Designing a Web Site: Logical and Graphical Organization

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Nota bene: Throughout this paper, the author uses Web pages illustrating particular issues of concern to potential Webmasters. Use of these pages as examples does not imply an endorsement of the products or services of the respective organizations by the author or by SCOUG.

A glossary of commonly used terms appears at the end of this paper.

Introduction

Deciding to use a corporate Web site to reach a company's customers, vendors, employees, and stockholders is the most important aspect of setting up the site. This decision includes the commitment of resources to refreshing and otherwise maintaining the site so that the audience regards the site as a source of useful information.

In this paper, we will examine a number of the issues facing executives and the corporate Webmaster as a company's Web site is created. The issues are divided into two major sections: logical organization matters and graphical organization matters.

Logical organizational issues

The next decision is which type of site or sites your organization will have. In order of decreasing security requirements, three possibilities exist: Intranet, Extranet, and Internet. The Intranet is for internal company use only. The Extranet typically aimed at providing EDI for your company's suppliers and distributors. The Internet provides access information for all others who may have an interest in your organization, for example, customers, stockholders, future employees, and the securities industry.

Many companies start with an Internet, unless there is a strong reason to begin with their Intranet. Nearly always the reason for starting with an Intranet is a very strong need to communicate among a large number of employees who are in secure environments where an external network connection would provide an unacceptable security exposure.

If a company starts with an Internet, it then usually implements an Intranet. Nearly always the last site to be implemented is the Extranet, primarily because it needs to operate on both sides of the firewall.

Particularly for the Intranet, it is desirable to organize the Web site using the corporate structure if at all possible. The primary reason for doing this is that the company may want to provide access to certain parts of the site based on where particular individuals work in the organization. For example, the company may want to devote a portion of the Intranet site for human resources. Employees in the human resources department may have access to this entire area while employees in other departments may have access, for example, only to job openings, human resources policies, and their own

personal benefits information. Necessarily, an Intranet site should be completely behind the corporate firewall.

The Extranet can provide EDI services for your company's vendors. In most instances, this site should operate through the firewall using a proxy server, i.e., a mechanism which allows data to pass through the firewall without giving the external organization access to the remainder of the internal network. Using access control, Extranets typically only give access to very limited portions of the company's data. Usually, this is an area specifically identified for Electronic Data Interchange (EDI) activities. For any other information about the company, Extranet users are required to use the Internet site.

The Internet site contains any information the corporation wants to make available to the general public. It may also contain some restricted access areas for particular customers or stockholders. For example, airlines often have restricted access areas for their Frequent Flyers where members can check their mileage or request ticket awards.

Logical Organization: Performance issues

An important aspect of the logical and graphical organization of any Web site is the speed with which pages load as well as the special features which increase or reduce that speed.

One major consideration here is the size of the web page versus the size of the screen on which it is being displayed. Since the smallest screens are capable of displaying 640x480, minus the window controls such as slider bars, at SVGA resolution, one criterion for the front page of any Web site is that it should be capable of being displayed, in toto, on such a screen. This is particularly easy to accomplish using a *.GIF* file together with an <ismap> to display the front page. If the volume of content is such that more than one screen of information needs to be conveyed, the additional information should be below the initial screen rather than to the right of the initial screen.

As an example, the Web site for The Institute of Archaeology at UCLA has a front page that can be displayed on a single screen. However, at the time this is being written, The Institute needs to display some additional information, so that information appears immediately below The Institute's standard front page.

Another issue is that the front page should load rapidly in both a lan-connected environment and a dial-up environment. Because the Web developers are often lan-connected, the loading speed in a dial-up environment is frequently ignored and irritates users beyond belief.

If the speed of loading is too slow, four things should be considered. First, can the front page image be made smaller? Or, can it be made less complex? If the clickable

areas in an ismap are formed by irregular polygons, changing them to rectangular areas will speed loading. The fourth way loading can be made faster is by having shorter text materials. This last mechanism is probably more pertinent to pages other than a site's front page.

