Riikka Vuokko

A Practice Perspective on Organizational Implementation of Information Technology

Turku Centre *for* Computer Science

TUCS Dissertations
No 132,December 2010

A Practice Perspective on Organizational Implementation of Information Technology

Riikka Vuokko

To be presented, with the permission of the Department of Information Technologies at the Åbo Akademi University, for public criticism in the Auditorium Gamma on December 20, 2010, at 12:00.

Åbo Akademi University
Department of Information Technologies
Joukahaisenkatu 3-5 A, FIN-20520 Turku, Finland

2010

Supervised by

Dr. Helena Karsten
Department of Information Technologies
Åbo Akademi University
Turku, Finland

Professor Barbro Back
Department of Information Technologies
Åbo Akademi University
Turku, Finland

Reviewed by

Professor Ulrike Schultze
Cox School of Business
Southern Methodist University
Dallas, Texas, USA

Dr Kathy McGrath
Department of Information Systems and Computing
Brunel University
Uxbridge, United Kingdom

Opponent

Professor Ulrike Schultze
Cox School of Business
Southern Methodist University
Dallas, Texas, USA

ISBN 978-952-12-2520-8
ISSN 1239-1883

Abstract

The organizational implementation of an information technology begins with the idea of a new information system and ends when it is no longer in the focus of attention. It is a slow and convoluted process that affects all members of the organization. Use of new information technology is expected to have a direct impact on work processes and everyday organizing of the work. However, information technology can be taken into use in various ways. This study examines the organizational implementation of an information system for managing home care visits. Personal digital assistants (PDAs) with client information were used for recording visit starts, endings, and special services.

This study explores the changes in work practices during the organizational implementation of the information system and how this transformation affected the workers. First, a practice perspective approach to the organizational implementation is developed. With this approach, work practices are defined as enacted, as a lived experience, where actions are informed by shared technologies, projects, identities, and interests. Work practices are embedded and routinized within the sociomaterial boundaries of working, and organizational power is manifested in the enacted practices.

This longitudinal ethnographic study followed the organizational implementation of the PDAs during 2001-2004. The care workers were repeatedly observed as they visited their clients and interacted with each other. They were also interviewed in order to attain a more detailed view of the rationalities both at work and in the implementation project. Related documents provided one more data source. With the data, from the practice perspective, the issues of the organizational implementation and change were scrutinized, as well as related themes of organizational power, control, and work identity.

The study shows how the new technology was gradually fitted into the home care after the initial resistance. During this organizational implementation, work practices and attitudes previously taken for granted were questioned as the material environment was transformed. The practice perspective approach emphasizes the workers as agents of change without marginalizing them. The contributions to practice propose realistic implementation goals, importance of peer support and feedback, and acceptance of the unexpected.

Keywords: organizational implementation, practice perspective, ethnography, mobile technology, home care, PDA

Abstrakt

Implementering av ett informationssystem ur en organisatorisk synvinkel initieras av en idé om ett system och avslutas då användningen av det inte längre kräver en medveten ansträngning. Ifall tolkningen av implementering är denna, är det fråga om en långsam och komplicerad process, som berör organisationens alla parter. Ny informationsteknologi anses påverka flertalet arbetsprocesser och organiseringen av det dagliga arbetet. Möjligheterna att ta i bruk systemet och utnyttja det är många. I avhandlingen undersöks implementering av ett system för att administrera hemvårdsbesök där hemvårdare använde handdatorer för att registrera information om besökens längd och innehåll.

I avhandlingen observeras vilka förändringar som sker i arbetets praxis p.g.a. det nya systemet och hur dessa förändringar påverkar vårdarbetet. Forskningen inleds med att strukturera teorier om arbetspraxis för kommande analys. Arbetspraxis är inarbetade och rutinmässiga arbetssätt i arbetets sociomateriella omgivning. Arbetspraxis i avhandlingen innebär hemvårdarens praxis och upplevd erfarenhet, där verksamheten informeras av gemensamma arbetssätt, projekt, identiteter och intressen. Organisationens auktoritet kommer även fram i den förverkligade arbetspraxisen.

Forskningen genomfördes som en etnografisk longitudinell studie under åren 2001-2004. I studien observerades hur nyttjandet av handdatorerna framskred ur ett organisatoriskt perspektiv. Hemvårdares arbete och verksamhet (arbetspraxis) observerades både under vårdsbesök och under pauser. Därtill intervjuades hemvårdarna för att erhålla en bättre förståelse för de rationaliteter som styr arbetet och hur systemet togs i bruk. Dokument relaterade till projektet att införa ett nytt system och administrativa dokument har utnyttjats som källmaterial. Analysen av källmaterialet styrdes av det teoretiska tillvägagångssättet att undersöka arbetspraxis. Problem som identifierades i samband med införandet av systemet och de förändringar som det medförde analyserades i detalj. Parallellt analyserades organisatorisk makt, kontroll och arbetsidentitet.

Undersökningen beskriver hur det nya systemet gradvis anpassades till hemvården efter ett initialt motstånd. Under själva implementering av systemet ifrågasattes tidigare arbetspraxis och inställningen till den eftersom arbetspraxisens materiella omgivning förändrades. Det teoretiska tillvägagångssättet i att undersöka arbetspraxis framhäver vårdarens agerande i förändringsprocessen. Resultatet av forskningen visar vikten av realistiska målsättningar, givande av gruppstöd med återkoppling samt förmåga att anpassa sig till det oväntade vid införande av informationssystem.

Nyckelord: organisatoriskt implementering, etnografi, mobila system, hemvård, handdator.

Acknowledgements

> Human affairs are so obscure and various that nothing can be clearly known. (Desiderius Erasmus, Dutch scholar ca. 1466-1536)

If I started my thesis now, I would undoubtedly have a better idea of how to go about it. However, when I started working on this thesis six years ago, I only vaguely knew where I was heading. The road has been long and winding, and many people have helped me along the way. As the completion of this thesis marks the ending of one journey and the beginning of a new one, I would like to take this opportunity to express my gratitude towards all those who have helped me through trials and tribulations.

First and foremost, my gratitude goes to Dr Helena Karsten who has been supervising my studies since I was a master's student with her in 2002-03. She has acted as an academic role model and a constant source of encouragement to continue with my studies and present my ideas to the academic world. Her dedication to information systems science and research is such that I could not have wished for a better supervisor.

I am also grateful for the two reviewers, Dr Kathy McGrath and Professor Ulrike Schultze, who have helped me to finish the thesis successfully. Further, Professor Schultze has also kindly promised to be the opponent of my dissertation.

I would also like to thank Professor emeritus Markku I. Nurminen, and the colleagues and co-students at the Department of Information Technology at the University of Turku, where I was employed when I started working on this thesis. In particular, I wish to thank Anne Forsell for co-authoring a number of papers and presentations. In spite of specializing in information technology in home care context already when I was working on my Master's thesis, I enjoyed every opportunity to scrutinize other kinds of information technology research, as well. I further wish to express my gratitude to Professor emeritus Pekka Leimu and the personnel at Ethnology in Turku University, where I successfully completed my original Master's thesis in 2007.

However, without the possibility to observe home care workers and their clients, this thesis would never have been accomplished. For that I thank the personnel of the home care in Turku Social Service. I especially want to thank Eija Salmiosalo for providing both insight and information. I also wish to express my gratitude to Dr Silva Tedre who enlightened me on various alternative viewpoints for social work research. Futher, I wish to thank all the clients I met

during the observations, who all shared a kind of positive attitude that was crucial for this research.

My thesis work continued at the Turku Centre for Computer Science, TUCS and I would therefore like to thank the personnel of TUCS for granting me the possibility to continue with my studies. I am particularly grateful to the members of the Louhi research group: Professor Sanna Salanterä, Professor Barbro Back, Professor Tapio Salakoski, research director Dr Helena Karsten and other research fellows. The Louhi group studied the use of recorded information in the intensive care environment. For me, the group provided a further opportunity to develop my skills as a researcher and observe the work of the paediatric intensive care unit of Turku University Hospital. I also want to thank the personnel of the paediatric intensive care unit for giving access to their constantly valuable and occasionally heartbreaking work.

After TUCS, the thesis work migrated to Åbo Akademi University's department of Information Technologies. I give warmest thanks to Professor Barbro Back and Professor Kaisa Sere, without whom this change would not have been as effortless. I wish to thank Professor Back for her elucidating comments on my work as well as being patient with my Swedish.

Most of the research papers that are a part of this thesis have gone through several versions over the years. I want to thank all the reviewers and the editors for their comments, although most of them have remained anonymous. I especially wish to thank Professor Lucy Suchman and Associate Professor Toni Robertson for giving ideas on how to study people and information technology in use.

I wish to extend my gratitude also to the TUCS and Åbo Akademi University administrative personnel who have helped me with various practical matters: Irmeli Laine, Tomi Mäntylä, Christel Donner and Ulla Bäckstöm.

This thesis has been funded for short periods by TUCS, Åbo Akademi University and Stiftelsens för Åbo Akademi Forskningsinstitut. I have also received grants for conference participations from TUCS, Turku University Foundation and Kunnallisalan Kehittämissäätiö Foundation.

During the thesis work I have been supported by my family, and I am grateful for the care and dog sitter services by Riitta, Marko, Reetta and Kaj. The latter receive also my humblest thanks for helping with the language and technical details. I also wish to thank Kirsti and Terttu, who – as working and studying women – inspired me to embark on this research journey. I thank also Sirpa and Kaj senior for providing support during a hard period. Last but not least I wish my thanks reach Markku.

Finally, I want to mention the family members without whom I would never have had the stamina to go through this process and who have given me the possibility to clear my thoughts on a daily basis. Without the German shepherd dogs Mörö, Wilma, Rebecca and Romy and Irish wolfhounds Häxan, Manta, Yrjö, Ossi, Justiina, Katariina, Nero, Nera, Mari, Helga, Reiska and Klaara this thesis would not have been completed.

Tampere, November 2010

Contents

List of original publications

Paper 1: Vuokko, R. (2004). Experiences from an implementation project – Time management and control in home care. In *Proceedings of HICSS-37*, 4.-8.1.2004, Big Island, Hawaii.

Paper 2: Vuokko, R. (2004). Constructing IT and Professional Identity: Introducing Mobile Informatics in Home Care. In *Proceedings of AMCIS-2004*, Track on Social Theory in IS Research, New York 6.-8.8.2004, 1291-1296.

Paper 3: Vuokko, R. (2005). Independency and Identity in Mobile Work: Constructing New Work Practices. In *Proceedings of IT and Postmodernity for Organisations and Systems*, 4th International Critical Management Studies Conference 4th-6th July 2005, Cambridge University, UK.

Paper 4: Vuokko, R. (2008). Surveillance at workplace and at home: Social issues in transforming care work with mobile technology. *Journal of Information, Communication and Ethics in Society* 6(1), 60-75.

Paper 5: Vuokko, R. (2011). A Practice Perspective on Transforming Mobile Social Work. In: Cruz-Cunha, M.M., and F. Moreira (Eds.), *Handbook of Research on Mobility and Computing: Evolving Technologies and Ubiquitous Impacts*. IGI Global, Hershey, PA, USA.

Paper 6: Vuokko, R. (2007). Mobile enhancement of care work. In *Proceeding of ECIS 2007*, June 7-9, St. Gallen, Switzerland.

List of figures

List of tables

PART I:
RESEARCH SUMMARY

1 Introduction

1.1 What are work practices?

Practices are often defined as shared actions of a collective of people (Barnes, 2001; Bourdieu, 1990a; Foucault, 1980; Orlikowski, 2002; Schultze, 2000; Vaast and Walsham, 2005). Barnes (2001, p. 19) gives a broad definition by stating that practices are "socially recognized forms of activity, done on the basis of what members learn from others, and capable of being done well or badly, correctly or incorrectly." This definition fails to answer several questions: Who recognizes this action? Who defines it and how is it learned? Who are the others? What counts as a group, which recognizes these same actions, same practices? Who determines when a practice is done correctly (or incorrectly)? How can we discern between the good and bad practices? What are their consequences?

Often, work practice seems to refer to a routine that is acknowledged or understood by all of the participants in a given context. As such, any practice combines what is known or identified in a situation to what is tacit or taken for granted in the same situation. If work practices are understood as taken-for-granted, how can they be transformed? Pickering (1992) uses the term practice to distinguish theory from the practical but at the same time he states that practices are a result of social production and implementation of theoretical knowledge. In this study, work practices are approached as an outcome of social production of information technology in use that combines knowledge at hand and action as observable enactment of work practices.

1.2 Background and motivation

In the home services of the City of Turku Social Centre, a mobile information technology (PDAs, personal digital assistants) was introduced during the years 2001-2003. At that time, this mobile

technology was an innovative choice in the highly distributed home care work. The organizational implementation[1] had a slow start as the decision to purchase the PDAs had been made already a year before the implementation plans were initiated. The organizational implementation of the PDA-based application was carried out to record the activities the home care workers, to share client information and, in general, to enhance the planning of the home care services.

In Finland, the home care is a part of law-based social services offering help for vulnerable clients, such as older or disabled citizens. Care workers visit their clients up to three times daily to attend to their immediate personal needs such as medication, getting up and going to bed, personal hygiene, meals, and visits to a doctor. Therefore, the home care work is, first and foremost, physical and distributed by nature. Nevertheless, the care workers need to share information of their clients on a daily basis to ensure the best care. The sensitive client information presented a challenge for the new technology, as it demanded secure transfer and storing of information.

This study explores the nature of work practices as instances of collective action in a work context where information technology was introduced for the first time and where the formerly appropriate work practices became outdated. Organizational implementation of an information technology begins with the idea of the technology and ends when the technology is no longer in the focus of attention. During the organizational implementation of a new information technology, the old work practices needed to be re-formed or re-fitted to the new situation and to the new tools at work. The care work and the mobile technology became intertwined through the actions of the workers, who used in their care tasks the information in their PDAs. In this sense, the PDAs made a new technologically mediated information infrastructure available for the care workers. Before the organizational implementation, such information would have been available only in the office and during the office hours. Thus, my focus is in the technologically mediated work practices that were emerging during and after this organizational implementation. As such, the work practices under scrutiny here are "objects emerging from a local ecology of human and non-human" (Gherardi, 2010, p. 501).

[1] The organizational implementation of the new mobile technology in home care is also referred to as organizational implementation or implementation.

When exploring an organizational implementation of information technology with an emphasis on work practices, several features emerge. First, concentrating on the work practice view illustrates how the macro level organizational talk about the implementation is interpreted on the micro level of organizational members, when actors working individually and in groups are ordering and constructing meanings of the world around them. Here, this means concentrating on how the new information technology was meaningfully adopted to use and how work practices related to its use were co-constructed by the organizational members.

Second, concentrating on work practices emphasizes the organizational members as active and intentional actors that participate in the change process. The work practice perspective allows the organizational members to have diverse motivations or goals as a basis for their actions or in carrying out their work tasks and practices; but nevertheless, they interact with each other on a daily basis. Through the realm of interaction within the organizational context, meanings and practices are formed and re-formed to render an organizational *regime of truth* (Foucault, 1980), a pragmatically motivated and constructed idealization of what work practices consist of (Schutz, 1970). On an individual level, there emerges the question of re-forming work practices to use a new technology. In a working environment, work practices cannot be based solely on individual interpretations or preferences, but instead co-construction of work practices takes place in intersubjective negotiations (Schutz, 1970; Schutz and Luckmann, 1973), as contrasted to individual decisions.

Third, a practice perspective reveals how technology is adopted and fitted to work practices and, on the other hand, how technology in use affects the existing work practices. From this third emphasis, there emerges also the argument of technology as an influential participant in certain situations or even that a technological artifact is an actant (cf. Latour, 2005; who sees practices as a part of socio-technical assemblage where shared work practices are jointly formed and re-formed). Still, information technologies have interpretive flexibility (Bijker, 1995; Orlikowski, 1992a) which implies that all technologies can have multiple interpretations and uses.

A fourth motivation for implementing a practice perspective is to understand how an organizational implementation happens and what

kinds of consequences or outcomes emerge during and after the process. It is suggested that a practice perspective might reveal what actually takes place during an organizational implementation as it enables to inspect what the organizational members do in contrast to what they aspire to do (Orlikowski, 2002; Levina & Vaast, 2005; Suchman, 2007).

In a contemporary organizational context, the implementation of a technology seldom occurs voluntarily. Generally, it is mandated, for example, by the management. However, when the aim is to understand how the new work practices emerge as the collective and intertwined action of humans and technologies, the experiences and actions of the home care workers need to be studied. This requires sensitivity to mundane details and openness to a multitude of diverging interpretations, possibly emerging through resistance or rejection. Hence, this study was informed by the critical interpretive and ethnographic research approaches.

1.3 Work practices during the organizational implementation

The main aim of this study is to understand and describe changes at work and in the work practices. Orlikowski and Barley (2001) argue that transformations occurring in the work and the organizations cannot be explained only through the technological changes but that also institutions and organizational activity need to be scrutinized as the social context to the change process. They suggest that information technology artifacts are at the same time both social and material artifacts. The implemented technologies reflect design requirements and aims that are grounded on material considerations as well as designers' assumptions of users and use contexts as well as on some level of understanding of how the world is organized. When these technologies are put to use, they can be interpreted and used in multiple ways by gradual adaptation and by fitting to everyday work practices in organizations (Orlikowski, 2000). Therefore, similar technologies can be put to use and interpreted or enacted in work practices in many different ways (Barley, 1986), "occasioning different social outcomes" (Orlikowski and Barley, 2001).

New information technologies are being developed, implemented and used by various groups of people. Typically all these groups have their own ways of organizing, planning, coordinating and carrying out their work. Transforming work practices is not simple in a way that it could be

described either through the technical or the social (Grint & Woolgar, 1997; Knights and Murray, 1994). One cannot simply say that the new technology influences the work practices, and the workers are forced to break away from their routines and reform their work practices to fit the new technology. Another oversimplification would be to say that workers can interpret the technology in any way, whatever is fitting to their needs.

In this study, the organizational implementation of the new mobile information system affected the organization of work in both planned and unanticipated ways. Van House, Butler and Schiff (1998, p. 335-336) state that changing the material bases of work or making possible new forms and methods of working often "foregrounds previously taken-for-granted practices." In addition to the expected outcomes, unexpected changes in the work arrangements, work practices and in interaction relationships between the participants in question, are likely to emerge (e.g. Vaast and Walsham, 2005; Orlikowski, 1996) as well as changes in professional identity and values (Jackson et al., 2006). This means that decisions of altered or new work practices have to be made. For example, in the home care there were negotiations of what to include and exclude in the care services. Besides describing some emerging types of action, this study tries to enlighten the workers' ways for coping with the changes while carrying on with the care work and maintaining client relationships.

New information technology is often implemented with the hopes of modernizing work practices. McGrath (2003) states that the managers and designers of new technologies seem to have an opinion that technology will automatically result in positive impacts on organizational culture. Thus information technology has been used to promote more efficient working. She describes the situation as one where attempts to implement technology in order to create organizational effectiveness may cause unintended consequences, which in turn may challenge the original objectives of the implementation of information technology. Wilson (2005) reminds that unpredicted responses during technological change are often, too simply, framed as workforce resistance. Another, often unplanned emerging aspect is that information technologies in use have capabilities to enhance surveillance at the workplace (Lyon, 2001a). Here, surveillance is approached with Lyon's (2001a, p. 5) definition of everyday surveillance as "any collection and processing of personal data,

whether identifiable or not, for the purposes of influencing or managing those whose data have been garnered."

Traditionally, the resistance of workers and the construction of surveillance practices at workplaces have been discussed with deterministic nuances that would suggest the workplace to be a place of conflict and struggle and also a place where information technology would automatically enforce unified ways of behavior (e.g. Sewell & Wilkinson, 1992; Webster & Robins, 1993; Thompson & Ackroyd, 1995). In recent studies, both workplace situations and surveillance aspects of technologies have been approached as a more varied and complicated co-construction of socio-technical practices (e.g. Ball & Wilson, 2000; Stanton, 2000; Lyon, 2001a, 2001b, 2002; Mason et al., 2002; Hier, 2003). Zuboff (1988) discussed the new power relationships facilitated by computerization and how information technology had the power to change the definitions of privacy and personal at workplace. In order to understand the elements and emergent features of surveillance, Ball and others call for further work (Ball, 2002; Mason et al., 2002; Raab, 2002).

Home care is a sensitive study area. The workers and clients interact on a very intimate level at the homes of the clients. Also the new technology needs to be domesticated to fit into the unofficial service environment (Burkitt, 2004; Stewart, 2007). In this context, domestication does not only involve appropriation of information technology but also scrutinizing the effects the technology has on everyday arrangements of service relationships. The home care workers have much tacit, unannounced knowledge about the actual care and about handling the clients, enabling local improvisations (Suchman, 2002). The implementation of the new information-gathering system makes possible that the unmentioned agreements and ways of handling client relationships rise in new ways to the consciousness of the whole staff.

One effect of the implementation of new technology is, according to Zuboff (1988, p. 9), that information technology also informates the working processes, that is, translates them into information. Zuboff considers this to be often an unexpected outcome of an implementation. Star and Strauss (1999) discuss the vulnerable situation of workers when invisible, often so called unskilled work such as home care, is made visible. Positive outcomes can be, for example, an increase in legitimacy

and rescue from exploitation. Other outcomes can be reification of work practices, surveillance of workers and, on the more positive side, increase in group communication and in sharing tasks. Although there are accounts on how new technology affects interdependence relationships at work (Karsten, 2003), these relationships are described as somewhat paradoxical (Elmes et al., 2005). A new information system can increase the level of empowerment amongst workers by increased visibility of information and processes. At the same time, the new information system can mean an increase of control through integrated systems of technological monitoring. Zuboff (1988) argues that even though the imperative control by managers is a delicate power, which needs to be renewed in daily experience, this power and managerial control can readily be emphasized by material dimensions. It was one of the interpretations given to the new technology also in this home care case.

Bellotti and Bly (1996), in turn, consider mobile technology as a way to use shared resources better. These include not only the facilities and artifacts in the working environment but, in home care, the distribution of the care workers and service hours reserved for the clients, as well. According to Pica, Sørensen and Allen (2004), besides providing adequate resources, the role of information is increasingly important in complex, temporally and spatially distributed work environments, such as home care. One aspect of utilizing mobile technology is that it can bring about a new kind of temporal mobility (Kakihara and Sørensen, 2002). In this case, for example, the workers can now access the client information outside office hours and outside office facilities. In a sense, they are freed from the clock time. At the same time, the use of working time is monitored and controlled to a greater degree than before. Mobile technology means also increase in spatial control (Haddon, 2004) as the home care workers can now be tracked throughout their working day.

Control at work is legitimized in relations of accountability between home care workers and managers (Suchman, 1995, 2007). These relations concern the sharing of knowledge and power. Disciplinary power (Foucault, 1979, 1980) is expressed in timetables and daily task lists and enacted through common work practices in ways that bind the care workers together (Zuboff, 1988). Moreover, the repetition of daily service routines and timetables places also the clients under spatial control (Watson, 2000).

1.4 Related work

In Western Europe, the work of home care has a long history, a social policy, with its power structures and normative disciplinary monitoring and regulating of clients (Banks, 2004). This reflects the ideal models of society based on a notion of social justice which disguises the concrete functioning of power (Foucault, 1979; Watson, 2000, p. 73).

In the social service sector, the attempts of modernization that have contributed to increase of work monitoring through organizational implementations of surveillance capable technologies have been linked to the growth of managerialism (Clarke et al., 2000; Banks, 2004). Patterns for managerial empowerment have been borrowed from the corporate organizations. According to Clarke, Gewirtz and McLaughlin (2000), the shift in ideals can be observed in the expectations on how the members of public service organizations should behave and act in a "businesslike" manner. Flynn (2000) is concerned with the impact of new managerialism on how work is done and supervised in the public administration. For example, mechanization, standardization, and re-defining routine work practices in areas such as nursing and care have meant a decrease in the workers' control of their own work. In the home care environment, these developments are apparent in standardization of service tasks and an increasing regulation of working arrangements.

Explorations of the relationship of home care and information systems are only emerging. In 1997, Beck described the process of changing care into "real work" with the help of information technology implementation and discusses the different rationalities of care and technology. Beck's argumentation contributes to the view that the care rationality and a more technical rationality cannot be combined successfully (Wærness, 2000).

Dennis (2006) explores how information technology is translated or appropriated in a social care setting, contributing to marginalizing of both social service workers and their clients. As information technology decreased the level of independent decision making in various care situations, the continued use resulted in deskilling of service workers and standardization of their work practices. Dennis argues that the cause for this unsuccessful implementation was the implicit rules and constraints embedded in the technology as well as the badly planned organizational change with insufficient comprehension or training amongst the workers.

The process that was approached as a technological change proved to be a more complicated organizational change. An unintended consequence was that the workers started to spend less time with individual clients, as the management emphasized following standard procedures.

Similarly, Hjalmarsson (2009) argues that the increasing strive towards professionalism and efficiency as well as introducing information technology in a care environment can affect the quality of the care work. Hjalmarsson's study describes strikingly similar experiences amongst Swedish home help servers as I had with the care workers in this study. In the Swedish social care, there have been problems with the availability and competence of care workers. The problems were explained with the working conditions and the low status of social care work. Hjalmarsson describes working as flexible and emotional, based on the care rationality. The information technology was implemented to make the care work more effective and predictable, "according to norms of instrumental rationality" (Hjalmarsson 2009, p. 373). However, the information technology contributed, according to Hjalmarsson, to twofold subordination of the care workers, both as caregivers and as employees. She analyses that the new rationality marginalized the emphatic care giving as the core of working.

More typically, case studies in the home care context are ethnographical accounts focusing on, for example, social relations and cultural typifications (Zadoroznyj, 2009), or communication and self (Tinney, 2008). In accounts like these, information technology is not in focus or a possible factor in explanations as the emphasis is usually more in the social than in the technical. Zadoroznyj (2009) illustrates some features that arise from contextual or spatial features of working at the clients' homes in comparison to institutionalized care. She sees that the home care workers cope in face-to-face interaction with clients with abilities based on their individual stock of knowledge (Schutz, 1970) that performs as "recipes". Tinney (2008) gives a confessional account of care relationships and interdependencies amongst care workers and their clients. In the study, also challenges to an ethnographer actively participating in care environment are discussed against a background of total institutionalism.

1.5 Aim of the research and research themes

This study of home care was conducted as a longitudinal ethnographic research (Van Maanen, 1988). Such research aims to describe the complexity of human sense-making and coping in a given context where the information system is influencing the context (Klein and Myers, 1999). Ethnographic methods aim to observe and understand the phenomena holistically within the context of everyday activities. It leaves room for the study subjects to voice their own views and concerns on the subject (Agar, 1980; Schultze, 2000). Like other interpretive methods, an ethnographic study easily provides multiple interpretations of the situation it tries to describe. McGrath (2005) argues that in studying information system implementation, one can see many colliding rationalities. If a critical stance is adopted by the researcher, it is possible to "downplay potential interpretations" (McGrath, 2005, p. 86) and look for alternative rationalities.

In the home care case, I wanted to concentrate more on the workers' interpretations of the situation than on the managerial level of change rhetoric. Emerging from personal motivation (Walsham, 2005), my interpretations of the situation in home care rely more on the data from the observations where I had a possibility to inspect un-rehearsed reactions of home care workers and the interactions between the workers, their clients, and the new technology. During the fieldwork, it was humanly impossible to stay emotionally detached from the various social issues emerging in the home care work context. Later, during the analysis period, critical distance was re-constructed by focusing the research themes on issues of power and control or on surveillance at the workplace, and by limiting these issues to those occurrences where information technology was present.

The process of ethnographic writing has been described by Geertz (1973) as a backward order in relation to the more positivist research traditions. In the process of writing an account of what took place during the study, there are periods of writing and periods of figuring out what you are writing about. Still, from the beginning of the research process to the final account, an ethnographer has an initial framework (Davies, 1999; McGrath 2003) that provides a direction to data gathering but allows developing a more fine-grained conceptualization and analysis, as the study progresses. According to Davies (1999, p. 173), the more formally

planned longitudinal studies "tend to be problem-oriented in that they are based on an intention to follow the effects of some major change over time."

In this type of research, the actual research questions are not necessarily formulated as questions but more like themes and topics of focus during the research process (Agar, 1980). Hence, the themes of this study are:

(1) Emerging changes in work practices during the organizational implementation of a PDA-based information system.
(2) Technology mediated working relationships and work identity.
(3) The surveillance capabilities of the PDAs realized in the everyday working and organizing.
(4) Justifying and negotiating the changes within the organization.

The overall themes (1 and 4) surround the more focused processes of technology mediation and surveillance in the workers' relationships with each other and with management.

1.6 Overview of the dissertation

Table 1 shows the outline of the dissertation. It consists of two major parts: Part I is a comprehensive analysis and summary of the research, and Part II is the combination of six research papers.

In chapter 2, theoretical literature is reviewed to introduce the themes and key concepts used in the research. Studying work practices is addressed in relation to the socio-technical research tradition. The practice perspective related to intersubjectivity and theories of practice. A review and discussion of the practice perspective in the context of information technology in use follows. A timeline of studying work practices within the tradition of information systems and related areas is outlined. In information systems research, studying work practices had at first the more practical aims of solving issues related to design and use of new information technologies. From the design-orientated research settings, the practice perspective shifted to a more use-oriented study of technologies to be implemented, used and transformed through their use.

Table 1: Outline of the dissertation

Theme	Research themes	Part I	Part II
Introduction		Chapter 1	
Theoretical background		Chapter 2	
Research methods and the case		Chapters 3 - 4	Papers 1, 6
From organizational to practice level view of change	1,4	Chapter 5	Papers 4, 5
Issues of organizational power	3	Chapter 6	Papers 1, 2, 4
Home care workers' identity	2	Chapter 7	Papers 2, 6
Adjusting to change	1	Chapter 8	Papers 1, 3, 6
Conclusions and contributions		Chapter 9	

In chapter 3, the research methodology of a longitudinal ethnographic study is discussed. The research methodology is interpretive and qualitative and, as such, the research tradition has several alternatives to choose from. Here I ground my own approach or interpretation of an ethnographic study in a technical environment. The main research methods for gathering data were observation and interviewing the home care workers, their managers and clients as participants of the organizational implementation.

In chapter 4, the home care environment as the research setting is introduced. This includes outlining the home care as a part of the social services and describing the main phases of the implementation project. My main study subjects, however, have been from the beginning the home care workers, who carry out the everyday service work and now use the new mobile technology at work. Thus even when describing the implementation project or the technology I address the care workers' concerns and interpretation more often than the managers' views.

The analysis based on the research themes is described in the following four chapters. In chapter 5, the analysis concentrates on research themes 1

and 4 and focuses on the micro level of the organization, on the work practices, and moreover, on the home care workers as individuals and as an intermingling group of workers. Here, the shared work practices of interacting and communicating in the home care environment are described as being transformed during the organizational implementation. The PDAs contributed to a new level of awareness shared during the working day, and the outcome was interpreted in various ways by the care workers.

In chapter 6, the analysis concentrates on the research theme 3 and focuses on the manifestations of organizational power during the organizational implementation. I analyze how organizational power is exercised in enacting practices related to learning and sharing information.

In chapter 7, I address the research theme 2, that is, the transformations in the home care workers' collective identity. The question of care workers identity and the practices that involve identity construction is a conceptual construction that could be easily used to illustrate any work related practice, but in the chapter 7, I concentrate – once again – on how the care workers themselves interpreted or described their "identity" at work.

In chapter 8, the analysis returns to the research theme 1 to emphasize the specific features of the work practices and changes in them during and after the organizational implementation. These practices involve the means that the care workers had when adjusting to and participating in the organizational implementation.

In the concluding chapter 9, I summarize the research results and the contributions of the dissertation. I also state limitations of my study and propose some directions for further research.

1.7 The original publications

In Part II, the research papers present a chronological view on the organizational implementation of the new mobile information technology. A common feature in the papers is that they still rely on the empirical data more than on theoretical considerations: in that sense the papers are a reflection of the whole research progress. The papers have different viewpoints, such as control at work (paper 1), professional identity (paper

2), empowerment of the workers (paper 4), surveillance at the field (paper 5), and other social issues (paper 4). The last one (paper 6) provides a practical view on the outcomes of the organizational implementation. The relationships of the papers to the research themes are summarized in **Table 1**.

The first research paper (**paper 1**) describes some of the first expressions of the home care workers during the pilot phase of the PDA use. The paper documents the three main attributes of the home care work: (1) home care work is mobile, (2) home care work is sensitive, and (3) home care workers are subjects to managerial control. The mobility aspect of home care working is discussed with conceptualizations from Bellotti and Bly (1996), Luff and Heath (1988), and Kakihara and Sørensen (2002). The control aspect of the new mobile information technology is discussed through Foucault's (1978) discourse of power. The idea here is that it is not only managers that exercise power but also the home care workers exercise active and passive power towards their managers and clients. Also the idea of a panopticon (Foucault, 1979) is introduced as the new technology implied automatic surveillance of the workers' time. Sensitivity of home care as an area of working remained a guiding principle throughout the field work. A limitation of this paper is that at that time there was no data available from many home care teams so no real comparisons could be made of work practices.

Paper 2 considers possible transformations in work practices and identity during a quite early stage of the mobile information technology use. Professional identity is approached through work practices, and Goffman (1959) is referred to in conceptualization of twofold identity at work. Personal identity is the ways in which a care worker sees her- or himself as different from others, and social identity is how the person interacts with the others. Again, Foucault (1980) is referred to, as professional identity is constructed in constant discourse between different participants in the field. It is also noted that previously, information technology had had no role in identity constructions amongst the home care workers, and no significant role in choosing home care work as a profession.

Paper 3 explores the interdependencies and relationships both between the care team managers and the care workers as well as between the care workers and their clients. These considerations were prompted by the home care workers' expressed fear of losing their previous independence

when working with the clients. As they had visited the clients' homes with no formal accounts made afterwards, the team managers had only a sketchy view of what was going on during the service calls. At times, either a home care worker or a client would contact team managers with a problem. Such problems of everyday working were hard to solve due to little or mistaken information on the matter as often different parties had different views on the conflicting issues. Likewise, care planning remained a tedious task, as little information was available of the planned service hours versus the actually conducted services. In this paper, interdependences and power issues within home care work are discussed with considerations on the general development in social work. However, no definite outcomes of the organizational implementation were available at the time.

Paper 4 studies the consequences of the organizational implementation and use of information technology in a sensitive work environment. This paper attempts to describe not only the home care workers' changing conditions but gives voice also to the team managers and above all, the clients, formerly absent from the papers. The paper includes a literature review of surveillance in information systems research, and three scenarios from the home care work environment describing surveillance and dependency relationships. A new phenomenon amongst the surveillance literature is the "creeping surveillance" (Percival and Hanson, 2006) when more and more surveillance-capable technologies enter the home sphere. Especially in the social and health care services, various monitoring, security and telecare devices are being domesticated. Lyon (2002) states that everyday surveillance does not concern only "vulnerable" citizens, but enters the life spheres of all citizens as organizing and ordering devices. Thus, according to Lyon's principles, the boundaries of acceptable surveillance are socially constructed and re-constructed.

Paper 5 explores transforming the home care services as mobile work. Based on related studies (e.g., McGrath, 2003; Adler and Henman, 2005), the paper presents a critical view on the managerial expectations of how work practices change, and how the new work practices would automatically contribute to increase in productivity, higher standards of performance and decrease in costs. Likewise, principles of e-Government are criticized as being too limited to provide a sufficient metaphor. When the e-Commerce paradigm is adapted to the e-Government developments,

the citizens may be reduced to customers of e-Government services (Bekkers and Homburg, 2007; Stahl, 2005; Clarke et al., 2000). In the paper, a practice perspective (Orlikowski, 2002; Levina and Vaast, 2005) is implemented to study the changes on the micro level, with a focus on the interaction between workers and their clients. Implementing mobile technology was expected to enhance the efficiency of care work, but the project outcomes include resistance due to the surveillance aspect of the new technology as well as technological problems during the implementation. Successful outcomes of the implementation include better planning of working hours and a more even distribution of work resources.

Paper 6 is in the chronological order the last paper. It draws conclusions on the whole organizational implementation and re-visits some of the outcomes. It shortly discusses the development of public sector with the help of information technology, but the emphasis on the paper is in the outcomes of the implementation project. These are evaluated in four groups: using the mobile technology, learning to overcome control, coping with technical problems, and lastly, coping with disappointment.

