

WebSCORE – A Structured Method for Evaluating Web Applications

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Abstract

Web-based applications are characterised by a variety of features requiring new approaches of evaluation. Special characteristics of web applications are the focus on information transfer, the inclusion of broad anonymous user groups, as well as the use of most diverse, even mobile end devices. This article introduces an evaluation methodology for multidimensional assessment of web-based applications, which integrates in four significant domains evaluation criteria and measurement procedures. The WebSCORE method facilitates analyses with variable degree of detail. Expert evaluations, checklists and questionnaires as well as detailed eye tracking analyses are used to attain a holistic evaluation depending of the application's profile.

1 Introduction

User-friendly conception and design are key factors for successful web applications. Especially in the areas of e-commerce, e-business, e-services and corporate portals, usability becomes a strategic aim as an acceptance factor and means for higher customer satisfaction and customer binding. However, the term usability does not only comprise well-known areas of user interface design, such as page design and navigation structure, but also quality and target group suitability of content, interactive functional conception or integration into existing systems as well as analysis of emotional user aspects.

2 Problem

There has not been a standardized procedure so far, which takes into consideration all relevant criteria of a user-friendly website to an equal degree. Currently leading guidelines and textbooks (e.g. Brink et al, 2002; Nielsen, 1999; Spool et al, 1999) hardly take an holistic view on web usability. An extensive structured model is still lacking. Experiences in numerous usability studies show that merely considering the classic user interface criteria is not sufficient in ensuring the success of a website. Especially the elevated significance of success factors, such as trust and credibility, urges an integrated evaluation approach requiring additional methods for the collection of affective action parameters (e.g. Fogg et al, 2001; Rosenbloom, 2000). This does not only apply to applications in the e-commerce sector but especially to corporate intranets whose acceptance by employees often depends on attitudes and opinions which, in many cases, are difficult to compile. But especially these factors, such as the disbelief in the topicality and completeness of information in the intranet, are, in the final analysis,

the decisive factors in the success of a website. Also, many decisions with positive as well as negative effects on the suitability for the task of a website, are made on the strategic level (Zerdick et al, 2001). Therefore, operationally applicable assessment criteria for the evaluation of purpose and strategy are required which, e.g., enable a reconciliation of the website provider's intended objectives and the potential customers' tasks and requirements.

3 Our Approach

Based on this findings, the WebSCORE method meets the requirements of comparability of website evaluations with a high-resolution criteria raster for the four basic components of a website evaluation (see figure 1 and figure 2): purpose and strategy, content and functionality, navigation and interaction, as well as media design and presentation.

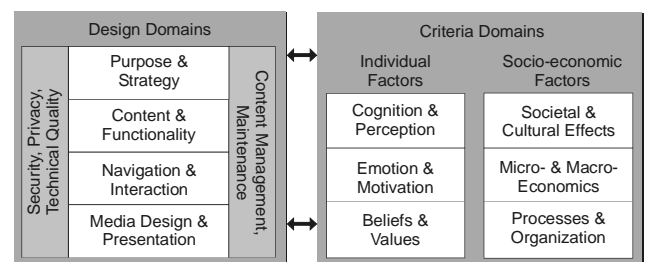


Figure 1 Reference model for website evaluation

These are complemented by the superior areas of security, privacy, and technical quality as well as content management and maintenance. These design criteria come up against three individual and three socio-economic evaluation criteria. The objective of this comparison is based on the necessity to analyse each design criteria from the aspect of each of the six criteria complexes. Therefore, it is reasonable to evaluate the content of a website not only with respect to cognitive and perceptive plausibility. Other essential usability aspects of

content design are the suitability for the users' systems of values and its motivational and emotional effect (see figure 3).

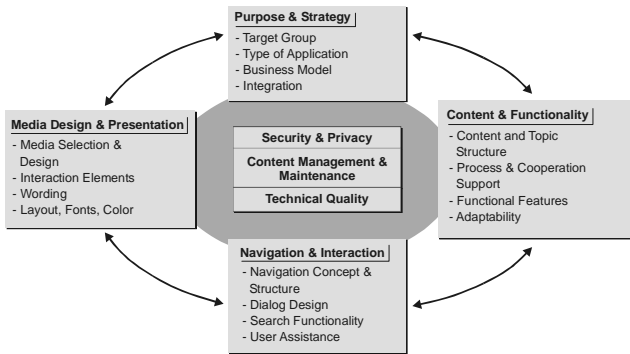


Figure 2 Main design factors

Thus, our reference model provides an integrated approach for the evaluation of websites. In order to ensure the comparability of evaluations even beyond different content areas specific assessment factors are used. They enable a weighting of particular test parameters adapted to the individual information target of each website.

