

User Experience Lifecycle Model ContinUE [Continuous User Experience]

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Abstract

We propose the conceptual User Experience Lifecycle Model ContinUE [continuous user experience], which illustrates sequential phases of a user experience lifecycle and the associated aspects of appraisal-forming. ContinUE extends existing models of user experience and usability by integrating a temporal perspective. Including phases of anticipation and reflection widens the frame of user experience with a distinct focus on the usage situation. The proposed sequence can be seen in analogy to information processing with the outcome of an appraisal by the user. In addition, the model recognizes the possibility of repeated episodes and thus the possibility of repetitive experiences. These evolve over time and over the lifespan of a product (e.g. marketing, use, after-sales services, wear, and disposal). Product development and design aiming for user satisfaction should take the entire user experience lifecycle into consideration.

Introduction

Ensuring continuous user satisfaction is one of the key goals when designing interactive technology, especially in the consumer electronics segment. However, it is not easy to get a grip of the vague concept of user satisfaction (Lindgaard & Dudek, 2003). As a result, many studies focus only on small excerpts of the entire user-product interaction, such as the actual usage situation. This is also the case in traditional usability studies. However, satisfaction is an overall appraisal.

Asking users (N=35) of interactive products to list criteria that motivate or hinder them to use interactive, technological products lead to an exhaustive variety of 375 stated reasons (Pohlmeier et al., 2009). Following a systematic, qualitative content analysis (Mayring, 2007), 33 categories were identified, ranging from usability-related aspects, environmental as well as financial concerns, visual appearance, wear, brand identification to the crucial criterion of usefulness. We were not able to find a single model within the HCI literature that covers all of these aspects. The matter of technology acceptance / adoption touches the fields of quality perception and user satisfaction. It appears that models usually only give a limited view of the entire user-product interaction, depending on the related discipline (engineering, psychology, design, marketing, or software-ergonomics).

User Experience and Product Quality

The appraisal with respect to satisfaction results from the overall experience with the device, expanding the mere focus of the usage situation. User experience has become quite a buzzword in the HCI community (Hassenzahl & Tractinsky, 2006), despite (or perhaps due to) its still rather fuzzy definition: discussions on conceptualizing and operationalizing user experience are still indecisive whether it is a construct which should be treated separately from usability as often seen in companies, whether it is an 'add-on' to usability (Jordan, 2000), or whether it should be considered as an extension of usability, as the ISO definition of effectiveness, efficiency, and satisfaction (ISO, 1998) could also include user experience by widening the scope beyond the instrumental (Blythe & Wright, 2003; Carroll & Mentis, 2008). On the other hand, consensus can be found that user experience incorporates more than just task fulfilment. Users

expect a pleasing, thus satisfying, experience, which is based on numerous facets of quality. System performance, in terms of task fulfilment, is just one of many.

Mørup highlights that “quality is the customer’s experience (or perception) of how well the totality of quality properties of a product satisfies their stated or implied needs” (Mørup, 1993, p. 91). Shackel (1991) extends this user-centered view by including objective measures of the interaction, such as effectiveness, as well as subjective perceptions of the user. Taken together, the knowledge of relevant quality attributes is required and should be considered in an experience-based context.

Most quality models are hierarchical in nature and adopt a cross-sectional perspective. We argue that the perception of quality of interactive products should also be considered in a longitudinal (temporal) sense. For this, an experiential approach seems appropriate. Forlizzi & Bartzbee (2004) argued that an experience has a defined beginning and an end. However, the question arises, when to set the beginning and the end – is it restricted to an actual usage situation or does it already start with a user’s expectations, attitudes, and subsequently intentions (Davis, 1989; Beauregard & Corriveau, 2007)? Does an experience end when a task is fulfilled or does the experience continue (e.g. evaluation and outlook)? Similar to usability-related approaches, current user experience-models limit their focus to the temporal frame of the usage situation. In line with a broader temporal perspective, approaches from marketing and from product development, regarding a product’s entire lifecycle, were found to be somewhat comparable to the stated attributes in our aforementioned study (Garvin, 1984; Elliott et al., 2003). In the following, we propose user experience as being a continuous process and will introduce a conceptual model of a user experience lifecycle.

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We see user satisfaction as ‘the user’s response to the evaluation of the perceived discrepancy between expectations and the actual performance of the product as perceived after its usage’ (modified from Tse & Wilton, 1988). However, we believe that there are more than just the three phases 1. before, 2. during, and 3. after usage, that should be distinguished and that the dynamics of relevant criteria should be taken into account. In other words, product feature importance might change along the usage cycle (Duke & Mount, 1996; Rust, 2006). Possibly, all criteria are considered at all times when evaluating a system, however, with varying importance (“weights”).

