

TTR Tirol Tourism Research

Applying the Usability Engineering Life Cycle to a Knowledge Platform

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Abstract

TTR (Tirol Tourism Research) is a tourism knowledge platform operated by the School of Tourism and Leisure Business of the Management Center Innsbruck (MCI Tourism) and the Tirolean Tourism Board (Tirol Werbung). The project was initiated in 2008 and the platform launched in September 2009. By March 2011, the platform registered 1,473 users. In order to develop the platform further and respond better to the needs of tourism professionals a usability study was conducted in 2011. Following the three main steps of the Usability Engineering Lifecycle first, the main target was to get to know the customers of the knowledge platform. Various existing data-sources, such as Google Analytics and existing user-data combined with a quantitative (full sample) user study gave a complete picture of the overall user behavior. To recruit the usability-testers for the second stage personas, created out of the provided data of stage one served as a blueprint. In several iterative steps the design for the new platform was developed and finally launched in March 2012. The current third stage of research validates the usability and applied methods and gathers new data. Though this is a single case-study the present study aims to find out about the usage of personas within a relaunch process in general, especially of a touristic knowledge platform.

Keywords: Usability engineering lifecycle, user-centred design, personas, card sorting, tourism knowledge platforms, TTR Tirol Tourism Research

1 Introduction

TTR is a knowledge platform initiated by MCI Tourism and the Tirolean Tourism Board in 2008. In order to evaluate the success of the platform, the TTR team could only analyse the limited information gained from the registration and data derived from Google Analytics statistics which gave an idea about the traffic on the website. However, no connection could be made between usage data and user profiles. Google Analytics gives you comprehensive quantitative insight in user behaviour but no possibility to cluster usage-groups. As the platform has grown over the past three years, the usability of the website was affected and therefore a relaunch was planned. While at the beginning of the project the needs of tourism professionals were

examined in a quantitative study (cf. Zehrer/Frischhut, 2010), in 2011 a usability study was conducted as a strategic tool for designing the relaunch. This research note deals with the process of a usability study by applying the Usability Engineering Life Cycle. The aim of the paper is to find out, how this theoretical concept can be applied to a tourism knowledge platform like TTR and - within this concept - how personas can be created and used for such a knowledge platform.

2 Theoretical Background

User-Centred Design basically means that a potential user of a service or product is involved in the development process in some way. The involvement reaches from occasional usability tests to involvement as partners where end users make important decisions within the design process. The term “User-Centred-Design” was first defined by Norman et al. (1986) and other authors like Shneiderman (1987) and Nielsen (1993; 1992), who defined rules and guidelines of how user involvement within the design process should look like (cf. Abras et al., 2004).

Usability and design are interdependent. Therefore usability professionals and usability testing should be involved in all stages of the design process (cf. Gulliksen et al., 2006). The *Usability Engineering Life Cycle* defines an iterative process of how usability methods could be integrated into design and engineering projects. The Life Cycle consists of the following three phases: predesign, design and postdesign.

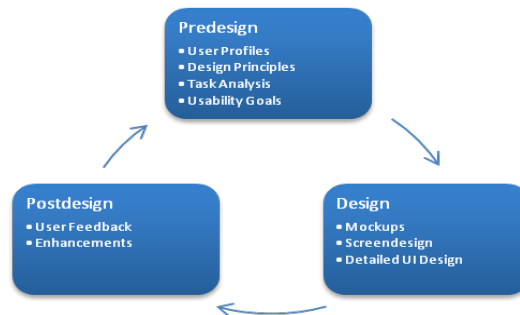


Fig. 1: Usability Engineering Life Cycle (according to Nielsen, 1992, p. 12-19)

The *pre-design phase* is characterized by user research and aims at answering the following questions: Which user problem should my product solve? Who is going to use the product? What characterizes this user? The main aim of this phase is to set usability goals for the project and to learn more about the customer who will be using the product. The key objective of the *design phase* is to create a usable implementation of the design (cf. Nielsen, 1992). Therefore, a prototype is needed

which is based on the results of the predesign phase. The prototype starts as a simple mockup and is developed further with ongoing user feedback. The *postdesign stage* describes the actual implementation and usage of the product. In this phase once more user feedback is being generated to ensure the implementation of the design meets the user's demands. The postdesign phase also initiates a predesign phase whereby the user feedback is used to enhance the current design and to evaluate the meaningfulness of a redesign/relaunch. This would also mean a new iteration of the Usability Engineering Life Cycle (cf. Nielsen, 1992; Mayhew, 1999).

A range of *usability tools*, such as personas, usability tests and card sorts, apply to different stages of the Life Cycle for various purposes. *Personas* are part of the predesign stage (cf. Nielsen, 1992), or requirement analysis (cf. Mayhew, 1999). They are created to represent the users of a product and guide the design team throughout the whole Life Cycle (cf. Mayhew, 1999; Sears/Jacko, 2003). These profiles are ideally based on a combination of quantitative and qualitative data and form a stereotype for a given user group. The profiles make the user more tangible and enable the usability team to emphasize on the actual user's needs. *Usability testing* is one technique or tool of user-centered design. It is „...best used early and often, not once at the end when it is too late to make changes. Usability testing is best used as part of a process that focuses on usability throughout design and development, not as the sole time when users are considered” (Dumas/Redish, 1999, p. 13). *Card sorting* is a method that follows the principles of user-centered design and helps to build the information architecture from the users point of view (cf. Maurer/Warfel, 2004). Participants receive a number of cards that they have to sort and group according to their own logic.