2 Theorizing practices

In this chapter, previous research and theorizing related to work practices are introduced. In this I have two motivations. First, I aim to conceptualize work practices, action and actors that together constitute everyday working in organizations. Here I follow Suchman's (2007, p. 11) argument that workers as human actors and machines (or information technology) are "to be discursively and materially enacted rather than naturally effected and to be available, for better and worse and with greater and lesser resistance, for refiguring." On the practice level, this means that when an organizational implementation is in progress, new technology features are being enacted in practice, to be fitted and adjusted to the particular needs of the work in question. The second aim of this section is to make a synthesis of the various practice approaches. These conceptualizations are then guiding the analysis.

2.1 Intersubjectivity and work practices

Various theoretical approaches or positions can be listed under the term *practice theories,* but no one complete theory of practices exists, even though Levina and Vaast (2008, p. 309) claim that "The scholars we cite have developed different theories based on the practice perspective, but all agree on its fundamental tenets." In order to compare theoretical constructs and contributions between different studies, I will first trace the main social theorizing they are based on (Østerlund and Carlile, 2005; Reckwitz, 2002). I will discuss practice-related concepts by Schutz (1967, 1970) and Bourdieu (1977, 1984, 1990a, 1990b) but will leave out Giddens for several reasons. First, there exist many shorter and longer expositions of his ideas readily accessible for information systems scholars (a comprehensive starting point would be Jones and Karsten 2008). Second, the theorizing later on will build more on the ideas of Schutz and Bourdieu than on Giddens. Moreover, Giddens (1979, 1984) develops practice theory in relation to the theory of structuration, and in this, grounds explanation and meaning for action in the symbolic

structures of knowledge and language (see Reckwitz, 2002; Gronow, 2008). However, in this work, explanation and meaning are placed not in mental processes, but in interaction and in enacted practices.

A number of core concepts have been developed in the various approaches that focus on how the world is socially constructed (Schutz 1967, 1970; Schutz & Luckmann, 1973), and how practices and structures guide our actions in different fields of action taking (Bourdieu, 1977, 1984, 1990a, 1990b; Bourdieu and Wacquant, 1992; Giddens, 1979a, 1984). I relate these to research in home care and in organizational implementation of technology.

The intersubjective nature of social relationships. For Schutz (1967, 1970; Schutz & Luckmann, 1973; Berger and Luckmann, 1967), it is clear that all social action (including action at any workplace) involves two or more people who in some way need to orient to each other in the situation. In everyday action many individuals are involved; hence all action takes place as entangled in complex networks of social relationships. Thus, in the case of organizational implementation, all participants of the implementation project have an understanding of what is taking place in the project, what is the goal of the implementation, or what kind of changes at work is to be anticipated. At the same time, this understanding may be an individual experience or interpretation of the implementation and its relation to work. Schutz (1967, 1970) sees the life-world as a world of intersubjective meanings. In other words, people experience and attach meanings to the world they are living in. Intersubjectivity explains how we experience ourselves and others, how meaningful phenomena can be observed and explored by us. The subjective or individual experiences do not suffice to explain social action. With the idea of intersubjectivity it is possible to explain how a society of any size is made up by individuals sharing a conscious life. The intersubjective nature of social relationships binds us to different collectives or groups of people.

Stock of knowledge. Taking a group of workers as an example, this means that the workers are participants in action that they all can approach, based on a commonly shared and taken for granted "stock of knowledge" (Schutz 1967, 1970; Schutz and Luckmann, 1973). The stock of knowledge – or wit as Berger and Luckmann (1967) call it – helps the workers not only to orient but at the same time this knowledge informs

them of the social action that is about to take place. It concerns practical matters and consists of "recipes" for different situations and actions (Schutz, 1970; Zadoroznyj, 2009). An individual actor's stock of knowledge can be incoherent or even have contradictory elements, but the individual may remain pragmatically unaware of these when daily actions follow routine forms. Studying home care workers in postnatal care, Zadoroznyj (2009, p. 280) describes the stock of knowledge as frameworks built on "knowledge that is contextual and spatial, and allows social actors to deal with the world through typifications." As in the case of postnatal home care, the typifications of home care included, among others, both emotional and rational interpretations of boundaries between home care and institutional care as well as who can provide care at home or what is the character of the care. Moreover, home as an environment to care work embodied particular meanings and power relations (Zadoroznyj, 2009) that compelled interpretations of the home care worker as a stranger at home.

The organizational implementation of IT in the home care environment took place in a social space with institutionalized practices regarding not only interaction with the clients but also with co-workers. Through common work practices, the home care workers as intentional actors are continually engaged in shaping their field of practice (Bourdieu 1977, 1990a; Bourdieu and Wacquant, 1992; Giddens, 1984). A practice theory that can help look at these phenomena would illustrate how individual actors and groups of actors act together and form various relations amongst themselves in everyday life. Knowledge needs to be looked at as embedded in practical experience and it is also observable through practice. To summarize, everyday interaction and routines take place effortlessly based on intersubjectively shared common frameworks or typifications of meanings and knowledge between the participants. Intersubjectivity is based on an understanding between the participants, and that what is understood is meaningful.

2.2 Logic of practice

Pierre Bourdieu wanted to understand the mechanisms that affect the production and reproduction or transformation of social structures (Bourdieu and Wacquant, 1992). Bourdieu's theorizing about practice is both fundamental for and problematic to this study. Bourdieu was one of the first ones to study the logic of practice. His view is problematic,

however, as it does not go beyond structuration. Bourdieu's concept of habitus, second order structures, has been criticized (see Fuchs, 2003) to be materially reflective and deterministic in a sense that it places an emphasis on structuration and stability instead of human agency and social change. Also the context and the materiality of practice are left aside more than this study would require.[2]

Bourdieu describes the system of relations between people as a field (1977, 1984, 1990a, 1990b; Bourdieu and Wacquant, 1992). Within a field of action, people engage in their daily life while structures construct their social world and help them to direct themselves in that world – or field – as they struggle to find and maintain a suitable position for themselves. In this context of action, the culture or habitus is learned with the body and through practice. Bourdieu (1977, 1990a) defines habitus as resources and practices that illustrate knowledge concepts, values and beliefs, typical to a given field.

To illustrate transformations of social relations and practices within a field of action, Bourdieu distinguishes between first order and second order structures (Bourdieu, 1977, 1990a). First order structures are easily visible or observable practices of distributing and sharing material resources within a field. Usually, first order structures, such as social class structure or division of labor based on gender, are a part of the objective reality of the actors and as such, they are taken for granted.

Second order structures are the actors' habits of classifying and ordering the world around them. The second order structures are internalized by the actors and as such, they are not so readily observable. Still, the second order structures guide the actors in their everyday life in the form of thoughts, feelings and judgment. Bourdieu calls these subjective second order structures as habitus. Habitus cannot be directly observed but it can be interpreted through observing the practices or repeated behavior patterns of the actors. Habitus can, for example, be observed in what is described as "reasonable action," as "common sense" or as "layman's logic." Habitus can also refer to practices so stable or durable that they

[2] I have explored this issue in depth in my Master's thesis for ethnology (in Finnish): Vuokko, R. (2007). Kunnallisen kotihoidon muuttuva kuva Turussa uuden vuosituhannen alussa [The changing form of municipal home care in Turku at the beginning of a new millennium]. Master's Thesis, Department of Cultural Studies, Ethnology, University of Turku.

can be transferred from one field to another. In short, habitus illustrates an individual as a part of her or his social collective as "habitus is a socialized subjectivity" (Bourdieu and Wacquant, 1992, p. 126).

Fuchs (2003, p. 391) argues that Bourdieu's work "in fact successfully posits dialectical thinking against reductionism and determinism." While habitus consists of guiding principles for taking action, it is also a product of a historical development. Through a history of repetition, shared practices are formed. Practices can be identified as formal rituals, such as promotion at work, or as everyday patterns of action, such as work practices related to archiving documents. According to Bourdieu (1977, 1990a), even a long history or an identified form for a practice does not mean that a practice would be mechanically repeated. A practice is more like a resource for strategic improvisation in a given situation. This implies that a practice is not stable but dynamic and can be transformed and new properties may emerge – within the limits of structures. Bourdieu (1977) illustrates this with an example of a game: while individual players can freely choose their moves, their actions are being guided or constrained by the rules of the game. With this reflexive approach to practice-forming, Bourdieu (1990b) emphasizes individuals as capable and creative actors.

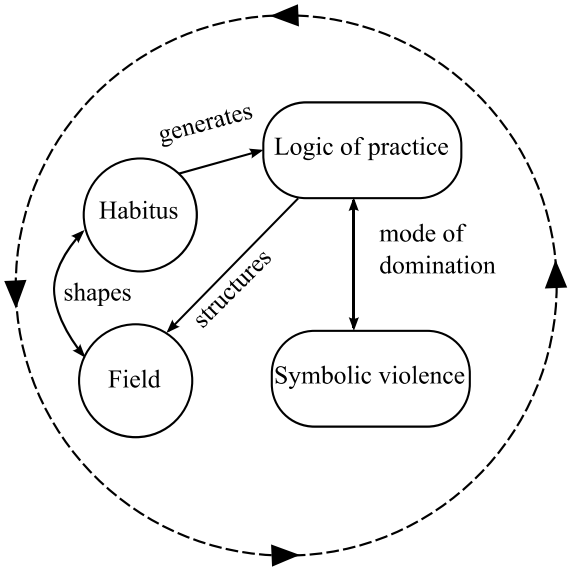


Figure 1: Generation and reproduction of practice

Bourdieu's reflexive approach to producing practices can be described as a causal path where practices are formed and reformed (see **Figure 1** by Richardson, 2003, p. 74). Habitus generates practices, but at the same time, practices restructure field and habitus: "Practices are generated by dynamically combining past experience, present situation and implicit anticipation of the future consequences of these very actions" (Richardson, 2003, p. 74).

The regeneration of practices is produced by combining previous experiences and knowledge to a rationality available in a given situation and to the presumed consequences of action taking place. Moreover, structures and rules of conduct, internalized in habitus, give orientation and limits to choice of action. This is how situational action can either confirm existing habitus and practices, or actuate reproducing of habitus and practices in a situation where previous experiences and knowledge cannot sufficiently guide actions to be taken. According to Bourdieu (1990b, p. 78) "uncertainty is an aspect of all social situations" and thus, the idea of habitus includes a possibility of an invention as people have a relative freedom of action due to creativity and self-consciousness (Bourdieu 1977, p. 95; 1990a, p. 55). I illustrate this **Figure 2**.

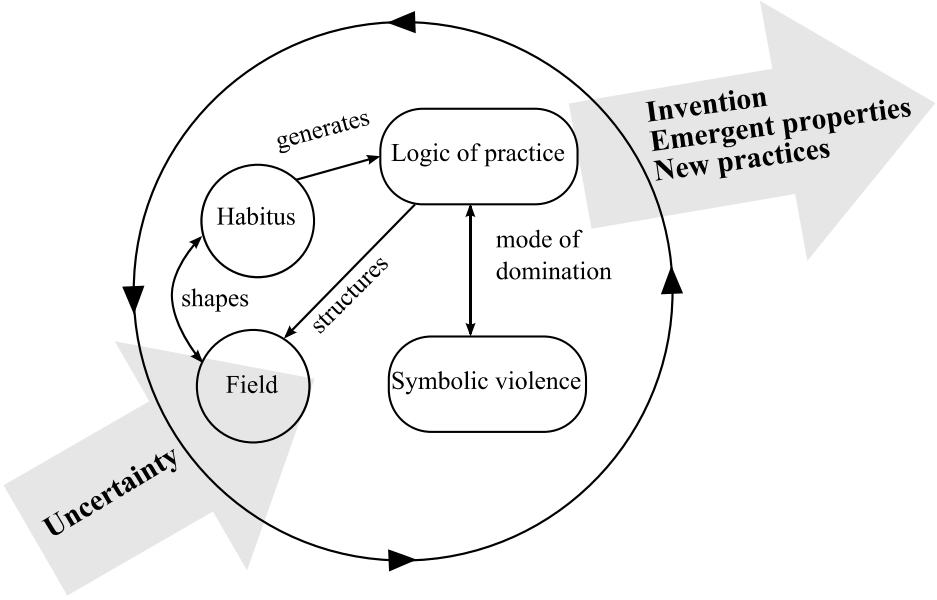


Figure 2: Generation of practice with emphasis on uncertainty and emergent nature of reproduction

Even though structures guide actions, they do not determine the final outcome of the change process during implementation. New practices and new properties of old practices emerge gradually during adjustment to the new situation.

Habitus provides conditioned and conditional freedom for action taking (Bourdieu 1977). At the same time, habitus is a condition for freedom but it also limits total freedom (Fuchs, 2003). In addition to habitus, invention as well as any action taking is related to practical logic "which is not that of the logician" (Bourdieu 1990a, p. 86). Everyday action is based on practical logic – or layman's logic – that is limited by the actor's situational rationality:

> Rationality is bounded not only because the available information is curtailed, and because the human mind is generically limited and does not have the means of fully figuring out all situations, especially in the urgency of action, but also because the human mind is socially bounded, socially structured. (Bourdieu & Wacquant, 1992, p. 126)

For Bourdieu (1977; Bourdieu & Wacquant, 1992) the field is a realm for everyday action. The boundaries of a field can be defined by the inner logic that guides action within that field – in other words, a field can be mapped out by the first and second order structures that define it. The structures within a field form relations between the actors and also relations towards other fields. In this sense, a field can also be understood as a field of social positions that define constrains and conditions for action. The positions within a field are enabled and maintained by the distribution of resources called social, cultural and economical capital. The actors within a field struggle to maintain their position and to access resources.

While the symbolic capital can take different forms, it is defined by the field where it is used (Bourdieu, 1977, 1990a; Bourdieu and Wacquant, 1992). Competitors in a field struggle to differentiate themselves from their rivals, and through these struggles, new structural divisions and cultural classification schemes emerge. To achieve better positions in the field of struggle, social, cultural and economic capitals are striven after.

Cultural capital consists of knowledge and information that is institutionalized, for example in education or in different repositories. Cultural capital can be material objects, such as works of art or books, but it can also be immaterial goods, such as a school of thought, a discipline, or abstract concepts, such as good manners. Economic capital is institutionalized, for example, in property rights. This symbolic capital can also be converted to material capital, such as money. Social capital is defined through social relationships and obligations between the actors. It can mean, for example, a membership of a group or network of social relations. An institution of social capital is, for example, the manner how the actors are referred to or how titles are used in social life.

Besides symbolic capital, practices and outcomes of actions are affected by symbolic power that Bourdieu (1977, 1990a, 1991) calls symbolic violence. Within a field of action, symbolic capital is divided in a certain way and this division has been stabilized in various cultural institutions, such as social prestige, honor or the right to be listened to. Such institutions symbolize stable and objectified power. Bourdieu detached power from individuals by conceptualization of modes of domination that justify symbolic violence. Exercising symbolic violence can be observed, for example, in political dominance, in practices of sharing information and in coercive practices related to communicating, such as disapproving looks and gestures. Symbolic power can also be materially objectified in forms of bureaucratic organization. In such organizations, work practices are formally regulated and modes of domination have been constructed as a part of organizational practices and forms of conduct as well as in the uses of language, such as, who has a right to voice opinions, to interrupt talk, or to ask questions.

The interconnectedness or mutual connections between people (and groups of people) and structures "constitute a permanent development process that results in new, *emergent* properties or qualities of society that cannot be reduced to the underlying moments" (Fuchs, 2003, p. 403). To sum up, a theory of practice studies people and human action as practical beings with an intentional capacity for action. Both Schutz and Bourdieu focus mainly on the interaction between people and on the social or the immaterial. However, studying technology-mediated work presumes thinking that takes into account also the materiality of the work environment, and how work practices are supported and mediated by

technologies. Next I will review research on work practices in technology environments.

2.3 Work practices in technology environments

Both the social and the technical can be observed and studied as embedded or embodied in practices (e.g. Kling and Schacchi, 1982; Orlikowski and Iacono, 2001; Davidson, 2002; Suchman, 2007). Information technology can be inspected as a set of resources that all have different outcomes, benefits, costs or skill requirements and "in addition to their functional capabilities as an information processing tool, computer based technologies are also social objects which may be highly charged with meaning" (Kling and Schacchi, 1982, p. 7-8). During phases of technological change, work practices have been explored through various socio-technical approaches (Mingers and Willcocks, 2004) such as social shaping of technology (Bijker, 1997; Latour, 2005; Howcroft, Mitev and Wilson, 2004), duality of structure (Orlikowski, 1992a, 1996, 2000), and institutional theory (DiMaggio and Powell, 1983; Lamb and Kling, 2003). Common to socio-technical approaches is that the uses of new technologies emerge through social negotiations and interaction.

Although these theories provide a consideration on the context of technological change, the approach on the subject working community is typically on a "higher level" of organizational life: as culture, as politics and as new innovations, for example. My interests lie more on how new technologies in use might transform social relationships, means of interaction, and work practices within the organization. In other words, how the everyday order and reality at work might be transformed during an organizational implementation of a technology. Theories of practice seem to provide an approach for studying organizational transformations as diverse and intertwined actions between the participants, when the focus is not just on the interaction between the social and the technical, but also on the everyday entanglement or assemblage of the sociomaterial organizing of the work (Latour, 2005; Leonardi and Barley, 2008; Orlikowski, 2007).

To explore relations between information technology and work practices, I review different approaches on studying work practices in environments where work is supported or mediated by information technology (see **Figure 3**). These studies illustrate not only work practices but also the

relationship between the social and the technical. I have grouped these studies according to their timeline and to their approach to work practices. These research interests or ways of addressing a research question shift through time. The research interests have included, for example, exploring practice for designing and using technology (Suchman, 1995; Suchman et al., 1999); practice as political (Knights and Murray, 1994); or as learning (Wenger, 1988); practice as co-constructed in the use of information technology (Orlikowski, 1992a, 1992b); practice as performance and as social action combining both the technical and the social (Schultze and Orlikowski, 2004; Schultze, 2000; Orlikowski and Scott, 2008).

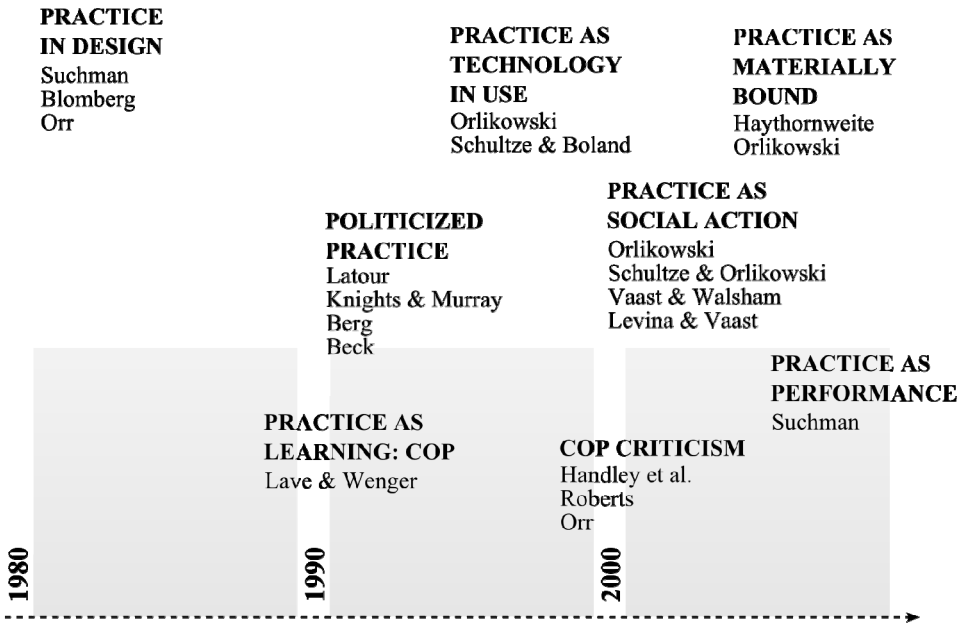


Figure 3: Timeline of practice perspective development in information systems research

Historically, the various research approaches have developed one after another, based on the previous research or providing alternatives to it. In this sense, these approaches are more or less intertwined with each other. It should be noted that none of these approaches have come to a standstill but are continuously developed and addressed from various viewpoints.

2.3.1 Practice for designing work and technologies

Some of the first contributions, where work practices were in the conscious focus of studying machines and their users, emerged during the 1980s and 1990s. These studies relied on ethnographical or ethnomethodological methods and workplace studies (e.g. Luff et al., 2000). The studies of technology and social action described cases and features of new tools and technologies at workplaces and in situations of interaction (Heath & Luff, 2000). Workers, the human users of the machines and tools, were approached as acting in a goal-oriented way and as regulated by formal rules, scripts and plans (Suchman, 1987). The impact of computers on organizational conduct was studied as interaction between groups with an orientation for design in Computer Supported Cooperative Work, CSCW (e.g. Schmidt & Bannon, 1992; Schmidt & Simone, 1996). Schmidt and Bannon (1992) argue that people are mutually dependent on each other in a working organization, referring to two practices at work: people share resources for accomplishing their work tasks, and moreover, need to coordinate and control their engagements at work.

A central issue in CSCW research is the representations at work and how various professional groups understand such representations (e.g. Robinson and Bannon, 1991). Different professional groups and subgroups have their own world view and specialized language as well as their own specialized tasks to carry out. Due to this, even the same technical artifacts are interpreted to have varied uses and, therefore, can be used to accomplish different tasks by various occupational or professional groups. Robinson and Bannon (1991) describe modeling and designing new technologies as being aware of existing work practices, and representing these in the design. Then, the successfulness of a new technology can be derived from how well these representations in design reframe reality. A technical artifact that supports both everyday work practices and the peripheral awareness of what the other workers are doing is a common artifact that also supports double level language at work (Robinson 1993). Double level language defines the organizational communication on two levels: first, there is the formal or implicit communication that the organizational artifacts and representations are mediating, and second, there is the cultural or explicit communication of everyday speech, ad hoc notes and the like between the organizational

members. In short, in CSCW, an effort was made to see the social and the technical not as alternatives, but as complementary and mutual.

CSCW studies describing information system failures (e.g., Grudin, 1988; Grudin & Palen, 1995; Orlikowski, 1992b) contributed to the argument that such failures were largely caused by managers', designers' and consultants' inability to consider how work was actually conducted in collaborative interaction and how work practices would be affected during organizational transformation. London Ambulance Service's infamous failure with a computer-aided dispatch system that was taken into use in 1992 emphasized the importance of considering the work practices more carefully (Heath & Luff, 2000; McGrath, 2003; Beynon-Davies, 1995). A lesson learned was that it is wrong to assume automatic change and modernization of work practices when a new technology is introduced.

Lucy Suchman (1987) studied human interaction with various technologies from copy machines to artificial intelligence. These studies address the tension between organizational practices – or just human behavior – and technologies. Suchman argues that plans as abstract thoughts and as embodied through design in different technical artifacts and systems are representations of action. Actions taken by people are situational in the sense that action is affected by, for example, contextual and individual factors. Thus, an action that is being carried out in reality cannot be fully anticipated despite the plans, rules or scripts guiding the action. Likewise, "[a] working practice is [a] lived experience" and cannot be fully represented in design (Suchman, 1995, p. 60). Tension to or fear of technical artifacts can emerge when a worker faces problems with a particular technology. These problems are not necessarily caused by the worker having insufficient technical skills, but because it is quite natural for human behavior to face difficulties with unfamiliar tools and machines (Suchman et al., 1999).

From early on, Suchman (1983) noted that to decrease the tension between new technologies at work and organizational practices the workers are used to, the work should be well represented in design. She promoted an alternative model for design: the reality at work cannot be found in the procedural specifications and in the formal task descriptions, but rather, in the work practices and in the organization of everyday working. The work practices and the knowledge processes related to them

should be made visible so that this experience and knowledge could be used to shape the work practices further: “Working practices can be revealed, ‘captured,’ analyzed into constituent parts and transformed into manipulable, objective knowledge” (Suchman, 1995, p. 60). Work practices can be divided in two types of practices (Suchman, 2000a): material practices that are the ways of organizing work tasks and resources, and practices of accountability that contribute to the reasoning of actions and coordination at work. Both types of practices occur as mundane routines and can thus be observed.

To sum up, work practices are studied to implement in design the findings of how work was actually carried out. The ideal is to get the work flowing smoothly and efficiently: “The goal in this case is to design a system whereby the actual work involved in carrying out procedures, specifically the ongoing inquiries of which it is compromised, is accomplished through the system itself” (Suchman, 1983, p. 327). Designers embody their own professional practices as well as work practices into the technical artifacts designed (Suchman, 2000b). Heath and Luff (2000a, p. 13) argue that in the CSCW approach the workers are “users” that are providing relevant data for the designers through various interaction experiments on usability of the designed artifacts as well as through the workplace studies. A gap between the work and the design remains although workers are approached as capable of actively shaping their work conditions and technology, on the other hand, and as passive recipients of technology, on the other (Suchman, 1995). These studies had three different research interests (Suchman et al., 1999): first, they present a critical analysis of technologies, second, they produce workplace ethnographies, and third, they accumulate design interventions. With regard to practices, such studies tell tales of various contexts of working: besides documented work practices and implied professional design practices, there emerges also a picture of research practices.

2.3.2 Practice as political

The material boundaries of information technology affect the organizational dynamics in issues related to organizational power and work identity (e.g. Suchman, 2005). Here, information technology is approached as material objects at the workplace – as objects that are constituted in “specific sites and associated practices” (Suchman, 2005, p. 381). Workers give identification to technical artifacts, and likewise, use

them for identifying themselves at work, and for positioning themselves strategically in organizational relations.

However, the work practices can also be approached as produced from the political practices of a professional field. Foucault (1972) gives an example of political practices when he describes how the medical professionalism was established in the eighteenth century. Such transformation of practices cannot be explained only as a historical process within a profession, but it involves, for example, political events, economic phenomena and institutional changes. Hence (p. 42), the profession is constituted by a group of individuals that "as a body of knowledge and practice" become an authority in the society. Such practices imply also a set of rules, roles and relations within the specific field.

A critical view on organizational politics and dynamics during a period of technical implementation and change was presented by Knights and Murray (1994) in *Managers Divided*. They describe power struggles and conflicts during designing and managing new information technology and new ways of carrying out work processes. They conclude that designing and deploying new technology is a political process, and as such, a social process. Knights and Morgan (1991, p. 253) ground the organizational change discourses in Foucauldian approach where the political discourse of the organization implies "a set of ideas and practices which condition our ways of relating to, and acting upon, particular phenomena."

The organizational members strive for normalization of affairs (Foucault, 1977), which means in a working context a routinized use of technology and well constituted work practices. According to Knights and Murray, conflicts emerge as the organizational power is dependent of the organizational resources. For those workers who can utilize more organizational resources than the other workers, it seems to be easier to display and back up their own interests as they have more capacity for action taking within the social relations of the organization. Similarly, Foucault (1979, 1980) explores power as manifested in its exercise in situations of social interaction, where the more powerful participants have more knowledge as "resources" for exercising power. The Foucauldian idea of power it is not necessarily negative, as power cannot be possessed but is instead exercised in various relations.

In a working environment, organizational power is constantly exercised through multiple and heterogeneous practices. Knights and Murray (1994, p. 37) state that "power is least visible when things are most ordinary" – that is to say that also exercise of power becomes embedded in mundane practices and routines when the new technology has reached a taken-for-granted status. Here, work practices are a part of political and social interaction in work, and described as the organizational culture where the decisions and practices are embedded in the technology in use. As such, work practices are constructed through various and even conflicting interests. Approaching practices through political issues implies that historical development of organizational discourse and practices should be studied (Knights and Murray, 1994; Knights and Morgan, 1995).

Berg (1999) suggests that by understanding information technology as intelligent and autonomous tools, it can also be understood what such tools do in a workplace. Berg draws from the historical emergence and co-construction of work practices and tools, as well as work tasks as interdependent activities at the workplace. In this setting, not only the organizational politics but also the technical features and facilities have an impact on how the work practices are developed further. Berg explores an electronic patient record as a reading and writing artifact, the use of which affects not only the documenting practices of patient care, but also decision making, workplace relationships, organization of work, and how the patient is configured (Grint & Woolgar, 1997). He concludes (p. 376) that as information technology can support workers' capabilities, work is also transformed through the active mediation of technical tools, and therefore, more than politically neutral descriptions of co-construction of technology and work are needed. Moreover, information technology can have (perhaps unintended) consequences of supporting more centralized and direct practices of controlling and supervising workers (Berg, 1999; Wagner, 1994).

Orlikowski (1991) ties professional work practices together with institutionalized forms of control and organizing. She explores two types of control affecting work practices. Internal forms of control affect interaction practices at work, and they can be studied, for example, as hierarchical relationships between supervisors and subordinates, or as social structures embedded in organizational politics, procedures and rules. External forms of control are a part of professional control that is learned or internalized through education and learning. This later

continues in socialization within a professional working environment. For example, this type of control can be embedded in knowledge practices within a profession as norms and standards of handling knowledge.

As such, professional forms of control can be understood as instances of disciplinary power (Foucault, 1979), exercised in organizations through various institutionalized ways of conduct. Orlikowski (1991) suggests that while professional control was previously embedded in professional and institutional practices, information technology changes forms of control to visible electronic monitoring with new organizational rules and politics.

2.3.3 Practice as learning

Communities of practice (Lave and Wenger, 1991; Wenger, 1998; Barton and Tusting, 2005) describe organizational interaction as everyday social action at the workplace. The concept of communities of practice describes mutual engagement at the workplace where a shared repertoire of resources and routines becomes a basis for learning and identifying amongst workers. Learning is situated in practice, in everyday actions of legitimate peripheral participation (Lave and Wenger, 1991). Peripheral participation makes it possible for a worker to position and identify her- or himself in the community of working as a social world.

Wenger (1998, p. 46-47) emphasizes that a practice is always social and local. As such, shared practices imply certain continuity in a working community. First, common practices provide guidelines for action in situations of conflict. Second, collective practices support communal memory so that individual workers have no need to know everything that takes place, in order to conduct their work tasks. Third, shared work practices help the newcomers' joining and internalization into a community of practice. Fourth, work practices enable new employees to learn shared concepts, language, terms, and the like. Fifth, shared practices make work habitable when monotonous and routine aspects of working are dramatized in rituals, customs, and stories of work. Work practices become reified through these concepts, tools, symbols and stories that are adapted and transformed during shared participation (Wenger, 1998, p. 58-59).

The concept of communities of practice was adopted in studies of cooperative work (Heath and Luff, 1992; Bowers et al., 1995; Büscher et

al., 2001) where work is achieved as mutual action and awareness with tools and materials readily available, such as a control room. Here work practices and routines are situated and embedded in information technology. Lave and Wenger (1991), Contu and Willmott (2003), and Walsham (2005) point out that not only material resources such as information technology shape everyday organizing and carrying out tasks, but also power relations within any community of practice affect the outcome of work. Walsham (2005) notes that relations of power in a community of practice remain ambivalent (Wenger 1998, p. 77): "Peace, happiness, and harmony are therefore not necessary properties of a community of practice." Roberts (2006) argues that those members who fully participate in a community of practice also have more power in constructing meaning within the community. She continues that in reality, meaning construction can be affected by misunderstandings or disagreements while – within an organizational hierarchy – the workers' knowledge is not necessarily recognized as relevant but instead expert knowledge is emphasized.

The idea of communities of practice has been also criticized (Handley et al., 2006) by its emphasis on the capabilities of an individual learner as a participant in action. Likewise, internalization and learning takes place in a broader socio-cultural context than just a closed community of practice. This brings further fluidity and heterogeneity into the actions of participants beyond the community itself. A worker can participate also in other communities of practice – for example, as free-time activity – hence identity construction and learning can take place within multiple communities. This can bring tensions into a community through individual construction of self, and, according to Handley et al. (2006, p. 642), also "personal histories of involvement" at work and in social life. Conflicting situations may lead to a participant distancing herself or even to a decision of not joining when participation is not mandatory. Roberts (2006, p. 625) continues the critique by stating that communities of practice are never stable or static, and as such, "as defined by Lave and Wenger (1991), [they] cannot be formed." A community of practice is bound to change as new members join it and older members may leave.

Barton and Tusting (2005, p. 2) summarize communities of practice as follows: "Situated learning then means engagement in a community of practice, and participation in communities of practice becomes the fundamental process of learning." For Wenger (1998, p. 47) practice is a

social practice that is carried out "in a historical and social context that gives structure and meaning to what we do." Handley et al. (2006, p. 651) argue that the definition of practice in itself is problematic as it can have many interpretations. Individual workers may learn to do or practice work tasks while remaining unaware of all aspects of their work and thus, unable to meaningfully discuss one's work.

When practice is defined as a meaningful engagement in social communities, the definition of practice comes close to definition of participation but what remains vague is the meaningful activity. Should practice be understood as meaningful to the actor or as meaningful to the others? Handley at al. (2006) state that practice can be understood as something that is observed in action rather than as meanings and relationships that affect the action. Furthermore, changes at work are developed through practice, and within already existing embodied practices. Østerlund and Carlile (2005) argue that communities of practice illustrate how knowledge and learning at work is being produced and reproduced through practice during periods of organizational change. They argue that the focus on relations amongst the participants of any community of practice also suggests the existence of power issues and dependencies between various participants. Most typically, however, power issues are explored in relations between the newcomers and the experienced workers.

According to Wenger (1998), in communities of practice, meaning is not constructed only in engagements in action and participation but also in reification. By reification he means a process of producing artifacts and objects that give form to knowledge and experience: "Any community of practice produces abstractions, tools, symbols, stories, terms, and concepts that reify something of that practice in a congealed form" (Wenger 1998, p. 59). Such artifacts of reified experience can be transmitted to outside the community of practice and their original meaning construction. So far, information technology is not included in the core of communities of practice although it may be evident in representations of work.

2.3.4 Practice as technology in use

Practices and structures in relation to information technology in use were explored in early 1990s by Orlikowski (1992a, 1992b) with the duality of technology model and, later (Orlikowski, 2000), with the concept of a practice lens for studying information technology. Orlikowski (1992a) argued for re-examining the whole concept of technology and its role in organizations based on the duality of structure by Giddens (Giddens, 1979a, 1984). She draws from Giddens in describing how work practices become institutionalized within an organization. First, interaction between knowledgeable individual actors becomes standardized ways of carrying out work and coordinating action. With time, "habitual use of such practices becomes institutionalized, forming the structural properties of organization" (Giddens 1984, p. 404).

Orlikowski (1992a, p. 403) sees technology as material artifacts, as physical objects created as an "outcome of coordinated human action." The duality of technology model explains how technology is being created and transformed through human action, and at the same time, how humans use technology to accomplish various tasks (Orlikowski, 1992a, p. 405). According to Orlikowski and Robey (1991. p. 153), information technology never determines social practices:

> For information technology to be utilized, it has to be appropriated by humans, and in this exercise of human agency there is always the possibility that humans may choose not to use the technology or use it in ways that undermine its 'normal' operation.

Especially information technology can be used in various ways by several users, in different times and places. As the interaction between technology and humans as well as transformation of technologies can take place in various contexts of use and by different actors, technology is inherently interpretively flexible. Despite the nature of technology as interpretively flexible, it is constrained by its material characteristics as well as the institutional context of its use. In the duality of technology model, technology is not only a product and medium of human action but is also conditioned by institutional features, such as intentions, professional norms, knowledge, standards, and resources (Orlikowski, 1992a, p. 410).

Orlikowski (1992b) emphasizes organizational issues and characteristics in how information technology is taken into use and what kind of changes are needed in work practices and interaction mediated with the new technology. Orlikowski approaches conditioning of information technology both on the individual and organizational levels. An individual's approaches to technology, that is, the mental models or the technological frames affect the use and transformation of technology as well as other organizational structural properties, such as, policies, norms, and reward systems. For example, if the organizational values support collaborative work, the new technology is likely to be used to support collaborative work practices further. Weakly developed technological frames and insufficient integration of technology and work practices, may lead to unsuccessful organizational implementation. When an organization's workers have formulated only marginal meaning for or understanding of the new technology, the technology is likely to remain resisted or used only partly.

Later, Orlikowski (1996, 2000) readjusted the duality of technology model with notions of the ongoing interaction between people and information technology. Technology is being further developed in this interaction through emergence and improvisation while in use. Moreover, organizational or social structures cannot be embedded in technologies as, according to Giddens (1984), such structures are not objects but only virtual elements that can be instantiated in interaction between people. When social structures are understood as set of rules and resources, what follows is that neither work practices can be said to be embedded in information technology in scripts, nor in bits of program code. Still, information technology has potential structuring elements that can be mobilized in work practices. Orlikowski (2000, p. 407) proposes that the new technology is not shaped as appropriation but as enactment – that is to say, as recurrent interaction with the technology at hand and in use. This enactment with technologies can be faithful to the original design of a technical artifact, or workers can, as individual social actors, circumvent or contradict the designed use.