Anticipated Experience

Before even interacting with a product or system in a physical sense, the user-to-be has certain expectations. These can be positive (e.g. hopes) as well as negative (e.g. fears). If negative expectations outweigh the positive ones, it might never come to an actual try out of the system. Due to the uncertainty of the situation, expectations can be realistic as well as unrealistic. Expectations are based on prior experiences and the person’s attitude.

Use / Experience

This phase is the focus of given usability and user experience models. The interaction is influenced by characteristics of the user (e.g. skills, preferences), the system (instrumental as well as non-instrumental qualities), and the context (e.g. surrounding, time pressure).

Reflective Experience

After interacting with the system, the user reflects on the encountered experience and evaluates the immediate outcome of the interaction. The appraisal of the system is not only affected by the quality of the outcome but also by its attribution. In other words, it depends on whether the

user perceives himself, the system, or the situation as being responsible for the success or failure of the interaction, respectively.

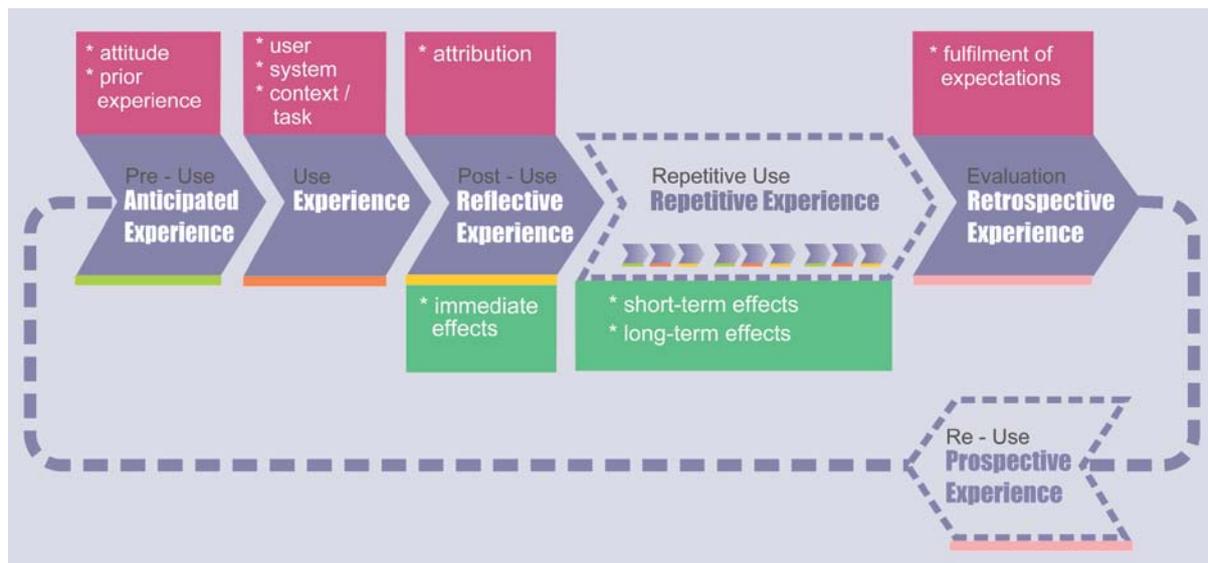


Fig. 1: Temporal Model of the User Experience Lifecycle with different experience phases. “Dashed” phases are optional additions if usage is repeated. Considering only the “filled” phases illustrates a unique episode, while all phases taken together indicate repetitive episodes. Boxes indicate influencing factors.

Repetitive Experience

This phase is an optional addition in case the system is used several times. Then, the first three phases are repeated a number of times and the reflective experience phase acts as a *formative evaluation*. The influencing factors user, system, and context also underlie the temporal dynamic with short-term and long-term effects (e.g. learning; durability, maintenance; variability of contexts).

Retrospective Experience

In the end, the user appraises the system and its experience as a whole. This *summative evaluation* is the basis of the decision regarding a possible re-use of a similar system. Note that repetitive use refers to the same system, while re-use and the associated **prospective** experience of such refer to the engagement with a new, comparable system, but not the initial system itself. Put differently, while the anticipated and reflective phases are linked to the current usage experience with a given system (expectation and response to outcome and interaction experience itself), the retrospective and prospective phases are a more general evaluation and outlook.

Summary

This paper presents a conceptual framework of a user experience lifecycle. The ContinUE [continuous user experience] model illustrates sequential phases of a user experience that go beyond the scope of the usage situation. This perspective widens the field of user experience, compared to that of usability-related research, not only by adding non-instrumental qualities, but also by expanding the temporal horizon of the system-user relationship. From a product development perspective, with the ambitious goal of continuous user satisfaction, all phases, their dynamics and interdependencies should be taken into account.

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