

Designing Alternative Arrangements for Ageing Workers

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ABSTRACT

In this paper we describe an ongoing project in which we apply a user-centred concept design process and participatory design (PD) tools to explore the phenomena of ageing workers' wellbeing at work. Our objective is to create concept ideas as design artefacts but also expand the traditional way of thinking about the objects of design. The paper discusses how PD methods and a designerly way of thinking and doing are applied to facilitate dialogue, participation and inspiration, and also increase awareness of ageing workers issues.

Author Keywords

concept design, work practice, ageing workers

ACM Classification Keywords

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

INTRODUCTION

Design thinking and practices are changing. Products have changed and assumed new meanings. The objects of design are moreover not merely products but experiences, strategic solutions, and action, interaction and models of thought as well (Buchanan 2001). This change has raised new meanings for design such as taking the role of explaining practice and working as a social agent (Findeli & Bousbaki 2005).

To present a way to approach this new design field we discuss our experiences in a case study about how design deals with a globally identified challenge: the ageing population. There is a need to find ways to both keep the experienced employees working and to employ ageing people. We began to tackle this challenge with participatory design tools and processes. The aim of the paper is to discuss how these tools and a designerly way of thinking and doing (Cross 2001) can be used to raise awareness in organizations and to create alternative conceptual solutions for ageing workers.

THE CASE

The project that we present in this paper focuses on ageing

workers. The main objective is to enable and support individual workers' sustainable wellbeing and increase the motivation to work longer. This objective is divided into three tasks: 1) to gather understanding of ageing workers' individual needs, attitudes, motivations, working practices and environments, 2) to identify potential improvement opportunities and 3) to develop proposals and concepts that aim at supporting individual working abilities and motivations. Furthermore, the descriptions of workers as one of the outcomes of the project aim at supporting dialogue within the organization but also with other stakeholders.

The EU-funded Active@work project has several national and European partners. The part of the project on which we concentrate in this paper is being conducted at the University of Art and Design Helsinki by a team of researchers with an industrial design education background. The target organization is Palmia, which is owned by the city of Helsinki and operates in the fields of catering, cleaning and technical maintenance.

The ageing individuals who are the focus of the study are Palmia employees. Palmia's concerns are that their working force is ageing: A high number of their employees are between 48 and 59 years old and most of their health problems are caused by physically demanding work. Cleaning and technical maintenance are also fields that no longer attract younger people. Moreover, Palmia is going through an organizational change, which affects their employees' work and wellbeing. The organization has expectations concerning the project such as how to consider age in the planning of work, how to profit from the long working experience of the ageing workers and how to apply new technology at work.

PROCESS

At the beginning of the project very little was known about the phenomena and the direction of the design solutions. There was no explicit need, problem or technology to be addressed. In concept design a wide and fuzzy goal is typical and challenging, but it can also lend many opportunities (see Keinonen & Takala 2006). The focus of the problem-solution space is adjusted iteratively during the process. This project has applied user-centred design methods including observations, probes, interviews, participatory workshops, generative tools and multidisciplinary interpretations and ideations. Using

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different methods seemed to be a way to narrow the "design space" (Westerlund 2005), to gain a holistic understanding of the individual ageing workers' needs and desires, and to find the most relevant directions for progress.

The project began with **setting the stage** by defining the project plan in more detail, deciding on the appropriate user study tools and target groups for the study. The two voluntary groups from cleaning maintenance and technical maintenance include 15 workers altogether, aged approximately 55+. This phase also included a literature review and superior interviews to gain an overview of the topic.

The user study phase started with focus groups in which we wanted to introduce the project, the project team and the ageing workers to each other and to start discussing the phenomena of ageing and wellbeing at work. The user study continued with probes self-documenting for gathering subjective views into the motivations, problems and attitudes of the ageing workers. Probes (see e.g. Mattelmäki 2005) are exploratory but resemble diary studies, although they allow for more subjective interpretation and expression. They are also aimed at activating the participants to reflect about their work and experiences and to become actively aware of them for the following phases of the project. To deepen the understanding all the workers were also personally interviewed.

The concept design phase started in parallel with the user study activities. As a result of the workshops carried out thus far we had prioritized ideas and shared understanding of the most interesting topics for the concept design phase. This phase included 12 video-observations to gain contextual and detailed understanding about users' activities, environments, communication and the use of tools. We especially asked the workers to consider which activities they found meaningful for us to observe.

