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Introduction to the AIS THCI Special Issue on User Participation/Centeredness in New, Challenging IS Contexts

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TODAY'S CHALLENGES OF USER PARTICIPATION AND CENTEREDNESS

Although user participation has been a central research topic in Information Systems (IS) research for decades, it is time to revisit it to make sure that previous findings will fit the new IS context we face today (Kyng, 2010; Markus and Mao, 2004; Vodanovich, et al., 2010; Spears and Barki, 2010). Our new context includes completely new ways of developing, acquiring, and using software, which in turn has drastically changed the notion of participation. Today's world faces a more mature and ambitious set of users' processes, needs, and expectations, which has engendered fascinating and exciting challenges to developers' ability to understand and cope with the new user-centered environment.

The changes are numerous. Outsourcing or purchasing off-the-shelf software has isolated users from developers and has extended the context of user participation from development to systems implementation and configuration. New revolutionary challenges have also appeared with web-based, mobile and ubiquitous systems, introducing potentially very large and geographically- distributed user bases. In addition, many contemporary systems are designed for consumer-users, who use them both during the work day as well as at home and even in leisure activities. Selecting and contacting these users may be very challenging. The user population has also widened to include new groups of people with varying ages, education, and interests (Druin, 2002; Vodanovich et al., 2010) posing new challenges for participation. Furthermore, new development approaches such as open source and end-user software development require complete reconsideration of the concept of user participation (Barcellini et al., 2008; Syrjänen, 2007). Another recent trend has been to hire or rely on different kinds of intermediaries to 'represent the users' in system development (Cooper and Bowers, 1995), such as usability or user-centered/interaction/user experience design specialists, ethnographers or change agents (Iivari et al., 2009; Karasti, 2001; Markus and Mao, 2004). Their emergence in system development has raised new challenges as well, relating e.g. to legitimizing their work both from the viewpoint of the designers and the users (Iivari, 2006).

There are also many controversies and ambiguities in the literature regarding what is meant by user participation or user centeredness. The motives for user participation may range from achieving workplace democracy to achievement of usability and usefulness, which can ultimately result in work intensification and profit maximization

(Asaro, 2000; Spinuzzi, 2002). Users may be afforded decision-making power regarding solutions, but they may alternatively be restricted only to the provision of background information or feedback to already-made decisions (Damodaran, 1996; Iivari, 2006; Keinonen, 2009). Moreover, usability engineering, user-centered design, interaction design and user experience design are recent approaches for ensuring user orientation in system development, each with its own emphasis and suggested activities. Generally, one can conclude that there is a multitude of approaches to rely on, and huge differences can be found in both the motives and the practical means suggested (Iivari and Iivari, 2011).

THE MULTIDIMENSIONALITY OF USER PARTICIPATION AND CENTEREDNESS

Both user participation and user-centeredness are complex concepts that have been interpreted in numerous ways. Next we will introduce a framework of user-centeredness, based on a critical literature review dealing with 'user-centeredness' or 'user-centered design,' that we use to make sense of these multidimensional concepts. The framework identifies four dimensions of user-centeredness, namely user-centeredness as user focus, as work-centeredness, as user participation and as system personalization. Those will be discussed next.

In an ideal world, each well-designed system would fit every individual user and his/her characteristics, preferences and skills. Naturally, this is impossible. However, developers can still rely on general human factors knowledge implying certain design features that fit the majority of people, or they can try to gain some empirical understanding of the intended users and to take this into account during the design process. Systems development focusing on users as human beings with certain general skills, characteristics and limitations can be defined as user-centered if the system is developed to suit that general 'human being'. Some authors have even recommended designing the system for imagined, fictive users, i.e. personas (Iivari and Iivari, 2011).

For some, user-centeredness seems to equal work-centeredness: thus, users are not the focus of attention, but instead their work practices and tasks, or more general work processes in the organization. In those cases the system is to be built to support work (tasks, practices or processes) the best way possible, which typically entails first gaining a detailed understanding of the work in question, and thereafter carefully refining it. The work-centeredness as user-centeredness approach may also lead designers to consider antecedents of change in the work domain, which might include novel technology, improvements in work practices or the joint optimization of both. Alternatively, the emergent and uncontrollable nature of the change process may also be emphasized (Iivari and Iivari, 2011.)

