The Mediated Action Sheets: Structuring the Fuzzy Front-End of UX

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Abstract

Decisions about what to design, for whom, and why to design it, are made during the fuzzy front of user experience (UX) design. Our approach to structure this process is to use a theoretical and methodological framework based on mediated action. This position paper describes how we put the framework, called the Mediated Action Sheets, to test in UX design practice. The test consisted of two workshops with professional designers. Transcripts of video recordings and results were qualitatively analyzed. The results are used to improve the framework.

Author Keywords

Mediated action; activity theory; interaction design; service design; user experience; concept design; fuzzy front-end

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Introduction

Decisions about what to design, for whom, and why to design a particular object with a certain set of user experience goals are made in the early phases of a design project. These stages are perceived as fuzzy since the directions for the project are not yet set and

qualitative data are usually gathered for both information and inspiration (Sanders, 2005). It is during this phase a vision of what to do, for whom and why is established and embodied in design concepts to facilitate innovation and choice of actions. Design concepts should be visionary and break new ground, well-grounded, easy to grasp, and focus on its unique selling points in terms of UX, looks, interaction, form factors and target users (Keinonen & Takala, 2006).

This paper focuses particularly on the interaction and service design aspects of user experience (UX) design. Interaction and service design can be conceived as the shaping of conditions for human activity (Arvola, in press). The Activity Checklist (Kaptelinin & Nardi, 2006) can be used as a support for the fuzzy front-end of interaction and service design, but it requires basic understanding in cultural-historical psychology and Activity Theory concepts (Arvola, 2013). We have, also based on concepts related to activity theory, instead developed the Mediated Action Sheets. They are used to structure the fuzzy front-end while also striking a balance between information and inspiration (Arvola, 2013). They are used to structure user research, develop personas, and generate design concepts.

The sheets have earlier only been informally tested, and the purpose of this case study is to evaluate and improve them with design practitioners.

Theory
An earlier approach to making Activity Theory useful in design work is the Activity Checklist (Kaptelinin & Nardi, 2006). It is developed to guide a researcher or designer to the critical contextual factors in a situation of use (Kaptelinin & Nardi, 2006). It covers all the major aspects outlined in Activity Theory (i.e. means ends; social and physical aspects of the environment; learning, cognition and articulation; development; and mediation). For someone who is just entering the field it is however a daunting task to even get started. The checklist work quite well for the information part of the fuzzy frontend, but it does not work well for the inspiration part.

In an attempt to make Activity Theory a more hands on tool for design, Bødker and Klokmose (2012) devised the Human-Artifact Model, with the purpose of getting students to act skeptically and systematically supported by theory. It builds on a model they call the human-artifact model, depicted in Table 1. The human side consists of learned routines and action possibilities of the user; while the artifact side consists of assumptions and constraints of use that artifact builds on. The three levels of why, what and how represent the three levels of activity, action and operation in Activity Theory. Bødker and Klokmose describe how students have used the Human-Artifact Model to address the motivation, goals and operational orientation of personas, and their various technological background competencies. The model was also used in explorations of existing scenarios as well as future scenarios, which were juxtaposed based on the three levels. The model was furthermore used in reviews of prototypes.

The Mediated Action Sheets, which we have developed (Arvola, 2013), build on a related model called Burke's Pentad (Burke, 1945), and Wertsch's (1998 a) use of it in a framework for Mediated Action. The first step of using Burke's Pentad is to identify the performed act, inquiring what the scene of the act is (the context or the situation in which it occurs and its history), and

Why?	Motivational aspects	Motivational orientation
What?	Instrumental aspects	Goal orientation
How?	Operational aspects - Handling aspects	Operational orientation - Learned Handling
	- Adaptive aspects	- Adaptation
	Artifact	**Human**

Table 1. The Human-Artifact Model (Bødker & Klokmose, 2012)

finding the person or role performing the action: who the agent is. After that, one is asking how and by what means the action is performed: what its agency is. Finally, one is putting the question of why the action is performed: what its purpose is. It is the standard questions you learn in school for writing a good story (see sidebar). This set of questions is sometimes referred to as the 5WH or just the Five Ws, and has been used in rethoric for centuries. They also reflect the five constituents of the Human-Artifact Model.

In Burke's original pentad, the label Agency refers both to "by what means" or steps by which an act is performed (Latin *quibus auxiliis*), and "the attitude" with which, or the manner in which, an act is performed (Latin *quo modo*) (Burke, 1978). It is important to capture both these aspects in design in order to produce an artifact with desirable UX qualities. Quo modo is especially connected to user experience qualities.

Another important aspect of the pentad is the ratios between its constituents, also highlighted in the Human-Artifact Model. For example, if we know of a person called Dan (agent) who is taking a drink (act), slowly in a glass (agency), in the evening at a bar (scene), together with friends (co-agents), we reach one meaning or purpose of the act. If we however put Dan in another scene where he takes a drink in the morning before going to work, the act takes on a completely different meaning. This means that the pentad should be viewed as a whole, even though different people can put different emphasis on the various constituents.

