

Motivation, Participation, and Engagement in Human Work Interaction Design Literature

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Abstract. This position paper is aimed at presenting as discussion material at the CoPDA 2016 Workshop the preliminary results of a short review of the literature published by the HWID community in the last 10 years in four books. Specifically, the attention is posed on understanding the importance of motivation, participation, and engagement in Interaction Design projects for smart and pervasive workplaces.

Keywords: Human Work Interaction Design, Motivation, Participation, Engagement, Smart Workplaces, Pervasive Workplaces.

1 Human Work Interaction Design

Human Work Interaction Design (HWID) studies the integration of work analysis and interaction design methods for its application to pervasive and smart workplaces' projects. HWID has its roots and inspiration in the 70's Cognitive Work Analysis (CWA) [1] methods. Today, HWID is a lightweight version of CWA, addressing the concept of Work in HCI. A main target of HWID is the analysis of and the design for the variety of complex work and life contexts that can be found in different public/private work contexts. It studies how technology is changing human life and work practice in numerous, multi-faceted ways: Interfaces between collaborating individuals; advanced communication networks; Small and large-scale distributed systems; Multimedia and embedded technologies; Mobile technologies and advanced "intelligent" robots; Communication, collaboration, and problem solving; Large information spaces, variability, discretion, learning, and information seeking; Methods, theories, tools, techniques and prototype design on an experimental basis.

The IFIP TC 13.6 Working Group on Human Work Interaction Design¹ is part of the International Federation for Information Processing² and specifically of its Technical Committee on Human-Computer Interaction (HCI)³. The mission of the group is to empower users by designing smarter workplaces, in many different work domains. The aims of the HWID working group are: Encouraging empirical studies and conceptualizations of the interaction among humans, their variegated social contexts and the technology they use both within and across these contexts; Promoting the use of knowledge, concepts, methods and techniques that enables user studies to procure a better apprehension of the complex interplay between individual, social and organizational contexts and thereby a better understanding of how and why people work in the ways they do; Promoting a better understanding of the relationship between work-domain based empirical studies and iterative design of prototypes and new technologies; Establishing a network of researchers, practitioners and domain/subject matter experts working within this field. The group provides the basis for an improved cross-disciplinary co-operation and mutual inspiration among researchers, but also leads to a number of new research initiatives and developments, as well as to an increased awareness of HWID in existing HCI educations. Complexity is a key notion in the working group, not *a priori* defined or limited to any particular domains.

In this paper, we briefly report a review of the collection of papers published by the Working Group community in the last 10 years in four books. The focus is on understanding the role of motivation, participation, and engagement in the reported projects. In particular, we aim to discuss at the workshop on the potentials of a participatory [2] approach applied to the Interaction Design for workplaces, both pervasive and smart.

2 Motivation, Participation, and Engagement in HWID Literature

For this position paper, we considered the four books edited by the IFIP TC13.6 HWID group as outcome of the four editions of HWID Conferences:

1. 2006 in Madeira (Portugal). The focus of the papers included in the first book “Human Work Interaction Design: Designing for Human Work” [3] is on synthesizing work analysis and design sketching, with a particular attention on how to read design sketches within different approaches to analysis and design of human-work interaction.
2. 2009 in Pune (India). Its contributions were published in the book “Human Work Interaction Design: Usability in Social, Cultural and Organizational Contexts” [4] that investigates the concept of usability in social, cultural, and organizational contexts.

¹ <http://hwid.m-iti.org/>

² <http://www.ifip.org/>

³ <http://ifip-tc13.org/>

3. 2012 in Copenhagen (Denmark). The third book “Human Work Interaction Design. Work Analysis and HCI” [5] discusses HWID from a strict Work Analysis and HCI perspective.
4. 2015 in London (United Kingdom). The theme of the “Human Work Interaction Design. Work Analysis and Interaction Design Methods for Pervasive and Smart Workplaces” [6] is the integration of work analysis and interaction design methods for pervasive and smart workplaces.

We reviewed all the 64 papers in the four books searching for three specific terms: motivation, participation, and engagement. We are in fact interested in discussing at the CoPDA Workshop the importance of such aspects in successful participatory/cooperative design projects that involve stakeholders and domain experts. More than focusing on terms occurrences and quantitative data, we would like to present some of the sentences that we find more significant for a constructive discussion during the workshop. The interest in on participation, motivation, and engagement in discussing HWID appears to be constant in time; no particular trends have been detected.

