

Interplay between User Experience Evaluation and System Development: State of the Art

COST IC0904 TwinTide Open Workshop

Effie Lai-Chong Law

Department of Computer Science
University of Leicester
UK
elaw@mcs.le.ac.uk

Silvia Abrahão

Department of Computer Science
Universitat Politècnica de València
Spain
sabrahao@dsic.upv.es

Arnold P.O.S. Vermeeren

Faculty of Industrial Design Engineering
Delft University of Technology
The Netherlands
A.P.O.S.Vermeeren@tudelft.nl

Ebba Thora Hvannberg

School of Engineering and Natural Sciences
University of Iceland
Iceland
ebba@hi.is

ABSTRACT

User Experience (UX) is an emerging research area pertaining to as well as extending beyond the traditional usability. Issues in the realm of usability may be amplified in UX because of its larger scope. Four key non-orthogonal issues are: definition, modeling, method selection, and interplay between evaluation and development. Leveraging the legacy of a series of earlier workshops, I-UxSED 2012 aims to develop a deeper understanding of how evaluation feedback shapes software development, especially when experiential qualities such as fun, trust, aesthetic values are concerned. Is feedback on these fuzzy qualities less useful for problem prioritization or less persuasive for problem fixing? This and other challenging questions will be explored in I-UxSED 2012 that brings together researchers and practitioners from two communities - HCI and Software Engineering.

Author Keywords

User experience; Usability; Software development; Interaction design; Downstream utility; Interplay

ACM Classification Keywords

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

General Terms

Human Factors; Design; Evaluation; Measurement

BACKGROUND AND MOTIVATION

Leveraging the legacy of a series of successful workshops ([1] [2] [3]) that brought together people from Human-Computer Interaction (HCI) and Software Engineering (SE) communities to discuss the interplay between software evaluation and development, the proposed I-UxSED 2012 is further inspired by more recent insights into the issues pertaining to traditional usability (e.g. [4]) as well as the emerging User Experience (UX) (e.g. [5], [6]).

The shift of emphasis in the field of HCI from usability engineering to a much richer scope of user experience where users' emotions, affects, motivations, and values are given as much, if not more, attention than ease of use, ease of learning and basic subjective satisfaction [7]. Among others, four challenges engendered by the new focus of UX are particularly relevant to software development: (i) definition of UX; (ii) modelling of UX; (iii) selection of UX evaluation methods; (iv) interplay between UX evaluation feedback and software development.

The concept of UX is commonly understood as subjective, context-dependent and dynamic [7]. A "formal" definition of UX issued by ISO 9241-210: 2010 - A person's perceptions and responses that result from the use and/or anticipated use of a product, system or service - is ambiguous and needs to be refined.

In contrast to usability, UX metrics are yet to be defined. The task is related to ongoing debates on the measurability of experiential qualities [8]. Both usability and UX measures should enable professionals to benchmark competitive design artefacts and to select right design options. The intriguing question is whether the respective measures have different persuasive power and impact on (re)design and development.

Modelling users' experiences is especially important for understanding, predicting and reasoning about processes of UX with consequences for software design. However, a number of issues pertaining to UX modelling remain to be resolved [9].

Recently, research efforts have been undertaken to collect, consolidate and categorize UX evaluation methods (e.g. [10]). It is envisaged that taxonomies of UX qualities, which can facilitate the selection of UX methods and

measures, will come to fruition from these ongoing endeavours.

The first three issues have significant impacts on their fourth one – the theme of I-UxSED 2012 - is only explored to a limited extent.

WORKSHOP GOALS AND THEMES

We understand the relationship between UX and usability as the latter is subsumed by the former. Usability evaluation methods (UEMs) and metrics are relatively more mature [11]. In contrast, UX evaluation methods (UXEMs) which draw largely on UEMs [12] are still taking shape. It is conceivable that feeding outcomes of UX evaluation back to the software development cycle to instigate the required changes can even be more challenging than doing so for usability evaluation (UE). It leads to several key issues:

- UX attributes are (much) more fuzzy and malleable, what kinds of diagnostic information and improvement suggestion can be drawn from evaluation data. For instance, a game can be perceived by the same person as a great fun on one day and a terrible boredom the following day, depending on the player's prevailing mood. The waning of novelty effect (cf. learnability differs over time in case of usability) can account for the difference as well. How does the evaluation feedback enable designers/developers to fix this experiential problem (cf. usability problem) and how can they know that their fix works (i.e. downstream utility)?
- Emphasis is put on conducting UE in the early phases of a development lifecycle with the use of low fidelity prototypes, thereby enabling feedback to be incorporated before it becomes too late or costly to make changes [13]. However, is this principle applicable to UX evaluation? Is it feasible to capture authentic experiential responses with a low-fidelity prototype? If yes, how can we draw insights from these responses?
- The persuasiveness of empirical feedback determines its worth. Earlier research (e.g. [14]) indicates that the development team needs to be convinced about the urgency and necessity of fixing usability problems. Is UX evaluation feedback less persuasive than usability feedback? If yes, will the impact of UX evaluation be weaker than UE?
- The Software Engineering (SE) community has recognized the importance of usability. Efforts are focused on explaining the implications of usability for requirements gathering, software architecture design, and the selection of software components [15]. Can such recognition and implications be taken for granted for UX, as UX evaluation methodologies and measures could be very different (e.g. artistic performance)?

- How to translate observational or inspectional data into prioritised usability problems or redesign proposals is thinly documented in the literature [4]. Analysis approaches developed by researchers are applied to a limited extent by practitioners [4]. Such divorce between research and practice could be bitterer in UX analysis approaches, which are essentially lacking.

While the gap between HCI and SE with regard to usability has somewhat been narrowed (e.g. [1], [2]), it may be widened again due to the emergence of UX.

The main goal of I-UxSED 2012 is to bring together people from HCI and SE to identify challenges and plausible resolutions to optimize the impact of UX evaluation feedback on software development.

RELEVANCE TO THE FIELD

The main contribution of I-UxSED 2012 to the field of HCI and SE is the understanding of state-of-the-art about the interplay between UX evaluation feedback and system development. Specifically, there are limited studies investigating how different UX evaluation feedback formats such as textual (e.g. diary), audio (e.g. interview), visual (e.g. pictorial scale) and physiological (e.g. eye-tracking) determine their usefulness as well as persuasiveness. Besides, visual and physiological data are more commonly used in UX than in usability, based on the observations that experiences are more difficult to verbalize and more subjective. The role of such evaluation data in system redesign entails further exploration. Besides, there are very few methodological and practical guidelines on integrating UX evaluation and system design in a software development process. The workshop will heighten the awareness of the need for more research studies on the above-mentioned issues.

CONTRIBUTIONS

Eleven quality contributions have been accepted. They are categorized into four groups:

- Domain-specific design and evaluation case study (Winckler et al. on e-citizen, Panayiotis et al on e-learning, Nilsson & Følstad on emergency services)
- Models on usability and UX evaluation (Oliveria et al on customer satisfaction, Sikorski on customer relationship, and Srđević et al on decision-making)
- Agile and UX practice (Lárusdóttir et al on UX role in scrum, Lindell on design-driven organization, and Jokela on the role of evaluation in UX)
- Attitudes towards and awareness of UX (Ardito on UX practice in companies; Law and Schaik on attitudes towards UX measurement)

In-depth discussions in the workshop can shed light on these aspects with regard to the interplay between UX evaluation and software development. Future research challenges along this inquiry will be identified.

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