A FRAMEWORK FOR UNDERSTANDING, COMMUNICATING AND EVALUATING USER EXPERIENCE POTENTIALS

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Abstract

Designing positive User Experiences with products enables the creation of unique selling propositions. Interdisciplinary design teams need feasible methods to deal with UX factors in design processes. But conventional design tools are not focused on analyzing the holistic influencing factors: User Experience goes beyond usability, considers time periods before, during and after the actual interaction, includes hedonic aspects and is dependent on intangible factors like subjective characteristics of the user. Existing UX approaches range from the emergence of emotions to the fulfillment of psychological needs, making it hard to understand and consequently design products that facilitate positive experiences. The UX framework is introduced to face these challenges by integrating the main theoretical models of User Experience Design in a pragmatic tool – enabling a common understanding, communication and evaluation of User Experience potentials. The paper defines the structure and elements of this framework and suggests a process for applying the framework in product development projects.

Keywords: User Experience Design, Emotional design, Design tools, User Experience evaluation

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1 INTRODUCTION

Technical systems have become important auxiliaries for achieving personal goals – e.g. in the fields of transportation, communication, information and entertainment. The frequency and intensity of interactions between people and technology is increasing. By this means, the character of interactive products is changing from working tools towards everyday products and their usage has become an integrated part of today's life (Hassenzahl, 2006) – e.g. at home, in the car, etc. Thus, demands and usage behavior of customers have changed as well. Traditionally focus was placed on pragmatic aspects. Users were satisfied with products which are useful and usable. Nowadays customer expectation, users' personal impression, emotional impact of product solutions and the fulfillment of individual needs is gaining in importance. Products should enable joy, excitement, pleasure and fun (Jordan, 2000; Norman, 2005). At the same time new technologies can be used to design products that impress beyond mere functionality (Hassenzahl, 2006). Consequently new ways of creating differing products in competitive markets and meeting real customer needs have to be found. The research field of User Experience (UX) addresses this challenge with extending the view on human product interaction. The focus of interest moves from developing products towards designing positive experiences that users have through the encounter with a system (Roto et al., 2011). Compared to the traditional mostly problem and technology oriented product development, User Experience Design (UXD) focuses on potentials in non-technical fields. Demands of users and their subjective and emotional evaluation of the interaction are considered to be the core of positive experiences. Many intangible influencing factors like individual characteristics of the user or characteristics of the specific usage situation make it difficult to plan experiences entirely before the actual user product interaction (Roto et al., 2011). Nevertheless, potentials for positive User Experience can be designed into products. But besides general basics User Experience is interpreted diversely, making it hard to clearly describe User Experience and communicate it in interdisciplinary teams. Many disciplines are involved in User Experience Design and accordingly the definitions and approaches vary from a business perspective to a pleasant, emotional product usage and to the satisfaction of psychological needs (Roto et al. 2011). So on the one hand the approach of User Experience can help creating great new opportunities for successful products that meet the demands of real users. On the other hand there are many open questions: How can we develop a positive User Experience based on a common understanding? Which influencing factors have to be considered? Why is one product inspiring users while another one fails to do so? For integrating User Experience in product development processes and offering products with reproducible experience possibilities it is necessary to have a structure for the according experience evaluation of products. Therefore, we introduce a framework for UX.
It is the aim of this paper to support designers in understanding, communicating and consequently evaluating UX. The theoretical background is summarized in chapter 2. All relevant aspects are then clustered in the UX framework supplemented with a methodological procedure for its usage (chapter 3). The paper ends with a discussion of the approach (chapter 4) and a conclusion (chapter 5).

2 BACKGROUND

2.1 General principles of User Experience (UX)

In their UX white paper Roto et al. (2011) state: "The field of UX deals with studying, designing for and evaluating the experiences that people have through the use of (or encounter with) a system. This use takes place in a specific context, which has an impact on, or contributes to, the UX." Based on this definition, the generally accepted principles of UX are explained in the following.

