

4 Prioritizing Your Usability Problems

Usability can be a matter of life and death. In war a soldier in a fighter plane has a critical edge if his plane's user interface for targeting and firing systems is just one second faster than his enemy's. On the Web, of course, usability does not have such a dramatic role. But it can determine whether your Web site fails or succeeds.

How do you know which usability problems have the most serious consequences for your Web site? Which ones to fix and which to let go? In this chapter, we discuss the issues that create the most trouble for users and the most missed opportunities for businesses. With this information, you can best decide how to allocate your resources.

How Severe Is the Problem?

- High-severity problems impose an unacceptable cost and/or loss of business, either by preventing people from using the site or by actively driving them away.
- Medium-severity problems cause users confusion and frustration, and cause sites some lost business but not to the degree of high-severity problems.
- Low-severity problems are cosmetic or irritating but do not individually hurt business for the site. Of course, the combined effect of many low-severity design mistakes can lower the quality of the total user experience enough that users do leave the site.

For every usability problem on your site, you need to balance the severity of the problem against the effort required to fix it.

There is a lot wrong with Web sites today, but to improve usability, we need to prioritize our resources and fix the problems that hurt users the most. To do this, we need a systematic evaluation of the severity of Web usability problems. This chapter provides that.

When we write consulting reports for our clients, we rate usability problems very simply as high, medium, or low. We then base our recommendations on the severity of the problems: Fix everything rated high, if possible; spend some resources on medium problems; and defer fixing low issues to a later date unless they're so trivial that they can be resolved with almost no work.

For the book research, we use a 100-point rating scale for severity because numeric ratings allow us to provide more interesting statistics than a rating scale based on words. We don't recommend that you apply this more complex scale to your own design because it's too detailed for everyday development projects. Simpler ratings allow designers to focus on their priorities, which are to fix the most severe problems. A fancy scale is an open invitation for everyone on the design team to pipe up and quibble over individual points. This is not a fruitful use of time because there is no meaningful difference between something rated 62, say, and something rated 63.

There's another reason that a simple scale is best for practical projects: You need to balance the severity of the problem against the effort required to fix it. Even a high-severity problem can be fixed later if that's going to be extremely costly and time consuming. We all know that estimates of development schedules are little better than numbers drawn out of a hat, and thus overly precise usability ratings have no place opposite rough development estimates.

What Makes Problems Severe

Three factors affect how serious a problem is for users:

- **Frequency:** How many users will encounter the problem? If a relatively small number of users are hurt by it, it's a lower severity problem.
- **Impact:** How much trouble does the problem cause to those users who encounter it? This can range from almost imperceptible irritation to losing hours of work or even deciding to leave a Web site.
- **Persistence:** Is the problem a one-time impediment to users or does it cause trouble repeatedly? Many usability problems have low persistency because once people figure them out, they can overcome them in the future. Other designs are so confusing that people get lost over and over again. Design mistakes of this kind deserve a higher severity rating than those that bite once.

Scoring Severity

To calculate the total severity score of a usability problem, we multiply the frequency rating by the impact rating, then multiply that number by the square root of the persistence rating and divide that by the square root of 10. (Dividing by the square root of 10 simplifies the rating by keeping the total number of potential points under 100.)

It's obvious why we multiply frequency by impact: Essentially we're multiplying how many users are hurt by how much they are hurt, and the result is an estimate of total harm done. It

may be a bit of a surprise, though, that we then multiply that answer by the square root of the persistence score instead of by the full persistence score. This is because we are dealing with Web sites, where there is not that much persistent use. Users usually only visit Web sites a few times, and if the site has sufficiently hurtful design mistakes, they won't return at all. Thus, we can't give full weight to the idea that users would hypothetically continue to be hurt on subsequent visits because for the most part they won't be revisiting

For each usability problem, we rate each of the three attributes on a scale of 1 to 10, with 10 indicating those that cause the most trouble for the most people. From these scores, we can calculate how severe the problem is. These screen shots illustrate low- and high-severity problems.