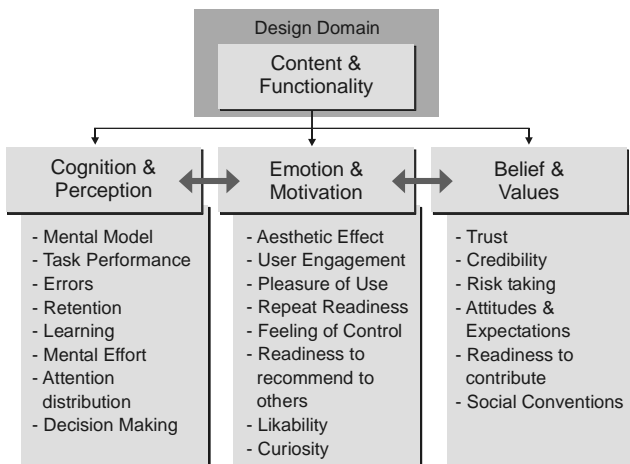


Figure 3 Evaluation perspectives, e.g. content & functionality

4 Evaluation Methods

Our method inventory comprises a combination of established usability engineering methods. Verbalizing procedures (e.g. questionnaires, interviews, focus groups, thinking aloud) are used as well as reactive procedures (e.g. eye tracking, controlled experiments, logging use). The basis for the drawing up of a questionnaire design is, besides ISO 9241, Part 10, mainly the criteria contained in ISO 14915 "Software ergonomics for multimedia user interfaces" which is presently being drafted. For example, semantic differentials serve as a method for emotional evaluations. These semantic differentials represent essential ratings of quality and intensity of people's emotional reaction to the appearance of a

website. Additional questionnaires and other methods of attitude measurement permit the assessment of user acceptance and perceived aesthetics of the website. These data can be matched with a reference profile which meets the domain-specific requirements of the site.

Figure 4 shows the possibility of visualizing the evaluation results in the form of a net interface. This type of presentation enables a quick overview on the strong and weak points of a website. It also enables, principally, to refine the presentation based on the individual evaluation parameters, e.g., in order to give the web designer crucial tips for the optimization of the website.

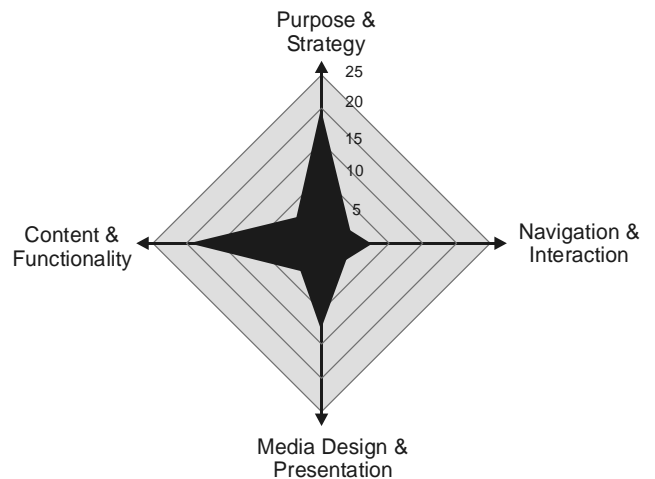


Figure 4 Visualization of the Evaluation Findings

5 Conclusions

WebSCORE is a systematic and scientific-based approach for the evaluation and optimization of web applications. It is conducive to the efforts of making the evaluation of web applications more transparent. At the same time, it provides an integrated evaluation approach which takes all relevant influential factors of human acting and experiencing adequately into consideration. Only by doing this, it can be ensured that the evaluation of a website as well as the subsequent redesign gives a valid presentation of the complex network of action and reaction regarding success vs. failure factors und acceptance vs. rejection factors. The future tasks lie in the successive refining and empirical validation of evaluation procedures as well as developing a more accurate scoring model for the four central design dimensions of a website.

6 References

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