Building Usable Web Sites

Looks are important, but the real key to a web site's success is how well it *works*. You might have fabulous graphics and solidly marked up pages, but if your users can't find the information they need or figure out how to buy your products, all of your efforts have been for nothing. Shoddy interfaces have been known to send commercial web sites right down the tubes.

Building a site that works involves attention to how the information is organized (information design) and how users get to that information (interface design and navigation systems). This planning needs to take place before you type your first HTML document or create a single GIF.

Don't skimp on this planning phase, regardless of the scale or purpose of your site. Even a personal web site will benefit from logical organization and good navigation (Figure 1, following page).

In this chapter, I'll introduce the basic principles of information design, interface design, and navigation. Each of these topics is rich enough to warrant further study (see the sidebar later in this chapter, Where to Learn More: Information Design); in fact, some designers choose to become specialists in these fields. But even if you're just starting out, it's important to keep these issues in mind.

Focus on the User

All design shapes a user's experience. Print designers can affect how information is perceived on a page and in what order. An architect designs not just the building, but the visitor's experience walking through it. Similarly, a web designer needs to consider the user's experience "moving through" the site.

In web design, it's all about the user. Terms such as "user experience" and "user-centric design" are used frequently and taken seriously. Formal studies abound, but in essence, it's about getting into the heads of your users in order to create a design that meets their needs and expectations. Interviewing users early on can give you a better idea of what they're looking for on a par-
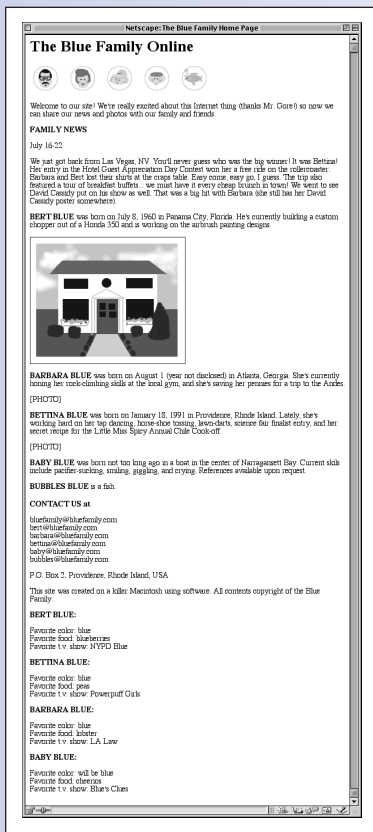
Figure 1. Simply throwing all your information on the home page does not create a good user experience.

ticular site and where they expect to find it. Later in the design process, user testing is an important step in finding out if your solutions are working.

Here are some common frustrations that can kill a good user experience:

- Not being able to find the information
- Hitting dead ends
- Not being able to get back to the starting point
- Having to click through too many pages to get to the information

Many of these can be avoided by setting up a logical structure and providing clear and appropriate tools for navigating it.

The family web site pictured in Figure 1 needs serious help. Throughout this chapter, I'll apply principles of information and interface design to whip this simple site into shape and make it more usable.

Information Design

Information design involves both organizing information and planning how users will find it. Designers who specialize in this discipline are often called "information architects" because, like traditional architects, they are concerned with designing structures and access to areas within those structures. The information designer may also conduct testing before, during, and after the design process to make sure the information is meeting users' needs and expectations.

Information design, whether highly structured or completely informal, is the first step in any web site–creation process. Your exact process will certainly depend on the scale and goals of your site. A large commercial site may require months of research and model building before production can begin. For a personal site, a quick list of the contents and a site sketch may suffice. Either way, there are three standard steps that make up the information design process:

1. Take an inventory of the information you want to include on the site.
2. Organize the information.
3. Give it shape by designing the overall structure of the site.

Taking inventory

A good first step is to make a list of *everything* you want to include on the site. This is often referred to as the site inventory, or asset list. The list should include not only the information you want to make available, but also the things your visitors can do on the site. Remember that some content comes in the form of functionality, such as shopping, chat rooms, research tools, etc.

Once you've determined what you want (or what your client wants) to publish, you also need to give careful thought to the types of information and functionality that your users want and expect. This is a good time to do research on your site's audience and their needs.

The information-gathering process will vary from site to site. For a personal web site, it might just be time spent considering the options and making a list in a notebook. For instance, the site inventory for the Blue Family site is a manageable list of information about the family and each of its members (Figure 2).

At the other end of the scale, large commercial sites benefit from more in-depth research. Web development firms often spend months identifying the most effective content for a site through a process of market research and interviews, both with the client and potential users.

Blue Family Site Inventory

Contact information
Updates on what the family has been doing
Photos of the house
Bert's biography
Barbara's biography
Bettina's biography
Baby's biography
A page for Bubbles!
Updates on Bert's projects
Photos of Bert
Updates on Barbara's activities
Photos of Barbara
Updates on Bettina's school stuff
Photos of Bettina
Updates on Baby
Lots of photos of Baby
Bert's favorite color, food, and TV show
Bettina's favorite color, food, and TV show
Barbara's favorite color, food, and TV show
Baby's favorite color, food, and TV show
Bubble's favorite color, food, and TV show (joke)

Figure 2. Start by making a simple list of everything that should go in the site.

Organizing information

The next step is to organize your site's assets. Organizing information can be a complex business. Information is highly subjective in that the same set of elements can be organized in different ways, depending on the organizer's perspective.

Sorting strategies

There are standard approaches to ordering information logically. The method you choose will depend on the type of information you have. However, even a single set of data can be organized in different ways. For instance, a list of national sales data can be sorted a number of ways:

Alphabetically. Putting elements in a list from A to Z is one of the most fundamental approaches to information organization. An example is sorting sales by customer name.

Chronologically. You can organize sequential events or step-by-step information according to a timeline, usually from earliest to latest. Sorting sales by purchase date is an example of this method.

By class (or type). This approach organizes information into logical groupings based on similarities. (See the next section, Information clumping.) An example is sorting sales by product lines (office supplies, art supplies, etc.).

Hierarchically. This takes organizing by class to the next level by breaking information into large sections, then each section into subsections, and so on. It is the most popular organizational strategy for web sites; we'll discuss this method in more detail later. Examples include breaking product line sales (art supplies) down by subgroups (brushes), and sub-subgroups (sable watercolor brushes).

Spatially. Some information can be organized geographically or spatially, such as room-by-room. Organizing sales by state is one example.

By order of magnitude. You can organize some sorts of information according to a continuum, such as largest to smallest, or lightest to darkest, etc. An example of this method is sorting sales from smallest purchase amount to largest purchase amount.

NOTE

The sorting strategies listed here are not web-specific—they are useful for any instance when information needs to be organized.

Information clumping

People tend to get overwhelmed by large numbers of options. In fact, it is our nature to search for similarities among individual items and divide them into fewer, more manageable groups. In information design, this is sometimes referred to as clumping. Instead of making all of your site offerings available in a big list on the home page, I recommend that you divide them into logical groupings.

Again, there is usually more than one way to slice up the same set of information, so you may need to move things around a few times until you find the solution that works best. Even simple lists, such as the Blue Family's site inventory, present more than one option for organization by class (Figure 3).

```
BERT:                          Email addresses:
    email address                  Bert
    birthday information           Barbara
    current projects               Bettina
    favorite color                 Baby
    favorite food                  Bubbles
    favorite TV show
    photos                     Photographs:
                                   Bert
BARBARA:                           Barbara
    email address                  Bettina
    birthday information           Baby
    current projects
    favorite color             Current events:
    favorite food                  Bert
    favorite TV show               Barbara
    photos                         Bettina
                                   Baby
BETTINA:
    email address              Favorite lists:
    birthday information            Bert
    current projects               Barbara
    favorite color                 Bettina
    favorite food                  Baby
    favorite TV show               Bubbles
    photos
                               Birthday information:
BABY:                              Bert
    email address                  Barbara
    birthday information           Bettina
    current projects               Baby
    favorite color
    favorite food
    favorite TV show
    photos

BUBBLES:
    email address
    favorite color
    favorite food
    favorite TV show
```

Figure 3. There are usually many ways to organize the same information. Here, the items from the Blue Family site inventory are arranged two different ways.

Remember the user

While you're organizing, be sure to keep the users' perspective in mind. One of the most common mistakes that companies make is to organize their corporate web sites to match their internal department structure. While someone who works for XYZ Corporation may know which department handles special promotions, chances are that the average user will not know to look there.

A good example of designing for the user is the FedEx site (Figure 4). They know a significant percentage of people visiting their site are there to track a package. Although this activity makes up a small part of the functions of FedEx as a whole, it is given a prominent space on the home page of the site.
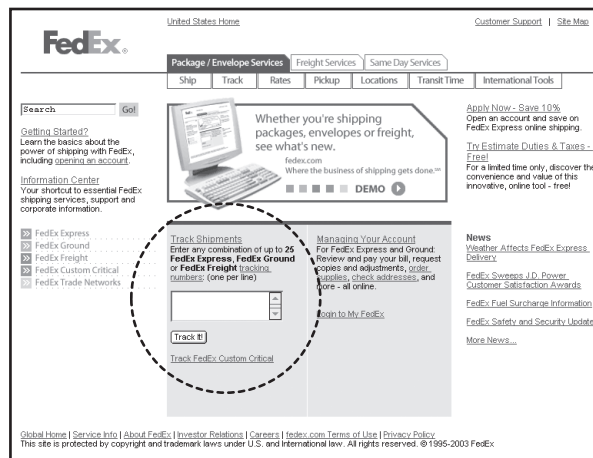

Figure 4. FedEx anticipated the needs of their users and put the tracking function right on the home page.

