operatively worked to relate Olga’s experiences to their own working practices. In this way the workshop aligned itself with Dewey’s (1933) position of philosophical pragmatism and his concern with interaction, reflection, experience and interest in community and democracy. More specifically with his view that experience is what knowledge starts from.

We feel we could do more to make our workshops a better form of appreciative inquiry (Cooperrider & Whitney, 2005). In other words we don’t begin the day by asking staff, ‘What’s the problem?’ If we do, we simply focus our energy on what we want less of and work (like car mechanics) to ‘fix’ things. Rather we have learnt that if we begin by trying to focus on what we want more of, even if it currently only exists in small quantities, then we create opportunities for different kinds of conversation. In turn these open up new possibilities for action. Moral courage (Kidder, 2005), leadership, commitment and persistence are all required, together with learning through reflection. An appreciative approach to empowering elderly people in home healthcare needs all those involved to be able to stand back occasionally from the busyness of daily life and enrich their understanding of health and well-being. Enrichment is about attending to how we feel just as much as to what we do. Without this kind of consciousness and the courage to talk about it (maybe through workshops of the kind described in this paper) the practices of staff, and the experiences of clients, run the risk of being misunderstood. Or worse they are regarded as trivial and of little consequence. Almost meaningless. It would be like reading Shakespeare’s Hamlet without the Prince of Denmark ever uttering a line!

One final thought. We now understand more richly that all learning through reflection is not fun! But trying to have fun is important. As Paul Everett (2006) says:

- Fun creates Enjoyment.
- Enjoyment invites Participation.
- Participation focuses Attention.
- Attention expands Awareness.
- Awareness promotes Insight.
- Insight generates Knowledge.
- Knowledge facilitates Action.
- Action yields Results.
(Therefore, Fun is results-producing)

Consent

Our intention to place our experiences of facilitating the workshops, in the public domain, was discussed with homecare staff. Informed consent was given orally, by all participants, to use the material produced during the workshop. This provided us with the ethical approval to cite from their individual notes, group discussions and the storyboards they created.
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Participation in IT-design: Reflecting on the Performance in e-Home Health Care @ North Calotte

Maria Jansson, Christina Mörtberg and Anita Mirijanddotter
Participation in IT-design: Reflecting on the Performance in e-Home Health Care @ North Calotte

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ABSTRACT
Participation and the contribution of participatory design methods and techniques are explored in the context of a Scandinavian Home Healthcare project. The project was undertaken during 2004-2005. Its aim was to introduce mobile ICT equipment to health care workers in order to improve planning, including quality and precision of information exchange. The study was designed according to Participatory Action Research and Participatory Design principles. Methods employed in the project were observations, interviews, future workshops, and story boards to actively involve different stakeholders. The experience of the project indicates that, although the rhetoric was that of a participatory design and research project, participants are not equally regarded in terms of experiences and knowledge of the actual practice. Assumptions about technology influences development and implementation at the expense of the actual care activity. Further, participation and participatory design techniques used in the project demonstrate the complexity of home healthcare and the necessity to involve all the different occupational groups involved in the care of the client. However, organisational boundaries reinforced shortcomings in cross-functional and cross organisational cooperation. A final conclusion is that time for collaborative and collegial reflections is necessity to support the learning process.

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INTRODUCTION
Participation and user involvement in design of information technology has been in focus in participatory design (PD) and user centred design since many years. Democratisation of working life and the intention to democratise the design process, have been dominant discourses in the Scandinavian tradition of PD (Bjerknes & Bratteteig 1996, Bratteteig 2004). However, the design process is not static; it has changed since the days of the Florence (Bratteteig 2004) and the Utopia projects (Ehn 1993) depending on a variety of factors. For example globalisation, more educationally qualified people in a variety of positions, more IT skilled people including qualified knowledge about IT systems and technologies, the convergence of multimedia, computer and communication technologies, the use of standard software and systems, and so forth. Consequently multiple discourses of the user exist and are discussed at the same time. Kanstrup and Christansen (2006) discuss some discourses such as the support to those in the margins or those with a weaker position (Lindquist 2007), specialists of their practices, and become means to inspire the designers (See also Lindquist 2007).

Design as a work practice thus takes place in negotiations and translations between the involved actors. Various people have different interests to participate in IT design projects and different actors also interpret the situation differently (Buchiarelli 1995, Bratteteig 2004, Bodker et al. 2004). Bratteteig emphasises that user participation will increase the likelihood of implementation and quality and consequently the system “durability and robustness” are also increase (Bratteteig 2004, p. 140). Another argument for an increased efficiency in implementation and an improved quality is that if users are represented in the design project, the final system might be in accordance with their expectations and needs (Bodker et al., 2004). It is not only involvement and participation that have been in focus, but also the development of collaborative methods and techniques. That is, various methods and techniques such as observations, interviews, future workshops, scenarios, prototypes, have been developed and used in order to get first hand experience of an application domain by genuine user participation (Bodker et al., 2004). Many of these methods are very much based on language, thus the ability to articulate one’s thoughts. Mostly it goes well but sometimes participants become silent and the silence might be a way to enact their resistance in participatory design projects. It is therefore important not only to consider what is
said but also what one finds in the silences (Mörtberg & Stuedahl 2005, Berg et al. 2005). On the other hand methods are not once and for all given because research with an aim to develop PD with new methods has also been conducted. That is, probes and interactive threads are developed and used (Lindquist et al. 2007).

