

Design Elements for Great Web Pages: Readability, Browsability, Searchability Plus Assistance

by Eric Lease Morgan, NCSU Libraries, November 15, 1996

(This text is available as a PDF document at <http://www.lib.ncsu.edu/staff/morgan/design/design.pdf> as well as in the form of a slide presentation at <http://www.lib.ncsu.edu/staff/morgan/design/slides/>.)

Introduction

In order to be useful, any information must be readable, browsable, and searchable. With increasing size and complexity of today's information systems, interactive user assistance is becoming a necessary feature as well. This essay outlines these qualities so you, as an information system manager, can incorporate them into your products and services.

An information system, in the present context, is any organized collection of information. In our culture, information systems abound. The dash board of our cars are information systems. Maps are information systems. World Wide Web servers are no exception. While World Wide Web servers are primarily intended to be an electronic publishing medium they are also information systems. In order to be most effective, all but the smallest of information systems must be readable, browsable, as well as searchable.

All of these qualities (readability, browsability, and searchability) do not have to be equally represented in every information system. As your collection of information increases, different aspects of these qualities take on greater significance. Thus, the amount of readability, browsability, and searchability your information system exhibits depends on the type and quality of your collected data, as well as the information needs of your clientele.



Readability means good page layout

Readability connotes an appealing graphic design and page layout. All information systems, no matter how small must incorporate principles of good graphic design. You and your information system is competing with a myriad of other information systems. If your data is not presented in a visually appealing, easy-to-read manner, then your chances of retaining the attention of your intended audience are significantly reduced.

Guidelines

- Use a consistent layout
- White space is good
- Visually organize the page; employ horizontal rules
- Keep pages short
- Include elements of contrast
- Use all stylistic elements in moderation

Use a consistent layout

Your documents reflect you, your organization, and your information. By consistently using the same layout you are creating a unified whole, an identity. With the use of a consistent layout it is easier for the reader to know when they are reading your text and not someone else's. The creation of a template file can be helpful here. The template file would consist of your standard headers, footers, logo, signature, last data updated, as well as any other stylistic features you may incorporate.

White space is good

White space is the empty areas of a page. It adds contrast and provides a place for you eyes to rest. White space is not wasted space. For this same reason, stay away from all capital letters. Capital letters are usually the same height and width. This creates a block effect reducing the white (negative) space around letters. Instead, use a combination of lower and upper case letters because it increases the amount of white space around the letters.

Visually organize your pages

In other words, group similar concepts on your page together. Employ proximity. Don't put our email address at the top of the page and the URL to your personal home page at the bottom. Both items are electronic pointers relating to you. Group them together. When there is more than one type of information on a page, delimit the page with white space or horizontal rules.

and-answer process some sort of game plan or alternative method for using the information system would be provided.

This last element of Web page design is the most difficult to implement and quite possibly the most controversial, yet this element has always existed in previous information systems. Why not information systems on the Internet?

Examples

- SavvySearch (<http://www.cs.colostate.edu/~dreiling/smartform.html>)
- Ask Alcuin (<http://www.lib.ncsu.edu/staff/morgan/alcuin/>)

See Also

If you are only going to read one book surrounding the subjects outlined in this essay, then I suggest Mary E.S. Moris and Randy J. Hinrichs, *Web Page Design* (SunSoft Press : Mountain View, CA 1996).

Here are other texts of interest:

- Jan V. White, *Graphic Design for the Electronic Age* (Watson-Guptill : New York 1988)
- Robin Williams, *The Non-Designer's Design Book* (Peach Pit Press: Berkeley CA 1994)
- Roy Paul Nelson, *Publication Design*, 5th ed. (Wm. C Brown : Dubuque IA 1991)
- Yale Center for Advanced Instructional Media, Yale C/AIM WWW Style Manual <URL: http://info.med.yale.edu/caim/StyleManual_Top.HTML>
- Web Pages That Suck - <http://www.webpagesthatsuck.com/>
- Derek Langridge, *Approach to Classification for Students of Librarianship* (Hamden, Connecticut: Linnet Books, 1973)
- Bohdan S. Wynar, *Introduction to Cataloging and Classification* (Littleton, CO: Libraries Unlimited, 1980), 394.
- *Proceedings of the International Study Conference on Classification for Information Retrieval* (London: Aslib, 1957)

Eric Lease Morgan (eric_morgan@ncsu.edu) is a systems librarian at the North Carolina State University Libraries.