For some pages, the loading speed may need to be long for some reason. An example of such a situation is The Institute's page which contains the Archaeology Program Handbook:

http://www.ioa.ucla.edu/instruc/ap/aphandbk.htm

In such cases, it is helpful to warn the potential client that clicking on that object may result in a long loading time.

One capability that slows loading speed is the use of "eye candy". Eye candy is the class of graphic objects which are intended to catch the user's eye. Since any particular Web site is not "competing" for attention directly with any other Web site when a user is already loading the front page. Most frequently, eye candy really becomes a pure design element and nearly always shows loading. The major types of eye candy are banners, blinking objects, and animated objects. Again, warning the user that something may take a while to load is matter of keeping your clients contented, if not happy.

Logical Organization: Security issues - firewalls

The first issue any corporation should address before connecting to the Internet is to set up a firewall to insure that the internal network is not visible to the outside world. It may be desirable to set firewalls within the company to protect especially sensitive areas from other employees in the company. A firewall acts as a proxy server by passing data between the organization's internal network and any external requester or between an internal requester and any external network location. The firewall sits on the network between the "external" network and the organization's internal network. Necessarily, a firewall needs to be programmable so that some measure of control can be obtained. So, typically, a firewall is a UNIX-box with special purpose software. The hardware needs to be fast enough to deliver all the information going across it, so sizing may be an issue for particularly large organizations.

As an example of how firewalls could be used, in The Institute of Archaeology, a firewall could sit between the subnet hubs and the campus backbone so that the subnets from access by other UCLA locations as well as Internet locations external to our campus. UCLA could also have a firewall between the campus backbone and the remainder of the Internet.

Logical Organization: Security issues - intellectual property

Protecting materials on a Web site once it is determined that they properly belong on the site is the next security concern. In particular, certain types of copyrighted materials containing substantial intellectual property may be a concern. Frequently, especially in academic environments, faculty, staff, and students may have "personal" Web pages where these individuals may want to web publish articles and other creative materials. Using simple HTML or various native document formats, such as Microsoft Word's *.doc* format, opens the documents to being used without respect to their copyright. However, creating a form of the document which cannot easily be moved into another text form helps defeat such use.

One such document format which is easily created and also extremely portable is the Adobe Acrobat® format. These documents typically have a file extension of *.pdf* in PC environments. Documents are created using Adobe Acrobat Distiller, which accepts a large number of different native document formats and print formats as input. Then, Distiller converts these to the Acrobat format. Adobe makes Acrobat Reader which can be downloaded at no charge from:

http://www.adobe.com/prodindex/acrobat/readstep.html

for a number of different environments, including OS/2, Windows 95/NT, Mac OS, and several flavors of Unix™. Customarily, if an Acrobat document for download is placed on the Web, a clickable hypertext reference to the Acrobat Reader download site is included next to the document download point.

For images on the Web, the most effective protection is not to put images on the Web that might be reproduced in print, i.e., be certain that the resolution of the image, if a print reproduction is attempted, is too gross to achieve a desirable result. Most often, restricting the image size to sizes less than 500 pixels or scanlines in the longest dimension will be satisfactory.

Sometimes, a company may **WANT** images to be reproduced for wallpaper. Such images may be a company logo or other artwork. For example, NBC in the United States has several different "peacock" logos that can be downloaded from NBC's digital nest and used as computer wallpaper at:

http://www.nbc.com/entertainment/nest/index

The details of issues relating to the use of images on the Web are discussed more completely in the paper by Hetrick and McClelland in this Proceedings.

Logical Organization: Security issues - personal privacy issues

Personal privacy issues affect all three types of Web sites. The most obvious way to secure access to this kind of information is to require a login to these special areas of a site. But, it may be more desirable to have a special purpose application that validates

a request for information before transmitting the information and to have that application resident on a "secure" server. The secure aspect of such a server requires an electronic document called a Certificate of @@@@@@@@@@@@@, sometimes referred to as a CA or a Certificate, which is obtained from a trusted third party. In the US, the most frequently used trusted third party is @@@@@@@@@@@ Verisign which can be found at:

http://www.verisign.com **@@@@@@@@@@@@@@@@@@@@**

In Netscape Communicator, under security options is a list of certificates whose authenticity will be believed by the browser. If the corporate Certificate is obtained from one of the vendors in the list, it will not be necessary to change the list of acceptable Certificates. If the decision is to self-certify the corporate Web site(s), then the company name must be added to the list of acceptable Certificates.