The screenshot shows the California State Parks website interface. At the top, there is a navigation bar with "California Home" and the date "Saturday, February 11, 2006". Below this is a banner with "Welcome to California" and various scenic images. The main content area is titled "Find a Park" and "California State Parks" with the tagline "Discover the many states of California." There are navigation tabs for "Park List", "Regions", "County/City", "Activity/Facility", and "Weather". A search bar is present with "My CA" and "This Site" radio buttons and a "search" button. On the left, a map of California is divided into 12 numbered regions. On the right, a "Region Search" form allows users to select multiple regions. The list of regions is as follows:

Region Number	Region Name
1	North Coast
2	San Francisco Bay Area
3	Central Coast
4	Los Angeles County
5	Orange County
6	Inland Empire
7	San Diego County
8	Shasta Cascade
9	Gold Country
10	Central Valley
11	High Sierra
12	Deserts

The usability issue is that the numbers 1 through 12 are not in numerical order in the list, appearing as if they were randomly placed in two columns.

At the bottom of the page, there is a footer with various links: "State Parks Home", "Find A Park", "Reservations & Fees", "Adventures in Learning", "About Us", "Jobs", "Press / Announcements", "Publications", "State Parks Store", "Contact Us", and "Site Index". The URL "www.parks.ca.gov" is also visible.

www.parks.ca.gov

A low-severity usability problem: The problem here is that the numbers on the list of checkboxes do not appear to be in numerical sequence, making them seem random. The underlying design problem is that the list looks as if it has been broken up in two columns whereas in fact it's structured by rows. This problem has a very low frequency of occurrence, because most people either click the map or click the name of the area they are interested in; very few people try to match the map and the list. For those users who do try to match them, this is still a very low-impact problem because the list is so small. You need to spend a few extra seconds scanning it, and that's all. Finally, the persistence of the problem is low because if you return to this screen, you know how to deal with it. You are not likely to spend even a few seconds thinking about the mismatch a second time. This layout problem is a minor irritation, and fixing it should not be a high priority.

February 11, 2006 11:37 PM EST



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ABOUT US

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▶▶ BEST VIEWED AT 800 x 600 PIXELS RESOLUTION.

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A high-severity usability problem: The problem on this bank's "About Us" page is that it does not tell enough to establish trust and credibility. Yes, the bank says that it is a "home of traditional banking," but it doesn't back that up with facts such as when the bank was founded, how many branches it has, how solid it is, or any other specific information that would make you feel comfortable handing your money over to it. This problem is high frequency because all users will want to know about a company before doing something as scary as giving it money for safekeeping. The problem is also high impact because it will cause a lot of people to simply refuse to use the site. Finally the persistence of the problem is high, because every time a new user contemplates doing business with the bank, they will want to know more about it, and every time they try to find out, they will be disappointed. This unsatisfying page significantly harms the bank's ability to attract online business.

Bad user interface can be life threatening in medical applications. In the March 9, 2005 issue of the *Journal of the American Medical Association*, Ross Koppel and colleagues reported on a field study of a hospital's order-entry system, which physicians used to specify patient medications. The study identified 22 ways in which the system's design flaws caused patients to get the wrong dosage of medicine. Most of these were due to usability problems.

The system screens listed dosages based on the units of medication available through the hospital pharmacy. If a rare medication is usually prescribed in 20- or 30-mg doses, for example, the pharmacy would stock 10-mg pills so that it could cover dosage needs without overstocking. When hospital staff members prescribed infrequently used medications, however, they often assumed the listed unit was a typical dosage. (Years of usability studies in many domains have shown that users tend to assume that the given default or example values are applicable to their own situations.) So a doctor might prescribe 10 mg even though 20 or 30 would be more appropriate. The usability solution here is simple: Each screen should list typical prescription dosages.

