

Usage Analysis: Combining Logging and Qualitative Methods

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INTRODUCTION

Services and applications are growing in complexity, which makes them harder to study and evaluate. This complexity emerges e.g. in extensive applications [1]; in integrated services with multiple stakeholders [2]; in interacting devices (fixed and mobile); and in switches between contexts and target groups [3]. High quality usage research across the entire service or application design cycle has grown increasingly difficult [4].

Event logging might provide a possible solution to the research problems encountered when evaluating complex services. Event logging which originated in website and browser logging analysis has made its way into logging and analyzing WIMP events [1, 4, 5]. Different typologies and frameworks have been introduced since. Most typologies, frameworks and methods focus on usability evaluation through rules-based (e.g. by guidelines) or models-based (e.g. GOMS models) analyses and have already proven to work [4].

During product design and after product launch, one also wants to gain explorative insights in usage of new services and applications, thus needing a broader view on the data as provided by rule and model based analyses. Furthermore, event logging analyses alone does not provide the more subjective or qualitative results of user research that help us understand the underlying problems or successes in usage [6].

Both approaches (event logging and qualitative methods) have strengths and weaknesses. We therefore consider an integrated approach of event logging analyses and qualitative methods as the most fruitful approach for performing usage research on complex services.

LIVE CONTACTS: EVALUATING A COMPLEX SERVICE

During earlier research on the Business 4 Users (B4U) project¹ we experienced the difficulties in usage research and evaluation of these more complex services and applications first hand, when developing Live Contacts (LC) [7]. LC is a complex service, which uses different media (e.g. Outlook, MSN, telephone and SMS) to provide users with context and presence information of persons in an address list. Based on the context and presence information a user can make a better informed choice to contact someone through a specific medium directly provided by LC. Without going into the further details of this application, we experienced the following aspects of a complex service making user studies more difficult and time and resource consuming:

- LC is used in multiple contexts.
- LC targets multiple user groups.
- LC is used on different (mobile) devices.
- LC has a dynamic, changing interface.

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¹ <http://www.freeband.nl/kennisimpuls/projecten/b4u/>

To evaluate the usage of LC we logged event data and interface changes during the LC pilot on a user level. Furthermore we combined the logged data with qualitative data gathered through questionnaires and interviews [3]. Combining event logging and qualitative methods enabled us to study usage of the complete LC design without using too much time and resources.

EVENT LOGGING AND ANALYSIS

Automatic capturing, analysis and critique are often mentioned as the basis for an automatic usability analysis [1][4]. One wants for example to be able to detect and store patterns in behavior, compare these usage patterns with patterns of other users, or combine patterns in behavior with qualitative data gathered through questionnaires, etc. Hilbert and Redmiles present a framework which is inspiring for thinking about automated usage analyses. Their framework consists of [5]:

- *Synch and search techniques*: used for combining UI event data with other data sources (e.g. observational video data), or searching specific UI event data of interest (e.g. a user smiles or performs a certain action).
- *Techniques for transforming event streams*: used to select, abstract and store specific parts of the event streams of interest (e.g. actions which together form a task).
- *Techniques for analysis*: used to perform counts and summary statistics, detect sequences in the event stream, compare sequences of events or characterize sequences of events based on e.g. probability matrices.
- *Techniques for visualization*: used to visualize the results of transformations and analyses of event streams so they can be explored with more ease.
- *Integrated evaluation support*: evaluation environments used to facilitate flexible composition of various transformations, analyses, and visualizations.

In studying usage of complex services, automated techniques as described in the framework of Hilbert and Redmiles can help us to structure and gain insight in the usage of complex services, which we might otherwise be unable to obtain. Furthermore, the framework enables us to study usage in real life situations through automated techniques and can be further developed to support the integration of qualitative methods in event logging.

TOPICS OF INTEREST

This one-day workshop is devoted to examine current approaches to automatic usage and usability analysis in commercial product design. The primary goal of the workshop is to formulate the basis for an integrated evaluation framework, which combines (event) logging techniques and qualitative methods in user studies for complex services. Topics addressed in this workshop are:

Techniques for event logging and analyses

Which techniques are used for capturing, storing and analyzing events? How do they work and with what purpose are they applied?

Combining event logging and qualitative data

Which methods of event logging techniques and qualitative data gathering and analyses techniques should be combined to produce results that enhance insight in usage and usability?

Usage analyses integrated in the design process

How can techniques for capturing, storing and analyzing events help us during design and after the launch, during marketing, of products and services? And what requirements should be met to realize them?

Integrated evaluation support

Can we formulate a standard approach, a general framework, which includes the product design cycle and the different techniques (event logging and qualitative methods and techniques)? What further requirements should be met to realize an integrated evaluation support environment?

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