

Enculturation of User Involvement in Software Development Organizations - An Interpretive Case Study in the Product Development Context

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ABSTRACT

It is widely accepted that users should be involved in the interactive systems development. However, involving the users is often difficult and quite rare in software development organizations, especially in the product development context. We took a culturally oriented approach in the analysis of the position of user involvement in two software development organizations operating in the product development context. We analyzed how user involvement is modified and interpreted in the cultural context. This meaning negotiation – enculturation - process was the focus of empirical examination. Empirical material was gathered and analyzed by employing an interpretive research approach. The results suggest that there exist clear differences in how user involvement has been encultured in the case organizations. The case organizations employ different approaches to user involvement, and differing strategies for the facilitation of user involvement. As an implication for practice, we emphasize the importance of understanding the cultural context in which the user involvement is to be initiated, and suggest that different approaches to user involvement might be selected in differing cultural settings.

Author Keywords

Organizational culture, user involvement, user-centered design

ACM Classification Keywords

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

INTRODUCTION

This paper examines how user involvement is encultured in software (SW) development organizations operating the product development context – referring to the development of commercial, off-the-shelf SW products or systems. It is

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widely accepted that user involvement is important when developing interactive systems, both in information systems (IS) and in Human Computer Interaction (HCI) literature. A variety of IS development methodologies, especially Participatory Design (PD) (Greenbaum et al 1991), emphasize user involvement in the IS development. (Kujala 2003, Nandhakumar et al 1997.) PD has its roots in Scandinavian tradition of systems design that has focused on workplace democracy and union involvement in the development of computer systems. A 'Scandinavian challenge' is argued to be 'to make systems design more participatory and democratic'. (Bodker et al 1988, Carmel et al 1993, Greenbaum et al 1991.) Also the field of HCI has addressed the development of usable, useful interactive systems by highlighting the importance of understanding the users. For example the approaches of UE (Usability Engineering) and UCD (User-Centered Design) emphasize that understanding the users and their tasks is an important basis of design. (Bannon 1991, Kujala 2003.)

However, there is confusion related to the terms. The terms of UE and UCD are often used interchangeably. (Kujala 2003.) In addition, PD has been defined to denote everything that somehow involves users in the development (Spinuzzi 1996). Also the term user involvement seems to denote a variety of approaches that emphasize one way or another 'direct contact with users' ranging from active user participation in the design process to the involvement of users as mere providers of information and objects of observation. (Bannon 1991, Kujala 2003, Mumford 1983.) In this paper a framework for comparing these different approaches to user involvement is proposed. The approaches all highlight understanding the users and their tasks as a basis for design, and the design as involving resign of users work and tasks. The approaches differ, however, in their assumptions about why and how users should be involved in the design process. The framework will be used in the analysis of user involvement in the empiria – in the SW development organizations we have studied.

Involving the users is often difficult and quite rare in SW development organizations, especially in the context of product development (Grudin 1991). In-house development has been the traditional context for user involvement. However, even in in-house development a huge amount of prob-

lems has been reported related to the user involvement. (Axtell et al 1997, Grudin 1991, Hirschheim et al 1990, Nandhakumar et al 1997, Symon 1998.) In the product development context even more difficulties have been encountered, since typically the customer is important, not the user. In addition, developers are often isolated from the users and even identifying the users is difficult. The requirements are transmitted to the development through marketing. Finally, relatively short development cycle causes problems; there is no time for involving the users or for iteration. (Grudin 1991, Poltrock et al 1994.) Literature also highlights the difficulty of getting user involvement accepted in organizations. Development organizations lack knowledge of the appropriate methods and techniques for involving the users, user involvement has not become standard part of development and the development often proceeds with little if any user feedback. If the users are involved, it happens too late and with hardly any effects on design. (Aucella 1997, Bodker – Buur 2002, Gould – Lewis 1985, Kyng 1994, Poltrock et al 1994, Tudor 1998.)

We took a culturally oriented approach in the analysis of user involvement in SW development organizations. In IS literature cultural and symbolic aspects of organizational life have been recognized as important objects of study. Empirical studies illustrate e.g. that IS implementation has been resisted because of the lack of compatibility with the cultural context (Pliskin et al 1993, Robey et al 1989), IS development is full of myths, metaphors and rituals (Hirschheim et al 1991), accounting has been vested with different meanings in different cultures (Dent 1991), cultural context has caused difficulties for the implementation of a teamwork approach and outsourcing arrangements (Dube et al 1999) and cultural assumptions have been implicated in information technology management (Kaarst-Brown et al 1999). Studies have also shown that different meanings have been attached to user involvement – it has been used only as a buzzword or as a weapon (Artman 2002, Catarci et al 2002, Hirschheim et al 1991, Symon 1998). These studies lead us to assume that there might be ‘symbolic uses of user involvement’ and multiple meanings attached to user involvement in different cultural contexts. However, empirical studies have analyzed symbolic and cultural aspects of user involvement in the in-house and contract development, but no empirical studies have been found in the product development context. Cultural analysis of user involvement in the product development context is the focus of this paper. One could assume that studies of this kind are needed also due to the great challenges encountered in involving users in this context.