Unix

- database - Mini SQL (<http://Hughes.com.au/product/msql/>) with W3-mSQL (<http://Hughes.com.au/product/w3-msql/>)
- indexing - Harvest (<http://harvest.transarc.com/>) or freewais-sf (<http://ls6-www.informatik.uni-dortmund.de/freeWAIS-sf/>)

Windows

- database - FoxPro () with
- indexing - ()

Macintosh

- database - FileMaker Pro (<http://www.claris.com/products/claris/filemakerpro/filemakerpro.html>) with Lasso Lite (<http://www.blueworld.com/lasso/lassolite.html>)
- indexing - Apple e.g. (<http://www.cybertech.apple.com/Appleeg.html>)

Assistance

The number of information systems we encounter in our "Knowledge Worker" lives is steadily increasing. Even for the people who deal with vast amounts of information on a daily basis, the ability to understand and make sense of all these new information systems is dubious. Consequently, even if your information system exemplifies the best of readability, browsability, and searchability, there will always be the people who still need help. Even the people who believe they can use the system(s) to their fullest potential may sometimes need assistance to achieve the highest ratio of precision to recall from their information gathering sessions. This is why the biggest and largest of information systems will require some sort of interactive assistance built into them.

This is nothing new. Libraries, huge information systems, have always had librarians. Shopping malls have "information desks." Even though you have a telephone book for your local area, how many times have you dialed directory assistance because the book was out-of-date?

The largest of information systems will require some sort of extra, interactive assistance in order for their services to be most effective. This interactive assistance could simply be a person at the other end of a telephone or an Internet Relay Chat. It could be an "expert system." In either case, there will need to be some sort of procedure where you can ask questions and/or the system can ask question of you. Based on the answers, other questions would be asked. At the end of the question-

Keep your pages short

In general, people do not like reading text from a computer screen. Using the popular vertical scroll bar of graphical WWW browsers it is very easy to get lost in a document. In general keep you pages shorter than two or three screens in length. By keeping your pages short and to the point, the attention span of your readership will increase. Put another way, break up long pages into shorter ones.

Include elements of contrast

A boring looking page is completely filled with text. It contains no white space, no change in fonts or font sizes, no lists, no pictures. It is boring. Elements of contrast breakup the monotony and make our page more dynamic. Elements of contrast include emphasizing some text with styles like `` or ``. Other examples include the use of very heavy horizontal rulers or very large headers. With the current version of MacWeb and MacMosaic you as a information provider can distribute preference files defining the size of style of fonts you want your readers to use. This gives you the ability to select different font families for different parts of your documents. Unfortunately, this is an extremely uncommon practice and difficult to actually implement.

Use all stylistic elements in moderation

Be a stoic Greek, "All things in moderation." The use of too many headers gets old and the reader feels like you are shouting. Too many emphasized elements loose their distinction. To many graphics take too long to download no matter how fast your computer or network connection is.

Examples

- Consumer Information Center (<http://www.pueblo.gsa.gov/>)
- New York Times on the Web (<http://www.nytimes.com/>)
- HotWired (<http://www.hotwired.com/>)

Browsability means logically classifying your data and information

As the size of your information system grows, so does the need to logically organize your data. This implies grouping conceptual sets of data with similar conceptual sets of data. Browsability becomes apparent when it is coupled with hypertext and logical

groupings of information. A browsable information system has a number of advantages.

Advantages

- Readers see entire system at a glance
- Knowledge of a vocabulary is not necessary
- Like items are grouped together
- Easy to navigate
- Fosters serendipity
- Stimulates thinking

But a solely browsable system is not without its disadvantages as well.

Disadvantages

- Easy to get “lost”
- Classification system may be foreign to reader
- Classification breaks down as quality of information increases
- Classification changes over time

An easily browsable system is logically organized by topics. Effective organization your information is critical to the success of your server. This point cannot be overstated and bears repeating. Effective organization of your information is critical to the success of your server. If you want your server to be an effective information tool and you want people to use your server more than once, then it must be organized.

