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POSITION PAPER

Reflections on the Role of Design Fictions in a Multidisciplinary Research Project

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ABSTRACT

Design fictions can offer a powerful tool to envision and communicate technology futures, which are yet to be developed. In this paper, we present the case of The Naked Approach research project, where design fictions were used in the form of futuristic technology narratives, that were visualized with videos, and drawings and other visual materials. The technology intensive research project addressing future smart environments utilized the design fiction approach e.g. to set the common vision for a multidisciplinary research team, and to discuss and evaluate potential application concepts in joined brainstorming sessions through participatory design approach.

INTRODUCTION

The development of future technologies often happens in large, multidisciplinary projects with several partnering institutes. This is the case also with the Naked Approach project, which was a strategic research project run for three years in Finland, and which is here presented as a case for utilizing design fictions. The Naked Approach is a future leaning research project, examining potential paradigm shifts in the relationship between humans and the digital world. Along the lines presented in Mark Weiser's vision 'The computing for 21st century' [Weiser 1991], the project's aim was to design for a future, where the technology is so entwined with the everyday surroundings, that it disappears on the background of the user's attention, with calm and aesthetic appearance. The work focuses on the change from gadget-centric interfaces to user centric, gadget-free -interfaces, where the digital surroundings provide all the information, tools, and services that the user needs in his or her everyday life. Although futuristic in direction, a target of the project is to demonstrate tangible steps towards the vision

through use case demonstrators. The project addresses technical, commercial and societal aspects of the vision, focusing on user experience and the development of business ecosystems enabling commercial exploitation. The project team includes several Finnish research institutes; VTT, Tampere University of Technology, Aalto University, the University of Lapland, and the University of Oulu, complemented with Demos Helsinki.

In the initial phases of the project, design fictions, in the form of videos and comic-strip sketches, were utilised as a key tool to develop the direction of the project, and to identify the targets for the following development-focused work phases. Using a groupwork approach, individual concepts extracted from the design fictions were evaluated using a framework (The NOTBAD framework) to identify their potential for further development. In this position paper, we discuss the types of design fictions used in the project, how these were progressed towards individual concepts and reflect on the rating approach utilised in the NOTBAD framework.

RELATED WORK

Design fiction is a term coined by the science fiction author Bruce Sterling [Sterling 2005]. It has gained more traction since Bleecker's early work, combining the concept of design fiction with other ideas turning it into a research method [Bleecker 2009]. Grand and Wiedmer provided a toolbox for using design fiction in design research [Grand & Wiedmer 2010]. Lindley and Coulton provide a more elaborate definition of the term, arguing that HCI researchers should embrace design fiction as a research methodology [Lindley & Coulton 2015].

There are numerous examples where retrospectively concepts demonstrated as part of design fictions have been realised as products, for example visions from science fiction movies, as collated by Bleaker in his Design Fiction Vol7 [Bleaker 2018]. Similarly, there are many examples of design fiction being used as a research tool. However, we were unable to find examples of complete workflows where design fictions were used as part of a systematic product development process.

DESIGN FICTIONS IN THE NAKED APPROACH PROJECT

Design fiction can be created in many ways using various media formats. Whether it be text, artefacts, still images or video to name a few. For this project, we chose various forms of video presentation using real people, stop-motion animation, and animated graphics, see Figures 1 and 2. Design fictions were used in different phases of the research project, starting from the drafting and scoping of the project, continuing in brainstorming and concepting phases, and in designing and evaluating different ideas. Moreover, design fictions were used not only for the project's internal benefit, but also in the dissemination phase.

At the outset of the Naked Approach project a video-format design fiction was created (Figure 1). With this, the main aim was to create material to communicate the level of novelty targeted by the project to the large project team. Particularly, there is a trend that those with engineering-based backgrounds favour approaches based on iterative development of current concepts, preferring not to over-promise. In the case of Naked Approach our target was to go

beyond iterative steps, towards a paradigm shift within the targeted scope. The storyboard for the video was created using a co-design approach between core members of the project team. The design fictions were used at the start of the project aiming to create a foundation for discussing the different aims of the project.

As the project progressed design fiction exploring more focused concepts were developed. In this stage a variety of formats were used including movie-based approaches with real actors, stop motion animation and animated graphics. In addition, many sketched comic strip format design fictions were created.



Figure 1: Screenshots from the design fiction created at the start of the Naked Approach project. Top row: information and environmental controls are accessible on demand from any wall surface. Bottom row: Bio sensors embedded into building infrastructure e.g. stair handrails with measured data being presented by the surroundings at an opportune location and time.