A substantial number of personal privacy issues exists on the Web, but two matters in particular stand out in the context of this paper. First is the matter of employees' confidential information such as their salaries and benefits information which are typically available from the human resources department. Second is information like credit card numbers which may be required for sales of merchandise or services. For both of these kinds of information, it is important to have a secure server so that validation occurs on both ends of a transaction before confidential information is transmitted and/or displayed.

If you are in a financial or medical environment, the matter of customers' personal privacy certainly escalates. But, it is possible to manage these kinds of information in a reasonable way so that both employees and customers requiring access to these kinds of information can have needed access without compromising the privacy of the information.

Security issues - corporate competition

Particularly because the ethos of the Internet developed out of the academic tradition of openly sharing information, the matter of corporate competition is important to consider in the context of setting up Web sites. As a general rule of thumb, material placed on Web sites outside the corporate firewall should be considered as public as a press release or an article about the company in The Times! Material behind the firewall should be considered equivalent to confidential. Any more sensitive material should be extremely carefully reviewed before being placed on an internal Web site.

While the legalities governing intellectual property rights in electronic media are still not clear, it is obvious that, as a minimum, corporations should treat their electronic corporate assets at least as carefully as they protect their physical corporate assets. However, this needs to be balanced against the requirements of customers for information so they can do business.

As an example, last winter, the author searched the Web for information about leasing a new car. The two big issues were finding the options available and knowing what the list price for those options would be. The options information was available from the manufacturer's Web site at:

http://www.pontiac.com/grandam

But, the pricing information is not provided on the manufacturer's Web site. So, I needed to look elsewhere on the Web for that information which I found at:

http://www.@@@@@@@@@@@@@@@@.com/bluebook

This raises the issue of how customers find necessary information. The most obvious method is to register the company's Internet site with one or more of the on-line search services. Before doing that, it is important to be certain there are keywords as metadata in the company's home page.

The last aspect of corporate competition is providing access to the company's customer support staff. Just as people may use a toll-free phone number, they require access over the Web to these staff members. Typically, companies provide a form which is then emailed to the customer support staff. Usually, the responsibility for answering such questions rotates among the customer support staff. If the number of questions is large, there may be several people receiving questions each day. Because certain questions are asked repeatedly, it is probably a good idea to consolidate some number of these into a FAQ and to maintain the FAQ in the customer support area of the Web site.

For very large companies or companies with substantially technical product lines, it may be useful to maintain a database of queries which can be accessed by customers, through the firewall, of course. A good example of how that is done can be seen at:

http://www.ibm.com/@@@@@@@@@@@@@@@@@@@

The look of a Web site

A number of general issues affect the look of a Web site. From a corporate perspective, possibly the most important is the corporate image and identity. The corporation's image and identity standards need to be adhered to. Specific issues related to these matters are discussed in considerable detail later in this paper.

@@
list the look issues
possibly move image and identity to front??

It is important for each web page to contain two pointers: one to the person or organization responsible for the content of the page, the other to the person or organization responsible for the structure of the page on the Web, i.e., the way the content is displayed. One way to accomplish the first objective is to have a "generic" userid for each department which automatically forwards comments on the content of that department's pages to the responsible individual. This makes it possible to change the pointer when required, for example, when the responsible individual changes jobs and a new person becomes responsible for the content.

Clearly, the person responsible for the structure of the page is the Webmaster. A company may decide to have more than one Webmaster. If that is the decision, it is very important to be certain that comments are answered promptly, usually within two working days, even if the only response is to say "Thank you for your comment."