Many authors acknowledge that user participation is an essential element of user-centered design, and that users should be actively involved in system development. There are numerous motives for user participation, some emphasizing democratic empowerment of users (Clement, 1994), meaning that users should be enabled to take part in decision making concerning their work, while others highlight functional empowerment of users (Clement, 1994), meaning that users should be able to carry out their work with useful and usable tools, which can be achieved through their participation in the development of those tools. In addition, there are also numerous roles for users and models for organizing user participation. It is usually impossible to include all users to be affected by the system in the development process due to practical reasons outlined above. However, it is possible to rely on representative or consultative user participation (Mumford, 1983), meaning that either selected or elected user representatives take part as participants in the design team, or users are consulted on some relevant matters. In those cases, users have no direct decision-making power. Nevertheless, they can contribute to the development in informative or consultative roles, acting either as providers of information when asked, or providing feedback to the already-made design decisions in a commentator role (Damodaran, 1996). Furthermore, it might be that intermediaries exist who 'represent the users' in the development process (Cooper and Bowers, 1995), in which case it is also interesting to observe and analyze their role and influence. This leads to the final aspect of interest in relation to user participation, i.e. the question of power. As has become evident, users might be taking part, but without any decision making power or noteworthy influence, while the opposite is also possible. Usually the developers or managers are perceived as very influential groups, having a say during the development process.

Finally, user-centeredness has also been connected with system personalization, in which the system is built so that it either automatically adapts or it allows the user to adapt it in order to fit her/his skills, characteristics, and preferences (Iivari and Iivari, 2011). These four dimensions are summarized in Table 1, in which they are also used as a framework for the six articles of this special issue.

Table 1: A Framework for User-Centeredness (Adapted from Iivari and Iivari, 2011)

Dimension	Key Questions	Research Issues	Special issue
User focus	• How can one identify and represent users?	• Real user – human factor – average or typical user – fictive user	Some articles with strong user focus
Work-centeredness	• How can one conceptualize and represent work? • What are the drivers of change in the work domain?	• Local work practices – holistic work models • Understanding current practices – designing future practices • Technology driven – interactive – work process driven - emergent	All articles with clear work-orientation
User participation	• Why should users participate? • How should users participate? • Who has the power to decide about changes?	• Democratic – functional empowerment of users • Direct – representative – surrogate • Informative – consultative – participative • Users – developers – managers – intermediaries	User participation an integral element in the articles
System personalization	• How can systems be personalized to match users' needs?	• Adaptive – adaptable	Mainly mentioned from the viewpoint of adaptivity

USER PARTICIPATION/CENTEREDNESS: SPECIAL ISSUE PAPERS

In response to the call for the special issue, a total of 11 papers were submitted, including 9 original research papers, one theory & review paper, and one issues & opinions paper. These submissions came from a total of 25 authors in all three regions affiliated with schools such as business, sociology, information technology and media, clinical medicine, computer science and communication, engineering and information technology, information systems, and industry. After an initial screening followed by two to three rounds of rigorous review and revisions, this special issue includes a total of 6 papers.

Ross, Marcolin and Chiasson as well as Johannessen, Gammon and Ellingsen provide us with an empirical understanding of user participation, the first paper offering a critical inquiry into representative user participation, the second one describing a study on how users act as designers of a highly complex information infrastructure (Star and Ruhleder, 1996). The design of these systems has aroused researchers' interest recently as a very challenging context for user participation. The other four articles develop or experiment with support for user participation or user-centered design. Nulden and Borglund utilize personas and scenarios in making sense of complex and diversified police work, recommending those tools also for further use. Seffah and Javahery develop a process and an associated tool to support persona creation to design utilizing patterns. They focus on the relatively recent design approach of user experience design (Hassenzahl and Tractinsky, 2006). Finally, Näkki and Koskela-Huotari as well as Yetim, Draxler, Stevens and Wulf concentrate on supporting online, distributed user participation which is a very recent and topical phenomenon in the research literature. Näkki and Koskela-Huotari utilize social media in enabling user participation and describe the design process and the methods they have used in the social media environment, while Yetim and colleagues devise a tool supporting user participation and participatory design during use, therefore extending users' possibilities to take part in a system's design, redesign and tailoring. Both of these papers also touch upon the research topic of user innovation (von Hippel, 2005). Next, the focus of these six articles is discussed according to the framework on user-centeredness as introduced in Table 1.

