A Practical Guide to Usability Testing

REVISED EDITION

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intellect

Part II

Planning and Preparing for a Usability Test

In this part, we describe how to plan and prepare for a usability test. We take you from the initial planning steps for a test to the point at which you are ready to conduct it. It is no accident that this part of the book has the most chapters. Conducting a useful usability test takes planning and attention to detail.

Chapter 7, "Planing a Usability Test," discusses the need for planning and introduces the topics that become the chapters that make up the rest of Part II. We describe how long it takes testing teams with different levels of experience to conduct different types of usability tests.

Chapter 8, "Defining Your Goals and Concerns," discusses the need to make the goals for a usability test explicit. We describe the importance of listing usability concerns for a product or document before you move on to the other steps in planning a test.

Chapter 9, "Deciding Who Should Be Test Participants," stresses the importance of audience analysis. We describe developing user profiles, determining how many groups of participants to test, and deciding how many participants to test.

Chapter 10, "Recruiting Test Participants," discusses the procedures for finding test participants and ensuring that they show up for the test. We describe turning user profiles into qualifying questions, the advantages and disadvantages of the various sources of test participants, and minimizing "no shows."

Chapter 11, "Selecting and Organizing Tasks to Test," discusses selecting tasks that probe the parts of the product you want to test. We describe creating a list of tasks, determining the resources you need for each task, and eliminating tasks when there are too many to test.

Chapter 12, "Creating Task Scenarios," discusses how to transform

task lists into the scenarios that the test participants will understand. We describe the importance of describing tasks at the correct level of complexity and including all of the information that the participant will need to attempt the task.

Chapter 13, "Measuring Usability," discusses the range of possible measures and the place of measurement in usability testing. We describe how to understand what you can measure, the options you have to establish quantitative usability criteria, and how to match measures with your usability concerns and test objectives.

Chapter 14, "Preparing Test Materials," discusses the written materials that are used in usability testing. We describe and present examples of the forms, questionnaires, checklists, and product documentation used in usability tests.

Chapter 15, "Preparing the Testing Environment," discusses the preparation of the test and observation areas. We describe preparing the product being tested, arranging equipment and props, and using recording equipment and materials.

Chapter 16, "Preparing the Test Team," discusses the roles that test team members can play during a test. We describe what the roles are and the options there are for mapping people onto roles.

Chapter 17, "Conducting a Pilot Test," discusses the importance of a pilot test and the consequence of not doing one. We describe when and how to conduct an effective pilot test.

In Part III, we describe how to conduct and ensure that improvements are made to the usability of what you test.

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Planning a Usability Test

In this chapter, we introduce the process of usability testing. We begin by discussing the common question, "How long does usability testing take?" Then we look at the importance of planning, the steps you need to take in planning, and some general principles for planning.

How Long Does Usability Testing Take?

The first question that most clients and managers ask about usability testing is, "How long is all this going to take?"

It is a legitimate question. Time for testing has implications for budgets and schedules. To have iterative testing, each test should take as little time as possible—*while still yielding useful information and without unduly burdening the test team.*

A usability test can take from a few days to a few months.

Clients and managers must also realize that development doesn't stop while testing occurs. Planning, for example, can take place at the same time as development of the prototype or part of the product to be tested. Moreover, companies that follow a usability engineering approach build testing into the budget and schedule so that testing is neither a surprise nor disruptive to the development process.

What Influences The Time It Takes?

The time you'll need will depend on factors like

- how much usability engineering has already gone into the product—how much has already been done to set objectives, analyze users, and analyze users' tasks
- how complex the product is
- how much of the product you are going to test
- how much setting up you need to do—whether you have to arrange for facilities, special equipment, or information for participants to work with
- whether you have a preselected pool of participants to choose from
- how many participants you need to get the information that you want; how much time you need from each participant
- how much training and prior experience the test team has both with the product and with usability testing
- how much experience all the people involved have working together
- how much education, negotiation, and review there needs to be between developers and testers at each stage of the testing process
- how many other tasks the test team and development team are doing at the same time

- how formal a report is required—whether you will prepare a technical memorandum of findings and recommendations or a complete, polished report or just meet with the developers and take minutes of the agreements that are made

How do these factors work together? Let's look at several examples of usability testing from different companies in different situations.

Testing in Many Companies – 8 to 12 weeks

Companies that follow the formal test process often allot 8 weeks or more for a usability test. (Remember that the rest of the project doesn't stop during this time. Product development and test planning go on at the same time.)

At Microsoft, for example, test specialists spend time working with product teams defining the goals and concerns that each test will cover. Test specialists find that these "problem definition meetings" are also educational sessions for the product developers. The test specialists may be raising issues that developers have not yet considered. Thus, it may take a few meetings to reach consensus on the focus of the usability test (Simpson, 1992, personal communication).

Microsoft test specialists also write a formal report and produce an edited, highlight tape for developers. One advantage of producing formal reports is that other test specialists and product developers can have access to the information from previous tests. Reading about previous tests can help developers avoid similar problems in their own products as well as helping test specialists plan and analyze new tests (Dieli, 1992, personal communication).