Do your research up front to learn what your users expect to find on your site and what you can do to meet their needs. Remember that the way you perceive your own information may be confusing to others.

After examining the possibilities, I've decided to divide the information for the Blue Family site into sections by family member. In addition, I've added three special pages that are updated frequently (Figure 5).

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2 0 0 7 N O T E S

The FedEx.com site has been updated, but package tracking is still prominent on the home page.

```
The Blue Family
Final Site Organization

Special Features:

Family News (updated frequently)

Vacation Photographs

Contact Information
(email and mailing addresses)

Family Member Sections:

Bert Page:
      Personal bio
      Current activities
      Favorites list
      Photo page

Barbara Page:
      Personal bio
      Current activities
      Favorites list
      Photo page

Bettina Page:
      Personal bio
      Current activities
      Favorites list
      Photo page

Baby Page:
      Personal bio
      Current activities
      Favorites list
      Photo page

Bubbles Page:
      Personal bio
      Favorites list
```

Figure 5. The organization of the Blue Family site.

Giving it a shape: Site structure

Once you've identified the contents of your site and given it a basic organization, it is helpful to create a site diagram. Professional information architects use site diagrams as tools for communicating the structure of the site to clients, and as a road map for providing guidance throughout the web-production process.

Site diagrams use boxes to represent pages with lines and/or arrows to represent the relationships (links) between pages (Figure 6). It's nice to have a mental model for the overall shape of the site; it creates a sense of space and begins to suggest a system for navigation.
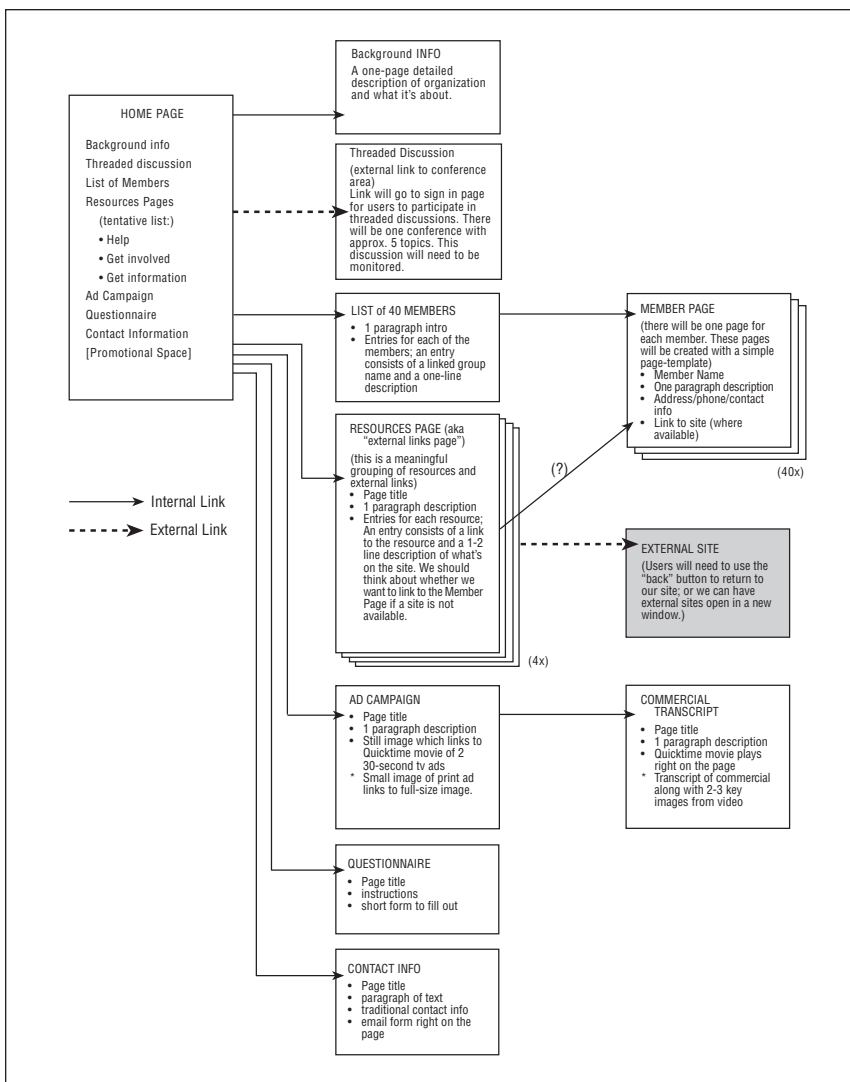
Professional information architects use site diagrams as tools for communicating the structure of the site.

Figure 6.   A sample site plan.
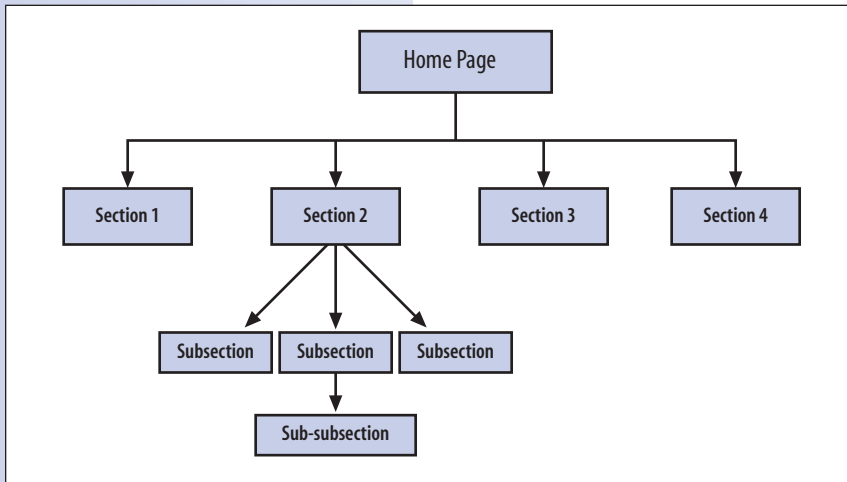
Figure 7. A diagram of a site with hierarchical organization.

Figure 8. The Blue Family site diagram.
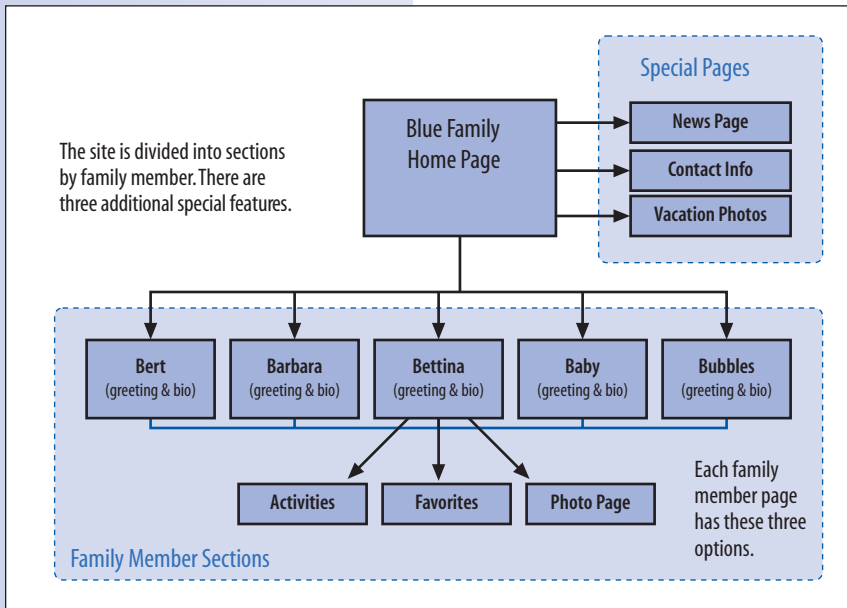
Hierarchical structure

Most sites are organized hierarchically, starting with a top page that offers several choices and then successive layers of choices branching out below, so that a "tree" is formed (Figure 7).

Hierarchical organization is a tried-and-true method and, if done well, it offers the user clear, step-by-step access to material on the site. If you choose this structure, there are a few guidelines you should follow.

First, make sure that important information doesn't get buried too deeply. With each required click, you run the risk of losing a few readers who may only have time to skim through the top layers of a site.

Also, make sure that the branches of the hierarchy tree are generally balanced. For example, if the majority of the categories are shallow (only a few levels deep), avoid having one category drill down through multiple levels of information. If this is the case, chances are you can organize the information better to create consistency throughout the site.

Our family site is based on a simple hierarchical structure (Figure 8) with the addition of special sections on the home page. The family member sections are available from every page on the site.

Linear arrangement

Although tree-style structure is the most popular and multipurpose, it is by no means your only option, and may not be the best suited for your type of information. You may consider organizing your site (or a part of it) linearly. In a linear arrangement, the user is guided from page to page in a particular order. This is appropriate for narratives or any information that must be viewed in sequence.