From usability to holistic approach

The research field of User Experience has its roots in the concept of usability. In ISO 9241-11 (2006) usability is defined as extent to which a product can be used to achieve specific goals of a user effectively, efficient and satisfying. Therefore, products should be easy to understand and to use (Norman, 2002; Shneiderman & Plaisant, 2010). But as customer demands are expanding, guaranteeing usability is not sufficient anymore when it comes to convincing users with unique selling propositions. The criticism can be summarized in two aspects. Firstly, in the usability concept, user satisfaction is just conceived as a consequence of effective and efficient product usage, whereas the experience of the usage itself it not considered. Secondly, pragmatic and task-based product

requirements are in focus whereas excitement and pleasure are not integrated (Norman, 2005). Therefore, User Experience widens the scope and is defined as perception and reactions of a user resulting of a real or expected product usage (ISO, 2010). Usability is part of the User Experience. But beyond this UX looks at the big picture of experiencing an interaction also taking into account emotional aspects as well as psychological interpretation by the user (Gube, 2010; Roto et al., 2011). Hence, the question why an individual should want to use a product is crucial for UX, even before asking what functionality a product has and how it is used (Hassenzahl, 2010).

Focus on interaction of user, product and context

Resulting from the holistic view of User Experience on the product usage other aspects outside the actual product have to be considered. The User Experience is influenced by the individual condition of the user, the product properties and the context of interaction (Hassenzahl & Tractinsky, 2006). Roto et al. (2011) describe these three factors in detail: The user is seen as a combination of his motivation, his individual mood, his mental and physical strength and his personal expectations. Concerning the product, properties changed by the user and the brand image attached to the product matter, besides its designed technical and aesthetic functionality. The context is subdivided into social (e.g. teamwork), physical (e.g. surrounding), task-oriented (e.g. purpose) and technical aspects (e.g. other products). When designing User Experience it is not sufficient to analyze user, product and context separately. Neither the characteristics of the user nor the properties of the product but their encounters during interaction are crucial (Garrett, 2011). The experience is often not interpreted as the result of the interaction but much more as an accompanying element of the interrelations between humans and technology (Hekkert & Schifferstein, 2007).

Subjectivity and affectivity

Subjective and affective aspects are an important part of all UX approaches. The perspective is broadened towards perceptions, thoughts and feelings of users (Tullis & Albert, 2006). During a user product interaction the experience is influenced by sensual stimulation, symbolic values attached to the product and feelings of the customer (Hekkert & Schifferstein, 2007). Therefore products should not only address instrumental requirements but also subjective, complex and dynamic demands of users (Hassenzahl & Tractinsky, 2006). Focus is placed on designing positive aspects like joy or pleasure (Norman, 2005). This orientation provides great potential for new unique selling propositions but at the same time brings along new difficulties and risks. Compared to the traditional usability concept, a broader range of influence factors, which are harder to achieve and only to a certain extend measurable, have to be considered. Firstly, User Experience cannot be measured with traditional task-oriented units like the time of usage as these factors do not reveal the personal assessment of the interaction by an individual (Roto et al., 2011). Secondly, the experience with one product can be very different depending on individual characteristics of diverse users (Gube, 2010).

Temporal dimensions

Besides the integration of emotional and subjective requirements, the discussion of temporal dimensions of interactions with technical systems is an additional aspect of User Experience. Not only the period of interaction but the user's reactions before, during and after the usage are included (ISO, 2010). Before the interaction anticipation and expectation of the user play an important role. After the usage, identification with or reluctance to a product are critical. Baekdal (2006) summarizes: "You want people to feel happy before, during and after they have used your product." The different time spans of User Experience are described by Roto et al. (2011): Emotionally experiencing the interaction itself remains a crucial factor (Momentary UX). Anticipated UX takes place before the first or repetitive use of a product and describes the thrill of anticipation. In contrast, Episodic UX does not refer to the time of interaction itself but the subsequent reflection on an experience. Finally, cumulative UX results of the assessment of all episodes of usage and time spans in between. The temporal dimensions have led to two different understandings of User Experience. On the one hand "An Experience" (Forlizzi & Batterbee, 2011) or "A User Experience" (Roto et al., 2011) describes an emotional usage event with a defined beginning and end. On the other hand "Experience" (Forlizzi & Batterbee, 2011) or "Experiencing" (Roto et al., 2011) describes a continuous, subjective and dynamic perception and assessment of an interaction over a longer period of time.

