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Implementation of CSCW in the Swedish social insurance board

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Abstract

A research model of processes where CSCW is implemented and used is presented and applied in a longitudinal comparative study of four cases. The cases focus the implementation and usage processes of different types of CSCW technology at different organisational levels in the Swedish social insurance board. Aspects that influenced the course of the implementation processes are analysed, such as the initiation of the implementation, user participation, technological problems, as well as the expected and real outcomes from the usage regarding efficiency and quality. The study shows that it is possible to initiate implementation of CSCW also at the local and regional level of a centralised and hierarchical organisation. Also, the most important aspects that influence the course of the processes are the expected and real efficiency and quality effects of the implementation and usage.

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1. Introduction

Computer Supported Cooperative Work (CSCW) has as a field of research a history of more than 10 years, but research of a more comparative character (Essler 1998, Harper 1997) with experiences from several cases of implementation and usage of CSCW is very seldomly seen. This also adheres to research about the special characteristics of when CSCW is implemented in a particular organisational context. This article treats four cases of when CSCW is implemented in a complex, public sector organisation as the Swedish social insurance board. Focus of interest is on whether these four implementation processes resulted in usage of the implemented technology or not, and on what aspects affected if this was to be the result. In other words, we will discuss what aspects that were decisive for the course of the implementation processes in this particular organisational context. Aspects of interest are e.g. the characteristics of the initiators, the user participation, and the influence of technological problems. Also, expected and real outcomes from the usage regarding efficiency and quality are of interest. We believe such knowledge to be of particular value, as the community of research about diffusion, adoption and implementation of information technology (IT) has seen, up until today, a very limited number of contributions that can be associated with CSCW ¹.

The organisation where the cases are situated is the Swedish social insurance board. This is a public sector organisation that administers several kinds of social benefits for the population, such as old age pensions, parents insurances, and sickness benefit allowances. It could be characterised as being an organisation of great complexity, as it includes three distinct organisational levels (central, regional, local), apart from that several external agencies have the potential to affect its activities (Czarniawska-Joerges 1992). Also, for a considerable amount of time, the organisation has lived through a deep and painful process of organisational changes, including significant cuts in staff, and will continue to do so in the coming years. In our article, four pilot cases of when CSCW is implemented in the social insurance board will be referred and compared. One of the cases was initiated and implemented at a local level of the organisation, two at a regional level, and one at a mixed central/regional level.

The paper is structured as follows: Section 2 introduces the background and related work. Section 3 explains the research framework. Of particular interest is our model of

implementation and usage processes of CSCW. Also, there will be a description of aspects that we believe affect the course of a process where CSCW is implemented. Section 4 gives a description of our research approach, while section 5 contains a description of the four cases of when CSCW is implemented. Finally, in section 6 these experiences will be discussed in the light of our research question: What aspects affect the course of a process of when CSCW is implemented in this particular context?

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2. Previous research

2.1 CSCW in research and practice

What has research about CSCW in every-day settings as the Swedish social insurance board to offer researchers and practitioners? One of our contributions to the field of CSCW is to present a research approach where several cases of implementing and using CSCW technologies are compared during a longer period of time. Another significant feature is that the cases have their organisational context in common. An argument for such research is that the research field of CSCW has been established for more than ten years, but still there is a lack of studies of actual work settings (Bowers 1995, Essler 1998) such as the Swedish social insurance board. Furthermore, the vast majority of the existing case studies focus only one project or organisational unit at a time, which means that the comparative dimension (Harper 1997, Essler 1998) between organisational units is absent (see e.g. Bowers 1995, Bowers et al. 1995, Ciborra 1996, Orlikowski 1992). Some elements of a comparative approach can be found in e.g. Ciborra (1996), but they are relatively sparsely presented. A more elaborated comparative approach can be found in Essler (1998) (see next section). Thus, experiences that are of importance to the CSCW research field are lost, and the lack of knowledge of a more accumulated character makes it more difficult to make generalisations from the results.

However, a comparative approach does have some difficulties. A researcher has to be familiar with both varying organisational circumstances in general, as well as the particular circumstances concerning the CSCW in itself in each particular case. The value of a profound knowledge of organisational aspects in research about IT have been emphasised recently (Henfridsson et al. 1997). Furthermore, these writers show by a review of previous research that it is not trivial and without difficulties to take organisational aspects seriously. Of particular importance is to give an account of what the organisational observations mean or explain. To overcome some of these difficulties, we have chosen to study several cases of implementation and usage of CSCW technologies, but within the *same* organisation, the Swedish social insurance board. The hope is that this will make us more familiar with the particular features that characterise this kind of organisation.

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2.2 Research about implementation of CSCW

Another field that is related to our research is the one that treats diffusion, adoption and

implementation issues. Our research approach is an expression of an interest in implementation issues, as well as in issues associated with the usage of CSCW in particular organisational contexts. We believe such knowledge to be of value, as the community of research about diffusion, adoption and implementation of IT has seen, up until today, a very limited number of contributions that can be associated with CSCW. As an example, Sanderson (1992) suggests a stage model of an implementation process, and provides a plethora of factors that in one way or another affect such a process. Unfortunately, the fact that only one implementation process is analysed and described in a rather concise way makes it difficult to generate any comparative knowledge, which is important when factors and stages are used as a frame of reference. If such knowledge is not provided, a model of analysis such as a stage model only serves as a means to describe and structure available empirical data.

