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Paper Prototyping: The Fast and Easy Way to Design and Refine User Interfaces

Book Review

—Reviewed by
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Index Terms—*Paper prototyping, usability case studies, usability testing, user-centered design.*

Paper prototyping highlights cost-effective usability testing techniques that produce fast results for improving an interface design. Practitioners and students interested in the design, development, and support of user interfaces will appreciate Snyder's text for its focus on practical information and application. This book's best features are the real life examples, anecdotes, and case studies that the author presents to demonstrate the uses of paper prototyping and its many benefits. While the author advocates paper prototyping, she also notes that paper prototyping techniques are one of many usability evaluation methods and that paper prototyping works best only in certain situations. Snyder reminds her readers that paper prototyping does not produce precise usability measurements, but rather it is a "blunt instrument" that rapidly uncovers qualitative information from actual users performing real tasks (p. 185). Hence, this book excludes in-depth theoretical discussions about methods and validity, but its pragmatic discussion on test design prepares the practitioner for dealing with several circumstances and making sound decisions based on testing method considerations.

What is paper prototyping? While the term has been used in various ways, paper prototyping is largely defined as the technique of usability testing the paper version of an interface. Actual users perform tasks using the paper prototype, which is manipulated by a person acting as the computer. Information about the user's interactions and problems encountered are used to change the prototype for testing the next iteration. According to Snyder, "In its broadest sense, paper prototyping can be considered a method

of brainstorming, designing, creating, testing, and communicating user interfaces" (p. 3). While the author offers a more elusive definition and wider scope than other usability experts, she pinpoints the essence of paper prototyping—it combines several techniques to produce data about user interfaces as early as possible in the development of a design.

Paper prototyping is divided into four main sections designed as independent units with related content. As a result, readers can enter the text in any section and use information without having read other chapters. This flexibility makes the text more accessible for experienced usability practitioners, yet the continuity between units permits a linear reading and a natural progression of knowledge that novice learners will appreciate. Furthermore, the text's organization is ideal for quick reference. Usability practitioners may find this text a useful resource for assembling proposals and test plans to gain managerial acceptance for a usability testing project.

Part One, "Introduction to Paper Prototyping," consists of four chapters that cover introductory material. This section explains the concept of paper prototyping, provides a brief historical background, and then begins to explore paper prototyping at greater length. Perhaps the most beneficial sections of Part One, Chapters 2 and 4, offer readers tangible models and explicit instructions from which to construct a paper prototype. Chapter 2, "Case studies," presents a range of issues from actual paper prototype studies conducted at several companies, including The MathWorks, Centra, Priceline.com, and Pingtel. The author addresses paper prototyping interfaces for software, web application, e-commerce, small-screen displays, and touch screens. Chapter 4, "Making a paper prototype," informs readers about tools and materials required to build a paper prototype and illustrates, with examples, how to create interface widgets. After reading Part One of *Paper Prototyping*, readers will have a solid understanding of what paper prototyping is and how to construct one.

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Part Two, "Process: Conducting a Usability Study with Paper Prototypes," is the core section of this text and consists of seven chapters. This section assumes that readers have decided to use paper prototyping for usability testing on a real project and provides an in-depth look at the process of conducting a usability study. It discusses an array of topics, including who to involve in the planning stages, how to create well-defined and appropriate tasks, how to conduct a valid and ethical test, and how to interpret test results, among other issues. From this section, practitioners will gain "how to" information, and students will obtain valuable insight about the process. Largely, this section serves as an instructional resource.

Chapter 5, "Planning a usability study with a paper prototype," starts with an overview of project considerations and then delves into each. Topics discussed include holding a meeting with team members, determining the goals of the test, designing tasks, recruiting members, and conducting the test, to name a few. While the chapter presents a lot of information to be absorbed, the author provides an excellent resource that captures all of the considerations in one table. This table is an important feature of Chapter 5 because it helps readers to comprehend the complexity of planning a usability test and the many people needed to make it a success. One shortcoming, however, is that this chapter fails to mention conflict between team members that can often increase planning time and complicate collaboration. Consequently, a student reader may develop misconceptions about the ease of creating a test when working with managers, marketers, technical writers, graphic designers, programmers, etc. Some discussion on working with cross-functional teams and workplace decision making processes would help depict the complexity that conflict between team members can add to a usability study.

The remaining chapters of this section build on concepts discussed in Chapter 5. In Chapters 6 and 7, "Task design" and "Preparing the prototype," the author shows careful consideration for the novice learner by providing ample details and examples for designing good tasks and an acceptable prototype. Chapters 8–10 focus on conducting the usability test and address issues such as roles and responsibilities of the facilitator, legal matters, and users' responses to working with a paper prototype. The author points out, for example, that preparing users for paper prototyping may differ from other usability testing methods because it is "an inherently visual and kinesthetic activity" and may be more awkward to users (p. 203). To prepare users for the awkwardness of using a paper prototype, the author suggests

that the facilitator explain the concept behind the imaginary computer, how interactions will occur, and the roles of testing staff. With such thoroughness, Part Two offers one of the better treatments written on specific details of usability testing.

Part Three, "Deciding Whether to Use Paper," is extremely helpful for determining the best applications for paper prototyping and whether or not it is an appropriate method for a given situation. Part Three will also satisfy the more academic reader because it presents research and introduces some theoretical and ethical questions about paper prototyping. Chapter 12, "What paper is (and isn't) good for," explains the four dimensions of a prototype: breadth, depth, look, and interaction. This chapter provides a decision checklist based on categories of questions and goals of testing. Chapter 13, "The politics of paper prototyping," looks at four main issues that usability professionals must deal with: validity, bias, professionalism, and resources. This chapter provides information about political constraints encountered when using paper prototypes and offers suggestions for overcoming skepticism. Chapter 14, "When to use paper," expands on the information in Chapters 12 and 13, but focuses on specific circumstances of a project that could determine whether or not paper prototyping should be employed. Overall, Part Three offers readers supplementary, yet valuable, information about the kinds of problems that may exist when using paper prototyping.

Part Four, "Broadening the Focus," while brief, situates paper prototyping within the larger scope of user-centered design. This section consists of two chapters: Chapter 15, "Examples of user-centered design," and Chapter 16, "Final thoughts." This section offers readers insight into other usability evaluation methods and provides additional references and resources on usability testing. In this final section, the author emphasizes the ways in which several usability evaluation methods can work together to optimize user feedback.

Overall, this text is an excellent reference for practitioners and students alike. It would be especially ideal for a novice learner of usability testing with paper prototypes and/or for use in an introductory course in usability testing or human-computer interaction. Paper prototyping provides exemplary case studies and instructional materials from which its readers can design paper prototypes and conduct usability testing. It offers a broad enough scope to cover design, methods, applications, justifications, and political concerns associated with paper prototyping, yet its scope is narrow enough not to overwhelm the newcomer.