Reflection on ‘Yu’ – introducing project management tools into the design process

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ABSTRACT

This article discusses the understanding of the design process in research projects by taking specific tools from project management into account. Explorative and creative design projects often run the risk of losing focus on project goals during the process. This article aims to provide a novel approach to the ongoing discussion of the clash between creativity and efficiency during the creation of artifacts. By discussing the self-conducted case study – project ‘Yu’ – this article reflects on the design process as well as the relationship between the designer and the user. The model created and presented includes two techniques; the active user dialogue and the goal and user needs definition. Both are inspired by similar approaches in project management, which illustrate the importance of the designer’s responsibility for the final design outcome. The article identifies and discusses similar approaches in design theory and is aiming to emphasize the positive possibilities for an elaborate design approach.

Author Keywords
Design research; design theory; project management; design process; user-centered design; participatory design; user needs; goal setting

INTRODUCTION

At the beginning of the design process stands an abstract idea, which may solely exist in the designer’s head. In order to create and generate an artifact from this idea, it has to be externalized and manifested through sketches, prototypes or similar tools of visualization. As the process continues, the idea becomes a solid foundation for design work [27]. Through testing, a design idea gets challenged, altered and transformed into a final design. At this point there is no difference between a commercial and a non-commercial idea and design process. The starting structure of a design process stays the same and is comparable to one another. The important difference is the outcome and the goal designers want to achieve, which differs between working for industry or for academia. Indeed, the practice of project work in related industries and business differs from the practice in Human Computer Interaction (HCI) research projects, where researchers don’t just strive to create artifacts but create artifacts in order to create knowledge instead [11, 43]. Buchanan even argues design "has become the new learning of our time", by connecting and integrating knowledge "into productive results for individual and social life" [4]. According to this notion there is always product development involved, when design processes are occurring. A product can therefore be all sorts of things – an artifact, a service or a system.

The subject of the design process in HCI has been discussed from multiple perspectives, which are according to Löwgren [26] either influenced by the engineering approach [15] or the creative design approach [41, 43]. Wolf et al. reason that the design process consists of a non-linear process of intent and discovery, design judgment, creation of artifacts and a design critique [40]. However, those terms leave much room for interpretation and we believe that there is need for clarification. Who is influencing the non-linear process? What effect does design critique and who performs design judgment? These questions combine different aspects this paper addresses; such as the design process and the reflection on design outcome.

In this research paper, I will put forward a certain number of tools taken from project management (stakeholder analysis and goal setting), reflect on their significance and propose a way of including them in the design process, in order to create a deeper insight of the projects goal right from the start, as well as including user feedback earlier into the design process. The case study I reflect on is the project ‘Yu’, which is an interdisciplinary research project on the development of a biofeedback system. ‘Yu’ is aimed at relieving the user’s stress through a real-time feedback system with the help of an aesthetic interface. In this paper I present the design process model I created in order to reflect on the different steps and turns the project took. The focus was inspired by the positive and negative side effects I came across during the ‘Yu’ project. Positive was the user-oriented design approach and negative the lack of a need’s definition and goal orientation from the start.
During research practice, it is common that the process from a plain idea to a finalized artifact or product can take up to several years, with frequent revisits to parts of the design process. This can be due to the lack of clear goals that increases the negative effects on multiple levels such as time, cost, motivation or commitment of all participants. The "elements of creativity and innovation" [11] which design projects encounter, make it indeed difficult to set and predict certain goals. In addition, it is possible that artifacts created in research projects, have potential to be commercialized and, for this step, it is necessary to include particular project management considerations into decision making. This paper should assist during such an exercise, but can also be seen as a general approach to rethink the design process. I believe that there are possibilities to plan and organize design research projects and nevertheless provide openness and creativity for the designers. In this paper, I present techniques that revive familiar approaches from user-centered design and project management, include the modern perspective on user experience and enhance the possibility for design creativity and an explorative design approach. The original aspect of this approach is to combine project management thinking with designerly thinking and provide a possible solution for a mutual benefit.