The paper is organized as follows. Next section presents the framework developed for the analysis and comparison of the approaches to user involvement. In addition, a suitable approach for cultural analysis is outlined. Third section presents the cases involved in this study, and the procedures of data gathering and analysis. Fourth section presents and discusses the results of the empirical analysis. Final section

discloses the central themes and observations of the paper, and suggests paths for future work.

THE ANALYTICAL FRAMEWORK

Approaches to User Involvement

In the framework a set of assumptions related to user involvement is identified. The assumptions are related to the 1) why to involve the users; and 2) how to involve the users (assumptions about the process of design and the role of users in the process). In the framework, the tradition of PD is contrasted with the traditions of UE and UCD. PD refers to the field of ‘participatory design’ that relies on the tradition of Scandinavian collective resources approach with strong Marxist flavour. Assumptions inherent in PD represent an extreme end of the continuum. This, however, does not mean that UCD and UE solely represented the other end. Certain UE and UCD methodologies share similar assumptions with PD, while other represent an opposite end of the continuum. Also one specific UE or UCD methodology might resemble PD related to certain assumptions, while be in clear contrast with PD related to other assumptions. Next the assumptions are discussed in more detail.

Why to involve the users? It has been argued that user involvement aims at empowering the users, but the empowering can be related either to the democratic empowerment inherent in the PD tradition that maintains that workers should be able to participate in the decision making process in their work place, or to the functional empowerment that highlights that workers should be able to do their job effectively and efficiently (Clement 1994). Different reasons for user involvement have been identified (Nandhakumar et al 1997): aim is to improve the design process; facilitate the implementation, or to address ethical principles. Altogether, the goal of user involvement is oriented towards Marxism or capitalism. Marxist orientation emphasizes conflict between capital and labor and aims at emancipation of the workers, the capitalist orientation, on the other hand, emphasizes competitive advantage and competitiveness in the marketplace achievable through user involvement (Asaro 2000, Spinuzzi 2002).

How to involve the users? There is a difference how structured approach for design is recommended (Carmel et al 1993). In PD there is a reluctance to specify fixed techniques or cookbooks for PD – the researchers reject the notion of a step-by-step PD approach (Carmel et al 1993). For UCD and UE, on the other hand, many cookbooks (textbooks) have been produced. Also the view of the design process may vary depending on whether creative or engineering aspects of design are highlighted (Bodker et al 1988, Löwgren 1995). Design can be seen as a creative and communicative process that involves ‘interplay between setting and solving the problem’, ‘mutual reciprocal learning’ and ‘design by doing’ (Bodker et al 1988, Löwgren 1995). On the other hand, design can also be seen as a structured engineering process in which the problem to be solved should be fully described, use situations and needs

are to be known beforehand and the task is to find the solution through a rationalistic, objectivistic process in which typical is also a separation of analysis and design and hierarchical decomposition of design work (Bodker et al 1988, Löwgren 1995). Especially in UE the engineering view of the design process seems to be evident. Altogether, the orientation can be either positivist or antipositivist. Antipositivism opposes scientific objectivism and the view of design as rationalistic decision-making process. Positivism, on the other hand, emphasizes scientific, rigorous, objective investigations, systematic protocol and formal analysis. (Bannon 1991, Bodker et al 1988, Carmel et al 1993.)

Finally, users can be seen either as human actors (active agents) or as human factors (passive objects of study) (Bannon 1991). User involvement can be categorized according to the degree the users participate in (and are therefore able to influence) the design. The involvement can be labeled to be of consultative, representative or consensus type. In consultative design users do not have decision-making power. Users are simply sources of information. In representative design selected user representatives are involved in the design process, and are assigned some decision-making power. Finally, in consensus type of design the responsibility of design is assigned to users, who are continually involved in the design process and have power to make decisions. (Mumford 1983, Carmel et al 1993.) We included also the role of the usability specialists into the framework. In the empirical material – in the SW development organizations we studied – only the consultative type of user involvement existed. The usability specialists were the ones ‘representing the users’ in the development. However, there seems to be differences related to the role of usability specialists – their role could resemble that of the consultative, representative or compromise type of design.