The creation of a shared understanding of the domain in focus is also emphasised in participatory design projects (Bratteteig 2004). Even if the intention is to create a common ground in order to understand each other it is not always easy since those who are involved have different lived practices based on different logics or different design conceptions (Gregory 2000). Hence participation is not only about users but also about all stakeholders involved in a design process. Participation is not unproblematic although the intentions are to create equal conditions (Star & Strauss 1999, Elovaara et al. 2006). We then question: do all the participants in a design or research project participate on equal terms or are all participants’ experiences and knowledges considered as equal?

This article focuses attention on various aspects of participation in a research and development project, the Interreg IIA\(^4\) project e-Home Health Care @north Calotte (eHHC) that took part during 2004-2005. The project was conducted in the northern parts of Finland, Norway and Sweden and was organized as coordinated trials to develop and test solutions for mobile information exchange among healthcare professionals. In this article we focus on the Swedish field trial of the eHHC project. This trial aimed at enhanced planning and improved quality and precision of information exchange in homecare services by introducing mobile Information and Communication Technology (ICT) equipment to professional health care workers.

The article is structured as follows. In the next section the frame of reference for the project as well as this article is presented. This is

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\(^4\) Interreg was founded 1990 by the European Union. Interreg is a community initiative whose objective is to ensure that national borders do not form a barrier to Europe’s balanced development and integration. The third programme period, Interreg III started 2000-2006 and included three strands A, B and C. Interreg IIA stands for crossborder cooperation.
followed by sections in which the e-Home Health Care @north Calotte project and the Swedish key participants are presented including PD methods when developing, implementing and conducting the field trial. Finally, the article ends by discussions of issues found in relation to participation in PD projects and some concluding remarks.

FRAME OF REFERENCE
The eHHc project was based on Participatory Action Research (PAR), which has its roots in Action Research (AR), and in Participatory Design (PD). Action Research (AR) is traditionally defined as an approach to research where the research is based on a collaboration and problem-solving relationship between the researcher and clients and where the aim is to both solve a problem and generate new knowledge (Coghlan & Brannick 2001). Action Research is more a perspective on research than a collection of principles, with distinct methods and theories (Nielsen & Svensson 2006). It is also a form of social research that involves people in a process of change. The process of change is based in organisational, professional or community action (Winter & Munn-Giddings 2001). AR has developed into several different forms; however they all recognise that AR is a cyclical process (Allen 2007). A cycle consists of one or another of the stages; Diagnosing, Action Planning, Action Taking, Evaluating and specify Learning (ibid.).

While embracing the perspective of AR, Participatory Action Research (PAR) emphasizes involving practitioners to be both subjects and co-researchers (Agryris & Schön 1991, Whyte 1991). PAR aims at constructing an environment, where participants get and give valid information and are able to make free and informed choices. The freedom to make choices also includes whether to participate or not. The constructed environment also makes the participants generate internal commitment to the results of their investigation (Agryris & Schön 1991).

Tensions between those involved and power relations are not unknown in action research since researchers and practitioners are likely to come from different cultures and may have different objectives. However, asymmetrical power relations are not well argued
in action research projects. The process of action research demands that choices needs to be made regarding how power is balanced in various ways between the collaborators (Avison et al. 2007). However, an explicit discussion of power structures is seldom found in AR reports (ibid.).

An approach that embodies power challenging potential is Participatory Design (PD) (Beck 2002). Democracy and user involvement is the base for PD and participation is a key element in the efforts to achieve democracy (Schuler & Namioka 1993). Another distinguishing characteristic is Kanstrup and Christiansen’s (2006, p. 328) argument that phronesis is deeply rooted in the Scandinavian systems design tradition. They explain it in the following way: “ […] designers’ strive to serve the common good and avoid harming peoples’ possibilities to develop a life of their own”. Empowerment, thus how people might control their everyday lives, can also be found in the Scandinavian tradition of participatory design even if the concept has not been used explicitly.

According to Ehn (1993) not only productivity and product quality should be the goal of the design. The Scandinavian approach to systems design is action oriented and the design should also be work oriented with democratic participation and skill enhancement. In the design or re-design of information systems, those who work in the practice where the system is or will be used should be involved in the design process (Bratteteig & Stolterman 1997) in order to produce feasible designs that help to improve their working lives. PD is a process of mutual learning, where users and designers learn about and from each others (Bødker et al. 2004, Ehn 1988, Bratteteig 2004). Participatory and collaborative approaches have also been discussed in developing countries; the Health Information Systems Programme (Puri et al. 2000) is one example and the participatory approach Participating Rural Appraisal (PRA) is another (Rydhagen 2002, Elovaara et al. 2006).

