

Usability Specialists - ‘A Mommy Mob’, ‘Realistic Humanists’ or ‘Staid Researchers’? An Analysis of Usability Work in the Software Product Development

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Abstract. Users should be involved in the interactive systems development. However, involving users is difficult and rare, especially in the product development context. Guidelines for the facilitation of user involvement have been produced. However, a critical review shows that the guidelines rely on naïve notions of people and change in organizations. In this paper an interpretive research approach is utilized in the analysis user involvement in software development organizations operating in the product development context. User involvement is indirect in the organizations, and labelled as usability work. Usability specialists are conceptualized as a specific community of practice, usability work being their practice. Analysis reveals divergent ways usability work has been organized in the organizations, and divergent meanings attached to usability work. Both practical and theoretical implications are discussed.

1 Introduction

This paper analyzes strategies for organizing usability work in the organizational context of software (SW) development. Therefore, the interactive systems development context is under examination. This context is one of the main research areas in the field of Human Computer Interaction (HCI) [17]. Usability work refers to the work of usability specialists, who ‘represent the users’ [8] in the development. This task of ‘representing the users’ has been crucial for the whole legitimacy and identity of the field of HCI [8]. Usability work advocates user involvement of indirect type. Users are assigned a consultative or informative role [10]: users comment on predefined design solutions or act as providers of information and objects of observation. They do not actively participate, but are represented in the design process. In this paper the focus is limited to usability work in the development of interactive systems in the product development context (as contrasted with the in-house development context). In-house development has been the traditional context for user involvement. Product development, on the other hand, is the context the HCI community has worked with. [15], [25].

It has been reported that usability work is quite challenging and rare in the product development context, not even to mention more participative user involvement [4], [15], [25]. This is because in this context even identifying and making contact with the prospective users is difficult. The development is also often totally organization-

ally isolated from users and the requirements are transmitted to the development via marketing. The development cycle is also typically very short and therefore there is no time for usability work or for iteration [15], [16]. The literature also highlights the difficulty of having usability work accepted in organizations. The position of usability specialists is often weak, their credibility questioned and their work undervalued [2], [3], [13], [25], [27], [32]. The development organizations lack knowledge about users and about appropriate ways to involve them [13], [14], [25], [32] and often the development proceeds without any user feedback [14], [16], [30]. If users are involved, it often takes place too late with no effects on design [2], [4], [14], [16], [25], [30].

This indicates that usability work has proven to be difficult, especially in the product development context. Regarding user involvement in organizations, empirical studies have been carried out mainly in the context of in-house development. This paper analyzes usability work in SW product development context. Usability specialists are conceptualized as a specific community of practice in the SW development organizations. The concept of community of practice has gained increasing attention in HCI literature and designers have been analyzed as a specific community of practice [19], [28]. This paper continues this work by analyzing the work of professionals who have labeled themselves 'usability specialists'. Focus is specifically on their work, which is related to the 'representing the users' in the interactive systems development. This community, their practice, and their interaction with other communities in the SW development organizations will be illuminated in the empirical part of the paper.

The paper is organized as follows. The next section presents literature on the facilitation of usability work. Afterwards, the literature is critically reviewed. It is shown that the literature relies on naïve notions of organizations and facilitation of usability work. In section three the concept of community of practice is introduced. In the fourth section the interpretive research approach utilized in this study is presented. In the fifth section empirical results are presented. Last section discusses the findings, outlines the limitations of the study and suggests paths for future work.

2 Literature on the Facilitation of Usability Work

Related to the challenge of facilitating usability work in organizations, HCI community has already produced literature addressing specifically this problem. Part of the literature implies that there is a 'one best way' to successfully introduce usability work into organizations. These studies outline a set of activities and principles that should and could be applied in any organization. Generally this literature suggests the following aspects as critical. Developers are seen as the most important target group [2], [3], [12], [27]. The development team should perceive usability specialists as allies [12], [27], [32]. Developers' involvement in the usability work is seen as a very important factor [2], [3], [12]. However, also the management commitment and support is seen as an important criterion for success [12]. Furthermore, a strong, centralized group of usability specialists is recommended [12], [27], [38] and the importance of experienced, professional usability specialists highlighted [2], [12].