The Mediated Action Sheets

There are two parts of the Mediated Action Sheets: the Persona Sheet and the Design Concept Sheet. The Persona Sheet can be used as support for creating user personas (Cooper, Reimann & Cronin, 2007; Pruitt & Adlin, 2005), hypotheses about who the user is, or observation/interview protocols for user research. The contents of the Persona Sheet are grounded in Burke's Pentad and Wertsch framework for Mediated Action. It consists of a number of fields where the design team can write down the user's goals and motivations, attitudes, skills and knowledge, things that work well and things that do not work well, as well an ordinary day in the life of the persona. There are also fields to describe the activities performed by the persona—in terms of act (what), agent (who), scene (when/where), agency (how) and purpose (why). There are finally fields for ideas to take note of and fields for remaining questions. The Design Concept Sheet is intended to facilitate generation of design concepts that are unique from each other, as well as well thought through. One part has fields based on Burke's Pentad, with the addition of a field for how the design affects people, society and environment (intended to make designers think of wider ethical and moral concerns of their design). The next part is an area for a sketch of the design. The final part of the Design Concept Sheet is storyboard template for sketching a scenario of use.

The latest version of the sheets are available at http://www.ida.liu.se/~matar/tools.en.shtml. Small versions of them are included at the end of this paper. An earlier version of the were tested in this study.

The Design Brief

There are sluice rooms between corridors and operating rooms at the burn intensive care unit (BICU) at the hospital. There is surgical equipment there and a sluice guard shall always be present during surgery. The guard is responsible for the patient before and after surgery, gets equipment that is needed during surgery. The guard also makes sure that the doors are shut to minimize the risk of infection.

However, a guard is only present during 70 – 80% of the surgeries. A physician or a nurse then opens the door to ask the guard for things. It then seems simpler enter the sluice room and just get the things. It furthermore seems like the sluice guards don't feel that they are taking part in the work.

Create a design that makes the sluice guards feel that they take part in the work, and also that facilitates communication between sluice guard and surgical staff.

The research question for this study is how the Mediated Action Sheets can be used by practicing user experience and interaction designers.

Method

To answer the research question we followed a case study methodology with data collection from two workshops at two different companies working with IT in healthcare. The Mediated Action Sheets and a fictive interaction and concept design brief, were introduced to all participants before the design workshops started. In total, five interaction designers from two companies, one master student on internship, and one UX-oriented programmer participated. The brief is described in a sidebar. They were then handed a Persona Sheet each and they were grouped in groups of three and instructed to talk during their design work. The interaction between participants was video recorded. One observer also took field notes. The groups worked for 25 minutes before the Design Concept Sheet was introduced, after which the design work continued in the same groups.

The video recordings were subsequently reviewed and notes were taken. The notes were analyzed thematically bottom-up. Notes and design material produced during the workshops were analyzed in the same way. The analyses of the different data sources were then compared to find recurring themes. Interesting passages of the recordings were transcribed for more detailed analysis. Finally, a top-down analysis was made using the Activity Checklist, and relations to earlier research were identified.

Results

How were the Mediated Action Sheets used in these workshops? Some groups made several personas since they had several Persona Sheets. The different parts of the sheets invited to different approaches depending on what the group focused on. For example, one group started with describing the user characteristics, while another group started with describing the activities around the sluice room. Groups that started with the activities gained more insights while working with Burke's Pentad. By thinking through activities, insights regarding who the user was also emerged and could be filled in in the user part of sheet. It was therefore more rewarding to start with the activity part of the Persona Sheet than to start with the user part. The groups that started with the user part had fewer ideas to work with, since they experienced a lack of information regarding things like user goals, attitudes, knowledge and skills (things prompted for in the Persona Sheet). Starting with activities seemed accordingly to make it easier to also imagine a hypothetical user.

There was an empty space on the Design Concept Sheet for sketching. Sketches provided a shared external representation for the group. They could point at it, explain and discuss. Produced concept tended to be quite similar due to a lack of divergent ideation. Key features like disk counter-windows, glass doors, microphones and speakers were often repeated. We could observe that the generated concepts covered all constituents of Burke's Pentad

Conclusions

The results of this study points toward a conceptualization of UX and interaction design as activity-centered (or use-centered) rather than user-

centered. Artifacts always mediate human activities and starting by describing the constituents of Burke's Pentad facilitates the formation of a holistic view. By understanding the action context you also open a door to understanding the people who act. Developing persona hypotheses of several user groups seems also more beneficial since it also promotes a more holistic view, which supports the creation of well-grounded design concepts. It would therefore seem like the Mediated Action Sheets facilitate an activity-centered, or use-centered, rather than user-centered approach to UX and interaction design.

In those groups where joint sketching occurred, one participant could easily fill in the blanks missed by others in the group. The shared representation facilitated in creating the concept. Finding workshop set-ups that facilitate joint sketching or modeling while also make use of the Mediated Action Sheets is an important step for further development of this approach. We also observed a lack of divergent ideation in the workshops. This is partly due to time constraints, but not only. We could, and should, develop workshop set-ups where the participants brainstorm around different acts, different agents, different agency, different scenes, and different purposes. This will allow for creating a morphological chart, and radical concepts can be typified based on such a chart. Exactly how to set up such a workshop remains a question for further research.

The final question for this paper is how the sheets can be improved. First of all, the sheets themselves, or instructions for using them, should afford designers to start with activities rather than details regarding user characteristics. Creating several personas (or persona

hypotheses) rather than a single one should also be promoted.

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Appendix: The Mediated Action Sheets

Figure 1. The Mediated Action Sheets in their latest version. The Design Concept Sheet to the right and the Persona Sheet with its three pages below. Dowload from http://www.ida.liu.se/~matar/tools.en.shtml