Approach for the Analysis of Cultural Context

Culture is a complex concept, and there exist many controversies in both defining and applying it (Czarniawska-Joerges 1992, Smircich 1983). The concept of culture is derived from the tradition of cultural anthropology in which the concept and studies on cultures are traditional focuses of study. In anthropology culture refers to the socially transmitted patterns for behavior characteristic of a particular social group. It refers to a way of life among particular people. The definitions highlight culture as historical, as being learned and as an abstraction from behavior and products of behavior. (Keesing – Strathern 1998, Kroeber – Kluckhohn 1952.) Organizational culture can be interpreted to refer to the same phenomenon in organizational context. Culture is viewed as an ideational, symbolic system. There is a distinction between symbolic system and socio-cultural system. Socio-cultural system is made up of patterned forms of interaction among the members of society. Symbolic system, on the other hand, consists of learned, shared, patterned sets of meanings. The distinction is between patterns of behavior and patterns for behavior. (Geertz 1973, Keesing – Strathern 1998, Lett 1987.) Culture necessitates

aspects such as collective identity, shared experiences and memories, and common frames of reference for sense making. Common frames of reference – the patterns for behavior – include shared understandings, interpretations and assumptions that guide the action of the cultural members. (Keesing – Strathern 1998, Schein 1985, Smircich 1983, van Maanen – Barley 1984, Wenger 1998.)

In anthropology an interpretive approach to the symbolic system of culture includes a long period of intimate study and participation in the everyday activities of the cultural members. The analysis is context sensitive and interpretive, and should focus on the ‘natives’ point of view’ and produce ‘thick descriptions. (Czarniawska-Joerges 1992, Geertz 1973, Keesing – Strathern 1998, Smircich 1983.) Some studies on culture in IS literature have also been carried out within an interpretive approach to culture. These studies highlight that a multiplicity of meanings can be attached to any technology or organizational change efforts in different cultural contexts. The importance of understanding the cultural context is emphasized and it is argued that change efforts and technologies are always interpreted and reinterpreted in the cultural context in an emergent process of sense making. (e.g. Dent 1991, Dube et al 1999, Kaarst-Brown et al 1999.) However, the dynamics between the change efforts and the contexts is highlighted also from the opposite viewpoint: the change efforts are capable of producing new forms of cultural knowledge and changing the cultural context in a reciprocal relationship (Dent 1991). We took as a starting point a hypothesis that cultural context affects the way user involvement is encultured in organizations. User involvement, while introduced into organization, is modified and interpreted in the cultural context. However, it is also capable of modifying the context and producing new forms of cultural knowledge. This meaning negotiation – enculturation – process is the focus of our empirical examination.

RESEARCH DESIGN

In this research effort we utilized a case study method, in which one examines “a phenomenon in its natural setting, employing multiple methods of data collection to gather information from one or few entities” (Benbasat et al 1987: 370). More specifically, the research effort is an interpretive case study. In interpretive case study researchers assume that our knowledge of the world is gained through social constructions, and attempt to understand and make sense of the world not to explain in the sense of predicting. In the focus are the meanings attached to the phenomenon under study. Aim is to capture the native’s point of view, to produce ‘thick descriptions’, and to gain thorough understandings of particular cases. Theories are used only as sensitizing devices; they are not aimed at being falsified, as is the case in the case studies of positivist nature. (Denzin et al 2000, Klein et al 1999.)

Two cases were involved in this study. They are organizational units from two SW companies. Unit A is part of a

large global corporation. Unit A's responsibility is the user-interface (UI) development. There are approximately 30 employees in the unit. Most of them are SW developers whose responsibilities include the design, implementation and testing of SW. The developers work in large-scale product development or maintenance projects including personnel from several organizational units. In the unit there is also a team of usability specialists including 4 persons. Unit B is a product development unit of a small-to-medium-sized SW company. The unit has 25 employees. Unit B's responsibility is the next generation product development. The product development unit is divided into two teams. Most employees of the development team are SW developers. Few developers focus specifically on UI development. The other team contains expertise e.g. on testing, documentation, usability and graphical design. There is also one usability specialist in this team.

Altogether, the research material was gathered during 3 year's time. The material was collected during a research project that was about introducing user involvement into SW development organizations. The case units participated in the research project. The research material was gathered while conducting process assessments in the units, and while supporting the units in the initiation of user involvement by offering workshops and training. In the process assessments we interviewed the personnel of the units related to their ways of working in a selected project, and evaluated whether user involvement activities were carried out in the projects. The research team had also regularly meetings with the personnel of the units. Memos from the meetings, the assessment reports, and all e-mail correspondence with the personnel of the units have been saved for the purposes of the research. Research team also wrote down field notes after all joint events.