A philosophy of classification

Classifying knowledge and bringing like things together have been fundamental aspects of at least Western culture since the before the Golden Age of Greece when philosophers systematized their ways of thinking. This classification process was their way of creating an intellectual cosmos from the apparent chaos of their experience. The process brought a sense of order to their disordered society. It provided a common ground for others to work from and to use as a basis for further discovery. Without organization intellectual anarchy rushes in to fill the void. Given enough time, eventually, no one is speaking the same intellectual language and communication breaks down. Stagnation sets in.

“Sour milk”

To make matters worse, “One person's cheese is another person's sour milk.” In other words, one person's view of the world may not adequately represent the next person's view. Interpretations of the night sky represent an excellent example.

Guidelines

- Include help texts
- Map located items to similar items
- Provide simple as well as “power user” search mechanisms

Include help texts

Just as “about” texts are necessary in a browsable system, help texts are necessary for searchable systems. Help texts describe the features and limitations of the system. They list system's data structure including fields available for searching and the contents of those fields. Help texts also list plenty of example searches and provide explanations on what the end-user should do if they encounter too many or too few results.

Map located items to similar items

After items are located with the search mechanism, there should be links to similar items. This answers the perennial question, “Can you find me more items like this one?” These links should go directly back to your browsable collection where the end-user can freely “wander.” From there the end-user will have the ability to see terms that can be applied to more searches. This is where you provide the end-user with the vocabulary terms of your system, in case they are unfamiliar with your system of information organization.

Provide simple as well as “power user” search mechanisms

Simple search mechanisms will be most useful for the first-time or casual end-user. Unfortunately, these same mechanisms often return too many or too few “hits”. Providing power user search mechanisms like field searching, truncation, Boolean qualifiers, and number-of-term limitations can compensate for the simple searches. Unfortunately, the cost of these services is effectively describing the more powerful searching mechanisms to the end-user. Again, readability comes into play.

Software for implementation

Readability is by achieved by exploiting HTML. Browsability is most effectively and efficiently via database applications. Searchability is acquired through indexing HTML files or directly searching the contents of a database. Below is a non-exhaustive list of software to help accomplish the goals of browsability and searchability:

help overcome this discrepancy by allowing the reader to create their own set of logically similar items.

Searchability readily lends itself to locating known items rather than making the reader browser down a number of menus to get what they want. Similarly, a reader may have used an item from you before and not put it into their list. If you have a searching mechanism in place, then it may be easier for the reader to find the item again.

Searchability works independently of your collection's size. Browsable systems begin to break down after the collection becomes too large. The effectiveness of searching an information system is not directly impeded by the size of the system.

Yet, purely searchable systems are not perfect either.

Disadvantages

- Must know searching syntax
- Must have a preconceived idea, phrase, or term
- Must know the structure of the data

In order to effectively search an information system, the reader must know the query language of the search engine. This may include Boolean logic or Unix regular expressions. They may have to know the meaning of right-hand truncation and the symbol for its use. While this sort of knowledge is necessary to use the system, it is irrelevant to the information itself and is seen by the reader as an impediment.

The ability to search an information system assumes your readership has a preconceived idea describing what they need. This is a notorious example of the chicken and egg problem. How are you supposed to find information about a particular topic if you don't know about that topic in the first place. In other words, the reader must come to the information with some terms or phrases describing what they want to find. Many times those terms or phrases will not be found in the collection, but synonyms will be found. It is difficult to think of many synonyms and it is difficult to "guess" at the controlled vocabulary used by the collection.

Finally, totally searchable systems require the searcher to know the data structure of the indexed collection. Is the data divided into fields? If so, what are those fields and how do they specify them in their query?

What to do? Here are some guidelines for creating searchable systems.

Everybody in the northern or southern hemispheres have exactly the same data in which to make interpretations, the stars. Yet every culture creates their own distinct constellations and explanations about what they mean. The interpretations these people make reflect their culture. War-like cultures see warriors. Fishing cultures see boats. Wandering peoples see migrating animals.