2.2 Emotional perspective

As described before emotions play an important role for User Experience. A main perspective of UX research aims at addressing emotions to evoke positive experiences with products and explaining User Experiences accordingly. In the context of user product interaction emotions can have two characteristics. They can cause pleasure and increase perceived product quality as well as support the perception and usage of products (Norman, 2005). In this context Norman (2005) developed a concept for the product cognition and use based on the ABC-model of attitudes. The model consists of the three levels "visceral", "behavioral" and "reflective" (see figure 1). Norman points out to consider these different levels in product design and formulates respective guidelines. The visceral level refers to the automatic, intuitive part of human processing. Visceral design aims at providing strong emotional signals that are directly sensually perceptible. The behavioral level concentrates on aspects of usage and performance. Based on the principles of human centered design it refers to the demands of users during the actual interaction, aiming at providing an appropriate function, a good comprehensibility and a pleasant look and feel. The reflective level refers to the ability of humans to reflect and assess. It goes beyond obvious aspects like attractiveness and performance. This level aims at the symbolic power of products. Personal aspects like memories attached to a product or cultural effects are important influencing factors on this level. Compared to the visceral and behavioral level the reflective level is not limited to the time period of usage but focuses on the following interpretation of the interaction.

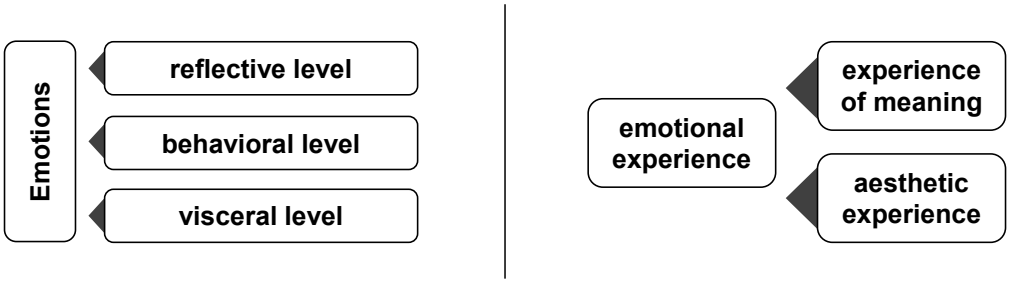

Figure 1. Levels of emotional design (left) according to Norman (2005) and types of product experience (right) according to Desmet & Hekkert (2007)

Desmet & Hekkert (2007) define three levels of product experience which have similarities to the three levels of emotional design by Don Norman. They describe the Experience as all affects being elicited by aesthetic experience, emotional experience and experience of meaning (see figure 1). Aesthetic experience considers all sensual pleasures and is the aspect to which Norman's visceral level refers to. For the experience of meaning, associations connected to and interpretations of a product are decisive. These experiences are, as the reflective level, strongly dependent on individual and cultural influences. Emotional experience arises due to feelings caused by product characteristics like functionality, innovative design and usability and can be compared to the behavioral level. The three components of the model are highly intertwined and only together do they lead to UX. In contrast to the three levels of emotional design, Desmet & Hekkert define emotional experience not as the general outcome of a user product interaction but as a specific type of experience that is influenced or caused by aesthetic experience and experience of meaning. Usability is considered as a source for experiences in the three distinguished aspects.

2.3 Psychological needs perspective

Another perspective on User Experience goes beyond emotions and understands experiences as result of satisfying psychological needs with product interactions. This approach is based on the goal- and task-orientation of traditional human computer interaction, but broadens the range of goals to non-instrumental needs (Gaver & Martin, 2000). Usability remains part of the concept. Nevertheless, it is not enough to avoid negative aspects for generating positive experiences. Besides pragmatic needs, hedonic needs are gaining importance (Hassenzahl, 2006). The individual motivation and ultimate sense of a product interaction is considered to be the core of any experience (Hassenzahl, 2010). Kim et al. (2011) highlight the significance of the fulfillment of users' psychological needs to generate positive experiences through product interaction. Based on the work of Sheldon et al. (2001) they define six main and four psychological sub needs for User Experience Design (see figure 2).