The practice lens for studying technology as an artifact and in use is a more practice oriented and dynamic approach than the earlier duality of technology model. When in the duality of technology model the technological structures and work practices were embedded and

dependent on a given technology, in the practice lens approach the technology structures are possibilities enacted in ongoing interaction.

In considering work practices, Orlikowski makes a distinction between the artifact and its use. Technology as a physical, durable artifact can have various cultural, historical, political or material properties that transcend an individual user's experience. At the same time, the use of technology can be experienced in different ways by different individuals, or in different contexts of use. Orlikowski calls routinely enacted technological structures as technology-in-practice. However, all of the technology's inherent possibilities are not necessarily deployed by an individual user as her or his technology-in-practice. According to Orlikowski (2000, p. 412), technology-related work practices may become institutionalized, or rather "stabilized for now" as "there can be no single, invariant, or final technology-in-practice, just multiple, recurrent, and situated enactments." Workers as knowledgeable individuals can always "choose to do otherwise."

A practice perspective for studying information technology mediated service relationships was implemented by Schultze and Orlikowski (2004), to study the tension between handling customer relationships and technology in practice. Here, they follow Schatzki, Knorr Cetina and von Savigny (2001) and define practices to be "clusters of recurrent human activity informed by shared institutional meanings" (Schultze and Orlikowski, 2004, p. 88). The approach emphasizes practice as mundane, everyday action that is enacted between workers and their customers according to given rules or structures coordinating the action. Schultze (2000) had already previously explored everyday action with an emphasis on the sensitivity of social conditions at work. She argues that practice oriented research focuses on what people actually do instead of what they say or what they are expected to do. According to her, work practices can also represent conventions of intersubjectivity established between groups of workers or their customers. Such intersubjectivity is informed by professional meanings, values and standards. As such, the understanding of these conventions may also differ between worker groups. For example, even when all are acting within the same profession, office workers may emphasize documenting practices, whereas field workers may emphasize information retrieval practices in relation to customer service practices.

Approaching practice as technology-in-use gives insight on the emerging work practices and on workers' daily achievements in fitting the new technology to their working environment. Transforming work practices becomes a challenge when the mundane work and utilization of routinized tools surface to the consciousness of the workers (Ciborra, 2002; Orlikowski, 2002; Schultze and Orlikowski, 2004). When the challenging issues have been resolved, the new technology and the emerged work practices disappear once again from the core of consciousness. As such, "ideal" working practices are described as demanding no special effort, and they are embedded in the context of working. During a period of change, also broader changes may emerge, as relationships to working partners and clients may face serious challenges due to unintended consequences.

2.3.5 Practice as materially bounded action

Work practices have been studied also from the viewpoint of how practices are represented in the material environment and in the organizational action. Here the question is how work practices change through information technology. The change of work practices is studied through the relation of representations and action (Vaast and Walsham, 2005). They first define work practices after Orlikowski (2002, p. 256) as "recurrent, materially bounded and situated action engaged in by members of the community." This definition explains what work practices involve but not how practices change. Merely stating that information technology contributes to changes in work practices (e.g. Barrett and Walsham, 1999) does not explain how work practices actually change. Almost, it would suggest that information technology defines the boundaries for everyday action taking and for the work practices, in general.

Vaast and Walsham (2005) propose a conceptual approach where work practices are explored through actions and representations, that is, how workers act and how they make sense of their actions. They explore the nature of work practices as follows: First, work practices are recurrent. As workers take action repeatedly and regularly in learned and routinized ways, they reproduce work related structures. Also changes in work practices take place after repeated action instead of a one-time action. Second, work practices are approached as materially bounded and situated action. As work environment and situations change, workers may face a

need to adapt their actions and work practices. This adaptation produces emergent change of work practices as well as technology in use. Third, work practices are defined and transformed as workers engage amongst themselves. As such, work practices are socially shared in contrast to individual habits or ways of doing things. An individual adaptation of action does not change work practices, but several workers engaging in new and recurrent actions may do that. A need to change work practices emerges from the workers attempts to make sense of their working environment. The sense-making process is socially shared at the work place, and through this process the social reality or "the world" is being defined and re-defined. As such, representations of social reality and working environment are not fixed. However, while changes in representations support changes in work practices, it is not clear how workers' sense-making processes should be explored as individual vs. social action.

Levina and Vaast (2005) see work practices as recurrent, materially bounded and situated action, akin to the works of Bourdieu (1977). This approach emphasizes a shared interest of workers as actors facing the challenges of a changing environment such as a new information technology or other resources and tools. The workers distinguish themselves from others by taking action in similar ways and by engaging in a defined field. In diverse organizational fields, different resources and power relationships are utilized as capital. According to Orlikowski (2002), boundaries between different professional fields may also promote emergence of various competencies embedded in work practices. The workers may continuously reproduce the boundaries between fields as well as new joint fields through shared organizational interests (Levina and Vaast, 2005).

In a later study, Levina and Vaast (2008) explore the boundaries of collaboration. They argue that differences in work practices can either become salient boundaries hindering collaboration when participating groups are set on their ways, but equally well the practices can evolve and thus stop mattering as boundaries. They focus on the emergent and transformative properties of everyday practices that allow adaptation on both social and technological relations. Levina and Vaast continue on Bourdieu's idea that various actors are continuously engaged in shaping their field of practices through shared, commonly understood practices. Such fields of practice can be overtly institutionalized or fragmented and

overlapping according to the changing practices and resources acquired. The fields of practice themselves remain dynamic as their boundaries can always be reformed and renegotiated through practice. In this sense, a field of practice is a more fluid concept than communities of practice, focusing on participation (Wenger, 1998).

2.3.6 Practice as sociomaterial action

Latour and Woolgar (1986) described in *Laboratory Life* how the material elements of the laboratory affect the production of scientific facts. Based on Latour and Woolgar (1986), Pickering (1992) defines culture as the field of action and as such, the material and mundane resources of taking action, while practices are all making and un-making actions performed in that field. When discussing scientific practices, Pickering (1995) later clarifies that his definition of culture in a broad sense covers man-made things and practices. In this view, the everyday life has a character of coping with the material agency, and the machines are central in relieving the efforts of agents. Human and material agencies are studied as intertwined and inter-defined.

Contu and Willmott (2006), Orr (2006) and Haythornthwaite (2006) have all studied socio-material action. Contu and Willmott (2006) explore work practices as materially constrained and embodied. As such, work practices are formed around shared practical understandings, and they represent both richness and complexity of working, bound by the material world such as the technologies available as well as the skilled improvisation of the workers involved in using the technologies and other material resources. Orr (2006, p. 1812) discusses the nature of work practices as an assemblage of selected techniques needed to carry out work, but warns against deleting the persons doing the practices from the scene: “Not agents, not actors, and certainly not just undifferentiated labor, but skilled people whose work matters.” This approach of everyday production of work practices relies on ethnographically studying work practices as bounded by their material and situational attributes. Haythornthwaite (2006) suggests that the invisible, taken for granted set of work practices forms a transparent infrastructure (Star and Ruhleder, 1996) in a working organization.

Hence, to map out the everyday work practices is a first step in understanding how technologies are used to accomplish work. Taking

new technologies in use may reveal such aspect of practices that also define individuals' or group's working and a new awareness of previously taken for granted work practices may arise. Such awareness may lead to refitting of work practices.

Orlikowski (2007) states that the relationship between the everyday organizing and the material forms and spaces at work is either ignored, taken for granted, or treated as a special case. In contemporary organizations, materiality consists not only of visible structures and forms but also of "less visible flows – such as data and voice networks, water and sewage infrastructures, electricity, and air systems" (Orlikowski 2007, p. 1436). In relation to sociomaterial practices, information technology is viewed as a material object during specific technological events such as periods of organizational implementation or breakdowns when the materiality emerges as a practice-related issue that has to be resolved. Approaching materiality only as a backdrop to action is too limited a view as all organizational practices are more or less bound with materiality: "Materiality is not an incidental or intermittent aspect of organizational life; it is integral to it" (Orlikowski, 2007, p. 1436). Transformation of work practices during the organizational implementation should not be limited to studies of technology's effects on action or to interactions with technology. The social and material practices should be studied as constitutively entangled in everyday life. In this view, a sociomaterial assemblage that contributes to carrying out a specific task can temporarily bind together the varied, heterogeneous assembly of actors and material agencies. These assemblages may shift over time as, for example, interests, preferences, and capabilities for action taking change.

According to Orlikowski and Scott (2008), applying this sociomaterial approach necessitates an examination of the performativity and reconfiguration of situated practices. The nature of sociomateriality proposes studying work practices as performed, as enacted in practice, and not as pre-given or fixed. According to Orlikowski and Scott (2008, p. 27) this approach leads to further questions such as, "when and why is sociomateriality (re)configured" or "what consequences arise out of the multiple sociomaterial (re)configurations performed in ongoing practices." Orlikowski (2007) and Leonardi and Barley (2008) argue that the materiality of contemporary working and organizing is overlooked and understudied in research. One reason for this is that the material is to

some degree bound with determinist approaches and the social with voluntarism.

Leonardi and Barley (2008) suggest that addressing materiality and avoiding determinism places four challenges. First, instead of studying certain artifacts, addressing materiality implies focusing on the technological artifacts as bundles of interconnected properties and features of software and hardware that have certain constraints and affordances. This implies studies of how the technical features become entangled in the work practices. Second, studying information technology in use seems to imply studying how people communicate or store data. However, information technology can make available information that was not previously accessible or transform the type of information to new information. Hence: "technologies that transform information not only offer affordances that change work practices; they often change the nature of the work itself" (Leonardi and Barley, 2008, p. 165). What follows is that the work tasks and roles as well as the relationships and responsibilities attached to certain roles start to change, too. Third, the separation between the design and the use of technologies is not an issue only when planning and developing, but likewise, for research. As people adapt to the technologies and as the technologies continue to change through the adaptation and use, this implies that studying sociomaterial practices and use of information technology requires longitudinal data. Lastly, Leonardi and Barley address social constructionism as the intersubjective and communicative means that people share and shape the world. They argue that in the context of the sociomaterial approach, a relative research question would be "Why do different organizations experience similar outcomes with the same technology?" (p. 169). Instead of concentrating on different outcomes of the same technologies, this could help understand similar experiences of various technologies in use.

2.3.7 Practice as performance

An alternative to the technical constraints and affordances for practices is an approach where human agency has more weight in how the actions or the practices turn out. Suchman (2007) continues to study work practices as performance. In any kind of work, actions and plans are related to each other. Plans or intentions of organizational actors define properties of action but at the same time, an action can be achieved or carried out in various ways by individual members of an organization. For Suchman

(2007, p. 70), situated action does not mean studying material or social boundaries for action taking, but rather to study "how people use their circumstances to achieve intelligent action." In any action, there are related attributes that are never mentioned – that is what Schutz (1967) calls everyday world taken for granted. All such background assumptions can never be covered but actions as performance can be observed and studied.

Suchman (2007) proposes that plans, scripts, and other ordering devices are interwoven in the fabric of everyday action in ways that they provide ordering "from within" - and as such, they can be observed through emergent practices. According to Suchman (2007), the concept of material agency (Pickering, 1995) expands human agency supported by technology and results in mutual constitutions of sociomaterial reality. In any profession, sociomaterial interactions of learning and conducting define both relevant objects as well as ways of seeing the world through "professional vision" (Goodwin, 1995). Here, work practices are at the same time historically situated (Goodwin, 1995) and socially articulated (Goodwin, 1994). The professional vision is not just a mental process, but instead, it is accomplished through complex situated practices.

According to Suchman (2007, p. 263), certain objects are defined by and exist within a professional matrix of social and material accountability, and as such, the professional knowledge and the identity of a competent professional worker are co-constructed. Similarly, designing information technology is an ongoing process of reproduction over time and across sites. In my study, the organizational implementation of information technology is approached likewise, as a process that has no clear beginning or ending points but rather as ongoing process of forming and reforming the work practices according to situational resources, knowledge and tools at hand.

2.4 Implementing a practice perspective

In summary, there are various practice-based approaches to studying technology and technology mediated work. One starting point is Bourdieu's (1977, 1990a) definition of practices as recognizable patterned actions that individuals and groups share and enact. When aiming to summarize these approaches, one starting point is that a practice approach avoids juxtaposition between people and the world or between

subjectivism and objectivism (Bourdieu, 1977, 1990a; Giddens, 1979a, 1984). According to Østerlund and Carlile (2005) and to Bradbury and Lichtenstein (2000), these are two theoretical vantage points that rarely account for each other. The first one emphasizes people and their knowledge, intentions, goals and the like, whereas the second approach emphasizes the world and its nature and structures. Compared to this, in practice theories, the subject and the world cannot be separated as their interactions are interlinked and recursive (Bourdieu, 1977, 1990a; Giddens, 1979a, 1984).

The discussion of objectivism and subjectivism is argued to a slightly different direction by Gherardi (2010). Gherardi suggests that objectivism and subjectivism can mean an inquiry of practices from the outside and from the inside. When practices are studied from the outside, they are analyzed as emergent objects that represent these practices. When the practices are studied from the inside, the practices are described as performed knowledgeable and collective action. An alternative to these two directions exploring what a practice does or what affects the practice has in the society or in its context.

In other words, there are relational interdependencies between the people and the world, between the individual and the community. These relations are not static but evolving, as the social relations are produced and reproduced in the everyday enactment of practices (Østerlund and Carlile, 2005). For example, Orlikowski (2002) explores the practices of knowing within organizations: adapting a practice perspective illustrates how knowing is a culturally situated, ongoing social activity that is enacted through everyday organizational practices. Orlikowski suggests (2002, p. 250) that organizational knowledge is "what the practice has made it."

This implies a focus on how the work practices are reproduced and enacted when the work becomes technologically mediated or, according to Gherardi (2010), a study of technology-in-practice. In technologically dense working environments also the material and the technological take shape enacted through practice. Reproducing new work practices may conflict with already established practices, with traditional actors and power relations, but when new features such as a new technology is taken into the use, a new local ecology of infrastructure is formed by the workers as a group sharing interests, alliances, organizational policies,

institutionalized myths, among others (Gherardi, 2010; Star and Ruhleder, 1996).

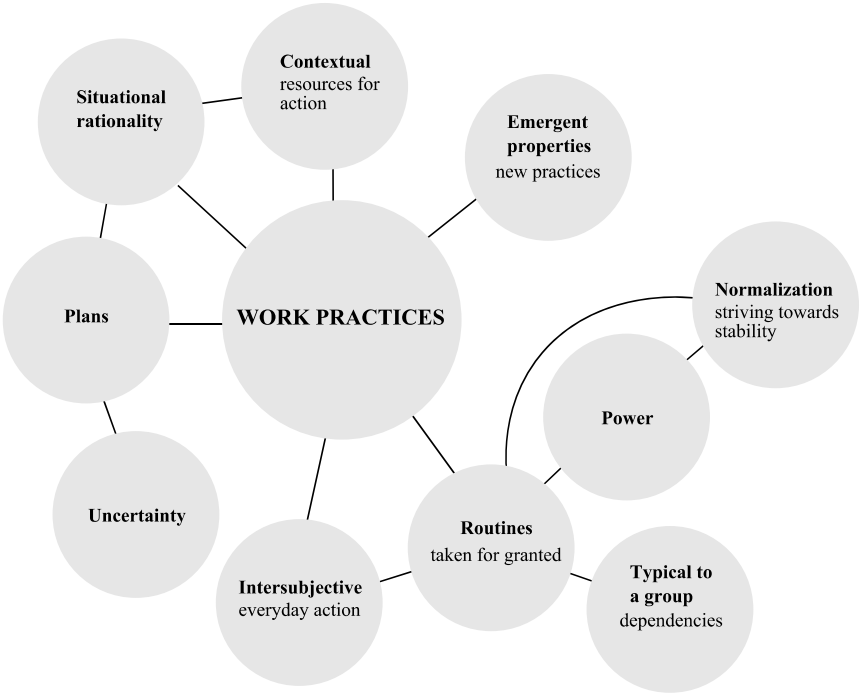


Figure 4: Attributes of the practice perspective

The literature reviewed yields some natural properties of work practices independent of the organization (see **Figure 4**). First, work practices are resources for everyday action in a sense that they bring continuation from day to day activities in the form of routines and shared meanings. As such, work practices are recurrent action that decreases effort needed in everyday accomplishment of work. At work, various tools and technologies are used, and together with the working environment they constitute the material boundaries for working. Work practices can be explored as socio-materially defined practices typical to a group of workers. Due to their nature, established work practices have organizational power embedded that grants a level of stability or continuity within the work group. Organizational knowledge and skills or situational rationality and information at hand form other boundaries to work practices.

In this study, the main emphasis is on readily observable practices related to use of information technology at work. Perceiving work practices as materially bounded and as typical to a group of workers does not mean that the work practices would be stable or limited to a group. Intersubjectivity of interaction enables reforming of work practices when a need arises. Such needs arise for example under situations of organizational change such as implementation of new information technology. Despite the plans that have been made and goals that have been set, risks and uncertainty remain as causes for organizational participants to adjust their actions and thus reform their work practices. Such adjustment of practices can mean establishing new, emergent work practices that fit to the changing material context of working. In attempts to normalize the situation to everyday action, where no anomalies hinder working or where no extra effort is needed, power relations within organization may force this reforming according to various interdependence relations in the organization.

Various definitions of what work practices are (see **Table 2**) can be found in the literature. It should be noted that many of these definitions relate to each other or even borrow from each other. Any practice theory should, according to Fuchs (2003), avoid determinism that explains change as mechanistic and rigid relations of input and output or categories of systems and subsystems overlooking chance. Likewise, Fuchs continues, reductionism explains new properties of a system or whole phenomena in terms of old properties, characteristics and parts of the system, thereby overlooking the human agency. Fuchs argues that Bourdieu's theorizing is closer to theories emphasizing complexity and self-organizing of both natural and social systems. Complexity theorizing approaches do not explain change simply by chance or chaos, but instead, the concept of self-organizing explains change by chance *and* necessity as the driving forces. How a system or a technology-in-practice turns out cannot be solely a process of chance development as there is always human capability of intervention and the design to be considered. Exploring organizational change with a lens of self-organization of social systems and practices means a shift of focus to non-predictability, risk, and uncertainty. This means also an emergence of a new organization and properties of the technology-in-practice as material properties of a working system.

In this study, the practice perspective has several implications. When the organizational implementation is perceived as gradual and as developing slowly on the level of everyday working and using the new technologies, the approach has affected my theory building and choice of research methodology. On a theoretical level, the practice perspective aims to answer on the research themes. The first theme (T1) is what the emerging changes in work practices were during the organizational implementation of a PDA-based information system. This implies studying how work practices changed during the organizational implementation and how this transformation affected the workers. To answer this, the practice perspective concentrates on the interaction on the group level of workers and on the situational rationality they applied while working and while enacting with the new technology. Moreover, the practice perspective allows studying how the workers and the new technology became more or less entangled in the everyday practices. The implementation period was a period of uncertainty to both the care workers and their managers. During it, the care workers could not rely only on established and routinized work practices but were at the same time coping with the uncertainty as the new technology-in-practice was just being generated. Gradually, the new ways of using the technology or the technological mediation at the care work context became more stabilized, and institutionalized through normalization supported by the management.

The practice perspective aims to describe also the workers striving for stability and normalization of the change; what work practices or strategies were applied and how the working relationships and interdependences affected this process of adjusting or how the technology was adapted? As such, the practice perspective aims to answer also the other research themes concerning work relationships and work identity (T2), adjusting to the new surveillance capabilities embedded in the mobile technology (T3), and carrying out the negations and justification of the changes at work (T4).

Table 2: Various definitions for work practice

Definition of work practice	Author(s)	Comments on the definition
Work practice is lived experience, only partially representable.	Suchman, 1995, p. 60.	Emphasis on designing tools for work. Work practices can be captured and transformed to models and knowledge.
Professional practices are informed by technologies, projects, identities and interests.	Suchman, Blomberg, Orr & Trigg, 1999, p. 392.	Emphasis on understanding work practices for design. Technologies can be reconstructed as social practice, and thus assessed.
Work practices are embedded and routinized social exercising of organizational power.	Knights & Murray, 1994.	Emphasis on understanding political conditioning and management of organizational life.
Information technologies have "role as active participants" in work practices.	Berg, 1999, p. 373.	Technical artifacts and work practices are interrelated. Technology has capabilities to transform work practices. Practices are informed by politics of information technology.
It is doing in a historical and social context that gives structure and meaning to what we do. In this sense, practice is always social practice.	Wenger, 1988, p. 47.	Practice and meaning are constructed embodied, and can be observed in action. Learning takes place in meaningful participation in practice. Knowledge created through participation can be reified in objects.
Technology embodies and hence is an instantiation of some of the rules and resources constituting the structure of an organization.	Orlikowski, 1992a, p. 405	Work practices become institutionalized with time. Organizational practices, rules, values and so on can be found embedded in information technology.

Structural properties of organization encompass the reward systems, policies, work practices, and norms that shape and are shaped by the everyday action of organizational members.	Orlikowski, 1992b, p. 366	Work practices are part of structural, institutionalized properties of an organization. Thus, work practices can become embedded in IT as technological features, or mediated with IT. This requires integration of work practices and information technology.
Structures of technology use are constituted recursively as humans regularly interact with certain properties of a technology and thus shape the set of rules and resources that serve to shape their interaction.	Orlikowski, 2000, p. 407.	Seen through the practice lens, technology structures – including those related to work practices – are emergent, not embodied.
Practices can be understood as clusters of recurrent human activity informed by shared institutional meanings.	Schultze and Orlikowski, 2004, p. 88.	Practice oriented approach emphasizes everyday action. Practices are dynamic and ongoing. People engage in them as a part of the structuring processes through which organizations and networks are constituted over time.
Work practices are what people actually do rather than what they say they do or what they ought to be doing.	Schultze, 2000, p. 4, after Pickering, 1992.	Definition of work practices is here based on ethnographic studies of work.
Work practices are recurrent, materially bounded and situated action engaged in by members of the community.	Vaast and Walsham, 2005, p. 67, after Orlikowski, 2002.	Definition of work practices explores the relationship of actions and representations at work. Transforming work practices demands effort of members of the working community.
The term practice defines “how social orders (such as organizations) are produced through recurrent human activities.	Orlikowski and Scott, 2008, p. 26.	Work practices are studied as performance, as continuous and shifting action taking. Social and material worlds are constitutively entangled.

3 Research methods

In this section, I outline the ethnographic research method used in this study, and on its implications in collecting and analyzing study data. My objective in this chapter is not to provide the reader an in-depth review of ethnographic tradition. The ethnographic methods have a long history originating in ethnological and anthropological research, but nowadays, they are widely applied in various research fields, of which information systems research is one example. In this chapter, I concentrate on the core characteristics of the ethnographic method and describe how the method was applied in this particular case.

To begin with, the organizational implementation of a new technology was a seemingly small part of the home care working, yet the implementation resulted in tensions between the workers, the clients and the managers. To understand these tensions as well as how the work was transforming, I conducted a longitudinal ethnographic study. Although the home care workers themselves had no role in developing the new technology or in planning the organizational implementation, the learning and adaptation process meant transforming their institutionalized routines and work practices. Hence they and their work are the foci in this study. In selecting home care as the area to study, I was inspired by Suchman (2000a) who suggests that studying seemingly simple and routine work tasks can reveal their actual demands and practices. She illustrated this with a case of lawyers and document coders, where the two worker groups had differences (as well as similarities) in their work practices based on their expertise and their organizational arrangements and hierarchies.

The home care case data is confidential in relation to the care workers and their clients. When starting this research project, I signed a contract of confidentiality at the Turku Social Service office. All workers and clients are presented anonymous and as collections of characteristics from several workers or clients to ensure that none are recognizable. To ensure

the anonymity of my research subjects and their clients I also decided not to use a still or a video camera for documenting the case. The data collection was organized so that it caused no discomfort or threat to the rights of the often vulnerable clients or the workers themselves.

3.1 Data collection

> In sum, then, our discussion is informed by the conviction that a body of practices widely regarded by outsiders as well organized, logical, and coherent, in fact consists of a disordered array of observations with which scientists struggle to produce order.
>
> Latour and Woolgar, 1986, p. 36.

I studied home care with qualitative and interpretive methods to learn how work practices were transformed or reproduced during and after the implementation of the new information technology (Klein & Myers, 1999). Walsham (2006) argues that the underlying belief, the epistemology in all interpretive studies is the nature of knowledge as a social construction by human actors: interpretive research has human action and intersubjectivity as a starting point. At the same time, interpretive research remains sensitive to the cultural context of the study and is "commonly guided by the ethic to remain loyal or true to the phenomena under study" (Altheide and Johnson, 1994, p. 488).

This study was conducted during 2001-2004, to observe and discuss the interpretations of and reactions on the working situation by the home care workers, in order to understand how the home care work was being transformed (Zuboff, 1988). According to Davies (1999, p. 17) ethnographic research requires "an ontology that asserts that there is a social world independent of our knowledge of it and an epistemology that argues that it is knowable." We can gain knowability of other cultures and people, although, in ethnography, there remains the danger of projecting our own assumptions and pre-convinced beliefs in the interpretation. The reflexivity – as in multiple perspectives – of an ethnographic approach provides explanations, but not strictly causal statements. Moreover, ethnographic research is situational, "rooted in the specific, in time and place" (Davies, 1999, p. 20).

Ethnographic methods aim for observing and understanding the phenomena holistically within the context of everyday activities and by the meanings attached to them by the participants (Schultze, 2000). According to Geertz (1973), meanings are made public as they are interpreted, inscribed by an ethnographer in accounts of "what took place" or just simply of "what was said." Moreover, Geertz (1983, p. 241) emphasizes that gaining such understanding can be ad hoc "grasping a proverb, catching an allusion, seeing a joke" more than just establishing formal communication. For Geertz, ethnography is not just a textbook example of reporting but instead a detailed and intentional effort towards a thick description. Denzin (1994, p. 505) compares thick and thin description: "A thin description simply reports facts, independent of intentions or circumstances. A thick description, in contrast, gives the context of an experience, states the intentions and meanings that organized the experience, and reveals the experience as a process." In this sense, the validity of ethnographic text emerges from the thick description.

As a research method, ethnographic data collecting enables also the exploration of new, emerging practices (e.g. Schultze & Orlikowski, 2004; Levina & Vaast, 2005), as especially in observational research, predefined concepts of research questions do not limit the scope of observations, but instead, new concepts or new relationships can emerge (Geertz, 1973; Tope et al., 2005). Therefore, the data collection was organized, at first, as participation with the home care workers' service calls and as observations at the home care workers' break facilities.

The first choice of methods was participant observation chosen because, according to Davies (1999, p. 67), it is the archetypal form of ethnographic research and more "a research strategy than a unitary research method." In the ethnographic research tradition, this method meant originally going to far off places and living amongst local people, but has been expanded to studies of industrial and social communities, such as different institutional settings, organizations and workplaces (Marcus, 1986; Davies, 1999). Participant observation is argued to provide detailed and rich information on workplace behaviors and interaction (Tope at al., 2005) as well as being means for the researcher to familiarize with the environment and establish face-to-face relationships with the subjects (Lofland and Lofland, 1995). With participant observation, the researcher can also gain understanding of the more subtle

ways of behavior and attitudes at the workplace that, later on, reassures the interpretations made on the research data (Tope et al, 2005).

The hallmark of contemporary participant observation is a long term personal involvement with the study subjects (Davies 1999). The observations I carried out during the research process were not participative in the sense that I would have been living the life of a home care worker. However, I did participate in the everyday actions of the home care workers for relatively long periods of time during several intervals. During the fieldwork, the level of my participation varied as the home care is a sensitive field to be working and researching in. Moreover, I had no educational background in social and health services, so a total participation would not be allowed as even amongst the home care workers there are levels of authorization to different care tasks according to the educational level of a care worker. Specifically, with the more problematic clients, as with clients with suspicious or aggressive behavior in their care history, I remained only as observing, not participating. If I would see something I did not understand, I could talk quietly with the home care worker, but not necessarily with the client or, alternatively, I could make a note for myself to discuss this with the home care worker after the client call.

The observations (see **Table 3**) began during autumn 2001 when the pilot phase of the new mobile technology was started in two home care teams, and continued during the years 2003 and 2004 when the mobile technology was being implemented and adopted by all the home care teams. During the first observations, there was another master's student working on the field with me, but during the latter phase of data collection, I was by myself in the field. The first phase of study concerning the pilot use of the mobile technology was documented in my Masters thesis for Computer Science. This work concentrated on the issues of time management at work, and on the new features of technology mediated control and surveillance. The home care work itself has been scrutinized with the concepts of Bourdieu in my other Masters thesis for Ethnology. In the latter, the meaningful attributes of the home care work are analyzed as field of action, habitus and capital or resources.

Table 3: Summary of data collection

Observations	- *First phase 2001:* observing for 40 hours in two care teams. Day and evening shifts. - *Later phase 2003-2004:* observing for 50 hours in three care teams. Day shifts.
Interviews	- *First phase 2001:* 7 home care workers and 13 other participants in the implementation (from stakeholder groups including the system vendor, the city planning personnel, the city technical department, the higher ups at the home care office) - *Later phase 2003-2004:* 20 care team managers and 20 home care workers. - Most of the home care workers' interviews were group sessions (eight out of ten interviews).
Questionnaire	- *First phase 2001:* Mapping of previous education, career paths and technology expertise amongst the home care workers.
Document analysis	- Documents and forms used in care work - Collecting examples of the service codes. - The information gathered in the new information system.
Other	- Observing training sessions (c. 4 hours). - Riding in a car with the home care meal services (c. 7 hours). - In addition: informal discussions during the breaks with the care team members provided more insight.

During a working day, I would observe two or three of the care workers. I arranged my observation periods so that I could usually stay with the same care team for the day, "switching" the subject to follow during the break times. During an evening shift, there would be only one or two care workers, and usually no breaks. I followed one care worker throughout the shift, and observed the more hectic schedule of basic services.

The observations included going to service calls with a home care worker to observe their interaction with the clients as well as how they carried out various service tasks. The observations include also participation in the training sessions organized for the home care workers. In total, the observations consist of over 90 hours in the field. I made notes on my field diary constantly during these visits. As my field diary consisted of a pen and a note book, I attempted to decode the scribbles in the note book after each day, so I ended up typing most of the observation diaries. The

field journal was organized only as a chronological journal with some key words on the margins as I did not have time to arrange the data under specific headings (Davies, 1999). This I did later, during the analysis.

During the service calls I presented myself to all the clients and asked the permission to enter their homes. My presentation was left intentionally a little vague, as I felt it was easier to present myself only as a "student" to receive permission for following a home care worker anywhere and in any kind of service situation. According to Agar (1980, p. 61) such vagueness of presenting self is a way of dealing with the expectations the study subjects have: "the goal is to begin your work honestly by presenting yourself and your task in some way that will make sense to group." It was easier for the home care workers to introduce me to their clients when they could just state: "Here's a student, who's going to write about us." It would have been relatively complicated to handle the introductions by, for example: "Here's an ethnographer, who's interested in organizational implementation and wants to observe information technology in a working context." Agar continues to warn against taking a specific or authoritative role right out of the research context instead that of an outsider. It would be unethical or considered as lying instead of building on trust between the researcher and the study subjects. Nonetheless, the clients seemed to interpret me as a student of social and health care. Although the home care workers knew – based on our introduction letter – our positions as students of a more technical orientation, they played along.

Related matters to presenting oneself in the field include the issues of content and confidentiality. Because of the informal interaction on the field, the researcher is "condemned to too much knowledge" (Agar, 1980, p. 122). I signed a contract of confidentiality. In my research, I followed the guidelines about the clients' rights and about handling the client information as stated in the Finnish social law. Besides concerns of client confidentiality, I told the study subjects how their anonymity would be protected in the texts I would be writing and how the study data would be handled and stored. Besides this, as the field work progressed, I witnessed actions I decided to leave outside the research texts as they are more related to the personal life and characteristics of the study subjects and less related to my research interests.

During the client calls, I had also some boundaries to respect privacy of the clients. I could, for example, observe the preparations for bathing and caring for personal hygiene, but I did not inspect the actual bathing service taking place. Similarly, Tinney (2008) discusses the ambiguity of roles while conducting ethnographic research in a nursing home for elderly. What are the researcher's boundaries in such narrow spaces? She had chosen the role of a non-care volunteer in an Australian nursing home. Later on during the research, she had to limit her physical and emotional participation to lessen personal involvement and stress of fieldworking. For example, Tinney made a decision to help in feeding the residents. Similarly, I made a decision to help in lifting the home care clients. Still, I had some situations, where I could not draw my boundaries and, for example, I once ended up changing swabs and dressing laceration on a client's leg. Tinney (2008, p. 222) concludes: "I was occasionally faced with requests to help either residents or staff, which I found difficult to refuse but difficult to fulfill." In a sense, you had to negotiate your boundaries again and again as the action in the home care involved both the care workers and their clients during a service call.

After a service call, I would be walking with the care worker to a next call or back to the team break facilities. These walks provided an important, yet informal access to the care workers' ways of thinking as they would be explaining various issues or instances of the previous service call. The care workers used these walks for concluding the previous service call and classifying the client's issues, as well as preparing for the next call by going through a sort of mental check list of the particular client. The preparation to the next service call would usually include some instructions or warnings for me – for example, at times I was warned about things that I should not say or act in the next call not to disturb the sensitive client relationship. After repeated visits to a home care team, a clearer picture of client relationships started to form through actions and discussions. As time went by, I did not have to wait "what will have happened" Garfinkel (1967, p. 77) so much to understand what and why certain actions were taking place – as how he describes this phenomenon of embedding presupposed knowledge on the study subjects to understand their conduct.

Also the time spent in the home care workers' break facilities proved to be insightful, because during the breaks the home care workers discussed freely their work and shared information about their clients. Issues

concerning the arrangement and coordination of work were repeatedly raised during breaks as well as general considerations about the future of home care and social working. Sitting in the break facilities and listening – or even taking part in the discussion to lead it into interesting directions – was an important way for gaining a deeper understanding of the beliefs and values that guided home care workers (Davies, 1999). For example, the discussions in the break facilities exposed practices of reaching a collective decision in problematic situations and also presenting various issues to the managers as a collective.

The emerging picture from the field was elaborated by doing semi-structured interviews (Davies, 1999) with the home care workers, their managers, and other stakeholders participating in the implementation project. Lofland and Lofland (1995) call this type of interviewing "unstructured," like a guided conversation. In practice, I had a list of themes or guiding questions that were used to keep on the topic and to cover all chosen themes of the research. The first phase of interviews (see Appendix 1) had wide range of questions of the home care working, whereas the latter interviews (see Appendix 2) had a somewhat modified list of themes concentrating more on the use of the PDAs.

This kind of semi-structured interviewing has the benefit that the researcher can alter the questions, add or omit something according to the sensitivity of the interviewing situation (Davies, 1999). While a structured interview illustrates, for example, a frequency of chosen phenomena, according to Lofland and Lofland (1995), an unstructured interview attempts to find out what kind of things exist for the research at the first place. In a semi-structured interview, some pre-formed view on the research subject already exists, but the research subjects are free to recall their own personal experiences on the chosen topics. For example, I had already observed the home care work before starting the interviews, so I had my experiences and a field diary to draw questions from.

As the interviews progressed, I noticed some vagueness in responses on topics related to the organizational implementation. First I pondered how to successfully communicate with the home care workers, how to rephrase my questions to make them more meaningful to them. Finally I came to conclusion that it was not a matter of communication or understanding, but of sensitivity of the issues. Gorden (1956) recalls that the research subject may feel "ego-threat" that causes withholding

information. This can be caused by fear of disapproval or status, as and when the information starts to circulate. The research subject may also have difficulties in recalling information that is not "ego-involved" or has no special meaning to the person in question. The research subject can also resort to generalizations when they actually have no personal experience on the matter, when they want to conceal, for example, an unflattering situation, or when the topic in itself holds a negative value. In the home care case, the most sensitive issues were – according to my experience as an interviewer – resistance of the mobile technology and the internal relationships within the home care organization. I had observed these issues played out earlier, and therefore could often identify when something was left out.

According to Tope et al. (2005, p. 482), "interviews are limited to what is asked and what is told." That is a highly mechanical look on the interaction situation that an interview is. Gorden (1956) describes an interviewer as permissive, reflective, and non-directive of the situation – keeping her or his activity to minimum and leaving space for the subject and the subject's experiences. Carried out in this way, interviews can be a source of quality, in-depth data of a different nature than the data collected by participant observations, and together these interrelated methods make possible a more detailed interpretation (Lofland and Lofland, 1995). For example, there are things that cannot be observed, and therefore, need to be accessed by making interviews or gathering data from other sources. Simply put, such topics can be located in history, in future or even inside the subjects. In the home care case, one of the topics in the interviews was the further advances in technology use and users' attitudes that caused me to formulate questions such as: "How do you see your work now and in five years?"