Kautz (1995) makes a deeper analysis of political and cultural aspects that have influenced the implementation process of an electronic mail system in a public sector organisation. He also makes some conclusions about the connections between the implementation process and the resulting usage. Among other things, it is important that the senior management are deeply involved and give support to project activities. Also, education and training of the users are decisive for if the CSCW technology is to be utilised. Furthermore, there has to be a match between the structure of the organisation and the work patterns of individuals and groups when using the mail system, or otherwise an adaptation of structure must be a part of the implementation process. Hughes et al. (1995) examines the wider context which bears upon the effectiveness of video-based systems. An important conclusion is that the intention of the implementation must be in line with the organisational ideals and strategies. As a contrast, the strategies of one company that was used as an example included sanctions towards the types of meetings that the video-based systems were supposed to support. Essler (1998) refers three cases of when Lotus Notes is implemented in large, private industrial companies. Research questions that are treated by him are: What problems does the corporation want to solve with Lotus Notes? Also, the effects of implementation processes that result in usage are also discussed. His study emphasises the importance of deep knowledge about groupware technology in the organisation, in order to avoid dependence on external consultants. According to Essler, the only implementation processes that will result in usage are those with a moderate ambition as to the complexity of changes that are introduced.

In sum, no one of these studies provided very much evidence of the relationship between the implementation process and the usage of CSCW on one hand, and the particular characteristics of the organisations on the other hand. There were only reflections about organisational circumstances in general, without any reference to if this is typical for these kinds of organisations or not. A more profound discussion of the particularities of the different types of organisations when implementing and using CSCW would therefore be of interest.

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3. CSCW in the Swedish social insurance board

The characteristics of the Swedish social insurance board as such, as well as its

technological infrastructure, provide arguments for an interest in implementation and usage issues in connection with CSCW. In Sweden the social insurance board is a part of the public sector and handles a broad spectrum of social benefits, such as old age pensions and child allowances. Their technological heritage is a heavy burden, as it mainly consists of very big, centralised systems built on old technology (Cats-Baril & Thompson 1995, Hedberg et al. 1986). In spite of the importance of this organisation, there are extremely few studies that treat the present introduction of new IT within the organisation, as compared with the old EDP-systems that were developed in the seventies and eighties (Arbetslivscentrum 1979, Hedberg et al. 1986).

Furthermore, the organisation as such has many problems that must be solved, problems that could be seen as arguments for studies about the implementation and usage of CSCW technologies in this type of organisation. The financial resources as well as the staff of the organisation have been reduced, at the same time as the administrative process has been made more complex by constant and numerous changes in the rules and laws that regulates the daily activities. Complaints from the clients are almost treated daily in the Swedish newspapers.

As a contrast, the central management of the social insurance board as well as the minister for social affairs have expressed the expectation that IT could be part of a solution for these big problems (Idling 1996, Försäkringskassseförbundet 1997). At the central level a big project has been initiated that includes the introduction of new technology. Also, some innovative initiatives concerning the introduction of CSCW have been taken at different levels of the organisation. The strict separation between central, regional and local levels in the organisation in general, and especially concerning IT development, is an important feature that affects the possibilities to initialise such development. It also affects the consequences of when IT such as CSCW technologies are used.

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4. Frame of reference: A model

Our research project is an example of process research (Cooper & Zmud 1990) about implementation and usage of information technology in organisations, and by thus has a longitudinal character. Another important feature is the intention to cover cases from different levels of the organisation that include an implementation of CSCW technologies. When doing comparative research, a systematic approach is more important than when studying a single case. There are several motives for providing such a model, as indicated by Cooper & Zmud (1990):

A comprehensive research model...provides a basis for recognizing research questions which build upon prior research and which have a good probability of significantly enhancing an understanding of the implementation process. In addition, such a model facilitates the interpretation of empirical results by, e.g., enabling a systematic comparison with prior work. (Ibid., p. 125).

We started our research with a general interest in the *implementation and usage process*. We suggest three relevant activities to define the contents of the implementation activities: *initiation*, *realisation*, and *introduction*. The important thing

for our study is not the actual contents of each activity *per se*. We are more interested in its effect on the course of the activities i.e. what makes the processes go on, terminate or change their directions?

It is clear that sometimes, as when video is implemented, there are not many activities that could be characterised as realisation, as e.g. programming and similar activities. Instead, the technology as such is tested directly by the users as a part of introductory activities in the organisation in question. If we, as a contrast, study the implementation of e.g. Lotus Notes in the handling of social insurance matters, the implementation process is somewhat different, and include more of realisation activities such as programming and testing by the systems developers. The actual use of CSCW can be different from the intended use, as Ciborra (1996) shows in his studies. He name this phenomenon as *drifting*. Thus, we can imagine the alternative of no usage, as well as change of usage as relevant activities after the introductory stage. The alternative change of usage includes both change of the technology and/or change of the work tasks in which the technology is used. As a consequence, we can also imagine the alternative of terminated usage, as well as a change of usage, after that CSCW actually has been used in regular work tasks. Lastly, with this as a background, the alternative that the process terminates is a relevant option, both regarding the initiation activities, as well as the realisation ones. In sum, all the different activities (initiation, realisation, introduction and usage) could terminate as well as continue. Also, the usage that has started could change its direction.