Another problem occurred when doctors changed the dosage of a patient's medication. They often entered the new dose without canceling the old one, so the patient received the sum of the old and new doses. This is similar to a banking interface error, when a customer mistakenly authorizes a payment to the same recipient twice in one day. Many bank Web sites will

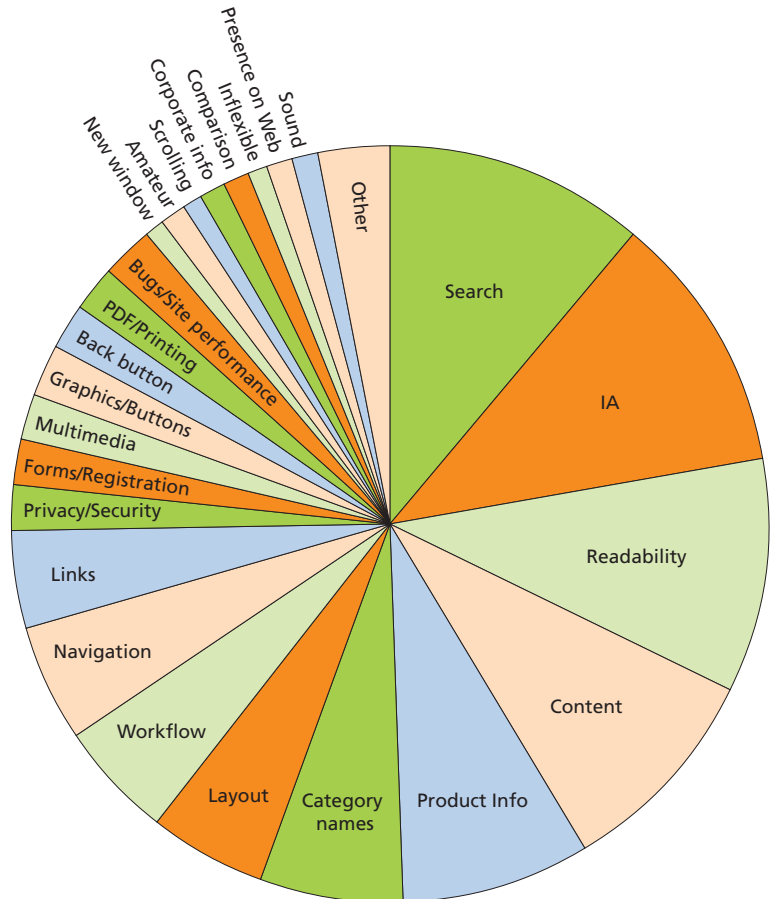
catch this error and ask the client to double-check their records. In general, if users repeat something they've done, the system should ask them whether both operations should remain in effect or whether the new command should overrule the last.

The article reported that at times staff had to review up to 20 screens to see all of a patient's medications. In a survey, 72 percent of staff reported that they were often uncertain about medications and dosages because they had difficulty reviewing them all. The well-known limits on human short-term memory make it impossible to remember across that many screens. Humans are notoriously poor at remembering exact information, and minimizing users' memory load has long been a top guideline. Rather than require users to remember things from one screen to the next—let alone to the next 19—the system should restate facts for users when and where they need them.

Other aspects of the system that required users to go through numerous screens placed additional burdens on some staff. As a result, they didn't always use the system as intended. For example, it was easier for nurses to keep sets of paper records that they entered into the system at the end of their shifts rather than to update it throughout their shifts. This increased the risk of errors and prevented the system from providing real-time information about the medications patients had received. In general, whenever you see users resorting to sticky notes or other paper-based workarounds, you know you have a failed UI.

The Scale of Misery

The combined severity points across all usability problems can be seen as an estimate of the total misery of the Web user experience today. We already know from Chapter 2 that the situation is pretty bad because users repeatedly fail their tasks or give up on sites. This pie chart shows what types of problems cause users the most trouble.