Knowledge questions and whose knowledge is it that counts in design, have also been in focus in the Scandinavian tradition of PD (Markussen 1996). A design project creates knowledge of present work practices and knowledge gaps such as perceptions about, technology, language, jargons and terminologies are resolved in cooperative collaboration
Knowledge is not the same everywhere but is produced from situated and partial perspectives where, culture, history, and places intersect (Jansson et al., 2007, Elovaara, et al., 2006, Bratteteig 2004). When we reflect on our own and other’s experiences, knowledge increases and is highly contextual. We create and recreate knowledge continuously through our actions and through reflective thinking. Knowledge is often thought of as the property of individuals, but a great deal of knowledge is possessed and produced collectively. When people work together such knowledge is created. Experience and knowledge are therefore always located, partial, and situated (Haraway 1991, Suchman 2002).

THE EHHC PROJECT

In Sweden as in many other developed countries and developing countries the elderly population is increasing, a phenomenon called ‘population ageing’ (Brown 2003), and the working population is decreasing. In Sweden, for example, the prognosis for 2018 is that the demographic group, people older than 65, will be 2 million people out of the total population of 9 million (SCB 2006). A big part of care and rehabilitation following a disease has moved from the hospital to the private residence (SOU 2004:68). At the same time the number of professionals working with elderly care is decreasing. In the near future many professionals will reach retirement age and new personnel must be recruited. Information and communication technology is a means to offer services to citizens and maintain the Swedish welfare state (Jansson et al. 2007).

The eHHC-project that took part between January 2004 and December 2005 was proposed based on this background and was succeeding other projects within this sector. Of particular interest for the focus of this project and its Swedish trial, was a pre-project termed eHealth in the Northernmost Regions of Europe. This pre-project, also funded by Interreg IIIA, was carried out between August 2002 and March 2003. It provided a thorough feasibility study for the eHHC-project reported in this article, and was carried out by project partners in the northern parts of Finland, Sweden and Norway. The main aim of the pre-project was to find the emerging obstacles and needs in
home healthcare and to define a common development topic in the North Calotte region. Three national workshops and one transnational workshop were arranged with the participants from various kinds of organisations from the home care sector (private companies, research and educational institutes, hospitals, social and home healthcare units, and other organisations). The common development topic and the development plan were worked out in these workshops and formed the basis for the research project e-Home Health Care @ North Calotte (eHHC), with purpose stated as: to offer customer-oriented empowerment-focused quality service provision in the right place at the right time, including competence-building and empowerment.

The eHHC was formally organized in four work packages (WPs): WP1. Project Management, WP2 Information and Communications in Homecare, WP3 Methodology for Empowerment, WP4 Competence Building. Each WP was lead by a WP leader that had overall responsibility for the work package covering all sites and countries. Every WP had a project e-meeting every other week where the development of the specific work package was discussed. The meetings were also a platform for sharing knowledge between the project participants in the different countries. In the project it was also considered important to meet physically and face-to-face meetings were held at least twice a year and alternated between the countries (see top of Fig. 1).

The main activity of the eHHC-project was organized as coordinated trials in five municipalities of northern Finland, northern Norway and northern Sweden. These trials were part of WP 2. Every country conducted its own trials in which developed technology and services were implemented and tested. The common basis of the trials (i.e., the outcome of the workshops in the pre-project) was to solve the problems of getting updated information on the present situation of the care of home healthcare clients, including services and security situations, and get the information in the right place and at the right time. Additionally, by solving this problem, the managerial planning of the care would be alleviated.

The Swedish trial focused on developing, testing, refining and evaluating an automatic planning system and a handheld mobile computer. Integrating these two artefacts would provide homecare
workers with current and complete data and thereby would meet the intention to increase the quality of home care service.

The devices and their integration would enable:

- planning of work becoming more effective;
- reduced traveling time, which, in turn, would allow that client contact persons to serve the client more often;
- substitute staff to take care of clients in support of the regular staff considering individual client’s preferences and health conditions; and
- better agreement between what is expected and what is delivered.

Thus, work tasks and redistribution of work task were supposed to improve since work tasks and redistribution of work was sent to the mobile computer and therefore could happen “on the fly”. Additionally, the handheld device was also a mobile phone which would enable quicker contact with primary care and other care givers involved in the client’s home care.

By mapping the needs of the elderly living at home and by developing and testing the solutions of mobile information exchange in the North Calotte region the trials were aimed at facilitating home healthcare professionals, including patients’ and clients’ and their immediate family members’ empowerment and competence. Each municipality in the project had their own trial to test in the home care of elderly people. In each trial there was a group of ICT and home care experts who were responsible for the planning and implementation process of the trial.

PARTICIPANTS AND ACTIVITIES IN THE SWEDISH TRIAL

In Sweden the project was conducted within the Centre for Distance-Spanning Healthcare (CDH5) as the leading partner. The project group

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5 The Centre for Distance-Spanning Healthcare (CDH) at Luleå University of Technology focuses on applied R&D projects, company development/‘spin-off’ companies and international excellence in the field of distance-spanning healthcare.
in Sweden consisted of the manager for CDH and a project leader, representatives from business firms, home- and healthcare, representatives of Senior Citizens’ organisations, and two PhD students (whom one is a co-author of this article). Project meetings were held physically every other week in Sweden, see Fig. 1, and all participants in the project had the opportunity to participate if they wanted to.