We are also inspired by Orlikowski & Hofman (1997), who characterise the way in which technological change is managed as:

First, the changes associated with technology implementations constitute an ongoing process rather than an event with an end point after which the organization can expect to return to a reasonable steady state. Second, all the technological and organisational changes made during the ongoing process cannot, by definition, be anticipated ahead of time. (Ibid., pp. 12-13).

The two writers define a model that includes three kinds of changes² that can be, in an arbitrary order, a part of a process in which CSCW is implemented. By this model, the reader is supplied with a tool by which it is possible to describe and analyse any implementation process from the point of view of what kinds of changes are performed, and in what order. We feel that this way of thinking, as it originates from research about processes where CSCW is introduced, capture essential features of such processes. It can be applicable also on other aspects, as e.g. when discussing what implementation and usage activities that are performed when CSCW are introduced in the social insurance board. Thus, our main argument for the relevance of the approach of Orlikowski & Hofman (1997) is that a model of implementation and usage processes needs to include, as their model does, flexibility both as to *when* a certain activity is performed, as well as *if* a certain activity is performed.

With this as a background, we present the following as a relevant model of processes where CSCW is implemented and used in the Swedish social insurance board (Figure 1):

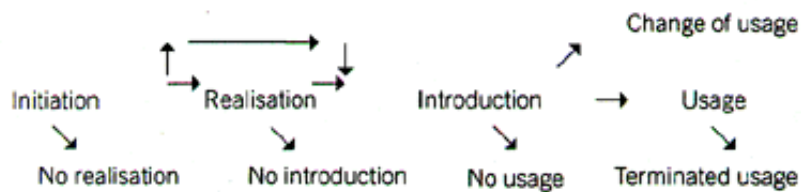


Figure 1: A model of implementation and usage processes of CSCW in the Swedish social insurance board.

We will in the next sections present factors, as well as research questions, that are of relevance when studying processes where CSCW is implemented and used in contexts such as the social insurance board. The factors we are interested in are such that can affect if the implementation processes will result in usage or not, or in other words affect the course of the process. Furthermore, we are interested in aspects that are associated with how the implementation and usage process in itself affect the participants and the organisation in each specific case. In this article we will not, however, go any deeper into the last aspects as our cases so far only give limited experience of the effects of usage.

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5. Aspects that can affect the course of the implementation and usage process

5.1 The characteristics of the initiators

The initiation of the implementation of CSCW, or in other words that someone comes up with an idea of introducing CSCW and arranges for a process of implementation, seems to be of importance from several aspects. One is the organisational position of the initiator, i.e. *at what level* of the social insurance board the initiation and the implementation took place. There are several organisational levels in the social insurance board (as e.g. local, regional, central, external) (Czarniawska-Joerges 1992), and hitherto, the main initiatives to introduce IT have been taken at the central level of the organisation. IT-competence and other associated competencies are sometimes seen as decisive for success of projects, especially in complex organisations according to Sauer et al. (1997) and Essler (1998). Of importance is also that the initiator or his/hers associates has a sufficient amount of power (Borum & Christiansen 1993) to allow for the process to continue. As e.g. Philips (1988) shows, dedicated persons (Sw. *eldsjälar*) can affect the course of change processes to a great extent due to their deep commitment. However, sometimes there is a lack of management support for the process of implementation, as showed by Kautz (1995) and Grudin & Palen (1995).

We will in our discussion focus whether other levels, as apart from the central, have the right to initiate implementation or not, as well as actually initiate implementation processes that can proceed into usage. Accordingly, relevant research question are:

- At what organisational level are the implementation processes initiated?
- Are the competence and power of the initiators sufficient for the implementation processes to result in usage?

5.2 User participation

User participation is another important aspect of how the implementation process is organised. In research about CSCW, the importance of strong ties and close contacts between users and those organising the implementation activities is emphasised (Orlikowski & Hofman 1997). As these particular types of technologies are associated with much informal learning (Ciborra 1996, Kautz 1995, Orlikowski & Hofman 1997), this need must be provided for not only by letting the users test and try out the technology in their work, but also by giving them education if needed. In other words, user participation in its various forms is more important than ever. Grundén (1997) argues that pilot implementation could be seen as a relevant method of introducing CSCW in an organisation as it implies a bottom-up strategy that allows the end users to take an active part in the implementation. Ciborra (1996, p. 12) describes the problem with the lack of user participators and its consequences as:

...perception and the discovery of the potential of groupware as a tool to support new ways of communicating and working seem in some of the cases to be carried out only by an elite...[Therefore] users either lack the resources (time, training, expertise) or specific economic incentives to engage in "perception". A consequence of deficient perception seems to be the slowness or the lack of exploitation of groupware systems potential...

Apart from the risk that the potential of the groupware is not perceived, a limited amount of user participation could result in a bigger risk that the users fall back into using substitute media, according to Ciborra (1996). With this as a background, two relevant research questions are:

Are the users allowed to participate in the implementation activities, and do they get a satisfactory amount of education for this?

