What is the difference between the purpose of usability and user experience evaluation methods?

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ABSTRACT

There are different interpretations of user experience that lead to different scopes of measure. The ISO definition suggests measures of user experience are similar to measures of satisfaction in usability. A survey at Nokia showed that user experience was interpreted in a similar way to usability, but with the addition of anticipation and hedonic responses. CHI 2009 SIG participants identified not just measurement methods, but methods that help understanding of how and why people use products. A distinction can be made between usability methods that have the objective of improving human performance, and user experience methods that have the objective of improving user satisfaction with achieving both pragmatic and hedonic goals. Sometimes the term "user experience" is used to refer to both approaches.

DEFINITIONS OF USABILITY AND USER EXPERIENCE

There has been a lot of recent debate about the scope of user experience, and how it should be defined [5]. The definition of user experience in ISO FDIS 9241-210 is:

> A person's perceptions and responses that result from the use and/or anticipated use of a product, system or service.

This contrasts with the revised definition of usability in ISO FDIS 9241-210:

> 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.

Both these definitions suggest that usability or user experience can be measured during or after use of a product, system or service.

A person's "perceptions and responses" in the definition of user experience are similar to the concept of satisfaction in usability. From this perspective, measures of user experience can be encompassed within the 3-component model of usability [1], particularly when the experience is task-related.

A weakness of both definitions is that they are not explicitly concerned with time. Just as the ISO 9241-11 definition of usability has nothing to say about learnability (where usability changes over time), so the ISO 9241-210 definition of user experience has nothing to say about the way user experience evolves from expectation, through actual interaction, to a total experience that includes reflection on the experience [7].

USER EXPERIENCE NEEDS IN DESIGN AND DEVELOPMENT

Ketola and Roto [4] surveyed the needs for information on user experience in Nokia, asking senior staff:

> Which User Experience information (measurable data gained from our target users directly or indirectly), is useful for your organization? How?

21 needs were identified from 18 respondents who worked in Research, Development, Care, and Quality. Ketola and Roto categorised the responses in terms of the area measured: UX lifecycle, retention, use of functions, breakdowns, customer care, localization, device performance and new technology.

In Table 1, the needs have been recategorized by type of measure. It is clear that most of the measures are common to conventional approaches to user centred design, but three measures are specific to user experience:

- The impact of expected UX to purchase decisions
- Continuous excitement
- Why and when the user experiences frustration?

USER EXPERIENCE EVALUATION METHODS

At the CHI 2009 SIG: "User Experience Evaluation – Do You Know Which Method to Use?" [6] [8], participants were asked to describe user experience evaluation methods that they used. 36 methods were collected (including the example methods presented by the organizers). These have been categorised in Table 2 by the type of evaluation context, and the type of data collected.

There was very little mention of using measures specific to user experience, particularly from industry participants. It seems that industry's interpretation of user experience evaluation methods is much broader, going beyond conventional evaluation to encompass methods that collect information that helps design for user experience. In that sense user experience evaluation seems to be interpreted as user centred design methods for achieving user experience.

The differentiating factor from more traditional usability work is thus a wider end goal: not just achieving effectiveness, efficiency and satisfaction, but optimising the whole user experience from expectation through actual interaction to reflection on the experience.

DIFFERENCES BETWEEN USABILITY AND USER EXPERIENCE

Although there is no fundamental difference between measures of usability and measures of user experience at a particular point in time, the difference in emphasis between task performance and pleasure leads to different concerns during development.

In the context of user centred design, typical usability concerns include:

Measurement category	Measurement type	Measure	Area measured
Anticipation			
Pre-purchase	Anticipated use	The impact of expected UX to purchase decisions	UX lifecycle
Overall usability			
First use	Effectiveness	Success of taking the product into use	UX lifecycle
Product upgrade	Effectiveness	Success in transferring content from old device to the new device	UX lifecycle
Expectations vs. reality	Satisfaction	Has the device met your expectations?	Retention
Long term experience	Satisfaction	Are you satisfied with the product quality (after 3 months of use)	Retention
Hedonic			
Engagement	Pleasure	Continuous excitement	Retention
UX Obstacles	Frustration	Why and when the user experiences frustration?	Breakdowns
Detailed usability			
Use of device functions	How used	What functions are used, how often, why, how, when, where?	Use of functions
Malfunction	Technical problems	Amount of "reboots" and severe technical problems experienced.	Breakdowns
Usability problems	Usability problems	Top 10 usability problems experienced by the customers.	Breakdowns
Effect of localization	Satisfaction with localisation	How do users perceive content in their local language?	Localization
Latencies	Satisfaction with device performance	Perceived latencies in key tasks.	Device performance
Performance	Satisfaction with device performance	Perceived UX on device performance	Device performance
Perceived complexity	Satisfaction with task complexity	Actual and perceived complexity of task accomplishments.	Device performance
User differences			
Previous devices	Previous user experience	Which device you had previously?	Retention
Differences in user groups	User differences	How different user groups access features?	Use of functions
Reliability of product planning	User differences	Comparison of target users vs. actual buyers?	Use of functions
Support			
Customer experience in "touchpoints"	Satisfaction with support	How does customer think & feel about the interaction in the touch points?	Customer care
Accuracy of support information	Consequences of poor support	Does inaccurate support information result in product returns? How?	Customer care
Innovation feedback	User wish list	New user ideas & innovations triggered by new experiences	New technologies
Impact of use			
Change in user behaviour	How the device affects user behaviour	How are usage patterns changing when new technologies are introduced	New technologies