In the Blue Family site, I've chosen a linear arrangement for the vacation photographs, which have been arranged in chronological order (Figure 9). Notice that I've also planned for access to the home page from any page in the photo sequence, so the user never gets stuck in the flow.
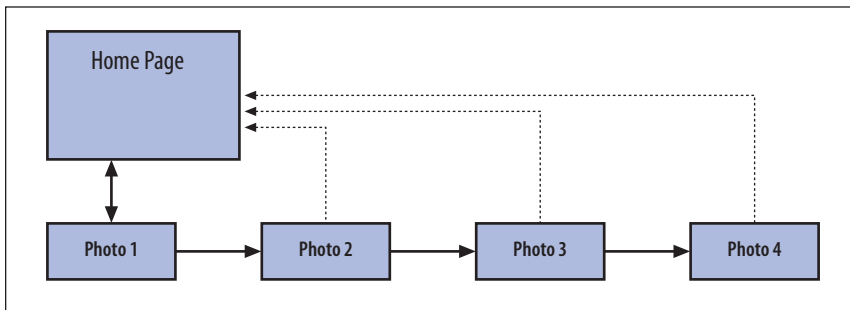
Figure 9. A linear site diagram. Each page offers a link to the home page.

NAVIGATION TIP

How Far Do I Have to Go?

When you're driving down a highway, you see mile markers and signs telling you how many miles it is to the next city. This is an important type of feedback for knowing where you are and for planning your trip.

Likewise, when users are clicking through a series, such as a multipart article, they need some feedback as to the total length of the trip (total number of pages) and where they are in the flow (the current page number).

Each page in a linear arrangement should be clearly labeled with this status information. There are several common approaches:

1 of 5
Lists the current page number (1) and the total number of pages (5).

1, 2, 3, 4, 5
Lists each page number individually with the current page highlighted. Each page number serves as a link to that page.

**Intro**
Information Design
Interface Design
Navigation Design
Conclusion
Instead of just numbers, it is more informative to provide actual titles for each page so users can make a better decision whether they want to continue or skip ahead.

Planning Server Structure

If you are building a web site that has more than a dozen or so pages, you'll probably want to divide your files into subdirectories on the server. In general, it is most convenient when the organization of your files on the server matches the structure of your site. Therefore, the information-design phase of a web design project is also a good time to set up a directory structure on the server.

There are many approaches to server management, but in general, a single directory contains all the files for a site. That directory is divided into subdirectories that reflect the site's major sections. It is common to keep all of the graphics in a directory called *graphics* or *images*. I often keep an *images* directory in each of my section subdirectories so all the common information sticks together.

www.orbitband.com
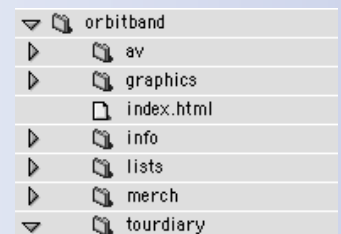
Complex structures

Not every site is going to fit nicely into a tree or a straight line. Most commercial web sites today offer so much information and functionality that the site diagrams can become enormous and quite complex. I've seen a site diagram for one popular media site that used postage-stamp sized boxes to represent pages, and the overall site diagram sprawled the length of the hallway!

But that's just the point of using a site diagram. It enables you to get a handle on the site as a whole and to keep track of its farthest corners.

TRY IT

Exercise 1: Take Inventory

If you bought this book, chances are you have a web site project in mind. Take this opportunity to plan the contents of your site. If you don't already have a web project on your to-do list, you can practice these skills by making up a site for your family, church, or a friend's business.

Make a detailed list of the things you want to include in the site. Don't underestimate the importance of this process; being thorough takes real work. You will probably find that the elements will fall into a natural organization, perhaps by category. Challenge yourself and see if you can take the same list of elements and put them into a different organization. Is there anything to be learned by the alternative structure?

When you can't think of anything else to add and all the pieces are organized in a balanced, logical fashion, try sketching a diagram that shows how your content inventory translates into a site structure. Start with boxes for the home page and pages that link from it. For small sites, it may be possible to sketch out every page of the site. For complex sites, you may only be able to indicate major sections.

Of course, there are no answers in the back of the book for this exercise. To see how you're doing, get feedback from your family, peers, or client.

Interface Design

Now that we have our content in shape, we need to give our visitors a way to get to it. We're entering the interface design phase.

The interface design determines how a site's logical structure appears visually on the page. It includes all the visual cues to understanding what information is available as well as navigational tools for moving through the site.

Because the interface works visually, it is closely integrated with the graphic design of the site. For instance, the interface designer might say, "This information will be accessed via a button on the home page," while the graphic designer might say, "Our buttons will be blue with yellow outlines and white type." In the real world, however, it is quite common for both of these roles to be performed by the same person or department.

Let's look at some of the visual cues and conceptual models that you can use to make the structure of your information more apparent and understandable.

Grouping like elements

Long lists of choices can be overwhelming and may discourage browsing. If there are a large number of items available on a page (and there often are), it is a good idea to break them into a small number of major groups and to indicate these groups visually (Figure 10).

Weightwatchers.com   Salon.com
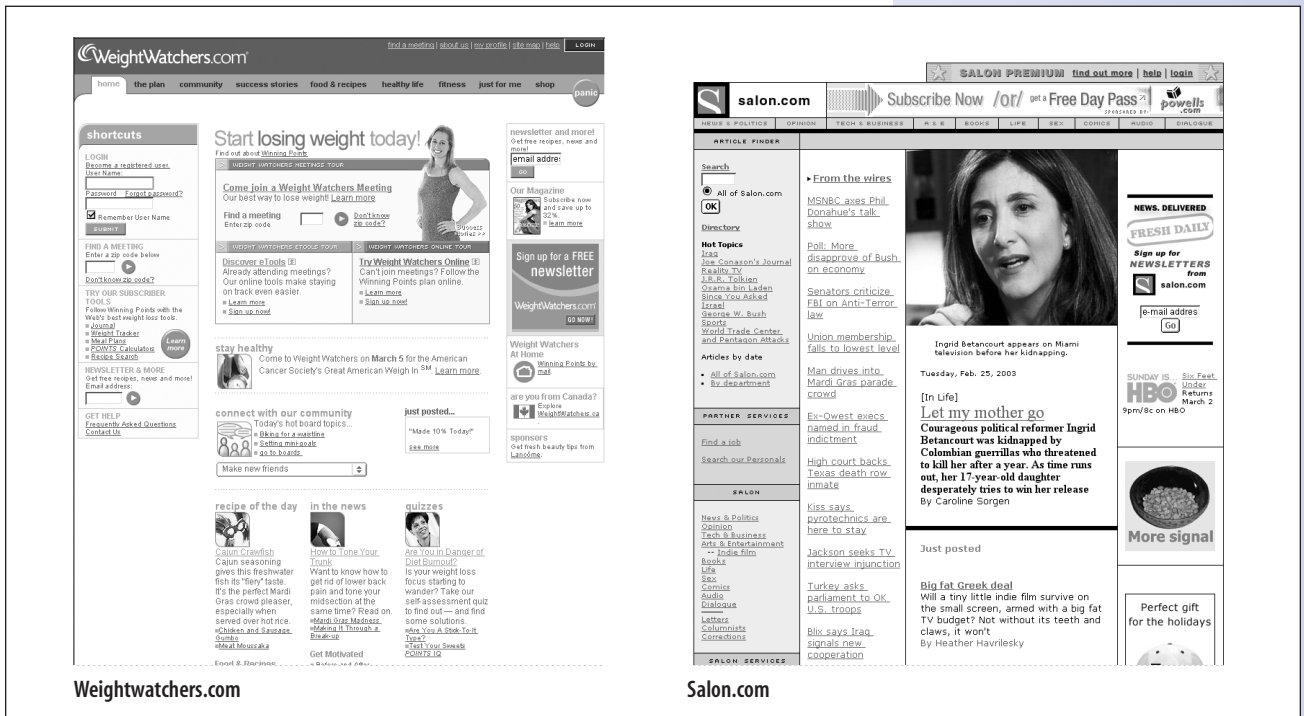
Figure 10. These sites do a good job of dividing a large number of page elements into manageable groups through the use of tables and color.

The magic number in interface design is seven. The theory is that the human brain tends to short-circuit when faced with more than seven options at a time. So when designing interfaces, choices are often limited to seven, plus or minus two (however, it is not a hard and fast rule). While it's unlikely that you'll have just seven elements on a page, you can break your longer list into seven or fewer groups.

For instance, you may put all of your navigational buttons in a row across the top of the page. By using a colored background for that area or similar graphical treatments for each button, the buttons will work together as one visual unit. Likewise, you may put links to archived material in a shaded table to set them apart from the main content areas of the site.

Metaphors

Another way to make the information on a site more accessible and understandable is to use a metaphor. A metaphor associates a new concept (such as a site organization or navigational tool) with a familiar model or idea. The knowledge the user has of the familiar setting will provide a head start to understanding the new environment.

