Chapter 1.15
The Usability Engineering Behind User-Centered Processes for Web Site Development Lifecycles

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ABSTRACT

Usability is integral to software quality. Software developers increasingly acknowledge the importance of user-centered, Web site development. The value of usability engineering and the role of the usability engineer (UE) are less understood. A common assumption is that the UE's role is only to be a user advocate. To this role, we add the responsibility of addressing concerns of other stakeholders in Web site design and development. We discuss usability engineering and the processes that it encompasses, such as project planning, requirements definition, user-centered design (UCD) and evaluation/testing within the context of traditional software engineering lifecycles. We define the UE's role throughout a user-centered, Web site development lifecycle. This lifecycle integrates compatible usability engineering processes into software engineering processes, drawing examples from research and experience.

INTRODUCTION

People use the Web in a variety of ways. Their interaction with the Web can be self-motivated or externally motivated; their proficiency novice or expert; their needs and expectations simple or complex. To engineer a successful and satisfactory user experience with a Web site, we need to understand issues such as why people go to

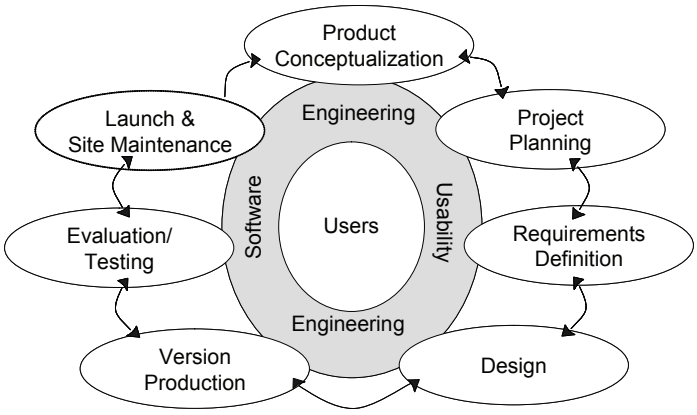
a Web site; what they expect and intend to accomplish at the site; and everything impacting on their experience.

A Web site is the result of a set of processes, usually iterative, beginning with conceptualization, planning and requirements definition, then going on to design, version production, and testing/evaluation, before culminating in the site launch. For usability engineering to be fully integrated into Web site development, its practices must be fully integrated into software development lifecycles (Addelston & O'Connell, 2004, 2005). Lifecycles are structured frameworks for software development activities. For example, Figure 1 incorporates elements that iterative lifecycles typically include. In practice, the sequence and frequency of activities can vary. Research and experience show that including usability in software engineering lifecycles is critical (Mayhew, 1992).

Developing a Web site is a team effort. Each team member has roles and responsibilities. The roles of the usability engineer (UE) are integral to these processes and to the team implementing them, primarily because the UE promotes a user-centered perspective. Software engineering of a Web site addresses a variety of purposes: building a new site; upgrading, refurbishing, maintaining or introducing new information or functionality to an existing site; and replacing a legacy site. These purposes track to the goals of the Web site providers. Software engineering is not inherently user centered. It becomes user centered by incorporating usability engineering. User-centered processes for Web site development are compatible and simultaneous with software engineering lifecycle processes.

Building usability into a Web site requires user-centered processes. Such processes require defined roles and activities, which, in turn, depend on common definitions of concepts, inputs, outputs, and tools. From the start, team members must share an understanding of users' attributes and needs. This understanding underpins the collaboration necessary to incorporate user-centered processes into Web site development.

Figure 1. A generic, variable sequence, iterative Web site development lifecycle illustrates points where usability engineering is most beneficial



Note: With the exception of version production, each of the activities in the outer ovals includes both usability engineering and software engineering processes. In practice, the sequence and frequency of activities can vary.