RATIONALE
In this article I propose to combine the following techniques from project management practice and user-centered design into the design process:

- Defining the user’s needs (goal setting and needs definition)
- Including the user in multiple stages throughout the design process (active user dialogue)
- Visualizing the design outcome with sketches, prototypes and other visualizations (showcasing)

The idea is that the designer and the user define artifacts for its potential use and see all aspects and outcomes throughout the process. The user provides valuable information and can be seen as a partner during the design process. Sengers et al. see the creation of good design and by designing something needed by the environment as the principle ideas behind an interactive design process [36]. I believe that techniques presented in this paper provide a more efficient workflow of research projects, without limiting the designers’ creativity. I assume that designers in research projects may profit from the methods I extracted from the area of project management.

In the first part of this paper, I present the ‘Yu’ case study project in detail along with various difficulties the team encountered during the design process. Then, I discuss related work in design theory and project management. In the following part, I demonstrate a model on the design process including the developed techniques in order to facilitate the design of systems such as the one in the ‘Yu’ project. Finally, in the last parts – the analysis and the discussion – I reflect on the model and it’s applicability as well as discussing the presented ideas.

DESIGNING AND TESTING ‘YU’
While mobile technology is rapidly evolving and has become a major influence in our daily lives, the desire of monitoring bodily functions and movement has become an academic field of study [7] and a field of interest for the industry (e.g. personal informatics). We discovered that, through the increasing speed of life rhythm, people are pursuing novel and various ways for health awareness and stress regulation [24, 33]. This phenomenon is fueled by the increasing social competition and individualistic life approaches – which becomes noticeable through pressure at work, social pressure and stress in other daily life situations.

In order to explore this field of body awareness project ‘Yu’ was created and conducted at the Mobile Life Centre in Kista, Sweden (http://www.mobilelifecentre.org/) in form of an interdisciplinary research project. The ‘Yu’ biofeedback system is aiming to measure stress with the help of sensors, which are attached to the user’s body and capture Galvanic skin response (GSR). Biofeedback on the one hand is a process which enables individuals to become aware of their psychophysiological and physiological activity, and in the ‘Yu’ project, this is aiming for health improvement and experiencing health and body [2]. Body awareness on the other hand can be seen as the awareness of “how the body is used in terms of body function, behavior, and interaction with self and others” [17]. By combining those two parts, the outcome combines both, a medical-technical and an interactional point of view. The project was first scheduled for five months and then extended to seven. The interdisciplinary team working on the project is assembled by one HCI-researcher (project manager), an interaction designer (author of this paper) and one web developer (technical part), which was later supplemented with a computer engineer (programming). Through different backgrounds we covered different areas of expertise, but also different levels of competence.

The project started with the general idea to create a tool which visualizes the users stress level in an ambient environment. This idea was founded in related projects at the Mobile Life Centre [24, 33] and from related work [7] on the subject of body-awareness, implementing sensors. The project started with short interview sessions conducted by the project manager alone, which then initiated the project. After the team was assembled, we approached the matter by a grounded literature research, a comparison of usable sensors and the creation of first sketches, in order to lean further discussions on visual material. Another technique we relied on was brainstorming. I see brainstorm as an important tool during the concept finding process and during the exploration and framing of design ideas. The brainstorm phases in our project have been intense and
explorative, idea explorations were never limited by topic or design outcome. We sorted our thoughts at the end of each brainstorm by taking notes and pictures of relevant sketches. Meetings were a big part of our design process. Some happened spontaneously, but many were planned and focused on specific elements in the design process. A tool I created as an addition to the brainstorm sessions was a physical mind-map (fig. 1), where ideas and thoughts were gathered, to gain an overview of the relevant related areas. Here the usage of different colors represented different content. This tool was developed in order to manage our thoughts and way of thinking, as well as to showcase our work in the office environment.

Another way of showcasing and keeping track of the process was the introduction of an online blog (fig. 3 and 4), where we documented all our design steps for a later evaluation. Important parts in the blog were visual examples of created designs and sketches (see online: http://bodyandnature.wordpress.com/). The blog’s motive was to showcase the work, which has been done during the design process, as well as providing us with a design diary, which detained the design decisions we made. A third tool was the creation of a poster showing visual outcome of the interface design, in order to generate direct feedback (fig. 2). Through these three tools, (mind-map, blog and poster) we built a visual foundation, on which we could base the user dialogue on (see result). It also offered the possibility for discussion and feedback from colleagues and visitors in the Centre, from which the project made further progress.