Some formal group interviews (Davies, 1999) with the home care workers were arranged as they seemed to find it quite natural to discuss and express their thoughts as a working team. Lofland and Lofland (1995) argue that group interviews are most productive on research topics that are not culturally too personal or too embarrassing. In the group interviews, the home care workers received questions or problems to discuss in small groups of two to five workers. Besides receiving information from the study subjects, the group interviews also served to emphasize some of the relationships of interdependence and power in a home care team. Lofland and Lofland (1995) remind that even in a group

interview the study subjects do not have to give uniform opinions, but instead can disagree and rethink on the issues discussed. Therefore, a group interview can spur also new memories and opinions. Although, at first, I hesitated in using group interviews because of the possibility that not all of the home care workers would express their thoughts in front of their co-workers, I was even more hesitant on gaining sufficient trust of each home worker. This could have meant re-arranging the interviews and maybe receiving interpretations of the situation from a more limited number of home care workers. As a group, they appeared relaxed already during the first interviews. The experiences during the service calls with one home care worker at a time supported roughly the same interpretations by individual home care workers as groups of home care workers. Thus I continued facilitating the group interviews.

All interviews were recorded and later transcribed as text. The transcribed data was arranged according the themes emerging from the case itself. The new insight led to re-forming the research questions. Mapping out themes from the data was similar to the inductive method described – by listening to what they had to say without imposing a preconceived judgment. Agar (1980) claims that the ethnographic process is always dialectic, not linear. Refining the interpretation meant cycles of data collecting, learning and making sense of it all. Geertz (1983) calls the going backward and forward a spiral during which the researcher makes countless questions to gain understanding. In this study, in the final analysis, the arranged data from the interviews was reflected on the issues emerging from the observations, and to the insights gained from the less formal discussions with the organizational members. In this sense the study process was open-ended, as the cumulative insight would always mean an iteration of the research themes.

Besides the interviews and informal discussions – which can be called casual interviewing in the sense of commenting on what was observable (Lofland and Lofland, 1995), there were always various documents and forms present that were a part of the organization of home care. I collected and analyzed organizational documents as supplementary data (Lofland and Lofland, 1995). These included care and service plan sheets and client evaluation documents, as well as documentation concerning the implementation project and development of home care service processes.

A limitation of my research data is the lack of visual material. Receiving authorization for still photographs or videos as a form of recording was considered a complicated effort needing approval not only from the home care organization but also from their clients.

Together, the different data sets I had provided various perspectives (Agar, 1980; Lofland and Lofland, 1995) on inspecting and reflecting the actions taking place during the data gathering. During the data analysis phase, the interpretations I made from the various data sets supported each other and my general impression of important issues and moments in the home care case.

The validity of ethnographic research such as the home care case is increased not only by ensuring that the data gives answers to the research questions but also by combining different data gathering methods to illustrate the phenomena from different angles (Davies, 1999; Altheide & Johnson, 1994; Zuboff, 1988; Agar, 1980). To do so, I have combined observations and interviews with document analysis to understand the emerging picture of the organizational implementation of a previously unfamiliar information technology. To get an overview of the rationalities present in the planning and developing of home care, the data gathered only amongst the home care workers and on their actions in the care field would not have revealed the whole picture. I conducted interviews also with the planning and managing personnel in the home care organization as well as some interviews with technical staff.

In summary, applying the ethnographic method meant continuous re-planning or narrowing down of the data collecting or making questions and observations. During the fieldworking, as a researcher I had to address my own position and approach at the field as well (c.f. Agar, 1980). After the fieldworking, I had a multifaceted collection of data, which I started to arrange and analyze for a more coherent view of a changing work.

3.2 Analyzing and validating the case data

In the beginning, my analysis consisted of comparing what I had observed during the service calls to what was told in the interviews, and then I compared possible findings with the available organizational documentation. From this comparison, I drew categories for labeling the

data – or for making low-level theoretical concepts for classifying (Davies, 1999). The formal or final analysis consisted of going back and forth between the data to arrange theoretical categories out of it. Davies (1999, p. 197) argues that such grounded theory approach is still "the best way of formalizing" the analysis process. Strauss and Corbin (1998) note that analysis is not just categorizing or classifying but also making comparisons and relating concepts to each other.

During the analysis phase, I kept in mind the principles of interpretive validity according to Altheide and Johnson (1994). These three principles inform that a valid ethnography consists not only of (1) accounting for ourselves but also (2) accounting for our knowledge, that is, explicating the claims made of the data set, and, (3) of multivocality that leaves space for multiplicity of meanings and perspectives grounded on the data set. This means that there are three "audiences" to whom the ethnographic tale is to be told. Firstly, I have to reach some kind of understanding of the phenomena. Secondly, I need to explain it to a critical audience. Thirdly, I attempt to leave voice for the study subjects and their interpretation of the situation as well.

During the analysis phase, I was, at first, mostly concerned with the organizational implementation; how the implementation and training was arranged and conducted, what were the care workers experiences in adopting, learning and using the new technology, what were the special features of the new technology, and what kind of problems or disagreements emerged. My concerns became re-thought during observations, where the main topics seemed to be how to cope with a client, how to handle the haste at work, or how to arrange the client calls. The practical issues that were most visible during fieldwork seemed to grow again more distant as I started to go through the data.

I noticed that during the fieldwork I had to keep some distance in order to avoid becoming either a technical support person or a go-between within the organization. Agar (1980) suggests that the strain of fieldworking can be eased either by distancing oneself or by "going native". These both have some danger in them. Distancing can mean failing to understand the research subjects, and going native can mean getting too involved to be able to function as a researcher anymore. Geertz (1983) claims that a trained ethnographer is a specialist of a sort that can keep in mind the practical aims of her or his observations and interaction at the field.

Geertz defines such interaction as experience-distant in contrast to experience-near interaction that describes natural and effortless seeing, feeling and thinking.

I found myself balancing somewhere between distancing and closeness. As the organizational implementation progressed slowly and as the technical and organizational issues dominated the implementation discussions, I started to familiarize myself more with the home care working. While making the field ethnography, I sympathized quite a lot with the home care workers as I was trying to find the salient characteristics in their work that could explain some of the implementation issues. The sensitivity of the care relationship between a care worker and the clients as well as the relationship between a care worker and the managers emerged as causes for tension in the expectations, attitudes and interpretations expressed by the personnel. Gradually, the nature and possibilities of the new technology as a means of control and surveillance emerged as a major issue. Still, it would be a part of a field-worker's conceit (Van Maanen, 1991) to suggest that the emerging picture was the same as the home care workers' understanding of their own work.

During the analysis period, the emerging issues were discussed with some key participants from the home care organization, and they were given also some of the drafts on the first articles for commenting and correcting, by this providing validation to the early findings described in those papers (Strauss and Corbin, 1998). The proofreading by organizational members also provided insight to the language and definitions used within the organization. The home care workers were especially strict with wording concerning their organizational posts and hierarchy. These discussions were often not only about getting the roles or the task names right, but at the same time they told about historical developments of home care as a part of the social and health sector. A historical chronology of events was often a topic of discussion as several of the home care workers had been employed for 15-20 years. Also the home care team managers would provide details on client services at the field as several of them had a background as home care workers.

3.3 Limitations and evaluation of the methodological approach

To understand how the home care services are organized and carried out, the workers were observed *in situ* – that is, the daily or mundane action taking and meaning making of home care workers was chosen as the starting point for the study. Ethnographic or interpretive research can also make the claim of being emancipatory in the sense that the research critically illustrates the motivations, values and believes of the research subjects (Denzin, 1994). With this, one must exercise caution as Van Maanen (1991) argues. As I had worked previously in the same organization, albeit in a different department, it was easy to sympathize with the home care workers and understand their insecurities and worries. Nevertheless, as I got further away from the field in both a practical and an abstract sense, also other kinds of reasoning emerged from the data set. I grew more distant with the explanations given by the home care workers as I finally was able to assess the situation from a critical and emotionally more detached viewpoint. Moreover, I have attempted not to present the home care workers as "victims" with an emancipatory writing (Marcus, 1986). Although I claim to give voice to the home care workers, this research is not emancipatory but instead recognizes also other realities and goals on various levels of the home care organization.

To continue, this research does not claim to be participative (Van Maanen, 1991) in the sense that I would have given special tools for the home care workers to help them in adapting to transformations taking place in their working environment. Furthermore, the organizational implementation was not of a participatory nature even within the organization of home care. During the data gathering, the home care workers and also some of the middle managers expressed their feelings on being left outside of planning and developing the future of their own work. Still, as the data gathering progressed, I noticed how the home care workers could discuss the technical implementation with more and more accurate words and phrases. As their impression after the first training sessions was that they could not understand language filled with unfamiliar technological terms, I have interpreted that the discussions during the data gathering worked in two directions. I received data from the research subjects, and at the same time, the home care workers were expanding their vocabulary and understanding on technical issues. Springs (2008) argues that practice-oriented ethnographic studies have lacked criticality as not necessarily the powers behind the practices have

been investigated at all. In this work, also the organizational and cultural context upon which the work practices in the home care were constructed, are introduced but they are not the focus as such.

One prevailing aspect of doing ethnographic fieldwork and analyzing of the data was the sensitivity and confidentiality of the home care as an area of work or research (Davies, 1999). The home care workers visit their clients' homes and perform the service tasks while respecting the clients' rights for self-determination and independent living. To ensure the wholesome well-being of a client, the home care workers need a commitment for care work and skills in human interaction. The observations enlightened how daily decisions in home care are often based on tacit knowledge about the clients or on individual interpretations about the "right" ways of providing care, meeting the clients and even taking control of the clients' daily lives. I have attempted to analyze also the sensitive and "unmentioned" or tacit tendencies in home care. Considering the sensitivity of the working environment and the various tensions during the organizational implementation, deciding what to present or how to present was at times demanding. I judged the presentation of sensitive issues on the basis whether they were crucial in relation to the organizational implementation or not.

Following Davies (1999), ethnographic research should satisfy the three criteria of reliability, validity and generalizability. Reliability and validity of ethnography are somewhat linked to each other, but not identical as such. Reliability refers to the repeatability of research findings, and whether they are accessible to other researchers. According to Strauss and Corbin (1998), a level of reliability emerges from comparing to related research that can be read as a reaffirmation from a larger conceptual perspective.

Validity can be seen to refer to level of "truth" or "correctness" of the findings in comparison to general knowledge or a wider context (Davies, 1999). Validity or truths of a response, an answer to a researcher's questions is evaluated against a wider background, as the study subjects may be bashful in their answers. The research subjects may answer what they expect the researcher wants to hear, what they perceive as an "appropriate" or "official" answer based on their shared beliefs and values. Validity of the research is thus based on the interpretation of such answers. Another source of validity emerges from the researcher's

participation in the everyday interaction in the research context that accumulates a richer understanding, from the holistic principle of ethnographic tradition. Altheide and Johnson (1994) call this reproducing and reflecting of ethnographer's experience validity-as-culture. The risk in such culturally interpretive ethnographic writing is mythologizing while describing. Altheide and Johnson (1994, p. 488) list validity as ideology, as gender, as language/text, and so on based on the assumption that "all knowledge and claims to knowledge are reflexive of the process, assumptions, location, history, and context of knowing and the knower" as well as the interpretive communities of other researchers and audiences. Simply put, all knowledge is socially constructed.

Springs (2008) argues that the practice theory approach in general does not propose a theory in traditional sense of law-like generalizations. Likewise, this study describes and suggests based on the experiences of the care workers and on my analysis of these experiences. Such statements can be compared to other experiences of organizational implementation, and more insight can be learned. Generalizability of ethnography is a more criticized issue, as formal, law-like statements in the positivist tradition cannot be made of human interaction and social life. However, according to Davies (1999, p. 90) generalizations of ethnographic research "can be explanatory but not predictive." Edwards and Bélanger (2008) argue that in ethnographic writing generalizations are linked to situational or contextual features of the research case. Different cases can have various key features, such as absence levels and rates of disciplinary action in workplace ethnography. Of such features comparisons can be made with other cases with similar attributes (Davies, 1999; Strauss and Corbin, 1998). Davies (1999, p. 92) argues that in such comparisons an ethnographer does not seek for repeated instances of a phenomena but "differences and variations whose explanation will refine, strengthen and make more profound the developing explanations that constitute valid generalization in ethnographic research."

Evaluating my methodological approach, it is apparent that the field work and the empirical data guided also my choice of theories. Although I have attempted to present findings of the home care case as the study subjects' interpretations, I haven't concealed my own presence or position in the process. Geertz (1983) asserts that it is not even possible for a researcher to perceive what the research subjects perceive. According to Agar (1980), a researcher always brings along her or his own cultural

background and experiences that guide the choices made during the ethnographic process – knowingly or unknowingly. Besides plausibility, the level of transparency on the whole process provides a critical view on the various rationalities present in the data collection. As a researcher, I tried not the let my own possible idiosyncratic assumptions and interpretations guide the analysis but instead attempted to reflect on the purposes, goals and interpretations of my study subjects. Hall (1997) argues that how people are represented is how they are treated, and in this sense, I hoped my research intervention to have a positive impact on the home care as a field of working.

As I did not approve the taken-for-granted assumptions and stereotypic generalizations of the home care workers, I also discarded some neutrality towards the study subjects. Although Thomas (1993) states that a critical approach in ethnography involves a political purpose, I cannot claim to have a stronger bias than wanting to challenge some of the social institutions, regimes of knowledge and practices that "limit choices, constrain meaning, and denigrate identities and communities" (Madison, 2005, p. 5). Critical ethnography implies also the researcher taking ethical responsibility of the consequences of the research and evaluating the choices made during the research process. Madison (2005) argues that domesticating "the other" in ethnographic research diminishes the possibilities for alternative findings as well as ways of addressing conflict. Madison outlines (after Fine, 1994) three alternative approaches in presenting qualitative research:

1. The *ventriloquist* approach aims for neutrality of providing information and findings with the ethnographer as invisible in the text.
2. Presenting the *voices* of the study subjects aims to provide also interpretations that are not aligned with dominant discourses and practices. In such text, the ethnographer is vaguely present, but not clearly addressed.
3. The *activism* stance means that the ethnographer has a clear position in the text while providing alternative discourses and practices as research findings.

My own position is nearer to the second alternative in giving space for the study subjects' own interpretations and discourses although I have attempted to be clear on my position and influence in the resulting text.

Compared to Van Maanen's (1988) division of ethnographic texts as realist, confessional and impressionist tales, my self-critical stance discards the possibility of neutral and realistic accounts, and likewise, I cannot present the detailed level of a confessional and dramatically personalized tale of the research intervention. Therefore, my ethnographic text is closest to impressionist tales of the field that provides insight on the researcher's position in a self-conscious way, and leaves room for reflective moves throughout the research process. Reflecting on the research data and process reveals both the subjectivity of research and makes it possible to address various rationalities present in the data (Davies, 1999). This principle aligns also with the ethnographic ethic that "calls for ethnographers to substantiate their interpretations and findings with a reflexive account of themselves and the process of their research" (Altheide and Johnson, 1994, p. 489). To conclude, I present a critically aware reflexive and interpretive ethnographic text.

4 The research setting

This chapter introduces the research environment in four parts: The first part illustrates a working day at the home care, the second one gives an overview of the home care as a part of the Finnish social services, the third part describes how the organizational implementation progressed, and the last part introduces certain aspects of the mobile technology itself.

4.1 A day at the home care

In the following, an average day in home care is described based on the situation during the organizational implementation of mobile technology. The home care workers in this description are constructed from information gathered by observing characteristic work routines of several workers.

> A working day in home care starts at 7:30 in the break facilities where the workers check who are working in the same shift. Saija comes to work by bicycle, and as she steps in to the break facilities, lively conversation greets her as most of her co-workers are already crammed around the large table, browsing through the client list and reading the notes on the table. After greetings, Anne, a home care worker with a longer work history starts reading the client list aloud name by name. The clients of the day are allocated according to their needs, changes in them and – quite naturally – location. The allocation of clients outlines the organization of the whole day: possible supplementary tasks or meetings are arranged as secondary to service calls. The clients are allocated by the experience or skill level needed for each service call as well as by practical issues. These practical issues are, for example, not being able to bathe several clients in one shift or hoping for clients living geographically near each other within the care area. This is an important consideration, as basic services to several clients take the same time as bathing one or two clients.
>
> As the list is read aloud, everyone hears at the same time, which clients do not need care services as, for example, they have been admitted to hospital.

All news from the previous evening shift is discussed to confirm the status of the more vulnerable clients. As the client list is read through, the keys to the clients' apartments are taken from the key locker one by one. The keys do not have clients' names on them, but they have numbers for identification. The care workers proceed to check the batteries of their PDAs as they log in to the system with their personal codes that identify them as users. Some consider that one should log in right after arriving at work every morning so that the working time starts running. The care manager has assured that the beginning of shifts is acknowledged as it's quite natural to start interacting with the co-workers instead of starting the day by logging in to the system. Some care workers continue to check that they have the needed client and task barcodes available, after which they're ready to go.

A typical morning service call consists of aiding and monitoring the client up from bed and getting ready for the day. Some clients may already be up when the care worker comes to call but most need help in toilet, in bathing, in changing clothes, and so on. An experienced care worker usually carries out small tasks such as making the bed or tidying a bit while the client is occupied. Usually the client calls are characterized by conversation, but there are some very quiet clients with whom the conversation declines to a monologue.

Today, Saija receives seven client calls for the morning shift, and she considers this to be a handful. She makes some notes to arrange her clients for the first morning round, takes the keys, and starts out right away by going to the client living furthest away by the border of this care area. Saija feels herself a bit rushed as during the morning shift the clients are normally already waiting. Many of the elderly clients have sleeping problems or are early risers, while at the same time the clients may have decreased capacities of personal mobility. Several clients need help to rise from the bed. Because the organization of the clients' everyday life is attempted to be kept according to their conventions, the home care workers aim for helping all their clients in starting a new day before 10 AM.

Saija comes to the door of the day's first client, and rings the doorbell to tell that she's coming in although she opens the door with her own key. This chipper client is already up, and comes to greet Saija with a walker aiding his moving as Saija takes of her coat and boots. The self-reliance of the client is praised, as he has already made breakfast. Saija goes to kitchen with the client and monitors the client taking his morning medicines. At this point she remembers to read the client and the basic task barcodes with her PDA. The client's personal barcode is taped in the kitchen door where Saija spots it before remembering the neglected PDA in her bag.

While the client is eating, Saija straightens the walker so that the client will have it easier when getting up again. As the client is still finishing his morning coffee, Saija washes the dishes and tidies up a bit in the kitchen.

Saija accompanies the client to the bathroom as he suffers from decreased agility and at times, from dizzy spells. After that, Saija helps the client to dress. This client doesn't need so much physical aid but more monitoring that everything goes well. Saija makes the bed and converses with the client, who wants to confirm that "someone is surely coming to help around midday" as Saija makes herself ready to leave for the next call. She remembers to end the service call in PDA when she checks for her bag.

One of needed skills for a home care worker is the ability to tackle with different kinds of clients. This is clearly illustrated by the next client Saija visits. The next client has memory problems, and her food intake has to be monitored. The key to the medicine-cabinet has been hidden in a closet for cleaning supplies where all the care workers can find it, but where the client will not look. Also the client barcode is taped inside the closet as the client ripped off the ones taped openly in the kitchen. The medicines of the client are in a locked cupboard in the client's living room. Saija coaxes the client to sit in the kitchen and start eating the breakfast that Saija prepared. While the client is eating, Saija fetches the hidden key to medicine cabinet and administers morning dosages for the client in the other room. This client has still good physical coordination but needs supervising nonetheless. From time to time, the client is found ambling outside with no destination. Saija monitors how the client gets dressed as the client chatters on of a relative visiting her. The client sits on the sofa, and as there's no apparent anxiety, Saija prepares to leave. She ends the service call in PDA while putting on her coat. Saija checks the door twice, but still, the client may decide to go outdoors by herself.

The next client is a solitary elderly with no relatives at all. Saija first greets the client and then proceeds to read the barcodes in the PDA. The client is helped up from the bed and accompanied to toilet. He dresses slowly and converses lively about a TV program he had watched previous evening. The client has low blood circulation in feet, and Saija checks them as he dresses. Still chatting, Saija prepares breakfast as well as some snacks for the client before preparing to leave. Saija takes his waste out, and discusses when the service call should be ended: when she leaves the client's apartment or only after she's thrown away the waste basket. She decides that leaving the apartment also ends the service task in practice.

At the same stairs, another client is already waiting. This client needs relatively little aid as her relatives visit on a regular basis. Today, Saija's only visible task is to monitor the medicines and administer eye drops for the

client. For this client, Saija does not prepare breakfast or wash the dishes, for example. The call falls also in the category of basic task barcode.

The self reliance of a client is maintained by not aiding her too much in small everyday chores. The client will also have something to do during the often long day, when some domestic chores are left to them if possible. This work practice is met with some disagreement by the clients and their relatives, as to them it appears as if the home care worker does not carry out any tasks at all. Still, a salient mandate in the home care is the task of just monitoring daily well-being of their clients and providing some social contact. Such "tasks" may appear entirely invisible to relatives and neighbors, though.

By the next client, the interaction starts by Saija wondering about a window that has been left open for the entire night. The client noticed that it was cold, but could not figure out why. Once again, Saija prepares breakfast and medication. While the client sits by the table, Saija packs a sauna bag for her. Between bites, the client informs Saija precisely what clothes she wants along for change. Saija reminds her to attend the hairdresser, who has been arranged for sauna-goers. Saija and the client check together that her outdoor clothing is all in order as the client is eagerly waiting for this little outing. Saija continues to the bedroom and the client tails along as Saija makes the bed and replaces the water in the jar on the bedside table. The client and Saija chat for a while more before saying goodbye for the day. Saija remembers to end the service call when going down the stairs.

The next client has strict manners about tidiness, and Saija takes off her shoes right by the door, and proceeds to read the according barcodes while greeting the client. Saija reminds herself that before leaving the client she should return all utensils and furniture exactly as they were. This client is already waiting for Saija in the hallway and seems to be worried about a doctor's appointment. Saija carries out the morning tasks and proceeds to check the schedule for the doctor's appointment as well as for laboratory tests, together with the client. The client needs to be assured once again that the transportation for the doctor is already arranged. One of the home care workers has promised to come a little earlier to work with her own car and accompany the client to the appointment.

The last client for the morning has already dressed for the day and has been waiting for Saija for a while. This elderly client suffers from depression, and Saija sits by her on the sofa. Saija cuddles the client a bit and asks how the previous night turned out. The client gets anxious easily, and Saija reaffirms time after time that she is in no hurry and can stay with the client for a while. The client is encouraged to tell about the visit of her son as well as the previous night's hockey game on TV. Saija moves to the

kitchen and continues to chat with the client as she cooks porridge for breakfast. The client starts slowly eating and needs a little motivational speech from Saija. Saija checks the client's refrigerator and they plan together a shopping list for the client. Saija counts the money in the client's purse and promises to order the groceries from the shopping service. This visit is also recorded as basic services.

Around 11, Saija returns to the team facilities for a lunch break. She remembers to read break time barcode with her PDA. A few of her co-workers have already returned for a break, and together the care workers start scrutinizing the morning by discussing their experiences of the service calls. Details and statuses of particular clients come up in the discussion until one of them reminds: "Stop talking work matters, we're on a break." Still, it takes only a while until the discussion bends towards client issues once again. These discussions are important to the workers as there may be changes in clients' status or condition. Clients are coming and going to hospital or other treatments. Medication may change and therefore also the special diet. Most of this changing information is discussed on a daily basis by the care workers. Only parts of the knowledge about the clients end in the care and service contracts done with the clients or their families.

Finally, also Anne comes for a break. During the morning, Anne had only two client calls, but they both included bathing services, hence Arja is the last one to complete her morning round. Anne had prepared herself with rubber gloves, an apron and soft boots.

The first client Anne bathed today was an elderly client with restricted mobility. First Anne puts on the apron and rubber boots. Then she prepares the bathroom for the client, for example by warming the shower stool with water. The partly paralyzed client has to be helped in undressing and in walking to the bathroom without the wheel chair. After the bath the client needs a short rest while Anne tidies the bathroom. Then Anne helps the client to dress and to get back to his wheel chair. Anne prepares a breakfast and snacks for the client. After the washing up and administering medication to the client Anne makes sure that the client has everything necessary within his reach and then heads back to the unit office. Anne is unsure about using the PDA and she stays for a while at the client's hallway to fumble with the PDA before she succeeds to read the needed barcodes. It seems that she wants to use the PDA only when the client is not watching.

Also Anne's next client needs help to get up from the bed and undress for a bath. This elderly man suffers from paralysis. His speech is slow and somewhat scrambled, so Anne tries to talk also slowly and clearly. The client easily loses his temper if he notices that a care worker hesitates to

answer to him or does not clearly understand what he tries to say. The client has also diapers in use between the client calls. Bathrooms tend to be small in private apartments, and also in this case, Anne moves the hamper outside but still has to work cramped between the shower and a washing machine. The client is helped to a bathing chair, but still the bathing exhausts both the client and Anne to some degree. After the bath, the client rests a bit on the bed while Anne tidies up the bathroom. She helps the client to dress and on to a wheelchair. After Anne has combed the client's hair, they both continue to the kitchen. When the client has received his breakfast and morning medicines, Anne pens down a note for the next caller. As this client needs extra services, a private home care provider and his relatives visit him regularly. To ensure the wellbeing of the client, notes of his status are exchanged with them regularly.

The afternoon round (between noon and 15:30) consists of checking that every client has eaten or providing meals for those who need help in preparing it. In general, the visits during the afternoon have a shorter duration. Some clients need also to be helped to the toilet. During the afternoon round, different errands and possible extra tasks are often taken care of. Also the weekly unit meetings are held during afternoons to discuss the clients and work details together with the team manager. The team meetings are important for circulation of new information but also for venting out problems or frustrations at work. The duration of these meetings is recorded in the PDAs with appropriate barcode.

The day of a care worker ends always at the unit office where she or he leaves the keys of the clients and pins down possible notes about the clients for the evening shift worker. Usually a care worker responsible for the evening shift is at the break facilities already after 15:00, before the workers on morning shift leave at 15:30. The change of shifts is a natural time for a short briefing of what had taken place during the day. The care worker on the evening shift makes rounds visiting most of the clients in that home care area. The care worker on the evening shift is expected to carry along a thick folder that had all the care and service contracts of that care area. If something unexpected would occur, the care worker could access client information while on the field. This practice is now history as the client information is available in PDAs, and the care workers feel relieved that they do not have to carry around the heavy client folder anymore.

The evening shifter has also a mobile phone, but during the evening shift a care worker cannot reach help by, for example, calling her or his care team manager. Outside the office hours, the care and service contracts as well as the emergency number are the primary information or help sources. A

home care worker stated that: "During the evening shift you are alone, so alone that you feel some pressure."

Today, Wilma is on the evening shift and she has 15 client calls to take care of. Wilma starts with the client furthest away from the break facility, and plans to circle the care area inward so that she'll visit the clients closest to the break facility last. Wilma carries a heavy bag that contains PDA, mobile phone, and the client information folder just in case – as she does not yet trust the PDA – and needed equipment for the services. The evening service calls consist of checking the medication of the clients, and helping them to toilet and some also to the bed. Some clients need help changing their clothes and some only a remainder for doing it themselves.

Wilma drives between the clients with her own car but says that using the car is by her own choice. She checks the addresses and keys of her list at the car where there's some light as the evening is getting darker. In one case the client is not at home. Wilma makes a small evening meal for him and leaves it at the kitchen table. She describes that the client can go out walking at odd hours but nonetheless, she decides to make a phone call for the client later during the evening to check if he has come home. If her call is not answered she will inform the night patrol to check on the client. Still, Wilma spends some time pondering how to document a service call when the client is absent. She decides to document the call as basic service.

The description of a typical work day at the home care shows details of the nature of working. The care worker encounters the clients on a close to body level to aid them with their most basic and mundane daily needs. As such, the care worker needs not only physical involvement but also skills to adjust to and maintain client relationships. Skills are needed also to cope with working alone and taking all the pressure from encounters with the clients. These issues are likely to be dealt with within the group both in informal, daily discussions and more formally during the weekly team meetings with the care team manager. The care team as a whole is accountable for the responsibilities of service work, but at the same time, the work is carried out alone at field, which at times causes conflict amongst the workers.

4.2 The home care as a part of the social services

Home care services promote independent living and coping. They monitor wellbeing and quality of life among older people. Continuing to live at home is preferred by the older citizens and assisted by the

municipality in the form of home care. Home care services can be categorized into personal and intimate care tasks (e.g., help with washing and bathing), domestic care tasks (such as washing up and tidying), providing meals, helping with visits outside the home, and doing errands such as fetching medicines from a pharmacy. Besides home care, municipalities provide service housing and residential care with various levels of caring and monitoring. However, in Finland, residential homes are mostly reserved as the terminal placement for citizens who cannot cope at home even with support and aid.

The biggest problems associated with home care services are the inadequacy of services provided at home, the quality of care, and the work-related fatigue or stress amongst the home care personnel (Vaarama et al., 2001). Moreover, pressures to develop both public and private home care services have been increasing along the growing numbers of senior citizens. It has been estimated that the percentage of the older citizens will double during the next three generations (Vaarama et al., 2001). Therefore, in the future, home care services should be provided for a growing number of clients with diminishing resources for home care workers. The outcome of this may be that the home care has also frailer clients and, at times, the terminal care is provided at home.

Home care services have been instituted in Finnish laws since the first statutory regulations from years 1852 and 1879 that provided help for the elderly, the poor and the crippled. During my study, the contemporary social care law from 1984 still divided social and health care as two separate sectors which meant different vocabulary, differing practices and ways of organizing, as well as separate client or patient information systems. In practice, these two public services have always collaborated as the responsibility of providing care in an appropriate manner is shared. In the recent years, public service providers have attempted to discard the artificial boundaries hindering close collaboration in arranging health and care services for the citizens. In Turku, the merger of public social and health services took place in 2008. This goal of decreasing boundaries that complicate cooperation is apparent also in the development of the national patient and client information systems.

In Turku, there are 40 care teams in the whole town and 750 home care workers. On an average, one home care team has 20 care workers and a team manager. The 40 care teams are allocated to four district managers.

The whole home care office is supervised by the head of office (see **Figure 5**). In a year, approximately 4000 clients are cared for on a weekly or a daily basis, and over 740 000 service calls are made.

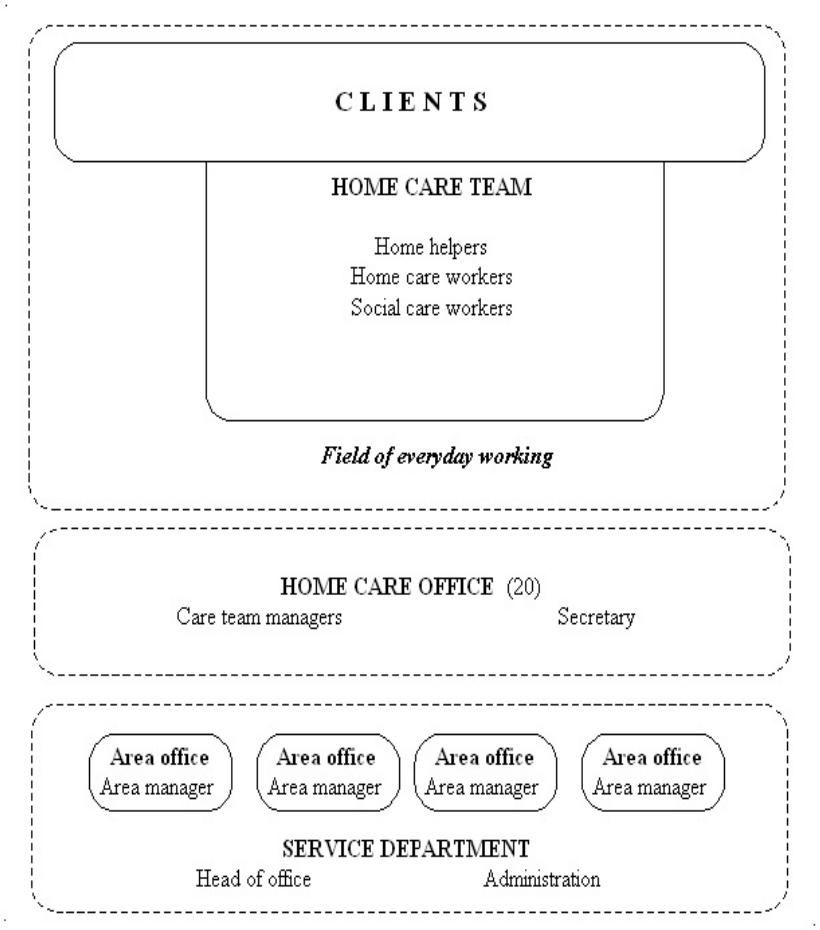


Figure 5: Organization of Home Care

The day of a home care worker in a morning shift begins at 7:30. After half an hour lunch break, working continues to 15:30. The evening shift starts at 13:00 and continues to 21:00. The shifts are planned for periods of six weeks with a circulation of the evening shift workers. A majority of home care workers attend to their tasks in the morning shift. Depending on the area, the evening shift usually has only one or two care workers per team. This means that a evening shift care worker will have 10-17 service

calls during the evening. The night service calls tend to be shorter, providing only basic care and monitoring the medicines for the clients. The home care workers find this problematic because the clients miss human companion and someone to talk to especially during the evenings. A shared responsibility of the home care and the home health care, a night patrol equipped with a car provides services in emergency situations throughout the night.

In Turku, the home care workers are mainly women: during this study there was one male home care worker. The average age of the workers was higher than in other municipal occupation groups. For example, in the care team that I first observed in 2001, only two of the care workers were under 40 and six of them were over 50. A stereotypic view of a home care worker in Finland is that of a middle-aged, uneducated woman with no previous work history, having cared of her own family first. During the study, I noticed that this generalization is not sufficient as a variety of backgrounds amongst the workers became apparent. The oldest group of workers, called home helpers, is usually with no formal education, and they rely on their personal experiences and life history of domestic care. Home care workers have a basic education, possibly a matriculation examination, and most of them have taken vocational courses or training during their time in the home care. Also skills tests are provided for the more experienced workers. Those entering the field recently have a vocational examination of basic social and health care. In the health care, this group of workers is called practical nurses, and in the home care, for example, care assistants, but there is not yet an established vocational name for this group of home care workers. In this study, the education or skill level of the home care workers is not my focus, so I'll use the term home care workers in general. That is also what they are mostly called in public. However, the naming issue of the home care workers illustrates an ongoing transition from the former "unskilled" workers towards a higher level of occupational skills and quality of working.

The same trend – I do not call this professionalization as the home care is not an established profession with an authority as such – has also affected the revision of main work tasks to a more standardized set of services. Traditionally, home care has been providing mainly domestic aid in tasks, such as cooking, cleaning, and accompanying a client out of home. Developing the selection and quality of the home care services has meant

redefinition of the service tasks to focusing on the client or the client's health and general well being. Beck (1997) notes the same trend when she discusses the different rationalities of care and technology. She suggests that care work is being transformed into "real work" with the help of information technology. Part of the transformation to real work is due to potential of information technology to make "invisible work" visible by logging all the activities (Suchman, 2002; Strauss and Star, 1999; Zuboff, 1988).

Table 4: Three main groups of home care services

Barcodes	Work tasks
Basic service	Personal and intimate care tasks: -help with rising and retiring -help with dressing and undressing -help with washing and bathing -help in going to the toilet or in changing diapers -administering medication -arranging visits to/from other care givers (e.g. doctor, nurse) -checking the well-being of the client -monitoring the circumstances of the client Providing meals Domestic care tasks: -washing-up -tidying -making and changing beds
Group service	Sauna Providing transport to/from the day centers Providing day trips, and social outings.
Errand services	Doing errands (e.g. fetching prescription medication, paying bills) Taking a walk together Accompanying the client to a hospital

The list of care services was revised by the management before the organizational implementation of the PDAs. It was planned so that the new and more standardized list of service tasks could be used also to define barcodes (see Appendixes 3 and 4) that were planned to be utilized in the future information gathering system. The service list has three main categories (see **Table 4**). Basic tasks include, for example, help with bathing, toilet, taking medications, and providing meals. Group services,

such as bathing in a sauna, and providing transport services and social gathering opportunities are provided when available. Sauna is usually provided once a week and other transport services on need or availability of a vehicle. Errand services include, for example, accompanying a client to hospital, taking a client for a walk or fetching prescriptions. The selection of the main service tasks was further adjusted before the organizational implementation was begun in practice. The plans for implementing mobile technology to be used by the home care workers were already in progress, and the care task list was crosschecked with the planned barcodes in the implementation project.