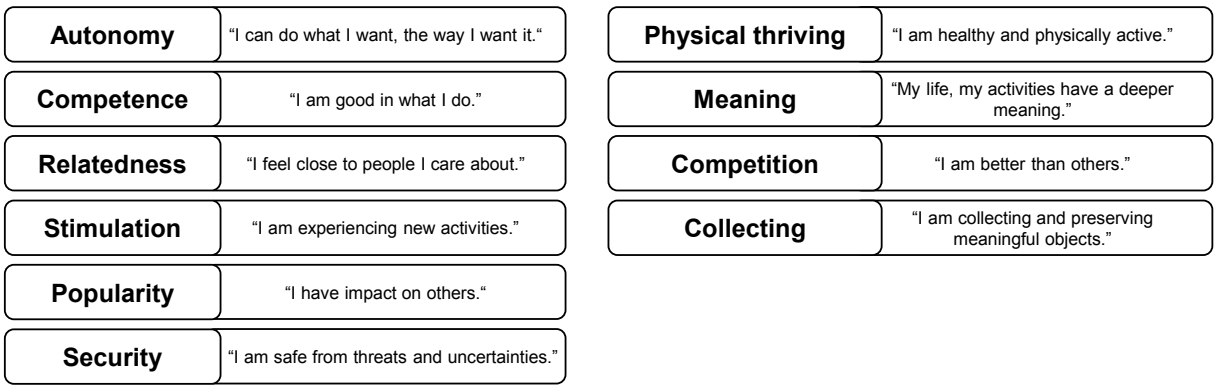

Figure 2. Psychological main needs (left) and sub needs (right) according to Kim et al. (2011)

2.4 User Experience evaluation

According to the two perspectives of emotions and psychological needs, User Experience evaluation mostly focuses on measuring one of these aspects. PrEmo (Desmet, 2003) is a widely used instrument to measure emotional responses to products. The evaluation is based on the fact that non-verbal analysis (e.g. of physiological manifestations) is objective but limited to basic emotions and verbal analysis reveals subjective feelings but is dependent on cultural and linguistic details. Therefore, PrEmo uses expressive cartoon animations, each one representing one of 14 emotions which are especially important for product design. The user reports which animated cartoon represents the emotion associated with the product interaction. In contrast to PrEmo, Attrakdif2 (Hassenzahl, 2010) is a questionnaire to measure psychological needs addressed with a product usage. Using semantic differentials the user is asked to rate the interaction in a lot of categories. For each question he has to evaluate the experience in between two bipolar characteristics (e.g. simple or complex). The evaluation results in the analysis of fulfilled pragmatic and hedonic psychological needs. Other methods work similarly but address a broader range of needs based on the work of Sheldon et al. (2001) (Körber & Bengler, 2013). UX evaluation is mainly performed after the actual interaction, revealing emerged experiences but not giving designers an impression of experience related product characteristics during product development processes. Few evaluation tools also aim at Anticipated UX assessing expectations of users towards the product interaction (Yogasara et al., 2014). But there are hardly tools to estimate User Experience potentials of existing or prospective products in all relevant categories described in chapter 2.

3 OBJECTIVES

The arousal of User Experience depends a lot on intangible factors like subjective and affective characteristics of the user or the specific context of the product usage. As a result, UX cannot be planned entirely beforehand by designers. Nevertheless, possibilities for the emergence of positive experiences can be created by actively designing UX relevant product characteristics. We want to provide a framework that supports and structures understanding, describing and communicating as well as comparing and evaluating the User Experience potential of ideas, product concepts and existing products. The model should be able to be used in different situations during the development process. Hence, the model should include all main relevant aspects of User Experience and present them in a coherent way. But at the same time the structure is kept as general as possible to facilitate pragmatic UX assessments in various development situations and leaving enough space for the creativity of each designer.