Because of the explorative nature of this design research project, the planning step was not taken into account properly. A project plan was made, but it only covered a schedule for several deadlines without a proper goal identification. The vague idea from the start was trying to create a working prototype to capture bodily data and interpret or visualize them in an application. At this point it was not clear for whom we were creating this application, nor a greater goal or widened planning of the design outcome. Instead, we just started designing and exploring without creating a plan or defining goals. The lack of a greater plan and defined outcome led to communicational problems, a misjudgment of the timing and unclear project steps later during the process. In reflection of the design process in our project, it became clear that the ‘Yu’ project would have benefited from a clear need’s and goal identification. As this is an important point during the design process, I will return to this notion in the related work and the result part of this article.

My main task in the role of an interaction designer was to create and test the interface design. The interface design went through five different stages, where the appearance (look) and user experience (feel) changed drastically. In order to test small outcomes, informal meetings with users were conducted where the users were asked for spontaneous feedback (e.g. what do you like? what do you dislike?). For this purpose the active user dialogue idea was created, where the communication was based on visual examples of sketches, low-fi prototypes, animations or video footage. The user was in the role of an evenly matched partner during the discussion, but the final decision was made by the designer. The idea resulted from a necessity to gain quick feedback and responses on created design objects. In a second stage the user feedback was taken into account, discussed and either applied or discarded. Those informal meetings were just covering one idea or artifact at a time, but later our pilot test covered the design and the system as a whole. The pilot test was created in order to gain feedback on the interface design and the user experience with involving the user into the decision making process. The aim was to understand how users react to the interface, how they would utilize the system in their daily lives and in which way the system and the interface should be improved. I therefore conducted a pilot test, including a workshop, where users individually would try and explore the application. At first, the basic idea was presented and some information was given to the users, here they should start thinking of the system as an integrated part into their daily life. My aim was to understand how it would affect them personally and if the system could help them to monitor stress. I used different techniques to gain information about the user’s needs: How do they want to
integrate them into their daily routine? Where is the best place for the system and how much interaction should be allowed? The testing phase was video recorded and accordingly transcribed. My testing revealed that the presented design and ideas were, by a majority of the testing group, positively accepted. Discussions we had afterwards in the team were circling around interactivity and where the application should be displayed in the end. There were two different possibilities, one aiming for more interaction and the other for less interaction. The user test gave proof of assumptions on the matter and added new ideas into the discussion. Major discussion areas included the using experience, the interface design as well as the debate between privacy versus sharing. The general reflection which could be made was that the usage context of the system relies on two parameters: first on the “place and situation” and secondly on the “social context”, which again raised questions according to individual use against collaborative use. But this will not be discussed here, but instead be part of future work on the subject.

According to a series of assumptions from the user testing, a revised interface design version was created. The next step from here has to be another test, focusing on the new interface design and the display setting. The most important step still to come is to build a finished prototype and test the whole system. Reflecting on the pilot test, we realized that it is not possible to gain information about the feeling or interaction between user and system, without a working system. We were aware of tools using a mock-up idea to gain information on the user experience, as for example with a Wizard of Oz prototyping approach [9]. Caused by the low-fi quality of the presented prototypes, such an approach was not possible to achieve with our pilot test. A second user test will be coordinated as soon as the material is implemented and the functional prototype is testable. The time frame of the whole project had to be extended. This can be partly traced back to the lack of a goal orientation, through which we as a team didn’t effectively used the available time and work force. Additionally the circumstances research institutes provide and problems of a real work environment, with regards to material and work force sharing, hindered the forthcoming of our project.

RELATED WORK
In order to bring the techniques presented in this paper into a wider context it is important to mention the different areas we see them being related to. The background in this research area covers a wide range of topics, including the two diverse areas of design research and project management. Tools in this paper are inspired by the area of project management, therefore I want to focus on that background first and highlight the relevant objectives, such as the stakeholder analysis and the goal setting method. Afterwards I take a closer look on different design approaches and discover the design areas which the papers content can be related to.

