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Guest Editors' Introduction

DESIGNING INTERACTIVE SYSTEMS FOR WORK ENGAGEMENT

Virpi Roto
School of Arts, Design and Architecture
Aalto University,
Finland

Torkil Clemmensen
Department of Digitalization
Copenhagen Business School
Denmark

Heli Väätäjä
Pervasive Computing
Tampere University of Technology
Finland

Effie Lai-Chong Law
Department of Informatics
University of Leicester
United Kingdom

Work engagement is a complex phenomenon referring to a positive, fulfilling, affective-motivational state of work-related well-being. It is characterized by observable attributes such as vigor, dedication, and absorption (Schaufeli, Salanova, González-Romá, & Bakker, 2002). The majority of research on work engagement has been focused on understanding and evaluating the above specific attributes. Less research has explored how to design a work environment that can improve these attributes. Although Schaufeli, Bakker, and Salanova (2006, p. 702) stated that work engagement is "not focused on any particular object, event, individual, or behavior," many aspects of the work context do influence work engagement, and these aspects can be influenced by conscious and systematic acts of design. The growth of scientific literature on, for instance, how workspace design, job design, and managerial guidance can improve work engagement shows the possibilities for and importance of design-oriented research on work engagement.

As digitalization and automation permeates all types of workplaces, it becomes difficult to find a job without some use of interactive technology. The increasing number and types of digital tools for all sorts of work implies that employees spend much of their working time with interactive technologies. Therefore, we find it surprising that research on designing interactive technologies for work engagement is such a neglected research topic. Below, we very briefly discuss the history and recent research of this field.

Because an interest in work engagement research stems from the positive psychology ideology (Hallberg & Schaufeli, 2006), a positive design (Desmet & Pohlmeyer, 2013) approach, such as experience design (Hassenzahl, 2010), can be effective in improving work engagement via interactive technology in work contexts. Therefore, in the call for articles to this special issue, we emphasized experiential aspects and experience design as the means to address work engagement in interaction design.

BACKGROUND

The design of interactive systems for work contexts has been studied by human–computer interaction (HCI) researchers since the 1970s, but the focus of the first two waves of HCI research primarily has been on human factors, efficiency, and effectiveness. Only in the early 2000s has the third wave of HCI brought the engaging and experiential aspects of interactive technologies into attention (Bodker, 2006, 2015). Although positive user experience is an important design goal of today's consumer products and services, the third wave in designing technology has not yet reached the workplace. Many companies have only recently realized that work tools should be selected not only for their performance, ergonomics, or safety improvement capability, but also for their ability to support the employees' well-being at work and to improve work engagement. Companies and employees alike are seeing the benefit of utilizing other digital tools as well to help them in reflecting and improving well-being at work. The need is there, but do designers know enough of how to design such tools and services?

Only during the recent decade have user experience researchers started to explore work experiences in domains such as machine automation (Palviainen & Väänänen-Vainio-Mattila 2009), factory automation (Obrist, Reitberger, Wurhofer, Förster & Tscheligi, 2011; Wurhofer, Fuchsberger, Meneweger, Moser & Tscheligi, 2015), metal industry (Lu & Roto, 2014), or software development (Harbich & Hassenzahl, 2017). Most of these publications point out the lack of focus on user experience research in work context, as do Bargas-Avila and Hornbaek (2011) and Tuch, van Schaik, and Hornbæk (2016). Many of the theoretical findings in the above works could be utilized in designing for work engagement, but it is hard to locate scientific reports of such design cases.

If user experience research in the work context is lacking, experience design research regarding interactive systems at work seems to be almost nonexistent. The closest piece of research on experience design in work context seems to be reported in Lu and Roto (2016), who analyzed 20 design cases targeted at evoking pride experiences at work. But even this report lacks the implementation of existing theories in experience design. In summary, there is clearly a need for research on designing interactive systems for work engagement. Therefore, in this special issue, we wanted to highlight the means for designing engaging qualities into technology used at work. Figure 1 visually demonstrates how the trifold elements comprise the topics of this special issue.
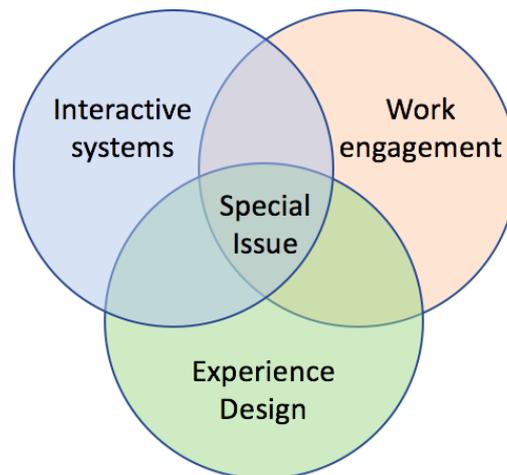
Figure 1. The scope of this special issue is in use of theoretical understanding of employee experiences in designing interactive systems for work engagement.

