Usability.gov
Your guide for developing usable & useful Web sites

Usability Basics

Usability refers to how well users can learn and use a product to achieve their goals. It also refers to how satisfied users are with that process.

Usability measures the quality of a user's experience when interacting with a product or system, including:

- Websites
- Software applications
- Mobile technologies
- Any user-operated device

Usability is a Combination of Factors

It is important to realize that usability is not a single, one-dimensional property of a user interface. Usability is a combination of factors including:

- **Intuitive design**: a nearly effortless understanding of the architecture and navigation of the site
- **Ease of learning**: how fast a user who has never seen the user interface before can accomplish basic tasks
- **Efficiency of use**: How fast an experienced user can accomplish tasks
- **Memorability**: after visiting the site, if a user can remember enough to use it effectively in future visits
- **Error frequency and severity**: how often users make errors while using the system, how serious the errors are, and how users recover from the errors
- **Subjective satisfaction**: If the user likes using the system

The key to developing highly usable sites is employing user-centered design.

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User-Centered Design

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User-Centered Design

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What is User-Centered Design?

User-centered design (UCD) is a design methodology and process that focuses on the:

- Needs of end users
- Limitations of end users
- Preferences of end users
- Business objectives

No matter what objectives you have for your site, it must carefully balance the needs of users and the needs of your organization.

Importance of User-Centered Design

Users visit your website to find information or accomplish tasks. If they don't find your website helpful, you risk them leaving. By focusing on the end user you:

- Satisfy the user with a more efficient and user-friendly experience
- Increase loyalty and return visits
- Establish a more relevant and valuable website
- Create websites that supports rather than frustrates the user

The Process

To create a user-centered website, you must think about the needs of your users through each step of the process, including:

- Planning
- Collecting user data
- Developing prototypes
- Writing content
- Conducting usability tests

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Questions to ask When Planning a User-Centric Website

To create a user-centric site, you must clearly define your organization and users' needs, goals, and objectives. Begin by asking questions such as:

- What are your business and website objectives?
- Who are the users of your website?
- What are their experience levels with the website?
- What are their tasks and goals when using your website?
- What information and functions do your users need, and in what form do they need it?
- How do users think your website should work?
- What devices and browsers will they use to access your site?

Get a complete list of questions to consider (PDF-160KB).

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Measuring Usability

Usability testing can measure a range of factors as you design or redesign a website.

Factors Measured in Usability Testing

The most common factors measured in usability testing include:

- **Effectiveness**: a user's ability to successfully use a website to find information and/or accomplish tasks
- **Efficiency**: a user's ability to quickly accomplish tasks with ease and without frustration
- **Satisfaction**: how satisfied the user is with site
- **Error frequency and severity**: how often users make errors while using the system, how serious the errors are, and how users recover from the errors
- **Memorability**: a user's ability to remember enough to use the site effectively after his or her first visit

Data Found in Usability Testing

Usability tests can capture two types of data. Quantitative data notes what actually happened. Qualitative data describes what participants thought or said.

When you have gathered your data, use it to:

1. **Evaluate** the usability of your website
2. **Recommend** improvements
3. **Implement** the recommendations
4. **Re-test** the site to measure the effectiveness of your changes

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Cost & Return on Investment

Benefits

Usable systems can save money by helping to

- increase productivity and customer satisfaction
- increase sales and revenues
- reduce development time and costs and maintenance costs
- decrease training and support costs

Usability Engineering Saves Money

You can use usability testing to show that the benefits of usability engineering outweigh the costs.

This method was first published by Clare-Marie Karat of IBM who used it to show a 100-fold return on investment for a particular software product. In that case, spending $60,000 on usability engineering throughout development resulted in savings of $6,000,000 in the first year alone.

The results from this technique are especially convincing if the same organization pays both the development costs of the Web site and the salaries of the people who use the site. But it should also be convincing to organizations that really care about how problems on their site cost their external users' time, money, and frustration.

The types of problems that you might find costing time (and therefore money) are misleading navigational cues, poorly designed pathways, pages that are so dense they take a long time to use, etc.

Return on Investment (ROI)

Simply put, it's a way to determine if usability is worth the investment, by comparing the money spent on usability activities with the savings that result from the process.

Since budgetary constraints often lead to software and Web site development managers viewing usability costs as an added effort and expense, the key is to help your organization realize that usability is an investment, not an added expense.

Usability increases customer satisfaction, productivity, and leads to customer trust and loyalty. Consumers have become more demanding about usability. Applying usability in the initial design can greatly reduce extensive redesign, maintenance, and customer support.

Following is a list of ways that you can measure the ROI of usability in your

organization:

User Effectiveness

- increase success rate and reduce users errors
- improve ease of use and ease of learning
- increase user productivity and user satisfaction
- reduce support costs and training costs
- increase user trust in the system

Development Costs

- reduce development costs and time
- reduce maintenance costs

Revenue

- increase product sales, revenue and market share
- increase site traffic and transactions/purchases
- attract and retain more customers

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User-Centered Design & Usability Testing

Usability testing fits in as one part of the user-centered design process. In a usability test, representative users try to find information (or use functionality) on the Web site, while observers, including the development staff, watch, listen, and take notes. The purpose of a usability test is to identify areas where users struggle with the site and make recommendations for improvement.

Usability testing is typically best implemented after you've completed earlier steps in the UCD process. It's better to clearly define problems, goals, and objectives before testing your site.

User-Centered Design vs. Testing

UCD, sometimes called usability engineering, is a structured approach to producing a Web site that involves users throughout the entire design process to create a Web site that works. UCD involves several methods, each applied at appropriate times, including:

- defining business and user goals and objectives
- gathering requirements
- evaluating design alternatives, building and testing prototypes
- analyzing usability problems, testing a site with users, and proposing solutions to problems

Benefits Outweigh Costs - Iterative Testing

You can use usability testing to show that the benefits of usability engineering outweigh the costs. The types of problems that you might find costing time (and therefore money) are misleading navigational cues, poorly designed pathways, pages that are so dense they take a long time to use, etc.

Here is how you can use usability testing to show how benefits outweigh costs:

- Conduct a usability test on an early version of the Web site (or other product). This could be the old site or one done without involvement of usability specialists. Have actual users try to complete relevant tasks, measure completion rates and the time to complete the tasks.
- Identify and fix problems.
- Conduct a usability test on the new version of the site. Try to match user demographics from the first test, use the same tasks and measure completion rates and time.
- Calculate the improvement in average time to complete each task and

completion rates. You can do the next steps for each task separately, for just one major task, or for all the tasks together.

- Multiply the time saved by the number of people who are likely to do that task in a given time period (say, each day).

If users are likely to do a task several times a day, you can also multiply by that number.

- If you have noted the time saved in seconds or minutes, convert it to hours because you will want to work in hours in the next step.
- Convert time to dollars by multiplying time saved (in hours) by users' salary (per hour).
- Find the one-year savings by multiplying your previous figure by the number of days in the year that users are likely to do the task. If this is a work task, use the number of days in the organization's working year.
- You now have the total annual savings of your usability changes - all due to time saved by fixing the product so users can do tasks more quickly.