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5.3 Technological problems

Technological problems and disturbances seem to be important features in processes where CSCW is introduced. Technical problems are mentioned in research about CSCW as important factors when explaining why the implementation of CSCW is less successful than what was intended (see e.g. Ciborra 1996, Essler 1998, Sanderson 1992).

The present technological infrastructure of the social insurance board is characterised by the use of big, centrally situated databases. There are also restrictions in the available network. As a conclusion, factors that most likely affect the course of the implementation are most likely technological problems, sometimes caused by the type of technological infrastructure in this kind of organisation.

Are there technological problems that affect the course of the implementation process?

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5.4 Expected and real outcomes from the usage regarding efficiency and quality

Efficiency and *quality* are two very important aspects of the work of an organisation. The two concepts are also closely related to each other. There is a strong pressure on the public sector today to make the work as efficient as possible. A study by Johansson and Ulfvensjö (1990) shows that efficiency was the motive for most of the organisational changes within the Swedish local government sector, something which also is the case in the Swedish social insurance board. Efficiency can be defined as the amount of utility or goal fulfilment that is reached as compared with the used resources. One aspect of efficiency is *productivity*, the volume of the production compared with the used work time or salary costs. The use of CSCW can contribute to an increased efficiency in work if e.g. time is saved when a work task is executed. If communication between different geographic locations can be made through the use of CSCW technique as e.g. video, the time to travel could significantly be reduced. In the Swedish social insurance board very often the old, big EDP-systems are a source of efficiency problems as they are difficult to handle due to a lack of adjustment to the needs of the users, according to our informants.

It is also important to study the quality of the services produced by the public sector. Rationalisation efforts should not contribute to a deficient quality of the service. Instead, there is a strive for increased quality through e.g. user involvement ("Vidga brukarinflytandet" 1991), customer orientation (Dahlbom 1991) or patient orientation (Skalin 1985). A more flexible and decentralised organisation is also seen to contribute to better quality of the service. The use of CSCW technique can contribute to a better quality of the service if the information that is used for decision-making is more relevant and current.

Consequently, when the implementation of CSCW is initiated it is important to consider the expected outcomes regarding efficiency and quality outcomes. When the CSCW is used in ordinary work it is possible to analyse the real outcomes regarding efficiency and quality aspects. Thus, both the expected and real efficiency and quality outcomes could affect the course of the process. The following research question is therefore of relevance:

Does the expected and real efficiency and quality outcomes from the usage affect the course of the implementation processes?

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6. Method

In this article, we present a study of four cases of when CSCW technologies are introduced within the realm of the Swedish social insurance board. One of the cases is situated and initiated at the local level of the organisation, and two are initiated and takes place at the regional level. The third case is initiated both at the central and regional level, but realised and introduced at the regional level. The methodological approach we use in the study is that of a qualitative case study (Merriam 1994). In this work we have made personal visits to the organisations where the processes of

implementation take place, and we have made several interviews with the main actors. We use a comparative approach in the case studies, as was suggested by Eisenhardt (1989). In this approach we compare different selected aspects between the cases, aspects that are connected with our research questions.

The fact that we are two researchers that do all the project work together (eg. plan the interviews, make and analyse the interviews) increases the validity and reliability (Kvale 1997) of our study because two people see more than one. This quality is not common in studies that are longitudinal and comparative within the field of CSCW.

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7. Case

7.1 The first case. The locally initiated implementation of video communication. The initiation of the implementation

The locally initiated implementation of CSCW technology (desktop video communication) took place at two local offices (Lindome and Öckerö) within the region of Bohuslän. There were about twenty employees at each local office. The initiative to implement desktop video communication at the local offices came from the office manager at Lindome, as she had experience of working with computer issues, and a big interest in such matters. The head manager of the region of Bohuslän was also very interested in finding effective ways of using computers. The regional office manager discussed with the local manager of the office at Öckerö, and they decided to buy desktop video communication equipment, which was regionally financed. Unfortunately, the central insurance board had turned down an application for economic support for the implementation of the CSCW technology.

The local manager of Öckerö was also very interested in computer issues. He described the social insurance organisation of Bohuslän as being precursors in IT development, as compared with the social insurance administration of the other regions. The manager explained the origins of many of the local initiatives with the fact that they work more close to the clients and the handling of all social insurance matters, than the central level of the organisation.

The background to the implementation of desktop video communication was that a group of employees that previously had worked with pension issues at the regional social insurance office, had now been decentralised to the local offices. It can be very complicated to handle pension issues, and it takes several years to receive a good competence in this. Before the decentralisation, the pension handling group at the regional office was used to cooperate and discuss difficult matters, but this was not so easy any more. The installation of the new desktop video equipment was seen as a solution to that problem. Now it would be possible for the members of the pension group located at Lindome and Öckerö to communicate with both sound, image and text, and to look at the same document at the same time. From the initiators there were big expectations of the result of the implementation activities.

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7.1.1 The introduction process

In November 1995 the desktop video equipment was installed at the local office of Öckerö as well as at Lindome. For reasons of confidentiality this communication was placed outside the usual computer network, which meant that there was no access to the big insurance databases when the desktop video equipment was used. Normally, support in computer issues was available from a regional computer group that were accessible for the local social insurance offices in Bohuslän. This group was not involved in these introduction activities partly because they were occupied with other systems development activities at that time.