2.1 Motivation

[7]	Activity theory encompasses and integrates a number of different areas of analysis for any given activity, including structure, context and development. The structure of the activity is decomposed into its sub-components, and analysed in terms of human motivations. This decomposition includes the full range from understanding the broad activity and its motives, individual conscious actions and goals, down to people's sub-conscious operations and the conditions that trigger them.
[8]	Such a distinction has been referred to by the terms causal systems and intentional systems. In causal systems, the outcomes are predictable by the laws of nature, whereas, intentional systems cannot be and are instead based on human motivation.
[9]	For the moderator skill level there are also specific contexts such as user's motivation "...in the sense that you have to realize that when a person is not motivated, he is probably not giving you the real feedback...the moderator has to realize that ..and he has to do some twists...".
[9]	'Overall user evaluator relationship' is related to the user's motivation and considered during test protocol development "You have to spend extra efforts if that person is not motivated... one of the reasons for using [specific kind of] scenarios is to make the user comfortable...".
[10]	Personal goals, computer self-efficacy, motivation, computer usage, anxiety, age, internet efficacy and attitude have been reported to influence user interactions and satisfaction which may affect the success and failure of a task.
[11]	Motivation can be considered as a characteristic of the worker influencing his or her experience. Sources for motivation are, for example, an increase of productivity despite having a lot of equipment down, working passionately

	for a common goal, or getting invited for a coffee to speak about the company. Further, the workers' attitude towards the system to interact with is crucial.
[12]	The workplace analysis was determinant to improve quality of services, either for the employees or other stakeholders. It permitted to increase the levels of employees' motivation, and engagement.

The concept of motivation clearly is used in different ways, from the broad activity-level-motivation in [7] and organizational level motivation in [12] and [11], to the general abstract human motivation in [8] and the traditional individualistic motivation in [9], [10] and to some degree [11].

2.2 Participation

[13]	The philosophy of the Action Research approach is that some knowledge about human activity can best be gained from the natural environment in which phenomena occur and that the acknowledged participation of the researcher and the subjects as co-participants are necessary for understanding them. Furthermore, AR recognizes that the researcher has knowledge that may be relevant to the activities under study and may contribute this to the research setting. Indeed, AR is particularly suited to studying processes where the organisation can be aided by the expert knowledge of the researcher.
[13]	Sketching supported Collaboration by allowing team members to create scenarios from which to elicit feedback and participation of others. Sketching also triggered understanding among designers which allowed them to build on each other's ideas.
[14]	The practice of dialogue contributes to the design of objects and systems that clarify all the design process through listening, hearing and participation. Planned actions and interactions are often difficult to predict with clarity and confidence. Dialogue helps us to find connection and meaning within the design process. Dialogue invites discovery as design does. It develops common values and allows participants to express their own interests and ideas.
[15]	User centred development is based on the principle that all development of technical IT systems for a workplace must be performed through active participation by persons that know the organisation and the work practice, i.e. the ones that actually performs the work. Experts from the outside can never fully understand the activities and can never alone decide whether a solution is good or bad. The ones that truly know the workplace and its practice can on the other hand not by them self describe and analyse their own organisation and work practice. Neither do they have the full competence to propose new, innovative solutions regarding the organisations as well as its IT support. It is only together and based on a suitable model for cooperation between future users and designers (researchers) that the work can succeed.
[16]	Without ensuring the participation of a valid sample of stakeholders, the evaluation process remains partial and most critical issues can be fatally missed.

Participation appears to be understood much the same by different authors, as involving end users to some degree in the development process. There are no attempts to question this kind of participation in the HWID papers.

2.3 Engagement

[15]	The participants were encouraged to engage their colleagues from their respectively workplace when completing the assignments. The distributed assignments were often related to how things are carried out, how and why, and they were closely coupled to the theme of the next seminar occasion.
[17]	We tried to engage the usability professionals and succeeded to some extent. They participated in several workshops and one of them acted as a co-facilitator in a couple of workshops with end-users. But in the end, we researchers were the main actors and the majority of activities were done by us alone. So in this respect, the UCD guerilla tactics was not enough. We needed more support and engagement from the organization than was possible.
[12]	The workplace analysis was determinant to improve quality of services, either for the employees or other stakeholders. It permitted to increase the levels of employees' motivation, and engagement.
[18]	Similarly, co-realization emphasizes the need for a long-term engagement between designers and users, as the full implications of new technology for work practices can only be revealed in and through the system's subsequent use.

Engagement appears to cover a) talk to other people, see [15]; b) involve other people, see [17], c) a kind of pairing, see [18], and d) being absorbed in one's work, see [12], so at least four different meanings of the term.

3 Conclusion

While the HWID literature agrees on one common view of the *participation* concept, there are several definitions associated with *motivation* and *engagement*. This position paper is aimed at offering some discussion starting points during the CoPDA workshop especially in relation to three of its main topics: how users' skills can be enhanced with active participation; how users can take charge of their responsibility and capability for improving their work, learning and personal environments; and how to support human-work interaction (supported by computers) and not only human-computer interaction (so people can focus on their tasks rather than on the use of computer systems).

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