A Practical Guide to Usability Testing

REVISED EDITION

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Defining Goals and Concerns

Most products are far too complex for you to test every group of users and all your concerns at the same time. Even with a simple product, so much happens so quickly in a usability test that if you have not thought about what to focus on, you may miss important events. For each usability test, therefore, you have to start by considering what you want to learn—that is, by defining specific goals and concerns.

Defining goals and concerns makes the rest of planning much easier. All the other decisions—who should participate, what tasks they should try, what data or equipment you will have to set up, what you will measure—flow from understanding what you want to learn.

In this chapter, we discuss

- making choices among goals and concerns
- moving from general concerns to specific ones
- understanding sources of goals and concerns

We also introduce an example that we will use throughout the rest of the book: testing an electronic mail program.

You can begin the planning with goals or concerns or a combination of both.

A goal is usually stated as a declarative sentence, for example, "Users will be able to select the correct icon in less than 30 seconds with no more than one mistake." If the product is being developed in a usability engineering approach, you may have many quantitative usability goals like this one. The point of planning is to decide which are of primary interest for this particular usability test.

A concern is usually stated as a question, for example, "Will users be able to select the correct icon quickly and accurately?" If no one has set quantitative usability goals for the product, you will probably raise questions (concerns) as you plan the usability test. (We'll urge you to define "quickly" and "accurately" before you test. See Chapter 13, "Deciding How to Measure Usability.")

Making Choices Among Goals and Concerns

In planning a usability test, you almost always have to make choices. Here are just two examples:

> Is your main concern whether people will use the manual at all, or whether people will find the manual easy when they do use it? It is very difficult to get an answer to both of those questions at the same time. You'll set up the test differently depending on which concern you want to resolve. (See the section on "Testing Different Aspects of the Documentation," in Chapter 2.)

Is your main concern whether new users will be able to get up and running to do basic tasks quickly, or whether users who have had the product for 6 months can figure out more advanced functions? You may be concerned about both, but you'll have to plan two different tests to learn about both.

Moving From General Concerns to Specific Ones

Only by moving from general concerns to specific ones will you be able to actually plan the test. Saying "we want to learn whether the product is easy for users" is a good start, but much too vague. What aspects of the product worry you? Which groups of users are you particularly worried about? What tasks will let you know if those worries are valid? What measures will let you know if the users are in fact having trouble with those tasks?

Are you worried that new and casual users will have trouble selecting the right icon in your drawing program, for example, the icon for grouping objects? Then you must have users who are new to the program or who use it infrequently as your participants in the test. You must have a task that includes grouping objects—and you may want to instruct participants to do the tasks with the icons and not with the menus. You'll also want to count "wrong icon choices."

Stating general concerns often helps you decide who to have as participants in the test. Making the general concerns more specific helps you decide what tasks to have them do, how to set up the test, and what to measure.

Consider this example from Kay Chalupnik of IDS Financial Services, Inc., an American Express Company in Minneapolis (Chalupnik, 1992):

The usability testing group that Chalupnik heads was asked to provide data to answer this question: Which of two laptops should the company buy for its sales representatives?

General concern:
comparative ease of use of two laptops for sales representatives

In order to know what to test, however, Chalupnik's group had to delineate more specific concerns, which they found by talking with sales representatives. Here are just two of the many specific concerns in this test:

1. Which laptop makes it easier to learn quickly how to call up and change a client's files?

(Sales representatives don't want to look incompetent in front of clients. Both sales representatives and clients are busy people. For this specific concern, Chalupnik planned tasks to call up a client's file and change it in specific ways. She measured time and errors.)

2. Which laptop is easier to use under typical lighting conditions in the field?
   (The laptops would be used in restaurant offices and even while standing on a street corner. Because she could not simulate the lighting problem in the lab, Chalupnik took the cameras out of the lab and ran the test in actual field sites and street corners.)

Understanding Sources of Goals and Concerns

Both your general and specific goals and concerns can come from several sources, such as:

- task analysis and quantitative usability goals
- timely issues
- a heuristic analysis or an expert review
- previous tests of this or other products

Concerns From Task Analysis and Quantitative Usability Goals

The goals and concerns for a specific usability test should come, at least in part, from the usability engineering techniques that you have already used to plan the product. In that sense, usability testing is a progress report on part of the product—seeing how well you are doing in moving towards a subset of your quantitative usability goals.