The staff that handled pensions became educated in computer issues and the desktop video equipment was used occasionally for a year in the administration of pension matters at the two offices. In other words, there was some user participation in the testing of the equipment as used in the administration of pensions. However, the introduction was more and more seen as a failure. The users felt that it did not add any qualitative or efficiency values to the handling of the pensions. The main reason for interrupting the implementation process was that solving difficulties in the pension handling through desktop video communication was not perceived as efficient enough. Instead, the difficulties in the pension handling were solved mainly through telephone calls because the users felt that it was more natural and practical to communicate in that way. There were also problems with the use itself. One problem was that the video equipment was placed in another room at Lindome, which made it uncomfortable to go there each time. Also, there still remained technical problems, as e.g. that the picture of the documents was not clear enough because the video camera did not have sufficient capacity. Another problem was that the instruction manual for the equipment was poor. Furthermore, a heavy work load made it even more difficult for the staff to take part in the video experiments.

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7.1.2 Change of usage

By using the desktop video equipment the employees in the pension group received experiences, as well as competence in using CSCW technologies. In this learning process they came up with new ideas about how to use this equipment, as e.g. for meetings between the local office and the regional board of the Swedish social insurance board. A positive effect from this would be that the time spent on these meetings is reduced, as no time for travelling would be needed. ³ At the moment, the experiments with using video equipment have terminated. In the beginning of 1998, the region where this office is situated is integrated into a larger one, the new region Västra Götaland, which cause some organisational turbulence according to the office manager at Öckerö. This also has negative effects on the interest to experiment with e.g. using video for meetings, according to him.

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7.2 The second case. The regionally initiated implementation of video communication. The initiation of the implementation

Our second case included a similar implementation of desktop video equipment for communication between two work sites within the social insurance organisation; a regional centre in Husqvarna and a rehabilitation hospital in Tranås. The initiative to the implementation was taken by a systems developer that also, at that time, was a manager of the development department of the regional centre. Furthermore, the initiative was supported by the manager of the regional centre. The regional centre was started in 1995, and recruited people that were interested in issues of organisational change and improvement. The intention was that this office would be more efficient than the average office.

A background to the implementation of desktop video communication was that it existed a need to communicate between local offices in the social insurance board and the rehabilitation hospital in Tranås in the administration of rehabilitation matters. At this hospital clients or patients with work injuries are examined, and treatment is proposed. Normally, before a patient leaves the hospital, a meeting takes place between the patient and a doctor at the hospital. As this is an important occasion in the handling of a patient, there is a need within the local social insurance offices to take part in the meeting. Unfortunately, this has been impossible due to the distance between the offices and the hospital. By using desktop video equipment it would be possible for the member of the staff at the local office that deals with rehabilitation matters to take part in the meeting between the patient and the doctor at the hospital.

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7.2.1 The introduction process

The experiments started in October 1996 and several sessions of using desktop video communication between the office and the hospital took place. The experiments with the video conferences did not, however, replace the more private meeting between the doctor and the patient that takes place before the more official meeting in which the local insurance office is allowed to take part in. The experiments were interrupted in April 1997.

There are several reasons for the interruption of the experiments that were presented by the participators. At the hospital, the video equipment was placed in another building, and it took about 45 minutes to walk to that building and connect the video equipment. There were other negative experiences from the usage as well, such as that some patients did not feel comfortable when sitting in front of the camera. Also, the doctors at the hospital had difficulties with spending sufficient time (half a day) to be able to learn how to use the equipment. Another reason for the termination of the activities was a reorganisation, in which about fifteen employees were dismissed. This organisational turbulence affected the motivation of the participants not to continue. Also, the manager that supported the implementation activities in the regional centre in Husqvarna left. It is, according to him, not clear whether the implementation activities is supported by the new manager. This may, or may not, affect the interest of the regional office to participate.

Still, there were in fact several positive experiences from the experiments. According to the initiating systems developer at Husqvarna, as well as according to informants at the

hospital in Tranås, important information was exchanged when using the video equipment. The initiator to the implementation described the positive aspects as "twenty questions were asked that otherwise would not have been asked". This meant that new rehabilitation activities could be identified and implemented.

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7.2.2 Expected change of usage

In spite of the difficulties that have been described, the initiator at Husqvarna, as well as the informants at the hospital in Tranås, felt that further implementation and usage of the equipment would be useful. Also, according to informants at the hospital, there seem to be continuing experiments in near future, but based on a slightly different technology. By using Internet, the costs could be reduced to one tenth of the price of the earlier used equipment Picture Tell (Picture Tell costs about 13.000 Sw.cr.). Instead, the ordinary terminals of the doctors could be used with cameras added on top. This would be more efficient than before, as it would significantly reduce the time needed to connect and use the video equipment. As a contrast, the power and the role of the initiating systems developer at Husqvarna has changed. Since the autumn of 1997, the systems developer are supposed to deal with service and support to the users of the region, rather than with innovative systems development.