**Participants in the Swedish team**

Below the key participants in Sweden are listed including their role in the project:

- **CDH manager (man):** responsible for the Swedish part of WP1 and by that the Swedish part of the whole project.
- **Project leader (man):** responsible for the Swedish part of WP2 and leader of the field trial.
- **Two doctoral students (women):** one was WP3 leader for the whole project and the other for evaluation of the Swedish trial.
- **One manager from the municipality (woman):** responsible for the Swedish part of WP4
- **Two systems designers, A and B (men):** consultants from business. Systems designer A started his own business during the project (2005-03-01). Consequently he could not spend so much time in the project as was planned. However, he did not leave the project completely but a new consultant from the business firm, systems designer B, was brought into the project in order to support systems designer A.
- **Head of the care team (woman):** responsible for running and developing the care team, including monitoring that all care tasks approved by the municipality are carried out. Additionally she manages and allocates work tasks to the home care service staff.
- **Care team members (three men and eighteen women):** The team members, care assistants, carry out medical interventions such as dosage of medicine, bandaging of sores and dispensation
of insulin on the instructions of the primary care staff. Twenty-one care assistants were involved in this trial, of which nine used the handheld field devices and the remaining twelve used paper printouts. Two of them (women) represented the larger group of the team in the design activities, and they cooperated more closely with systems designer A.

- District nurses: medical responsibility for the client, dispense the tasks of medicine dosage, sore bandaging and insulin injection to homecare personnel. Two district nurses were in possession of the handheld devices during the project.

- Rehabilitation personnel: those employed by the municipality are responsible for providing occupational assistance to the care staff while those employed in primary care are responsible for the rehabilitation of the client. Two rehabilitation personnel (women) at the municipality used one handheld device between them, while three personnel (two women and one man) in rehabilitation at primary care shared one handheld device.

- Alarm personnel at the care centre (women): twelve staff members had access to the information in the automatic planning, and could make use of the information when answering upon alarms.

Additionally, enterprises, managers and the IT-department in the municipality, case officers who investigate the clients’ needs for care and service, and care assistants working night shift participated in the future workshops but are not in focus in this article. The Board for Senior Citizens represented an additional stakeholder group at the municipality that provided input to the project.
Figure 1. Meetings and activities in the eHHC-project

The figure illustrates project meetings with stakeholders and frequency. At the bottom of the figure the activities of the project are delineated and methods employed for interacting with the various participants in the Swedish team.

**Methods and Activities in Sweden**

A range of PD methods and techniques were employed in the Swedish trail such as interviews, group interviews, future workshops, storyboarding, questionnaires, and observations. (Jungk & Müllert 1987, Greenbaum & Halskov Madsen 1993, Bødker et al. 2004) The initial purpose with using a variety of methods was to create a basis for mutual understanding, learning and participation among the participants since the trial was built on a PAR and PD perspective. Another aim with using the different methods was to gain an understanding of whether the work practice changed by the implementation of ICT. Therefore, interviews, group interviews and observations was performed before and during the trial.
Questionnaire and Interviews

A questionnaire was produced and sent out to all participants in the project with an aim to acquire information from the home care staff on their level of skills in using ICT-tools and their need for training, as well as their perceptions of options in using those tools in the work. Information on the opportunities to use ICT tools was also gathered from home care clients and from their relatives and close persons. All these parties were asked about their opinions on information exchange and cooperation in home care, and about their abilities to influence the care and services. The response rate was very low in Sweden, thus, the outcome could not show the state of the art.

Future Workshops

We decided to conduct a workshop with the homecare team, in order to get to know what these occupational groups regarded as obstacles in offering good care and service for elderly and how they envisioned their future work in relation to the aim of the project; thus, what did they wish for, what were their needs? Future workshops were found suitable since it is a recommended method when an organisationally large group participates in a design project (Jungk & Müllert 1987, Greenbaum & Halskov Madsen 1993, Bødker et al. 2004). Future workshops consist of five phases; preparatory, critique, fantasy, implementation, and follow-up. The performance of the future workshops was documented and the written results were brought back to the different groups with the possibility to make changes or corrections; so called member checking (Lincoln & Guba 1985).

Six future workshops were conducted during the project and the first workshop was held with the care team’s twenty-one care assistants including the head. The results from the first future workshop shed light on the work practice and how care assistants’ visions also included other professionals’ involvement in the care of the client. These included all professionals involved in the care and services of the clients, i.e., case officers, district nurses, care assistants answering up on safety alarms, care assistants working night shifts (night patrol), and rehabilitation personnel.

Story Boards
Based on the results from the future workshops storyboards were created together with professionals. Storyboards can be used when designing new tools and they can also be a first technique to sketch plans for future applications (Greenbaum & Halskov Madsen 1993). They were created together with professionals from different occupational groups, identified through the workshops. The intention was to get the whole picture of client’s interactions with health workers in order to create and provide future services. The storyboards outlined in detail ideal scenarios for delivering and maintaining the home care service to the client. They were meant to function as a tool for the personnel to describe context, work practice, and, consequently, specify requirements for the systems designers (Bødker et al. 2004). The Future workshops and storyboards (see Fig. 1) were conducted before the field trial.