The literature also identifies as important the creation of documentation on best practices [2], printed materials describing the methods and techniques for usability work [12] and a formal development process with usability work included [12], [27], [38]. Moreover, the results of usability work should be documented and made avail-

able [2]. As an addition to the facilitation of usability work, there usually are other change and improvement initiatives in organizations. Usability specialists should be perceived as allies to these initiatives [3], [27]. In addition, marketing, training and documentation should be addressed and cooperation initiated. Usability specialists should act as change agents addressing many different target groups in their organizations. [3], [21], [27], [32]. Altogether, it is argued that usability work should be ‘sold’ into organizations [27]. Presentation of the things you do and especially of the results achieved is recommended [3], [32]. Quick results are important [3]. One should also be able to show the benefits achieved [27], [32]. The business perspective is highlighted [3], [12], [27], [32] - usability work should make sense from the business perspective and be related to achieving key business goals [3], [12]. Also cost-benefit tradeoffs may play a major role in the adoption of usability work - low cost methods are preferred [38]. Finally, the resources for usability work should be planned and budgeted [2] - usability work should not increase development costs and time [3].

On the other hand, other studies argue that one should understand the context in which usability work is to be facilitated more thoroughly in order to select the most suitable strategy. Processes should not be followed religiously. [1], [33], [35] Processes should be used as guides not to be executed mechanically. Instead, a highly adaptive approach is recommended. [21] Generalizable guidelines for the facilitation of usability work are not good, and instead the emphasis should be on supporting developers’ ingenuity, reflection and improvisation. [4], [29], [35] Furthermore, it is also highlighted that the social and organizational context should not be neglected [6], [16], [18], [33], [34], [35]. In addition, organizational politics and conflicts should be acknowledged [1], [6], [18], [21], [23], [33], [34]. Also the role of organizational culture should be understood and addressed [3], [6], [7], [21], [27], [29], [32], [34]. Finally, some studies warn that very different meanings have been attached to user involvement – it has been used only as a buzzword [7], [23], [33].

2.1 Critical Review of the Guidelines

The advice can be categorized by utilizing the distinctions between realism vs. nominalism and determinism vs. voluntarism [5], [22]. Realist, deterministic position ‘implies that reality is predictable and at least in principle manipulable, prescribable and designable’ [22]; human beings are postulated as responding to the external events in a mechanistic or even deterministic way [5]. Nominalist, voluntarist position, on the other hand, views ‘social phenomena largely as emergent and not directly designable’ [22]; human agent is viewed as a creator of the environment and as a controller rather than as controlled [5]. The studies outlining mechanistic, universally valid activities and principles for usability work that should and could be applied in any organization can be labeled as relying on a realist, deterministic orientation. The only problem is to figure out how to exploit usability work the most efficient way (cf. [20]). This position can be criticized of relying on very mechanistic assumptions about organizations and people. On a more practical level there is a risk that facilitation strategies and models relying on this type of assumptions cannot take into account the complexity involved in the facilitation of usability work in any organizational context. There is a risk in their application in real life environments, in which one cannot escape the complexity.

On the other hand, other studies highlight that processes should not be followed religiously and improvisation, reflection and ingenuity are always needed. The one fa-

Facilitating usability work should always be aware of the multitude of factors (cultural, organizational, social, political) that affect usability work in organizations. Furthermore, it is highlighted that very divergent interpretations can be attached to usability work in practice. Therefore, within this position usability work is seen as raw material that can be tailored and modified by human actors (cf. [20]). It is argued that management can never directly control this process, but instead a multiplicity of meanings will be attached to it in practice. Furthermore, also paradoxical, ironic and unexpected reactions and consequences are possible, since interpretations cannot be controlled or directed. (cf. [31]) This advice relies on more nominalist, voluntarist orientation. The emergent, context-specific nature of the facilitation of usability work is highlighted. One could argue that adopting this position might provide more realistic basis for the facilitation of usability work, since the complexity is at least acknowledged, even though the process might never be controllable or directly manipulable.

3 Communities of Practice

As mentioned, the organizational context of the facilitation of usability work needs to be acknowledged. Recent literature in organizational studies highlights that organizations should be characterized by differentiation and diversity. A view of organization as a harmonious, unified phenomenon is criticized of being too simplistic and static. Instead, organizational reality needs to be seen as contested, changing and emergent. Researchers should examine how meanings are created, recreated and negotiated in organizations. [9], [31]. Altogether, organizations should be seen as multicultural, and clashes and conflicts as distinctive features. Researchers should pay attention to the inconsistencies and lack of consensus in any organizational context [9]. Also the inevitable multitude of subcultures and occupational communities should be acknowledged [9], [36]. Especially occupational communities and divergent communities of practice are influential within organizations [9], [36], [37].