For the same reasons, it is important that pages contain "last update" information. Some pages may contain corporate information that does not change over time. But, most pages will contain some type of time-sensitive information. It is important that these pages, in particular, contain the last-update information. It may be only the date or it may be the date and time. The author's personal preference is to have both date and time because, when updates are in progress, there may be multiple changes on the same day. Having both pieces of information helps the Webmaster keep track of things as well.

Next, it is desirable to have slightly different looks for the three types of sites so that your internal users become accustomed to dealing with different levels of corporate security. This can be accomplished in a number of different ways. For example, slight variations in the color of the background can be used. Different representations of the corporate logo, within identity guidelines, of course, can be used in each one. Or, the layout can be varied somewhat for each of the three different sites.

One particular consideration is the need to have "browser-safe" colors. Simply because of the nature of the Web, not all colors can be represented reliably. This is because different workstations have different color capabilities because of differences in their graphic adapters, i.e., the card where the monitor cable is connected. As a result, most PCs have the capability to represent only 256 colors while many Macintoshes can represent more colors. Browser-safe colors are those which can always be depended on to be displayed correctly in a 256-color system. A handout describing the formation of those colors can be downloaded from the author's Web site:

http://www.ioa.ucla.edu/~hetrick/handouts/toolkit.htm

The next issue is to insure that any issues such as copyright, trademark, service mark and registered mark are considered. It is particularly important that any corporate marks are identified as such and that ALL material be copyrighted. In addition, if there are references to other organizations' marks, it is equally important to have those

items properly marked as well, regardless of the relationship to the other organization. For example, a retail company needs to mark the trademarks of the products it sells; a computer company needs to mark the products of its competitors as well as its own products.

Next, when particular Web pages or areas are in the process of being changed, it is important to have a standard method for letting your audience know that construction is ongoing. Additionally, if an area is under construction, it is helpful to your audience to know when the updates will be completed as well as to change the expected completion date when necessary. To accomplish these tasks, it is useful to settle on an "under construction" sign as well as a mechanism for keeping track of pages / areas under construction. The author keeps this information in a table which is updated each time an "under construction" image is placed in a new page. Then, each day, a report is generated with the list of pages which currently have the under construction image along with the expected completion date for each one.

With all of these issues as well as the identity discussion below, it is important that the symbology be uniform across each Web site. If the corporation implements three Web sites, the symbology may be the element that gives the reader cues about which of the three types of site is in view.

Corporate Identity

Typically, the parts of a corporation's identity to appear on its Web site consist of a signature, a set of color specifications for the signature as it is used in various situations, and a set of typography specifications. Very often, the identity has a long history and, very often, was designed before the advent of electronic media. Consequently, it may be desirable to update the identity before beginning to build the Web site.

The chief considerations for updating the identity are the logotype, the colors, and the typography. First, it is important to examine the present corporate identity to see whether any changes are necessary. If they are necessary, most companies hire an image and identity firm to perform an additional review and then to propose changes which can be used in both print and electronic media.

The considerations usually begin with the corporate logotype. One issue may be to make the logo more dynamic. Having a dynamic logo does not mean that the logo must be animated, as will be discussed in the British Airways example below. The objective is to give the logo a look that will imply that the logo is moving forward (not backward or static) and that the organization itself is on the move. A simple redesign of the logo can give this effect.

A second issue related to the identity is probably the corporate colors that are allowed in representing the identity. If the identity is to be used in electronic media such that it

is not misidentified, one consideration is "browser-safe" colors as noted previously. In addition, it may well be possible to move from the present color scheme to browser-safe colors with only slight changes in the color specifications.

Finally, the typography allowed in the identity should be typefaces which can be accurately represented in the electronic media, i.e., there must be both a True Type font and an Adobe Type Manager font available so that the typefaces can be used in most electronic environments.

In the event the corporate identity is redesigned, it is important to ask the identity firm for electronic versions of all the collateral developed for both print and electronic media as well as an electronic version of the standard document which specifies the criteria for using various elements of the corporate identity.

