

Evaluating Web Site Quality

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I. INTRODUCTION

Web sites developed on the principles of user-centered design score higher in user quality questionnaires than those which are not tailored according to users' needs and expectations. Since quality is always prone to subjective interpretations unless it is quantified, requirements that the Web site has to meet have to be defined and for each of the requirements a set of measurable attributes has to be identified and measured according to the specified procedure.

This paper describes the quality model and introduces methodology that enables evaluation of Web site's quality from users' perspective.

II. WEB QUALITY MODEL

The quality model described in this paper is based on the ISO 9126 standard [1]. The model is represented by hierarchical three-level tree structure and consists of six top-level characteristics from the ISO model: functionality, usability, reliability, efficiency, maintainability and portability.

At the second level, each characteristic is decomposed into a set of subcharacteristics, which are in turn decomposed into a set of indicators at the third level. Indicators are chosen according to a set of Web usability guidelines, W3C standards and the analysis of the existing Web sites.

Figure 1 depicts the hierarchy of the proposed model.

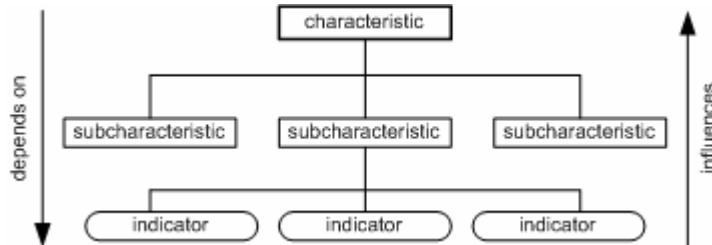


Figure 1: Quality Model Hierarchy

Functionality is the capability of the Web site to provide functions and properties which meet stated and implied needs when the site is used under specified conditions. Regardless of the purpose, the functionality can be further decomposed into subcharacteristics of suitability, accuracy, interoperability and confidentiality. The importance and scope of those subcharacteristics and their indicators depend on the purpose of the site.

Usability is the capability of the Web site to be understood, learned and liked by the user, when used under specified conditions. In essence, usability reflects the ease with which the functionality of the Web browser is used to take advantage of the functionality of the site. Subcharacteristics of usability are ease of use, content comprehensibility, level of communication and attractiveness.

Reliability is the capability of the site to maintain a specified level of performance when used under specified conditions. The subcharacteristics are availability, fault tolerance and security.

Efficiency is the capability of the site to provide appropriate performance, relative to the amount of resources used, under stated conditions. Resources on the Web site may include other software products, hardware (discs, memory, CPU), financial costs, etc. On the users' side, resources may include connection costs, time, effort, etc. Subcharacteristics are time behaviour, resource utilization, scalability, visibility and flexibility.

Maintainability is the capability of the site to be modified. Modifications may include corrections, improvements or adaptation of the site to changes in environment, and in requirements and functional specifications. Subcharacteristics are analysability and changeability.

Portability is the capability of the site to be transferred from one environment to another. This characteristic is further decomposed into subcharacteristics adaptability, installability and co-existence.

The characteristics of functionality, usability, reliability and efficiency have the most impact on users' perception of the quality, while maintainability and portability are mostly visible from the administrators' perspective. Figure 2 describes the first two levels of the quality model.

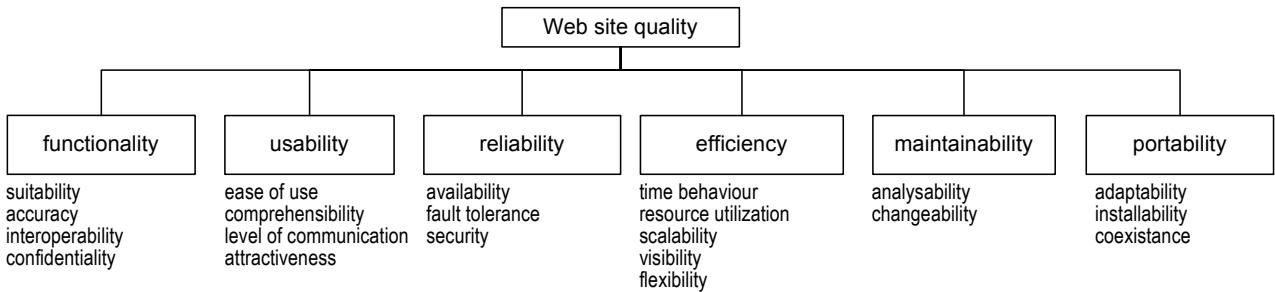


Figure 2: Characteristics and subcharacteristics of the quality model

III. EVALUATION PROCESS

The described Web site quality model follows the principles stated in the ISO 9126 standard. The evaluation process is defined in the ISO 14598 series, which also provides the basis for Web site quality evaluation in this paper. The evaluation process distinguishes four stages: definition of quality requirements, definition of metrics, evaluation planning and preparation and evaluation execution. This process can be applied during any phase of the Web site lifecycle.

IV. RESULTS AND CONCLUSION

The verification of the proposed model was performed on the selected subset of Web sites that belong to different Departments at the Faculty of Electrical Engineering and Computing at the University of Zagreb. In order to compare the results obtained using the proposed methodology, usability evaluation based on user surveys was performed on the same set of sites. The results show that qualitative analysis based on proposed quality model matches users' assessment with respect to final ranking of sites' quality.

V. LITERATURE

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