3.1 Create a holistic framework for understanding UX

In the research field of User Experience and User Experience Design various theoretical models and concepts exist. They can help understanding the complex background of the emergence of experiences. But at the same time the various concepts can lead to frustration (Desmet & Hekkert, 2007). We experienced that UX is often misunderstood by many researchers and designers in industry as a gimmick or add-on to technical products. But it is much more. It is impossible to not experience a

product. Every encounter with a product causes a reaction of the user – even if it is a bad experience. In addition, usability and User Experience are often by mistake understood synonymously (Gube, 2010). We want to provide a pragmatic tool, including traditional aspects like functionality and usability and expanding the view on new aspects. The relevant aspects described in chapter 2 are therefore integrated into one UX framework, facilitating a common understanding in design processes.

3.2 Support communication of UX relevant aspects

The discipline of User Experience is influenced and shaped by various different disciplines (Gube, 2010; Hekkert & Schifferstein, 2007) – e.g. mechanical engineering, industrial design, human computer interaction, human factors and marketing. It is a main challenge bringing together the different perspectives and communicating about UX in interdisciplinary teams. Focus should be placed on the real user instead of on aspects of your own discipline. Therefore, different perspectives (e.g. marketing: brand image; industrial design: aesthetics) should be included in the framework to create a common communication platform. On the one hand, detailed analysis of certain aspects can be performed by each discipline. On the other hand, the general factors and results of the detailed analysis can be located in the framework allowing a discussion about a common UX goal and a synthesis of different perspectives.

3.3 Facilitate a pragmatic evaluation of UX potentials

When developing products with considering the impact of User Experience it is important to find answers to the following question: Why is one product fascinating the user and enabling positive experiences while similar products fail to do so? The emotional perspective is to some extent missing the analysis of sources for the emergence of emotions (Desmet & Hekkert, 2007). On the other hand, analyzing real development projects in industry and experiences with real products, we recognized that psychological needs are often to abstract and cannot describe every User Experience (von Saucken et al., 2013). So relying on one UX approach is not sufficient but applying them all is not efficient. You can also not ask the user directly what their experience would be like. Therefore, the proposed framework categorizes the factors of user product interaction relevant for UX, enabling a pragmatic evaluation of UX potentials.

4 APPROACH

4.1 User Experience framework

Based on the theoretical background and objectives, identified in UX research and industrial application, the proposed User Experience framework clusters the diverse aspects for describing and evaluating UX potentials in the structure of a use-value analysis (see figure 3). This method supports the non-monetary analysis of complex systems with multidimensional goals. It provides a hierarchical system, organizing the potential value of a system into superordinate criteria and further into subordinate categories and allows a scoring of the different categories (Lindemann, 2005). The superordinate dimensions are based on the three levels of emotional design (Norman, 2005) since they provide the link to include all important UX factors: visceral, behavioral and reflective. Being supplemented with the main relevant aspects for User Experience, the categories are partly re-defined and integrate the psychological needs by Kim et al. (2011). Usability remains part of the UX approach but is extended to a holistic view on product usage. The different categories also address temporal aspects (visceral and behavioral: during usage; reflective: before, during and after interaction). The rough and flexible structure integrates all aspects of interaction between user, product and context and allows the adaptation to subjective and context-sensitive aspects of a specific development situation (details explained within the methodological application process, chapter 4.2). In the following, the superordinate and subordinate criteria are described and illustrated with an example of the Apple I-Pad *(in brackets*) – a product with a high UX potential when being initially introduced to the market.

visceral

The visceral category refers to experiences that emerge due to the sensual perception of an object. External characteristics are decisive. Successful experience products address the gut feeling of the user

and convince him with a very good first impression. It can refer to the psychological need of stimulation, providing exciting sensual experiences by

- visual appearance (I-Pad: e.g. elegant design),
- touch experience (e.g. new experience of just using touchscreen instead of intermediate device),
- sound experience (e.g. making no noise compared to laptops).