Background to project management
The field of HCI has been changing during the last decades and has continuously been influenced by different fields of science, such as sociology, anthropology, psychology, informatics, computer science and philosophy [12]. The area of economy and project management has not yet been taken into account in a wider scale. Approaches have been made according to realize the coherence between project management and research projects in general [10] or including management models into the design process [5, 38]. Other attempts have been undertaken by integrating HCI into the system development life cycle [42] – enhancing the positive effect HCI has on this research area, and which demonstrates an vice versa approach to our attempt here.

In order to get an idea of project management in general, it is important to present a short overview: Project management is a significant field and relevant for nearly all types of work environments, where project work occurs. Theories in project management are therefore prevalently shaped by practitioners, and less discussed in theory [39]. The variety of applicable areas, where project management is used, makes it hard to find an explicit and universal theory of project management – but still has been tried in a smaller scale [23, 37]. It can be said that project management tools don’t provide a solution in the search of knowing what to create, but it facilitates the process in researching how to find solutions through planning and in what should be invested. Project management can be defined as “the means, techniques, and concepts used to run a project and achieve its objectives” [30]. In simple terms cares project management mainly about creating a structure and formulating a plan, which tells all participants and stakeholders, what to do when, with whom being involved and on which cost. Stakeholders are all parties of interest in a project. Meredith and Mantel [30] declare that there are four parties-at-interest which are involved in a project - the client, the project team, the parent organization and the public. In our project the client would be the end-user, the project team are designers and developers, the parent organization is the research institute and the public, would be the peer-audience (e.g. other researchers and designers). Of course the stakeholders vary in every project and are highly aligned with the context. It would therefore be wrong to generalize stakeholders on those named mandates, but it becomes clear that the stakeholder approach is applicable for HCI research projects as well.

Stakeholder analysis is a method in order to map the different stakeholders, sharing an interest in the projects outcome, value their influence in the project and the associated risks. For this project the user plays an important role and their feedback is crucial, especially during the practical parts of the projects (interviewing, designing, testing), where the peer-audience will be relevant at a later point. Stakeholder analysis is a project management method, which is made frequently during the whole
process, in order to recognize and ban potential risks from parties of interests. In our project, the user will be taken into account on a frequent basis, in order to gain feedback on the design and the user experience.

The second method I want to take up is goal-setting [25], which consists of a search for goals, structuring a hierarchy of goals, analyzing possible conflicts, goal definition and documentation as well as final goal adjustments. This goal-setting method is again, an exact way of how to gather as much relevant information as possible, while entering a project. It was created in order to make project outcomes comparable with their original goal and gave them a measurable indication of a projects success. Our research project could have profited from a clearer idea of a goal and sub-objectives at set milestones during the design process. My reasoning is therefore similar to Ernø-Kjølhede’s, who claims "Goals may be abstract and subject to change" [10], but I argue that they have to be defined first, in order to be changed later. Design can be seen as a risky endeavor, a situation where the “yet-unknown” gets created [27]. It is not sure if the result would be better - in the meaning of resulting in a better design - but it would make the design process clearer and more comparable, as well as providing certainty for all participants (designer, users, etc.) during the projects progress. A project needs a "well-defined objective - an expected result or product" [14]. Instead of a linear workflow, as seen during engineering projects - creative projects demand freedom during the development [40, 41]. The key to good project management is to find a balance between the strict and planned work approach and the possibility for creativity and innovation.

Background to design theory
In order to understand the reasoning of my approach, I now focus on similar design approaches, which take user participation and design reflections into account. The limited scope of this work compels to a restriction onto the area of user-centered design, participatory design, reflective design and user experience – for each approach I will provide a brief summary related to our project.