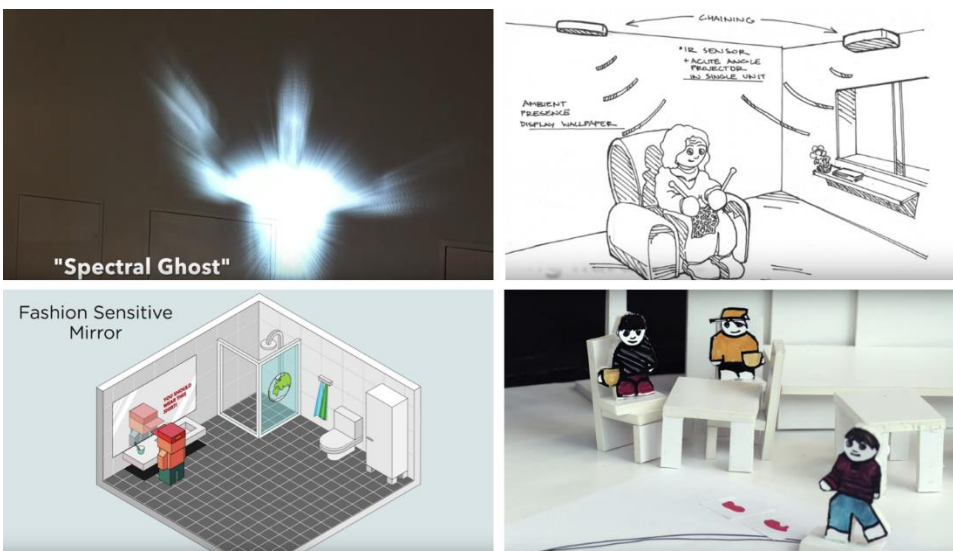


Figure 2: Different formats of design fictions used in the Naked Approach project. Top row: different approaches to explore the concept of creating an ambient connection between remote loved ones by embedding connectivity in the surroundings. Bottom Left: Information embedded in the living environment. Bottom right: Visual navigation guidance integrated into the floor guides someone to meet their friends.

Links to the referenced Naked Approach project design fictions:

- Initial inspiration and direction:
<https://www.youtube.com/watch?v=GJ7djPEH504>

- Everyday routines (graphical animation):
https://www.youtube.com/watch?v=xvjk5qd_pf4
- Navigation guidance (stop motion animation):
https://www.youtube.com/watch?v=SZWsi_2jLCw
- Ambient connectivity (workshop process):
<https://www.youtube.com/watch?v=W3Mj1NXCwNE>

CO-EVALUATION OF THE DEVELOPED CONCEPTS

Particularly, the design fictions were used as part of the participatory design sessions within the project. The target was to engage different partners to discuss and evaluate the different ideas. As the sessions varied in the number and backgrounds of participants, and it was soon discovered that a structured approach was found to be beneficial to guide the discussion in the sessions. Thus, to support a more unified participatory process and to evaluate the visions created in the project, we created the NOTBAD framework. The NOTBAD framework functions as a toolbox for a holistic, user, and business centric analysis methodology. It targets the early phases of the development process along the six evaluation criteria from which the toolbox derives its name:

Need: The need for the concept

Overall: The overall relevancy and suitability of the concept

Technology: The technical feasibility and potential of the concept

Business: The business potential of the concept and its use cases

Acceptance: Societal and personal aspects regarding the acceptability of the concept

Design: The concept's design potential covering both aesthetic and functional design aspects with a special focus on UX and usability

These six evaluation criteria are revisited in five phases:

Idea: The first phase is the description of concept ideas, aiming at collecting all ideas that have emerged for future analysis. At this stage, a concept idea is visualized and briefly described so that project members from different areas can comment on the idea and approach it from their own area of expertise. Teams with different backgrounds can co-generate ideas.

Summarizing: In this phase, the concepts are ranked based on pre-defined criteria by teams from different areas of expertise. Goal of this phase is to provide an easy way to summarize the proposed concepts from different viewpoints.

Light Analysis: After summarizing and ranking, the most promising concepts are chosen for further consideration. Concepts are evaluated using the NOTBAD canvas and the challenge levels. Summaries are updated, and priorities selected.

Deep Analysis: Teams from different domains use their domain-specific tools and methods to generate requirements for further development. The deep analysis phase produces detailed technical requirements, user, and business requirements.

Reflection: The analysis process is iterative in nature. It uses e.g. collaborative workshops, participatory design with domain experts, and “Quick and Dirty” prototyping. Hence the reflection phase is an active phase throughout the whole process. In practice, data is collected, and analysed to elicit requirements throughout the entire project, e.g. from lab prototypes, and real usage environments.



Figure 3: Evaluating the concepts using design fiction sketch materials and co-evaluation by the project team.

NEXT STEPS

Whereas the technical Naked Approach research project ended in mid-2018, we will continue to examine design fiction as a methodology. As a next step, we plan to reflect on the impact of the design fictions on the work & outputs of the project. Interviews with the project staff have been planned, followed by evaluation of the role of design fictions in such a project, developing the method further and applying to future research projects. It is our belief that design fiction can offer an interesting and engaging tool as part of a participatory design processes, particularly when involving people with multidisciplinary backgrounds.

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