From a client's point of view, the service tasks are carried out by various care providers, such as home care workers, practical nurses, doctors, communal kitchens, day centers, parishes, and shopping services. This means that the clients' home is being invaded by a number of people daily, and that the need to exchange information about shared clients is urgent, especially between home care and health care. Also, within a care team, there is a need to exchange information about the shared clients on a daily basis as not all of the care workers meet each other more than during the short intervals at the break facilities. That is why every break room tends to have one to three notice boards for less urgent matters to be remembered. On the main table, there usually are the more active notes of the daily particularities of what has taken place at various clients' homes.

4.3 The mobile technology

The use of PDAs meant a significant change in the ways the information at work would be assessed and distributed (see **Figure 6**). Before the organizational implementation the home care team managers would have to rely on oral reports by their workers to write manually the needed reports and plan the follow up of the care services. A part of the reporting was based on more or less guess work, or the manager's knowledge of fieldworking. The team managers shared the opinion that writing various reports was tedious and time consuming. It was not even a rewarding task as the working time was often prioritized in planning the working hours and dealing with various issues in the field. At this time, the care workers were solely field workers, and had no clear role in planning the work. Taking their insight or experiences into the planning depended on the team manager and how her team discussed various issues together.

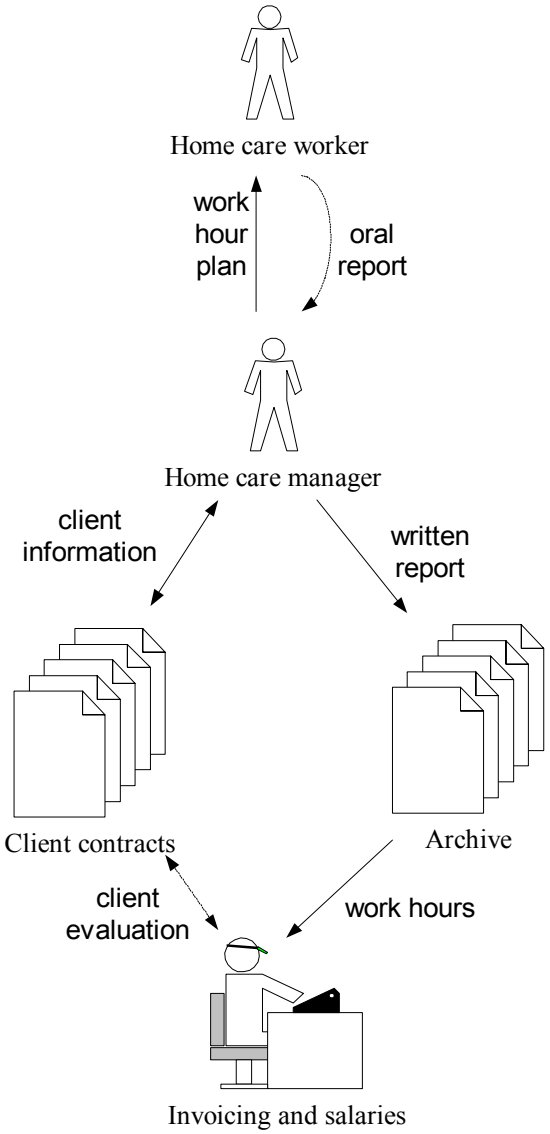


Figure 6: Work information before the PDAs

When the PDAs were taken into use for gathering service information, also the ways of accessing, distributing and storing information at work were changed (see **Figure 7**). For the home care workers, the PDAs meant a more orderly and constant feedback about their work. A service data entry with a PDA would include information such as the worker, the client, the date of the service call, duration of the service call and the task

or tasks carried out. This information is stored in the database for the mobile interface (named Mobi database in the figure).

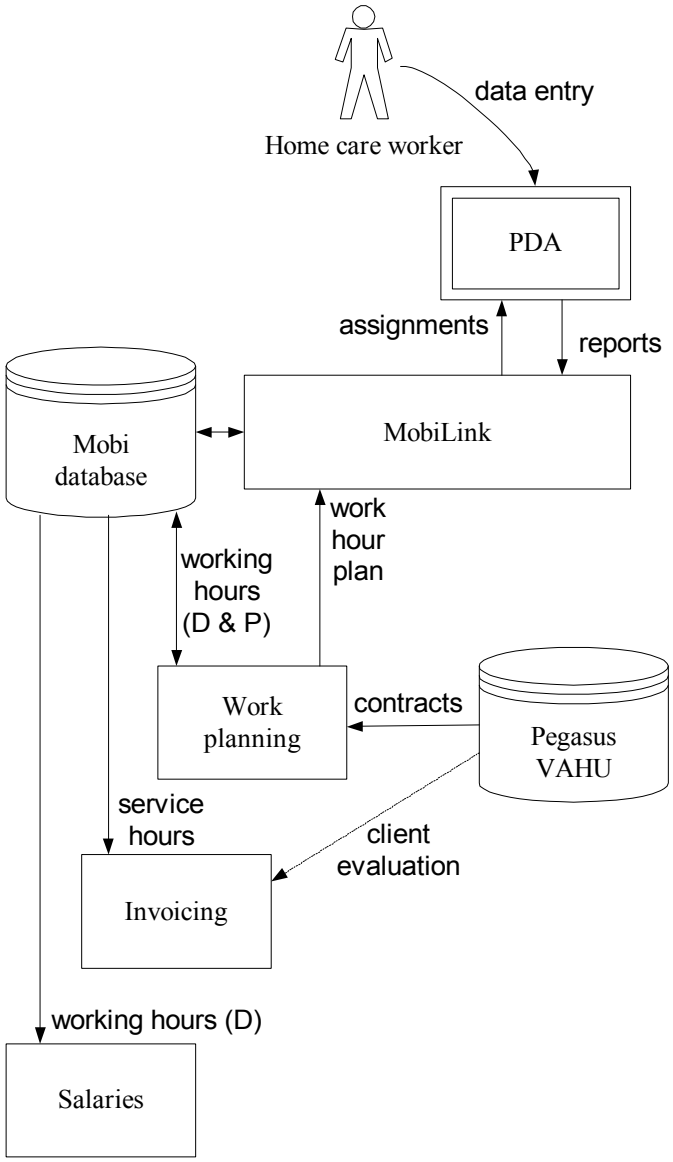


Figure 7: Work information with the PDAs in use with the emphasis on working hours done (D) and planned (P)

The actual client information is stored in the Pegasus VAHU database and includes, for example, a client's name, address, and date of birth, social security number, contact information (relatives and physicians), medication, special diet, assistance devices, and the planned weekly care hours. There is also an evaluation of the client's physical and mental status. All client related issues are re-evaluated, for example, when the records show an increase of needed service hours. The PDAs store the client information of a given team. The client information in the PDAs has been scaled down for mobile device, and it is quite fast to check. The care team only has access to their team's clients to support safe and ethical handling of the client information. That is to say, only an established client relationship gives the worker a right to access the client information.

In everyday working, the mobile technology meant a more timely feedback for all participants: the home care workers could access their working hours and see also their upcoming assignments, the team managers could plan and report based on the gathered data, and the clients' position was improved as their living conditions would now be even more swiftly evaluated in cases of decreasing health. In this sense, the organizational implementation made a noticeable difference at work. The technical mediation of both client information and the client call information supported the already existing work practice of sharing knowledge and experiences of the client calls and of their working environment in general.

Despite these positive features of the mobile technology, the organizational implementation itself was met with conflict. At the time when the home care organization was planning to implement mobile information technology, the whole project was advanced and one of the first implementations of this size in Finnish social care. The idea that service call information could be used for planning more enhanced services and for cutting administrative costs by partly automating processes such as client invoicing or paying salaries. Although the project vision was novel, carrying out the organizational implementation was not as successful.

The mobile devices had been purchased before the organizational implementation was started. Two of the care teams participated in a pilot phase, where the system was tested in action and user experiences were

acquired. Then, for a whole one year, nothing much happened from the home care workers' point of view. From time to time, the managers were asked to recharge the batteries of the PDAs that had been stored at the area offices. When the organizational implementation was continued, it was met with doubt and little interest. Lack of a more robust implementation planning and organizing meant in this case also a lack of commitment of the participants.

4.4 The organizational implementation project of the PDAs

The implementation of mobile information technology in the home care began during winter 2001-2002. As a researcher, my first contact with the home care office took place during the summer 2001 to hear out the outline of the implementation goals and plans as well as to plan the first data gathering. I continued to follow the complex process of organizational implementation until year 2005. During analysis, I divided this intervention spanning over four years into four artificial phases reflecting the particular issues to be solved during each phase.

4.4.1 The first phase

The first phase of the organizational implementation was characterized with plans, aims and a vision of more modern home care office. To evaluate the plans, a pilot implementation with the chosen mobile device was planned to start during autumn 2001 (see **Figure 9**). During the summer meetings, I learned how the implementation of a highly automated information gathering device had been planned for years by the head of office, who acted as the first project leader. She handled the competitive tendering and contracting for a supplier of the technical device and for a designer and vendor of the information system. The acquisition plans had been changing as new technical solutions had been appearing one after another, before the actual decision for purchase had received majority support from the municipal board. The first choice had been a barcode-reading pen in the year 1997 that still lived on within the plans. Although a more advanced mobile device was finally chosen – namely a PDA – a barcode reader had been attached into it "to ensure the planned easy and flawless process of data gathering" as described by the project leader. Her main drive for launching the whole project was the

abilities within the new technology: “Now we can give reason for the board why we need more workers.”

The organizational implementation had various goals that more or less depended on each other. The new mobile information technology was taken into use to increase the level of automation in planning and reporting of home care services. The mobile information technology was planned to automate, for example, client invoicing and calculation of salaries for the employees based on the service hours (see **Table 5**). With the new system, it would become easier to crosscheck between planned work hours and the work hours that the home care workers would carry out in practice. However, there are various reasons why planned service hours do not necessarily actualize. For example, home care workers may have sick leaves, work related meetings or private reasons for changing work hours.

Each break facility has a print-out sheet of the planned working hours for a period of four to six weeks where everyone can check her own working hours as well as other workers’ hours. By the end of the period, these plan sheets are usually full of corrections in various colors, and the care team manager crosschecks the plans, the sheets and the actual working hours when available. The new system would enforce both the clients and workers rights as it would become easier to compare service hours and planned hours. Previously, the care team managers needed to hear out both sides in situations of conflicting tales of client calls. The automated data gathering would increase also automation level in planning working hours as well as in client invoicing and calculating salaries (see **Figure 8**).

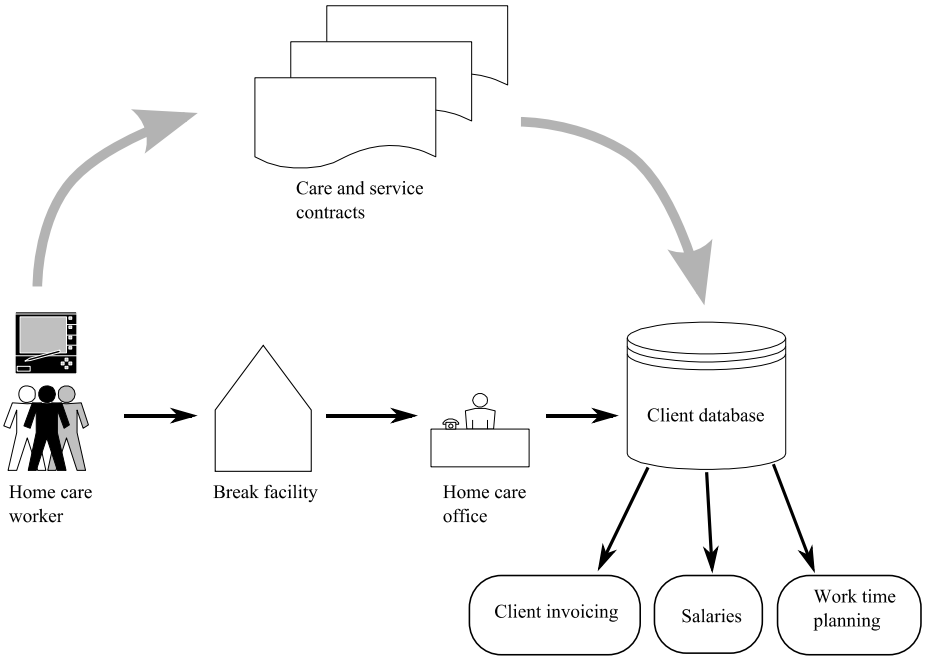


Figure 8: The plan for automated data gathering and transferring

Besides enforcing the rights of the clients and the home care workers, the mobile information system was expected to have various benefits on the overall efficiency of home care working (see **Table 5**). By automating some office procedures, it is estimated that more working hours can be saved directly on client service. For the home care workers this was a somewhat abstract benefit to interpret, but especially the care team managers expressed joy over the fact that in the future they would not have to gather various reports manually from various sources. Reporting within the home care is according to a manager "constant and tedious" as the municipal board needs various information. For the home care workers themselves, this benefit was unfamiliar as they do not take part in making reports, and especially as there were no uniform practices of accounting service calls before the organizational implementation. As the implementation project processed, there was even a time when the home care workers were complaining that the new information system increases their work load instead of relieving them from documenting and accounting for service calls.

Table 5: Expected benefits with the organizational implementation in home care

Viewpoint of expectations	Expected benefits
Management	Increased efficiency of services through new allocation of working time Easier planning of service delivery Enhanced monitoring of costs Decrease of manual work such as handwriting of reports Advances in communication and information sharing Improved legal position as public employees
Workers	Conservation of working time on care instead of documentation More fairly divided work load through better planning Advances in communication and information sharing Improved legal position as public employees
Clients	Fair invoicing based on the service hours Advances in communication and information sharing Focusing care workers' time on care of the clients Assured legal rights as clients

The enhanced capabilities for communicating was another benefit that was possibly marketed with too much force, as this later caused disappointment amongst the home care workers. The PDAs had inbuilt capabilities for communication that were not taken into use. The security risks with available communication solutions were assessed as too high. The client information along with the care and service contract information is confidential and private, and the municipals did not want to take the risk that in would become available in networks. It was decided that the PDAs would have closed connections to home care office through a grid solution for automated updating, and all other communication would be handled with telephones at break facilities and mobile phones while working in the field. It seems that the home care workers had some expectations related to communication capabilities, and they were not happy with the new situation where they had to carry around two devices: both the new PDA for client information and the accustomed mobile phone for communications.

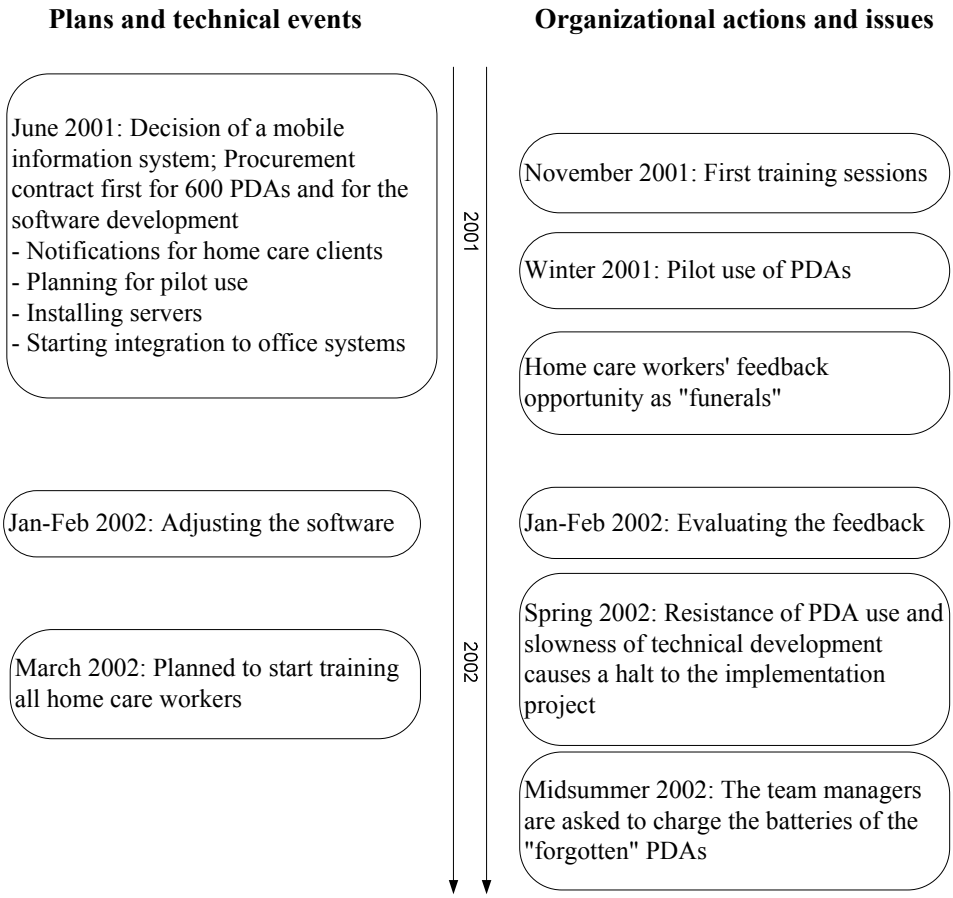


Figure 9: The first phase of the organizational implementation

During autumn 2001, two care teams piloted the system (see **Figure 9**). From early on, even during the pilot phase, the mobile system met some resistance that was attributed to the controlling aspect of the system. The home care workers were worried about their rights and the accustomed level of freedom while working. Their reactions were not unanimous but, in general, the minute by minute schedule made available in the new system was met with suspicion and resistance. The planned working day would be displayed on the PDA as a general list, but the reason for worry was the automated data gathering of the service calls that would generate a detailed list of what took place day by day, minute by minute. The first interpretation of the daily working hour view was that in the future, even stricter lists of planned service calls would be employed. Later, the home care managers needed to spent time in working on this misinterpretation.

It was never planned that all the extra minutes would be fused together to include yet another client in a worker's list. On the other hand, from the beginning the home care workers would also express the somewhat malicious pleasure in the fact that now all service hours would become public: "Now we see who actually works and who the freeloaders are."

Although the participants never named these free-loaders, it was evident that some envy or jealousy was present amongst the workers. The care team managers addressed this "jealousy" to emerge mainly for two reasons. Firstly, there were also part-time workers, and in some of the care teams these were allocated as many clients as the full-time workers during the morning meetings. When the part-time workers were frustrated, complaining or unable to carry out the allocated service calls, other home care workers would easily interpret this as laziness. The issues related with the part-time workers would be discussed in the weekly team meetings, but according to the team managers, it proved complicated to change the attitudes. The home care workers were mainly sharing a work practice that everyone present during the morning meeting would receive an equal number of service calls. Secondly, as the home care workers had various educational backgrounds, the service tasks they were authorized to perform also varied. This caused a situation where, for example, a home care worker with training on foot treatment would visit several clients during a working day to give feet treatments needed especially due to diabetes and bad blood circulation. Still, the basic service would be carried out by other home care workers amongst these clients. Yet again, some of the home care workers would interpret such a co-worker as being "lazy" or inefficient if a service call by two workers was needed.

Why such wrongly based interpretations were prevailing amongst the home care workers? During the observations it became evident that although especially the experienced workers and the latest new comers would have different educational backgrounds, the experienced ones would interpret what was right and proper way of doing work by their own routines and common work practices, whereas the new comers were interpreting the situation with the instructions given during their education. Even though the new ideals of home care services are slowly being introduced, during the organizational interpretation it was apparent that there were loosely two "generations" of the home care workers with slightly different interpretations of the service. These changes of the

ideological basis of social care work were intertwined with the impacts of the new information technology, and at times, it was not easy to interpret what in a particular situation was caused by technological features and what by the slower cultural change within social service sector.

4.4.2 The second phase

The second phase of the organizational implementation was challenged with various issues or complications. Various technical problems complicated and slowed down the progress of the organizational implementation. The biggest issues were the unreliability of updating the system or losing data during the updating, due to server problems. In the beginning, the incomplete integration between office systems and the mobile system made, for example, establishing and checking new clients a taxing task. Later, it was acknowledged that the server resources were estimated too low during the planning.

Later, the server resources were doubled, but even this did not help in all cases. Turku, where the implementation took place, is a coastal city and parts of the city are scattered on islands. Maintaining stable connections between the mainland office and the island care teams' facilities has remained problematic. Updating information in the PDAs was planned to take place once or twice a month but, in practice, the updating is usually taken care of in shorter intervals. The home care workers mostly update their PDAs at least once a week to receive the latest client information and to decrease the effects of possible data losses.

In use, the new PDAs were esteemed as too fragile devices and there were breakdowns of the PDAs as well as problems of successful loading of the batteries. The PDAs were sent abroad for repairs, which easily took two to three months. Mainly because of these technical problems, the schedule of the implementation project was slowed down and, finally, the whole project became to halt during the first half of the year 2002.

The whole implementation project was evaluated. The home care workers that had participated in the pilot phase were asked to give feedback, and actually, the workers were calling the feedback session "funerals" of the PDAs. The common interpretation amongst the home care workers at that time was that the halt in the implementation project would become an end to the whole organizational implementation. The implementation project

participants assessed the situation, technical corrections were carried out, the system integration was continued, and issues of the workers' feedback were considered.

One outcome of the assessment was that the need for more user training was apparent. The home care workers might have understood principals of using the PDAs as a technical system but they did not clearly share the same interpretations of the implementation goals as the management. During this time, the head of office that had been working as the project leader announced that she does not have time for planning and carrying out the worker training. So the project leader was changed (see **Figure 10**). The new leader, a district manager, evaluated the situation and decided that considerable effort should be put into introducing the technology successfully to the rest of the home care teams, and into training those home care workers who only at that time joined in the implementation.

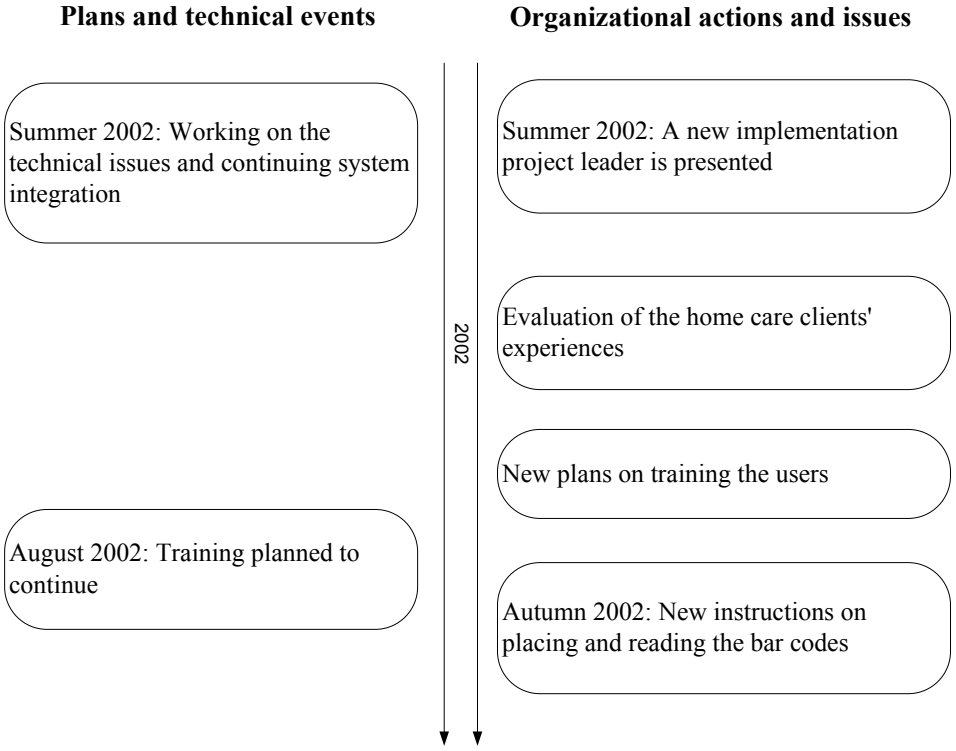


Figure 10: The second phase of the organizational implementation

4.4.3 The third phase

The third phase of the organizational implementation started with new plans and training for the care workers. All of the home care workers started to use the mobile system during autumn 2003. During this phase, the home care workers were trained by both the new project leader and those workers who already had been using the system during the pilot phase. The basic use training lasted only two hours but for those who needed more support, peer-training was arranged.

Much effort was used to work the attitudes related to technology use amongst the home care workers. For example, the other team manager that was participating already in the pilot phase confessed: “That start ruined this for me. And then I went and told the workers about this in the same tone.” She had returned from a leave, heard in the corridor from a co-worker that her team was chosen as the other participant in the pilot phase, and she was “shocked” by the abrupt way of receiving the information. Without any training for the team managers themselves, they were just supposed to “sell” the implementation to their care workers. Unfamiliarity with information technology and, in some cases, even fear of using technology was discussed in the new training sessions.

During the pilot phase, some issues related to the bar codes had also arisen to general discussion at the weekly meetings. The PDA system was planned to be as easy to use as possible and so inconspicuous that it would not affect the service calls. During the service calls, every home care worker would have her own PDA and she would read current client barcode right away as she would enter a client’s home. To ensure this, the respective barcodes would be positioned in an easy to see place in the hallway or in the kitchen.

However, there were several occasions when a client had ripped off and destroyed the bar code identifying the client. Reasons for this were, for example, a client’s suspicion or fear of unfamiliar technology in general, or suspicion due to memory related problems such as dementia. This resulted in new instructions to place the client barcodes in a less visible place – for example on the ceiling of the hallway or inside the cleaning closet. Furthermore, as not all of the clients seemed to approve the new technology entering their homes, a service satisfaction survey for clients was arranged as a formal possibility for giving feedback, but the survey

did not bring forth dissatisfaction with the information technology. A care team manager explained the result was due to the clients telling only positive things or because the survey was not answered by the clients but by the clients' relatives.

Even when much effort was shared to train the home care workers to use and trust the new information system, the project related problems prevailed. During February 2003, a home care team sent a letter to their care area manager addressing the implementation issues. The resistance in this team peaked on a self-made decision to stop using the PDAs while working (see **Figure 11**). The care team claimed the technical issues to be behind their decision, but there seemed to be also organizational issues increasing the tension and insecurities felt within the team. The home care workers were still suspicious about the minute by minute gathering of their working day data. They were sure that this would lead to further tightening of service schedules and eventually to sacking of the workers incapable of reaching the new efficiency requirements. This tension arose from various interpretations of the new level efficiency that was promised with the PDAs in use. The home care workers interpreted the new efficiency meaning that fewer workers would be needed in future. The interpretation amongst the managers was quite the opposite; they saw that in the future, at least the same amount of the home care workers would be needed as the amount of clients would increase. As rumors were circulating, partial or wrong interpretations of the situation increased the uncertainty felt by the home care workers.

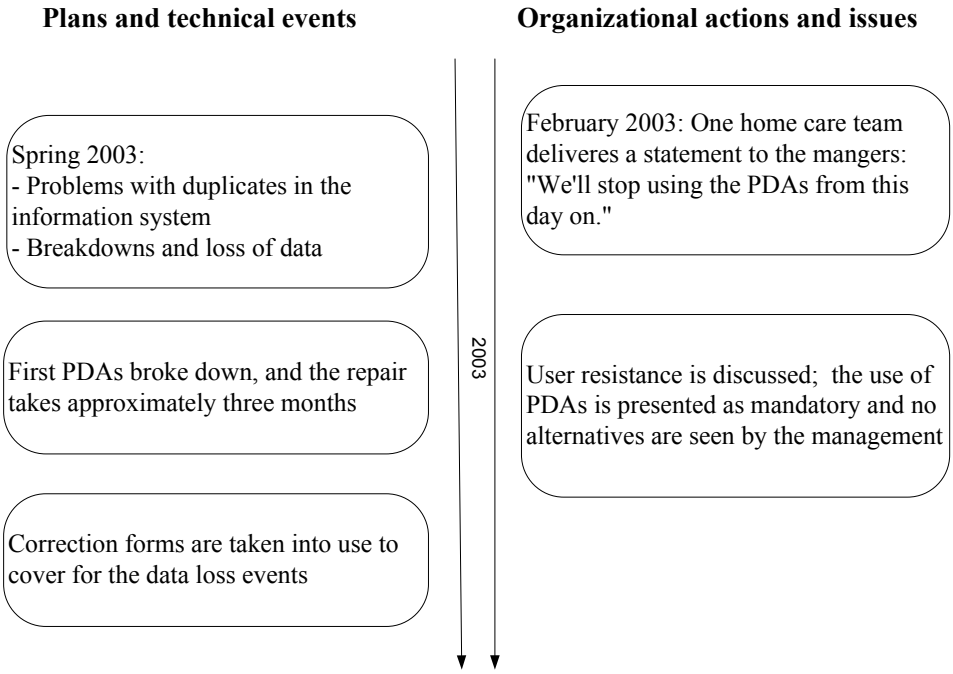


Figure 11: Third phase of the organizational implementation

4.4.4 The fourth phase

The fourth phase of the organizational implementations (see **Figure 12**) was characterized by slow acceptance by the users and a progress towards routine use of the PDAs. In the case of the care team that decided to stop using their PDAs, the whole care team was asked to attend a crisis meeting. The discussion was led by the project leader, but also the care team manager and the head of the home care office were present. In the discussion the care team was presented with the problem: "In which alternative way are you then going to collect the service information?" In practice this meant that there were no alternatives for the mandatory use of the PDAs for gathering the service information. Indirectly, the home care workers were made to understand that not using the PDAs would mean redundancy. In the end, also this care team continued the use and also the rest of the care teams found out that there were no alternatives to using PDAs for information gathering. After this, the PDAs were quietly

accepted, although dissatisfaction with the situation would be discussed at least within the own care team.

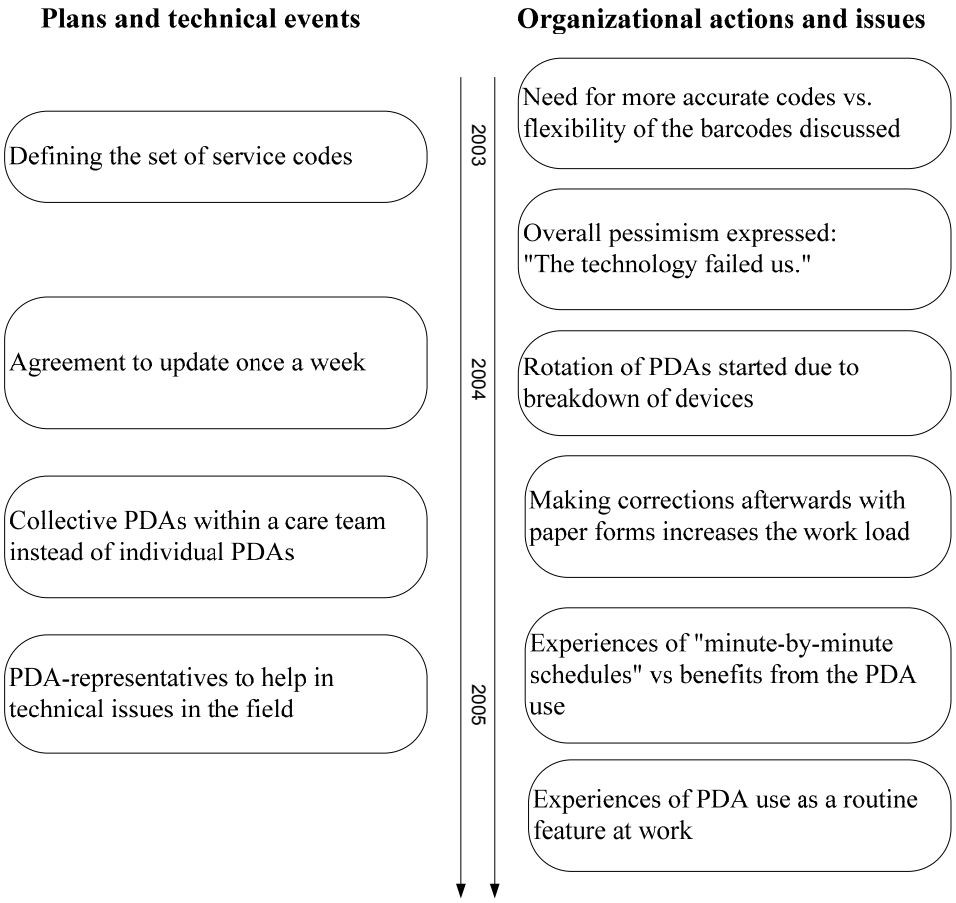


Figure 12: Fourth phase of the organizational implementation

Apparent in these continuing discussions amongst the home care workers was the major question about the precision of the service codes (see **Figure 12**). According to Bowker and Star (2002), it was to be expected that typically invisible classifications and standards become visible in negotiations, when the premises of the work change. They state (p. 4) that such categorizations in turn craft the workers identity, aspirations and dignity. This seemed to be the issue also in the home care, when the barcodes were defined. How accurate and detailed view of a working day

could be inspected on the information gathered with the PDAs? Some of the home care workers asked for more accurate bar codes (e.g. for lunch at the break facilities vs. lunch outside) and actively presented their own ideas for these. In this ideal, all instances of any action would be recorded in the service database. On the other hand, there were views that the service codes should not be too strictly bound as there would always be variations and unexpected situations in a work such as home care. The implementation project leader finally compromised between the two extremes by stating that the goal of the PDA use would neither be in arranging a minute-by-minute schedule for the care workers nor all variations of service tasks would be so common that they would demand an allocation of singular bar codes. Service bar codes that are not too strictly defined would leave room also for situational interpretations when needed.

Some general practices concerning PDA use were also modified. It was first planned that every home care worker would have her or his own PDA. Due to the breakdowns and technical problems with the devices themselves, these plans had to be changed. New rules were laid out that all the PDAs were to be kept in the break facilities, and every morning given to those working in the shift. In this way, it was made sure that there was a sufficient number of PDAs. While rotating the PDAs, it would be natural to update the service information in the PDAs also after every shift. This was impossible to arrange as the home care workers stay for relatively short intervals at their break facilities. There is not always time to do the updating at the end of the day. Moreover, often it would mean queuing for the computer to do the actual updating as the wireless access for updating was excluded during the implementation project because of the security risks. In general, the rotation practice was not resisted, as it was deemed quite practical to store and charge the PDAs in the break facilities over night.

Technical help was also arranged in a new way: now each team had one person in charge of helping with simple technical problems. One home care worker was nominated as the “PDA-representative” and she would come to help if needed. The help system was created on the idea that the workers know best their own needs and issues and that technical knowledge can be accumulated through trial and error. With such peer support based technical help it was also easier for the workers to ask for

advice than to ask from their managers or even more unfamiliar technical staff employed by the city.

To summarize the phases of the organizational implementation, the first phase was characterized by uncertainty and drift as not all of the implementation goals were yet clear to various participants, the second phase illustrates training efforts and slow change of attitudes towards the new technology, the third phase culminates the whole organizational implementation in a crisis situation after which the more or less mandatory acceptance of the new technology is finally shared amongst the home care workers, and finally, the fourth phase of practical adjusting and beginning of routine use the implemented technology. Dividing the organizational implementation in four phases is artificial as in reality the phases were not necessarily so different of each other. Still, there were some deciding events that affected how the implementation was continued within the organization as each phase had issues that needed to be actively handled.

To the analysis of the home care case, the various implementation phases emphasize the parallel and intertwined development in explanatory ways. Organizational change does not take place in a vacuum, but there are, for example, external and organizational context forces, issues of designing and planning as well as the actual work process and work features that affect the development as a historical process although their roles are not necessarily clear (Newman and Zhu, 2007). Some impacts may even have different outcomes on the work level and on the project level of exploring implementation issues. For example, in the home care case, automated features in service information gathering had different outcomes in the working context than was planned in the implementation project goals. In this sense, the four implementation phases illustrate how the new project leader and a combined effort in dealing with the unexpected issues led to that a level of stability was established also in those work practices related to the use of the PDAs.

5 Changes on the practice level

In this chapter and the following three chapters, I analyze the organizational implementation. With the practice perspective as my chosen lens to the organizational change process, it is possible to discern how the change took place as a gradual, emergent action between various participants. Applying practice perspective means exploring the everyday working situations where these practices are enacted. The practice perspective illustrates not only the action level of interaction but considers the knowledge and tools ready-at-hand (e.g. Introna and Ilharco, 2004; Bødker, 1989) as well as other observable, situational features affecting the outcomes of action taken.