User-centered design can be seen as a multidisciplinary design approach which is "based on the active involvement of users to improve the understanding of user and task requirements, and the iteration of design and evaluation" [43]. "User" as a term works well in the context of this paper, but as a standard, "user" is replaced with the notion of "human", because it then addresses and includes different stakeholders instead of just the user. In practice the terms of human-centered design and user-centered design are equivalently used and we will here refer to the latter. While reflecting on user-centered design it becomes clear, that one of the main interest of researchers in this area is usability [18, 28]. Usability "is the extent to which a system, product or service can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use" [3]. So the main goal of user-centered design is to provide for those named goals and adjust the development accordingly. While concentrating on user-centered design, Sander and Dandavate, [34] describe the ground rules to understand the user by listening what they say, looking what they do and by expressing what they think and dream of. This means that when we try to design an artifact with the user in mind, we have to take them seriously and listen to their ideas. The model presented in this paper can especially be related to the user-centered work of Gulliksen et al. [16], who created key principles for user-centered system design, in order to create a definitional approach to the matter, as well as Göransson and Gulliksen [18] who decided on how user-centered design can be included into a process and the hands-on work of Olsson [32], which is focused on the question and possibilities with “what the user and the designer might contribute in a design process”.

Another relevant approach is participatory design, which integrates the stakeholders into the design process, where they "interact directly with a prototype of the new technology" [1]. This approach empowers the stakeholders to share their diverse perspectives and enhances a "democratic participation" during the design process. The intend is similar to my idea of including the user in an active user dialogue, but participatory design forces the designer to work with the stakeholders, which may "turn the whole process of participation into an illusion" [30]. Many of the positive properties of participatory design can be found in approaches of user-centered design [16].

Through the rise of networking and digital media the field of interest of many researchers in HCI shifted towards user experience - which included a wider perspective with emotional concerns and a more complex look on the using context [13, 28, 41]. Cockton sees user experience as a broader concept than usability, which "moves beyond efficiency, task quality and vague user satisfaction to a wider consideration of cognitive, affective, social and physical aspects of interaction" [6]. But even in this more modern view on user experience, two main accounts have been detected. The previous understanding of the term experience enhances a moment-to-moment experience [13], where the result relies on how a product looks and feels. However the recent understanding of experience cares more about experience itself – where it reflects on memories of experiences and a general creation of meaning instead [19]. Both understandings of experience are important, but valued differently by researchers. Hasezennahl classifies the first approach as a "technology driven innovation" and the second as a "human driven innovation" [20]. Norman supports this notion and states: "Design has moved from its origins of making things look attractive (styling), to making things that fulfill true needs in an effective understandable way (design studies and interactive design) to the enabling of experiences (experience design)." [31]. But how is it possible to define those true needs in the first place? Hess [21] describes how a system with the user in mind should
be created, and presents an approach which is inspired by practice in user experience design. Here she includes four open key questions: who, why, what and how. According to Hess [21] we first need to identify the intended audience (who?), in order to determine the problem. Secondly we have to clearly define the purpose and problem (why?). As a third step the investing elements (workforce, time, cost, etc.) have to be prioritized and decided on (the what?). Accordingly the fourth step includes the (how?) and therefore finds the right solution, with all recent steps in mind. As Hess [21] resumes "uninformed design (undefined what, who and how) cause pain and confusion, adding unnecessary cost and defeating the purpose of the entire effort". It can be therefore said that well-defined key questions provide a higher chance of a positive design outcome. It becomes clear that this approach can be related to the tools presented in this paper.

Another significant area for the theoretical background of this paper is reflective design. The idea about reflective design is grounded in critical theory, which in itself opens the discussion to an extensive field, too big to be extracted at this point. Sengers et al. define critical reflection as "brining unconscious aspects of experience to conscious awareness" and they enhance the "ongoing reflection by both users and designers is a crucial element of a socially responsible technology design practice" [36]. The concept of reflection-in-action, introduced by Schön [35], is worth mentioning as well. Here reflection is proposed as "an active, in the moment, and almost intuitive, visceral process" [35]. A similar approach can be found at McCarthy and Wright [29] who enhance experience and the importance of dialogue in the design process. Wright et al. conclude by arguing that the experience itself is not only about "what the individuals bring to the interaction [but] it is [also] about what the designer leaves there" [41]. Those named arguments speak for an importance of including reflection into the design process, as well as showing that the user has been central in many approaches already. It becomes also clear, that the field of design theory is multifaceted and of course goes beyond the scope of this work. In the next part I combine the background information gathered, with the case study and built a research process model as a result.