Other senses are hardly addressed in product development so far but have a big UX potential and can accordingly be integrated into the framework if needed. The visceral category has the strongest dependency on the product implementation. Therefore, it is important to keep in mind that especially in this category only the potential can be rated in early stages of product development.

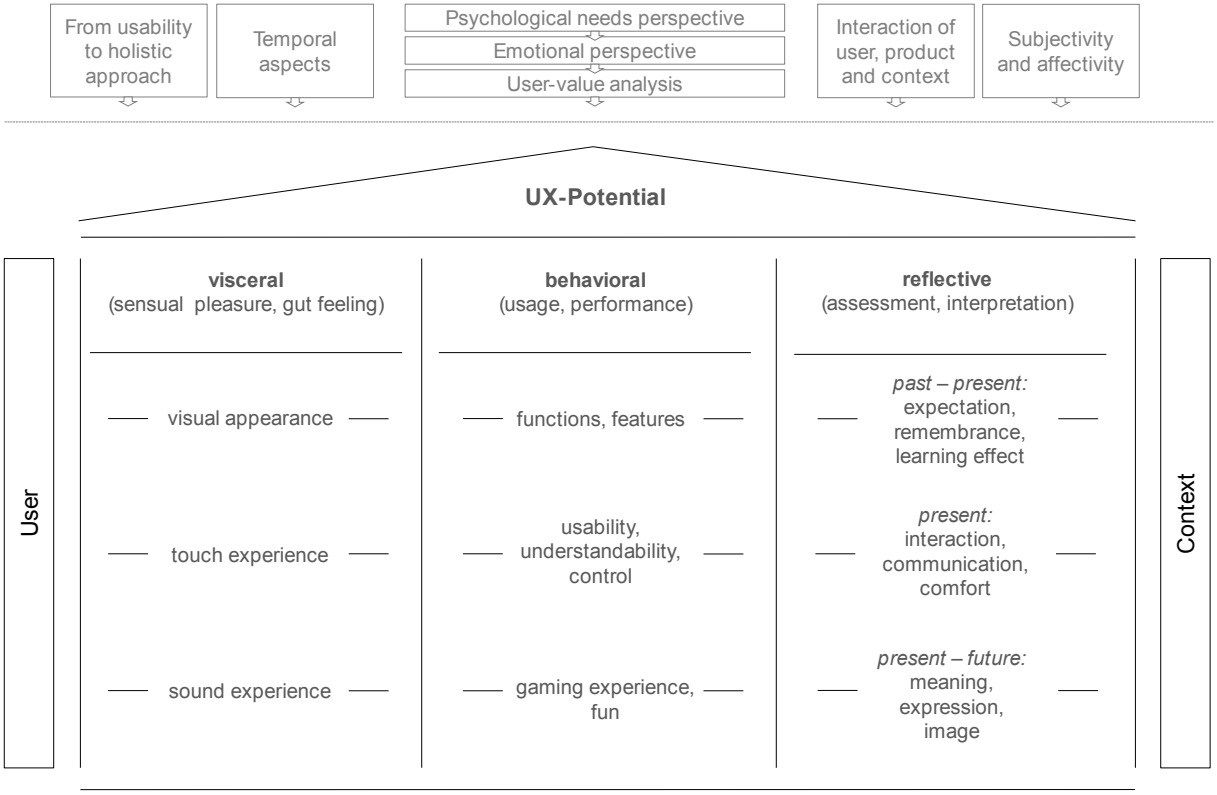

Figure 3. Framework for UX potentials

behavioral

The actual interaction of product and user can be evaluated in the behavioral category. Concerning usage and performance, User Experience is strongly related to novelty of specific aspects.

- Already the very existence of a new function can lead to positive User Experience. This subcategory can enable the fulfillment of specific psychological needs, supporting autonomy and competence *(e.g. integration of several functions in new technical device)*.
- In the center of any User Experience usability still plays an important role. In order to enable experiences belonging to this criterion products have to provide outstanding usability, understandability and a feeling of complete control. These aspects can refer to the needs of autonomy, competence and security *(e.g. intuitive usability)*.
- According to the maturity of a product and the specific product category, focus may shift from functionality and usability towards joy of use. Usage of products with a high UX potential is great fun and addresses stimulation, physical thriving and competition *(e.g providing exciting applications)*.

reflective

The reflective criterion refers to the interpretation and assessment of the product interaction by the user. Compared to the previously described categories, this criterion widens the scope from the actual interaction towards timespans before, during and after the encounter with a technical system.

