

THE ROLE OF THE INFORMATION ARCHITECT

Information architecture (IA) is the art of expressing a model or concept of information used in activities that require explicit details of complex systems. Among these activities are library systems, Content Management Systems, web development, user interactions, database development, programming, technical writing, enterprise architecture, and critical system software design. Information architecture has somewhat different meanings in these different branches of IS or IT architecture. Most definitions have common qualities: a structural design of shared environments, methods of organizing and labeling websites, intranets, and online communities, and ways of bringing the principles of design and architecture to the digital landscape.

Role of information architect:

An Information Architect organizes a website so that users have a better online experience. In general, their main responsibilities are to:

Assign tasks to team members. The Information Architect often doubles up as the Project Manager.

Capture the site's design goals.

Communicate the business objectives, such as the site's sales targets, audience, and language requirements.

Create access points to content from different incoming pages.

Design the navigation system, menus, sitemaps etc.

Label and organize data.

Map content to the appropriate section.

Protect users from getting lost on the site.

Before any coding begins, the Information Architect meets the client and defines the project's scope, objectives and target audience.

Documentation of Success Criteria

The meeting minutes are then returned to the client for confirmation. Once confirmed, they're circulated to all members involved in the development process.

When the project enters the production stage, the Information Architect works with the web designers to develop the interface, icons and ensure the navigation systems are integrated correctly with the overall site architecture.

For very complicated sections, the Information Architect and Software Engineers work together to ensure that each site component make sense so that the user can easily achieve their goal.

The Information Architect communicates with the team during all key stages in the development cycle. On small projects the Information Architect may perform Project Management duties as these two areas frequently overlap. It is imperative to record client feedback at all stages and circulate it accordingly.

Communication

Lack of planning at the kickoff phase often results in untold disasters at later stages -often with serious financial repercussions.

This may occur when, for example, the person delegated to lead the project lacks sufficient technical understanding to extract relevant information from the client. The Information Architect has this knowledge and can ask key questions that others will have overlooked.

Finally, the Information Architect also works with the Quality Control team to ensure that the site is performing correctly and, for example, by analyzing the log files, identify areas where users are struggling to locate date or getting lost.

COLLABORATION AND COMMUNICATION

The information architect must communicate effectively with the web site development team. This is challenging, since an information architecture is highly abstract and intangible. Besides communicating the architecture verbally, documents (such as blueprint diagrams) must be created in ways that can be understood by the rest of the team regardless of their own disciplinary backgrounds.

In the early days of the Web, web sites were often designed, built, and managed by a single individual through sheer force of will. This webmaster was responsible for assembling and organizing the content, designing the graphics, and hacking together any necessary CGI scripts. The only prerequisites were a familiarity with HTML and a willingness to learn on the job. People with an amazing diversity of backgrounds suddenly became webmasters overnight, and soon found themselves torn in many directions at once. One minute they were information architects, then graphic designers, then editors, then programmers.

Then companies began to demand more of their sites and, consequently, of their webmasters. Simple home pages quickly evolved into complex web sites. People wanted more content, better organization, greater function, and prettier graphics. Extensions, plug-ins, and languages proliferated. Tables, VRML, frames, Shockwave, Java, and ActiveX were added to the toolbox. No mortal webmaster could keep up with the rising expectations and the increasing complexity of the environment.

Increasingly, webmasters and their employers began to realize that the successful design and production of complex web sites requires an interdisciplinary team approach. An individual cannot be an expert in all facets of the process. Rather, a team of individuals with complementary areas of expertise must work together. The composition of this team will vary, depending upon the needs of a particular project, available budget, and the availability of expertise. However, most projects will require expertise in marketing, information architecture, graphic design, writing and editing, programming, and project management.

Marketing

The marketing team focuses on the intended purposes and audiences for the web site. They must understand what will bring the right people to the web site and what will bring them back again.

Information Architecture

The information architects focus on the design of organization, indexing, labeling, and navigation systems to support browsing and searching throughout the web site.

Graphic Design

The designers are responsible for the graphic design and page layout that defines the graphic identity or look of the web site. They strive to create and implement a design philosophy that balances form and function.

Editorial

Editors focus on the use of language throughout the web site. Their tasks may involve proofreading and editing copy, massaging content to ensure a common voice for the site, and creating new copy.