At Microsoft, test specialists have found that developers are most easily convinced when the testers "talk from data." Taking the time to do careful data analysis is thus an important part of their procedure (Dye, 1992, personal communication).

The Microsoft usability team also does rapid iterative testing of prototypes, helping to find the best implementation of design decisions, on a much shorter time scale. These tests usually focus on just a few features and include about six to eight participants who come for about an hour each. Two usability specialists conduct these tests in about a week (McClintock, 1992, personal communication).

As you increase the number of test participants, the time you need for recruiting and for analyzing data also increases. Hewlett-Packard asked our group at the American Institutes for Research (AIR) to test the documentation for the new version of an operating system. They wanted the test to cover several different manuals and several different groups of users. They were willing to spend the time and effort to have 10 people representing each group and to have a complete report with a highlight tape and a presentation to managers. The test took more than 8 weeks.

Shortening the Test Time – 4 to 6 Weeks

Completing a usability test in less time requires strong collaboration between professional usability specialists and the development team, but refusing to conduct a test because the developers have only a month or 6 weeks to fit the test into their schedule will not make the product easier for its users. Here's how AIR and General Electric Information Services (GEIS) worked together on a 6-week test of a new software product:

Week 1: The testers and designers spent about 3 days working together to determine who participants should be, how many participants to have, what criteria to use in recruiting, what tasks to have them do, and what special arrangements needed to be made.

Rest of week 1 and week 2: While appropriate participants were being recruited, the test administrator became familiar with the product and created the scenarios and questionnaires for the test. One way to reduce the time for testing is for the client to provide lists of appropriate participants or to do the recruiting.

End of week 2: The test team conducted a pilot test. Because the regular testing started at the beginning of the next week, the test team had to make the necessary changes over the weekend. Fortunately, few were needed.

Weeks 3 and 4: Conducting the test took about two weeks. Twelve people participated. Six were potential users of the software. Six were system administrators who set up and configure this type of software. The people in the second group were customers of GEIS. GEIS recruited these customers and made travel arrangements for them.

GEIS also had two members of the development team attend all of the test sessions. They were responsible for handling technical problems that might arise, such as software crashes. (If you do usability testing early, as you should, the software is still being developed; crashes happen.) Having technical people from the development team at the test saved time that we would have spent on the phone with them getting the software working again. They also got to observe the test, which is always good for developers to do.

End of week 4: During the test, the test administrator kept a running list of the problems, always focusing on how specific instances were indicators of more general, global problems. Every day or so, he talked with developers to keep them informed about the major (global) problems that the test team was seeing over and over.

Shortly after the last participant left, the test team met with the development team to go over the list of problems and agreed on ones that the developers could begin to fix right away. If the problems aren't obvious at the end of the testing—and they often aren't—you can still shorten the time by concentrating on getting out a memo of findings

and recommendations within two weeks of the test and then writing the more complete formal report later.

Week 5: The test team analyzed the data to confirm the problems they had seen and to see if there were problems that had not been obvious during the test. One team member began the report. You can write the sections on background and methods even before the data analysis is ready.

Week 6: The test team finished the report and made a tape of test highlights.

Many people that we know are starting testing by doing a small-scale, rush job, sometimes taking even less than 4 weeks, and often fitting it in with their other responsibilities. You *can* have a valuable test with real users and real tasks in a couple of weeks. It may mean lots of overtime; it may mean skimping on how many participants, how many tasks, and how much analysis you do. It probably means not writing a full report. But if it convinces managers that usability testing is worthwhile, it may mean that you will get the resources you need to do more in the future.

Testing Small Pieces with Well-established Procedures – About 1 Week for a Test

Some companies have developed procedures for turning around test results very quickly. At WordPerfect, the standard usability test now takes about one week (Young, 1992, personal communication). WordPerfect usability specialists can test that quickly because of this combination of factors:

- In-house usability specialists conduct the tests. They know the procedures and the facilities well; they can quickly understand the implications of what they see users do in a test.
- The specialists are also very familiar with the products that they evaluate.
- Each test covers only one or a few features of a product.
- Specialists know in advance about the features they will be evaluating.
- An experienced recruiter selects participants from a pool of people who have already filled out questionnaires about their backgrounds.
- Participants can do relevant tasks with each feature in a short time. Each participant comes for only about 1 hour.
- The specialists generally write only a short report; they seldom create a highlight tape. The specialist and the developers meet to go over the findings in the short report and agree on what needs to be done.

- Developers have bought in to the importance of usability and accept the findings of the usability evaluations.

This procedure has evolved at WordPerfect over time. They weren't able to do it this way when they first started out; nor is this the only procedure that they use. This procedure focuses only on small additions or changes to existing products. It would be difficult to use such a rapid procedure if you were concerned about larger issues, wanted to test many aspects of the same product, or wanted to see how several features work together. WordPerfect specialists also run longer evaluations when the situation warrants them.

"Just in Time" Testing – 1½ Days

Can you do testing in even less time? Yes, but . . .