A community consists of individuals who interact with each other and consider themselves as a group - a collective identity has evolved [26], [36], [37]. A community of practice necessitates a community to have a joint enterprise, and a practice supporting the enterprise. [26], [37] A community of practice is also characterized by mutual engagement of the members and by shared repertoires of resources (tools, techniques, language etc.). Membership necessitates interaction between the members and existence of mutual relationships. Characteristic are feelings of solidarity and construction of boundaries against outsiders. Members also have a mutually defining identity and common styles or ways of displaying it. Use of specific language expresses membership and status, and thus provides a basis for identification. [26], [36], [37]

In this paper usability specialists are conceptualized as a specific community of practice within the context of SW development organizations. This community of practice, their practice, and their interaction with other communities within the larger organizational context will be illuminated in the empirical part of the paper.

4 Research Design

In this research effort we have gathered empirical research material related to the process of usability work and to the context of usability work from three product de-

velopment units (case units A-C) from three SW development companies during three years time. Units A and C are organizational units of large global corporations. Unit B is an organizational unit of a Small to Medium Sized Enterprise. The units have from 16 to 30 employees. In the research effort we utilized an interpretive case study method, in which researchers attempt to make sense of the world, not to explain in the sense of predicting. In the focus are the meanings attached to the phenomenon studied. 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 to be falsified, as is the case in the positivist case studies. [11], [24].

The research material was gathered while conducting process assessments in the units, and while supporting the units in the facilitation of usability work 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 usability work was carried out in the projects. The research team has also regularly had 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 has also written down field notes after all joint events. Furthermore, we have gathered specifically contextual data from the units. We have experimented with different techniques for data gathering - organizational culture surveys, themes interviews and workshop sessions. In the interviews we gathered feedback from the survey results, and discussed the context and process of usability work in the units. In the workshops we discussed and evaluated the interview results. Therefore, the technique of member checking was utilized extensively.

The data analysis proceeded in different phases. Case study write-ups were produced related to each unit, and commented by the interviewees and by the workshop participants. In the analysis of usability work in the units we went through all the empirical material gathered during 3 years time, and listed the usability activities carried out in the units and the preferences for the future the units had expressed during the years. The workshop participants commented also on this material in the workshop sessions. Afterwards, we used the concept of community of practice as a sensitizing device. We analyzed usability specialists as a specific community of practice, and usability work as their practice. This community of practice, their practice, and their interaction with other communities in their organizations were under examination.

5 Empirical Examinations

In all case units there were one or more usability specialists hired. However, they had divergent educational backgrounds (e.g. in information systems, engineering, psychology, design science) and amounts of work experience (from a couple of years to over ten years). All had some familiarity with the field of HCI, but not necessarily through education. The practical ways of involving the users resembled that of the consultative type [10] in all the case units. The usability specialists 'represented the users in the development'. They had carried out customer visits (interviewed and observed the users) and evaluated design solutions by using methods such as laboratory usability testing, paper prototyping and different kinds of usability inspection methods. Next the specific features of each unit are reviewed.

In unit A the first usability specialist was hired six years ago. Now there is a team of four usability specialists in the unit. In addition to the usability specialists, the manager of the unit has emphasized the importance of usability work a lot: "the path has been smoothed a lot probably because management has had such a positive attitude and has marketed this thing (usability work). Due to this also workers have at least at some level quite a positive perception of this" (Usability specialist A). The rest of the personnel are SW developers whose responsibilities include designing, coding and testing the SW – including the user interface (UI) SW.

In this unit the usability specialists label themselves as a '*mommy mob*' (Usability specialist A). They view their role to be a 'controlling mommy mob' in their unit:

"When you bring usability orientation into an organization you have to be a police in the beginning. The developers don't have the knowledge needed in their head, and you have to act as a police." (Usability specialist A)

"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. (...) We have these control mechanisms, and they're very powerful. If you try to compete with them, and you aren't in the control mechanisms, then you are left out. Because these control mechanisms set the pressures." (Usability specialist, A)

In unit A 'what is measured, that is done'. Usability work has to be measured and included in the control mechanisms, otherwise 'it is left out'; "in the same way as SW metrics are gathered, they should be gathered for usability" (Developer A). Also the developers have quite a positive perception of this controlling effort:

"If things can be measured one can show how well one has succeeded and where one can improve and what went wrong. All measured things are concrete. It can be bugs in the SW or usability. (...) Things are prioritised and those that are measured and controlled, those can't be left out. (...) Controlling, constant controlling and monitoring, its part of normal project work. (...) If usability work can be measured and controlled, then it's more natural, then its just part of your job." (Team leader A)