RESULT
The work on ‘Yu’ suggests that creative design research projects, which are similar to the one presented, could profit from an implementation of project management tools, which include user feedback and a clear goal setting from the start. In order to understand the introduced ideas, here a short summary of both techniques:

Active user dialogue: The active user dialogue is a technique, which enhances the communication with the user, throughout the design process. The user acts hereby the role of an expert, who is consulted during relevant milestones. By this step the designer has the possibility to reflect on the design at appropriate moments and profit from the feedback of the user. An important factor is though, that the designer should not perceive these influences as threatening in their creativity and self-management, rather as a profitable exchange of ideas. The dialogue sessions should be accompanied by showcasing the outcome visually in form of drawings, sketches, prototypes, video footage or similar visual aid.

Defining needs and goals: The second technique is a known and important step during project management. The definition of a goal is in theory and practice mandatory - that is why I propose this likewise for design research projects. Explorative and creative design practices tend to create artifacts without defining a goal from the start. I suggest that design outcomes would profit on the long run, when a goal definition is included at the beginning. Whenever creating for a specific user group, another aspect becomes relevant - namely a user needs definition and identification. Here it becomes clear what the user wants and expect from a product. As presented in the model (see fig. 5) this technique is not fixed and should not dictate the outcome (reshape if necessary), it should rather provide an approach to assist the designer during the process as well as during the evaluation phase.

The presented techniques should not be seen as an independent tool set, but instead pictured in a greater context of the project life cycle. The project life cycle itself can be seen as "a standard concept of a product or project where it goes through a start-up phase, a building phase, a maturing phase and a termination phase" [30]. Interesting is the ISO 9241-210:2010 standard [22], which defines how the user should be integrated during designing of products. The standard describes the process as an iterative cycle of six activities: First the planning of the design process (1), then the understanding and specification of the context of use (2), the specification of user requirements (3), the production of design solutions to meet the users’ requirements (4) and the evaluation of the designs against the requirements (5). A design process has to react on changes and adjustments during the process therefore are steps two till five repeatable and iterative, whenever necessary. The final last step (6) is reached when the designed solution meets the proposed user requirements. The model of activities in user-centered design is the basis for the model presented here, where both techniques: the active user dialogue and defining goals and the user’s needs are implemented (fig. 5). The model includes steps from our design research project, with relevant components.
This concept of a design process is mainly inspired by the ISO standard 9241-210 [22] and refined through input from Ernø-Kjølhed’s theory on management of research projects [10], where he identified different constraints a researcher is obliged to follow in order to manage projects successfully. Additionally Göransson and Gulliksen’s ideas on system design [18], which identified similar principles such as an active user participation and early prototyping, prove the importance of those additions to the research process model.

The model shows where the techniques become relevant during the process. Defining the goals is necessary right at the start, during the planning of the whole process. Those goals display a direction, where to go and what to expect from the projects outcome. When aspects are reshaped or adjusted, the process starts over and the “circle of creation” begins. This means that – especially in an explorative design process – it is possible for goals and objectives to change during the process. The model allows adjusting the outset goals, which become relevant during the final evaluation of a design solution. At this point the goal and the user’s needs’ definition build a framework on how it is possible to reflect on taken decisions and enables comparison.

Defining the user’s needs is the second part of the defining needs and goals approach, which is relevant during the specification of the user requirements during the process. They behave similar to the goal objective and focus on what the user might need and gain from the design outcome. They also provide ideas for the creation itself. The active user dialogue is in the model pictured by different colored framing of the different steps. Steps which enhance the role of the designer are marked blue and steps which focus on the users’ input are green. The importance of the role of the designer and the user switches from step to step and this is why we called it a dialogue. It visualizes the importance of the users’ influence during the design process, but leaves the designer room to decide on the final outcome.