We know of one case in which a test was completed in 1½ days. This test was done by an experienced team of five people who worked long hours to test a product at Silicon Graphics Company. An administrative assistant recruited and scheduled participants. A documentation specialist met each participant and conducted the pretest briefings and posttest interviews. A human factors specialist and a documentation specialist conducted the sessions (one each in different laboratory suites). A human factors specialist put the raw data into the computer and ran the analyses.

Dr. Anna Wichansky, who managed the test, notes in her description of it that only someone with extensive experience in usability testing and intense dedication should even attempt to conduct a test in such a short time (Dumas, 1991). From Dr. Wichansky's notes here are some of the factors that made doing the extremely short test possible:

- The team knew ahead of time the problems that engineering and manufacturing were worried about. They could concentrate on those problems when collecting data.
- Everyone on the team had done what they were doing before. Nobody was on a learning curve.
- The Silicon Graphics facilities can accommodate 12 participants per day, 2 at a time for 2 hours each.
- The lab at Silicon Graphics is maintained so that it is working 99.9% of the time. Dr. Wichansky makes everyone, including herself, responsible for making sure the lab is always ready.
- Six of the 12 participants were recruited from a pool of appropriate internal people. Six were recruited by an outside agency that was alerted the day before and that typically finds appropriate participants in 4 hours or less.
- An experienced human factors professional (Dr. Wichansky) was doing dry runs on the data as soon as she coded it into

the computer to make sure that she could get analyses immediately after the last test session.

- The team did not write a formal report. Dr. Wichansky prepared slides showing the results and recommendations (Wichansky, 1991).

Educating Developers and Managers About Time for Testing

It is ironic and unfortunate that when a company first begins to think about usability testing, developers and managers are likely to apply the greatest pressure for fast results and yet none of the features that reduce the time for testing are likely to be in place. Developers and managers may have no appreciation of the time and effort that usability testing takes. The company probably has no usability specialists nor procedures for usability testing. If the product has been developed without a focus on usability, part of the time for testing has to be spent determining who the users are, what tasks they will do, how to recruit them, and how to measure how well the product is doing. A formal report and a highlight tape may be needed to convince the developers and managers of the need to make the changes. The test may uncover an overwhelming number of problems.

Whenever we have to compromise on time because our clients have not started to even plan the usability test until very late in the development process, we take the opportunity to educate them. We point out that if they had an established usability engineering program, they would not have left usability testing until it was almost too late. If they had an established usability engineering program, they would have already worked through many of the planning steps in the testing process. If they had an established usability engineering program, they would have worked on the usability of the product throughout development and would be less likely to find numerous, serious problems in the usability test.

Planning is Critical to a Successful Test

Good planning is absolutely necessary for a smooth and useful test. If you skimp on the planning, you will regret it during and after the test.

Bringing in "just a few people" to "see how they work with the product" will be a waste of time unless you have thought about

- what aspects of the product might not be as usable as they should be
- how well the "few people" represent the actual users of the product
- what tasks you will have the people do in the short time that they have with the product

- what information you are going to collect as you observe these people work with the product
- how you are going to analyze the information that you collect
- what you are going to do with the information once it is analyzed

Planning Involves a Series of Specific Steps

Planning a usability test involves these activities:

- defining the goals and concerns that are driving the test
- deciding who should be participants
- recruiting participants
- selecting and organizing tasks to test
- creating task scenarios
- deciding how to measure usability
- preparing other materials for the test
- preparing the testing environment
- preparing the test team—assigning specific roles, training team members, and practicing before the test starts
- conducting a pilot test and making changes as needed

You can use this as a checklist of steps in planning a usability test. The list is also a table of contents to the next 10 chapters of this book.

Planning Requires Team Work

The planning should be led by a testing professional, but he or she must work closely with others on the team. There are many decisions to be made in planning a test, and the more that all the groups involved on the product team come together in planning the test, the more likely you are to have a useful test.

These people	*May Bring This Perspective to Planning a Usability Test*
Usability specialists (human factors specialists)	knowing what can be accomplished in a usability test and how to plan one; understanding the interface and potential problems users may have

Designers and developers	understanding the product and the tasks users can accomplish with the product
Technical communicators	knowing which aspects of the documentation should be tried out in a test; understanding potential problems in the ways that the product communicates with users
Trainers	understanding the problems that users are likely to have
Marketing	knowing who the users should be
Help desk or customer assistance	knowing about problems users have with earlier versions or similar products

Planning Must be Managed and Tracked Carefully

Planning a usability test, just like any other part of a development project, needs to be well managed with a quality control system that allows you to schedule activities, assign responsibilities, track progress, and document decisions.

You should at least keep a written log of the decisions that the planning team makes for each of the planning activities. You'll find it useful both for conducting the test and for reporting on the test later.

Writing an actual test plan is also a good idea. Writing the plan forces you to articulate the planning decisions. Sharing the test plan with all the groups who are involved in the project and getting agreement on it helps avoid problems later and builds commitment from the product's owners. The table of contents of Part II of this book could also serve as an outline for a test plan.

The first item in our planning list is "Defining goals and concerns." That's the topic of the next chapter.