However, usability and UI design will not be the main concern of the developers: "our work involves a lot of investigation of new things. Most of our time is spent on investigating things when we are designing new things and new interfaces. And when someone has thought of a new part for the system, then we have to investigate how it affects our part of the system. Most of our time is spent on investigating things. Quite little time is spent on coding or on designing the UI." (Developer A)

Related to the facilitation of usability work, the 'grand mission' in this unit is to "solve how usability can be very effectively integrated with other processes" (Project documentation). Another challenge is the development, evaluation and documentation of methods, tools and techniques for usability work (Project documentation). Altogether, "we have put a lot of effort on the improvement efforts and meta-level work related to context of use knowledge. We have spent a lot of time on that. And less time on concrete work with products and projects" (Usability specialist 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).

However, problematic is that the developers do not appreciate usability work; they perceive usability work as pedantic decoration in the last phase of the project:

"A coder is not excited about things like that. 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 SW 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." (Developer A)

"Projects have always limited resources and one must decide whether to invest in the finishing touch (usability) or in bugs and functionality. (Project manager A)

"Yes, sure, sometimes it feels like the usability issues become kind of useless speculation. (...) Sometimes the usability work is over emphasized. If we are in a hurry, it might be that we don't have time for these speculations." (Developer A)

Also the larger organizational context is brought up. Unit A alone can't ensure usability of the system. Cooperation with other units is needed, but the other units don't understand the importance of this nor have the knowledge for doing this:

"If you think of the problem, it is that our unit develops the UIs, and due to this the whole usability is our responsibility. They (other units) don't understand that all stakeholders should put effort into making the product usable. If the other parts of the project do not support usability, we can only decorate in here." (Usability specialist A)

The usability specialists have taken the responsibility to organize cooperation with other units. However, in this case organization facilitating usability work: "is extremely painful and persevering job. You must proceed slowly and take small steps. You can't change the direction of a ship of this size very fast." (Manager A)

Unit B, on the other hand, has very long history in usability work; it started over ten years ago. There has been a team of usability specialists and graphical designers in the unit, but currently there is only one usability specialist and few graphical designers left. However, both a team leader and a manager are former usability specialists. The graphical designers and usability specialists formed a very tight group within this unit: "we had a lot of co-operation, especially when we had more people in our team" (Usability specialist B). However, most of the personnel also in this unit are SW developers. A couple of developers focus specifically on UI development.

In this unit the usability specialists identify themselves as '*humanists working with engineers*' (Usability specialist B). Their strategy for usability work can be characterized as 'sneaking in, in secret':

"I think that it is very important from the point of view of user centeredness that our manager is a usability specialist; that there is that kind of competence. We can avoid a lot of unnecessary work, because our manager makes the decisions. We can trust her. (...) This user-centered viewpoint kind of affects other things in secret. (...) I think that it is better that all know little about it than we have a dozen of usability specialists and rest of the personnel know nothing about it. Because this situation it is a battlefield. Or there should be a developer and usability specialist doing things together all the time. But in this situation the developer becomes a usability specialist almost naturally." (Team leader B)

The 'sneaking in, in secret' is perceived as the most efficient way in this unit, since: "we do what we want. We have this traditional culture. X (a product) wouldn't have been invented if we had obeyed the managers. But people did it in the lab" (Team leader B). "Doing things together, it is the most effective way to teach. It is much more efficient that to produce fancy guidelines for how things ought to be done. At least for part of our personnel. Some people might be good in following written work descriptions, but those are quite rare here." (Manager B) One of the former us-

ability specialists further argues: "I have been doing this job so long that the utopia has disappeared. You understand the realities. I have spent here ten years with the engineers and worked with them. You learn to take new perspectives and don't fancy vain things. You learn to live with it and adjust your own ways of working." (Manager B)

Also in this context it is the developers who have problematic perceptions of usability work. Technological development 'wins' and usability is seen as decoration:

"Truly, we have a feeling that the development service people (including usability specialists and graphical designers) are the 'second rate' people. We are, our history is technocratic, and technology is appreciated here. (...) 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 B)

"Our team got into a rut because usability specialists and graphical 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. (...) People thought that UI developers are not needed and technical skills are not needed. Like our team could do it, like it could just make a decoration over the top of the technology." (Team leader B)

This is one of the reasons the team of usability specialists and graphical designers does not exist anymore: "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). Furthermore, some of the developers strongly maintain that it is not their job to think about the user:

"These java coders, quite many of them have a strong opinion that they don't touch the UIs. Someone else has to do that. They won't do it. And this reflects their professionalism. They have different type of design problems. (Manager B)

There are a couple of UI developers in the unit. One of them cooperates considerably with the usability specialist; she has participated in the customer visits and paper prototyping sessions, and writes a style guide together with the usability specialist. However, 'not all developers participate like her' (Usability specialist B). Furthermore: "here has not been much UI development. We don't have that tradition in here. We haven't even had a strong team here who would have developed them. We have only had few individuals and they have been quite alone in here." (Team leader B)

Related to the larger organizational context, unit B functions very independently. However, the usability specialists have adopted a responsibility to educate also other units, i.e. sales and marketing: "it spreads through my and Ellen's (both former usability specialists) personalities, what we are able to tell about it. We forcefully talk about user centeredness, when they (sales and marketing) want to hear what we do" (Team leader B). Finally, in this unit the usability specialists highlight that usability work should especially contribute to the strategic level planning and decision-making. The business strategy and vision should be influenced by user orientation: "here the most important targets for improvement are not related to making the position of the usability specialists better or their work easier, but they are related to the strategic level (...) Related to the decision making, for example when you are defining what to include in the next release" (Manager B).

Finally, in unit C usability work has been part of the development from the establishment of the unit. Actually, usability work has been defined as one of the main competences the unit excels in (Project documentation). The personnel of this unit are all labeled as specialists focusing either on usability, or interaction, graphical or SW design. The usability specialists are labelled '*staid researchers*', who are supposed to carry out the 'burdensome and dull' usability work in the unit:

"There are 'staid researchers', research oriented people, and in some other projects there are these 'careless designers'. (...) This 'research gang' questions existing things and wants to examine things. On the other hand, these designers like to do things that are fun. They don't have, like arguments, behind their decisions. Designers produce designs from a very creative point of view, not from the point of view of the user." (Usability specialist C)

"There exists some unwillingness to carry out usability tests, because usability activities are perceived to be burdensome and dull. (...) Brainstorming sessions are their (designers) favorite sessions, those sessions in which relatively lightweight methods are used. (...) Ideating is fun, but systematically using certain methods seems to be unappealing to some of these 'ideators' (designers)" (Usability specialist C)

The 'careless designers' have condemned usability work as burdensome and dull. Furthermore, there are problems with management commitment to usability work – the personnel complain that the management doesn't demand usability work: "management has not understood to demand for quality, which, together with the lowering of the competence level has resulted in degradation of usability" (Usability specialist C).

In this context there is not much control of work and the project work is chaotic: "we have a lot of freedom to do things in new ways. (...) Processes, we don't have anything agreed on, like officially. Everything is informal. (...) I have to say out loud that project work is chaotic. (...) I think that the motive behind this is that we do creative work. And creative work necessitates freedom" (Usability specialist C). However, the usability specialists wish for more control. Their preference for future action is related to: "how to evaluate the product as an addition to the process? It is easy to evaluate a process, but how about its effectiveness?" (Project documentation) The problem is that in this unit "qualitative criteria (easy to use) are readily proposed, but they can not be verified" (Project documentation). Furthermore:

"We have bad quality measures. And when targets for individuals are defined and afterwards evaluated whether they are met, they are always quantitative. It is always certain document: whether it is produced. But the question should be: how has the content been produced, what methods have been used, and are they rational and generally acknowledged methods? We don't have measures for this type of things." (Usability specialist C)

"The (usability) specialists have done these things, for example things to do with strategic planning. And they have initiated these process improvement efforts. Those have come from bottom up rather than top down. Probably too much. And the specialists shout that there should be more quality and improvement." (Usability specialist C)

Furthermore, more cost-effective methods are called for, since the methods currently used have proven out to be very resource demanding:

"It (a method) is so resource-costly. From the viewpoint of the project it is a risky method. It is a big risk to choose. As a method it is fine and fun and includes everything. But when you are planning the project, you are taking a big risk from the viewpoint of the schedules (...) Things are prolonged, prolonged, prolonged" (Project manager C)

“It (usability testing) is also a risk. It takes time to prepare, it takes time to carry out, and its analysis takes time. This time is taken away from other issues.” (Usability specialist C)

6 Discussion

The paper conceptualized usability specialists forming a specific community of practice within the context of SW development organizations. In the analysis of this community of practice the focus was on the joint practice of this community (usability work). Table 1 summarizes the findings that are related to the collective identity (who are we?); to the joint practice (what do we do?); and to the helping and hindering 'outsider' groups (who do we work with?) in the case organizations.