Technical

The technical designers and programmers are responsible for server administration and the development or integration of site production tools and web site applications. They advise the other teams regarding technology-related opportunities and limitations.

Project Management

The project manager keeps the project on schedule and within budget. He or she facilitates communication between the other teams and the clients or internal stakeholders.

The success of a web site design and production project depends on successful communication and collaboration between these specialized team members. A linear, black-box, throw-it-over-the-wall methodology just won't work. Everyone needs to understand the goals, perspectives, and approaches of the other members of the team. For example, while the marketing specialist may lead the audience analysis process, he or she needs to anticipate the types of questions about the audience that the specialists will have. Otherwise, each will need to start from scratch in learning about that audience, wasting substantial time and resources.

ORGANIZING INFORMATION, ORGANIZATIONAL CHALLENGES

We organize to understand, to explain, and to control. Our classification systems inherently reflect social and political perspectives and objectives. We live in the first world. They live in the third world. She is a freedom fighter. He is a terrorist. The way we organize, label, and relate information influences the way people comprehend that information.

As information architects, we organize information so that people can find the right answers to their questions. We strive to support casual browsing and directed searching. Our aim is to apply organization and labeling systems that make sense to users.

The Web provides us with a wonderfully flexible environment in which to organize. We can apply multiple organization systems to the same content and escape the physical limitations of the print world. So why are many large web sites so difficult to navigate? Why can't the people who design these sites make it easy to find information? These common questions focus attention on the very real challenge of organizing information.

Organizational Challenges

In recent years, increasing attention has been focused on the challenge of organizing information. Yet, this challenge is not new. People have struggled with the difficulties of information organization for centuries. The field of librarianship has been largely devoted to the task of organizing and providing access to information. This quiet yet powerful revolution is driven by the decentralizing force of the global Internet. Not long ago, the responsibility for labeling, organizing, and providing access to information fell squarely in the laps of librarians. They classified, cataloged, and helped us find the information we needed.

The Internet is forcing the responsibility for organizing information on more of us each day. How many corporate web sites exist today? How many personal home pages? What about tomorrow? As the Internet provides us all with the freedom to publish information, it quietly burdens us with the responsibility to organize that information.

As we struggle to meet that challenge, we unknowingly adopt the language of librarians. How should we label that content? Is there an existing classification system? Who's going to catalog all of that information?

We're moving towards a world where tremendous numbers of people publish and organize their own information. The challenges inherent in organizing that information

become more recognized and more important. Let's explore some of the reasons why organizing information in useful ways is so difficult

Heterogeneity

Heterogeneity refers to an object or collection of objects composed of unrelated or unlike parts. You might refer to grandma's homemade broth with its assortment of vegetables, meats, and other mysterious leftovers as heterogeneous. At the other end of the scale, homogeneous refers to something composed of similar or identical elements. For example, Oreo cookies are homogeneous. Every cookie looks and tastes the same

Most web sites are highly heterogeneous in two respects. First, web sites often provide access to documents and their components at varying levels of granularity. A web site might present articles and journals and journal databases side by side. Links might lead to pages, sections of pages, or to other web sites. Second, web sites typically provide access to documents in multiple formats.

The heterogeneous nature of web sites makes it difficult to impose highly structured organization systems on the content. It doesn't make sense to classify documents at varying levels of granularity side by side. An article and a magazine should be treated differently. Similarly, it may not make sense to handle varying formats the same way. Each format will have uniquely important characteristics

Differences in Perspectives

that labeling and organization systems are intensely affected by their creators' perspectives. We see this at the corporate level with web sites organized according to internal divisions or org charts. In these web sites, we see groupings such as marketing, sales, customer support, human resources, and information systems. How does a customer visiting this web site know where to go for technical information about a product they just purchased? To design usable organization systems, we need to escape from our own mental models of content labeling and organization.

Internal Politics

Politics exist in every organization. Individuals and departments constantly position for power or respect. Because of the inherent power of information organization in forming understanding and opinion, the process of designing information architectures for web sites and intranets can involve a strong undercurrent of politics. The choice of organization and labeling systems can have a big impact on how users of the site perceive the company, its departments, and its products.

ORGANIZING WEB SITES AND INTRANETS :

The organization of information in web sites and intranets is a major factor in determining success, and yet many web development teams lack the understanding necessary to do the job well. Our goal in this chapter is to provide a foundation for tackling even the most challenging information organization projects.