**The Mobile Service - Implementation, Fine-tuning and Conducting the Field Trial**

In April 2005 the integrated system was installed and tested; the overall system was fine-tuned and bugs were fixed. At the same time, evaluation procedures developed throughout the project were implemented prior to a pre-trial and interviews were carried out. Planning of homecare comprises many different variables related to the preferences and health conditions of the client, as well as considering different competences among personnel, types of tasks and the question of more than one staff member being needed, and timeframes in which tasks are to be performed. The implemented automatic planning system for homecare distributed the plans via mobile connection to staff members’ hand held device, or via paper printouts. The handheld device also functioned as a mobile phone.

A pre-trial phase was carried out to prepare the home care team for a fuller deployment later in the year. The system was tested and enhancements and refinements were made to its performance. From the final week in June 2005 a built-in hold began due to the Swedish vacation period. No trials were conducted during this period, although the technical support staff continued to monitor the systems and provide more fine-tuning. Following the vacation, it was considered necessary to conduct a second (refresher) training phase starting in mid-August, in preparation for the full trial phase; in both cases this education took place face-to-face and also by means of a specially-
produced manual. The full trial phase ran from late August to the end of November.

All health workers involved in the Swedish field trial (the home care team, district nurses, rehab personnel) provided an input into the design phases of the integration process, contributing valuable insight into how the artefacts should be structured and function, what kinds of information needed to be exchanged and stored and according to priority of information, see Fig. 1, for an outline of meetings and activities.) and in general how the trial would ultimately happen.

In January 2006 a closing meeting was held. In this meeting all the participants were asked to present opinions about the most positive things that were achieved by activities within the project and other issues they wished to raise. The participants were also asked to present the most important things that they would like to see improved in order for all to benefit most fully from the results of the project. Some of the things mentioned during this meeting were that the district manager responsible for the homecare announced that she was working for a full scale implementation of the automatic planning system without the handheld device in the whole municipality. The handheld device was considered too expensive and did not have full coverage in the whole municipality. However, the planning systems was an improvement of managing the work tasks and re-distribution of work tasks, even on its own

Systems designer B mentioned the positive aspect of being able to have direct contact whit the users during the project; he had never experienced that before. The negative things mentioned were the informal structure and that the roles in the project were not clear and defined from the beginning.

**Ethical considerations**

It is important to reflect on how you treat people that participate in a research project. When people agree to participate in a research project they give their time and trust and this should be respected (Preece et al. 2002). All participants involved in the project received verbal and written information about the project. All participants read and signed an informed consent form that outlined and explained the aim of the
project and that all information from the participants was confidential and that they had the right to withdraw. This also included the participants in the focus group interviews.

Löfman, *et al.* (2004) bring forward the problem with informed consent and focus group interviews. Even if participation is to be voluntary and informed consent is gained, it might be difficult not to participate if everybody else does because of the pressure from the group. Informed consent was not insisted on when future workshops were conducted. The participants were informed about the project and orally asked to participate. After each workshop the written results were brought back to the participants for so called member checking. Additionally, the project was reviewed and approved by the ethical committee at the university in Sweden.

PARTICIPATION in SWEDEN

The initiation of the project can be described as a collaborative initiation. Firstly based on the outcome of the feasibility study conducted 2002–2003 and secondly depending on how the action research evolved from the interaction between home health care personnel and the researchers through the future workshops. Action research projects can be *initiated* in three ways, by the researchers, practitioners or in collaboration by the two (Avison *et al.* 2007).

The eHHC project had an informal structure and the only written agreement was the project description approved by the funding organisation. There were no written agreements on how the teams should collaborate or the warrants for action. In the project plan it was written that the home health care organisations participating in the project was supposed to contribute to the project by allocating time to the home healthcare staff to participate in the project. Action research requires extensive involvement of staff from the organisation participating in the project, as well as researchers (Avison *et al.* 2007). The only person paid for participating in the project from the home health care organisations was the head of the care team. The project paid her salary so that she could allocate 25% of her working time in the project. Project leaders and researchers were paid for participating
in the project and the business firm for their development of the technology.

In the following section we discuss various stakeholders’ participation in the project, what became apparent with the use of participatory design methods and techniques, and also the difficulties to respect each other as equal stakeholders.

**Participation – Home Healthcare Staff’s Demands and Suggestions of IT Systems and Services**

The importance of the documentation and also the necessity to share it between the involved health workers became apparent through the home healthcare workers participation in the future workshops. The result from the first future workshop showed that the care assistants and the head of the care team wished to develop an optimised, simplified and automatic planning system with easily accessible information on the daily tasks for each client, which would reduce time wasting and deliver effective home care. The care assistant’s stated that “planning takes a lot of time” and it is “easy to forget” clients when you do the planning manually with paper and pencil. The quality of the service would be enhanced if documentation could continuously be updated both for the client and the staff because they said that it was a “Lack of information about the care recipient, from other instances and colleagues”.