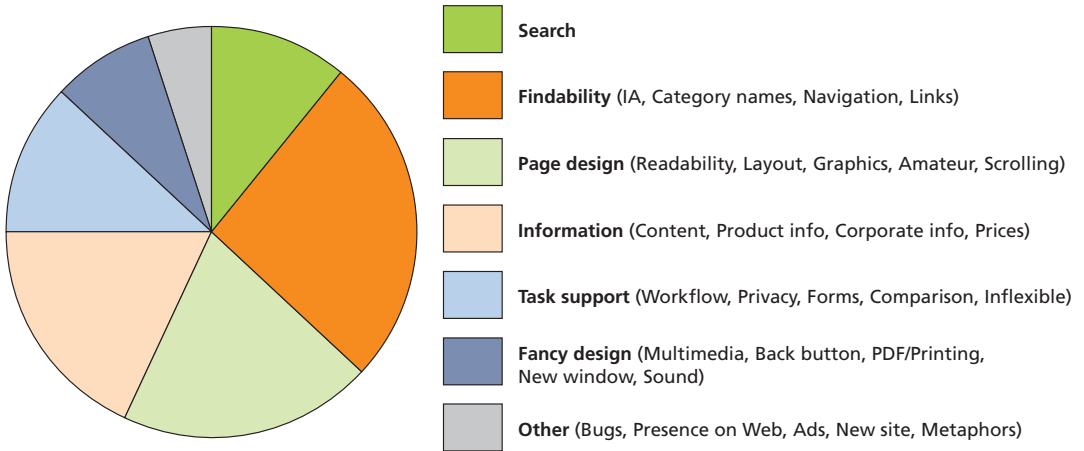
Usability problems weighted by their severity score. Each slice indicates the percentage of the total misery imposed on users by each type of design mistake. The last slice represents the 4 percent of the total score that was due to various miscellaneous issues that defy classification.

You must look beyond Search and findability to determine why your site isn't fulfilling its business potential. Much of your losses are probably caused at the page level.

In the severity scale we prepared for this book, Search was the worst offender, sharply followed by confusing information architecture, low readability, and uninformative content. In other words, almost three-quarters of the usability issues that people encounter have to do with basic user goals: finding, reading, and understanding information. Most of these problems delayed or annoyed users, but they eventually overcome them in many cases. For example, users might get lost in a site's information architecture but still find what they want through Search.

Certainly, some very bad design mistakes are so small or infrequent that they didn't rack up enough points to account for at least one percent of the total. Aggressive, offensive, and intrusive ads, for example, accounted for only four-tenths percent of the severity score and are thus not shown in the pie chart. The low score for bad ads is based on two things. First, we didn't test very many content sites in this study, so most of the sites we used didn't have that many ads. Second, ads must be extremely obnoxious to get users to leave a site. This does not mean that users don't find them irritating. They do. But most have developed a defense strategy of ignoring anything that looks like an ad which is why we have a usability guideline advising that none of your design elements do.

To get a better grasp on the big areas of design mistakes in current Web sites, we then grouped the problems into larger categories. As this pie chart shows, Search was still such a big problem, it's literally in a category all by itself. But in this grouping, findability was the biggest issue, accounting for 26 percent of user misery. Findability—which includes design elements such as information architecture, category names, and links—is one of two ways users get to where they want to go on a site. Search, of course, is the other. When we add up the two, we see that 37 percent of people's difficulties on the Web relate to getting to the right page.



Usability problems weighted by their severity score and grouped into larger categories of design mistakes. Combining usability issues into broader categories shows the major areas that caused confusion and dissatisfaction among users.