Organization systems are composed of organization schemes and organization structures .An organization scheme defines the shared characteristics of content items and influences the logical grouping of those items. An organization structure defines the types of relationships between content items and groups.

Before diving in, it's important to understand information organization in the context of web site development. Organization is closely related to navigation, labeling, and indexing. The hierarchical organization structures of web sites often play the part of primary navigation system. The labels of categories play a significant role in defining the contents of those categories. Manual indexing is ultimately a tool for organizing content items into groups at a very detailed level. Despite these closely knit relationships, it is both possible and useful to isolate the design of organization systems, which will form the foundation for navigation and labeling systems. By focusing solely on the logical grouping of information, you avoid the distractions of implementation details and design a better web site

Organization Schemes

We navigate through organization schemes every day. Phone books, supermarkets, and television programming guides all use organization schemes to facilitate access. Some schemes are easy to use. We rarely have difficulty finding a friend's phone number in the alphabetical organization scheme of the white pages. Some schemes are intensely frustrating. Trying to find marshmallows or popcorn in a large and unfamiliar supermarket can drive us crazy. In fact, the organization schemes of the phone book and the supermarket are fundamentally different. The alphabetical organization scheme of the phone book's white pages is exact. The hybrid topical/task-oriented organization scheme of the supermarket is ambiguous.

Alphabetical:

An alphabetical organization scheme is the primary organization scheme for encyclopedias and dictionaries

Chronological

Certain types of information lend themselves to chronological organization. For example, an archive of press releases might be organized by the date of release

Geographical

Place is often an important characteristic of information. With the exception of border disputes, geographical organization schemes are fairly straightforward to design and use Organization Structures.

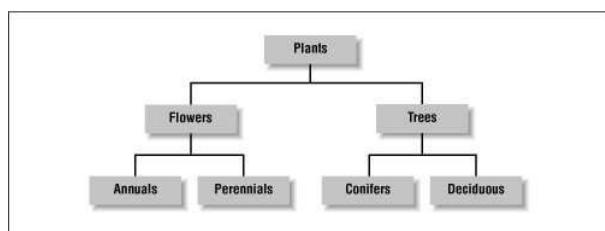
Organization structure plays an intangible yet very important role in the design of web sites. While we interact with organization structures every day, we rarely think about them. Movies are linear in their physical structure. We experience them frame by frame from beginning to end. However, the plots themselves may be non-linear, employing flashbacks and parallel subplots. Maps have a spatial structure. Items are placed according to physical proximity, although the most useful maps cheat, sacrificing accuracy for clarity.

The structure of information defines the primary ways in which users can navigate. Major organization structures that apply to web site and intranet architectures include the hierarchy, the database-oriented model, and hypertext.

The hierarchy: A top-down approach

The foundation of almost all good information architectures is a well-designed hierarchy. In this hypertextual world of nets and webs, such a statement may seem blasphemous, but it's true. The mutually exclusive subdivisions and parent-child relationships of hierarchies are simple and familiar. We have organized information into hierarchies since the beginning of time. Family trees are hierarchical. The top-down approach allows you to quickly get a handle on the scope of the web site without going through an extensive content inventory process.

example of a simple hierarchical model



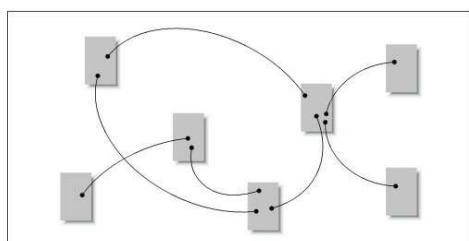
Designing hierarchies

When designing information hierarchies on the Web, you should remember a few rules of thumb. First, you should be aware of, but not bound by, the idea that hierarchical categories should be mutually exclusive. Within a single organization scheme, you will need to balance the tension between exclusivity and inclusivity. Ambiguous organization schemes in particular make it challenging to divide content into mutually exclusive categories.

Second, it is important to consider the balance between breadth and depth in your information hierarchy. Breadth refers to the number of options at each level of the hierarchy. Depth refers to the number of levels in the hierarchy. If a hierarchy is too narrow and deep, users have to click through an inordinate number of levels to find what they are looking for.