We have also gathered specifically cultural data from the units. First we delivered organizational culture surveys to the personnel of the units. We produced a survey results report to each unit. Afterwards we interviewed the personnel and gathered feedback from the survey results. First we interviewed the usability specialist of the units. After that we interviewed people whose work is directly related to the units' core mission. With both types of interviewees we discussed the cultural characteristics of the unit, and the position of user involvement in the unit. After the interviews we produced an interview results report to the units. Afterwards, we organized workshop sessions in the units in which we again focused on cultural characteristics and the position of user involvement in the units. In these sessions we discussed and evaluated the interview results. The interview results report was updated based on the feedback we gained in the workshop sessions. Finally, we organized additional workshop sessions in which results gained through the different techniques for data gathering were compared, and contrasted with the results of other units. In addition, before the workshop sessions we went through all the memos, e-mails, field notes, and assessment reports pro-

duced in relation to the case units. From this material we listed the user involvement activities carried out in the units, problems reported related to these activities and preferences for the future actions the units had expressed. We presented this material to allow the personnel to comment also on that material.

As one can see, the data analysis proceeded in different phases. During the cultural analysis phase, after each interview we categorized the findings from the interview. The categorization was inductive and based on empirical data. Two case study write-ups were produced and commented by the interviewees and by the workshop participants. The workshop participants commented also the material related to the position of user involvement in their unit presented in the latter workshop sessions. Therefore, the technique of member checking was utilized extensively. Furthermore, all the interviews and workshop sessions were tape-recorded and the tapes transcribed. Afterwards, we focused on the process of meaning negotiation in the research material: the material was viewed as capturing data on how the personnel negotiated and reproduced shared meanings of themselves and of the position of user involvement in their unit. The meanings negotiation related to the cultural context was analyzed by searching for co-constructed, shared assumptions about 1) who are we and what do we do, 2) how do we carry out our work; and 3) how do we related to each other? First assumption is related to the co-constructions of collective identity, the rest of the assumptions characterize the collective frames for reference that guide the action of the cultural members. The meaning negotiation related to the position of user involvement was analyzed by searching for co-constructed, shared assumptions about the 4) why to involve users; 5) how user involvement is carried out; and 6) how the facilitation of user involvement should be carried out. The shared assumptions and their co-construction will be illustrated in the citations in the following section.

EMPIRICAL EXPLORATIONS

In unit A first usability specialist was hired 3 years ago. Now there are four usability specialists in the unit (Usability specialist A1-4). In addition to the usability specialists, the manager of the unit (Manager A) has emphasized the importance of user involvement a lot. The rest of the personnel are involved in more technical development. In the citations, this part of the personnel is represented by three SW developers (Developer A1-3) and two team leaders (Team leader A1-2). Unit B, on the other hand, has a very long history in involving the users; usability testing started years ago. Currently there is one usability specialists in the unit (Usability specialist B). However, both a team leader (Team leader B1) and a manager (Manager B1) are former usability specialists. Most of the personnel are developers, represented by two developers (Developer B1-2) and their team leader (Team leader B2). The other team of the development unit is represented by a graphical designer (Graphical designer B), the usability specialist, and their team leader (Team leader B1). In addition, two managers of an-

other organizational units participated in the workshop sessions (Managers B2-3).

Why to Involve Users?

There was a general agreement in both units that the goal of user involvement is functional empowerment, democratic empowerment was not even mentioned. Furthermore, in both units the goal was the functional empowerment of the *expert* users. In unit A the usability specialists had created a persona called *Eric*, an example user with specified skills and knowledge, to make users more visible to the developers. *Eric* was defined to be a naïve user with limited skills and knowledge. However, the developers criticized *Eric* as 'too stupid' (Usability specialist A1) and dismissed him as 'a special case, which we don't need to serve' (Usability specialist A3). Therefore, in unit A the usability specialists tried to highlight the functional empowerment of the naïve users, but the developers acknowledge only the functional empowerment of the expert users.

In unit B there seems to be a general agreement that 'users need to be taken into account': 'we have a common goal here; nobody wants to develop a lousy product or not to take the users into account. It's only the practical ways of doing things, how to develop a usable solution or how to take the users into account (...) It might be that some developers, they swear that of course the users have to be taken into account, but then they see themselves as the users (laugh), technically competent persons like they are. They think they represent a typical user and say that if I were the user then this would be ok.' (Usability specialist B) As one can see, also in this unit it is the expert users whose functional empowerment the developers consider, even though the usability specialist criticizes the situation.