To give ageing workers the possibility to actively participate in the design phase we combined generative make-tools (Sanders & Dandavate 1999) with six video-observations. Make-tools are tangible design items which can be used to facilitate ideation and expression of needs (see Figure 1). The ageing workers were asked to create "a dream device" which could facilitate their tasks or wellbeing at work. They were asked to carry the dream device along during their normal activities, while we shadowed with the video camera. Now and then the observation was interrupted for a short reflection, when the worker either acted out or described how and why to use the dream device in context. The aim of the make-tools in context was to support ageing workers to imagine possible use situations and useful properties by utilizing the real context as a trigger and inspiration. In this way the ideas were bound to the real context, tasks and needs.



Figure 1. An ageing worker using make-tools to design a facilitator i.e. a digital device for improving his daily work.

The interpretation, ideation and iteration activities were carried out in two complimenting ways. On the one hand the interpretation of the data was conducted in several sessions by the team of design researchers in order to identify individual characteristics, patterns, needs and design opportunities.

On the other hand, to carry out the process in a participatory manner, the aging workers, representatives of the target organization and national partners were invited to comment on and evaluate the interpretations in several workshops. The goal of these activities was to share and organize the data, interpretations and concept design ideas, to take into account the stakeholders' expertise and interests, and to brainstorm and focus the following actions. These workshops were carefully planned and facilitated by the design researchers.

RESULTS OF THE ONGOING PROCESS

Personas

Persona descriptions as user representations have often been applied in user centred design in e.g. software development (Cooper 1999). In this project the personas describe none of the workers as such but they are based on their characteristics, tasks and attitudes combined, such as issues that affect their motivation, their attitudes towards technology or teamwork, as well as the local or remote mobility of their work. They aim at presenting in a realistic and visual way interpretations of the workers without revealing the authentic persons behind. Persona descriptions include narratives and visualized situations to support empathy, insights and to facilitate discussion. They also create a basis for the ideation, development and evaluation of concept design solutions.

To share the persona descriptions in an appealing way we designed booklets with illustrated representations that summarize the characters, tasks, and attitudes. They include a story about one day at work, pictures to illustrate the context, social contacts, and key findings about needs, motivations and instructions for their superiors. These descriptions have already been and will be distributed

within the organization to the management and occupational health to raise awareness of individual ageing workers' everyday perspectives. In concept design the persona descriptions are used as a tool to direct and integrate the mass of ideas in a meaningful way. They, for instance, together with the ideas and use situations from the make-tools sessions, helped us to create credible use scenarios about the dream device concepts. Personas will also be applied during the project to develop alternative customized education practices for ageing workers.

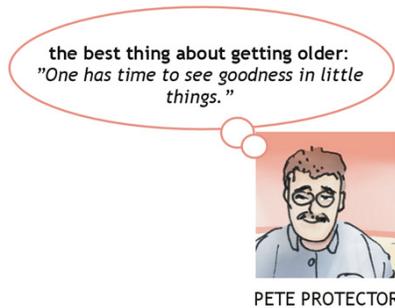


Figure 2. The persona descriptions include quotations from the user study.

Potential Design Frames

Wellbeing is a holistic phenomenon and is affected by various factors from fragmented details to strategic practices. One of the goals of the project is to propose alternative improvement opportunities by creating concept design solutions. During the process we have identified problem and solution spaces in various fields of individual and organizational work practices. They include:

- physical wellbeing could be improved by developing working tasks, ergonomic tools and environments
- social wellbeing could be enhanced by developing systems for interaction with superiors and co-workers and supporting belonging to a community
- management could be improved by developing the coordinating of the work, interaction within the organization and empowering the workers in the planning
- education could be developed with individual career planning and education, which would consider both physical and cognitive changes through ageing, and gained skills and experience
- cognitive wellbeing could be elaborated by improved ICT systems including communication in the Intranet, visualized work descriptions and instructions, and moreover, systems and applications for mobile communication and information transfer.

To concretize and share visions these potential areas are studied and formed into concept design proposals. To address the tasks and environments that were found to affect physical stress we have created visualized suggestions of an easier-to-clean toilet with accessible smooth surfaces and forms and less places that collect dirt,

a toilet brush for professional use with a long handle to avoid back strain, a cleaning chart with improved ergonomic and functional considerations such as placing of the wheels, adjustable handle and sliding storage boxes, and a school attendant's workplace with several features to improve both physical and mental wellbeing such as placing of the computers and creating personal space.