Here is an example:

A general goal for the product:	Menus should be easy to navigate through.
Quantitative usability goals for the product:	Users will be able to find the menu choice they want in less than two minutes with no more than two wrong choices the first time they need it. They will remember it correctly (no errors) after the first time and select it in less than one minute.
General concern for this test:	Can users who are transferring to this product from another word processor find the correct menu choices as they need them?

Specific concerns for this test:	Can transfer users add a header to a document? (A later task will have them change the header to test the quantitative goal for selecting the same menu choice again.) Can transfer users adjust the size of a picture in their document? (A later task will have them put a border around the picture to test the quantitative goal for selecting the same menu choice again.)

Concerns From Timely Issues

The issues that worry you and lead you to a usability test are likely to be different, depending on where you are in the process of designing and developing the product. Consider these examples:

- Your company is developing a new product. Members of the development group differ strongly on which of two design philosophies to incorporate into the interface. Resolving the issue with a usability test is far better than spending months arguing about it. The test at this point would be limited to the specific concerns that examined the differences between the two philosophies.
- You did early usability evaluations and user edits of the manual, but it didn't have an index during the earlier tests. The index is now ready and you want to focus in this test on whether users can find what they need in the index. The general concern is whether users can find what they need in the manual by using the index. (Note that you would have to tell users to find the appropriate instructions in the manual by looking in the index before attempting the task. You would also have to be careful about the way that you word the task scenarios. See Chapter 12 on writing scenarios.)

Concerns From a Heuristic Analysis or Expert Review

Most of the specific concerns for a usability test come from thinking about different groups of users and their tasks. Some, however, come from thinking about the product itself.

Any problems that have been predicted by a heuristic analysis or an expert review should be candidate concerns for a usability test. Any problems that the designers themselves are worried about or that others—such as planners, other designers or developers, human factors specialists, or technical communicators—have raised should be candidate concerns for a usability test. Even if there haven't been any

earlier analyses or reviews, concerns like these may arise when usability specialists get involved in planning the test.

> Suppose that in looking over the documentation for a new machine that you were going to test, you notice that the part names seem rather technical. The instructions for cleaning and maintaining the machine don't include any pictures. The developers don't think that's a problem. They tell you: "The users all know the parts and these names. It won't take them more than 5 minutes to clean it at the end of each day."
>
> One of the company's general goals, however, is to keep calls for technical support and maintenance to a minimum. If users call because they can't figure out what to clean or because they give up on trying to clean the machine and that makes it need maintenance sooner, that general goal will not be met.
>
> Based on that goal, you might express a strong concern about the assumption that users won't have problems cleaning the machine. That concern would in turn lead to including a task that has participants "do the required end-of-day cleaning" and to measures such as time for the task, calls for assistance, and errors in selecting the right part to clean.

Concerns From Previous Tests

If you are working in a usability engineering approach with iterative testing, your primary concerns may come from earlier tests. If you are doing rapid prototyping, you may be conducting several tests in a row that address the same set of concerns.

Even later in the process when you do more formal, larger scale usability testing, one test may raise concerns that suggest another test. As we will discuss in Chapter 21, "Recommending Changes," even when a usability test has helped you to identify problems, the solutions aren't always obvious. Change is not always an improvement; sometimes you need to retest.

A test may raise concerns that you hadn't realized were important and don't feel that you got enough information about.

> Let's say you've just tested some of the features of a new time management software package. One of the participants expressed much more frustration and took much longer to do the tasks than the others. That participant was the only executive in the group. Your company wants to market this product to executives as well as to managers and support staff, but you don't know if this person was typical of executives. You might plan a second test with five executives, focusing on tasks they are likely to do with the product.

Even in your first test of a product, some concerns may come from tests of other products.