**ANALYSIS**

The attempt in this paper is to combine specific tools and ideas from project management theory and practice into the workflow of the design process and propose an idea of reflection at an early stage, in order to improve the design research outcome. The development steps of the ‘Yu’ project were the initiator for creating those named tools (see result). The ISO-standard 9241-210:2010 takes already some of the ideas into account, but novelty with the tools presented in this paper are that they provide designers with
practical tools of how to achieve a dialogue with the user. Additionally this paper gives an example for a negative outcome, caused by the lack of a clear goals and needs’ definition, which should prevent designers in other creative research design projects from making similar mistakes. What are lessons I learnt through creating the ‘Yu’ project? It can be said that the design process of our projects interface went through iterative design phases. According to the presented model, we spent a long time in circle of creation phase. The feedback from the users helped us in moments of uncertainty to get inspiration and to find a path of design. Going back to the raised questions in the start of this paper quoting Wolf et al. [40] which included “who is influencing the non-linear process?”, I now can answer that influences might come from different stakeholders, which have to be defined according to the context of each project. In this project I enhanced the role of the user and see them as a partner for feedback and reflection throughout the design process. Another question tackled the effect of design critique and asks who performs design judgment (see introduction). I detected that design critique has its own field of research, but in this context it can be seen as a provider for more qualitative feedback on design products. Similar is the notion of design judgment, which opens the discussion beyond the scope of this paper. According to my reasoning, design judgment is the task of the designer, who is encouraged to reflect on the design outcome and decisions.

I realized that typical influences, which affect the design process, are the environment, the work setting and different stakeholders. In the presented case, we had different influences which affected the fluency and effectiveness of the design process; those were related to problems with obtaining necessary material or differing understandings of competence. The model is therefore just applicable to a small area of the design process and not demonstrating the whole picture. The reason why this paper includes a demand after more structure is grounded in the absence of this step in the presented case study. In the model it becomes obvious that the step of ‘planning the design process’ takes up a prominent and important part, which should be done directly after the idea has been presented and decided on. At the same time it became clear, that it is important to keep the goal definition loose, in order to respond to the changing circumstances of a creative design project, but a general goal direction from the start can be profitable for the project outcome and the work approach for all participants involved.

This article contributes to the ongoing debate between aiming for efficiency or creativity, but instead discarding the one or the other, I tried to combine them. Creative design demands after a “period of exploration in which problem and solution spaces are evolving and unstable until (temporarily) fixed by an emergent bridge which identifies a problem-solution pairing” [8]. Creative design research projects need therefore the possibility for exploration and openness, but at the same time consider an efficient way of structuring a project. The presented techniques try therefore to influence a designer’s direction of thinking and reasoning whilst engaging in research projects and preventing them from making similar mistakes.

DISCUSSION AND FUTURE WORK

This paper presents the reflections of one instance of a design process and tries to identify its shortcomings. It then attempts to identify tools to mitigate these problems. The presented techniques work in this scenario setting, but they have to be tested in a wider scale in order to be valid. The ideas are therefore not universally applicable to every design process. The core idea presented in this paper shows a possible way to benefit from project management tools and give the designer the chance to include the user – as a resource – earlier into the design process. By involving the resulting valuable user feedback, the design outcome can be greatly enhanced. The result is responding to the urge to create “good design” and to have a purpose and framing for their design outcome at an early stage of the design process. Through the combination of the design process and tools from project management, it is easier to move into the next stage: the commercialization of an artifact or research outcome, which might be a natural progression for successful design creations. The co-operation with users and the definition of goals and proper structuring can lead to positive results on a long-term basis.

This paper hopefully provides an insight into the complex area of designing research projects and presents some potential solutions to the matter. In this approach I combined project management thinking with designerly thinking to provide a possible solution towards a mutual benefit. As said before: project management tools don’t provide a solution in the search of knowing what to create, but it facilitates the process in researching how to find solutions through planning and in what should be invested. Future work would include applying the presented techniques in other research projects and to examine their applicability. Further investigations into similar approaches might extend the general acceptance of including divergent methods into the area of HCI.

REFERENCES


conference on Designing interactive systems: processes, practices, methods, & techniques. ACM. 87-95.