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7.3 The third case. Developing of a prototype in Lotus Notes for electronically handling of pension matters. The initiation of the implementation

At the central level of the Swedish social insurance board, a big project has been initiated, that include a change of the technical infrastructure of the organisation, and an introduction of e.g. an intranet. The name of the project is "Work-place 2005". This project has also partially financed some local and regional experiments with information technology, something which applies to the third case in our investigation. The initiation of this case of using Lotus Notes for handling of pension matters electronically was a conversation in mid-1996 between the project leader of the project "Work place 2005" and the regional manager of the systems development department in the region of Bohuslän. There was an interest from the central level to integrate a new project within the field of electronically handling of social insurance matters in the central project. At that time, the law did not allow for handling such matters electronically, but work was going on to change that situation. As a matter of fact, the development and testing of the system for electronically handling of social insurance matters was in this way legitimated for a defined period of time from the central administration of the social insurance office.

As already has been described, handling pension matters is a complex procedure, as it includes taking complex decisions, as well as making an investigation before the decision. This means that documents of various kinds have to be sent between different officials, something which up until today is managed almost without the help of IT. The goal of the regional/central project was to rationalise the handling of insurance matters,

as e.g. by replacing as much paper document as possible with electronic documents, and thus reduce the time needed for the administration of each matter. The manager of the regional systems development department expected the time for the handling of each insurance matter to be reduced by fifty percent when electronic documents are used. Another goal was that all work tasks in the handling of pension insurance matters should be performed by the the system. Special attention was given to problematic areas such as external communication, storing and scanning of documents, as well as security and legal issues. One member of the pension handling staff is supposed to have the main responsibility for the documents about each matter, but the electronic documents can be viewed and discussed at the same time by staff situated at different geographical locations at different insurance departments and offices. The employee that has the main responsibility for a document can delegate work tasks to other employees without moving the document from the database.

[\(Åter till början av artikeln\)](#)

7.3.1 Realisation

At the regional systems development department, a project group consisting of four members was constituted in the autumn of 1996. Staff with technical knowledge, as well as insurance knowledge were represented in the group. The intention was to store electronic documents in a relation database implemented in Sybase. A graphic user interface was made in Visual Basic, and Lotus Notes was used as a document database. Information from the relation database could be viewed in Lotus Notes. By this arrangement, all handling of the matter can be made by the use of Lotus Notes; change of records, storing of decisions and memorandums etc.

The group started by making outlines of the new relation database. The project members from the insurance field became educated in the use of Lotus Notes. In November 1996 an outline of the implementation was presented for persons from the central office as well as from the regional office. The realisation of the Lotus Notes application started in December. The project group members were educated in Sybase and Visual Basic by some consultants. Sybase was installed as a test/development database. During the spring in 1997 a server for Lotus Notes also was installed. The construction of the database and Lotus Notes implementation were made in parallel with the user contacts (see next section). The intention was that these contacts would result in a specification of user requirements. As a whole, two of the systems developers at the regional systems development department have been working with the development of the prototype for using Lotus Notes in the handling of pension matters. Some consultants have also been involved in the development work.

[\(Åter till början av artikeln\)](#)

7.3.2 The introduction process

The manager of the systems department characterised the systems development model that they use as incremental and iterative. This is why he arranged substantial sessions of user participation in the testing of the implementation. In June 1997 a prototype of the system was finished. An evaluation group became educated in using the system.

The test of the prototype was made by users during eight days in the summer. It was demonstrated at a general information meeting with participants from both the regional and the local level. The prototype was also demonstrated in the late spring of 1997 to an evaluation group consisting of 8-10 people that work with pension handling matters and also to 40 employees that are responsible for the area as such. The comments from these people have been a ground for further development of the prototype during the autumn of 1997. At present (spring 1998), a prototype is being tested by some of the pension handling staff at the local offices in Kungälv and Mölndal. Two scanner are already installed at the offices. The testing of the Mölndal staff were however delayed due to the involvement of the test person in another project.

In Kungälv, four people from the pension and the investigation departments have been involved during the first months of testing. Two more people will also soon be involved in the testing activities. The testing activities are made when the during work load is low. Pension matters are registered in Lotus Notes in parallel to the ordinary handling of the matters. There have been some minor technical problems with e.g. the scanner but mainly they have been solved. Still there are some problems because the system is too slow to respond.

The testing group has a strong support from the Mölndal system development department. They can ask questions any time and they have regular meetings where the testing activities are discussed. So far, the testing group are very positive to be involved in the testing. They think this is a chance to get experience of groupware and that this new knowledge will be valuable even if the prototype not will result in usage. They think that this new mode of work has so many qualities that it will be a model for the future handling of matters in the social insurance board, even if other types of technology will be used. They expect the following effects:

The communication will improve. Different persons can view and handle the same matter at the same time.

Time will be saved. Today very much time is spend to search for documents that are lost.

The quality of the decisions will improve. Consulting contacts can be made more quickly as no paper need to be printed in advanced and mailed.

The security and integrity will improve as the authorisation for handling a matter could be more precise.

The need of technical knowledge will increase; "you need to be an engineer to work at the social insurance board".

The further course of the introduction process will very much depend on the result of these tests. But there are also several other things that affect the further course of the process. It will be of strategic importance if the system could be accepted in the new region of West Gotaland, in which the region of Bohuslän has been incorporated. On the other hand, there are no longer (since January 1998) any law that prohibits handling social matters electronically, due to a change of legislation. At the same time, these experiments with Lotus Notes in the administration of pension matters is not the only

one in the organisation as a whole. There is a test of a another similar system going on in the Swedish social insurance board, that is partly interchangeable with the one described here.

