OVERVIEW AND MOTIVATION

The Web is becoming a medium through which more and more people search for information, communicate with others, and have fun. The complexity of this collection of information has attracted the interest of the human-computer interaction (HCI) research community. Researchers have focused their attention in developing new models and methodologies for describing user behavior on the Web, analyze their needs and expectations, and thus successfully design user-friendly Web sites.

Usability evaluation for the Web presents an additional interesting complexity. Due to the variety in design of Web sites and the variety of user goals while browsing the Web, the task of choosing and properly using the appropriate evaluation method becomes a challenge. New approaches and methodologies for Web evaluation have been developed — this book presents some of those.

This book also points out that beyond the technical aspects of Web design we need to systematically take into account human interaction and activity and the completely renewed social and cultural environments that Web environments and interfaces are calling for and that technologies are now capable of delivering.

The book’s objective is to serve university educators and educators in general; university administrators; researchers; lecturers of HCI and user-centered design (UCD); Web system managers; instructional designers; and the general audience with an interest in HCI and Web design. This book is structured in such a way so that it can act as a core textbook in HCI and Web development courses.

DESCRIPTION OF CHAPTERS

Interaction design should always follow a UCD approach that focuses the design activity on the user. This user-centered approach is further broken down into three key activities: analysis, design, and evaluation. Our book is structured into four broad sections. Section I provides an introduction into HCI in Web design and evaluation and provides the theoretical
foundations for it. Section II takes those theoretical foundations further by focusing on task analysis. The focus of Section III is on the design stage of UCD. Finally, in Section IV we include chapters that describe evaluation methodologies for the Web.

The book includes 14 chapters from prominent international authors.

The following section presents an overview of each chapter.

Section I: Introduction and Theoretical Foundations

Chapter I, The Usability Engineering Behind User-Centered Processes for Web Site Development Lifecycles, is written by Theresa O’Connell and Elizabeth D. Murphy and discusses usability engineering and the processes that it encompasses, such as requirements definition, UCD, and evaluation. The authors define the usability engineer’s (UE) role throughout a user-centered, Web site development lifecycle and stress that this lifecycle integrates compatible usability engineering processes into software engineering processes, drawing examples from research and experience in developing for accessibility.

Chapter II, How Users View Web Pages: An Exploration of Cognitive and Perceptual Mechanisms, is written by Rebecca A. Grier, Philip Kortum, and James T. Miller. Their chapter presents the basic cognitive and perceptual attentional mechanisms that affect how users view Web pages and the methods used to measure this attention. The primary goal of the chapter is to help the reader gain an understanding of what visual elements on a Web page draw a user’s attention, how that knowledge can be collected, and how it can be applied to the design of useful and usable Web sites.

Chapter III, A Qualitative Study in User’s Information-Seeking Behaviors on Web Sites: A User-Centered Approach to Web Site Development, is written by Napawan Sawasdichai. This chapter introduces a qualitative study of user’s information-seeking tasks on Web-based media, by investigating user’s cognitive behaviors when they are searching for particular information on various kinds of Web sites.

Section II: Analysis

Chapter IV, Understanding the Nature of Task Analysis in Web Design, is written by Rod Farmer and Paul Gruba. This chapter presents an overview of task analysis frameworks in HCI, which are capable of eliciting, describing, and evaluating human factor requirements in Web design. Moreover, the chapter describes existing and emerging paradigms in task analysis, including several prominent methodologies. The chapter concludes with the description of a task analysis framework suited to both the cognitive and sociocultural demands of Web design.

Section III: Design

Chapter V, From Behavior to Design: Answering the Question of Who and What to Build Human-Centered Products and Information Systems, is written by Catherine Forsman. In this chapter UCD concepts are explored through case studies illustrating tools and techniques in the Internet industry for the practice of UCD. It argues that by combining techniques from participatory design, persona research, and market research, complex quantitative and qualitative evidence is produced and offers a potentially more substantive approach to understanding the nature of designing interfaces for the Internet in a variety of contexts.

Chapter VI, Design Methods for Experience Design, is written by Marie Jefslioutine and John Knight. The chapter describes an approach to Web design and evaluation where
the user experience is central. It outlines the historical context in which experience design has evolved and describes the experience design framework (EDF). This is based on the principles of UCD and draws on a variety of research methods and tools to facilitate the design, development, and evaluation of user experiences.

Chapter VII, *Innovations in Collaborative Web Design: Methods to Facilitate Team Learning During Design*, is written by Madelon Evers. In this chapter the link between multi-disciplinary design and team learning, which the authors argue needs to be supported in equal measure during Web design projects, is explored. The chapter introduces a new approach to collaborative Web design, called the design and learning methodology, as a way to support these two processes. The approach involves many stakeholders, including future Web site users, in design decision making. It structures stakeholder participation through multi-disciplinary design teams (MDTs). It uses professional facilitators to guide design and learning processes.

Chapter VIII, *Information Architecture and Navigation Design for Web Sites*, is written by David Benyon. In this chapter the author explores two key issues of Web site design: information architecture and the design of navigation support. In order to do this he draws upon theories of information spaces and theories of navigation in urban spaces. From these theories a number of practical features of Web sites are described.

Chapter IX, *A Methodology for Web Accessibility Development and Maintenance*, is written by Julio Abascal, Myriam Arrue, and Markel Vigo. This chapter introduces the basic concepts related to Web accessibility and proposes a method for including accessibility in standard Web engineering methodologies. The key phases, accessibility, evaluation, and maintenance are described in detail. Finally, a model is proposed for implementing accessibility policy in organizations.

**Section IV: Evaluation**

Chapter X, *Usability Evaluation*, is written by Zhijun Zhang. This chapter introduces the different ways of conducting usability evaluation, which is categorized under four methods: model- or metrics-based, inquiry, inspection, and testing. Under each method, a list of techniques is described, focusing on when and how each technique should be applied. The chapter also summarizes various studies that compared the effectiveness of different usability evaluation techniques.

Chapter XI, *Walkthroughs in Web Usability: Cognitive, Activity, and Heuristic Walkthrough*, is written by Hokyoung Ryu. Three usability inspection methods — heuristic walk-through (HW), cognitive walk-through (CW), and activity walk-through (AW) — are reviewed in this chapter. This chapter then discusses the relative advantages and weaknesses of all of the techniques, and suggestions for Web evaluation are offered, with a short Web site example. Based on these analyses, the authors suggest some changes to Web site evaluation to improve accuracy and reliability of the current walk-through methods.

Chapter XII, *User-Centered Evaluation of Personalized Web Sites: What’s Unique?*, is written by Sherman Alpert and John Vergo. In this paper, based on our experience in usability studies of a personalized e-commerce site, the authors present some of the additional questions and issues that must be addressed for user-centered evaluations of personalized Web sites.

Chapter XIII, *Remote Usability Evaluation of Web Interfaces*, is written by Naouel Moha, Ashraf Gaffar, and Gabriel Michel. While it is prohibitively expensive to conduct usability testing on a global range of users, it is technically possible and is more feasible to
remotely collect the necessary information about usability problems and to analyze them the same way we do local tests. In this chapter, the authors present systematic methods and tools to support remote usability testing and evaluation of Web interfaces.

Chapter XIV, *Modeling Interactive Behavior with a Rational Cognitive Architecture*, is written by David Peebles and Anna L. Cox. In this chapter the authors discuss a number of recent studies that demonstrate the use of rational analysis and cognitive modeling methods to understand complex interactive behavior involved in three tasks: icon search, graph reading, and information retrieval on the World Wide Web.