Table 1. Categorisation of usability measures reported in [4]

1. Designing for and evaluating overall effectiveness and efficiency.

2. Designing for and evaluating user comfort and satisfaction.

3. Designing to make the product easy to use, and evaluating the product in order to identify and fix usability problems.

4. When relevant, the temporal aspect leads to a concern for learnability.

In the context of user centred design, typical user experience concerns include:

1. Understanding and designing the user's experience with a product: the way in which people interact with a product over time: what they do and why.

2. Maximising the achievement of the hedonic goals of stimulation, identification and evocation and associated emotional responses.

Sometimes the two sets of issues are contrasted as usability and user experience. But some organisations would include both under the common umbrella of user experience.

Evaluation context
Lab tests
Lab study with mind maps
Paper prototyping
Field tests
Product / Tool Comparison
Competitive evaluation of prototypes in the wild
Field observation
Long term pilot study
Longitudinal comparison
Contextual Inquiry
Observation/Post Interview
Activity Experience Sampling
Longitudinal Evaluation
Ethnography
Field observations
Longitudinal Studies
Evaluation of groups
Evaluating collaborative user experiences,
Instrumented product
TRUE Tracking Realtime User Experience
Domain specific
Nintendi Wii
Children
OPOS - Outdoor Play Observation Scheme
This-or-that
Approaches
Evaluating UX jointly with usability
Evaluation data
User opinion/interview
Lab study with mind maps
Quick and dirty evaluation
Audio narrative
Retrospective interview
Contextual Inquiry
Focus groups evaluation
Observation \ Post Interview
Activity Experience Sampling
Sensual Evaluation Instrument
Contextual Laddering
Interview
ESM
User questionnaire
Survey Questions - Emocards
Experience sampling triggered by events, SAM
Magnitude Estimation
TRUE Tracking Realtime User Experience
Questionnaire (e.g. AttrakDiff)
Human responses
PURE - preverbal user reaction evaluation
Psycho-physiological measurements
Expert evaluation
Expert evaluation
Heuristic matrix
Perspective-Based Inspection

Table2. User experience evaluation methods (CHI 2009 SIG)

CONCLUSIONS

The scope of user experience

The concept of user experience both broadens:

- The range of human responses that would be measured to include pleasure.
- The circumstances in which they would be measured to include anticipated use and reflection on use.

Equally importantly the goal to achieve improved user experience over the whole lifecycle of user involvement with the product leads to increased emphasis on use of methods that help understand what can be done to improve this experience through the whole lifecycle of user involvement.

However, notably absent from any of the current surveys or initiatives, is a concern with requirements. User experience seems to be following in the footsteps of other fields where a focus on evaluation has preceded a concern with establishing criteria for what would be acceptable results of evaluation.

User experience and usability

The notes that accompany the definition of user experience in ISO FDIS 9241-210 show some ambivalence as to whether usability is part of user experience, stating "User experience includes all the users' emotions, beliefs, preferences, perceptions, physical and psychological responses, behaviours and accomplishments that occur before, during and after use." If user experience includes all behaviour, it presumably includes the user's effectiveness and efficiency. This seems consistent with the methods nominated by many people in industry [4], [8] who appear to have subsumed usability within user experience.

In contrast, researchers working in the field consider user experience to be entirely subjective, e.g. "The objective measures such as task execution time and the number of clicks or errors are not valid measures for UX, but we need to understand how the user feels about the system." [8]

In summary, user experience can be conceptualised in different ways:

1. An elaboration of the satisfaction component of usability [1].

2. Distinct from usability, which has a historical emphasis on user performance [8].

3. An umbrella term for all the user's perceptions and responses, whether measured subjectively or objectively [3].

Regardless of the terminology used, there are two distinct objectives:

- Optimising human performance.
- Optimising user satisfaction with achieving both pragmatic and hedonic goals.

The relative importance of using methods to support these two goals will depend on the specific product and design objectives.

Methods for optimising user satisfaction with achieving both pragmatic and hedonic goals can be categorised as:

1. Methods to evaluate and design for the hedonic goals of stimulation, identification and evocation and associated emotional responses.

2. Methods to evaluate and design for the user's perception of achievement of pragmatic goals associated with task success.

3. Methods that support the design of the user's experience (including setting requirements and understanding the context of use).

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