User-Centeredness as User Focus

Two of the papers in this special issue deal with the use of personas in the design process, but from very different angles. Seffah and Javahery show how to improve and automate the design process, while Nulden and Borglund deepen our understanding of the users' work. Personas, i.e. fictitious users – hypothetical archetypes of actual users (Cooper, 1999) – are recommended to describe the users in both papers. Detailed persona descriptions are suggested, e.g. Seffah and Javahery recommend including information related to identity, goals, tasks, knowledge and experience, relationships, psychological profile and needs, attitude and motivation, as well as expectations and disabilities.

Also in the other papers some user focus is noticeable, usually related to describing users who have been involved in the design or evaluation process under scrutiny. For instance, Ross and colleagues highlight selection criteria for user representatives, some of them being clearly work-related as would be the case when work-centeredness as user-centeredness dominates, while there also are other criteria in use, such as the selection of people with whom one can ensure continuity from current systems, to selecting organizational champions and committed people as well as people comfortable with existing technology. However, the authors also suggest that many demographic dimensions were not considered in these criteria, such as age, gender, and years of experience in their professions.

In the paper by Näkki and Koskela-Huotari the users taking part in the design process represent geographically dispersed consumers, who are all active social media users having a lot of usage knowledge but not much technical expertise. Additionally, they have an intrinsic motivation to take part in the design process due to their interest in social media applications or in user innovation in general, and they differ greatly related to their age and educational background.

User-Centeredness as Work-Centeredness

Most of the papers in the special issue include the dimension of work-centeredness. In some of these (by Johannessen and colleagues, Nulden and Borglund, Näkki and Koskela-Huotari), strong emphasis is placed on understanding users' current work practices. Some articles (by Johannessen and colleagues, Näkki and Koskela-Huotari, Seffah and Javahery) stress carefully designing users' future practices.

Näkki and Koskela-Huotari present online methods for understanding users' current practices as well as for designing future practices; the users create probe blogs (descriptions of current use situations where the users would have needed a solution) and user stories including current problems and future solutions. Relating to the range of methods described in the papers, scenarios in association with the personas have also been relied on in two papers – for describing users' current work practices (by Nulden and Borglund) or for designing those anew (by Seffah and Javahery).

Some of the papers provide hints about the divergent views of change. In the paper by Johannessen and colleagues, interactive or emergent view of change has likely been adopted, as the authors highlight how intertwined technology and work practices are, how they shape each other, and they also show the potential in generative systems to adapt usage to tasks not originally anticipated. The same interpretation can be made in the paper by Ross and colleagues, who refer to Habermas and argue that it needs to be acknowledged that users' interests cannot be known and settled in advance and that decisions related to systems of representation may have unintended consequences. Finally, the paper by Nulden and Borglund indicates that they view users' work practices as primary, and improvement of those practices should drive information technology development efforts.

User-Centeredness as User Participation

As highlighted previously by Iivari and Iivari (2011), user participation is an integral part of user-centeredness which is nicely illustrated by the papers in this special issue. In two of them (by Johannessen and colleagues, Ross and colleagues), qualitative research is reported for greater understanding of user participation in more depth, while in two others (by Näkki and Koskela-Huotari; Yetim and colleagues), experiments are described that aim to improve user participation through distributed, online participation.