Another 62 percent of user misery is caused by bad design at the page level or bad design of a progression of pages in a workflow—cases in which users arrived at the right location but it didn’t meet their needs. This means that you must look beyond Search and findability to determine why your site isn’t fulfilling its business potential. Much of your losses are probably caused at the page level by information that is incomprehensible, lowers trust, or simply doesn’t provide a crucial answer that users want. Conversely, just one percent of users’ difficulties related to issues caused by companies having multiple, inconsistent Web sites, so this is a less severe problem.

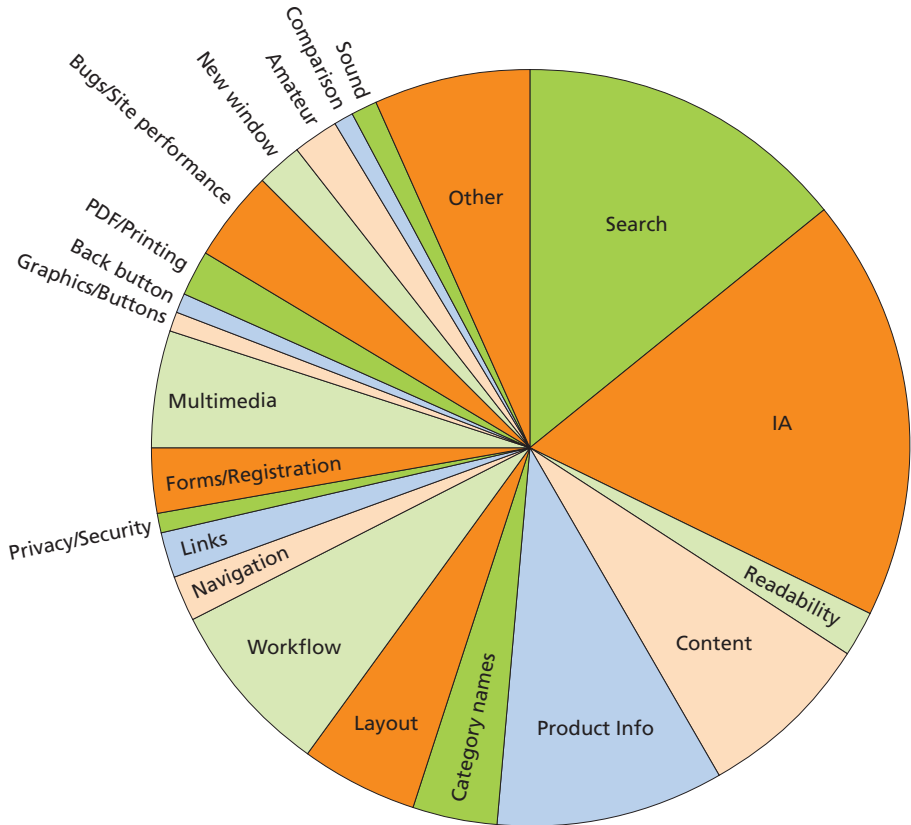
Tip: The First Law of E-Commerce

If the user can’t find the product, the user can’t buy the product. The ability to get around a Web site is extremely important for usability, but the key components of Search and findability account for more than one-third of users’ difficulty doing so.

One piece of good news: Fancy design now causes only eight percent of users’ misery, down from its glory days in the dot-com bubble, when it was much more commonly used. We still need to guard against the reemergence of excesses like splash screens and annoying animation, but for the moment they are mainly a thing of the past.

Why Users Fail

In the previous section, we discussed problems that primarily delay or annoy users but don't necessarily stop them from completing a task. Some problems are too severe to for average users to overcome, however. This chart shows problems that were severe enough to cause users to fail on a site either by leaving it, giving up on a task, or completing a task incorrectly.



Usability problems weighted by how frequently they caused users to fail a task. These are the issues that stopped people in their tracks and prevented them from successfully accomplishing their tasks.