Site-wide metaphors

A site-wide metaphor strives to turn the whole site into something recognizable, such as a town square or a kitchen, as the interface to information. Objects in that space correlate with sections of the site.

Site-wide metaphors were popular when the Web first started because it was easy to assume that everyone was new to the Web and needed a little hand-holding. There were many little villages online (Figure 11, middle), and even large corporations tried it out. Some infamous examples include the IRS's "Digital Daily" newspaper interface (Figure 11, top), Southwest Airlines' virtual ticket counter, and Kraft's "Interactive Kitchen." They've all been redesigned now. In fact, the site-wide metaphor is virtually extinct...and for good reason. Metaphors tend to break down—not every section in your site is going to have a logical association with something in the metaphorical scene. It becomes confusing quickly, and at times, even trite. For instance, where do you download tax forms in a newspaper, or look for corporate information in a kitchen? In addition, site-wide metaphors often require a graphics-heavy design to set the stage, which can slow down performance.

So while a metaphor might be a fun and tempting solution to your home page, I advise that you resist, unless that metaphor is part of your content (like a game) or it somehow makes perfect sense for the site. For instance, it might be an entertaining and easy interface for a children's site.

Tool metaphors

Metaphors are more effective when they are used to explain specific concepts or tools (Figure 11, bottom). I think the best example of this is the online "shopping cart." People know what you do with a shopping cart in the real world: you load it up with the things you want to buy and then take them to the cash register for purchase. Shopping sites quickly adopted the shopping-cart metaphor for online shopping functionality.

Getty Images, a company that licenses photography, has a function for saving selected images that can be looked at later and shared with a group. They call this feature the "lightbox," referring to the backlit table that traditional designers use to view transparent artwork. The activities that take place around a traditional lightbox are a good match for what takes place on Getty's virtual photo-viewing area, making the lightbox an effective metaphor.

Use any metaphor with caution. When the symbol misses its mark, it's not only confusing, it can be comical.

Examples of site-wide metaphors

The IRS (www.irs.gov) used this newspaper metaphor for years. Fortunately, they have since cut the cute stuff and have redesigned the site to make finding information and forms easier.

An example of a neighborhood metaphor on a community center web site. The assignment of topic to building is arbitrary because the drawing is not of the center itself.
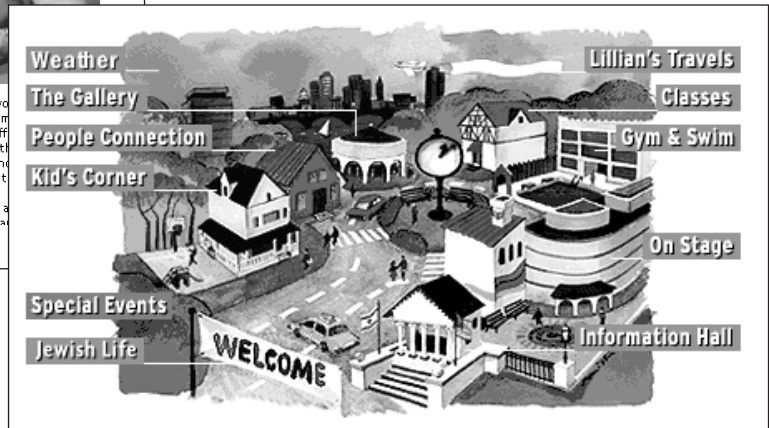
Examples of tool metaphors
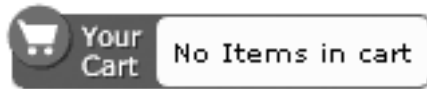
The well-established shopping-cart metaphor (this one from barnesandnoble.com).

This online lightbox tool on the Getty Images site (creative.gettyimages.com) allows designers to store and view images. When you are ready to purchase, you add the image to your cart, of course.
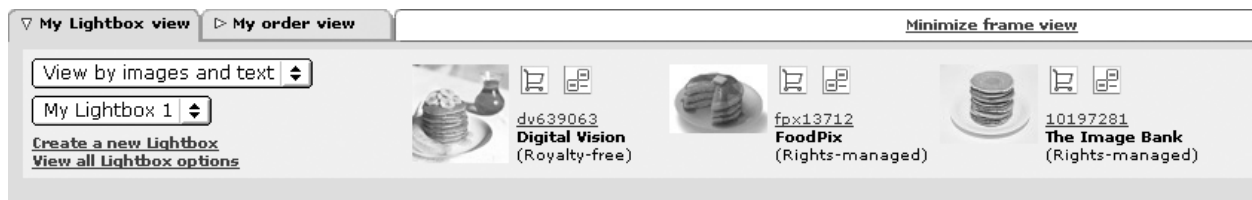

Figure 11. Site-wide and tool metaphors.
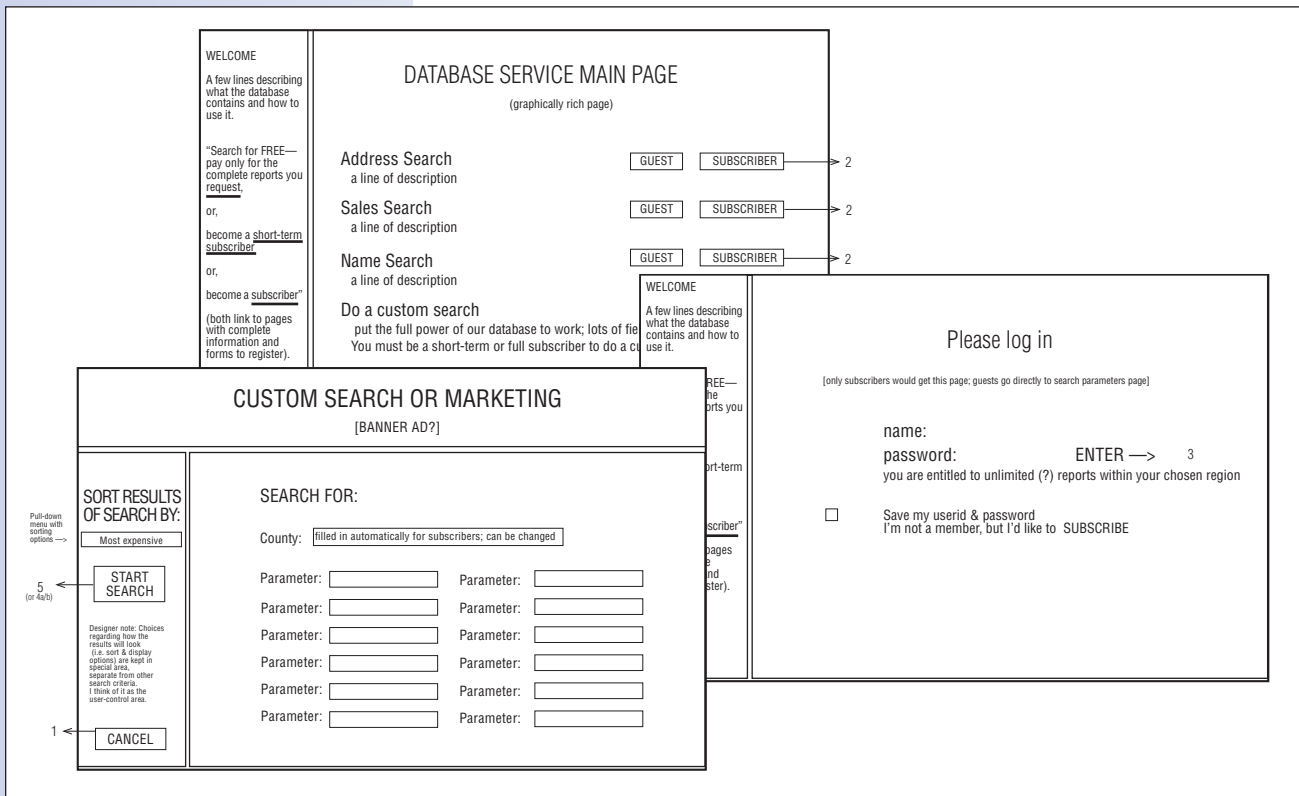
Interface design methods

Like information architects, interface designers use diagrams and flowcharts to work out the functionality of their designs. Diagrams show how pages work and are generally devoid of graphic design. You can even use them to do a round of user testing to make sure your site works before the time is spent developing the prototype.

Page diagrams

One type of diagram used in the interface-building process is a wireframe page layout of typical pages in the site. In most cases, large web sites use a limited number of page templates that can be reused for common page functions (such as login pages, top-level section pages, etc.).

I developed the interface for a site that allowed members to search through a large database of public records. Early in the design process, I created diagrams of each page type to communicate the functionality of the site to the client and to give the graphic designer a basic structure for the page design (Figure 12).

Diagrams show how pages work and are generally devoid of graphic design.

Figure 12. Interface designers use wireframe page diagrams to plan the functionality of the site.