[\(Åter till början av artikeln\)](#)

7.4 The fourth case. Implementation and use of Lotus Notes document databases for systems administration in the region of Bohuslän. The initiation of the implementation

The fourth case includes an implementation of Lotus Notes that was initiated by the very same manager at the systems development department as in case three. The systems development department has about seven employees. Apart from that, the region of Bohuslän also has about fifteen employees that have certain systems administrative tasks at the local offices. Due to a perceived need of sharing information about the total IT-structure and systems within this context of people, a simple implementation of Lotus Notes was arranged in the spring of 1997. The manager of the regional systems development department described himself as a dedicated person in trying to spread a more co-operative way of working and sharing information, with the help of as e.g. Lotus Notes.

[\(Åter till början av artikeln\)](#)

7.4.1 The realisation

The realisation was done very quickly by developers at the systems development department. Due to the experiences of implementing Lotus Notes in the handling of pensions, the systems developers had previous knowledge of the technology as such. The structure of the document databases for systems administration consisted of a database for discussions about the systems in the region, a database with documentation about the systems, and a database with Frequently Asked Questions (FAQ).

[\(Åter till början av artikeln\)](#)

7.4.2 The introduction process

In May 1997, the potential users were given about fifteen minutes of education about the system. Then they started to use the system at their respective offices.

[\(Åter till början av artikeln\)](#)

7.4.3 Usage

Because of the implementation of Lotus Notes, more people have access to the same information at the same time, which is very positive according to some of the users. The question and discussion databases have reduced the burden of answering questions of the systems developers at the regional department. Also, all members of the group have the possibility to answer questions that are put into the database. Apart from that,

there are a few consultants that have knowledge about Lotus Notes, that answer questions about such issues.

The users have been very positive to the system. In September there were about 1.000 reading registrations within the various groups. In January 1998 there were about 13.500 reading registrations.

As a result of the implementation, the special knowledge of the IT-staff is to a higher degree known by others, which is seen as positive. The systems administrators and systems developers can, although they are scattered at various offices in the region, work and function as a team. At the same time, according to some of the system developers, sharing your documents with others is sometimes considered as embarrassing. In other words, there is a slight psychological resistance against publishing information in Lotus Notes before it is complete.

[\(Åter till början av artikeln\)](#)

8. Discussion. Aspects that have affected the course of processes

8.1 The initiation of the implementation

The initiators of each case seem to have had enough power to initiate and introduce the new solutions. Furthermore, all initiators were managers; in the first case the initiators were the managers of local offices, and in the other cases managers of the regional systems development departments. According to Kautz (1995) and Grudin and Palen (1995), the support of senior managers is important when introducing CSCW in an organisation. The regional IT-managers of course have more genuine knowledge of the IT field as compared with the managers of the local offices, a phenomenon that we will comment further down. This seems to be a relevant aspect that affects the course of implementation, according to Sauers et al. (1997) and Essler (1998). However, it is not clear whether the power to initiate and the knowledge of the IT field is sufficient as to that the first, second, and third cases will result in usage.

In the Swedish social insurance board, organisational change can affect the power of the initiators as well as their knowledge of IT, which in turn can affect the course of the existing projects as well as coming projects. One obvious example is the second regional case where the organisation of the IT department has been changed. This is something which reduced the IT knowledge in the office and the possibility to initiate IT projects. Also, it makes the course of the second case more uncertain, according to the informants. In the third regional/central case, the question of initiation in future is more complex. Due to the character of the implementation, it has to be authorised by several levels of the organisation. The local users have to be positive, as well as the big region of West Gotaland, and the central level of the organisation. As a contrast, the power to initiate and attain usage was sufficient in the fourth case. The system was very simple to implement and use. The systems developers had already experiences of the technology (Lotus Notes). Also, it seems that the area of usage was rather limited (sharing of knowledge between systems developers and systems administrators). Furthermore, no authorisation from other organisational levels was needed.

8.2 User participation

Projects developed at the central level of the social insurance board have been criticised for involving too little user participation. Their projects also have been criticised for not being enough adjusted to local demands. In all our cases the users have participated in an active way, maybe with the exception of case four. This is positive, if we are to believe as e.g. Ciborra (1996). However, the participants in the first, locally initiated case also seems to have had more limited support regarding technical assistance and education possibilities, something which most likely is negative for if the process is to result in usage. Also, there seems to have been some problems with getting enough user education in case two, but not in case three and four. In case one and two the work load was too strong to allow enough testing activities. As a contrast, more time was spent on testing in case three on testing. In the fourth case the users did not need much time for education.

The course of the fourth case is somewhat surprising, as the literature suggests that strong ties and close contacts between users and systems developers are of importance when introducing CSCW (Orlikowski & Hofman 1997). The course has to be explained by the existence of good previous contacts between systems developer and prospective users, which means that the need of the later was so well known that no formal user participation was necessary.

