

Table I-3 Web Development Phases and Questions

WEB DEVELOPMENT PHASE	QUESTIONS TO ASK
Planning	<ul style="list-style-type: none"> <li>• What is the purpose of this Web site?</li> <li>• Who will use this Web site?</li> <li>• What are their computing environments?</li> <li>• Who owns <b>and</b> authors the information on the Web site?</li> <li>• Who decides <b>if/where</b> the information goes on the Web site?</li> </ul>
Analysis	<ul style="list-style-type: none"> <li>• What <b>tasks</b> do the users need to perform?</li> <li>• What information is useful to the users?</li> <li>• What process considerations must be made?</li> </ul>
Design <b>and</b> Development	<ul style="list-style-type: none"> <li>• <b>What</b> type of Web site layout is appropriate for the content?</li> <li>• <b>What</b> forms of multimedia contribute positively to the Web site?</li> <li>• How will accessibility issues be addressed to ensure that the Web site will not limit anyone from using it?</li> <li>• Will the Web site need to be designed for an international audience?</li> </ul>
Testing	<ul style="list-style-type: none"> <li>• Is the Web site content <b>correct</b>?</li> <li>• Does the Web site functionality work correctly?</li> <li>• Are users <b>able</b> to find the information that they need <b>and</b> complete desired tasks?</li> <li>• <b>Is the navigation easy to use?</b></li> </ul>
Implementation and Maintenance	<ul style="list-style-type: none"> <li>• <b>How is the Web site published?</b></li> <li>• <b>How is the Web site updated?</b></li> <li>• Who is responsible for content updates?</li> <li>• <b>Who is responsible for structure updates?</b></li> <li>• <b>How will users be notified about updates to the Web site?</b></li> <li>• <b>Will the Web site be monitored?</b></li> </ul>

## Web Site Planning

Web site planning involves the identification of the Web site goals or purpose. In the Web site planning phase of the Web development project, you thus should first ask the question, What is the purpose of this Web site? As you have learned, individuals and groups design and publish Web sites for a variety of purposes. Individuals develop Web sites to share their hobbies, post resumes, or just to share ideas on personal interests. Organizations create Web sites to keep members informed of upcoming events or to recruit new members. Businesses create Web sites to advertise and sell products or to give their customers 24-hour online support. Instructors publish Web sites to inform students of course policies and requirements. You should determine the purpose of your Web site in the planning phase. Until you can answer this question adequately, you should not proceed with the development project.

In addition to understanding the Web site purpose, you also should understand who will use the Web site and the computing environments of most of the users. Knowing the makeup of your target audience — including age, gender, general demographic background, and level of computer literacy — will help you design a Web site appropriate for all of your users. Understanding their computing environments will determine what types of Web technologies you use. For example, if you knew most of your users had very low-speed connections to the Internet, you would not want to create pages with large graphics or multimedia elements. Asking the questions:

- Who will use this Web site?
- What are their computing environments?

will help you take all of these factors into consideration during the planning phase.

A final aspect to the Web site planning phase is to identify the content owners and authors. To determine this, you need to ask the questions:

- ▶ Who owns and authors the information on the Web site?
- ▶ Who decides if/where the information goes on the Web site?

Once you have identified who will provide and authorize the Web site content, you can include those individuals in all aspects of the Web development project.

## Web Site Analysis

During the analysis phase, you make decisions about the Web site content and functionality. To help define the appropriate Web site content and functionality, you should first identify the tasks that users need to complete. By answering the question What tasks do the users need to perform? you should be able to define the content necessary to facilitate those tasks and determine what information will be useful to the users. Extraneous content should be eliminated from the Web site, as it does not serve any purpose.

In the analysis phase, it also is important to consider the processes required to support Web site features. For example, if you determine that users should be able to order products via the Web site, then you also need to define the processes or actions that must be taken each time an order is submitted. For instance, how will each order be processed throughout the back-office business applications, such as inventory control and accounts payable? Will users receive e-mail confirmations of their orders?

The analysis phase is one of the more important phases in the Web development life cycle. Clearly understanding and defining the desired content and functionality of the Web site will direct the type of Web site that you design and reduce changes during site development.

## Web Site Design and Development

After you have determined the purpose of your Web site and defined the content and functionality, you need to organize the Web pages. Many ways to organize a Web page exist, just as many ways to organize a report or paper exist. Table I-4 lists some standards for Web page organization.