Even if you are just working on a web site for yourself, you might find that sketching out the home page and representative pages within your site is a useful step to take before you dig into writing the HTML and developing the look and feel for the page. It helps you make sure that all the pieces are there. Page diagrams for the Blue Family site might look like Figure 13.
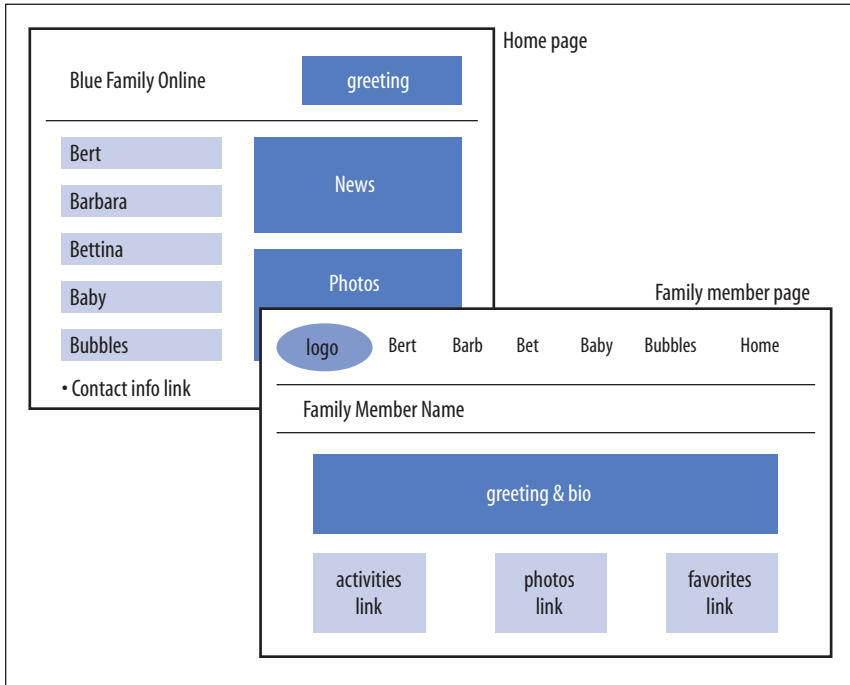
Figure 13. Page diagrams for the Blue Family site.

User scenarios

For complex commercial sites, particularly those with interactive functionality and step-based features such as shopping, personalized content (accessed by logging in), and so on, the interface designer might also produce typical user-scenario flowcharts. These flowcharts show how a typical user might click through the various levels and features of the site. It's a diagram of one possible pathway through the site.

The database site I mentioned earlier had a complicated interface that changed depending on the level of membership the user signed up for and the number of records that were retrieved. The development team and I used flowcharts to anticipate and plan for each of these variations (Figure 14). Flowcharts may be accompanied by a more descriptive narrative of the action, as shown in the flowchart sample.
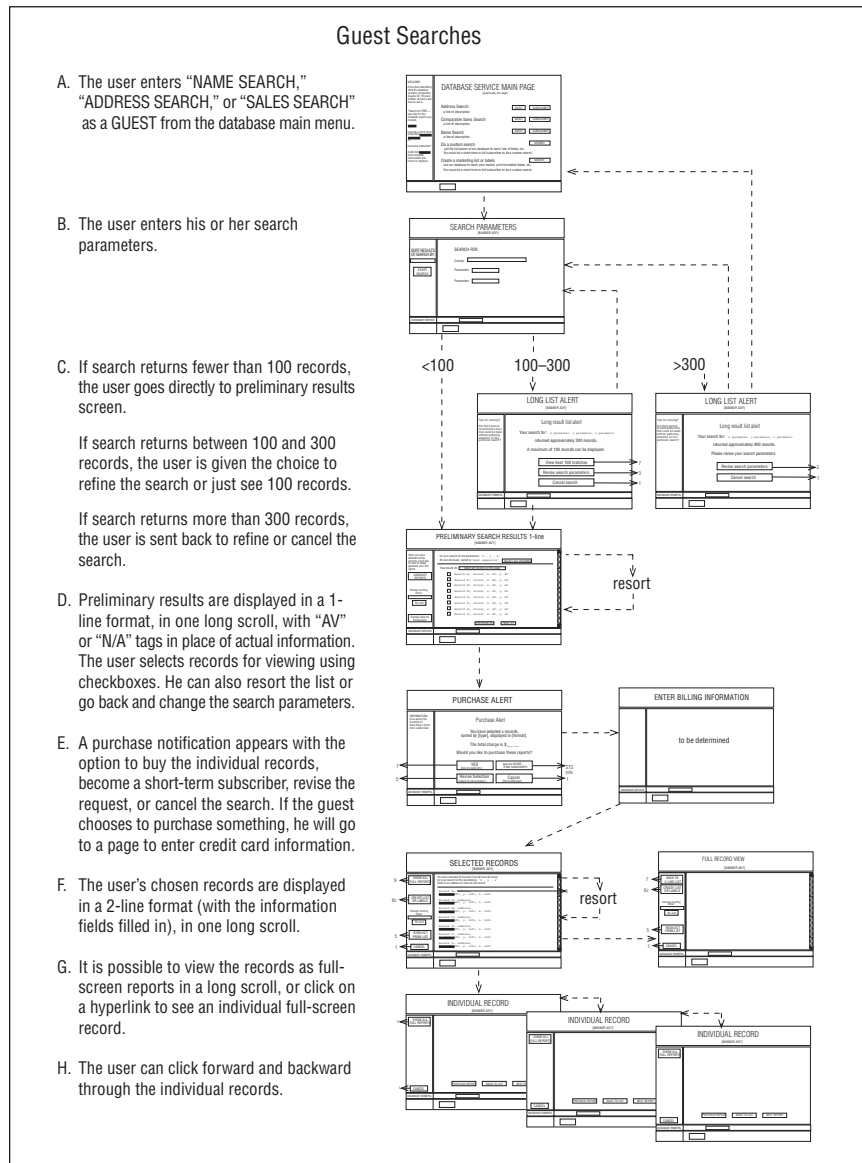

Figure 14. A sample user-scenario flowchart.

Navigation Design

Navigation is a subset of the site's interface, but because it's an important topic, I'll give it a little extra attention.

The information in a web site is often perceived as occupying a physical space. Like a real physical space, such as a city or airport, a web site requires a system of signage to help visitors find their way around. On web sites, this takes the form of logos, labels, buttons, links, and other shortcuts. These elements make up the navigational system for the site.

Where am I?

One of the main duties of a navigation system is to let users know where they are. Remember that users can enter your site at any point if they have the right URL or if they are clicking on a link from a list of search engine results. There's no guarantee that they will have the benefit of the home page to tell them where they've landed, so it is important that every page on your site contains some label that identifies the site.

Nordstrom's web site (*www.nordstrom.com*) uses an effective global navigation bar at the top of every page (Figure 15). The Nordstrom logo on the left clearly identifies the site.

Figure 15.   Nordstrom's global navigation toolbar clearly identifies the site and is used on every page.

In addition, if your site has different sections or levels, it is a good idea to orient the reader within the site's structure. As you can see in the Nordstrom navigational toolbar, the subsection is also identified by highlighting its name in the toolbar.

Where can I go?

The other responsibility of a navigation system is to clearly present the options for where users can go (or what they can do) next. I usually ask myself two questions when deciding exactly which navigational buttons to add. The first question is user-based: where might this person want to go next? For the second question, I play the role of the client or web site publisher: where do *we* want that person to go next?

Like a real physical space, such as a city or airport, a web site requires a system of signage to help visitors find their way around.

It is impractical to provide a link to every page on a site from every other page, so you need to choose your links wisely. By limiting choices, you can help shape the users' experience of your site while providing the flexibility they need to get around.

The navigational options for every site will be different, but there are a few standards. An expanded view of the Nordstrom site shows how it employs some standard navigational systems (Figure 16).

Ⓐ First, a link back to the home page from every page in the site is usually expected. If the reader ever gets lost in the maze, this provides a way to get back to the beginning with one click.

Figure 16. Nordstrom's navigational systems.

Ⓑ There might also be a set of links that should be accessible site-wide, regardless of the current section. These include links to a help section, personalized information, search capabilities, and other general information that should always be available to users. These can be incorporated into the global navigation system, but usually with less visual weight. Note that Nordstrom uses a shopping bag, rather than a cart.

Ⓒ If your site is divided into sections, you might choose to provide links to the main pages of the other sections as part of the navigation system on every page.