Table 1. Usability Specialists as a Community of Practice

Unit	Unit A	Unit B	Unit C
Identity (who are we?)	'A controlling mommy mob'	'Realistic humanists working with engineers'	'Staid researchers'
Joint Practice (what do we do?)	- Meta-level work - Control people	- 'Sneak in, in secret', cooperate with designers and developers - Participate in strategic decision making	- Carry out usability work alone in projects - Participate in the strategic level planning and quality improvement
Helping outsider groups	- Management: strong management support	- Graphical designers: team mates - UI developers: cooperate in usability work	-
Hindering outsider groups	- SW developers: usability work pedantic decoration - Other units: don't support usability	- SW developers: usability work decoration - Management: usability as a buzzword	- Designers: usability work pedantic, dull and burdensome - Management: usability as a buzzword

Regarding the facilitation of usability work, the existing HCI literature suggests that one should especially involve and educate the developers, have a strong group of usability specialists, document the methods and tools for usability work, incorporate them into the development process, involve other organizational units and change efforts, carry out cost-benefit analyses and show the business benefits of usability work. However, in the case organizations there clearly are divergent strategies for usability work. The formal development process with usability work integrated and the documentation of methods and tools can be associated with unit A, the importance of cooperation with the developers with unit B, the interest in strategic level decision-making with B and C, the importance of low cost methods with unit C and the cooperation with other organizational units with A and B. Therefore, the empirical results seem to suggest that in different contexts different strategies to usability work are adopted.

Related to the difference between the realist, deterministic and the nominalist, voluntarist position to the facilitation of usability work, the results seem to provide support for the latter. The results show that divergent interpretations have been attached to

usability work in divergent settings: usability work has been perceived only as a buzzword (B and C), as decoration in the last phase of the project (A and B), as pedantic, delaying factor (A and C) and as a strategic level factor contributing to the business success (B and C). Furthermore, also the attributes attached to usability specialists show that usability work can be perceived in clearly divergent ways in organizations; 'a mommy mob', 'realist humanists' and 'staid researchers' clearly advocate different interpretations of usability work. Furthermore, these divergent interpretations emerged in divergent contexts: the mommy mob operates in a context in which 'constant controlling is normal project work', the realist humanists try to 'sneak in, in secret' in a context in which 'technology always wins' and people 'do what they want' and the 'staid researchers' work in a context in which 'everything is informal' and 'project work I chaotic', but in which they try to demand for more quality and control.

Finally, divergent 'outsider groups' seem to provide helping and hindering factors to the usability work in different contexts. Designers might be either teammates or the worst critics of usability work. Developers altogether seem to have rather problematic perceptions of usability work, but if the responsibility of the UI development is assigned to specific UI developers, they might also show clear interest in the usability work. Therefore, the facilitation of usability work might be conceptualized as a dynamic, volitional, context-dependent process in which mechanistic, universal, context-free strategies will not work, at least as they are expected to work. Based on this study and the existing literature one could also suggest that it should be acknowledged that usability work, while introduced into organizations, will be interpreted and reinterpreted in these contexts in an emergent process of sense making that is not manipulable or directly controllable. Furthermore, the results also suggest that paradoxical and unexpected consequences are possible, since interpretations cannot be controlled. In the case organizations several 'outsider groups' were identified, and they had also surprising and conflicting interpretations of usability work.

As an implication for practice, we argue that sensitivity to the contextual issues in the facilitation of usability work is important. The problem of selecting a fitting strategy for the facilitation is brought up. Especially practitioners introducing usability work into their organization could benefit from the insights presented in this paper. Furthermore, the paper advocates the nominalist, voluntarist position related to the facilitation of usability work. Mechanistic, universal, context-free strategies for the facilitation of usability work seem to rely on naïve notions of people and change in organizations. Acknowledging this can provide a more realistic basis for the facilitation of usability work, since the complexity related to this phenomenon is at least acknowledged, even though one might never be able to control or directly manipulate the process. Regarding the limitations of this study, the paper is based on the analysis of only three cases. In the future this type of analyses should be carried out in more varying 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 technologies and services for nomadic users. Paths for further work include also a further analysis of usability work in the case organizations. Follow up data related to the facilitation of usability work is to be gathered – this paper provides only one snapshot of dynamic, continuous process of the facilitation of usability work in the SW development organizations.

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