ARTICLES IN THIS SPECIAL ISSUE

In the call for papers for this special issue, we invited manuscripts that offered theoretical, methodological, analytical, or empirical contributions about designing interactive technologies and work tools with the aim to increase wellbeing at work and work engagement. We received 10 submissions of which 4 are published here after an elaborate review process. The four articles selected for publication introduce various means to improve work engagement. Nonetheless they share a common thread in that they are based on theoretical understanding of experiences at work. Three of the four articles report actual design cases that applied the gained theoretical understanding. The work contexts include factories, entrepreneurs, and office work.

The article by **Katharina M. Zeiner, Michael Burmester, Kristin Haasler, Julian Henschel, Magdalena Laib, and Katharina Schippert** reports the latest advances in methods that help designing for positive experiences at work. As the groundwork, Zeiner et al. analyzed 345 reports of positive experiences in various types of work environments and derived 17 categories of positive experiences at the workplace. In this article, Zeiner et al. provide guidance for and examples of the many uses of experience categories, such as making the experience interviews method more focused and efficient. The appendixes of this article provide printable versions of the experience interview template and Experience Cards. As Zeiner et al. suggest, the Experience Cards, experience interview, and experience potential analysis form a promising experience-centric approach to design for work engagement.

The three other articles study more specific phenomena to identify means to improve work engagement. Gamification is a common method for improving user engagement, and to an increasing extent, also in the work context. While the mainstream of work gamification studies focuses on individual workers, **Niko Vegt, Valentijn Visch. Arnold Vermeeren, and Huib de Ridder** studied how gamification can improve team cohesion and thereby work engagement in factory work context. By utilizing the theories of team cohesion and gamification, they designed and installed two interactive screens to communicate the

performance of two departments in a factory's production hall and canteen. Analysis of the use of this tool reveals, for example, that the screen led to an increased level of task commitment. However, the interactive screens did not prompt the employees to interact as much as Vegt et al. had anticipated, which raises the question of how to engage employees to use the interactive technologies that are designed to enhance work engagement.

In a semiconductor factory cleanroom context, employees' work is not full of exciting new experiences. Rather, routine tasks form a significant part of the work. **Thomas Meneweger, Daniela Wurhofer, Verena Fuchsberger and Manfred Tscheligi** point out that in these kinds of work contexts, designing for extraordinary experiences might be less important than designing for ordinary experiences of mundane tasks. The article thoroughly reviews the user experience research and highlights the overlooked research area of ordinary experiences. The article is a good example of in-depth research in an unexplored territory of experience design.

Päivi Heikkilä, Elina Mattila, and Mari Ainasoja focus on the eustress of entrepreneurs, that is, turning negatively perceived stressors into positive challenges. Heikkilä et al. first study entrepreneurs' experiences of eustress via interviews and diaries, based on which they derive six means to help entrepreneurs in handling stressors in their work. The six means were then used in developing a Web-based service, the Eustress Toolbox, that aims to improve entrepreneurs' skills in managing challenging stressors. This article contributes to the nascent literature on the influence of positive stress (eustress) in work engagement. It also addresses the design engagement challenge of Vegt et al. by proposing guidelines for designing the engagement tools.

CONCLUSIONS

From the articles in this special issue we can see that focusing on positive experiences in work contexts may require special forms of experience-oriented data collection and analysis—to bring up new insights into work stress and well-being and for creating innovative designs to improve work engagement. The articles highlight the special nature of work experiences and help the reader rethink the types of experience goals embedded in designing interactive systems for work engagement. The editors expect the articles in this special issue will make a significant contribution to the literature and inspire readers to tackle this emerging research field. The theoretical and empirical contributions such as those reported in the four articles, will help experience designers improve work engagement and well-being at work. Hopefully, this eventually will lead to professional tools that employees not only have to use but enjoy using, and even lead to human flourishing at work.

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Authors' Note

All correspondence should be addressed to
Virpi Roto
Aalto University, School of Arts, Design and Architecture
P.O.Box 31000, 00076 Aalto, Finland
virpi.roto@aalto.fi