Ⓓ You may also have options that are specific to a particular section of the site. This is called secondary navigation or section navigation. On Nordstrom.com, the secondary navigation is in a column on the left. Each section has its own set of section-specific navigational options as well as the global navigation system.
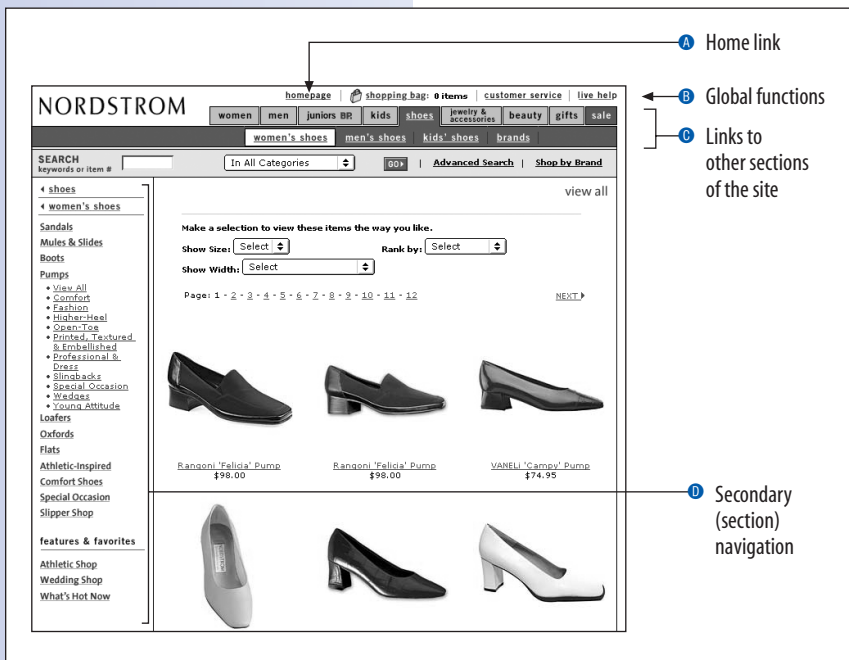
Fundamentals of good navigation

Navigation systems are highly site-specific. The list of choices that are perfect for one site could totally bomb on another. However, there are a few guiding principles that apply regardless of the type of site you're building. The key characteristics of a successful navigation system are clarity, consistency, and efficiency. Let's look at what each of these means in practical terms.

Clarity

In order for navigation to work, it must be easily learned. One of the main gripes about surfing the Web is that you have to learn how to use every new site you visit. It is in your interest to make the learning process as quick and painless as possible by making your navigational tools intuitive and easily understood at a glance.

Try following these guidelines for keeping your navigation system clear and user-friendly:

Navigation should look like navigation. Your navigational tools (such as links to the home page and other parts of the site) should somehow stand out on the page. This can be accomplished by grouping them together and applying some sort of visual treatment that sets them apart from ordinary content. Buttons don't necessarily need to be in 3-D to look "clickable," but they should still read as navigation at a glance.

Label everything clearly. I can't emphasize this point strongly enough. Despite the fact that the Web is a visual medium and we've been discussing visual cues for interface design, people still find their way around with words. Nothing stands in the way of finding information more than labels that are vague or too cute to be understood. Don't call a section "A Light in the Darkness" when it's really just "Help."

User testing shows that longer, more descriptive link text is more effective in getting people where they want to go. Make sure your section names and all links are labeled in a way that everyone will understand.

Use icons with caution. Although there are a few icons that have taken on standardized meanings (such as a small house picture as a link to the "home" page), for the most part, icons are difficult to decipher and can stand in the way of usability. Can you tell what each of the icons in Figure 17 do?
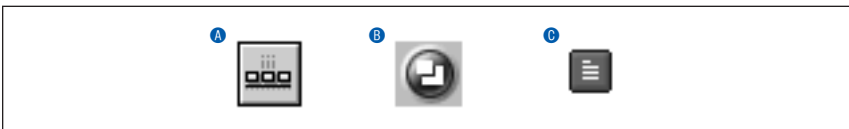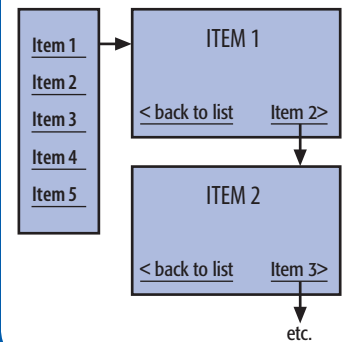

Figure 17. Icons aren't necessarily intuitive.

Did you guess "align elements" **Ⓐ**, "expand window" **Ⓑ**, and "News" **Ⓒ**?* This shows how, in general, icons alone do a poor job of communicating. Some icons, such as a globe, are so overused that they mean absolutely nothing. If you choose to use icons, it is best to reinforce them with clear labels in every instance. If you have just one or two carefully chosen icons, you may get away with defining them once on the home page and using the icons alone throughout the site. Either way, you should carefully consider whether icons are really aiding your navigation.

Consistency

Providing navigational options is not enough if they aren't predictable or dependable. It's important that navigational options be consistent throughout the site, in availability as well as in appearance.

Pages that are alike should have the same navigational options. If I could get back to the home page directly from one second-level page, I'd expect to be able to get back from all the others as well. Third-level pages might have a different set of options, but those options need to be consistent among all third-level pages, and so on.

Furthermore, it helps usability to present the options in the same fashion every time they are presented. If your home page button appears in blue at the top right-hand corner of one page, don't put it at the bottom in red on another page. If you offer a list of options, such as in a toolbar, keep the selections in the same order on each page so users don't have to spend time hunting around for the option they just used. Navigation options should stay put.

Efficiency

With every click into a site's hierarchy, you run the risk that the user will lose interest and leave. When you are designing the structure and navigation of a site, be mindful of how many clicks it takes to get to a piece of content or complete a task (such as filling out a form or purchasing something). The goal is to get users to the information they want efficiently and keep them engaged in the process.

The navigation system for a site should alleviate extra clicking, not add to it. Your navigation should include shortcuts to information—it can be as simple as providing links to other major sections of the site. You might want to supplement the global site-navigation system with specialized shortcuts such as a site map or search function.

It's important that navigational options be consistent throughout the site, in availability as well as in appearance.

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* Icons were taken from Macromedia Freehand 8, RealPlayer 7, and *www.k10k.com*, respectively.

Navigational elements

There are many tools that you can use to help users move around a site. Here are some of the most popular.

Toolbars and panels

The majority of web sites group their navigational options (whether graphical buttons or text links) into some sort of horizontal toolbar or vertical panel. Toolbars are generally placed along the top of the page (sometimes below an advertising banner). The left edge of the page is another convenient location for navigation options and lists of related links (Figure 18).

Most web sites group their navigational options into a vertical or horizontal toolbar.

www.npr.org uses a global navigation toolbar at the top of every page.
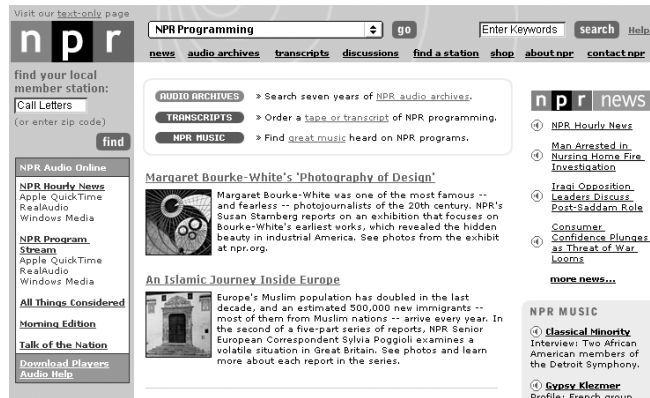
www.sfgate.com places navigational options in a panel on the left side of the page. The panel is consistent in every part of the site, while the main content area varies according to content.


Figure 18. Navigational toolbars and panels.

Pull-down menus

A great space-saving method for adding a large number of links on a page is to put them in a pull-down menu (Figure 19). That way, all the links are readily available but don't require much precious screen real estate.

~~The most common method for doing this today is to use DHTML menus that pop up when you mouse over them (DHTML is discussed in Chapter 22)~~. A similar effect can be created using a pull-down menu form element. Form elements require some scripts on the server in order to function. In either case, beginners may need some assistance from a web programmer to implement this navigational shortcut.
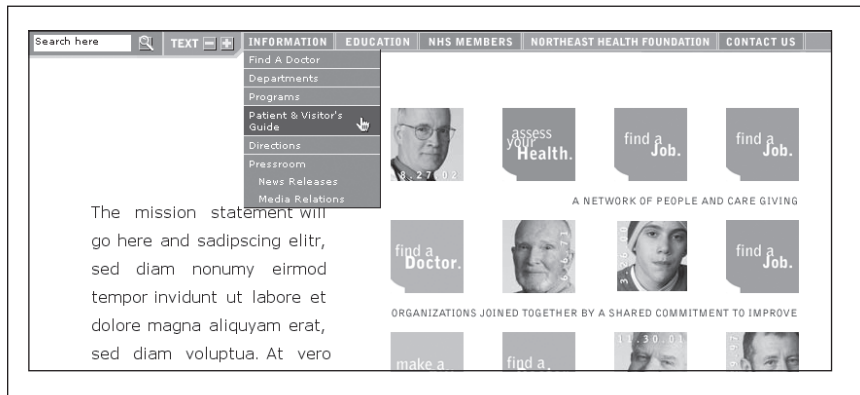
Figure 19. Drop-down (or pull-down) menus are a great way to add shortcuts to pages without taking up much screen real estate. This site uses DHTML to make an interactive toolbar at the top of the page.

Tabs

Navigational tabs across the top of the page have become a standard web element since their introduction in the late 90s. While they serve as a compact and fairly intuitive device for allowing access to different sections of a site, I find that they are sometimes applied inappropriately or gratuitously.

Ideally, tabs should be used to indicate similar functionality across a number of categories (Figure 20). Amazon.com (one of the early tab adopters) uses them correctly in this case—whether you've selected books or movies, you have the same basic options for viewing specials, reading reviews, and shopping.

