Chapter 16
A Conceptual Tool for Usability Problem Identification in Website Development

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ABSTRACT
Techniques and tools that enable website developers without formal training in human-computer interaction to conduct their own usability evaluations would radically advance the integration of usability engineering in website development. This paper presents experiences from usability evaluations conducted by developers in an empirical study of means to support non-experts in identifying usability problems. A group of software developers who were novices in usability engineering analyzed a usability test session with the task of identifying usability problems experienced by the user. When doing this, they employed a simple one-page conceptual tool that supports identification of usability problems. The non-experts were able to conduct a well-organized usability evaluation and identify a reasonable amount of usability problems with a performance that was comparable to usability experts.

INTRODUCTION
Over the last decade, software usability as a discipline has made considerable progress. An important indicator of this is that more and more software organizations are beginning to take usability seriously as an important aspect of development. Yet there are still significant obstacles to a full integration of usability engineering into software development (Bak et al., 2008). The average developer has not adopted this concern for usability, and usability specialists are not involved until late in development, when most substantial changes are too costly to implement (Anderson et al., 2001).
There are several areas of software development where the limited integration of usability efforts is apparent. Development of sites for the World Wide Web is one such area. It is usually argued that the web is qualitatively different from conventional software systems. For the typical web application, the user group is more varied and fluent, and the application itself has a considerably shorter lifetime compared to other kinds of software. For development of web applications, the main difference compared to other applications is that it is done by a broad variety of companies, ranging from one or two person companies to large corporations, and many of the development companies, in particular the smaller ones, do not have any usability experts available. Budget constraints prohibit hiring specialists, and the development schedule does not leave time for usability testing and feedback to iterative design (Scholtz et al., 1998). Research indicates that work practices in website development seem to largely ignore the body of knowledge and experience that has been established in the disciplines of software engineering, human-computer interaction, and usability engineering (Sullivan & Matson, 2000). Conventional usability evaluation is expensive, time consuming and requires usability specialists. This is incompatible with web development, where many websites are designed and implemented in fast-paced projects by multidisciplinary teams that involve such diverse professions as information architects, Web developers, graphic designers, brand and content strategists, etc. Such teams are usually not familiar with established knowledge on human-computer interaction (Braiterman et al., 2000). The consequence of this is clear. A large number of websites have severe usability problems that prohibit effective and successful use (Spool et al., 1999). An investigation of usability through content accessibility found that 29 of 50 popular websites were either inaccessible or only partly accessible (Spool et al., 1999; Sullivan & Matson, 2000).

There are at least two ways of integrating usability expertise in website development projects. First, developers can adapt and use tailored usability heuristics in the evaluation and let these heuristics guide the usability work in the development team (Agarwal & Venkatesh, 2002; Sutcliffe, 2001). The practical implications of usability heuristics in software design have been discussed for several years, but traditional heuristics is not of focus in this paper. Secondly, the limited integration of usability in software development can be resolved by involving non-experts in the usability engineering activities. This could be accomplished by offering ordinary software developers means for creating usable websites and evaluating them in a systematic manner (Skov & Stage, 2001). This might bring usability into the earliest possible phases of software development where it could have most impact by improving initial design and eliminating rework. It would also solve a potential problem with availability of usability experts. The professional evaluator resource is very scarce, thus evaluating the usability of just a fraction of all new websites would be well beyond their capacity.

This paper presents an empirical study of a specific means to support non-experts in web usability in conducting a website usability evaluation. We have explored to what extent a simple one-page conceptual tool for usability problem identification can support and stimulate the analytical skills of novice usability evaluators. By doing this, we wish to explore whether people with a basic foundation in software engineering and programming through methodological support can build a capability to identify, describe and classify usability problems. The next section provides an overview of existing literature on identification of usability problems. The following section describes the design of an empirical study we have conducted in order to examine the usefulness of the usability problem identification tool we have developed for problem identification. Then the results of the empirical
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