

# Towards Practical User Experience Evaluation Methods

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## ABSTRACT

In the last decade, User eXperience (UX) research in the academic community has produced a multitude of UX models and frameworks. These models address the key issues of UX: its subjective, highly situated and dynamic nature, as well as the pragmatic and hedonic factors leading to UX. At the same time, industry is adopting the UX term but the practices in the product development are still largely based on traditional usability methods. In this paper we discuss the need for pragmatic UX evaluation methods and how such methods can be used in product development in industry. We conclude that even though UX definition still needs work it seems that many of the methods from HCI and other disciplines can be adapted to the particular aspects of UX evaluation. The paper is partly based on the results of *UX evaluation methods in product development (UXEM)* workshop in CHI 2008.

## Author Keywords

User experience, evaluation methods, product development.

## ACM Classification Keywords

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

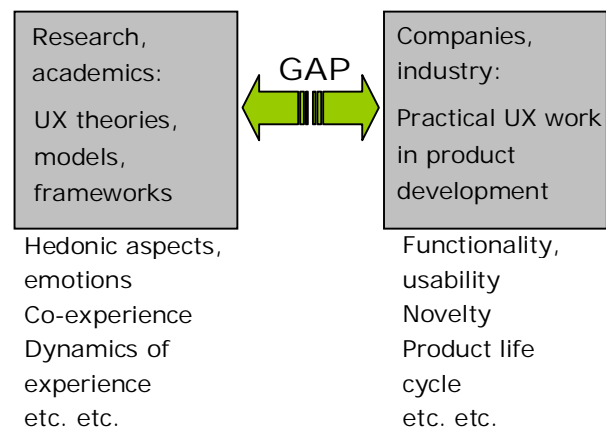
## INTRODUCTION

Companies in many industrial sectors have become aware that designing products and services is not enough, but designing experiences is the next level of competition [19, 22]. Product development is no longer only about implementing features and testing their usability, but about designing products that are enjoyable and support fundamental human needs and values. Thus, experience should be a key concern of product development.

There are many definitions for UX, but not an agreed one [16]. However, even the most diverse definitions of user experience all agree that it is more than just a product's usefulness and usability [2,6,17,18,23,26]. In addition, they stress the subjective nature of UX: UX is affected by the user's internal state, the context, and perceptions of the product [2,6,17].

However, definitions alone are not sufficient for the proper consideration of UX throughout product development. Product development in its current form needs tools from the very early concept to market introduction: UX must be assessable and manageable. An important element of this is a set of evaluation methods focused on UX.

Apparently, there is a gap between the research community's and the product developers' understanding of what UX is and how it should be evaluated (see Figure 1).



**Figure 1. Currently the academic UX research and industrial UX development are focusing on different issues.**

As an attempt to close the gap, we organised a workshop on UX evaluation methods for product development (UXEM) [25] in the context of the CHI 2008 conference on human factors in computing. The aim of the workshop was to identify truly experiential evaluation methods (in the research sense) and discuss their applicability and practicability in engineering-driven product development. In addition, we hoped for lively and fruitful discussions between academics and practitioners about UX itself and evaluation methods. In this paper, we present the central findings of this workshop.

## CURRENT STATE OF UX EVALUATION METHODS

Traditionally, technology-oriented companies have tested their products against technical and usability requirements. Experiential aspects were predominantly the focus of the marketing department, which tried to create a certain image of a product through advertising. For example, when Internet became an important channel in communicating the brand and image, technical and usability evaluations of Web sites needed to be integrated with more experiential goals [4,15]. Today, industry is in need of user experience evaluation methods for a wide variety of products and services.

User-centered development (UCD) is still the key to designing for good user experiences. We must understand users' needs and values first, before designing and evaluating solutions. Several methods exist for understanding users and generating ideas in the early phases of concept design, such as Probes [5] or Contextual Inquiry [3]. Fewer methods are available for concept *evaluation* that would assess the experiential aspects of the chosen concept.

## EXPERIENTIAL EVALUATION METHODS

A number of evaluation methods were presented and discussed in the UXEM workshop. However, only a few were "experiential" in the sense of going beyond traditional usability methods by emphasizing the subjective, positive and dynamic nature of UX.

Isomursu's "experimental pilots" [11], for example, stress the importance of evaluating before (i.e., expectation), while (i.e., experience) and after product use (i.e., judgment). This acknowledges the subjective and changing, dynamic nature of UX: expectations influence experience, experience influences retrospective judgments and these judgments in turn set stage for further expectations and so forth. In addition, Isomursu points at the importance of creating an evaluation setting, which resembles an actual use setting. UX is highly situated; its assessment requires a strong focus on situational aspects. Roto and colleagues as well as Hoonhout [21,10] stress the importance of positive emotional responses to products and embrace the notion that task effectiveness and efficiency (i.e., usability) might be not the only source for positive emotions. Their focus is on early phases of development where idea creation and evaluation is closely linked and short-cycled.

Hole and Williams suggest "emotion sampling" as an evaluation method [9]. While using a product, people are repeatedly prompted to assess their current emotional state by going through a number of questions. This approach takes UX evaluation a step further, by focusing on the experience itself instead of the product. However, in the context of product development additional steps would have to be taken to establish a causal link between a positive experience and the product: how does the *product* affect the measured experience. Bear in mind, that product

evaluation is not interested in experiences per se but in experiences *caused* by the product at hand.