Hypertext

Hypertext is a relatively new and highly nonlinear way of structuring information. A hypertext system involves two primary types of components: the items or chunks of information which are to be linked, and the links between those chunks. These components can form hypermedia systems that connect text, data, image, video, and infoarch chunks. Hypertext chunks can be connected hierarchically, non-



hierarchically, or both

The relational database model: A bottom-up approach

Most of us are familiar with databases. In fact, our names, addresses, and other personal information are included in more databases than we care to imagine. A database is a collection of records. Each record has a number of associated fields. The database model has limitations. The records must follow rigid rules. Within a particular record type, each record must have the same fields, and within each field, the formatting rules must be applied consistently across records. This highly structured approach does not work well with the heterogeneous content of many web sites. Also, technically it's not easy to place the entire contents (including text, graphics, and hypertext links) of every HTML page into a database. Such an approach can be very expensive and time consuming.

For these reasons, the database model is best applied to subsites or collections of structured, homogeneous information within a broader web site. For example, staff

directories, news release archives, and product catalogs are excellent candidates for the database model.

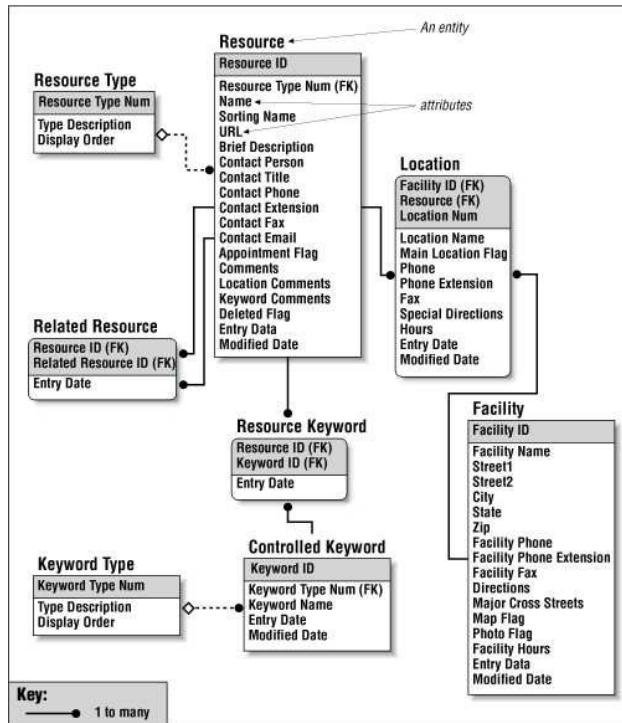


Figure 3-13. This entity relationship diagram (ERD) shows a structured approach to database design see that entities (e.g., Resource) have attributes (e.g., Name, URL). Ultimately, entities and attributes become records and fields in the database. An ERD also shows relationships between entities. For example, we see that each resource is available at one or more locations. The ERD is used to visualize and refine the data model, before design and population of the database.)

CREATING COHESIVE ORGANIZATION SYSTEMS

You also need to think about the organization structures that influence how users can navigate through these schemes. Should you use a hierarchy or would a more structured database-model work best? Perhaps a loose hypertextual web would allow the most flexibility? Taken together, in the context of a large web site development project, these questions can be overwhelming. That's why it's important to break down the site into its components, so you can tackle one question at a time. Also, keep in mind that all information retrieval systems work best when applied to narrow domains of homogeneous content. By decomposing the content collection into these narrow domains, you can identify opportunities for highly effective organization systems.

In considering which organization schemes to use, remember the distinction between exact and ambiguous schemes. Exact schemes are best for known-item searching, when users know precisely what they are looking for. Ambiguous schemes are best for browsing and associative learning, when users have a vaguely defined information need. Whenever possible, use both types of schemes. Also, be aware of the challenges of organizing information on the Web. Language is ambiguous, content is heterogeneous, people have different perspectives, and politics can rear its ugly head. Providing multiple ways to access the same information can help to deal with all of these challenges.

When thinking about which organization structures to use, keep in mind that large web sites and intranets typically require all three types of structure. The top-level, umbrella architecture for the site will almost certainly be hierarchical. As you are designing this hierarchy, keep a lookout for collections of structured, homogeneous information. These potential subsites are excellent candidates for the database model. Finally, remember that less structured, creative relationships between content items can be handled through hypertext. In this way, all three organization structures together can create a cohesive organization system.