The care assistants deliver a daytime and evening service to elderly clients in their private homes on weekdays as well as weekends. This team serves approximately 80 elderly people. The services are specified by the decisions taken by the authority on care at the municipality, to allow the client to lead a reasonably bearable life, to motivate and support the client to help him/herself. The head of the care team also requested that the authority’s official decision on the extent of care be sent directly to the care assistant. This information was filtered in different stages through various intermediaries down to the care assistant, which could lead to risk of misinterpretation. Additionally, a profile of a staff member’s competence was useful as quality of care would improve when the tasks were carried out, by a person with the relevant skills.
The ability to communicate with colleagues, managers and other senior staff (such as district nurses and rehabilitation personnel) at separate organisations was also considered desirable, and they mentioned at the workshop that “Telephone contact with district nurses. Takes for ever in some cases, they are not at their office, or they do not call back” and that it was “Difficult to get in contact with primary care.” The ability to communicate with others would reduce stress and frustration, which in turn would contribute to improved job satisfaction. In the workshop, the care assistants reported that if they had sent a message regarding a client to a district nurse, they often did not receive notification that the message had been acknowledged, and this caused anxiety to the staff member in question.

In all future workshops conducted with the different occupational groups, it was mentioned that the lack of information and communication between the different occupational groups about the clients’ health and service was difficult and something that needed to be improved. The lack of cooperation between the occupational groups involved in the care of the client was also mentioned as an obstacle in the delivering care and service to the client. Hence health care workers participation and the usage of participatory methods and techniques showed in an apparent way how cross functional and cross organizational cooperation was an obstacle in their day-to-day work.

**Participation in the field trial**

Based on the outcome from the first future workshop and in dialog with the head of the care team and two staff members, a demonstration version of the user interface and information content was created and evaluated by systems designer A. The two staff members from the home care team were specifically given the task of representing the larger group of the team in the design activities, and they cooperated more closely with the systems designer. The demonstration version, a prototype, was then during the project presented in various meetings in which the different occupational groups could comment. Consequently, the prototype was updated according to suggestions from these meetings.

During the field trial the plan was to have meetings on regular basis together with the personnel and the systems designer. The aim with
these meetings was to get to know how the personnel experienced the use of the implemented system and in this way the systems designer could improve the system continuously during the trial. Another aim with these meetings was that the personnel could share experience, learn, and reflect together. However, these meetings never happened, because systems designer A left the project and he was responsible for these meetings. In the group interviews the care assistants mentioned that they lacked these meetings as an opportunity for learning together with colleagues, but also for the possibility to influence the technological development, and they said that “I would like to discuss how others use the device. Because I was waiting, when will we discuss things? When can I learn more?” “I feel that we actually have a possibility to influence this and make things better, but then you also have to meet and talk about it. Not every day but at least sometimes sit down and reflect”.

All health workers involved in this trial, through future workshops and by attending demonstration meetings provided an input into the design phases of the integration process. They also contributed valuable insight into how the devices should be structured and function, what kinds of information needed to be exchanged and stored and according to priority of information and in general how the trial would ultimately happen. In the interviews one of the staff members representing the home care team said: “I believe that it has been a good thing that I could tell what information that should be in the hand held device. I feel that I am not just a “little worker” that can not speak my mind”.

The group interviews conducted during the trial showed that the home care assistants were the occupational group that really had used and tested the implemented system. They thought that the automatic planning system would benefit if some improvements where made. However, they did not like the idea to go back to the old system and conduct the planning with paper and pen again, when the project ended. In a group interview one of the care assistants said “Do we have to begin to work with paper and pen again?! How will that be, we have become rusty”.

In the eHHC project the care assistants used the implemented system on a regular basis. However, time for reflection and verbalisation were never realised. In the interviews, carried out during the trail, they
expressed that they wished they have had time for reflection together with their peers upon the use of the technology. They explained that in order to learn how to use the technology one needs to use the system in one's every day practice, thus, a couple of days of training was not enough. Brattetiege (2004, p. 75) states that knowledge can ‘best be understood as actions of individual members of a community, sharing the practices in which the action make sense.’ She also stresses that the regularity of practice makes reflection and verbalisation possible. The regular meetings that were planned for learning and reflection were not conducted. Systems designer A was responsible for these special meetings but since he left the project they were never conducted. Thus, no one else took over the responsibility.

**Participation in the Project - Changes in Commitments and Participation**

A project process is not stable because the approved project proposal has to be materialised in various activities that demands negotiations, adjustments and concretisations. Participatory Action Research and Participatory Design were starting points in the process which implies participation, not only by systems designer and researchers, but also home healthcare staff. The home care assistants and district nurses were the only occupational groups participating in the beginning of the project. Project management, project leader and the technical providers were most concerned to get a solution for homecare personnel and district nurses only. Hence, the focus was on “getting the work done”.

However, the collaboration in the various teams implied new understandings of the health care practice among those involved in the day-to-day activities. An outcome of the first future workshop conducted with care assistants was the realisation that other professionals from e.g. rehabilitation and the safety-alarm group, needed to be involved in the field trial – the aim with the eHHC project was to improve homecare services by enhanced information and communication sharing between different occupational groups involved in the care of the client. Hence methods have to be changed and adjusted to the project during its enactment (see also Lindquist et al. 2007). However, the project manager meant that the Swedish trial would expand too much and the trial would be too complex if other
occupational groups were included and also that the budget would be exceeded.