2.1 Methodology and Research Design

By applying the Usability Engineering Life Cycle the selected approach can be divided into the three stages of the usability engineering lifecycle. The whole project is work in progress and started in March 2011. Currently the research is within stage three of the lifecycle. The persona development process by Pruitt and Grudin (2006) could not be applied here since the usage of a survey is (if ever) suggested to be used at the end of the process to validate the persona data. McGinn and Kotamraju (2008) however, turned the process suggested by Pruitt and Grudin (2006) upside down and put the survey right at the beginning of it. They use a factor analysis to categorize the data and create personas. After defining personas, they make qualitative interviews with real users representing the different groups to gather additional explanatory data. This study follows the approach by McGinn and Kotamraju (2008). The quantitative survey was conducted as a full-sample in April 2011 amongst the registered users on TTR with the main aim to get quantitative insights on the current usage of the

platform as well as insights on further development. It reached a response rate of 29.3% (n=432 replies from N=1,473 registered users).

2.2 Findings

With regard to the *pre-design stage*, findings showed that TTR users have a high computer and internet affinity. 94.4% of users use their PC on a daily basis, 94% of respondents also use the internet daily. This result suggests that TTR users are both, computer and internet affine. Most of the respondents (41%) use the TTR platform 4 to 10 times a year. 17.8% said, that they use it even more often. 49% indicated they are "very satisfied" and 43% are "satisfied" with the knowledge platform. For TTR users, statistics (73.3% 'important') and relevant trends in tourism (79.5% 'important') are the most important content that users look for on the platform. About 23% of respondents said that content is lacking on the platform. In a final question, the users were asked if improvements could make them use TTR more frequently. Interactive statistics (39.5%) seemed to be most promising, followed by clearer navigation and hierarchy (31.9%), a blog (12%), comment function for articles (13.8%) and more frequent newsletters (12.7%). The two-step cluster analysis resulted in four clusters from 357 valid cases. 114 interviewees can be assigned to cluster 1, 60 to cluster 2, 64 to cluster 3 and 119 persons to cluster 4. These clusters were distinguished by age, education, field of activity within the tourism industry, satisfaction, gender, current position held and frequency of usage of the platform. Basically, the resulting clusters also represented the four biggest user groups of the platform by field of activity. According to those clusters 4 personas were formed.

During the *design phase* the method of card sorting was used for restructuring the website. Participants were selected according to the personas identified in the pre-design phase through the cluster analysis. A total of 15 participants sorted 36 cards into categories which they could decide on how to name them. For analysis x-sort, a cardsorting-software for mac, was used. It enables the researcher to display the results as a cluster-tree or distance table. The sorting generated a total of five clusters. These five clusters then functioned as the basis for the new structure of content for the relaunched website. These are Statistics, Market Trends & Target Groups, Marketing & Online Marketing, Innovation & Research and Services. Depending on the stage of development, also usability tests were conducted in the design phase in two different approaches. In the early stage of development, users were given a total of 10 scenarios (based on the usage insights of Google Analytics and the quantitative survey). Each test-person received a minimum of three random test-cases (the target was defined on the observers document) and was asked to carry out the task. Eighty percent of participants were able to solve at least one task. One participant was able to

solve all three tasks. Three out of ten tasks could not be solved at all, another five could be solved at least once and two tasks could be solved by every participant. In further stages two usability tests were conducted with the new design. Five participants were shown printouts of the design and asked what they make of it and what they assume as eye-catching in the layout. A third question was about where they would click. Another five participants were tested with an on-screen version of the design and basic tasks. The design was then iteratively refined according to user-feedback.

The *postdesign stage* is currently work in progress. For technical and foremost legal reasons all users of the old platform were asked to register on the new platform. This also provides the advantage of new user-data. Right now the researchers are waiting for the user-base to grow again in order to provide significant data on usage and demographic data. Furthermore, another usability survey is carried out in order to track the satisfaction of users in order evaluate the evolution of usability of the knowledge platform.

3 Conclusions and Further Research

This study produced a number of findings that the authors believe are noteworthy. First, the authors found that basing personas on original research data provides a realistic picture of personas and helps gathering feedback from users about their current usage behaviour. Obviously, this is only applicable for platforms and projects which are already in the field. Secondly, to make the process complete, a brainstorming meeting was initiated to discuss, if the personas represent the target audience or if adaption is needed. In this case, the authors figured out, that 60% of our users hold a university degree. An additional 23% of the users are students. In order to also attract both target groups, it was important to add another persona and structure the content and usability on the website in a way that it would also be attractive for this additional persona. Hence, the authors believe that questioning the totality of personas is a vital step if the data sources are based on research within a given user database. The defined personas kept a vital role throughout the following design- and postdesign-stage. Test persons for usability tests were chosen upon persona categories in order to cover all the major target groups for the TTR. Within the usability tests additional qualitative data could be gathered to find out more about the groups and were used to refine the personas, especially concerning targets and obstacles while using the platform. The new platform was finally launched in March 2012 and optimization is since work in progress. In the current state usability tests are held again with the same question-sets, used back in 2011.

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