Five Biggest Causes of User Failure

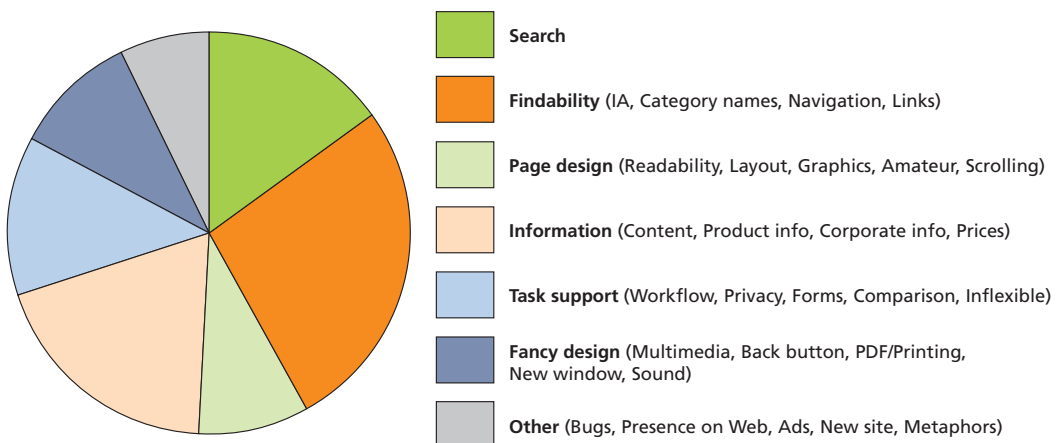
- Search
- Information Architecture
- Content
- Product Information
- Workflow

As much as Web designers love to discuss the importance of elements such as graphics and layout, page design is not that important for people's ability to use Web sites.

Comparing all types of user problems to those that cause task failures, we can see some striking differences. Most notably, Search and information architecture are larger factors in task failures. This makes sense because nothing else really matters if you can't find what you're looking for.

Conversely, readability ranked third among the problems on our misery scale, but was much less significant to user failure. It's very annoying for readers to have to squint or lean forward because text is difficult to read, but they can usually suffer through it for a few minutes until they are finished with their task. Sometimes, of course, poor readability will cause people to leave or overlook an important piece of information, but usually it's more of an annoyance than a direct cause of failure.

In the final pie chart, we grouped the design problems that cause task failure into yet broader categories. This can help you prioritize your design and make sure that you are focusing on the big areas that destroy the most business value if not corrected. Again, note that the two categories related to getting around Web sites Search and findability have assumed even more importance. Fifteen percent of task failures were caused by usability problems with Search, and a whopping 27 percent with findability problems. Difficult information or lack of information accounted for the second largest slice: 19 percent of task failures.



Bigger categories of usability problems weighted by how frequently they caused users to fail a task. Notice the combined dominance of findability and information.

Again comparing user failure to general user misery, it's interesting to note that page design is more of an annoyance than a direct cause of failure. As much as Web designers love to discuss the importance of elements such as graphics and layout, page design is not that important for people's ability to use Web sites. Of course, you don't want any task failures on your site, so this is not an argument for ignoring page design. But it *is* an argument for giving higher priority to improving Search, findability, and the actual information that's presented on the pages.

Is It Enough to Focus on the Worst Problems?

Should you devote all your resources to the problems that make users fail and forget those that simply cause annoyances and minor difficulties? We don't think so, which is why we analyzed the data both ways. Usability problems that are not the direct cause of a task failure can still hurt your business in many ways. Constantly annoying users with problems like low readability eventually makes them like you less, which is not good for the many sites whose main goal is marketing and promotion. Most important, when enough little irritations add up to a bad user experience, people are likely to leave and not return.

The data presented in this chapter should help you prioritize your own usability and design resources. In particular, we recommend more emphasis on content usability than what we find in most projects. Having the information users need and presenting it in an appropriate writing style are crucial for success on the Web. Of course, it's also extremely important to work on Search and findability, but most people already know this. For the remainder of this book, we will discuss these top issues that most influence people's ability to use your Web site and how you can correct them.