My purpose is to be critical about what was taken for granted or ignored on the organizational level of the implementation project, in order to gain a rich insight of the issues raised in the organizational negotiations during the implementation (Richardson, 2003). By analyzing work practices, it is possible to understand the realities at work and mechanisms behind the actions (Bourdieu, 1997) without marginalizing the worker (Richardson, 2003).

My first research theme (RT1) is how the work practices changed during the organizational implementation and how this transformation affected the workers. On a theoretical level, the first theme would be formulated as the following question: What does the practice perspective mean for exploring change in the organizational context? My approach is that it means seeing the workers as agents of change, either contributing to or resisting the outcomes of the technical implementation and as adjusting and working around the new features. Seeing the workers as agents of change meant observing them as a group that had strong interdependencies in their relationships, and who kept discussing or negotiating the technological issues amongst themselves and with their managers. This is closely related to the fourth research theme (RT4) on

how the organizational change was justified and negotiated within the organization. In my study, the practice perspective means bracketing out the macro level view of organizational change and the implementation process plans with formalized goals, and concentrating on what the workers actually do or claim to be doing. In this way, the unexpected changes emerging during the process can be observed with ethnographic methods and identified for analysis.

To illustrate aspects of organizational change, I adopted for the analysis a collection of work practices similar to those that Orlikowski (2002) used in her study of knowledge practices. However, Orlikowski's study explores knowledge practices in a global product development environment that could not be further away from the home care that is local and localized. Therefore Orlikowski's study provides an inspiration for the analysis but not a classification that could be readily applied. To illustrate the change of work practices in home care, I first introduce some common work practices shared by all home care teams, starting with the interaction within a care team. The interaction practices can be observed in daily activities, such as, ways of building and maintaining trust amongst the workers, building commitment within the care team, sharing information, sustaining social networks and in overall, adjusting to a "we as a team" spirit. Enacting such activities illustrates the underlying practice principle that guides interaction at work.

Although the analysis of the work practices has the observation data as a main source, to some degree all of the work practices were also emerging in the interviews although sometimes in indirect or vague ways in talk. In the interviews or even in the informal discussions, the same importance behind repeated action was brought up in words and reasoning behind the action. Based on how frequently the established "rules" of interaction at work came up in action and in talk, **the practices of interaction within a care team** seem as a crucial starting point at the home care.

Interacting with other home care workers and their managers is a crucial part of everyday working at home care. As the care work is carried out in various locations throughout the day, the understanding of what the work consists of and how it should be carried out is constructed not only through personal competence and experience, but through interaction with the co-workers. The everyday interaction is part of daily routines, and there are some common practices characterizing this interaction.

First of all, there are work practices concerning how the clients are handled between the workers. The home care workers have a practice of sharing client information in daily discussions at the break facilities. The clients and their personal issues are discussed first thing in the morning, possibly also during breaks by those workers that happen to be present and lastly at the end of the shift when the home care workers once again meet collectively at the break facilities. The practice of discussing the clients has been an important way to circulate the latest information of each client, but at the same time it has been a way of accounting for the work that has been carried out and peer checking that everything has been taken care of. Client calls are hardly forgotten, but sometimes there are more or less problematic clients who are not easy to visit. The practice of discussing also such clients openly ensures that at least basic services are given.

> A new worker gets only an overview of the clients from the care and service contracts. The actual knowledge comes from other workers. What a client wants to be done and how you are supposed to do it; the real knowledge you get only from the other workers. (*Care worker*)

> If a client is strange or difficult, we tell it to each other. So that every worker knows it. And some clients have strict habits that we tell to other workers. So that everyone knows to be cautious. (*Care worker*)

The work practice of discussing the clients is in this sense about sharing responsibility at work and about sharing the collective load of giving good care. Discussing the clients time after time shows it as a recurrent or routine practice. It is taken for granted that the information needs to be shared in this sense, but actually these discussions are not one-sidedly about information sharing but a stock of knowledge or a shared understanding of the home care work is being constructed and re-constructed. This understanding deals with typifications of clients and their care, and with meanings that can be given to daily work. Now the standardized set of care services backed up by the PDAs during every client call intervenes with the previous typifications of clients and care services. As these typifications and meanings are carried into daily working situations and enacted in practice, it was understandable that

during a period of change, the usually unspoken agreements and more or less tacit typifications emerged also into the discussions and negotiations at work.

In contrast to the sharing and interacting as a norm, there were also workers that expressed a stronger streak of detachment from other care workers and even of the team manager. These workers stated generally to like working by themselves during the day.

> I'm glad to get out of the break facilities. I like working by my own all day and usually I choose the clients that live further away. I do not have to meet the other workers that way. (*Care worker*)

In informal discussions, these workers admitted their fear that the mobile technology and what it implies will contribute to decreasing freedom in arranging their work.

Furthermore, giving information technology a role in information gathering and distributing was expected by the management to change the need for discussing the clients on a routine basis every day. The workers themselves seemed to give the client information in the PDAs the same status that the client information on the paper printouts of the care and service contracts had. That was a role of static information that gives some guidelines for each client but does not inform how the daily service calls should be carried out. From the practice perspective, these routine discussions are about sharing the uncertainty of working in an environment such as the home care where planned work is interrupted with unexpected changes caused by the fact that work is carried out amongst the old and frail clientele. One of the home care workers described the uncertainty as follows: "With these people you never know what to expect when you open the door. I mean, some of the situations are just so quick, so in your face, that you cannot be prepared. So it helps, when you can talk these out afterwards."

In some cases, the mediating role of the mobile technology brought forth issues that were not previously easy to discuss in weekly meetings. Such are, for example, client calls of exceptional duration as one of the care managers describes:

> Yesterday I looked through the lists. I was rather surprised that there were such short service calls; many were 30 or 40 minutes. But there were also longer, for example 80 minute long calls, I can't think why they needed such a long call ... But surprisingly, lots of the service calls are short. Care workers tell me that there is nothing else to do but to chat with the client. I said, well, and then you chat. Well, it depends on the worker; some are quicker workers, and others are not talkers. (*Team manager*)

The manager can discuss these now, based on the summary data. The sensitive issue of why some clients receive less or more time than others can be openly and objectively discussed within the care team without pointing to a particular worker. Earlier, these were discussed in one-to-one conversations with the worker and the manager, and the team did not learn from the experience.

However, the new technology has a role in how the clients are circulated amongst the care workers. Every morning starts with going through the day's client list and choosing who is to make a service call at which client's home.

> Our clients remain the same from day to day, so we circulate them. Exceptions are dealt with every morning. (*Care worker*)

> Before we used to have lists of clients, and the same list was used for months or for years by a worker if there were no changes in her clients. But nowadays we come to work in the morning and look who are the workers that are attending. Then we divide the clients of that particular day between us. Sick leaves and such make differences to your daily rounds. (*Care worker*)

> You're alone when you go around on the field. Before, we used to work as pairs. Now we're alone, but we know, we have instructions what to do if we – for example – find someone dead. But still, you have to make the decisions of what to do yourself. You can't just shut the door or shout for help. You have to handle it alone. (*Care worker*)

The home care workers are given instructions that a static set of chosen clients should not be formed but that everyone should make service calls

at every client's home in a manner that prevents too regular and too needy service relationships that sometimes become unhealthy or burdensome because of the intensity of client care. The pressure of close human interaction with the clients is at the same time both rewarding and challenging, but these pressures are shared and in a sense diminished by establishing boundaries to client relationships even when working at the clients' homes.

Although daily circulation of clients amongst the care workers is one effort towards established care relationships instead of more personal relationships between clients and workers, there have been cases where the clients have not been circulated along the guidelines. Typically such happens in care teams where the experienced workers choose first, and where newer workers have less to say. There have been silent practices of the experienced workers serving easier clients closer to the break facilities. Having the daily client lists in the PDAs has made such silent practices visible also to the team managers in ways that enable discussing these issues, for example, in the weekly team meetings. Information technology is in this sense a neutral mediator of client information, as within the home care teams open confrontations that could ruin working relationships are usually avoided.

Interaction with the clients within the home care is also in many ways routinized or standardized in shared practices that guide the workers in unexpected or unplanned for situations. **Work practices concerning the client relationships** and interacting face to face with the clients is about, for a large part, how to enact during the service calls or how to "be a proper home care worker". This means that there are guidelines for establishing service relationships and maintaining a professional level of interaction during the calls. On the practice level this means finding ways of building and maintaining the client relationships, bridging closeness while maintaining distance, defining the services and maintaining authority. In a sense, these work practices are about enacting in reality what the home care is about: how the care and service of the vulnerable or elderly clients is understood and interpreted in everyday situations, how social monitoring of the clients is intertwined within the practices, and how the professional or occupational boundaries are constructed, based on these interpretations.

The work practices concerning interaction with the clients are in a sense the core of the home care work but, at the same time, these practices have been partly invisible. The clients may tell to the team managers or to their relatives about the client calls, but there has been no formalized accounting for them. Likewise, the home care workers themselves discuss the client calls, but mostly afterwards, as a feedback or as a way of giving order to daily work. During the client calls, a home care worker is alone. Especially in situations when a client asks or demands for more services, it in not necessarily easy for a home care worker to decline extra tasks.

When there is enough time or when the asked services are rationally grounded, extra work is usually carried out. When it is not time wise or rationally possible to do something extra, the care workers have a fear that there will be complaints about them. The following complaints are just part of the picture: “The home care worker does nothing. She just comes and goes. She does not hear for my needs.” The home care workers state that in a work like home care there has to be room for adjusting to the client, adjusting to the situation:

> It depends on the people so much, some do only the necessary, or are already planning the next service call, or are waiting for a break. It’s like, some workers do 'by the book' - only the necessary, but you should also ask a little, at least if your not in a hurry. [...] Of course, if you have a new client, you wouldn't probably look for something extra right away, but anyway - when you go to a client you have been taking care for a long time, looking and asking around at the client's home a little - that is what makes it good care. (*Care worker*)

> You often end up on a situation, where the client is demanding more small tasks [so that the home worker would stay longer]. You can play along in that only to a certain extent because the other clients are also waiting. Now, as I have this [PDA] device, I can tell the client that this device with the daily task list doesn’t allow me to do any extra tasks. (*Care worker*)

Home care workers sometimes interpret that good care means hearing out every wish of the clients. This amounts easily to an endless chain of wishes or demands that increase the personal workload of a care worker and the general tension in client relationships when “Mari does so much

more than Wilma." This leads to tensions both in client relationships and in relationships with co-workers. With the PDAs, it has become seemingly easier for the home care workers to decline the extra tasks. The home care workers were quick to give the PDAs an active role in client relationships in a sense that they can give authority to "inhuman" technology that does not allow breaks from the planned care. While enacting institutionalized authority through the mobile technology, the home care workers have been re-constructing boundaries for care working at clients' homes in a manner that is also successful from the managers' point of view.

Carrying out the extra tasks touches also upon interpretations of what is good care. The meaning attached to good care or quality of care is abstract but nevertheless, the home care workers attempt to enact these interpretations and qualities while working with clients. For the home care workers it has been somewhat stressful to decide when enough has been done. Likewise, for the team mangers it has been hard to assess what actually takes place during service calls. Now that the service calls are recorded in a timely manner with the PDA, some of the tension felt with the abstract interpretations of good care is seemingly relieved. Both the care workers and their managers can be assured that the basic level care is sufficient and "extra" is carried out when possible.

A part of the everyday interaction at the home care is **the work practices to align effort**, that it, the practices concerning shared effort to organize and carry out the care work. These practices can be observed in the daily activities such as using common models and methods, or as coordinating across time and space. Part of the aligned effort is a shared list of service tasks as well as the individual care and service contracts made with each client that guide planning each service call. No matter what is the amount of pre-given information about a client or about a service call, each worker interprets the information in a framework of her situational and personal rationality and experience, in ways that cause differences between the care workers and between the service calls.

Despite the standardized list of service tasks, each home care worker enacts these tasks in face-to-face interaction during the service calls and this is what brings personal differences forth. Previous to the organizational implementation, the team managers received secondary interpretations from the clients and from the home care workers about

what took place during the service calls but as there was no formal accounting of the service calls, it was not an easy matter to solve situations when these interpretations were different and contradictory. For example, a client can call the team manager and complain that the service calls are so quickly over that no help is received. With the automated information stored of each service call in the PDAs, it easier to access and evaluate past service calls as at least some traces remain.

The home care workers were at first suspicious about the automated ways in which service call information is being gathered but as the organizational implementation progressed there emerged also other opinions on the matter. When the technically mediated accounting became a routine feature of everyday working, the home care workers started to interpret this technical feature in ways that would prove meaningful for them. The care workers noticed that they themselves can observe how and what details of service calls are documented in their PDAs. As the care workers continued to observe the service call documentation, they became more aware of the everyday organizing and timing of their work. This decreased the feelings of haste or stress. When the service calls were not made visible in this sense, the care workers were somehow feeling that they never do enough. Still, there are mixed feelings about the outcome:

> The control of time is a good thing. Everyone is feeling hurried. Some feel haste even when there is no extra work. Now you can actually see here on the display your working time: what you have already done and how much you still have working time left. (*Care worker*)

> One of the hardest parts of this work is to divide your work load evenly. So, that you wouldn't have to have either rush hours or quiet phases with nothing much to do. For example, all the clients need help in the morning and then again during the lunch time and so on. Everyone always needs help at the same time. (*Care worker*)

Increasing visibility of time spent on each service call or in every particular service task helps managers to control or check afterwards that all planned service has been carried out but once again some of the authority is given to the technical artifact. On a personal level, spending

time with clients can increase tension in relationships amongst the care workers when the differences in times can be observed on a daily basis but the reasons for these differences have not been visible. This has eased especially the part timers:

> We do not have to think over if we can go or cannot go; we do not have to slip away in secrecy any more. We do not have to call out to all the others when and why we leave. (*Care worker*)

Even with the service call information mediated with PDAs, small details of carrying out work are not visible, but now "a picture of what has happened" is easier to construct afterwards, as one of the team managers said. Constructing the time control practices as a mainly positive outcome of the use the PDAs relieved some of the tension between the team managers and the care workers. Nonetheless, the care workers' own contribution to establish the time control features of the PDAs as a norm later contributed to increasing subordination of the workers.

Practices for aligning effort have been enacted also in work hour sheets. These work hour sheets are printouts of planned service hours for each home care worker that the team manager makes for periods of four to six weeks depending on the size of the care team. The period is dependent on the needed personnel for both day and evening shifts. For example, for a home care worker, one week of evening shift is usually followed by three weeks of day shift. The evening shifts are allocated in rotation to avoid a situation where one care worker has many weeks of evening shifts over short intervals. As the home care workers have a freedom to make changes in their working hours amongst themselves, the planned hours hardly ever were the same as working hours that were actually carried out during the planned periods.

Calculating working hours for salaries was a complicated matter to the team manager who needed to crosscheck the plans with the work hour sheets that had been received back from the care team after the planned period was over. The work hour sheet had usually corrections and corrections to these corrections, and the team manager would call break facilities or discuss the work hours in the weekly team meetings to make sure that the salaries would be rightly paid by the hour. This manner of checking working hours was both time consuming and burdensome and it took time from other important tasks. Moreover, it could also mean

arising tension amongst the personnel if there was a suspicion of miscalculation. Here, the automated information documented in the PDAs was mostly interpreted as a positive thing both by the home care workers and the care team managers.

To summarize the above, in this chapter, I illustrated some of the everyday work practices concerning work relationships and coordination. Interaction and communication with the clients and the management is crucial in a type of work that intervenes with people and their lives. However, the most emphasis is given to the information exchange amongst the care workers themselves and with their team managers. This need arises from the organization of the home care as team based, mobile working. The mobile technology supports information needs while carrying out the client calls. It added a new level of awareness about the care work both amongst the workers and especially in relation to the team managers. The work practices concerning how the clients are allocated daily amongst the workers were transformed towards a more equal circulation. The new technology seemed to strengthen the care worker's control of the service relationship during the client calls.

Applying the practice perspective on the organizational change enables analyzing the implementation on the levels of individual and group interaction. This exploration gives quite a different picture of the organizational implementation when compared to a higher level of organizational interaction where the implementation is discussed as a problem filled and much resisted phenomenon. On the individual and group levels, early on the new information technology was given a role with several meaningful interpretations and thus, the information technology has been adapted to the home care work bit by bit.

Why then the organizational truth in a Foucauldian sense and the everyday interpretations given to the implemented technology differ so much? Part of the answer can be found in the differences between the goals for action on various levels. Although the implementation project goals as such remained unfamiliar to the home care workers and as they were alienated from the everyday rationalities of working, the PDAs clearly had technical features that the home care workers were ready to adopt and enact in daily work practices.

6 Issues of organizational power

As the organizational implementation progressed gradually, the home care workers became more and more aware of the controlling abilities built into the new information technology. The third research theme (RT3) addresses how the surveillance and automated controlling capabilities of mobile information technology affect everyday working and organizing. The practice perspective approaches organizational power from the viewpoint of intersubjectivity, or everyday action amongst the workers. Likewise, their relationships with the team manager and the clients embody organizational power and control as well as interdependencies. The interdependencies within a care team seemed to be one factor in how the implementation was approached as the team manager and the more experienced care workers influenced the meaning construction of the mobile technology and its uses.

The process on meaning construction was also influenced by shared rationality of the care workers; at first they had less knowledge and fewer experiences about the PDA, but when the implementation continued, there were stories and experiences concerning the use of PDA that helped in the adaptation in those teams that joined the organizational implementation at a later date. How organizational power was exercised to control the home care workers was observed already during the pilot phase (see Paper 1). As the organizational implementation was continued, the consequences of certain technical features could be observed both in client relationships and in relationships between the home care workers themselves, as illustrated in Paper 4. In this chapter my aim is to explore organizational power issues more from the home care workers point of view. To do so, I scrutinize daily recurrent work practices concerning learning to use the new PDAs during work and sharing information amongst the co-workers.

Part of exercising of organizational power was enacted through **the work practices of learning** – or being learnt. The learning practices in the home care organization seemed to be established in the daily activities of investing in individual worker's capabilities, mentoring the workers, and at times, even rewarding or punishing a worker. Neither rewarding nor punishing are very visible in the Finnish working life, but mentoring was at least tried out at home care. During the organizational implementation, the PDAs were the visible part of learning, but at the same time, a more subtle learning of transforming practices, norms and interpretations was taking place.

In home care, learning to use the new technology took mainly place in the way that the care workers were already used to. That is to say, they were used to learning by doing, by repeating and by trying out during the daily activities. From the management's point of view, this type of learning could be interpreted as investing in the workers' individual capabilities. And certainly, some of the home care workers were more interested or open to learn the new technology than others.

> Doing your work and learning something new at the same time can be complicated. It doesn't help if you do something once while an instructor is standing by you. […] Only after you have done something several times, you start to learn well; then it becomes natural – and then it becomes good. (*Care worker*)

Issues of learning at work can be explored with the practice perspective when learning is understood as an individual and group effort of finding out and fitting the technical features of the PDAs to work. For the home care workers, the learning practices were not commonly shared as the workers had not previously needed to make such a combined effort to learn to use a new technology. Typical things to be learned before the organizational implementation had included, for example, hearing out and familiarizing with features of new guidelines for care or new forms to be filled at work. These are much less complicated than taking new technology into use. The first wave of resistance against the PDAs, and technical matters in general, emerged from the unfamiliarity with technology, technical vocabulary and learning about technology. As a combination, the unfamiliarity of learning new technology and human uncertainty felt during any organizational implementation, emergence of resistance is understandable. One of the care workers described the

attitudes as: “We’re no technicians.” And technicians they certainly were not expected to be, with the relatively limited set of technical functions chosen to be available for them in the PDAs. Still, the whole concept of using information technology was unfamiliar for most of the workers, and they needed to learn how to read or interpret the information shown on the PDA screen. A care worker expressed her doubt and feelings of alienation with a question:

> This all so is far away from our work, detached from what we do. We take care of old people so what we’re expected to do with these things? (*Care worker*)

During the training period of the new technology, the home care workers felt frustrated about how the training sessions were arranged. They were shown needed functions and features of the PDAs that they would be using at work. The main functions are automated as much as possible so that the home care workers “wouldn’t need to press too many buttons” that could be confusing. Also logging in to the system was similar to logging to mobile phone with a personal identity number. At a minimum, a home care worker would log in to the system in the morning, read different barcodes during the service calls, end services by pushing a button and at the end of the day, log off.

When browsing through client information, the daily service list and the accumulating count of daily service hours, the home care worker would need some understanding of how browsing is technically carried out and of how the information is hierarchically arranged to be displayed in various views. After first hesitancy – or shock in some cases – the PDAs were not too hard to learn. The reading of barcodes was mostly automated, and here the hardest part for the care workers was to remember to end each service task timely. Perceiving how the client information was arranged in the PDAs took more time by the care workers that had no or little previous experience with any kind of information technology.

However, the automated time keeping while recording the client calls and other activities during a working day was not established without compromises. The home care workers were accustomed to a flexible way of working. This meant that, for example, they could start doing laundry at a client’s home, and while the laundry machine was still on, visit

another client nearby. The record keeping with PDAs made this impossible. Some of the care workers would still attempt to work around the issue, for example, simply by "forgetting" to record the end codes.

The practice for learning to use the PDAs was, at the break facilities, sharing and talking out loudly during the breaks. As the technology was new to all or most of the home care workers, they did not feel ashamed or embarrassed to ask for help or to discuss problems with the PDAs. This contributed to sharing of learning practices and peer support that was later on, as the implementation project progressed, identified and institutionalized also by the implementation project leader. In the discussions amongst the care workers, at first, the loudest voices in some of the care teams seemed to be of resistance.

When exploring deeper into the reasons behind the resistance, it became evident that there were other contributing organizational issues that were not directly dependent on the mobile technology. The technology became the surface reason or the scapegoat for issues that had been building up for a long time, concerning the organizational hierarchy and power balance. However, when the organizational implementation was continued and the peer training became an established part of the process, the resistance also decreased. One reassuring reason was the work practice of discussing and sharing what was learned at work and within the organization. Similarly, also reconstructing organizational power practices concerning information and learning issues were embedded into those discussions. Some of the team managers were hopeful that through learning, the PDAs will contribute also to improve the care workers position:

> This leads to even more independent working. Also the managers need to change their attitudes. This doesn't mean spying your workers – you have to trust them and their abilities. (*Team manager*)

> It feels like the team is now planning themselves how they care for the clients, or how they will plan different working days. I do not do much of such work anymore. It is almost so that the team members call me telling that a client needs this and that or this many hours. It feels like the team is now really organizing the care, although there is still a lot to learn. (*Team manager*)

The practices of exercising organizational power are manifested clearly in the ongoing discussion concerning the level of mandatory acceptance during the organizational implementation. The home care workers identified relative freedom of work relationship dependencies as a reason for personal work satisfaction. Mandatory use of the surveillance capable technology was doubly a threat to the accustomed autonomy of working alone. The home care workers claimed to resist technology as an unfamiliar and unfitting feature in the care context. However, as they become more skilled users of the PDAs, they found technical functions or features that they were readily adopting. Such features include, for example, giving the PDA an authoritative role during service calls or arranging their own daily schedule by following the work hours accumulating into the PDAs. Neither of these technical features was present in the implementation project plans or goals. By accepting the use of PDAs as a part of their everyday working, the home care workers contributed themselves to the increasing surveillance and monitoring at work.

From this viewpoint, the shared learning practices did not contribute only to using the PDAs as planned in the goals of the organizational implementation but, as well, to using the PDAs as relieving tension in conflicting interests by attaching organizational authority to the technical features. For the home care workers it proved important to learn their own uses of the PDAs as this decreased the initially felt detachedness of the technical device in the down-to-earth care environment. At the same, the learning practices illustrate organizational power. Apparent in the learning practices was how they intertwined with issues of managerial power in the mandatory learning aspect and in the more subtle exercise of power by the home care workers themselves. The care workers exercised power in relation to the learning effort in several ways: first, there is power shared by the workers as equal learners, second, there is power expressed in the resistance and in the organizational discussion, and lastly, there is the organizational power exercised in the client relationships. The home care workers seemed to be more successful in exercising power in the first and third aspect, but less so in relations to their managers or within the organizational hierarchies. Especially the work practices concerning client relationships were considerably changed with the conscious effort to ease the strain of clients' wishes as extra demands.

As the organizational implementation slowly continued from learning towards use, in some of the care teams the learning was advanced to a new level. The care team members made shared efforts to organize the daily care together with the team manager. Sharing the responsibilities of organizing and planning daily care is a continuation of learning practices as a joint effort. During my field study period, this kind of continued shared learning was more likely an exception that a norm, but nonetheless, such development seems natural in the home care working environment. Such further development would mean new interpretations of exercising managerial control as well as organizational power as a whole. The other side of exercising power is the shared attempts for normalization during occurrences of anomalies or deviations of what has been considered as typical everyday action. Attempts to normalize or stabilize during a period change are a common practice in the sense of shared need to avoid further uncertainty or breakdowns. In the home care case this manifests in the common acceptance of the mandatory nature of the implementation and use of the PDAs, after one care team had – unsuccessfully – tried to break away from the organizational implementation.

A small but somewhat significant technical feature that hindered learning as shared practices was the home care workers' fear of breaking their PDAs as delicate technical devices. The PDAs did not endure too well in the austere working environment of the home care. For example, dropping a PDA indoors or freezing it outdoors was quite a common occurrence. When reparations were needed, it would take up to three months to get the PDA back. The home care workers had mixed feelings about the PDAs being repaired. Some seemed to ashamed that a PDA was broken – even when the breakage was not due to their actions but due to general wear and tear. At the same time, some of the home care workers were clearly relieved that they could "enjoy a free period" from the scrutinizing eye of the PDAs.

Work practices concerning the information availability and sharing of information at work are also part of **the everyday power practices** at work. Sharing information came up recurrently in the everyday action. It was a work practice that that was also named, held important, and therefore, discussed at various occasions by the workers themselves. Daily activities included both sharing information between the care

workers, the clients and their managers, as well as sharing information about the implementation project.

Communication and knowledge integration as well as domination through power-related information and work practices can be described as a part of symbolic violence at work (Bourdieu, 1990a, 1991). Here symbolic violence means institutionalized domination in a set of formalized and hierarchical control practices that can be identified in any organization (cf. Foucault 1979, 1980). These control practices are typically hidden in the communication or in the working relationships between the care workers, based usually on their years in service and on the level of assimilating the organizational values and culture. However, during periods of uncertainty such as the organizational implementation the modes of dominance may be turned around. This happened, for example, in the home care case when the care workers expressed their resistance by strikes or other methods over conflicting issues.

In Bourdieu's sense, uncertainty is always present in human action taking. During the organizational implementation the home care workers felt pressured by the uncertainties concerning the future and continuity of their work. The new mobile technology became in a way a scapegoat for the negative feelings during a period of uncertainty and change. The uncertainty was partly caused by lack of information. Information concerning the new mobile technology was available and technical user training was offered to the care workers, but still, they felt concerned of the impact the new technology would have on their work. As the management could not predict the technological impact beforehand, somehow the care workers were not feeling cared for.

There are two levels of transformation: first, the organizational talk, the discursive construction of an organizational regime of truth as Foucault (1980) describes the established and taken for granted sense of the world within an organization, and second, the level of action by organizational members. The later takes place as quite unpredictable and emergent action. This interests me as it can change the whole course of the organizational implementation by small, seemingly unimportant steps. While analyzing the change in the home care case, it became evident that the implementation was greeted and processed in various ways in different care teams.

The level of resistance versus satisfaction with using the mobile technology within a care team seemed to be dependent on the information and rumors circulating in the organization. The workers discussed the information or rumors with the closest working partners. In teams where the care manager encouraged the workers to express their own opinions and concerns, the use adaptation seemed to progress better as everything from uncertainty to practical use issues could be handled together. In teams where the care manager herself was doubtful or even negative towards the organizational implementation, the care workers were ready to adapt the same stance and the user adaptation did not progress well. In some teams, the care manager was even quite indifferent about the whole organizational implementation and did not encourage or expect the care worker to use the new technology. So the doubts about using the PDAs prevailed:

> This is the system we are working with, we have no other options and we have to cope with it. We try to learn [to use the system], and will keep on discussing this, and raising voices about this – but – even so, we are using this. (*Care worker*)

> The palm-based device is a device of control; that is what it makes possible – you can't deny it. (*Team manager*)

Various interpretations of the organizational implementation goals caused a situation where the reasons for gathering the service information were not clear to all of the care workers as users of the technology. This caused further resistance as the technology was first and foremost interpreted as a technology of controlling and monitoring the working hours. When the new technology did not work as well as planned, the care managers were expected to request the care workers for correction reports to fill in the information gaps caused by breakdowns of the system or by loss of data during updates. The correction reports were penned down manually and the care workers felt that the new technology only added on extra work tasks instead of decreasing the documentation needed, as promised. Furthermore, the correction reports were enforcing the interpretation that the working time was the core reason for the organizational implementation. However, even the managers had mixed feelings about using the PDAs for record keeping:

> Now we get black on white – who of the workers really do visit the clients. (*Team manager*)
>
> It hasn't been connected to the other information systems we have. The information was supposed to be transferable to other systems automatically. But that hasn't been succeeded in. Our workers do not think much of this system, for them it is just a system of control, and our managers do not think that this is even important as long as the information is not being exported anywhere. (*Team manager*)
>
> This is a disappointment for me, because we haven't been able to achieve the goals. We cannot yet accomplish the clients' invoicing based on this information – there remain too many gaps [in the data] and the manual corrections drag behind. I haven't done two months' worth of corrections myself. First we should get this system to be more reliable and gapless, so that we could achieve the goals. (*Team manager*)

The work practices related to information at work were not concerning only the organizational implementation issues. Client information and care work related issues were still the main topic even during the height of the organizational implementation. Closely related to the new technology was the new standardized set of service tasks as the barcodes in the PDAs were based on the task list. While the set list of service tasks added to the increasing regulation of the working conditions, the care workers, nevertheless, were mostly pleased that some of the heaviest tasks such as domestic cleaning were off the task list. Even though they were mostly relieved, during the service calls the new task list caused situations where the organizational and personal features seemed to conflict during the service calls. Although the care workers could understand that it would be both physically and psychologically positive when their clients would carry out small domestic tasks themselves on a daily basis, it was not always easy to discuss this with the client. The nudge to get the clients to do some small tasks themselves would ensure a minimal activity level even for the lonely clients to help them pass the time and to hinder passivity. Some of the clients were still expecting more domestic servitude than just basic health care. Apparently this continued to be the prevailing and established interpretation of home care in Finland.

To summarize the discussion on the research theme three (RT3), the added surveillance capabilities and the organizational control by the PDAs appear as the main reasons for rejection of the PDAs. At first, the home care workers felt threatened by the loss of relative autonomy while working amongst their clients at the field. They seemed to fear that the new timetables and work schedules would mean loss of "breathing space" as one of the care workers put – that is loss of the moments between the tasks and the clients. The new classification of the care tasks that was carried out to generate the task barcodes seemed to leave little space for personal adjustments. However, at the same time, the care workers were relying on the work practices of shared learning and discussing the changes at their work. Through these negotiations, the new standard for everyday care tasks was slowly implemented, intertwined with the mobile technology implementation. The decreased flexibility or freedom of arranging a client service call was mandatorily accepted. While the increasing surveillance was not approved of, at the same time, some of the care workers expressed their relief that the situation during the client calls became more pre-organized and controlled.

7 Home care workers' identity

The second research theme (RT2) explores how the working relations and the work identity amongst the care workers are affected by the organizational implementation and the changes brought by the new technology. The practice perspective answers to the question of work identity as shared by the group of workers and as expressed in the work practices. As such, the home care work identity consists, for example, of tacit interpretations of what is good care or how the daily work is to be carried out according to the common goals and practices. At the same time, the shared work identity provides resources for coping with the daily uncertainty while visiting the clients. A part of the home care work identity involves the personal interpretations given to it by each individual worker based on her experiences and education.

Relating identity and work practices proved difficult throughout this study. A loose interpretation of what identity means or how it is expressed at work would mean that all my observations of home care workers could be interpreted as expressions of work identity. According to Bourdieu, work practices shape and re-shape identity (Bourdieu, 1990a) and, thus, cannot be explored as a distinct practice or as a separate phenomena detached from other work practices or tacit skills. Therefore, in this study, the issues of identity were explored as expressions and manifestations at work, as ways of conducting care tasks and orienting to unexpected situation.

The identity at work was not explored as such, or as a conscious and separate practice of constructing a specific work identity, but as a more subconscious or embodied means of being a home care worker amongst a group of home care workers. Being a home care worker amongst the others is expressed also in shared believes and values that guide working. This implies that work identity is also normative by nature. Some of these values are also written in the home care guidelines and quality

regulations. However, in the observations for this study, I concentrated on what the home care workers were doing or conducting and how they explained their daily tasks and how the mobile technology fitted in the picture. Therefore, the view on identity in this study also concentrates on what is readily observable.

Based on the above, all the work practice examples could be analyzed as parts of expressing work identity amongst the care workers during everyday working. In this chapter, however, I concentrate on the specific practices of sharing practices or skills and identifying with other care workers as their foremost means of orientating and committing themselves to care work. These can be interpreted as **the work practices related to expressing identity** and being one of the members. These practices can be observed in daily action, such as, in engaging in common training and socialization, in identifying with the organization and with own work group, and in general, in orienting to the care work and discussing the work.

An underlining principle in all the work related discussions with the home care workers themselves was a willingness to help. This is often called the care rationality in the Nordic countries (Wærness, 1996). According to Wærness, the care rationality implies that the workers are conscious of the human interaction, compassionate and emphatic to the point that they often end up completing more care services to their clients that they are expected to by their managers. The worker constantly assesses what influence her working has on the clients, on her co-workers and even on other related people, such as, the clients' family. The workers feel responsible for the welfare of their clients:

> You see the work carried out by your own hands. You feel satisfied when you know that you can leave the client alone with good conscience – you have taken care of the client's needs and know that she or he will manage at home. *(Care Worker)*

> Mostly it's a good thing that you can arrange a service call the way you want to. But especially during the evening shift, you feel pressure: what if something happens – to you – what you're going to do then? So, during the evening, you feel the responsibility more. *(Care Worker)*

As such, the care rationality implies that managerial guidelines cannot actually constrain the everyday working too much. The technical or economical rationalities are seen more or less incompatible with the care rationality. As such an altruist approach has long been the norm, any transition towards a more efficient and regulated working would rise issues.

Work identities as well as common work practices and norms guiding the actions are enforced through storytelling at work (Suchman et al., 1999). Storytelling is a part of the social organization of the workers, and through stories also social control can be exercised. In the home care context, such storytelling deals with the service tasks and how to carry them out while working alone, as well as tales of difficult or even bizarre clients. These tales are not told only for the shock or laugh effect, but rather as a way of telling how to deal with difficult situations with clients. Orr (2006) noted that such "war stories" are an important means for distributing professional expertise and practices in a distributed work group. In home care, the client situations and stereotypes are discussed in a similar fashion on a daily basis.

In home care, such stories were mostly about good care practices and about handling the clients. By telling anecdotes about the client calls, information about managing the client relationships and conflicting situations were distributed and discussed for further learning amongst the co-workers. At the same time, the storytelling provides stress relief or a justification that a complicated client situation was well handled. Because the home care workers visit the clients alone, from time to time, work can be burdensome. In this sense, a shared work practice of discussing the clients daily within a home care team is an important part of sharing information about the clients and building accepted ways or means to handle various client situations.

Usually the practice of daily discussions and sharing took place as unstructured and voluntary action. The more formal discussions were carried out with the team leader during the weekly meeting. When needed, sometimes sharing was done on the higher levels of the organizational hierarchy. For example, some details of the mobile technology use and the documenting needs were discussed on all levels of the organizational hierarchy during the troublesome implementation phase. Through these meetings, the more uniform guidelines for

documenting care work were constructed for all care teams. At the same time, the mobile technology's role as a part of the home care environment was strengthened, as well. Some of the home care workers noted that, likewise, they would like to have more organized opportunities for sharing information between the different care teams to learn from each others' experiences and practical solutions. At the time of the observations for this study, the relationships between the care teams were scarce and based more on personal acquaintances rather than organized meetings.

In the view of occupational or professional identity, interpretive schemes provide the organizational actors ways of presenting that very identity. In the day-to-day interaction, this can be observed in the shared work practices. That is, for example, in how communication and distribution of information concerning organizational development are arranged in the working context. Also, the actors' interpretations are influenced by the structures of signification. The structures of signification are shared by the organizational members and help them making sense of the world or guide their processes of creating meanings and knowledge within the organizational regime of truth (Foucault, 1980). This dimension includes also exploring what kind of meanings the home care workers gave to the new technology, and how these interpretations were received and signified on the organizational level. In the beginning of the organizational implementation, there seemed to be an attempt to "sell" the mobile technology to the home care workers as a minor change at work or as a device for a simple routine of recording the client visits. This interpretation was provided by the organizational management and also by the technology provider. Nevertheless, the home care workers and also some of the care team leaders were interpreting the recording device through their work identity as care providers and as social workers that handle people, not technologies.