ELEMENT	ORGANIZATIONAL STANDARD	REASON
Titles	Use simple titles that clearly explain the purpose of the page.	Titles help users understand the purpose of page; a good title explains the page in search engine results lists.
Headings	Use headings to separate main topics.	Headings make a Web page easier to read; simple headings clearly explain what the page is about.
Horizontal rules	Insert horizontal rules to separate main topics.	Horizontal rules provide graphical elements to break up Web page content.
Paragraphs	Use paragraphs to help divide large amounts of text.	Paragraphs provide shorter, more-readable sections of text.
Lists	Utilize lists — bulleted or numbered — when appropriate.	Lists provide organized, easy-to-read text that readers can scan easily.
Page length	Maintain suitable Web page lengths: <ul style="list-style-type: none"> <li>• Six screens of information are too much.</li> <li>• Half a screen of information is too little.</li> </ul>	Web users do not always scroll to view information on longer pages; appropriate page lengths increase the likelihood that users will view key information.
Information	Emphasize the most important information by placing it at the top of a Web page.	Web users are quick to peruse a page; placing critical information at the top of the page increases the likelihood that users will view key information.
Other	<ul style="list-style-type: none"> <li>• Incorporate a contact e-mail address.</li> <li>• Include the date of the last modification.</li> </ul>	E-mail addresses and dates give users a way to contact a Web developer with questions; the date last modified helps users determine the timeliness of site information.

As a Web developer, you must select an appropriate layout for your Web site and work to balance the narrowness and depth of the Web site. Users go to a Web site looking for information to complete a task. Good design provides ease of navigation to allow users to find content quickly and easily.

During the design and development phase, you also should consider what, if any, types of multimedia could contribute positively to the Web site experience. For instance, adding a video message from the company CEO might be useful, but if the computing environment of your users cannot accommodate video playback, then the video serves no purpose. In general, you should not use advanced multimedia technologies in a Web site, unless they make a positive contribution to the Web site experience.

Finally, you should consider accessibility issues and internationalization. When developing a Web site, you should design it to allow a diverse audience to view it, including physically impaired and international people. A key consideration is that the software used by physically impaired individuals does not work with some Web features. For instance, if you use graphics on your Web site, you should always include alternate text for each graphic. To support an international audience, you should use generic icons that can be understood globally, avoid slang expressions in the content, and build simple pages that load quickly over lower-speed connections.

The design issues just discussed are only a few of the basic Web page design issues that you need to consider. Many excellent Web page design resources also are available on the Internet.

## Testing

In addition to usability testing, other types of tests should be conducted on a newly implemented or maintained Web site. Functionality testing involves determining whether the Web site works as it is designed. Compatibility testing is performed to verify that the Web site works with a variety of browser versions. Stress testing determines what happens on your Web site when greater numbers of users access the site.

## Web Site Testing

A Web site should be tested at various stages of the Web design and development processes. The testing process should be comprehensive and include a review of Web page content, functionality, and usability. Some basic steps to test content and functionality include:

- ▶ Reviewing for accurate spelling and proofreading content, including page titles
- ▶ Checking links to ensure they are not broken and are linked correctly
- ▶ Checking graphics to confirm they display properly and are linked correctly
- ▶ Ensuring that accessibility and internationalization issues are addressed
- ▶ Testing forms and other interactive page elements
- ▶ Testing pages to make sure they load quickly on lower-speed connections
- ▶ Printing each page to check how pages print
- ▶ Reviewing the HTML to ensure it meets W3C standards

You also should test each Web page in several different browser types and versions to verify they display correctly. Different browsers display some aspects of Web pages differently, so it is important to test Web pages in several different browsers. If you have used technologies that are not supported by older browsers or require plug-ins, consider changing the content or providing alternate pages for viewing in older browsers.

**Usability** is the measure of how well a product, such as a Web site, allows a user to accomplish his or her goals. **Usability testing** is a method by which users of a Web site or other product are asked to perform certain tasks in an effort to measure the product's ease-of-use and the user's perception of the experience. Usability testing for a Web site should focus on three key aspects: content, navigation, and presentation.

Usability testing can be conducted in several ways. The best results are realized when you can test all users in the various scenarios. One good way to test a Web site's usability is to observe users interfacing with (or using) the Web site. As you observe users, you can track the links they click and record their actions and comments. You even can ask the users to explain what tasks they were trying to

accomplish while navigating through the site. The information gained by observing users can be invaluable in helping to identify potential problem areas in the Web site. For example, if you observe that users have difficulty finding the Web page with hours of operation of the retail stores, you may want to clarify the link descriptions or make the links more prominent on the Web page.

Another way to conduct usability testing is to give your users a specific task to complete (such as finding the price list of products) and then observe how they navigate through the site to find the particular information. If possible, ask them to explain why they selected the links that they did. Both of these observation methods are extremely valuable, but require access to users in order to conduct this type of testing.