All too often, tabs are used arbitrarily for access to divisions of the site. While there's nothing inherently wrong with this, the tabs aren't communicating functionality; they're just a decorative design for what otherwise would be a simple navigational toolbar.

Tabs are best used for indicating similar functionality across a number of categories...

...but they are often just decorative toolbars (www.apple.com).
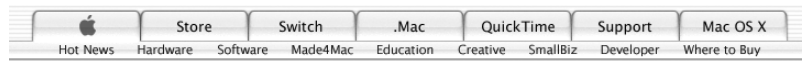
Peapod.com uses a tabs-within-tabs design. The top tabs are bascially a toolbar. The second-level tabs offer similar functionality across food categories.

Figure 20. Examples of navigational tabs.

One drawback to tabs, which Amazon.com faced early on, is that graphical tabs stack up pretty quickly, and you may end up with an unwieldy mountain of tabs. Their solution was to offer only a select number of tabs with access to their full list of offerings on a separate page. Because of the limited pixel real estate across the top of a web page, tabbed interfaces are not easily scaleable.

As the Web continues to evolve, navigational approaches come and go like any fad. Buy.com, another formerly tab-reliant site, ditched its tabs altogether and now just presents options in a navigational panel. If you choose to use tabs, consider whether your interface is really benefitting from the additional graphics overhead. It may be that a simple toolbar would suffice.

"Breadcrumb" navigation

One of my favorite navigational elements is what's become known as "bread-crumb" navigation. As you click through the site's hierarchy, each successive level is indicated as a text link (Figure 21). Eventually, you end up with a string of section and subsection names that shows exactly where you are and where you've been (like Hansel and Gretel's breadcrumb trail through the forest). The trail also allows users to return to the higher levels they've passed through with just one click.

Perhaps the best feature is that, because they are only HTML text links, this form of navigation barely adds to the file size. That's a lot of communication and functionality packed into a few bytes.

Figure 21. Examples of "breadcrumb" navigation.

Site maps

If your site is large and complex, you may want to supplement the navigational system on each page by providing shortcuts to your information. One approach is to provide a site map, which is a list of the contents of the site, organized to reflect the structure of the site by section and subsection (Figure 22). By providing an overhead view of the site's logic, you may help the user feel better oriented when travelling through the site. Each topic in the site map is also a handy link directly to that page.

As an alternative, smaller sites may be represented with a graphical site map. It is generally more difficult to do this effectively. In addition, because it is a graphic, it will take longer to download than text.

You might also choose to provide a site index, which is an alphabetical listing (like a book index) of all the topics available on your site.
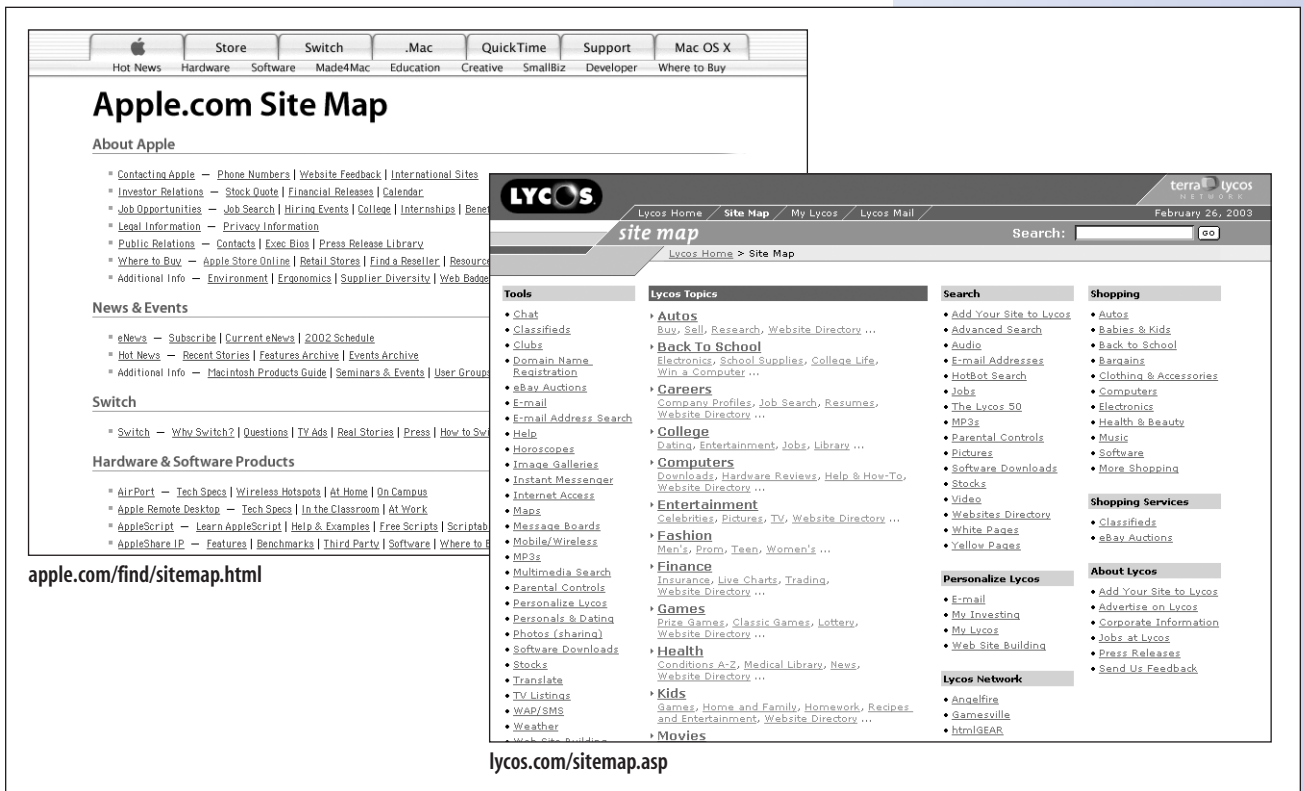
apple.com/find/sitemap.html

lycos.com/sitemap.asp

Figure 22. Examples of site maps.

Search functionality

One of the most widely used shortcuts for finding information on a web site is the search box (Figure 23). Other examples appear in nearly every navigation example in this chapter.

While it's tempting to assume that a search engine is the answer to everybody's information-seeking problems, in reality, most search functions offer a false sense of security. Search engines require special scripting on the server side, and although that can be simple to do, it's not so easy to do well. It also requires careful site indexing for it to work efficiently.

The unfortunate truth about many search engines is that they may turn up irrelevant links, or too many links to sort through. Some search engines do not provide a thorough enough description of each listing for users to make an informed choice. This can cause wasted time following links that *seem* useful, but actually aren't.

There's nothing wrong with supplementing your navigation system with search capabilities, as long as you actually take the time (and spend the money) to support it on the backend.

Figure 23. Search boxes are only as good as the programming behind them. Amazon.com provides a well-designed and essential search function.

Color coding

When used deliberately and thoughtfully, color is a powerful visual cue with many applications. A bright color calls attention to an element on a page. Coloring individual items with similar colors causes them to be perceived as a group. Assigning colors to each section of a site can help orient the user.

Keep in mind that the key to effective color usage is restraint and control. Too many amateur web sites make the mistake of using every available color on a single page, resulting in visual chaos. Choose a few colors, and stick with them.

I'll address a few specific examples of color use on the Web.

Link colors

The very first graphical browsers were designed to display hypertext links in bright blue, underlined text. This initial decision to assign a link color distinct from the text color was an effective method for indicating that linked text was somehow different from ordinary text. It has become the primary visual cue for "click here."

Since then, browser developers have stuck with blue text as the default link color, and it is the closest thing we have to a true interface convention on the Web. Want to get to another page? Click on the blue text!

Lately, there's been some controversy over whether designers should use Cascading Style Sheets to override the default link colors. Some more conservative designers feel that it requires more work if the user has to learn a new link color for every web site. The more popular opinion is that it is fine to change the color of links on a site as long as it is done consistently within that site. If you prefer red links, that's fine; just keep them red throughout the whole site.

Another consideration in coloring links is the difference between regular links and visited links (links that have already been followed). In general, you should set the link color to be somehow brighter or bolder than the visited link color. A toned-back visited link color better communicates a "less active" state.

Section color coding

If you have just a few major sections in your site, you might consider assigning each section a different color (Figure 24). This can be a useful method for orienting your user in the site, and is particularly helpful if you anticipate linking from section to section. The shift in overall color scheme is an instant indication that you've arrived in a new "place."