Related to the distinction in the orientation towards capitalism or Marxism, both case units show clear capitalist orientation. The units didn't consider the emancipation of workers nor contrast the goals of user involvement with the management goals. Unit A highlights user involvement from the viewpoint of 'improving the design process' (Nandhakumar et al 1997), as the following discussion in the latter workshop session shows:

"It is problematic to get money and the permission from the projects to do this, it's not easy to get permission to spend money on doing usability" (Team leader A2)

"Yes, if we think these things separately. But if we think it from the viewpoint of our every day job, the question is that do we get permission to do quality job (laughing)?" (Usability specialist A3)

"Yes, do they allow us to stop the projects wasting their time and effort (laughing)? (...) I don't think that in the long run usability work costs a lot in the projects. And afterwards you save money through high-level usability plus it increases productivity. And it produces money to the customers also." (Manager A)

Unit B, on the other hand, has adopted even a more capitalist orientation and highlights user involvement as a selling argument and as an imago factor - especially at the managerial level - as the discussion between the former usability specialists and other managers shows:

"From the viewpoint of the image of the company, one of our goals is to be a pioneer." (Manager B2)

"This is visible also in the way the usability issues have been acknowledged. We were the first ones who started it. It's not only related to the technology." (Manager B1)

"I think we aim at being pioneers related to many things, related to technology, product development, ways of working, customer relations. Related to many things we want to be in the vanguard. (...)" (Manager B2)

"I think it [competence in usability issues] has been a selling argument and a thing that we have had, but not necessarily the competitors. We have been the most progressive in this respect." (Team leader B1)

"And in SW development companies of this size, there might not be even this, what we have. You should always proportion these things. Here it has a clear position at least." (Manager B3)

"And we have the will." (Manager B2)

However, the usability specialists criticize that it seems like their mere existence in the firm is enough: 'I admit that it is valued here, my and Ellen's [usability specialist] work is valued in this firm, but it is like: "it is enough that you are here (laugh)." It is like mere talk was enough' (Team leader B1). Earlier there was a team of usability specialists and graphical designers in the firm, but 'the fact that the team existed created an illusion that usability issues are taken care of. There were people who took care of these issues and had knowledge of these issues, but the knowledge didn't necessarily have any contact with the end product or how it was developed.' (Graphical designer B) The usability specialists are afraid that user involvement is used *only* as an imago factor and selling argument in their company. However, also the usability specialists' strongly emphasize the business aspects related to user involvement. In their preferences for future actions they wanted to put effort on 'proactive product and business planning and strategy development influenced by a user-centered approach'; and on 'understanding the needs of customers segments before and better than the customers themselves' (Project documentation B). These goals clearly illustrate the business aspects of user involvement in this unit.

How to Involve Users?

The role of users was consultative in both case units; the users did not participate nor have decision-making power in the design process. The usability specialists had carried out customer visits and evaluated usability through usability

testing and paper prototyping – the users had been involved as providers of information and as objects of observation (Bannon 1991). However, differences were found related to the role of the usability specialists. In unit A the developers are responsible for the design of UI:

“The area of visual design, that’s the area we [the unit] can make decision that are visible to the customers. But related to the visual design, people [developers] can make the decisions on their own. We have these guidelines on a general level. They try to control that people don’t do what ever they want. But still I feel like people shouldn’t make these decisions by themselves (laugh).” (Usability specialist A1)

Furthermore, the developers say that even though they are responsible of the design of the UI, most of their time is spent in investigating other issues:

“Our work involves a lot of investigation of new things. (...) When someone has developed of a new unit for the system, then we have to investigate how it affects our part of the system. Most of our time is spent on investigating these things. Quite little time is spent on coding or on designing the UI.” (Developer A3)

Furthermore, the developers don’t have much knowledge of the users. It is the job of the usability specialists’ to represent users in the development: to comment the design the developers produce:

“Yes, we all know that we need to ask comments from the usability specialists in the design phase.” (Developer A3)

Nevertheless, the usability specialists cannot affect the design much:

“At this moment we can’t trust that the projects know at what time they should contact us. We must follow up the situation and control it and push ourselves into the projects. (...) Latest experiences have revealed that if a project is in the early phase it seems like they actually reject our involvement. They say that you don’t have to peep in here yet, we are doing nothing yet.” (Usability specialist A3)

“And a software designer doesn’t ask anything before he/she has coded everything and commented and documented it all. Then they can show it on screen and ask that is this ok?” (Manager A)

The role of the usability specialists is merely that of the consultative type in unit A: it is up to the developers to ask for comments in the design phase. Furthermore, this might be complicated since:

“It depends on your job. Some coder is not excited about things like that [usability]. If you have a passion for coding, then you code. And some senior, for example architects, especially here, the important things are the functionality of the software and the interfaces. It is so technical here. You don’t then necessarily think that the most important thing of the UI is that it is usable. The most important thing is that it functions with the rest of the system. It might be difficult to convince

some senior people, who are technologically oriented, that usability is important.” (Developer A1)

In unit B, on the other hand, there is a group of graphical designers and usability specialists responsible for the design of UI: ‘it is pair work. Either a visualist and a usability person, or a usability person and a UI developer, like Mary, this kind of pairs, sit together using the same computer and work together.’ (Usability specialist B) However, also in unit B the usability specialists are expected to represent the users in the development. The developers lack knowledge of users and the context of use. However, it is assumed that the knowledge the usability specialists affect the design if the usability specialists actively participate in the design:

“The most relevant way to do it is to do it together and think aloud at the same time. Then the knowledge spreads. It is not very advantageous to make people to sit in training sessions.” (Manager B1)

Unit B has invested a lot in the collaboration in the specification phase. Actually, in the next generation product development project the usability specialists are in a central position:

“When we think about how the next generation product development project is managed. The specification starts when I and Susan [usability specialist] do the functional specification and the APIs are specified according to that. (...) How should I say it? It’s not anything like vague assistance. The whole thing starts from the specification and they are in the project plan.” (Manager B1)

“I’m the project manager, or help in that.” (Usability specialist B)

However, also in unit B it is up to the developers whether they follow the specifications produced:

“Our team got into a rut because [the team of] usability specialists and designers cannot alone affect anything. People thought that our team could do everything. But we ran out of steam, because it is the developer who actually implements everything.” (Team leader B1)

“Many times the specifications are not that exact that all was described the way it should be. And then there are issues that are not described and you do it the way you like. You don’t ask the usability specialist or the one who did the specification that how should this be? (...) Yes, I’m myself guilty of that.” (Developer B2)

Finally, two team leaders negotiate the position of user involvement in their company:

“Truly, we have a feeling that the development service people are the ‘second rate’ people. We are, our history is technocratic, and technology is appreciated here. Even though we talk about user centeredness and multidisciplinary teams and competence, but it still is. (...) I understand that the technology is important; it has to be there. But when we compete of

the resources, it is always the technology that wins.” (Team leader B1)

“Well yes, but the technology is always needed.” (Team leader B2)

Team leader (B2) maintains that the goal of the product development unit is to be ‘in the bleeding edge of technological development’ (Team leader B2), and therefore, the technological development will always be the most important thing to consider in the unit.

How to Facilitate User Involvement?

Related to the facilitation of user involvement, in unit A the usability specialists have concentrated on ‘meta level work related to context of use knowledge’ (Usability specialist A3) and on the definition of methods and tools for user involvement: what exists, what is needed, and what is lacking in their process? Furthermore, they have been involved in the development of a new SW process model in which user involvement activities are incorporated. (Project documentation A.) This is because: “we are used to having these tools before we start our work. We miss them and want to have them also here [in usability work].” (Manager A) Now the new process is being implemented. According to it the context of use should be specified, usability requirements defined, and prototyping and formal usability testing carried out in the projects (Project documentation A). Both the usability specialists and the developers have a strong reliance on the process model in incorporating the user involvement activities into the projects. A discussion among developers ends up with the following statement:

“Now, when the new process is being implemented, now those [user involvement activities] are planned, and then you have a permission to do them and time to do them, they are included in the schedules. Earlier they were not included in the project plans and schedules. It was very difficult to order projects to do them. Then they usually said that ‘no way, we’ll finish this release and then think about it’. It was difficult in the late phase of the project, if it was not planned in the beginning” (Team leader A1)

Altogether, the usability specialists rely strongly on a control-oriented approach to the facilitation of user involvement in their unit. It is assumed that people work according to the process model and the implementation will not cause problems. Furthermore:

“Here we have a quality organization who perceives quality within a rules oriented approach. Numerical things are highlighted, bugs and stuff like that. We have quality plans and report the bugs and follow the projects. It’s visible to people in the projects. Bugs have to be removed and so forth. (...) We have these control mechanisms, and they are very powerful. If you try to compete with them, and you are not in the control mechanisms, then you are left out. Because these control mechanisms set the pressures.” (Usability specialist A1)

The usability specialist emphasizes that in their organization ‘what is measured that is done’. Also the developers

seem to prefer the measurement and control approach to their work:

“Controlling, constant controlling and monitoring, it’s part of normal project work. Maybe it comes from there, the monitoring. I don’t know whether you think this way, but if the usability work can be measured and controlled, then it’s more natural, then it’s just part of your job.” (Team leader A1)