Let's say you are developing a version of your product for a multitasking, multiwindow environment and want your current users to migrate to it. You've heard from other people that in situations like yours, users have been frustrated even trying to start working because they have trouble manipulating the windows. You would probably want to include tasks that have participants work with the windows to see if this is a problem for your users. If you've built solutions into your product to help users overcome the learning curve for working in the new environment, you would be concerned about how well your solutions work for your users.

Introducing Our Ongoing Example: Testing an Electronic Mail Program

Throughout this book you will find examples from a wide range of products. We provide the variety on purpose; we know our readers work in many different fields.

Variety is valuable; so, however, is continuity and consistency. To provide an ongoing thread throughout the book, one of the examples we will use will be of the same product—an electronic mail program.

We chose electronic mail because it is meant for a general user population. It does not require knowledge of any particular technical domain. Furthermore, electronic mail is becoming ubiquitous both in business and at universities. Many of you use it regularly. Many others are at least familiar with the concept.

(If you aren't, think of it as a way to send and receive letters, memos, and other documents through the computer. You don't have to weigh the envelope and buy stamps; you don't even have to worry about envelopes. You can usually send files that you've created outside the electronic mail program along with your messages. You can often send the same message to many people at the same time and type it only once. You do have to somehow be connected to the people with whom you can correspond through a computer network that you can reach by hardwire or by modem.)

The specific product that we discuss here does not actually exist. Our example is an amalgam of many different electronic mail programs we have worked with. The product has a menu-based interface and is used on personal computers that are linked through networks to other personal computers in the same company.

Unfortunately, we have been asked to conduct a usability test of this product at a rather late stage in its development, and very little usability engineering has gone into creating the version we are testing. Here are just some of the general and specific concerns we might list as we begin to plan this usability test:

General concern: Will new users (people who have not seen this particular program before) be able to become productive quickly?

(Although we are also concerned about how easily users will be able to work with some of the more advanced features after they've had the product for some time, we think we should concentrate in this test on making sure that users will be able to do basic tasks quickly. If people don't have success with the product when it is first introduced into a company, they won't continue to use it.)

(As we will discuss in the next chapter on "Deciding Who Should Be Participants," we are concerned both about people who have never used electronic mail and those who have used another program and will be told by the company to switch to this one.)

General concern: Will new users be able to navigate through the menus quickly and easily?

(This concern comes from the general plans for the product as well as from the usability specialist's review. The developers want users to be able to select the appropriate menu items correctly and quickly. The usability specialist predicts that users may have problems because the names on the menus do not appear to be in users' terms.)

Specific concerns about navigation for new users: Will new users be able to find the right menu path to:

read a message?
write and send a message?
respond to a message?
forward a message?
save messages and delete them from the list?
retrieve a message that they have saved and then reply to it?
set up a distribution list?

Ways to measure concerns about navigation:

wrong menu choices
time to complete tasks

General concern: Will new users be able to select items from lists on the screen quickly and easily?

(This is not a concern that the developers originally had. These functions exist in the product. A quick expert review by the usability specialist, however, has raised the concern that the way this functionality works is not the way that most users will expect it to work. Just by asking 10 potential users how they would do this task, even without any prototype, the usability specialist has found that 10 out of 10 gave the same sequence of steps that they would expect to take. That sequence will not work in this product. It will give users a different message from the one they want. It will create a distribution list consisting only of the first name that users select.)

Specific concerns about selecting from lists:

Will new users be able to read a specific piece of mail and skip over mail they don't want to read at this moment?
Will new users be able to select more than one name from a list of

names and addresses when they want to send the same mail to multiple people or when they want to create a distribution list?

Ways to measure concern about selecting from lists:
selection errors
time to complete tasks

The actual test might have many concerns, each with several more specific concerns leading to specific tasks and measures. We will return to this list of concerns and add to it as we discuss other planning issues such as "Selecting and Organizing Tasks to Test" (Chapter 11), "Creating Task Scenarios" (Chapter 12), and "Deciding How to Measure Usability" (Chapter 13).

Before we get further into tasks and measures, however, let us return to the issue that is usually addressed in the most general concern: *Who* are you most concerned about? *Who* are you going to have come in to participate in the usability test? *What characteristics* should you use to select participants who will help you to accurately predict the problems that other *real* users will have when they try to use the product? That's what we cover in the next chapter.