Website Evaluation: A Usability-Based Perspective

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Abstract. The usability is recognized as an important quality factor of any modern website. In this paper, techniques for usability evaluation of a website are proposed and their use is described. The results of application of these techniques are discussed in the frame of the design and evaluation of a web portal, serving an Academic Department. The applicability of the developed techniques in a wide area of web-based applications and their importance in the context of today's web applications development is also discussed in this paper.

1   Introduction

The evaluation of a website is an important phase of the development cycle, often overlooked during the fast-paced development processes adopted by modern web applications developers. This is more important today when the web becomes gradually a platform for deployment of complex applications of increased interactivity, a front end for databases and corporate information systems. This new use of the medium increases the importance of usability, as the web is used for accomplishment of complex tasks, like learning, retrieving information, interacting and collaborating with peers [1]. The effective accomplishment of such tasks has to be proved during the design of web applications. According to Ivory and Hearst [2], many web sites today are characterized by low usability, while millions of new web sites are expected to become operational during the next years, further intensifying the problem.

Today's highly interactive web applications tend to adopt interaction styles borrowed from traditional software. This is not however always acceptable, since the web poses special requirements that need to be taken in consideration [3]. For instance, the web users' characteristics are often not well known beforehand or can vary considerably. Also the computing platforms, network bandwidth and access devices used can be very different. For example, users can access a certain application through wap-enabled devices using 9,6 kbps connection, through typical modems of 33,6-56 kbps or through high bandwidth connections allowing few hundred kbps or higher. These can affect considerably the user interaction characteristics.

According to Nielsen [4], the highly quoted user-centred design methodology is considered applicable in this new context. The principal characteristics of this ap-

proach, as described by Theng et.al [5], are: (i) Interactive systems design should be based on a systematic user requirements capturing and recording of possible ways in which the users interact with the application. (ii) Design of highly interactive applications needs to be an iterative process. This approach, if adopted, brings iterative usability evaluation [6,7] at the center of the design process. However, involvement of users and setting up of usability testing experiments, advocated by user-centered design, is often considered a burden to the design team. Despite this, the need for such design approaches is widely recognized by the research community. Additionally there is an increased need to adapt the established usability testing techniques [6] (application inspection methods [4,8], observation methods [9], questionnaires and interviews [10]) to the requirements of web usability evaluation and to accelerate the often tedious process they propose [11,12].

In this paper, we report our experience with a website usability testing. The case study discussed relates to a web portal that has been designed and is in operation during the last years, to serve the academic community of the Electrical and Computer Engineering Department of the University of Patras in Greece (www.ee.upatras.gr). This application, typical of many similar University Departments, offers information on the activities of the Department to the public and the members of the Department and includes some more interactive components like support to the students for building their personal semester timetable and exams schedule.

A number of usability tests of this application have been contacted recently. These were based on adapted techniques proposed in the literature: (a) an experiment involved on-line questionnaires filled by the users, (b) heuristic evaluation by usability experts in the lab, and (c) user observation techniques and analysis of usage log files. The contacted experiments are presented and discussed. The findings are compared and their usefulness in the design of web applications is discussed. The re-design of the portal following these evaluation studies is also briefly described. Wider implications of the multi-faceted usability evaluation framework described in design of web applications are discussed in the last part of the paper.

2   Case Study: Usability Evaluation of an Academic Website

The web site of the ECE Department of the University of Patras (www.ee.upatras.gr) is a bi-lingual portal (in English and Greek) that has been developed with the objective to promote the Department and to provide information about its research and educational activities while at the same time to serve the Department students and faculty members. This latter use necessitates some interactive components, which need special attention during usability evaluation. The eight areas covered by the portal relate to:

(a)   Information on the Department history and structure,
(b)   Academic matters (courses offered, curriculum content etc.),
(c)   Research activity (laboratories, publications, results),
(d)   Personnel (faculty and researchers information, personal web pages etc.),
(e)   Additional information (the area, access instructions etc.),