In unit B, on the other hand, the usability specialists highlight the freedom they have to do their job:

“He [former boss] gave me, I have had the opportunity to decide how to do that [facilitation of user involvement], based on my own personality and based on what I felt good. (...) I have always been allowed to do it in adhoc way, to figure out what would work here. I have been allowed to experiment and to look for people who are interested in participating. (...) I just look for people who are willing to experiment with new things in their work. We have always had people who like changes. There’s no point starting from the difficult ones.” (Team leader B1)

This is characteristic to the company altogether:

“We do what we want. We have this traditional culture. X [product] wouldn’t have been invented if we had obeyed the managers. But people did it in the lab. And finally something came out. It’s same thing in here; we do it in secret. And I have said many times that don’t give the permission, we will do it in secret anyway (laugh). (...) We are encouraged to take initiative. Its like “do what you want if you are capable of it and you have the resources for it, do what ever you want”. But if I needed help in it, if I had an idea that needed investments and more thorough research, then it’s different. If we had an idea for the product from the usability point of view, and we wanted to do research on that from the point of view of usability, then many times somebody just says that cut off.” (Team leader B1)

People are trusted and allowed to take initiative, but the problem is that the work is not supported enough. The employees have to take much responsibility themselves:

“We don’t control people, people are trusted, my and Ellen’s [usability specialist] initiative have been trusted a lot. But there is a problem. We have not been forbidden of doing, but not concretely supported either. It’s just that it’s enough that we do things. They think that it’s enough and we take care of it by ourselves.” (Team leader B1)

“Doesn’t this apply to many things in here?” (Manager B2)

“Yes. To everything.” (Team leader B1)

Finally, one strategically important decision related to the facilitation of user involvement is that:

“I think that it is very important for the point of view of user centeredness that our manager is a usability specialist, that there is that kind of competence. (...) This user-centered viewpoint kind of affects other things in secret. I think it is strategically very important that a usability specialist was

nominated as a manager (...) She can affect that usability is considered among other things.” (Team leader B1)

Altogether, user involvement has a high status in the company. In unit B the usability specialists are in influential positions and their knowledge can ‘sneak in’ ‘in secret’ – through collaboration and through the decisions the usability specialists make in their positions.

Cultural Assumptions

Table 1 summarizes the cultural assumptions identified from these two product development organizations.

	Unit A	Unit B
Who are we and what do we do?	A product development unit producing functionally correct SW within the schedules	A product development unit staying in the bleeding edge of technological development, a pioneer
How do we carry out our work?	Control mechanisms, rules, tools and processes are in place and useful	Adhocratic ways of working, no control of work, taking initiative, experimenting with new things
How do we relate to each other?	‘We are all valued workers’, good social relationships important	Competent, technical people respected, ‘blood and thunder fights’

Table 1. Cultural Assumptions Identified from the Case Units

In unit A the personnel maintained that ‘control mechanisms set the pressures’ and ‘constant monitoring, measuring and controlling is normal project work’. Important are the schedules and that their part of the system ‘functions with the rest of the system’. When asked about respected type of worker the response was that *‘everyone is respected, that is the starting point. We all are valued workers.’* (Team leader A1) Harmonious relationships are emphasized and the personnel stated also that *‘of course you can give constructive criticism but you should never be mean’* (Usability specialist A1).

In unit B, on the other hand, the most important thing was argued of ‘being in the bleeding edge of technological development’. It is argued that people like changes and experimenting with new things. Furthermore, ‘people are trusted’ and ‘we don’t control people’. In this context ‘we do what we want’ and ‘we are encouraged to take initiative’. When asked about a respected type of worker the response was that *‘in the development, well, the developers respect innovativeness. It depends on who is capable to innovate’* (Team leader B1) Furthermore, *‘the developers outrank us, the servants, who serve the developers’* (Usability specialist B). Finally, harmonious relationships are not the main focus, and *‘there are strong personalities and blood-and-thunder fights (in the unit)’* (Team leader B1).

DISCUSSION

The results suggest that there exists similarities in the ways user involvement has been encultured in these two product development contexts, but more interestingly, there exists

also differences between the organizations. The differences are related to the 1) why to involve users (goal of user involvement); 2) how to involve users (process of design and the role of the usability specialists in the process); and 3) strategy for the facilitation of user involvement. Table 2 summarizes the different views of user involvement identified from the two case organizations.