Ross and colleagues illustrate the variety involved with representative user participation, showing that the representative's role can be merely symbolic, to serve as an example, or to serve as a spokesperson in building the system specifications. Johannessen and colleagues describe in their study how users can take part in the development process as designers creating new work practices as well as modifying technology. Näkki and Koskela-Huotari also extend the existing understanding of user roles in system development by showing that users can be active participants and decision makers when open decision making processes are employed, e.g. by users voting, rating and prioritizing. Users act as innovators and co-creators while blogging, generating ideas, chatting, commenting, voting, reporting bugs and making user interface sketches in the social media environment. They also show that there was a mixing of user and facilitator roles, with users commenting on each others' ideas, and voting and selecting issues to be further developed. Such roles have traditionally been tightly clutched in the hands of facilitators. Finally, Yetim and colleagues introduce a tool for enabling user participation during use time, therefore entering a new phase for user participation as an addition to development and implementation phases. They emphasize that users should be allowed to act as co-designers, tailoring and redesigning the systems they use.

Näkki and Koskela-Huotari as well as Yetim and colleagues experiment with novel tool support for user participation. In addition, both studies tackle distributed, online user participation with a focus on user innovation. Näkki and Koskela-Huotari argue that social media should be utilized to enable users to act as co-creators continuously through the development process, and that users provide mainly micro contributions that should still be considered valuable. Yetim and colleagues describe how users provide valuable feedback and ideas to the developers. They argue that

the tool lowers the burden for participants, supports reflecting on design in breakdown situations and enables users to influence design.

The question of power has once again been raised in these studies. Ross and colleagues show that questions of power are still legitimate issues to be studied in contemporary systems development and implementation contexts. They argue that healthcare is a very hierarchical context, in which the importance of physicians and their participation are of crucial importance. They rely on the work of Habermas and argue for strong user influence and involvement. Related to selecting the user representatives, free, equal, and secret elections should be preferred to decrease the influence of power relations. However, many times it was instead the managers who selected the user representatives, and many times those representatives were also managers themselves. They also identify a 'symbolic' form of user representation, which is a political process to sell the system to the powerful group, while the weak group remains largely ignored. All these findings point to the pertinent role of dominance, power, marginality and exclusions in contemporary systems development contexts that make these kinds of analyses highly relevant today (see also e.g. Beck, 2002)

Other studies in the special issue show that power relations need to be negotiated since they are quite complex and keep constantly changing throughout the process. In the case reported by Johannessen and colleagues the users had to negotiate power issues among themselves. Näkki and Koskela-Huotari argue that facilitators, who also represented social media consumer-users, may have their own preferences and more power than the other users. At the same time, the other users are still able to make a higher contribution (e.g., by voting, rating, and prioritizing) in comparison to a traditional situation in which the decision-making power is completely in the hands of the developers and/or the facilitators. In their paper, the active users, and more generally those with good writing and communication skills and time to participate, had more influence in the design process. This changes our current understanding of the factors affecting users' influence in systems development. Similar kinds of findings have been put forward in the open source software development context, in which power has been argued to be not only technical and material but also discursive (Sack et al., 2006). It might be that user participation in the future even in the commercial setting will rely more on distributed, online forms that would make the findings derived from these other distributed settings highly relevant.

User-Centeredness as System Personalization

Personalization as a dimension of user-centeredness is also brought up in the papers of this special issue. Seffah and Javahery mention that the views of their tool can be customized, implying that their solution may be adaptable by its users. Yetim and colleagues create a flexible technical basis for design in use, thereby allowing some level of customizability and configurability. Johannessen and colleagues discuss in their paper the concept of generative systems which allow adaptation and flexibility. In a similar vein, Yetim and colleagues advocate tailorable systems and users' ability to adapt and redesign them.

CONCLUSION

This special issue of the *AIS Transactions on Human-Computer Interaction* highlights the growing importance of user centeredness and participation in a world that is increasingly dominated by complex technical systems. We present a framework on how to classify research in this area and present six papers that nicely illustrate the relevance and applicability of user centeredness/participation for both researchers and practitioners. In doing so, we hope to encourage researchers to further contribute to this interesting area and to support the quest for system design procedures that allow the adequate incorporation of the needs of all relevant stakeholders.

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