An additional example is how systems designer A, who worked very closely with the home care workers during the design process, realised that the homecare practice was much more complex than he had expected. This resulted in an understanding which enabled the business firm that systems designer A represented in the project, to develop a product more suitable for the homecare area. However, participation in the systems design process which also includes other occupational groups that are involved in the day-to-day activities implies a fuller understanding of the information and communication sharing in home healthcare practice and among the different home healthcare workers, and therefore entails a higher quality of produced services and systems.

The project manager hesitated to bring in the other occupational groups in the project than those who were thought of from the beginning of the project. A reason was that additional health workers would demand more technical equipment (handheld devices) that would increase the expenses in the project. Although the project manager’s resistance to expand the numbers of participants, systems designer A together with home healthcare workers (the head of the care team and the care assistants) and the doctoral students argued for an expansion. Many discussions, meetings, and negotiations took place in order to convince the Swedish project manager the benefits of expanding the trial by bringing in other occupational groups in the project. Finally, although those in favor for the expansion did not hold any action warrants, the argued expansion was accepted but while care assistants were reimbursed for their participation these new occupational groups (rehabilitation personnel) had to promise not to claim any compensation for their participation in the project. The project manager had the power, authority, (Avison et al. 2007) to decide who could participate or not in the project since he controlled the resources. Authority refers to who is actually in charge of the research project (Avison et al. 2007) and in this project systems designer A, doctoral students and the professionals from home healthcare had to recommend and justify the action to bring in other professionals in the project.
Another change during the process was that the leaderships shifted, exactly when this shift took place is however unclear. In the closing up meeting of the Swedish trial it was highlighted that this shift was not communicated out to all participants in the project. The result of this was that the leadership was experienced as vague by the home healthcare personnel. This vagueness resulted in that the head of the care team took the responsibility for conducting the trial. Consequently she became the informal leader of the trial but the project did not compensate her more extensive role in the project. Because of the heavy workload she took on in the project her employer decided to allocate resources so that she could participate 100% in the project (fall 2005) and leave her ordinary work assignments to a deputy. A role is a social position characterised by expected behaviours (Checkland & Scholes 1999) and ones agency (power) varies depending on the different responsibilities and activities assigned in the project. It is therefore of great importance to discuss and declare the participants different roles from the beginning in a project and communicate it in the project especially when the conditions are changing. Hence, the eHHC project had an informal structure. Consequently the participant’s roles in the project were not clear. This informality and vagueness caused a lot of discussions and negotiations that took a lot of time and could have been avoided if roles and responsibilities had been decided from the start of the project. It takes time to understand each other logics, thus it is time consuming to use participatory design approaches as well as to create trust and a shared understanding (Gregory 2000, Bratteteig 2004). The first future workshop showed that other occupational groups involved in the care of client ought to participate in the project. In accordance with PAR and PD principles the doctoral students, systems designer A, and other professionals wanted to include them in the project. However, PAR and PD principles were not naturally embraced by project manager so inclusion of additional participants had to be argued for.

Whose Knowledge – Asymmetrical Power Relations

Various methods were used in the eHHC project to get first hand experience of home health care work. These were also presented in the project proposal. Early in the project it was decided that the storyboards that were created ought to be a foundation for the design
of ICT system. The storyboard was constructed by the different occupational groups involved in the project together with the doctoral students. The ideal scenario the story boards outlined showed a picture of future home care as the professionals involved in the care of the client wanted the future to look like. The storyboards were thought to be a foundation for the design of the ICT system. However, the storyboards were not used as a specification by systems designer B when setting up the systems requirements. He focused on a technical solution for only one part of the home healthcare service despite what became obvious in the first future workshop, i.e., the necessity to involve other occupational groups than home care assistants and district nurses. Bødker, Grønbæk & Kyng (1993) describe that systems' designers often pursue their own interests and ignore solutions that different groups of users are asking for. They state that ignoring the users is a risk and might create solutions that are less useful.

Why did systems designer B not take into consideration the experiences and knowledge produced in the construction of the storyboards which illustrated the importance to include other professionals' requests and opinions? Can it be that he already had his vision of the system designed for home healthcare service? A vision of the system to be designed often emerge very early in the design process for the systems designer (Stolterman 1991) and consequently this restricts the range of possibilities in the design process. Participation and involvement counteract this. In the design or re-design of information systems, those who are affected by the organizational change should be involved in the design process (Bratteteig & Stolterman 1997) in order to produce feasible designs that help to improve their working lives. Another explanation why the systems designer B did not include the other occupational groups might be that project management did not approve the inclusion of additional professionals from the beginning.