The subtle changes of work identity were not easy to accept amongst the home care workers. Besides the mobile technology, also the task list for the home care was updated to be a more standardized set of tasks. This standardization attempt was partly due to the new technology. With the standardized list, it was easier to define the barcodes for each task. It also meant that the list of task barcodes that were handed out would be same everywhere. The mobile technology was a secondary cause for the task standardization. Other reasons included that at the time, the social care

attempted to define itself as an occupational or a professional field. This attempt was supported by the standardization of the care tasks but also by the care quality definitions and established care guidelines. Especially the higher management of the home care wanted the basic domestic care work moved elsewhere. This was supported by the lower levels of the management. The new task list concentrated on the client as the object of the care. The clients' welfare is monitored and supported, and tasks such as cleaning or making a meal for the client are mainly handled by other – often private – service providers. This change was not easy for the workers or the clients:

> Also the workers have difficulties in outlining their role. They have often been working in this field over a long time. They are those old ones who have been cleaning the house and doing the shopping for a client. Their work has not meant getting near the client on a body-level. They have taken care of domestic matters, not of human matters. The role change is difficult: you are no longer a house-cleaner but a care-taker instead. […] The workers would rather choose the shopping bag. The younger [professional] care workers have it easier, they know how to approach a client and how to tend to the human side and, for example, [they] cut the toe-nails and spread lotion on the dry skin of the client. Also the clients have difficulties in accepting help from home care when they are used to a situation where the bodily care has been offered by home health care. *(Team manager)*

> The clients are not used to the situation, where your cleaner is suddenly your care taker. *(Care worker)*

With this new interpretation, especially the older care workers were uncertain how to act in the new situation. Some complained that "now there is nothing to do in the client's home" when they were used to working with their hands. For example, they would chat with the client while preparing a meal – and as such the situation had served the client's need for human relationship. Chatting with the clients and monitoring their status was still expected, but the care workers were unsure how they handled such client situations. Some seemed to be fine sitting for a bit with the client, but some continued the client visits as they had been used to.

In both alternatives, recording the client call with the PDAs came up as an issue to be solved. The task barcodes list visible tasks, but some of the client visits are just short visits to check on the client. An appropriate barcode is not always easy to choose for the short visits, and the home care worker just chooses the basic service although – according to the home care workers – they did not necessarily do "anything". Likewise, when a home care worker carries out the client call as she has been used to during the years with the social service; she can feel that she "hides" information from her manager when recording the call just as a basic service. The client centered care is not only a complicated issue to carry out but also an issue for recording it with the PDAs.

Continuing as before was explained by the care rationality and the technology seemed to be an easy target when a scapegoat was needed. Especially in the beginning of the organizational implementation, many of the home care workers felt alienated from the mobile technology. These mixed feelings were enacted through work practices and, thus, even became a part of the care workers identity for some of them. Lamb and Davidson (2005) note that when interaction with the others is seen as a main means and ways of identity construction, this shifts the conceptual focus from what identity is to how identity is enacted. Moreover, the conceptualization of identity as enacted fits to Schutz's views on intersubjective interaction. In the home care, there seemed at times to be a conflict between how the work identity was conceptualized and how it was acted out.

To sum up, in client relationships, there had to be rational limits to be drawn for care, based on the organizational goals and resources – in times such as, for example, when there was no time to carry out extra service tasks. However, some of the care workers saw such boundaries for action in conflict with their personal interpretations of care and altruism. This contributes to exhaustion in care work, and it often arises into formal and informal discussions amongst the care workers.

Lamb and Davison (2005) describe the increased professionalism as a factor that can mean not only increased ease of positioning oneself in the working field but, on the other hand, also more standardized possibilities for identity construction and identification. They perceive information technology as having a strong influence in identity construction. Information technology can strengthen or weaken the organizational

actors' participation in the working community, by enabling or constraining the individual's presentations of self. Use of a new technology can, for example, support communication and distribution of information between the organizational members. This happened also in the home care case. However, at the same time, the technological inabilities can be a cause for isolation or a breakdown in interaction for an individual. For example, participating in the basic training sessions was compulsory for the care workers, but after that, they were free to seek more help or to cope by themselves. Although most of the care workers were ready to seek for help when needed, there were also those who never participated in the shared training sessions. Not participating in the training sessions meant also an exclusion from other information shared during the training. The management even had an opinion that the workers who complained of insufficient information were those that hardly ever participated in the meetings and training sessions.

Besides lack of necessary information, the home care workers had other fears concerning the continuity of their accustomed work, and in these issues, there were hints of losing clear sense of the care worker identity. During the organizational implementation, a concern was raised by the home care workers that technology can also disintegrate professional identity, especially when the workers felt increased insecurity about their abilities to continue daily working during a phase of what seemed to be constant changes in their working environment. Professional identity construction is a part of creating the organizational truth, and as such, according to Foucault (1980), it is also a part of the constant discourse within the organization and affected by the exercise of power and control or interpretation of meanings and values. In the home care case, control at work was legitimized in relations of accountability between home care workers and their managers. As these relations concern the distribution of information and power, they have an important part in construction of organizational knowledge and professional identity. In this context, the disciplinary power (Foucault, 1979, 1980) was expressed in timetables and daily task lists that bind workers together in a productive activity (Zuboff, 1988) and provide a standardized frame of identification for the home care workers.

According to Orlikowski (1996), the process of constructing new information technology as a part of professional identity is affected by the values perceived and interpreted about the technology-in-use. In the home

care case, previously, information technology had had no significant role. More generally, according to Wajcman (2000), information technology has not been approached as an important part of female care identity creation and maintenance. Similarly, in the home care case, the majority of care workers were women that according to van Zoonen (1992) and Wilson (2002) were still associated with the identity attributes of altruistic care, emotionality and intuition instead of, rationality, productivity or competition.

In the home care setting, firstly, the home care workers constructed meanings for the implementation and usage of the new information technology, and incorporated these meanings to be a part of their professional identity. In the beginning of the organizational implementation, the general understanding amongst the care workers seemed to be that information technology had no important role in their working environment, and that the values embedded in the care work and in technology cannot be aligned. On the other hand, there were also care workers with an attitude that information technology is just a new tool: "The work itself does not change, although the tools may change". Such an attitude supports the view that the new technology is being shaped by the workers using it, and at the same time the users, as social actors, are shaped by the use of technology (cf. Lamb & Kling, 2003; Orlikowski, 1992a). The meanings perceived in the new technology are signified in the process of reflecting on it with the values and skills that are perceived as important in relation to working.

Secondly, the home care organization supported and facilitated the technology use in various ways that could promote or hinder the construction of the technology as a part of the professional identity. The home care has a strong notion of situated action despite of all the planning. One of the reasons behind the implementation of information technology was the need to distribute the organizational resources more efficiently. There was also a need to be able to show in reality or "dramatize" (Goffman 1959, p 32) the costs of the services that are offered to the clients. At the moment, it seems that the visible tasks are more highly valued than the more invisible ones. The values of human care are the ones that are more highly respected, although care workers joked that in the future "only robots will tend to the clients." The workers try to maintain control in the new situation by taking an active part in the change process: they do their best to construct the new technology as a

part of their own views on what is important in relation to daily work routines.

Thirdly, especially in the context of conflicting attitudes or user resistance, the organizational norms have an important role in legitimatizing the technology use. In the design of the mobile technology for care workers, a leading principle was ease of use. Afterwards, it was also an important aspect when the team managers introduced the mobile system to their workers. Organizational norms can guide the care workers' professional identity construction by giving insight into what are the appropriate ways to act or what kind of knowledge is relevant. This includes also the co-construction of technological frames such as how technology is utilized or how the use is legitimized in the organization. In the day-to-day interaction, norms can be observed as what is included and excluded within the social sphere of working. In the cases of disturbance or breakdown in the working context, the social norms and legitimation become visible in the ways for handling or even sanctioning such situations.

In exploring the second research theme about work relationships and identity construction, I can rely only on the observed and the interviewed data I have collected, and thus, the care workers' internal or personal issues are touched only on the surface. Nevertheless, these considerations imply that although the care workers were at first claiming that the work itself does not change, there are small, yet considerable changes in the organizational dynamics and attitudes that affect both the relationships between the workers and with their clients.

8 Adjusting to change

In this study, the research theme one and my main interest is in exploring how work practices changed during the organizational implementation in the home care and how this transformation affected the workers (RT1). In this chapter I return to reflect upon the adoption of mobile technology on the level of the care workers and their working organization. What were the new features or unanticipated uses of the mobile technology, after the plans had been taken to action and the period of uncertainty was over?

To analyze how the workers adjusted to the change**, the work practice of participating in the change** at work was observed in the daily activities, such as, in the various ways of supporting or resisting the transformation at work, or as attempts to control the change process. These working practices were usually intertwined with the everyday action, and as such, not necessarily separate from the work practices described in the previous chapters. However, at times, a conscious effort to participate in the change was visible. The care workers participation as such could be on any level, but mainly such efforts were carried out by the management. In the interviews, the change or transformation of the home care working seemed was not an easy thing for the workers to describe. Their reaction to the changes came up both directly and indirectly in discussions, and some of the reactions are discussed here.

Looking back to the transformations in the home care, it is evident that the level of mobile information system use is high. Other possibilities besides just gathering service information remain largely underdeveloped or unused. Some workers clearly express disappointment: "I think that we are still at the same point where we were during the pilot phase. We haven't progressed anywhere."

The mobile system has not been aligned to fit better in the home care after the corrections after the pilot phase. As such, the system did not seem to

promote a significant change of working practices but it appeared more as an added task. The home care workers feel somewhat disappointed with their mobile devices and the lack of achieving the goals, although the actual implementation is viewed as successful. Both the information and the various functions available in the PDAs could be further developed to enable a more versatile use of the mobile technology. Looking deeper into the matter of changing work practices, it became evident that actually the mobile technology caused several fine-grained changes at work. These were related to the daily arrangement of work tasks and distributing clients as well as to the weekly sessions of discussing work to learn from each others' experiences and to relieve tension.

What caused continuous frustration or resistance by the care workers was the disappointment with the technology. It was seen as an already outdated model and a "cheap" choice, or as not robust enough for the mobile working environment. For example, if a care worker tries to skim through a new client's information beforehand in a stairway, the display has insufficient light. When it is burdensome to read the small display, the care worker may choose not to read anything and trusts instead her personal instinct. The care workers were also complaining that they have no real time to learn to use their PDAs for greater benefit. They quickly learn the basic functions to cope with the system, and during the busy working days, the situation is likely to remain so.

> This [implementation] demands for more talk and more pondering of these things. […] We should think about which of the reactions emerged because of the system, which because of the thought of control and which because of the technology. *(Team manager)*

> Well, the enthusiasm is gone and we feel kind of disappointed - especially with these mobile devices. If we had working devices everything would be better – but we would need better equipment, ones that would work with more reliability. These are just cheap. *(Care worker)*

> We have to do corrections constantly and by hand on paper forms. It's not fair. *(Care worker)*

> We have to do this [manual documenting] daily. There are many reasons for this. For example, the client code can disappear, which

> means that we have to add the services for this particular client manually afterwards. Or sometimes, the device does not function, or we can forget it on the table in the break facilities. And sometimes we can punch wrong buttons or read wrong barcodes. There are really many reasons. We can end the service too early by mistake or go to the next place with the previous client's codes still counting the time. *(Care worker)*

The home care workers have also stated that the first and foremost reason for their disappointment is the lack of real benefits for the clients and for themselves. However, there are clear benefits. These benefits include, for example, the enhanced capability to control one's own working time and the cope better with the stress and haste at work where several tasks are carried out simultaneously and intertwined with each others. A benefit for the workers is also that now every service call can be traced back, if such a need arises. For the clients, the benefits should also be evident: the clients' rights for receiving care and for equal invoicing are being enhanced with the mobile technology. These benefits are somewhat abstract and maybe practical every day benefits could be more easily identified by various participants. One practical benefit is clearly the various contact information for emergency situations in the PDAs.

The lack of practical benefits leads to a situation where the mobile technology remains somewhat apart from the actual working. It is still just "something extra" attached to the working context and the home care workers claim that they could as well work without their mobile devices. For example, the mobile system does not support exchange of client information between the home care workers. Maybe instant messaging or note making functions could add user satisfaction if such would be added to the current system. As the same client can be visited by several of the care workers during a day, such notes could prove useful. In the organizational implementation project, these issues were acknowledged as valid, but the level of information security in the mobile solution remained a risk that could not be solved. As such, the mobile technology does not support information exchange or awareness of other home care workers.

Awareness of other workers and transparency of work done supports cooperation in mobile work (Bellotti and Bly, 1996; Luff and Heath, 1998). Awareness can be achieved through use of mobile technology, but

mobile technology can equally well mean lack of awareness and communication problems when the system is not working accordingly. In home care, the system supports explicit communication such as which clients have been visited, for how long, and by whom. The system does not make implicit communication available like what was the present condition and spirit of the client or what actual care tasks were carried out. One of the workers comments:

> Cooperation in a care team relies on the exchange of this [informal] information. In this sense of communication, the new technology does not necessarily enhance cooperation between us [the care workers]. *(Care worker)*

In addressing the research theme one (RT1), the change at the home care is a slow process of adjusting and adapting to the use of the PDAs. The initial resistance based on the fear of increased control at work gave way to the shared effort of working around and adopting to the control features amongst the care workers themselves. Now they acknowledge the surveillance aspect of the mobile technology, but nonetheless, apply the organizational control embedded in the PDAs in the client service situations when needed.

Reflecting back on the practice perspective, it becomes evident that the mobile technology stands in for pre-given plans when situational uncertainties happen. The mobile technology can provide supporting resources at various care situations, mostly in form of information but also as a device for established organizational control. As such it enforces normalization and standardization of work practices in contrast to the situational or personal fitting of routines. The mobile technology can mediate organizational power, but it does not support intersubjectivity well even though the whole team uses the same technology.

9 Conclusions

9.1 Research insights

The goal of this thesis was to explore how work practices are transformed during the organizational implementation of mobile technology in a home care environment, and how this transformation affects the care workers or the arrangements of their work. This thesis contributes to a long tradition of workplace studies on information technology in use (e.g., Grint and Woolgar, 1997; Heath and Luff, 2000; Luff et al., 2000). The themes of conflict, resistance, control or surveillance are not unique to this particular case, but instead emerge in various studies of organizational implementation (e.g., Avgerou and McGrath, 2007; Beynon-Davies, 1995; Knights and Murray, 1994; Orlikowski, 1991, 1992b; Venkatesh, 2000). However, the case of home care shows that these are not necessarily only negative issues to be solved but instead they can contribute to the implementation outcomes in constructive ways. Although the home care workers resisted some features of the mobile technology, they were quite ready to adopt other features of the same technology.

This thesis started out with a theoretical consideration about work practices as shared and recurrent resources that guide the daily working. Approaching work practices in organizations as political and social action leads to consideration of organizational power in the same spirit as Knights and Murray (1994). They explore power issues as organizational relations and as power/knowledge relations from the management point of view. In my study, these same issues could be seen, but the focus was on the side of the workers, not the management. Their four aspects of organizational power include: First, an individual manager can have an important but limited effect on an organizational implementation as there are always various interests and power relations affecting the overall change. Second, a manager is usually striving for normalization of the

situation through upholding the already existing knowledge/power – relations. Third, power interests are multiple and discontinuous, and as such even contradictory to each other. Fourth, power interests and conflicts emerge when routinized practices break down. Thus, work practices become part of the organizational "struggle" while new ways of conduct and using technology are striven after.

In my study, these four aspects were visible as follows. First, the home care workers had their own interest to guard and their own relationships to maintain within the organizational hierarchies. Second, although strive towards normalization of the situation was also apparent amongst the care workers, their interpretation of the desired situation was not necessarily the same as the managements' view. Third, as the power based relations are multiple and discontinuous, they are so even among the care workers. This contributed to varied interpretations of the situation adding to the general uncertainty and resistance. Fourth, although the care workers were "struggling" to maintain their work practices, the organizational implementation was mandatory, and thus added on the resistance and conflict during the period of change.

Following the practice perspective, this study concentrates on the actual working. That is to say, on what organizational members do when they conduct their work (cf. Orlikowski, 2000; Schultze and Orlikowski, 2004). Applying the practice perspective means seeing also the technology-mediated work practices as ongoing enactment, and as such, emergent and situated, not as predefined by the design. Still, the recurrent use of technologies can become routine, taken for granted or institutionalized within an organizational environment. Orlikowski (2002) suggests that there is no use of talking about the 'best practices' at work. Similarly, in this work, I have declined to call best practices or quality practices everyday working that is constantly adjusted to various situations and reformed by the care workers. Practices as performance is not detachable from the context and the situation, and as such, it is not easily transferred from one care team to another.

In this study, I have explored working in technological environments as sociomaterial practices. The practice perspective emphasizes work practices as engaged with organizational materiality. In this sense, the technical environment lays out a basis for everyday action, but at the same time, the workers are capable of making their own interpretations of

the change and of giving meaning to the technical from the viewpoint of their own work and tasks that it concerns. According to Orlikowski (2007), the sociomaterial approach evades explaining changes in work practices primarily as technology effects or as technology use as well as explaining practices solely as social action.

Leonardi and Barley (2008) add that it is a challenge for research to try and combine materialism with approaches of voluntarism in the organizational implementation. The values embodied in the technical and the social are not easily combined and a research account easily leans on to technical determinism or reifies to a moral anecdote. However, Suchman (2007) links sociomaterial practices with emergent, performative action taking and co-construction of a professional identity within a field of action. In the home care, the work identity reconstruction by the workers was a crucial part of taking the mobile technology in use and in intertwining it with the service tasks and the overall arrangements of the care work.

Work practices can be approached from various viewpoints such as, for example, providing base for learning or as providing fodder for exercising power. An interesting aspect in the work practice perspective is how immaterial work practices and material resources for working are brought together to make a working environment. An information technology indicates ways of conducting work by the functions available in it, yet it leaves room for situational fitting or technical improvisation. The new technology carries with itself various plans by the designers or developers of the technology, but there are always many ways to adopt (and adapt) even the same information technology. Even then, the participants in the adoption of information technology are bound to share intersubjective meanings so that they are able to understand the common goals of adaptation in relation to their work.

The thesis continued to introduce the research methods and the home care case in question. The research has been conducted as a qualitative ethnographic study. The home care workers became my main study subjects, but in the course of the study I collected implementation related experiences also from the care managers, the implementation project participants as well as from the home care clients. This type of data collecting is mostly face-to-face interaction with the study subjects. Consequently, a major challenge during the study was to balance between

the distancing and closeness with the study subjects and their personal concerns (e.g. Agar, 1980; Geertz, 1983; Van Maanen, 1991; Tinney, 2008). As ethnographic, the data set became rich and detailed, thereby giving much material for analysis, but at the same time the research themes emerged as connected to each other and therefore difficult to analyze separately.

In the next chapters, I have analyzed the organizational dynamics and arrangements of daily practices which were transformed during and after the organizational implementation. I started out by describing small changes in arranging and organized the daily services that transformed some of the everyday work practices. In analysis, I have six interest areas that include daily interaction amongst the care workers; building and maintaining the client relationships; aligning effort and learning at work context; sharing information for purposes of practice and power; building common work identity; and participating in the change process as individual workers.

These work practices concentrate on handling the various relationships at work and coordinating effort in service. The work practice of discussing the client calls seemed to be central in both informing the workers of gradual changes at work and in handling the pressures felt during the period of uncertainty. In this sense, the practice of discussing the clients is also about sharing responsibility and not only information. The new mobile technology supports awareness of what the others are doing. The team managers have now a better understanding of what is taking place during the client calls. The level of the PDA adaptation varies from one care team to another.

Surveillance and control at work arose as evident issues, and much managerial and shared effort was put to construct acceptable meanings on these matters. Although the care workers were concerned about the new level of control at work, they were not so much concerned about the control embedded in the mobile technology brought to the clients' homes. In relation to the work identity, the most apparent changes took place in the work relationships. The home care workers did not lose their previous autonomy while working, but instead the new awareness of interdependencies within the organization seemed to strengthen the care workers identity and resolve at work.

Reflecting on the analysis, an interesting question arises. While I have explored changes in home care work after the implementation of a mobile information system and evaluated some of the outcomes of the implementation, there remains a crucial issue: *Why is it so that the development of the system was stopped at the earliest possible point and to some degree the initial goals of the implementation remain unfulfilled?* Like in so many other organizational implementations of IT, sufficient effort is not expanded on forming new work practices, addressing the fears of the organizational members, and negotiating towards an established, shared interpretation of what kind of meanings the new technology has at work. Hence the outcomes fall below expectations (cf. Brynjolfsson and Hitt, 1998). A notion of disappointment in the technological impact has caused the home care workers to approach the mobile technology as something extra, or as something that does not necessarily fit in the picture of care work.

The benefits from new technology remain minor, according to the home care workers themselves. They can now access the client information during the service calls if something unexpected occurs. They can also inspect their accumulated working time on the display of their devices, and thus feel more in control of it. The care team managers can now check the client information more easily on the system, allowing quicker searches than with the paper archives. The managers can also plan future working hours with automated processes in the office information system linked to the mobile system. Clients can be assured that the increased visibility of service calls contributes to increase equal quality in care. However, from the study analysis emerges also an alternative view of the organizational implementation. That is the new technical mediation of information at work, and the new, more visible aspects of control and monitoring at the home care that contribute to the regulation of work activities and the subordination of the workers.

Some negative presumptions reduced the motivation to learn to use the new system. The workers felt that the mobile system was not especially useful to them, as the main benefit remained to be the possibility to check client information in the PDA. As the home care workers were expected to fill in correction reports quite constantly, they felt that the use of the mobile system demanded time and effort. In home care, the system has remained as an “extra”, as something that has to be taken care of on top of

the actual care work as the benefits gained from the use are not yet apparent to home care workers.

Home care workers have been experiencing changes at work after the first implementation of the mobile system and the introduction of new service ideals. Learning the basic use of the system was mostly experienced easier than anticipated. One apparent change was that with the system the time spent in break premises is now used for managing the technology and updating the information while previously break times were used to discuss different aspects of client care. On the other hand, several technical problems and breakdowns of the PDAs have caused passive resistance in the form of doubt.

The management problems during the implementation project and the technical problems caused lack of trust in the new technology and this attitude seemed difficult to change. A common attitude among the home care workers is that the work could as well be carried out without a PDA. Van House et al. (1998, p. 335-336) state that changing the material bases of work or making possible new forms and methods of working often "foregrounds previously taken-for-granted practices." This means that a decision has to be made concerning the new working practices and, for example, what to include and exclude.

Mobile technology also means a change of interdependence relationships in home care work when considering both the social process and the technical system. The negative or indifferent attitudes towards new practices are supported by the views that the system does not work well and cannot promote real benefits through automated processes, as was planned. As such, the mobile system is likely to remain only as a means to monitor and control working hours. Karsten (2003) notes that surveillance capabilities can be used to form "a non-equal relationship between two collectives, as one group can control the other group with the information gathered". She continues to argue that surveillance does not necessarily create only inequality of relationship through mutual control but can also reach a state of mutual confidence.

According to Venkatesh (2000), even more experiences of use, or in this case, making the technology more reliable, does not necessarily mean the end of resistance. Increased confidence in technology use does not diminish the initial computer anxiety. This was clearly illustrated when a

care team tried to refuse using the PDAs altogether. They claimed that the technology makes their work too complicated and they will soon have not enough time to take care of the clients. These situations were mostly handled by discussing the problems with a care manager or by receiving extra training to reduce anxiety. However, despite the training sessions, much sureness about using the PDAs was constructed in everyday working and in informal discussions amongst the care workers themselves.

9.2 Contributions to theory

Theoretical contributions in this thesis are related to the chosen methodological approach and to the practice perspective as a theoretical conceptualization. I have striven towards a critical approach in the sense that the thesis attempts to provide alternative interpretations when compared with the mainstream managerial view. I present and claim that most of these alternative views – ethnographic and involving everyday working rationalities – are critical by nature, from Bourdieu onwards. McGrath (2005) argues that all interpretative research may be critical or, at least, it includes a number of possible positions or directions for research. All research that regards knowledge and technologies as socially constructed and enacted in practice are a part of the critical research tradition in information systems research. In this study, the critical lens meant, at first, giving voice not only to the managers of the home care but also (and mainly) to the care workers, and second, not only accepting what was shown to me during the observations or told to me during the interviews but instead being critically aware of the various – and contradictory – interpretations given to the organizational implementation.

The theoretical contributions of this study concentrate on defining and implementing the practice perspective. Noteworthy is that the chosen approach does not marginalize the workers from an organizational development, as easily happens when the focus is on the organizational macro level or on the technical implementation project. The home care workers were given here a role as agents of change as they are part of the organizational relationships in which power is exercised in complex and intertwined relations. In the strictest Foucauldian sense, all relationships are power relationships (Avgerou and McGrath, 2007). Of this follows that the focus of observations is on the relationships at work and that

these relationships are considered to manifest organizational power. The intersubjective nature of interaction is emphasized. The new emergent features arise when the workers themselves negotiate and reconstruct the sociomateriality that is their work environment. The practice perspective also avoids determinism in explaining the organizational change. I explained the change by the shared action and the negotiations concerning technical features and functions and not as direct technical impacts of the mobile technology.

Bourdieu's model was used to show how new practices are being generated by taking the human action into account. The naturally felt uncertainty during a change period was taken into account by expanding the original model by Bourdieu. The model avoids mechanistic explanations of change as simple systems of input and output, and instead, it addresses the human capacity to adjust, to invent and to come up with new solutions or goals. As such, the human action taking to cope with natural uncertainty of change enables also unplanned outcomes or slowly emerging outcomes in any organizational implementation. Thus, the practice perspective explores and describes also the non-predictability, risk and uncertainty during the organizational implementation.

The theoretical explorations also portray the practice perspective on the understanding of the nature of the organizational implementation. The organizational implementations of technologies are apprehended as periods of constant change and conflict, during which the workers are stressed by the uncertainty of what the consequences of the implementation actually will be. Here it should be reminded that information technology, by its very nature, leaves space for interpretive flexibility that allows multiple interpretations of the same information technology, implemented in various contexts of use.

It is possible to diminish the tension felt by the workers by learning from the previous implementations: what might have been a successful factor contributing to positive outcomes and what less successful paths were taken.

9.3 Contributions to practice

The contributions to practice in this study emphasize the attempts to modernize and to develop the home care organization in relation to the

outcomes of the implementation project. At times, it seemed that the goals or ideas behind the organizational implementation were not clear to the participants. Moreover, the interpretations made during the implementation were somewhat forgotten along the way. Such ambiguity of common goals or lack of shared interpretations meant that considerable effort was needed to continue with the organizational implementation.

The abstract implementation project goals appeared to be distant from the everyday rationality of the working field. The implementation goals and the rationalities in the field appeared to be as if from different worlds. To ensure a more successful or less conflicting organizational implementation, a focal issue to be considered or solved is the following: How to translate the implementation goals to be understandable also to the home care workers who find office work alien? In the home care case, the transformation of everyday work was slowly emerging as adjusting the work practices with the new materiality. The mobile technology became embedded in the familiar ways of working through loose interpretations of the new technology.

One contribution is an understanding of the project disappointment. The overall feeling amongst the home care management was that the implementation project ended as a disappointment, because the PDAs could not be integrated with the other administrative information systems. At the same time, however, the home care workers continued to fit the mobile technology more and more to their daily work. This fitting was carried out through technological adaptation as well as shared negotiations and learning by doing. Peer support and sharing of experiences as well as revelations of the technology in use were important attributes in the adaptation of the technical features. The shared learning within the care teams had also a role in building commitment to continuing the use of PDAs so that they became a part of the everyday materiality.

I also related organizational control and surveillance capable technologies to the history of monitoring as a part of social sector working. The enactment of a new level of control through the PDAs made visible what was previously a more subtle monitoring of the clients and surveillance of the workers. An issue to be addressed in future projects is how are the ethical boundaries drawn in relation to the workers and also to the clients in terms of using surveillance capable technology?

When the care workers entered the clients' homes with the PDAs, the home was intruded by uninvited information technology. From time to time, some clients expressed fear of the technology or they destroyed the bar codes. As such, the mobile technology used in home care context does not fall within the conventional studies of domestication of information technology (e.g., Berker et al., 2006; Lie and Sørensen, 1996; Stewart, 2007) as here, the people living at home have not themselves decided to have such technology at home or to use it (Silverstone, 2006).

The organizational implementation strengthened the work identity and enabled some kind of empowerment amongst the home care workers. These were facilitated by the new technology as it allowed new kinds of mediations of information and new kinds of connections between various participants, all working to take care of the clients.

9.4 Limitations of the study

Ethnographic and interpretive studies, as such, have a set of limitations that are based on the choice of methodological approach and that have been widely discussed. One of the criticized issues is the generalization of results to similar cases. This thesis explores a case of organizational implementation in a home care context, and although there are not many similar studies (Hjalmarsson, 2009), similar experiences by workers and similar issues in technology appropriation can be read in other studies of work and technology. For example, compared to Hjalmarsson's (2009) study, where the information technology was interpreted to contribute to double subordination, in the home care case both negative and positive outcomes can be discerned, also from the care workers viewpoint.

One issue of qualitative research is always the issue of objectivism vs. subjectivism. I have acknowledged the issue in the methods chapter, and described my own position and approach during the fieldwork and analysis of the study data. As a text, I have attempted to enclose relevant information of my own position during the research as well as the position of the research subjects.

According to its historical definition, ethnography means an exploration of a single culture aimed at obtaining rich contextual data (cf. Geertz, 1973). Contemporary ethnography has many interpretations, different

methodological emphases and numerous contexts that it has been applied to. As such it provides a fruitful, yet burdensome analysis of work places, workers and technologies in use. Ethnographic methods can never become a static state of art, but they are constantly developed and refitted to new cases and new solutions. As such, they provide continuous possibilities for new or unique theorizing and conceptualizing over a set of data.

Also the home care environment itself, as an established and historical organizational environment, produced some limitations to my ethnographic endeavor as I had to consider the existing organizational rationalities and the often subtle modes of dominance. There are several, if not limitations but at least issues, I had to deal with such as, for example, the social hierarchy at home care, junior vs. senior expertise, the often strict organizational boundaries built during a long history of organizational existence, and, in overall, the organization as an entity that has set geographical boundaries, a defined history and its own regime of truth.

Certain kind of limitations rose from the nature of home care work as a public service. The security of client information as well as confidentiality of the information and interactions at home care contributed to limitations for conducting the empirical research.

9.5 Future research

This study concentrated on the home care workers as the main study subjects. An entirely different picture could emerge if their managers (Egan et al, 2009) or clients (Courtney et al., 2007; Dennis, 2006) or just the organizational implementation as a technically oriented project (Vimarlund et al., 2008) were studied. Even during this study, several alternative possibilities for studying the same phenomena became apparent through methodological, theoretical as well as practical considerations. In this type of research, the outcome could have been different, had themes or topics been chosen differently, for example, if the attitudes of the carers had been explored only at one point in time (Sávenstedt et al., 2006).

In the future, it might not be relevant to study the same environment or the same implementation and use case, but to study other cases and use

situations to compare the analysis of transforming work and adapting new technologies in use. At the same time, it would be interesting to go back and visit the home care to observe how the situation might have developed from those early years of the mobile technology in use.

Eloranta (2009) has discussed supporting elderly people's independent living from the viewpoint of nursing science and in view of clients' satisfaction with the public services. According to her, there is a need to strengthen the collaboration and communication between various care providers, and the care itself should be developed as a more client driven and goal oriented approach. In my study, the client centered approach was not chosen as my main interest area is in the care workers and their capabilities or experiences in dealing with the changes of their work. In the future, it would be fruitful to combine these two realities.

One interesting future direction for the work could be the issues related to the domestication (Silverstone, 2006) of information technology. In this study, the clients' experiences were touched upon only in cursory ways, but during the research process it became evident that the home care clients offered their own interpretation for information technology and its use. Moreover, some of the clients were concerned with how the unfamiliar information technology was being forced in their homes and in their daily lives. Typical studies exploring the domestication of information technology (e.g., Berker et al., 2006; Lie and Sørensen, 1996) have different starting points: usually the setting is about the users of technology at their own homes in contrast to the situation at home care environment. In this type of technological adaptation, the vulnerabilities or concerns of the clientele should be addressed as valid issues to be solved instead of being forced quiet. The future clientele is bound to have their own experiences and a deeper understanding of uses of information technology than the clientele in this study (Mitzner et al., 2010).

The research data has also interesting themes that could be taken under scrutiny as they could prove promising new directions for research. Besides domestication of information technology, one home related theme is the surveillance capabilities of commonly used information and communication technology solutions in the care of elderly citizens (Hyysalo 2004). How much, in reality, do such solutions guide the arrangement of the everyday living of the clientele? Does the information technology itself enforce some of these arrangements or are they enforced

by the care providers with various goals at work? Furthermore, what level of fitting of information technology is needed when it is used not in an office environment but in mobile working environment where the conditions for carrying out various tasks can change between service calls?

References

Adler, M., and Henman, P. (2005). "Computerizing the Welfare State." *Information, Communication and Society* 8(3), 315-342.

Agar, M.H. (1980). *The Professional Stranger. An Informal Introduction to Ethnography.* Academic Press, San Diego, CA, USA.

Altheide, D.L. and Johnson, J.M. (1994). "Criteria for Assessing Interpretive Validity in Qualitative Research." In Denzin, N.K. and Lincoln, Y.S. (Eds.) *Handbook of Qualitative Research*, pp 485-499. Sage, Thousand Oaks, CA.

Avgerou, C., and K. McGrath (2007). "Power, rationality, and the art of living through socio-technical change." *MIS Quarterly* 31(2), 295-315.

Barley, S.R. (1986). "Technology as an Occasion for Structuring: Evidence From Observations of CT Scanners and the Social Order of Radiology Departments." *Administrative Science Quarterly* 31, 78-108.

Barnes, B. (2001). "Practice as collective action." In Schatzki, T.R., Knorr Cetina, K., and von Savigny, E. (Eds.) *The Practice Turn in Contemporary Theory*, pp. 17-27, Routledge, London.

Barrett, M. and Walsham, G. (1999). "Electronic Trading and Work Transformation in the London Insurance Market." *Information Systems Research* 10(1), 1-22.

Barton, D., and Tusting, K. (2005). "Introduction." In: Barton, D., and Tusting, K. (Eds.), *Beyond Communities of Practice. Language, Power and Social Context*, pp. 1-13, Cambridge University Press, Cambridge.

Bradbury, H., and Lichtenstein, B:M: (2000). "Relationality in organizational research: Exploring the space between." *Organization Science* 11(5), 551-564.

Beck, E.E. (1997). "Managing Diffracted Rationalities: IT in a Home Assistance Service." In Moser, I., and Aas, G.H., (Eds.), *Technology in Democracy: Gender, Technology and Politics in Transition?*, pp. 109-132. University of Oslo, TMV Skriftserie 29,.

Bekkers, V., and Homburg, V. (2007). "The Myths of E-Government: Looking Beyond the Assumptions of a New and Better Government." *The Information Society* 23(5), 373-382.

Bellotti, V., and Bly, S. (1996). "Walking Away from the Desktop Computer: Distributed Collaboration and Mobility in a Product Design Team." *In Proceedings of Conference on Computer Supported Cooperative Work CSCW 1996*, 209-218.

Berger, P.L., and T. Luckmann (1967). *The Social Construction of Reality. A Treatise in the Sociology of Knowledge.* Anchor Books, New York.

Berker, T., Punie, T., and Hartmann, M. (Eds.) (2006). *Domestication of Media and Technology.* Open University Press, Berkshire, UK.

Beynon-Davies, P. (1995). "Information systems 'failure': The case of the London Ambulance Service's Computer Aided Despatch project." *European Journal of Information Systems* 4, 171-184.

Bijker, W.E. (1997). *Of Bicycles, Bakelites, and Bulbs. Toward a Theory of Sociotechnical Change.* The MIT Press, Massachusetts, US.

Bourdieu, P. (1977). *Outline of a Theory of Practice.* Cambridge University Press, Cambridge.

Bourdieu, P. (1984). *Distinction. A Social Critique of the Judgement of Taste.* Routledge, London.

Bourdieu, P. (1990a). *The Logic of Practice*. Polity Press, Cambridge.