Usability testing also can be completed using a questionnaire or survey. When writing a questionnaire or survey, be sure to write open-ended questions that can give you valuable information. For instance, asking the yes-no question Is the Web site visually appealing? will not gather useful information. If you change that question to use a scaled response, such as Rate the visual appeal of this Web site, using a scale of 1 for low and 5 for high., you can get more valuable input from your users.

A usability testing questionnaire should always include space for users to write additional comments to further explain their choices. For example, if a user rates visual appeal low and adds a comment, you might learn that the user viewed the Web site on a smaller monitor that cut off the right side of the page, or you might find that the user disliked the site's background color.

Figure I-6 shows some examples of types of questions and organization that you might include in a Web site usability testing questionnaire.

do not require name unless necessary

ask for user's relationship to the company/school/group

one way to structure questions

another way to structure questions

provide area for additional comments

**Web Site Usability Questionnaire**

The purpose of this questionnaire is to gather information regarding the usability of our company Web site.

Name (not required): \_\_\_\_\_

Your relationship to the company (circle your choice): customer      employee      no relationship

How easy was it to use our Web site navigation to find the following information? (circle your choice)

Contact information	very easy	somewhat easy	moderately difficult	very difficult
Store hours/locations	very easy	somewhat easy	moderately difficult	very difficult
Product information	very easy	somewhat easy	moderately difficult	very difficult
FAQs	very easy	somewhat easy	moderately difficult	very difficult

How would you rate our Web site? (circle one)

Browsing Experience	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
The Web pages loaded in an acceptable time frame	5	4	3	2	1
The Web site was visually appealing	5	4	3	2	1
The navigation was clear and made it easy to find information	5	4	3	2	1
The graphics were used to convey pertinent information	5	4	3	2	1
I found what I was looking for on this Web site	5	4	3	2	1
My experience with this Web site was successful	5	4	3	2	1

Please use the area below to give us additional feedback. Our company goal is to provide an appealing and enjoyable Web browsing experience. We are interested in hearing your comments about our Web site.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

FIGURE 1-16

## Web Site Implementation and Maintenance

Once Web site testing is complete and any required changes have been made, the Web site can be implemented. Implementation of a Web site involves the actual publishing of the Web pages to a Web server. Many HTML editors and WYSIWYG editors provide publishing capabilities. You also can use FTP software, such as WS\_FTP, to publish your Web pages to a Web server. After you publish a Web site, you should test the Web pages again to confirm that no links are broken, no graphics are missing, and so on.

Once a site is implemented, you should develop a process to maintain the Web site. The one constant about Web development is that users will request changes and content will require updates. You need to ensure, however, that updates to the Web site do not compromise the integrity and consistency of the site. For example, if you have a number of different people updating various Web pages on a large Web site, you might find it difficult to maintain a consistent look on pages across the Web site.

To help manage the task of Web site maintenance, you first should determine who is responsible for updates to content, structure, functionality, and so on. Then limit the ability to update the Web site to specific users. Be sure the implementation is controlled by one or more Web developers who can verify that pages are tested thoroughly before they are published.

As updates and changes are made to a Web site, consider notifying users with a graphic banner or a "What's New" announcement, explaining any new features and how the features will benefit them. This technique not only keeps users informed, but also encourages them to come back to the Web site to see what is new.

Finally, Web site monitoring is another key aspect of maintaining a Web site. Usually, the Web servers that host Web sites keep logs of information about Web site usage. A **log** is the file that lists all of the Web pages that have been requested from the Web site. Web site logs are an invaluable source of information for a Web developer. Obtain these logs and analyze them. Analyzing the logs allows you to determine the number of visitors to your site and the browser types and versions they are using, as well as their connection speeds, most commonly requested pages, usage patterns, and so on. With this information, you can design a Web site that is effective for your targeted users, providing them with a rich and rewarding experience.

## Summary

The Introduction to HTML provided an overview of the Internet and the World Wide Web and the key terms associated with those technologies. It introduced you to three different types of Web sites, the Internet, intranets, and extranets, and the purposes for each of these Web sites. The Introduction presented information about browser technology and the HTML programming language. An overview of the five phases of the Web development life cycle was introduced, along with pertinent questions to be addressed at each phase. It is important that a Web development project follows the life cycle methodology so the finished Web site is effective and efficient for the users. Issues such as usability testing and accessibility must be considered in any Web development project. As you work through the projects that follow in this, book, you will learn the power of HTML. You will learn how to develop many interesting and useful Web pages.

### More About

#### Log Files

What do your usage statistics tell you about your Web site? Many log analysis tools are available that you can use for additional information. TargetedListing has information about many of these tools in addition to lists of other Web resources. For more information about Web site log analysis, visit the HTML More About Web page ([scsite.com/html2e/more.htm](http://scsite.com/html2e/more.htm)) and click Log Files.