The ambition of particularly the doctoral students was to create a shared understanding, where each participating occupation should be able to see the world as if they were standing in the shoes of other participants. Bratteteig & Stolterman (1997) stress the importance of trying to grasp the aspects of the others' perspectives. This means that
designer needs to take into consideration that s/he partially understands the complex work situation, meaning that knowledge is always situated and partial (Greenbaum & Kyng 1991, Haraway 1991, Suchman 2002). Although, the doctoral students attempted to facilitate participation of all occupational groups in the design process in the spirit of PAR and PD, the rehabilitation personnel, and care assistants working with safety alarm often became just token representatives at project meetings. One reason for that might be that they were included in the project at a later time than the rest of the participants. The fact that additional participants were included in the project at a later stage indicates that the initial focus on relevant participators was to narrowly defined.

CONCLUDING REMARKS
In this article, participation and the contribution of participatory design methods and techniques have been explored in the context of the eHHC development and research project. This project took part during 2004-2005. It was aimed at introducing mobile ICT equipment to health care workers that would improve planning and quality and precision of information exchange in homecare services. One of the authors was actively involved in this project and used Participatory Action Research and Participatory Design approaches to actively involve different stakeholders in the design process. The project experiences lead us to question whether all the participants in a design and research project participate on equal terms and whether all participants’ experiences and knowledges are considered as equal.

Participation and participatory design techniques used in the project demonstrates the complexity in the work practice, thus that it was not only to ‘getting the work done’. The approaches also demonstrated the necessity to involve all the different occupational groups that was involved in the care of the client in order to improve the home health care service. The demands and advantages with the mobile services used in the trial became also visible through the health workers participation. The shortcomings of cross functional and cross organisational cooperation became also evident through the eHHC projects participatory approaches. Organisational boundaries, due to that some are employed by the county council, while others are
employed by the municipalities, reinforce the difficulties and complicate such cooperation (Jansson 2005).

It also became apparent how men dominated the managerial positions including that all the participants from the IT business, that is, systems designers, were men. Conversely, the very majority of all home healthcare workers that participated were women, and as were the doctoral students. Further, the person in charge for the elderly care and services was a woman. Systems design is male dominated in Sweden despite many women are graduated from higher education and work with systems design. The health care sector and particularly home health care for elderly is female dominated and do not enjoy high status in the society (Berg 2000, Jansson et al. 2007). The focus on participation made visible that the eHHC project is thus a reflection of the gendered division of labour in Swedish society.

The doctoral students’ modest interventions (Heath 1997, Haraway 1997) were based on a high degree of commitment to PAR and PD. Through their intervention they challenged the boundaries between the project managers and other participants on one hand, and between the managers and the health workers on the other hand. They also acted as translators between at least two different logics; the health workers’ and the project leaders’/systems designers’ (Gregory 2000). Sometimes the doctoral students interventions succeed, other times not. Their efforts to achieve equality and participation of all occupational groups did not work because some became just token representatives at project meetings.

Group and the collective have been the main focus in participatory design research. We have also discussed participation with the use of group categories. Lindquist (2007) shows in her thesis the importance also to pay attention to the individual participant, their contributions and suggestions. Despite that our main focus has been on groups, individual’s imaginations and experiences of PD emerged out of the project partly because the designer (representative of the IT business) and partly because he was replaced by another. The first was not committed to participatory processes but was, later on, convinced of its efficacy through the collaboration in the project. The designer that
replaced him did not have any experiences of user centred design nor of participatory design. He talked and acted within the discourse where users are considered as actors to inspire the designers/developers. Various discourses of the participants existed thus at the same time in the project - some where more dominating than others (Kanstrup & Christiansen 2006).

The eHHC project had an informal structure; consequently the participant’s responsibilities in the project were not clear. We have argued for the importance of defining and allocating the responsibilities from the beginning of the project but also that participatory approaches are time consuming and challenges positions such as “getting the work done”. The changes during the project and the replacement of one systems designer with another showed the importance that all project members are committed to the basic principles the project builds on. One of them is that it is important to include knowledge about the practice or domain for which the system is developed. Participatory approaches and participation is a way to give room for those with day-to-day experience and knowledge of the practice. Participatory design ideas, methods and techniques made this evident also for the systems designer that did not have previous experience of participatory design. Further, we have discussed the need of time for reflection and verbalisation and carried out in collegial and collective processes.

Another experienced outcome is that research and development projects such as the eHHC project never begins from scratch, i.e., the participating business firm in the project had already a product; a mobile technology system that they wanted to develop and test during the project. This limited the project from the very start. Hence the handheld device in combination with the special software had already been used and tested by maintenance workers. When the business firm was invited to participate in the eHHC project they saw a possibility to enter another application domain, the homecare market, and do so by developing and adjusting the product in this project. Others involved in the eHHC project had other interest for participating. Tensions and ambiguities that were not obvious in the start of the project became visible during the project; to participate on equal terms demands time to create trust and to enable understanding each others logics.
Healthcare development in the twenty-first century is demanding; new and different approaches to learning through reflection are necessary. One approach is Ghaye’s (2005, 2007) who seeks to establish reflection as a collegial and collective process. Team collaboration is crucial in order to learn now and in the future. This was also what the care assistants expressed and wished for in the trial. If people respect each others as individuals, this will enable them to engage in valuable learning relationships. But knowledge and experiences will not be shared if the learning is not supported by teams and organisational cultures including underlying structures.

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