- Connecting the past and present, positive User Experience can emerge due to fulfilled expectations, intensified remembrance and learning of new competences. This can refer to the

psychological needs of relatedness, collecting and competence *(e.g. feeling good because of quickly learning new operations)*.

- The reflection during the product usage is connected to feelings of increased interaction, communication and comfort. All psychological needs can have an effect on the present assessment of a User Experience *(e.g. feeling comfortable compared to using a computer due to avoidance of booting)*.
- The interaction can also be interpreted regarding the impact of the product interaction on prospective characteristics of the user. Products should aim at supporting the expression of the user, conveying an intended image and creating a symbolic meaning. Psychological needs addressed are competence, popularity, security and meaning *(e.g. transferring the brand image to oneself)*.

The framework can be used as a reference to estimate UX potentials. It is a flexible tool. However, when scoring products or product concepts in this structure, important aspects have to be considered: Specific user, product context and temporal aspects like novelty have a huge impact on the evaluation of UX potentials. Looking at the example of the Apple I-Pad, it initially provided a lot of potentials for experiences. By now similar products emerged and UX potentials might have been reduced – at least in some customer groups. Central aspects and guidelines how to deal with the framework are described as part of the methodological application process in the following chapter 4.2.

4.2 Methodological application process

1. **Analyze user**
   Due to subjective and situational dependencies of User Experiences it is especially important to define a clear target group. The subsequent evaluation is only valid for this target group. Therefore, collect influencing factors like cultural aspects, individual characteristics, previous experiences and demands of users. We propose to summarize the findings in a research story, using the method of storytelling for User Experience (Michailidou et al. 2013).
2. **Analyze product context**
   Besides the user, the context in which a product is offered and used is crucial for assessing UX potentials. Novelty and the comparison to existing products have to be considered when designing experiences with products. The aim is to create something new, special, exciting, or surprising. Therefore, it is important to define the product type and capture the product's technological status quo. Accordingly potentials in one category can be interpreted diversely (e.g. striking sound of Ferrari and no sound of electric car as UX potential). Also keep in mind that this status and connected UX potentials are changing over time.
3. **Define and weight UX categories**
   The rough framework has to be specified in concrete development situations. We suggest specifying each category with a short description in form of a characterizing story extract, based on the analysis. By precisely defining the criteria, you make sure not to compare apples with oranges. According to the development goals in a specific context, the weightings (w) of super- and subordinate categories have to be adapted (But note: $[w_{visc.}+w_{beh.}+w_{ref.}]=\Sigma w_{visc.i}=\Sigma w_{beh.i}=\Sigma w_{ref.i}=1$). In addition, identify interrelations between (sub-) categories. For example a new function in the behavioral category might influence the reflected symbolic meaning of a product.
4. **Generate ideas/ concepts/ products**
   The framework with its associated process is applicable to ideas, concepts and products. When combining different ideas in an integration concept, try to address as many categories as possible. Keep in mind the previously defined development focus and describe each solution in two to three story sentences.
5. **Discuss ideas/ concepts/ products**
   Discuss the ideas, concepts and analyzed products in an interdisciplinary team. Use the compiled stories to compare demands and solutions regarding the UX potential. All perspectives can be located in the framework and one discipline does not have to be limited to one category. Note that different categories can be strongly interrelated (e.g. visual appearance – assessed symbolic meaning).
6. **Conduct user feedback**
   At first, formulate concrete questions for each subcategory according to the specific definitions. Then conduct feedback of potential or actual users as orientation for the consecutive evaluation.