Approaches to user involvement	‘Quality and control oriented engineering approach’	‘Business and collaboration oriented sneaking in approach’
Why	Capitalist orientation; money saving	Capitalist orientation; money making
How	Design a structured engineering process, usability specialists in consultative role	Design a creative, communicative process, usability specialists in consensus role
Strategy	Controlling strategy	‘Sneaking in’ strategy

Table 2. Two Approaches to User Involvement

The empirical part illustrates that there are divergent views of user involvement in these two software development organizations. User involvement has been interpreted e.g. as ‘an imago factor and selling argument’, as ‘an engineering tool for increasing the quality of our product and the process’, as ‘a tool for controlling the developers’, as ‘a tool for strategic planning’ and as ‘a communicative, collaborative tool for the specification phase’. One might argue that both organizations seem to prefer aspects of user involvement that are compatible with their cultural context. The ‘quality and control oriented engineering approach’ tries to facilitate user involvement by a controlling, measuring and monitoring that is argued to resemble ‘normal project work’ in the unit. The ‘business and collaboration oriented sneaking in approach’, on the other hand, tries to sneak in, in secret and is careful of not commanding people to do things against their will, since the personnel is used to ‘do what they want’, ‘people are trusted’ and they are ‘allowed to take initiative’. Existing research on organizational change efforts also maintains that compatibility with the cultural context is very important due to which organizational change efforts should be tailored to fit the target culture (e.g. Pliskin et al 1993, Robey et al 1989).

On the other hand, the results also warn that user involvement might be used as a buzzword and as a ritual that has form but no substance (c.f. Artman 2002, Hirschheim et al 1991, Catarci et al 1999, Symon 1998). From the viewpoint of Scandinavian tradition that highlights democratic empowerment of workers, some of the images of user involvement identified from the empirical material might be interpreted to be in stark contrast with the original aims. Within both case organizations the goal of user involvement is expressed in terms that appeal to management; they highlight the money making and money saving aspects of user involvement. User involvement is seen as helping the projects to ‘do quality job’ and ‘get it right the first time’, and as a selling argument and imago factor for the company

in making profit. According to Spinuzzi (2002) this type of capitalist orientation in user involvement efforts might be 'a realization of Scandinavians worst fears'.

The approaches to user involvement identified from these product development contexts highlight problems that have already been identified to be typical for this context. In product development, the development cycle is short and iteration and late changes are resisted (Grudin 1991, Poltrock – Grudin 1994), due to which the ones trying to facilitate user involvement emphasize that user involvement helps to 'stop the projects wasting their time and effort'. Also the SW process model with user involvement activities incorporated is needed, since earlier 'it was very difficult to order projects to do them', especially if they were not planned and included in the schedules. Finally, in the product development the developers typically have no contact with the users and do not know what users tasks and goals are (Grudin 1991, Poltrock – Grudin 1994), as was the case also in these case organizations. The usability specialists represented the users in the development.

However, these two product development contexts had also clear differences. Unit A is part of a large, global corporation resembling the case organization described by Poltrock and Grudin (1994): the unit is part of a large, hierarchical organization that highlights project schedules and constant controlling, monitoring and measuring as normal project work. Development is organizationally separated from the customers and users, and tight project schedules inhibit user involvement (c.f. Poltrock et al 1994). Unit B, on the other hand, is part of a small SW house having similar characteristics than companies operating in the context of packaged SW development described by Carmel and Sawyer (1998) in which time-to-market pressure, immature processes and entrepreneurial and individualistic cultural milieu are typical. Also unit B seems to have a history of supporting individuality, initiative and innovativeness. Furthermore, there are differences in how user involvement has been encultured in the case units: user involvement is interpreted as quality, control and engineering oriented approach, or as a business and collaboration oriented approach. Therefore, one could argue that even within the product development context there exist different interpretations of user involvement, and the cultural context (among other things) might greatly affect which aspects of user involvement are emphasized.

CONCLUSIONS

This paper focused on the enculturation of user involvement in two SW development organizations. The study was based on empirical material gathered and analyzed by employing an interpretive research approach. The results suggest that there exists similarities in the ways user involvement has been encultured in these two product development contexts, but more interestingly, there exists also differences between the organizations. As an implication for practice, we argue that sensitivity to the cultural issues in

the facilitation of user involvement is important. The problem of selecting a fitting strategy for the facilitation is brought up. Especially practitioners initiating user involvement in their organization can benefit from the insights presented in this paper. However, the paper is based on the analysis of only two cases. In the future this type of analyses should be carried out in more varying product development contexts employing a larger amount of cases. The results of this paper are to be utilized in a NOMADIC MEDIA project in which multiple European partners participate in the development of new nomadic technologies and services. Paths for further work include also a further analysis of the relationship between organizational culture and the position of user involvement. Follow up data related to the facilitation of user involvement is to be gathered from the case units – this paper provides one snapshot of the dynamic, continuous process of enculturation of user involvement in the SW development organizations.

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