DESIGNING NAVIGATION SYSTEMS

On the Web, navigation is rarely a life or death issue. However, getting lost in a large web site can be confusing and frustrating. While a well-designed hierarchical organization scheme will reduce the likelihood that users will become lost, a complementary navigation system is often needed to provide context and to allow for greater flexibility of movement within the site.

Navigation systems can be designed to support associative learning by featuring resources that are related to the content currently being displayed. For example, a page that describes a product may include *see also* links to related products and services (this

type of navigation can also support a company's marketing goals). As users move through a well-designed navigation system, they learn about products, services, or topics associated to the specific content they set out to find.

Any page on a web site may have numerous opportunities for interesting *see also* connections to other areas of the site. The constant challenge in navigation system design is to balance this flexibility of movement with the danger of overwhelming the user with too many options.

Navigation systems are composed of a variety of elements. Some, such as graphical navigation bars and pop-up menus, are implemented on the content-bearing pages themselves. Others, such as tables of contents and site maps, provide remote access to content within the organization structure. While these elements may be implemented on each page, together they make up a navigation system that has important site-wide implications. A well-designed navigation system is a critical factor in determining the success of your web site.

Browser Navigation Features

When designing a navigation system, it is important to consider the environment the system will exist in. On the Web, people use web browsers such as Netscape Navigator and Microsoft Internet Explorer to move around and view web sites. These browsers sport many built-in navigation features.

Open URL allows direct access to any page on a web site. *Back* and *Forward* provide a bidirectional backtracking capability. The *History* menu allows random access to pages visited during the current session, and *Bookmark* enables users to save the location of specific pages for future reference. If the hypertext link leads to another web site on another server, prospective view provides the user with basic information about this off-site destination.

Building context:

With all navigation systems, before we can plot our course, we must locate our position. Whether we're visiting Yellowstone National Park or the Mall of America, the *You Are Here* mark on fixed-location maps is a familiar and valuable tool. Without that landmark, we must struggle to triangulate our current position using less dependable features such as street signs or nearby stores. In designing complex web sites, it is particularly important to provide context within the greater whole. always follow a few rules of thumb to ensure that your sites provide contextual clues. First, all pages should include the organization's name. This might be done as part of the title or header of the page. As a user moves through the levels of a site, it should be clear that they are still within that site. Carrying the graphic identity throughout the site supports such context and consistency. In addition, if a user bypasses the front door and directly accesses a subsidiary page of the site, it should be clear which site he or she is on. Second, the navigation system should present the structure of the information hierarchy in a clear and consistent manner and indicate the location within that hierarchy.

TYPES OF NAVIGATION SYSTEMS

A complex web site often includes several types of navigation systems. To design a successful site, it is essential to understand the types of systems and how they work together to provide flexibility and context.

Hierarchical Navigation Systems

Although we may not typically think of it this way, the information hierarchy is the primary navigation system. From the main page to the destination pages that house the actual content, the main options on each page are taken directly from the hierarchy. The hierarchy is extremely important, but also rather limiting. It is these limitations that often require additional navigation systems.

Global Navigation Systems

A global or site-wide navigation system often complements the information hierarchy by enabling greater vertical and lateral movement throughout the entire site. At the heart of most global navigation systems are some standard rules that dictate the implementation of the system at each level of the site.

The simplest global navigation system might consist of a graphical navigation bar at the bottom of each page on the site. On the main page, the bar might be unnecessary, since it would duplicate the primary options already listed on that page. On second level pages, the bar might include a link back to the home page and a link to the feedback facility.

Local Navigation Systems

For a more complex web site, it may be necessary to complement the global navigation system with one or more local navigation systems. To understand the need for local navigation systems, it is necessary to understand the concept of a *sub-site*.

For example, a software company may provide an online product catalog as one area in their web site. This product catalog constitutes a sub-site within the larger web site of the software company. Within this sub-site area, it makes sense to provide navigation options unique to the product catalog, such as browsing products by name or format or market.