A cultural example

For better or for worse, classification systems of knowledge ultimately break down. This is because cultural revolutions and technological change occur. For example, the Medicines of the late Middle Ages used their newly found wealth to hire artisans and craftsmen. These creative individuals explored new ways of looking at the human form and rekindled an interest in humanity. These cultural perception shifts were then picked up by others throughout Europe. At the same time, technologies like the telescope offered people like Galileo a new perspective of the skies. For example, he noticed Venus moves through phases just like our moon. These observations lead Galileo to believe Venus did not revolve around the Earth as previously thought but around the Sun instead. While these two phenomena (the rekindled interest in humanity and observations of Venus) did not by themselves alter a system of knowledge, these phenomena represented the beginning of a major intellectual shift in Western thought. Specifically, these two phenomena contributed to the Renaissance and Reformation where Western civilization's entire intellectual basis was shaken. Therefore, old ways of thinking always seem to give way to new ways of thinking and the process begins anew. Put another way, there is no perfect intellectual organization of knowledge or information just as there is no perfect circle. Similarly, as the habits and technologies of societies change so does their interpretation of the "cosmos" they live in.

Back to the real world

The point is, despite the dynamic nature of intellectual constructs, the organization of information and knowledge seem to be a necessary part of human existence. Since the primary purpose of information servers is to disseminate knowledge, facts, and ideas, it then follows the information they disseminate must be organized in some reasonable fashion.

Guidelines

- Know your audience
- Provide an "about" text
- Use the vocabulary of your intended audience
- Create a hierarchical system of ideas
- Create a system that is both flexible and exhaustive
- Classify by format last

Know your audience

If your intended readers cannot make sense of your server's organizational scheme, then they will only use it as a last-resort information resource. Thus follows the first and foremost guideline for a useful organizational scheme. The organizational scheme must be comprehensible to your intended audience. Think about the people who will be using your server. What are their backgrounds? What do they want? What specialized terminology do they use? In general, how do they think? Incorporate the answers to these questions into the structure of your server. To paraphrase a respected librarian, "Servers are for use" and, in order for this to happen, your organizational scheme must be understandable by the majority of your intended clientele. A thesaurus listing the vocabulary of a discipline may be indispensable in this regard, especially for those of you who are creating collections of Internet resources.

Provide "about" texts

Embed "about" texts, texts describing your organizational system, its intended audience, and how it can be used, within as much of your system as possible. You can not include too much explanatory information as long as it stays within the guidelines for good readability.

Use the vocabulary of your readership

Once you have identified your intended audience, use their terminology. Thus your readership will identify with your information system and be more likely to use again and again.

Create a hierarchal system of ideas

By definition, a hierarchal system of ideas begins with broad terms and is subdivided into narrower terms. There is no perfect hierarchal system of ideas, but your intended audience will bring to your system some preconceived ideas on how information on their topic should be organized. These people will have similar, but not exact preconceptions. Biologist think similarly, just as computer scientists think similarly. Create a hierarchal system fitting the preconceptions of as much of your intended audience as possible. This is called "literary warrant." At this point it may be helpful to employ the use of a specialized thesaurus or handbook written for your audience. This thesaurus or handbook will contain definitions of the discipline's terminology. These tools will help clarify and provide a structure for your hierarchal system.

Create a system that is both flexible and exhaustive

Make sure the system is exhaustive as well as flexible. In other words, create a structure striving to be both enumerative and synthetic.

"Enumerative classification attempts to assign designations for (to enumerate) all the single and composite subject concepts required in the system. . . . Synthetic classifications are more likely to confine their explicit lists of designations to single, unsubdivided concepts, giving the local classifier generalized rules with which to construct headings of composite subject."
[Wynar]

Classify by format last

Organize materials based on format as a last resort. People usually don't care what format the data is in just as long as the answer to their query can be found. This means when you have a collection of various Internet resources group them by subject first and Internet protocol last; do not put all the telnet sessions in one section, FTP sites in another section, gopher sites in a third, WAIS sites in a fifth, and so on. Organizing your information by topic rather than form brings like things together and end-users will not have to navigate throughout your server for the information they need.

Examples

- Consumer Information Center (<http://www.pueblo.gsa.gov/>)
- Yahoo (<http://www.yahoo.com/>)
- A2Z (<http://a2z.lycos.com/>)

Searchability means direct information access

The largest of information systems must include search features. These features help overcome the disadvantages of the purely browsable system. They have a number of distinct advantages.

Advantages

- Creates alternative logical classifications
- Simplifies location of known items
- Works independently of collection size

As described in the previous section, your conception of the information universe is not necessarily the same as your reader's. While you try to group things in the most logical manner, your reader's "logic" will be different than yours. Searchability can