The concept design activities focus also on visioning digital mobile devices to facilitate team communication, work planning and coordination. Furthermore, alternative education practices will be created to enrich the work content but also to enhance expertise sharing.

In a two year project these potential directions cannot all be explored. Thus, in addition to these design oriented outcomes summaries and reports about the understanding gained through the process are also shared with the target organization and the partners.

Affect on Organisational Practices

The ongoing Active@work project's activities and findings have raised attention and concern about the wellbeing of the ageing workers in the Palmia organization. This concern has inspired ideas and started activities to improve the situation. For instance, sudden heavy tasks or work overload have been identified as issues that negatively affect the wellbeing of the ageing workers. One of the ideas to be implemented is to share tasks between Palmia's service units during times of pressure, due to e.g. seasonal issues such as heavy snowfall. To minimize fatigue helping hands will be provided. This will be arranged by training employees to be able to accomplish different tasks, which allows them to be sent to assist where sudden help is needed.

DISCUSSION

The experiences gained during the project have raised our awareness of challenges in this kind of process.

First, the broad theme of concept design enables creative exploring. It is also ambiguous and reveals, perhaps, too many design solution spaces. It can be difficult to decide which are the most relevant. Some of these problem-solution-spaces cannot be studied very deeply but documenting them is part of the making sense of the phenomena and they might be of use to other development projects in the organization.

Second, as the process allows exploring with new methods the personal interests of the researchers at the university can affect the process. For example, the doctoral or master studies with set research foci may motivate the selection of the tools and approaches. They also have parallel but separate research questions concerning the tools. The integration of both the goal of the project and the research motivation is not actually a problem but requires awareness of the challenges and special attention.

Third, concept design has various meanings in different contexts. In industrial design concept design aims at exploring possible futures. The outcomes are concretized visions of possible solutions; they are not products ready for production or use. These visions would typically require more detailed planning to be implemented in the real context. The challenge will be if these visionary outcomes satisfy the workers and other stakeholders.

Fourth, the ageing workers are asked to talk about their work, their relationship with superiors and their opinion of the situation in the organization. Confidentiality issues must be carefully considered: participants must feel confident in their anonymity to be able to share needs and opinions. One solution to this is the use of personas. Another solution is to ask for permission for the use of pictures and video-clips, as has been done throughout this process.

Finally, in this kind of project interested in individual people and their needs, it is important that the individuals are committed to the project. How can we enhance engagement in the two year process? A fundamental matter is that funding allows organizing replacements during the meetings. One motivating factor seems to be enabling learning and exploring with innovative tools. Another is the fact that during the various meetings the workers are listened to and they are able to describe their experiences, expertise and topics that are meaningful to them. It is also hoped that the sharing of the findings will finally create changes, both in a short time frame and in the long run, that improve their working conditions, motivations and their ability to work longer

Design is described as a solution oriented activity. The creative process is typically about looking for something which is not known before it is found. Creativity and intuition are important in design work. Designers explore and make sense of the phenomena to use that understanding for solving design problems. User studying and designing are closely intertwined. During the first phase of the presented case preliminary insights about the constraints and opportunities of the design space were already identified.

For example, Sanders and Dandavate (1999) have described the objective of using generative tools to inspire and support the users in the design process. Our experience of the make-tools exercises brought forward many ideas beyond the ones expressed by the ageing workers. If the designers are participating in the observation, the ideation can begin immediately while observing. Many normal tasks we observed turned out to be a good design opportunity to improve ageing workers wellbeing at work. This requires an innovative attitude both for designers and ageing workers and appropriate tools (such as make-tools) to reflect, explore and present possible improvements.

Different PD methods have already proved to be useful when practicing in an area not familiar to the designers, by

enabling the variation of concept design opportunities. During the process we have addressed issues from organizational practices, environment development and IT design. The ongoing case study implies that design skills and processes help to reflect problems and improvements in everyday work and produce visions for the decision makers. In this kind of project concept design solutions are only one design outcome. We have experienced that designers' creative, visual and change oriented thinking is useful in workshops and co-design sessions as a motor of innovation or in driving the ideation forward. The designerly way of working can be applied during the process in many ways including the ways the workshops have been planned and facilitated and how the interpretations such as persona descriptions and other representations are designed, finalized and shared.

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