Ad Hoc Navigation

Relationships between content items do not always fit neatly into the categories of hierarchical, global, and local navigation. An additional category of *ad hoc* links is more editorial than architectural. Typically an editor or content specialist will determine appropriate places for these types of links once the content has been placed into the architectural framework of the web site. In practice, this usually involves representing words or phrases within sentences or paragraphs (i.e., prose) as embedded hypertext links. This approach can be problematic if these ad hoc links are important, since usability testing shows "a strong negative correlation between embedded links (those surrounded by text) and user success in finding information." Apparently, users tend to scan pages so quickly that they often miss these less conspicuous links. You can replace or complement the embedded link approach with external links that are easier for the user to see.

INTEGRATED NAVIGATION ELEMENTS, REMOTE

NAVIGATION ELEMENTS

Integrated Navigation Elements

In global and local navigation systems, the most common and important navigation elements are those that are integrated into the content-bearing pages of the web site. As users move through the site or sub-site, these are the elements they see and use again and again. Most integrated navigation elements fit into one of two categories: navigation bars and pull-down menus.

Navigation Bars:

You can implement navigation bars in many ways and use them for the hierarchical, global, and local navigation systems. In simplest form, a navigation bar is a collection of hypertext links grouped together on a page. Alternatively, the navigation bar may be graphical in nature, implemented as an image map or as graphic images within a table structure. Graphical navigation bars may employ several techniques for conveying content and context, including textual labels and icons. Textual labels are the easiest to create and by far most clearly indicate the contents of each option. Icons, on the other hand, are relatively difficult to create and often fail to indicate the contents of each option. Graphic navigation bars tend to look nicer but can significantly slow down the page loading speed.

Frames:

Frames present an additional factor to consider in the application of textual or graphical navigation bars. Frames allow you to define one or more independently scrollable "panes" within a single browser window. Hypertextual links within one pane can control the content displayed in other panes within that same window. This enables the designer to create a static or independently scrolling navigation bar that appears on every page in that area of the web site.

However, frames present several serious problems, both from the consumer's and producer's perspective. Architects should proceed very carefully in considering framebased navigation solutions. Let's review a few of the major considerations

- Screen real estate
- The page model
- Display speed
- Complex design
- Pull-Down Menus

Remote Navigation Elements

Remote navigation elements are similar to software documentation or help systems. Documentation can be very useful but will never save a bad product. Instead, remote navigation elements should be used to complement a solid internal organization and navigation system. You should provide them but never rely on them. While remote navigation elements can enhance access to web site content by providing complementary ways of navigating, they should not be used as replacements or bandages for poor organization and navigation systems.

The Table of Contents

The table of contents and the index are the state of the art in print navigation. In a book or magazine, the table of contents presents the top few levels of the information hierarchy. It shows the organization structure for the printed work and supports random as well as linear access to the content through the use of chapter and page numbers. Similarly, the table of contents for a web site presents the top few levels of the hierarchy. It provides a broad view of the content in the site and facilitates random access to segmented portions of that content. A web-based table of contents can employ hypertext links to provide the user with direct access to pages of the site.

The design of a table of contents significantly affects its usability. When working with a graphic designer, make sure he or she understands the following rules of thumb: Reinforce the information hierarchy so the user becomes increasingly familiar with how the content is organized.

Facilitate fast, direct access to the contents of the site for those users who know what they want.

Avoid overwhelming the user with too much information. The goal is to help, not scare, the user.

The Index: In selecting items for the index, keep in mind that an index should point only to destination pages, not navigation pages. Navigation pages help users find (destination) pages through the use of menus that begin on the main page and descend through the hierarchy.

The Site Map: A real site map presents the information architecture in a way that goes beyond textual representation.

The Guided Tour: A guided tour serves as a nice tool for introducing new users to the major content areas of a web site. It can be particularly important for restricted access web sites (such as online magazines that charge subscription fees) because you need to show potential customers what they will get for their money.

A guided tour should feature linear navigation (new users want to be guided, not thrown in), but a hypertextual navigation bar may be used to provide additional flexibility. The

tour should combine screenshots of major pages with narrative text that explains what can be found in each area of the web site

SEARCHING SYSTEMS, SEARCHING WEBSITE

Searching Your Web Site

When Not To Make Your Site Searchable :Your site should of course support the *finding* of its information. But don't assume a search engine alone will satisfy *all* users' information needs. While many users want to search a site, some just want to browse it. Because many site developers see search engines as *the* solution to the problems that users are experiencing when trying to find information in their sites, search engines become bandages for sites with poorly designed *browsing* systems.