Two further methods presented in the workshop (Repertory Grid, Multiple Sorting) [1,12] make use of Kelly's "personal construct psychology" [e.g., 13]. Basically, these are methods to capture the personal meaning of objects. They have a strong procedural structure, but are open to any sort of meaning, whether pragmatic or hedonic. Interestingly, the methods derived from Kelly's theory tend to provide both a tool for analysis *and* evaluation [7]. The results give an idea of the themes, topics, concerns people have with a particular group of products (i.e., content). At the same time, all positive and negative feelings (i.e., evaluations) towards topics and products become apparent.

Finally, Heimonen and colleagues [8] use "forced choice" to evaluate the "desirability" of a product. This method highlights another potential feature of UX, which may pose additional requirements for UX evaluation methods: There might be drivers of product appeal and choice, which are not obvious to the users themselves. Tractinsky and Zmiri [24], for example, found hedonic aspects (e.g. symbolism, beauty) to be predictive of product choice. When asked, however, participants gave predominantly pragmatic reasons for the choice. Note that the majority of the "experiential" methods discussed so far rely on people's self report. This might be misleading, given that experiential aspects are hard to justify or even to verbalize. In other words, choice might be driven by criteria not readily available to the people choosing. Forced choice might bring this out.

All in all, a number of interesting approaches to measure UX were suggested and discussed in the workshop. All of them addressed at least one key feature of UX, thereby demonstrating that "experiential" evaluation is possible. More work, however, has to be done to integrate methods to capture more aspects of UX simultaneously. In addition, methods need to be adapted to the requirements of evaluation in an industrial setting. So far, most suggested methods are still demanding in the sense of the skills and time required.

## REQUIREMENTS FOR PRACTICAL UX EVALUATION METHODS

In industry, user experience evaluation is done in order to improve a product. Product development is often a hectic process and the resources for UX evaluation scarce. Evaluating early and often is recommended, as the earlier the evaluations can be done, the easier it is to change the product to the right direction.

The early phases of product development are challenging for UX evaluation, since at that point, the material available about the concept may be hard to understand and assess for the participants [10, 21]. In the early phases, it is not possible to test the non-functional concept in the real context of use, although user experience is tied to the context [6]. We need good ideas for simulating real context

in a lab [14]. Later on, when prototypes are stable enough to be handed for field study participants, UX evaluation becomes much easier. The most reliable UX evaluation data comes from people who have actually purchased and used a product on the market. This feedback helps improving the future versions of the product.

In summary, the UXEM workshop presentations and group works produced the following requirements for practical UX evaluation methods:

Valid, reliable, repeatable

For managing UX also in a big company

Fast, lightweight, and cost-efficient

For fast-paced iterative development

Low expertise level required

For easy deployment (no extensive training needed)

Applicable for various types of products

For comparisons and trend monitoring

Applicable for concept ideas, prototypes, and products

For following how UX develops during the process

Suitable for different target user groups

For a fair outcome

Suitable for different product lifecycle phases

For improving e.g. taking into use, repurchasing UX

Producing comparable output (quantitative and qualitative)

For UX target setting and iterative improvement

Useful for the different in-house stakeholders

As UX is multidisciplinary, many company departments are interested in UX evaluation results.

Clearly, it is not possible to have just one method that would fulfill all the requirements above. Some of the requirements may be contradictory, or even unrealistic. For example, a method which is very lightweight may not necessarily be totally reliable. Also, it might be challenging if not impossible to find a method which is suitable for different types of products, product development phases, and product lifecycle phases. We thus need to have a toolkit of experiential methods to be used for the different purposes.

In the UXEM workshop, we noticed that there is not always a clear line between the design and evaluation methods, since evaluating current solutions often gives ideas for new ones. On the other hand, companies do need evaluation methods that focus in producing UX scores or a list of pros and cons for a pool of concept ideas in an efficient way. After the product specification has been approved, the primary interest is to check that the user experience matches the original goal. In this phase, the methods applied are clearly about evaluation, not about creating new ideas.

## DISCUSSION AND CONCLUSIONS

Obviously, applying and developing methods for UX evaluation requires an understanding of what UX actually is. This is still far from being settled. Although everybody in the workshop agreed that the UX perspective *adds* something to the traditional usability perspective, it was hard to even put a name to this added component: Is it "emotional", "experiential" or "hedonic"? The lack of a shared understanding on what UX means was identified as one of the major problems of UX evaluation in its current state. As long we do not agree or at least take a decision on what we are looking for, we cannot pose the right questions. Without an idea of the appropriate questions, selecting a method is futile. Nevertheless, once a decision is made — for example to take a look at the emotional consequences of product use — there seem to be a wealth of methods already in use within HCI or from other disciplines, which could be adapted to this particular aspect of evaluation.

Working with UX evaluation is a double task: We have to *understand* UX and make it *manageable* and *measurable*. Given the fruitful discussions in the workshop, a practice-driven development of the UX concept may be a valid road to a better understanding of UX. "UX is what we measure" might be an approach as long as there is no accepted definition of UX at hand. However, this approach requires some reflection on the evaluation needs and practices. By discussing the implicit notions embedded in the evaluation requirements and methods, we might be able to better articulate what UX actually should be. The UXEM workshop and this paper hopefully open up the discussion.

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