This advice comes with a word of caution, however. Do not rely on color alone to communicate the current section. The color-coding system should be secondary to clear labeling of the sections. Users can't be expected to memorize that corporate information is blue and small-business information is green. Furthermore, they may not see the colors at all. Make sure that color is used only as a reinforcement.
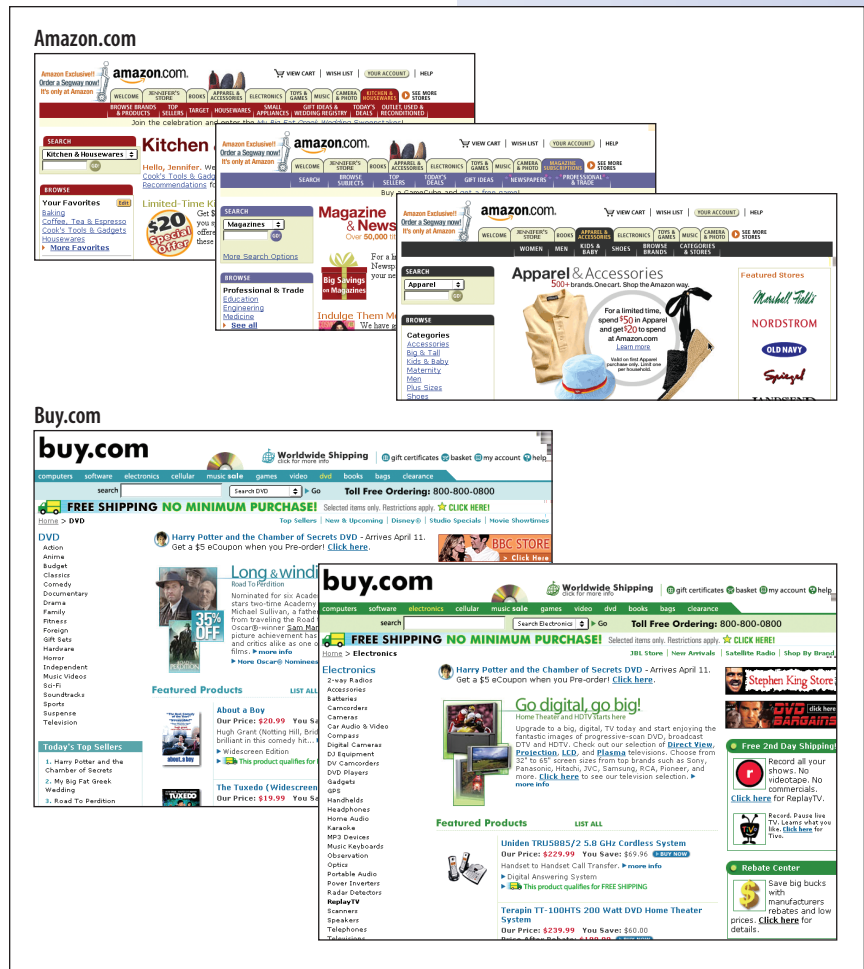

Figure 24. Section color coding is a popular method for orienting users within your site.

TRY IT

Exercise 2: Page Diagrams

Using your site diagram as a starting point, develop wireframe page diagrams for each type of page in your site. Most sites have only a handful of different page types.

For instance, a simple site may have a home page, a section page, and a content page. Applying a single page template to similar pages on your site is one way to ensure consistent navigation options.

Consider whether your content can share page templates. Then, using the diagrams in this section as an example, sketch out the structure of your primary page types.

Don't worry about what the pages will look like; think only about which areas of the page will be allocated for which content. Think carefully about which navigational options will be available on each page and then decide where the navigational elements will be placed.

If done well, these diagrams will speed up the processes of creating a look and feel for the site and creating the working HTML template pages because all the thinking and planning will have been done ahead of time.

Some web developers use wireframe page diagrams in user testing. Using printouts, they ask users to point to "buttons" and move through pages of the site. You can use your site diagrams too see whether it is possible to smoothly move through your site. It's much easier to edit or make a new sketch on paper than to tear apart an HTML page and put it together again.

Building the Pages

Once you've carefully organized your information and planned the interface and navigation, designing and building the pages should be a fairly smooth process. Once the content and structure of the pages are designed in wireframes, the graphic designer can put a visual face on it. Using the designer's sketches, the developers can start coding.

Giving it a look and feel

The "look and feel" phase of the web design process includes choosing colors, fonts, and the graphical style for the content and navigational elements. The visual design of a site is an important factor in its usability. Colors need to be chosen not just to be pleasing to the eye, but to reinforce the structure and intended functionality of the page. Buttons and links should read as clickable at a glance. Elements need to be given appropriate visual weight on the page (for instance, the treatment of global navigation versus section navigation). These decisions typically fall into the hands of graphic designers.

The result of the visual design process is usually non-working sketches of each page type. Most designers create page sketches using Photoshop or Fireworks. Placing page elements on separate layers makes it easier to create the individual graphics later.

Figure 25 shows the look-and-feel treatments I created based on the Blue Family wireframe diagrams from Figure 13. On the home page, I've grouped the links to the family member sections and given them a similar graphical treatment to imply that they have similar content and functionality. The news and photo page areas are given special visual treatments that are appropriate for features that will be updated frequently.
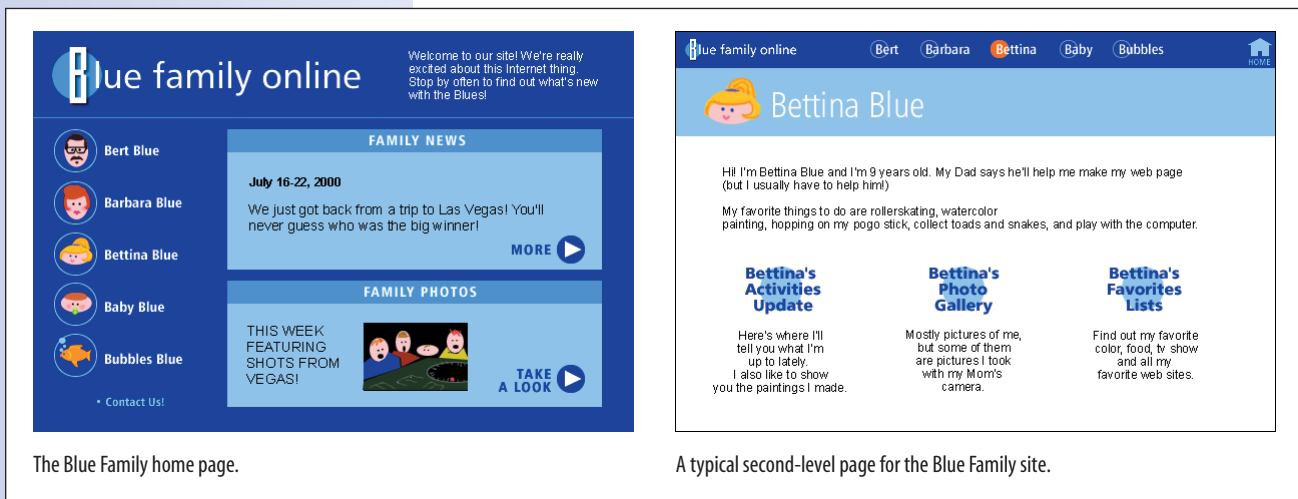

The Blue Family home page.

A typical second-level page for the Blue Family site.

Figure 25. Look-and-feel treatments.

Second-level pages feature a navigational toolbar that will be used on every page of the site. It features the Blue Family "logo" in the upper-left corner to identify the site from any point of entry. It also provides links to each family member section as well as the home page. The current section is identified both by the labeled area below the toolbar and by the orange dot behind the member's name in the toolbar itself.

Creating working pages

The final phase of the design process is to create working web pages from the page layouts. Web developers deconstruct the pages and create the HTML documents, style sheets, and web graphics to recreate the graphic designer's vision as closely as possible. Meanwhile, programmers may create scripts and coding for adding interactivity and functionality, if necessary. Once the site is built, it needs to be tested thoroughly (this is true for personal sites as well).

For personal and other small sites, it is common for one person to handle all the phases from interface design through the final HTML page creation. Even if you are working as a one-person web developer, it is good to be aware of how creating a web site is broken down into individual tasks.

Building Usable Web Sites: In Review

There are a lot of big, meaty topics in this chapter, all warranting further study and experimentation. Here are a few of the highlights:

- A successful web site requires attention to how the information is organized (its information design) and how users get to that information (its interface design and navigation system).

- Users' top frustrations in browsing the Web include not being able to find information, hitting dead ends, not being able to get back to where they started, and having to click through too many pages to get to the information they want.

- Information design involves organizing information and planning how users will find it. It requires taking an inventory of all the information on the site, organizing it, and giving it structure.

- Interface design determines how a site's structure is represented visually on the page. It includes all the visual cues to understanding what information is available, as well as how to get to it. It includes how items are grouped, color-coding systems, metaphors, and all the buttons and tools for navigating the site.

- Site diagrams are useful for communicating the structure of the site and developing its navigational system.

- A good navigation system must answer the questions "Where am I?" and "Where can I go from here?".

- The key characteristics of a successful navigation system are clarity, consistency, and efficiency.

- The most common navigation tool is the navigational toolbar, usually at the top (but sometimes along the side or bottom) of every page.

- You may choose to supplement the navigation system with a search function or site map.

Test Yourself

We covered a lot of topics in this chapter. Answer these questions to see if you've mastered them. The correct answers are in the Appendix.

1. Name some tasks an information architect might be responsible for.

2. Name at least five standard ways information can be organized.

3. What is the most popular organization strategy for web sites?

4. What is an interface designer responsible for?

5. What are the advantages and disadvantages of using metaphors in interface design?

6. How is a user scenario different from a site diagram?

7. Describe ways to ensure clarity in navigation.

8. Name two ways to ensure consistency in navigation.

9. Name two advantages to using breadcrumb navigation in hierarchical web sites.