7. **Evaluate ideas/ concepts/ products**
   Based on input from previous steps, evaluate the UX potential of each artifact in a use-value analysis. The values of all categories are summed up to the final evaluation score: $UX_{pot}= w_{visc.}*[w_{visc.1}*v_{visc.1}+w_{visc.2}*v_{visc.2}+w_{visc.3}*v_{visc.3}]+w_{beh.}*[w_{beh.1}*v_{beh.1}+w_{beh.2}*v_{beh.2}+w_{beh.3}*v_{beh.3}]+ w_v*$
   $[w_{ref.1}*v_{ref.1}+w_{ref.2}*v_{ref.2}+w_{ref.3}*v_{ref.3}]$, (w=weighting factor, v=value). Depending on the UX goal, not all categories have to be necessarily addressed by a product in the same way. As you are evaluating potentials instead of requirements already one exploited potential might lead to a positive User Experience. Consider this fact when comparing total values of UX_{pot}. Nevertheless, outstanding products concerning User Experience convince in a broad range of categories.
8. **Select ideas/ concepts/ products**
   Finally, select ideas, concepts, or suggested improvements for products and support decisions by applying additional methods like a SWOT-analysis. If necessary perform iterations in the process (e.g. going to step 4 to generate product concepts after having selected promising ideas).

5 DISCUSSION

We suggest a framework to evaluate User Experience potentials of ideas, product concepts and products. To understand the development of the framework structure the theoretical background was described in chapter 2. The presented framework is not claiming to cover all aspects of UXD in detail, as this might confuse non-specialist users. It is the aim to provide a pragmatic and flexible structure. At present, experiences are mostly evaluated after usage of a product or in late development phases using high fidelity prototypes. We want to enable and encourage feasible evaluation at different design stages. Note that a solely quantitative evaluation of UX potentials is not sufficient. The framework inspires structures and enhances discussing relevant aspects in design teams qualitatively. The adaptability to different development situations can be an advantage. At the same time it is a main limitation as the adaption needs some experience of the user. Nevertheless, the approach gives designers, who are inexperienced in UXD, an idea what to consider.
Using the framework, it is important to keep in mind that UX potentials have crucial differences compared to conventional requirements. Traditionally requirements are generated based on problem solving goals and have to be fulfilled. In contrast, potentials offer opportunities. These circumstances create great chances for designing inspiring products but also require anticipation and creativity of designers. This leads to the fact that the emergence of positive experiences cannot be planned entirely beforehand. Analyzing user group and context factors can reduce the danger of generating bad experiences. But as the product is the only aspect of the interaction the designer can shape, the evaluation focuses on UX potentials directly attached to the product.
The approach was applied in a university UXD project. The design team first generated and evaluated ideas with traditional methods. Then the UX framework was applied to assess the potential of 45 ideas connected to 9 different research story sentences. With progressive scoring, using the values 0-1-3-9 from low to high potential, the high amount of ideas could be reduced and clustered into three product concepts. These were again ranked using the framework. Results of observations and interviews showed an enhanced common understanding of relevant UX factors and an increased focus on UX chances when working with the framework. Being supported with a structure of the relevant UX aspects, also researchers not so familiar with the topic were encouraged to participate in discussions.
Conclusion and Outlook
Designing positive User Experiences with products enables the creation of unique selling propositions. Interdisciplinary design teams need feasible methods to deal with UX factors in design processes. But conventional design tools are not focused on analyzing the holistic influencing factors: User Experience goes beyond usability, considers time periods before, during and after the actual interaction, includes hedonic aspects and is dependent on intangible factors like subjective characteristics of the user. Existing UX approaches range from the emergence of emotions to the fulfillment of psychological needs, making it hard to understand and consequently design products that facilitate positive experiences. The UX framework is introduced to face these challenges by integrating the main theoretical models of User Experience Design in a pragmatic tool – enabling a common understanding, communication and evaluation of User Experience potentials. The paper defines the structure and elements of this framework and suggests a process for applying the

framework in product development projects. Future work focuses on the evaluation of the UX framework in real development projects as well as on the specification of the framework according to different product categories, user groups or other context factors. Furthermore, we intend to create guidelines how to address different categories of the framework with product design.

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