The actual user participation that exists in a particular case is probably influenced by the *implementation model* that is used in the specific context. In the IT-department of Bohuslän an incremental model is used, where small steps are taken at each time. This makes it possible to correct the process many times, and also to include the users in the testing. One disadvantage could be that the development work becomes too fragmented, which means that it is difficult to grasp the consequences and structure of the whole system. As such, user participation in itself is a part of the philosophy of the systems development department of the Bohuslän region, but was a part of the other cases as well (one and two). User participation seems to be a prerequisite for implementation that results in successful usage. This is not, however, a guarantee for success as our first case indicates.

8.3 Technological problems

In the first and second cases there were technical and practical problems with the video equipment which most likely affected the course of implementation (Ciborra 1996, Sanderson 1992, Essler 1998). In the second case the technical problems caused an interruption of the implementation process. The problems seem however to be solved with the coming use of new technology. In the first case the original intended use of video equipment was changed, partly due to the technical problems. As a contrast, in the second case, there seem to be a change of usage in another sense that has connections with aspect of the influence of technological problems on the course of the process. The original intentions of usage could be kept if the video technology is

changed into another type of video technology, that would not include the problems of the existing one. This would be a way in which the implementation process can proceed into regular usage.

In the third and particularly in the fourth case, there do not seem to be many technical problems that have affected the course of the process negatively. Also, these processes still continue in accordance with the first intentions.

[\(Åter till början av artikeln\)](#)

8.4 Expected and real outcomes from the usage regarding efficiency and quality

The implementation process of the first case seems mainly to have been terminated due to a lack of experienced efficiency and quality effects as perceived in the implementation activities. The use of the video equipment in dealing with pension matters did not lead to more positive effects as compared with the earlier way of solving these matters. It is likely that the additional value of seeing the person you discuss with, as well as the documents that are discussed is not so great in such administrative processes. Those involved know each other well, and furthermore, know the documents in detail. It is our belief that the limited effects of the technology could have been estimated in advance, if the knowledge about IT of the initiators was slightly better. This would have meant that the implementation activities in case one never had started. In the second case there were more genuine efficiency and quality gains according to our informants. Questions were asked that not have been possible before. This implementation process is occasionally interrupted, but seems to continue in a near future due to the positive experiences.

The third case has not resulted in usage yet, but a first evaluation of the prototype has been very positive and the realisation and testing continue. However, it will be of strategic importance to convince the whole region of the advantages of this system for the process to result in usage, as one similar project also is developed at the central level of the organisation. The fourth case has already resulted in usage, and it seems that the expected gains in efficiency and quality actually were fulfilled.

Grudin and Palen (1995) argue that *experienced* gains in efficiency are especially important to motivate use of e.g. electronic calendar applications. Our study shows that *expected* gains in efficiency and quality (experienced in the testing activities) also can be of importance for if the implementation process should continue.

[\(Åter till början av artikeln\)](#)

9. Summary

As we have showed above, all our defined research aspects had influenced the course of implementation processes. Our cases show that it is possible to initiate implementation of CSCW in the Swedish social insurance board also at a local and regional level. Traditionally, the central level is the main initiator of IT-based systems. Furthermore, organisational turbulence seems to influence the process of

implementation and usage, as e.g. changes of IT-departments and managers. Technological problems seem to influence the processes, but not in a definite way. Most important are the expected or real outcomes of efficiency and quality effects, as our cases show. Lastly, user participation can be a good way to experience such aspects. But, as our fourth case indicates, user participation is not necessary if the users' needs are well-known by the experts.

[\(Åter till början av artikeln\)](#)

9.1 Some methodological aspects of our comparative approach. The influence of CSCW technology and application area on the implementation process

As the field of CSCW is broad it includes different types of technology and application areas, as e.g. more informal video communication, as well as groupware used in more formal co-operation among many employees. One aspect of the type of CSCW technology and application area is whether it mainly affects the *formal or informal communication* of the organisation (Litterer 1963). The implementation process of CSCW technology that supports mainly informal communication probably has a more flexible character and is therefore more difficult to control as compared with the implementation process of more formal CSCW applications. In our first two cases a more informal communication is supported by the video technology. In the first case the usage of the video equipment was changed from solving difficulties in pension handling to usage at meetings between employees in different insurance offices.

Furthermore, CSCW applications can also be implemented in order to support more formal routines e.g. for the electronically handling of pension insurance matters among many employees, as our third case illustrates. Then there is more *complexity in the settings of the applications*, as more people within different organisational units are involved. It is obviously more easy to change the use of the technology if few users are involved as compared with a very big system with many users.

With this as a background, a relevant question is whether it is possible and meaningful to compare the implementation processes of such different types of CSCW technologies and application areas as in our four cases?

[\(Åter till början av artikeln\)](#)

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([Åter](#) till början av artikeln)

Fotnoter

1. Sanderson (1992) in Turner & Kraut (1992), Hughes et al. (1995) and Kautz (1995) in Kautz et al. (1995), and none at all in McMaster et al. (1997). [Åter till texten](#)
2. These kinds of changes are anticipated changes, opportunity-based changes, and emergent changes. The kinds of changes are not important as such to our discussion here, as apart from that the structure of the model of Orlikowski and Hofman (1997) can serve as an inspiration to our own model in Figure 1. [Åter till texten](#)
3. Öckerö is situated in the archipelago of Gothenburg. [Åter till texten](#)

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