A final issue related to corporate identity on the Internet is that some unscrupulous individuals registered names for what might be the commonly expected representation for certain companies on the Internet. For example, looking at:

http://www.gm.com

does not allow us to see either General Mills (really ***http://www.generalmills.com***) or General Motors (really ***http://www.generalmotors.com***) which is what we might expect. Rather the individual who registered this name is willing to sell the registration, probably for a substantially greater fee than the $100 initial registration fee.

A Corporate Identity Example

An excellent example of an identity program which gives a more dynamic image to the corporate entity is British Airways' new identity. An important aspect of the change is that this more dynamic identity is dynamic without being animated. This means that the various elements both load rapidly in electronic media and look good in print media. None of the elements in the new identity program is a long way from the corresponding element in the old identity, except for the tail art.

The major comparative elements discussed here are the color scheme, the ribbon, the typography, and the tail art. The old identity had red, navy, and gray as the principal colors. In the new identity, the principal colors are red, blue (brighter than navy), and white. Changing the gray for white gives a crisper, more up-to-date image than the old identity.

In the old identity a straight, red ribbon of color ran along nearly the entire length of the plane with a fold at the front end. In any color representation, the ribbon was always and completely red. In the new identity, the ribbon is softer and looks as though it is being blown in the wind as the plane flies along. The top side of the ribbon

is always red with a white highlight which adds to the dynamism of the ribbon. Unlike the old identity, the underside of the ribbon shown below the longer part of streaming red ribbon takes the contrasting color depending on whether the background is blue or white.

Examination of the font used in the new identity shows a change from a nearly purely sans serif font (Optimist family) to a font with small serifs (@@@@@@@@@@@@ family). Additionally, because the angle between the serifs and where they are attached to the remainder of the letters is slightly curved, the letters appear to flow more readily from one to another.

Finally, looking at the tail of the planes shows the dynamism of the new identity in a considerably different way. In the old identity scheme, the tail art on all planes was a coat of arms. In the new identity, each plane will have a different piece of commissioned art on its tail. This has the effect of adding to the dynamism of the corporate identity because there will be something new to see each time a person looks at a different plane.

Incidentally, several of the tail art compositions are available on the Web for downloading as computer wallpaper at:

http://www.british-airways.com/lsp/wgallery/wgallery.shtml

Examples

Pontiac Grand Am options table
Indexed newsreader questions
Academic Information Technology Board
document download
Old UCLA front page
New UCLA front page
New SHARE front page
SHARE Internet program front page
Old British Airways identity
New British Airways identity

Dynamic versus static identity

One of the major issues facing organizations that set up Web sites is determining whether or not their corporate identities require change in order to take on the dynamism associated with the Web. The exact details of such a decision are clearly beyond the scope of this discussion, but some of the issues which are related to electronic media need to be considered.

First, can the elements in the current identity be used as they presently exist? Many of the really classic corporate logotypes can make a successful transition to electronic media. One such example is the IBM logo. Primarily these successful transitions reflect foresight on the part of the original designers.

Among the issues are whether the actual lines which define the design can successfully make the transition. Complex logos frequently cannot be represented electronically at a reasonable scale. One such example is the coat of arms on the tail of British Airways' planes in the former BA corporate identity. This was clearly too complex to make the transition to electronic media.

The second major issue is whether the colors included in the identity can be accurately represented in electronic media. A number of colors are "browser-safe", i.e., they are accurately represented across nearly all browsers on nearly all computer video systems. But, the vast majority of colors are not browser-safe. The question then becomes whether the current colors can be slightly altered to make the transition.

The third issue is the font or fonts used in the identity. In particular, sans serif fonts tend to look static while serif fonts, particularly those with some type of curving element to the serifs, look more dynamic.

Finally, it may be important to the organization to have some mix of elements conveying both stability and dynamism, so, as usual, which of these aspects apply in any given situation depends on the organization's objectives.

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Glossary of Commonly Used Terms

home page: the default page exposed by a browser entering a site or an area of a site when a particular page is not requested by the client; also sometimes called the ***front page***, the ***index page***, or the ***welcome page***.

browser-safe colors:

FAQ(***frequently asked questions)***: a list of frequently asked questions maintained as part of a list or Web site so that customers need not necessarily ask the same questions over and over