Bourdieu, P. (1990b). *In Other Words. Essays Towards a Reflexive Sociology.* Polity Press, Cambridge.

Bourdieu, P., and L. Wacquant (1992). *An Invitation to Reflexive Sociology*. Polity Press, Cambridge.

Bowers, J., Button, G., and Sharrock, W.W. (1995). "Workflow from Within and Without: Technology and Cooperative Work on the Print Industry Shopfloor." *Proceedings of the European Conference on Computer Supported Cooperative Work*, *ESCSW'95,* 51-66.

Bowker, G.C. and Star, S.L. (2002). *Sorting Things Out. Classification and Its Consequences*. The MIT Press, Cambridge, MA, US.

Brynjolfsson, E. and Hitt, L.M. (1989). "Beyond the Productivity Paradox." *Communications of the ACM* 41(8), 49-55.

Burkitt, I. (2004). "The Time and Space of Everyday Life." *Cultural Studies* 18(2/3), 211-117.

Büscher, M., Gill, S., Mogensen, P., and Shapiro, D. (2001)." Landscapes of Practice: Bricolage as a Method for Situated Design." *Computer Supported Cooperative Work* 10(1), p. 1-28.

Bødker, S. (1989). "A Human Activity Approach to User Interfaces." *Human-Computer Interaction* 4(3), 171-195.

Ciborra, C.U. (2002). *The Labyrinths of Information: Challenging the Wisdom of Systems.* Oxford University Press, Oxford, UK.

Clarke, J., Gewirtz, S., and McLaughlin, E. (2000). "Reinventing the Welfare State." In Clarke, J., Gerwitz, S., and McLaughlin E. (Eds.), *New Managerialism, New Welfare*, pp. 1-26. Sage, London.

Contu, A., and Willmott, H. (2003). "Re-embedding situatedness: The importance of power relations in learning theory." *Organization Science* 14(3), 283-295.

Contu, A., and Willmott, H. (2006). "Studying Practice: Situating *Talking About Machines*." *Organization Studies* 27(12), 1769-1782.

Courtney, K.L., Demiris, G., and Hensel, B.K. (2007). "Obtrusiveness of Information-based Assistive Technologies as Perceived by Older Adults in Residential Care Facilities: A Secondary Analysis." *Medical Informatics & the Internet in Medicine*, 32(3), 241-249.

Davies, C.A. (1999). *Reflexive Ethnography: A Guide to Researching Selves and Others.* Routledge, London.

Davidson, E. (2002). "Technology Frames and Framing: A Socio-Cognitive Investigation of Requirements Determination." *MIS Quarterly* 26(4), 329-358.

Dennis, M.R. (2006). "Proletarian or Promethean? Impacts of Automation and Program Integration on Social Service Workers and Their Clients*." Journal of Contemporary Ethnography* 35(5), 552-582.

Denzin, N.K. (1994). "The Art and Politics of Interpretation." In Denzin, N.K., and Lincoln, Y.S. (Eds.), *Handbook of Qualitative Research*, pp. 500-515. SAGE, Thousand Oaks, CA, USA.

DiMaggio, P.J., and Powell, W.W. (1983). "The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields." *American Sociological Review* 48(2), 147-160.

Edwards. P., and Bélanger, J. (2008). "Generalizing from Workplace Ethnographies. From Induction to Theory." *Journal of Contemporary Ethnography* 27(3), 291-313.

Egan, M., Wells, J., Byrne, K., Jaglal, S., Stolee, P., Chesworth, B.M., and Hillier, L.M. (2009). "The Process of Decision-Making in Home-care Case Management: Implications for the Introduction of Universal Assessment and Information Technology." *Health & Social Care in the Community*, 17(4), 371-378.

Eloranta, S. (2009). *Supporting Older People's Independent Living at Home through Social and Health Care Collaboration*. Doctoral Thesis, Nursing Science. Annales Universitatis Turkuensis Ser. D, Tom. 869.

Fine, M. (1994). "Dis-stance and Other Stances: Negotiations of Power inside Feminist Research." In: Gitlin, A. (Ed.), *Power and Methods*, pp. 13-55, Routledge, New York.

Foucault, M. (1972). *The Archaeology of Knowledge and the Discourse on Language*. Pantheon Books, New York.

Foucault, M. (1977). *The History of Sexuality. Volume I – An Introduction.* Penguin Books, London.

Foucault, M. (1979). *Discipline and Punish. The Birth of the Prison.* Penguin Books, London.

Foucault, M. (1980). *Power/Knowledge.* Harvester, Brighton.

Fuchs, C. (2003). "Some Implications of Pierre Bourdieu's Works for a Theory of Social Self-Organization." *European Journal of Social Theory* 6(4), 387-408.

Garfinkel, H. (1967). *Studies in Ethnomethodology.* Polity Press, Cambridge.

Geertz, C. (1983). *Local Knowledge. Further Essays in Interpretive Anthropology.* Basic Books, New York, USA.

Geertz, C. (1973). *The Interpretation of Cultures*. Basic Books, New York, USA.

Gherardi, S. (2010). "Telemedicine: A Practice-based Approach to Technology." *Human Relations* 63(4), 501-524.

Giddens, A. (1979a). *Central Problems in Social Theory. Action, Structure and Contradiction in Social Analysis.* MacMillan, London.

Giddens, A. (1979b). "Schutz and Parsons: Problems of Meaning and Subjectivity." *Contemporary Sociology* 18(5), 682-685.

Giddens, A. (1984). *The Constitution of Society. Outline of the Theory of Structuration.* Polity Press, Cambridge.

Giddens, A. (1991). *Modernity and Self-Identity.* Polity Press, Cambridge.

Goffman, E. (1959). *The Presentation of Self in Everyday Life.* Doubleday, New York.

Gorden, R.L. (1956). "Dimensions of the Depth Interview." *American Journal of Sociology* 62(2), 158-164.

Goodwin, C. (1994). "Professional Vision." *American Anthropologist* 96(3), 606-633.

Goodwin, C. (1995). "Seeing in Depth." *Social Studies of Science* 25(2), 237-274.

Grint, K., and S. Woolgar (1997). *The Machine at Work: Technology, Work and Organization.* Polity Press, Cambridge.

Gronow, A. (2008). "The Over- or the Undersocialized Conception of Man? Practice Theory and the Problem of Intersubjectivity." *Sociology* 42(2), 243-259.

Grudin, J. (1988). "Why CSCW Applications Fail: Problems in the Design and Evaluation of Organizational Interfaces." *Proceedings of the Conference on Computer-Supported Cooperative Work*, CSCW'88, 85-93.

Grudin, J., and Palen, L. (1995). "Why Groupware Succeeds: Discretion or Mandate?" *Proceedings of the 4th European Conference on Computer-Supported Cooperative Work*, ECSCW'95, 263-278.

Hall, S. (Ed.). (1997). *Representation: Cultural Representation and Signifying Practices*. Sage, London.

Handley, K., Sturdy, A., Fincham, R., and Clark, T. (2006). "Within and Beyond Communities of Practice: Making Sense of Learning through Participation, Identity and Practice." *Journal of Management Studies* 43(3), 641-653.

Haythornthwaite, C. (2006). "Articulating Divides in Distributed Knowledge Practice." *Information, Communication & Society* 9(6), 761–780.

Heath, C., and Luff, P. (1992). "Collaboration and Control: Crisis Management and Multimedia Technology in London Underground Line Control Rooms." *Computer Supported Cooperative Work 1(1-2)*, p. 69-94.

Heath, C.C., and P. Luff (2000). *Technology in Action.* Cambridge University Press, Cambridge.

Hjalmarsson, M. (2009). "New Technology in Home Help Services — A Tool for Support or an Instrument of Subordination?" *Gender, Work and Organization*. 16(3), 368-384.

Hyysalo, S. (2004). *Uses of innovation : wristcare in the practices of engineers and elderly*. Diss. Helsinki : University of Helsinki, Department of Education.

Introna, L.D. and Ilharco, F.M. (2004). "Phenomenology, Screens, and the World: A Journey with Husserl and Heidegger into Phenomenology." In Mingers, J. and Willcocks, L. (Eds.), *Social Theory and Philosophy for Information Systems*, pp. 56-102. Wiley, Chichester, UK.

Kakihara, M., and Sørensen, C. (2002). "Mobility: An Extended Perspective." *Proceedings of the 35th HICSS,* Jan 7-10, Big Island, Hawaii, USA.

Karsten, H. (2003). "Constructing Interdependencies with Collaborative Information Technology." *Computer Supported Cooperative Work, Special Issue on Evolving Use of Groupware* 12(4), 437-464.

Jones, M.R., and Karsten, H. (2008). "Giddens's Structuration Theory and Information Systems Review." *MIS Quarterly* 32(1), 127-157.

Klein, H.K., and Myers, M.D. (1999). "A Set of Principles for Conducting and Evaluating Interpretive Field Studies in Information Systems." *MIS Quarterly* 23(1), 67-94.

Knights, D. and Morgan, G. (1991). "Corporate Strategy, Organizations, and Subjectivity: A Critique." *Organization Studies* 12(2), 251-273.

Knights, D., and Murray, F. (1994). *Managers Divided. Organization Politics and Information Technology Management.* John Wiley & Sons, London.

Knights, D., and Morgan, G. (1995). "Strategy Under the Microscope: Strategic Management and IT in Financial Services." *Journal of Management Studies* 32(2), 191-214.

Kling, R. and Schacchi, W. (1982). "The Web of Computing: Computer Technology as Social Organization." *Advances in Computers* 21, 1-90.

Lamb, R., and Davidson, E. (2005). "Information and Communication Technology Challenges to Scientific Professional Identity." *The Information Society* 21(1), 1-24.

Lamb, R. & Kling, R. (2003). "Reconceptualizing Users as Social Actors in Information Systems Research." *MIS Quarterly* 27(2), 197-235.

Latour, B. (2005). *Reassembling the Social. An Introduction to Actor-Network-Theory*. Oxford University Press, Oxford.

Latour, B. and Woolgar, S. (1986). *Laboratory Life. The Construction of Scientific Facts.* Princeton University Press, Princeton NJ.

Lave, J. and Wenger, E. (1991). *Situated Learning. Legitimate peripheral participation.* Cambridge University Press, Cambridge.

Leonardi, P.M: and Barley, S.R. (2008). "Materiality and Change: Challenges to Building Better Theory about Technology and Organization." *Information and Organization* 18(3), 159-176.

Levina, N., and Vaast, E. (2005). ”The Emergence of Boundary Spanning Competence in Practice: Implications for Implementation and Use of Information Systems.” *MIS Quarterly* 29(2), 335-363.

Levina, N. and Vaast, E. (2008). ”Innovation of Doing as Told? Status Differences and Overlapping Boundaries in Offshore Collaboration.” *MIS Quarterly* 32(2), 307-332.

Lie, M., and Sørensen, K. (Eds.). (1996). *Making technology our own? Domesticating technology into everyday life*. Scandinavian University Press, Oslo.

Lofland, J., and Lofland, L.H. (1995). *Analyzing Social Settings. A Guide to Qualitative Observation and Analysis.* Wadsworth, Belmont, CA, USA.

Luff, P., and Heath, C. (1988). “Mobility in Collaboration.” *Proceedings of Conference on Computer Supported Cooperative Work, CSCW 1988*, 305-314.

Luff, P., Hindmarsh, J., and C. Heath (2000). *Workplace Studies: Recovering Work Practice and Information System Design.* Cambridge University Press, Cambridge.

Lyon, D. (2002). “Everyday surveillance. Personal data and social classifications.” *Information, Communication and Society* 5(2), 242-257.

Madison, D.S. (2005). *Critical Ethnography: Method, Ethics, and Performance.* Sage, Thousand Oaks, CA.

Marcus, G.E. (1986). “Contemporary Problems of Ethnography in the Modern World System.” In: Clifford, J., and G.E. Marcus (Eds.), *Writing Culture: The Poetics and Politics of Ethnography*, pp. 165-193, University of California Press, Berkeley, CA.

McGrath, K. (2005). “Doing Critical Research in Information Systems: a Case of Theory and Practice not Informing Each Other.” *Information Systems Journal* 15(2), 85-101.

McGrath, K. (2003). "ICTs Supporting Targetmania: How the UK Health Sector is Trying to Modernize." In: Korpela M., R. Montealegre, and A. Poulymenakou (Eds.), *Organizational Information Systems in the Context of Globalization*, pp. 19-33, Kluwer, Boston, US.

Mead, G.H. (1934). *Mind, Self, and Society. From the Standpoint of a Social Behaviorist*. University of Chicago Press, Chicago.

Mingers, J. and Willcocks, L., Eds. (2004). *Social Theory and Philosophy for Information Systems*, Wiley, Chichester, UK.

Mitzner, T.L., Boron, J.B., Fausset, C.B., Adams, A.E., Charness, N., Czaja, S.J., Dijkstra, A.D., Fisk, A.D., Rogers, W.A., and Sharit, J. (2010). "Older Adults Talk Technology: Technology Usage and Attitudes." *Computers in Human Behavior*, 26(6), 1710-1721.

Newman, M. and Zhu, S. (2007). "Process Modelling Information Systems Development: The Cello Case." In: McMaster, T., Wastell, D., Ferneley, E., and DeGross, J. (Eds.), *Organizational Dynamics of Technology-Based Innovation: Diversifying the Research Agenda*, pp. 63-81, Springer, Boston.

Orlikowski, W.J. (1991). "Integrated Information Environment or Matrix of Control? The Contradictory Implications of Information Technology." *Accounting, Management and Information Technology* 1(1), 9-42.

Orlikowski, W.J., and Robey, D. (1991). "Information Technology and the Structuring of Organizations." *Information Systems Research* 2(2), 143-169.

Orlikowski, W.J. (1992a). "The Duality of Technology: Rethinking the Concept of Technology in Organizations." *Organization Science* 3(3), 398-427.

Orlikowski, W.J. (1992b). "Learning from Notes: Organizational Issues in Groupware Implementation." *Proceedings of Conference on Computer Supported Cooperative Work, CSCW '92*, 362-369.

Orlikowski, W.J. (1996). "Improvising Organizational Transformation over Time: A Situated Change Perspective." *Information Systems Research* 7(1), 63-92.

Orlikowski, W.J. (2000). "Using Technology and Constituting Structures: A Practice Lens for Studying Technology in Organizations." *Organization Science* 11(4), 404-428.

Orlikowski, W.J. (2002). "Knowing in Practice: Enacting a Collective Capability in Distributed Organizing." *Organization Science* 13(3), 249-273.

Orlikowski, W.J. (2007). "Sociomaterial Practices: Exploring Technology at Work." *Organization Studies* 28(9), 1435-1448.

Orlikowski, W.J. and Scott, S.V. (2008). "The Entangling of Technology and Work in Organizations." *Working Paper Series 168*, Dept. of Management, London School of Economics.

Orlikowski, W.J. and Barley, S.R. (2001). "Technology and Institutions: What Can Research in Information Technology and Research on Organizations Learn from Each Other?" *MIS Quarterly* 25(2), 145-165.

Orr, J.E. (2006). "Ten Years of *Talking About Machines*." *Organization Science* 27(12), 1805-1820.

Pickering, A. (1992). "From Science as Knowledge to Science as Practice." In: Pickering, A. (Ed.), *Science as Practice and Culture*, pp. 1-26. University of Chicago Press, Chicago.

Pickering, A. (1995). *The Mangle of Practice. Time, Agency, and Science.* The University of Chicago Press, Chicago.

Reckwitz, A. (2002). "Toward a Theory of Social Practices." *European Journal of Social Theory* 5(2), 243/263.

Richardson, H.J. (2003). "CRM in Call Centres: The Logic of Practice." In: Korpela, M., R. Montealegre and A. Poulymenakou (Eds.),

Organizational Information Systems in the Context of Globalization, pp. 69-83. Kluwer, Boston.

Roberts, J. (2006). "Limits to Communities of Practice." *Journal of Management Studies* 43(3), 623-639.

Robinson, M. (1993). "Design for Unanticipated Use…" *Proceedings of the 3rd European Conference on Computer Supported Cooperative Work*, *ECSCW'93*, 187-202.

Robinson, M., and Bannon, L. (1991). "Questioning Representations." *Proceedings of the 2nd European Conference on Computer-Supported Cooperative Work*, *ECSCW'91*, 219-233.

Sávenstedt, S., Sandman, P.O., and Zingmark, K. (2006). "The duality in Using Information and Communication Technology in Elder Care." *Journal of Advanced Nursing*, 56(1), 17-25.

Schatzki, T.R., Knorr Cetina, K., and von Savigny, E. (Eds.) (2001) *The Practice Turn in Contemporary Theory*. Routledge, London.

Schmidt, K., and Bannon, L. (1992). "Taking CSCW Seriously: Supporting Articulation Work." *Computer Supported Cooperative Work* 1(1-2), 7-40.

Schmidt, K., and Simone, C. (1995). "Coordination Mechanisms: Towards a Conceptual Foundation of CSCW System Design." *Computer Supported Cooperative Work* 5(2-3), 155-200.

Schultze, U. (2000) "A Confessional Account of an Ethnography about Knowledge Work." *MIS Quarterly* 24(1), 3-41.

Schultze, U. and R.J. Boland Jr. (2000). "Knowledge Management Technology and the Reproduction of Knowledge Work Practices." *Strategic Information Systems* 9, 193-212.

Schultze, U. and Orlikowski, W.J. (2004) "A Practice Perspective on Technology-Mediated Network Relations: The Use of Internet-Based Self-Serve Technologies." *Information Systems Research* 15(1), 87-106.

Schutz, A. (1967). *The Phenomenology of the Social World.* Northwestern University Press, Evanston.

Schutz, A. (1970). *On Phenomenology and Social Relations.* University of Chicago Press, Chicago.

Schutz, A. and T. Luckmann (1973). *The Structures of the Life-World*. Northwestern University Press, Evanston.

Silverstone, R. (2006) "Domesticating Domestication. Reflections on the Life of a Concept." In Berker, T., Punie, T., and Hartmann, M. (Eds.), *Domestication of Media and Technology,* pp. 229-248. Open University Press, Berkshire, UK.

Springs, J.A. (2008). "What Cultural Theorists of Religion Have to Learn from Wittgenstein; Or, How to Read Geertz as a Practice Theorists." *Journal of the American Academy of Religion* 76(4), 934-969.

Stahl, B.C. (2005). "The Ethical Problem of Framing e-Government in Terms of e-Commerce." *Electronic Journal of e-Government* 3(2), 77-86, [online] www.ejeg.com

Star, S.L., and Strauss, A. (1999) "Layers of Silence, Arenas of Voice: The Ecology of Visible and Invisible Work." *Computer Supported Cooperative Work* 8(1-2), p. 9-30.

Strauss, A., and Corbin, J. (1998). *Basics of Qualitative Research. Techniques and Procedures for Developing Grounded Theory*. 2nd ed. Sage, Thousand Oaks, CA, USA.

Star, S. L. and Ruhleder, K. (1996). "Steps toward an Ecology of Infrastructure: Design and Access for Large Information Spaces." *Information Systems Research* 7(1), 111-134.

Stewart, J. (2007). "Local Experts in the Domestication of Information and Communication Technologies." *Information, Communication and Society* 10(4), p547-569.

Suchman, L. (1983). “Office Procedure as Practical Action: Models of Work and System Design.” *ACM Transactions on Office Information Systems* 1(4), 320-328.

Suchman, L. (1987). *Plans and Situated Action: The Problem of Human-machine Communication.* Cambridge University Press, Cambridge.

Suchman, L. (1995). “Making Work Visible.” *Communications of the ACM* 38(9), 56-64.

Suchman, L. (2000a). “Making a case: ‘knowledge’ and ‘routine’ work in document production.” In: Luff, P., J. Hindmarsh, and C. Heath (Eds.), *Workplace Studies: Recovering Work Practice and Information System Design*, pp. 29-45. Cambridge University Press, Cambridge.

Suchman, L. (2000b). “Embodied Practices of Engineering Work.” *Mind, Culture, and Activity 7* (1&2), 4-18.

Suchman, L. (2002). “Practice-Based Design of Information Systems: Notes from the Hyperdeveloped World.” *The Information Society* 18(2), p. 139-144.

Suchman, L. (2005). “Affiliative Objects.” *Organization 12(3)*, 379-399.

Suchman, L. (2007). *Human-Machine Reconfigurations: Plans and Situated Actions 2nd Edition.* Cambridge University Press, Cambridge.

Suchman, L., J. Blomberg, J.E. Orr, and R. Trigg (1999). “Reconstructing Technologies as Social Practice.” *American Behavioral Scientist* 43(3), 392-408.

Thomas, J. (1993). *Doing Critical Ethnography*. Sage, Newbury Park, CA.

Tinney, J. (2008). “Negotiating Boundaries and Roles. Challenges Faced by the Nursing Home Ethnographer.” *Journal of Contemporary Ethnography* 37(2), 202-225.

Tope, D., Chamberlain, L.J., Crowley, M., and Hodson, R. (2005). "The Benefits of Being There. Evidence from the Literature on Work." *Journal of Contemporary Ethnography* 34(4), 470-493.

Vaarama, M., Luomahaara, J., Peiponen, A., and Voutilainen P. (2001). *The Whole Municipality Working Together for Older People. Perspectives on the Development of Elderly People's Independent Living, Care and Services.* STAKES, Helsinki.

Vaast, E. and Walsham, G. (2005). "Representations and actions: the transformation of work practices with IT use." *Information and Organization* 15(1), 65-89.

Van House, N.A., Butler, M.H., and Schiff, L.R. (1998). "Cooperative Knowledge Work and Practices of Trust: Sharing Environmental Planning Data Sets." *Proceedings of Conference on Computer Supported Cooperative Work, CSCW'98*, 335-343.

Van Maanen, J. (1991). "Playing Back the Tape. Early Days in the Field." In: Shaffir, W.B., and Stebbins, R.A. (Eds.), *Experiencing Fieldwork. An Inside View of Qualitative Research*, pp. 31-42. Sage, Newbury Park, CA, USA.

Van Maanen, J. (1988). *Tales of the Field: On Writing Ethnography*. University of Chicago Press, Chicago.

Van Zoonen, L. (1992). "Feminist theory and information technology." *Media, Culture and Society* 14(1), 9-29.

Venkatesh, V. (2000). "Determinants of Perceived Ease of Use: Integrating Control, Intrinsic Motivation, and Emotion into the Technology Acceptance Model." *Information Systems Research* 11(4), 342-365.

Vimarlund, V., Olve, N.-G., Scandurra, I., and Koch, S. (2008). "Organizational Effects of Information and Communication Technology (ICT) in Elderly Homecare: a Case Study." *Health Informatics Journal*, 14(3), 195-210.

Wagner, I. (1994). "Networking Actors and Organizations." *Computer Supported Cooperative Work 2*, p. 5-20.

Wajcman, J. (2000). "Reflections on Gender and Technology Studies: In What State is the Art?" *Social Studies of Science* 30(3), 447-464.

Walsham, G., and Han, C.K. (1991). "Structuration Theory and Information Systems Research." *Journal of Applied Systems Analysis* 17, 77-85.

Walsham, G. (2006). "Doing Interpretive Research." *European Journal of Information Systems* 15(3), 320-330.

Walsham, G. (2005). "Knowledge Management Systems: Representation and Communication in Context." *Systems, Signs & Actions* 1(1), 6-18.

Wærness K. (2000). "'Omsorgsrationalitet' – Reflexioner över ett begreppskärriär." In: Eliasson R. (Ed.), *Omsorgens skiftingar – Begreppet, vardagen, politiken, forskningen*, pp. 203-220. Studentlitteratur, Lund, Sweden.

Wenger, E. (1998). *Communities of Practice. Learning, Meaning, and Identity.* Cambridge University Press, Cambridge.

Wilson, M. (2002). "Making Nursing Visible? Gender, Technology and the Care Plan as Script." *Information, Technology & People* 15(2), 139-158.

Zadoroznyj, M. (2009). "Professionals, Carers or 'Strangers'? Liminality and the Typification of Postnatal Home Care Workers." *Sociology* 43(2), 268-285.

Zuboff, S. (1988). *In the Age of the Smart Machine*. Basic Books, New York.

Østerlund, C., and Carlile, P. (2005). "Relations in Practice: Sorting Through Practice Theories on Knowledge Sharing Complex Organizations." *The Information Society* 21, 91-107.

APPENDIX 1: Interview themes for the home care workers

Name of the informant.

Work:
What is your occupation, how do you call yourself at work?
What are your work tasks?
How work is organized daily? Who decides which worker is going to visit which client? Do you have always the same clients?
Does the distance affect how the clients are chosen? Does the client affect on who goes?
How you keep the keys of the clients? What happens if a key is lost? Or if something else, unexpected happens?
What do you do at the break facilities? Are you on break or do you continue working?
Do you have regular breaks at work?
Do you go a lot between the clients' homes and the break facilities daily?
What is the most important in this work?
What is the most hardest at this work?
Do you enjoy working as a team? What kind of relationships you have as a member of a team?
Is your work important? What is the meaning of the home care work?
Do you feel that you are respected at your work?
What kind of collaboration you have with other service providers?

Paper work:
How the care work is accounted for or documented?
Do you have a lot of paper work? What kind of forms or papers you need/use on a daily basis?
How the care and service contracts are checked or updated? Who is responsible that the contracts are up to date?
Who plans the working hours and shifts? How do you make changes to these plans? Who makes changes to these plans?

Do you hope that, in the future, paper works are not needed anymore? Do you think that electronic documents could replace them? Would it be easier/harder to find the client information in you PDA?
Should the PDA contain also information of the workers – e.g. planned working hours vs. time off?
Would you like the PDA to have other functions/possibilities in it?

Managing the work:
Who is your closest supervisor?
What kind of relationship you have with the team manager? What kind of issues you take to her – e.g. related to the clients, related to the workers?
On what kind of situations do you contact the team manager? How often you contact the team manager?
Do you need the team managers decision support daily/weekly/less?
What kind of issues do you decide upon yourselves?
How often you meet formally?
Do you have occupational training within the organization?
On what kind of situations do you contact the home care office directly? How often such takes place?

Organizational implementation of PDAs:
How the PDAs were introduced to you?
How the implementation project was introduced to you?
What kind of things was told/not told? What would you have wanted to ask yourself?
What kind of meetings you have had due to the implementation project?
What kind of training meetings have you had?
Did you receive enough/not enough training?
Was the training slow/fast/suitable? What did you learn?
What would you have wanted to know more? Do you wish for more training?
What is the first thing that you remember from the training?
What kind of support PDA gives you at your work? How do you use the PDA?
How are you using your PDA at work? Are you used to it?
Do you easily remember the PIN code?
Have you had problems in using the PDA? How did you solve the problem? Did you receive help? From who?
What you use most/least of the PDA's functions?
How does the PDA affect your working/organizing daily work?

Does the PDA support/complicate your working?
Does the PDA have right/correct information? Do you trust the information in PDA? Have you noticed wrong or missing information?
Is the client information up to date in your PDA? Do you easily find the information you are looking for? How is the information displayed in the PDA? Is it easy to browse and read?
How much time you spent with the PDA? How long it takes to find a particular function or particular information in the PDA?
Is the PDA safe information security wise?
Are you comfortable with the PDA and using one?
How does the PDA fit on the home care work? How do you feel about control at the home care work?
What kind of costs the PDAs have?
What kind of benefits the PDAs have?
What other issues there are related to the use of the PDAs?

Technology in general:
What other technologies you have at the break facilities? Do you already have PCs at the break facilities or are they being installed along with the docking stations?
Have you already used a docking station?
Did you manage to update the information in you PDA correctly? Or did you have problems updating?
How is the grocery shopping arranged for clients?
Can you write up and send a client's grocery list with a Communicator?
How would you like to arrange the grocery shopping in the future? Would it be easiest on paper/via Internet/by fax/by phone etc?
What kind of technology is needed at the home care work? What kind of support devices would you like to have?

APPENDIX 2: Modified interview themes for the home care workers

Name of the informant.
Work tasks or personal preferences and/or competences; how long one has worked in the home care; educational background; previous experiences leading to home care occupation (from the new informants).

Organizational implementation of PDAs:
When did you first hear about the PDAs to be taken into use in home care?
How the PDAs were introduced to you? How the implementation project was introduced to you? From whom did you hear about the matter?
At what point of the implementation project did you and your team join?
How would you describe your role at the implementation/training period?
Was the internal communication about the implementation project sufficient/successful/overloaded/something else?
What kind of issues were told/not told? What would you have wanted to ask yourself?
Can you describe the implementation project for me, from start to end?
What was the starting point for the implementation in your opinion/in your working sphere?
How did the implementation progress?
What kind of issues arose during the implementation? How were they solved? Who solved them?
Who was responsible of the implementation? Who was organizing the implementation?
What kind of meetings you have had due to the implementation project?
What kind of training meetings have you had?
Did you receive enough/not enough training?
What did you learn? What would you have wanted to know more? Do you wish for more training?
What is the first thing that you remember from the training?

Work practices:
How do you use the PDA in your daily working during the client calls/at break facilities/at the office?

How the services are now being documented with the PDA?
What benefits the documentation has?
What other issues (problems) the documentation has?
How the PDA supports your working? How the PDA complicates your working?
What changed at the work with the use of the PDAs? Did anything change?
What kind of new features, examples there are? What kind of things didn't change at all?
Does the PDA fit in your working?

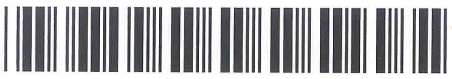
Outcome, benefits:
How did the implementation of the PDAs success?
What things could have had different outcomes? What things could have been handled differently?
What things turned out well? What things need still working/adjusting?
How does IT support/complicate the care work?
What kind of benefits you expect from IT in the care environment at the long run?

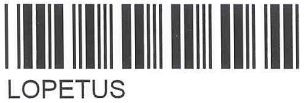
Work identity:
How do you see yourself as a care worker?
What were the reasons that you became a care worker?
What is the most important while working?
What is a good home care worker like?
What makes a worse care worker?

Future:
How will things progress forward in the home care?
What do you see as the most important parts of the home care that need to be further developed?
At the moment, what are the most crucial development issues from the viewpoint of the clients/the workers/the management/the city?
How does the IT fit in this picture?
What are the (historical) things in this work that you don't miss/which to get rid off?
How do you see your work in five years/ten years time?

APPENDIX 3: Examples of a client barcode, the break facility barcode and the end task barcode.

TAUKOTUPAKOODI





APPENDIX 4: Task barcodes.

TEHTÄVÄKOODIT


KERHOT


SAUNOTUS-TYÖAIKA


KAUPPAPALVELU


SAUNA


ASIOINTI


SIIVOUS


PALAVERI/KOULUTUS


TAUKOTUPA


LOPETUS

Translations to the codes in the appendix 3 are following:

The first one is an example of a client barcode that shows the client identification in barcode and in numbers, the client's name and address.

The second one is barcodes for the break facilities (taukotupakoodi) that shows the following:

Taukotupa – Break facilities
Lopetus – End code

Translations to the task barcodes (tehtäväkoodit) in the appendix 4 are following:

Kerho – A club meeting
Saunotus, työaika – Bathing a client at sauna
Kauppapalvelu – Doing groceries for a client
Sauna – Helping a client to sauna (without the bathing services)
Asiointi – Doing errands
Siivous – Cleaning
Palaveri/Koulutus – Meeting/Training (meant for the worker)
Taukotupa – Break facilities
Lopetus – End code

PART II: ORIGINAL PUBLICATIONS

Paper 1

Vuokko, R. (2004). Experiences from an implementation project – Time management and control in home care. In *Proceedings of HICSS-37*, 4.-8.1.2004, Big Island, Hawaii
.

Paper 2

Vuokko, R. (2004). Constructing IT and Professional Identity: Introducing Mobile Informatics in Home Care. In *Proceedings of AMCIS-2004*, Track on Social Theory in IS Research, New York 6.-8.8.2004, 1291-1296.

Paper 3

Vuokko, R. (2005). Independency and Identity in Mobile Work: Constructing New Work Practices. In *Proceedings of IT and Postmodernity for Organisations and Systems*, 4th International Critical Management Studies Conference 4th-6th July 2005, Cambridge University, UK.

Paper 4

Vuokko, R. (2008). Surveillance at workplace and at home: Social issues in transforming care work with mobile technology. *Journal of Information, Communication and Ethics in Society* 6(1), 60-75.

Paper 5

Vuokko, R. (2011). A Practice Perspective on Transforming Mobile Social Work. In: Cruz-Cunha, M.M., and F. Moreira (Eds.), *Handbook of Research on Mobility and Computing: Evolving Technologies and Ubiquitous Impacts*. IGI Global, Hershey, PA, USA.

Paper 6

Vuokko, R. (2007). Mobile enhancement of care work. In *Proceeding of ECIS 2007*, June 7-9, St. Gallen, Switzerland.

Turku Centre for Computer Science
TUCS Dissertations

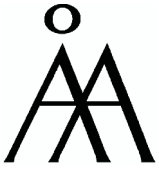
100. **Roope Vehkalahti**, Class Field Theoretic Methods in the Design of Lattice Signal Constellations
101. **Anne-Maria Ernvall-Hytönen**, On Short Exponential Sums Involving Fourier Coefficients of Holomorphic Cusp Forms
102. **Chang Li**, Parallelism and Complexity in Gene Assembly
103. **Tapio Pahikkala**, New Kernel Functions and Learning Methods for Text and Data Mining
104. **Denis Shestakov**, Search Interfaces on the Web: Querying and Characterizing
105. **Sampo Pyysalo**, A Dependency Parsing Approach to Biomedical Text Mining
106. **Anna Sell**, Mobile Digital Calendars in Knowledge Work
107. **Dorina Marghescu**, Evaluating Multidimensional Visualization Techniques in Data Mining Tasks
108. **Tero Säntti**, A Co-Processor Approach for Efficient Java Execution in Embedded Systems
109. **Kari Salonen**, Setup Optimization in High-Mix Surface Mount PCB Assembly
110. **Pontus Boström**, Formal Design and Verification of Systems Using Domain-Specific Languages
111. **Camilla J. Hollanti**, Order-Theoretic Mehtods for Space-Time Coding: Symmetric and Asymmetric Designs
112. **Heidi Himmanen**, On Transmission System Design for Wireless Broadcasting
113. **Sébastien Lafond**, Simulation of Embedded Systems for Energy Consumption Estimation
114. **Evgeni Tsivtsivadze**, Learning Preferences with Kernel-Based Methods
115. **Petri Salmela**, On Commutation and Conjugacy of Rational Languages and the Fixed Point Method
116. **Siamak Taati**, Conservation Laws in Cellular Automata
117. **Vladimir Rogojin**, Gene Assembly in Stichotrichous Ciliates: Elementary Operations, Parallelism and Computation
118. **Alexey Dudkov**, Chip and Signature Interleaving in DS CDMA Systems
119. **Janne Savela**, Role of Selected Spectral Attributes in the Perception of Synthetic Vowels
120. **Kristian Nybom**, Low-Density Parity-Check Codes for Wireless Datacast Networks
121. **Johanna Tuominen**, Formal Power Analysis of Systems-on-Chip
122. **Teijo Lehtonen**, On Fault Tolerance Methods for Networks-on-Chip
123. **Eeva Suvitie**, On Inner Products Involving Holomorphic Cusp Forms and Maass Forms
124. **Linda Mannila**, Teaching Mathematics and Programming – New Approaches with Empirical Evaluation
125. **Hanna Suominen**, Machine Learning and Clinical Text: Supporting Health Information Flow
126. **Tuomo Saarni**, Segmental Durations of Speech
127. **Johannes Eriksson**, Tool-Supported Invariant-Based Programming
128. **Tero Jokela**, Design and Analysis of Forward Error Control Coding and Signaling for Guaranteeing QoS in Wireless Broadcast Systems
129. **Ville Lukkarila**, On Undecidable Dynamical Properties of Reversible One-Dimensional Cellular Automata
130. **Qaisar Ahmad Malik**, Combining Model-Based Testing and Stepwise Formal Development
131. **Mikko-Jussi Laakso**, Promoting Programming Learning: Engagement, Automatic Assessment with Immediate Feedback in Visualizations
132. **Riikka Vuokko**, A Practice Perspective on Organizational Implementation of Information Technology

Turku
Centre *for*
Computer
Science

Joukahaisenkatu 3-5 B, 20520 Turku, Finland | www.tucs.fi

University of Turku

- Department of Information Technology
- Department of Mathematics



Åbo Akademi University

- Department of Information Technologies

Turku School of Economics

- Institute of Information Systems Sciences

ISBN 978-952-12-2520-8
ISSN 1239-1883

Riikka Vuokko

A Practice Perspective on Organizational Implementation of Information Technology