Search engines are fairly easy to get up and running, but like much of the Web, they are difficult to set up effectively. As a user of the Web, you've certainly seen incomprehensible search interfaces, and we're sure that your queries have retrieved some pretty strange results. This often is the result of a lack of planning by the site developer, who probably installed the search engine with its default settings, pointed it at his or her site, and forgot about it. So, if you don't plan on putting some significant time into configuring your search engine properly, reconsider your decision to implement it.

Now that we've got our warnings and threats out of the way, we'll discuss when to implement searching systems, and how you can make them work better.

When To Make Your Site Searchable

Most web sites, as we know, aren't planned out in much detail before they're built. Instead, they grow organically. This may be all right for smaller web sites that aren't likely to expand much, but for ones that become popular, more and more content and functional features get added haphazardly, leading to a navigation nightmare.

Your site probably doesn't contain as much content as Yahoo! does, but if it's a substantial site, it probably merits a search engine. There are good reasons for this: users won't be willing to browse through your site's structure. Their time is limited, and their cognitive overload threshold is lower than you think. Interestingly, sometimes users won't browse for the *wrong* reasons; that is, they search when they don't necessarily know what to search for. Even though they would be better served by browsing, they search anyway. You should also consider creating a searching system for your site if it contains highly dynamic content. For example, if your site is a Web-based newspaper, you could be adding dozens of story files daily. For this reason, you probably wouldn't have the time each day to maintain elaborate tables of contents, browsable indices, and other browsing systems. A search engine can help you by automatically indexing the contents of the site once or many times per day. Automating this process ensures that users have quality access to your site's content, and you can spend time doing things other than manually indexing and linking the story files.

Understanding How Users Search

Assuming you've decided to implement a searching system for your web site, it's important to understand how users really search before designing it. We'll try to condense decades of research and experience generated by the field of information retrieval into the next few paragraphs. But it really boils down to this point: searching systems can and should vary as much as browsing systems or any other components of web sites do, because all users aren't alike, and information retrieval is much harder than most people realize.

Users Have Different Kinds of Information Needs

Known-item searching: users' information needs are clearly defined and have a single, correct answer

Existence searching: some users know what they want but don't know how to describe it or whether the answer exists at all

Exploratory searching : Some users know how to phrase their question, but don't know exactly what they're hoping to find, and are really just exploring and trying to learn more.

Comprehensive searching (research): users want everything available on a given topic. Scientific researchers, patent lawyers, doctoral students trying to find unique and original dissertation topics, and fans of any sort fit into this category.

DESIGNING THE SEARCH INTERFACE

Designing the Search Interface

Assuming that a search facility is needed, a designer should first and foremost consider what the user wants to search for. Far too often, search engines are added to a site and set to index everything using a free text search. Similar to a Web-wide search, users pound their heads as they search for a particular part number like KF-456 only to be shown every single document the part number occurs in, ranging from press releases to technical notes. To the user, the ordering of the documents from this type of search may seem arbitrary, with the most important document not appearing first in the list. What's interesting is why this form of search was used. Designers assume that since public search engines work like this, so should their local search engine. This seems like a good idea—users are familiar with formulating search strings at public sites and bring this knowledge with them to your site. However, global search engines are not very accurate for a variety of reasons, including the fact that numerous sites try to fight their way to the top of returned results. Public search engine results don't always seem to make sense, and the ordering often seems more random than systematic.

Consider that in your own site, if you want a particular page to be shown when a user types in "Robot Butler," you can cause that page to be shown. Remember, when building a local search facility, to copy the style, syntax, and interface of public Web search engines, but don't imitate their imprecise functionality.

The main advantage of local searching is that you can utilize controlled vocabularies to deal with what users will probably want to search for. Besides relating keywords with certain pages in a more precise manner, you may even suggest common queries for users to run. Remember, local search engines provide designers with a much greater degree of control than public search engines.

basic points should be considered when designing a search interface

Support Different Modes of Searching

Before diving into design, think hard about why users are searching your site, and what they want to get out of their search. Are they likely to search for certain types of information, such as specific product descriptions or staff directory entries
Searching and Browsing Systems Should Be Closely Integrated

Users typically need to switch back and forth between searching and browsing. In fact, users often don't know if they need to search or browse in the first place. Therefore, these respective systems shouldn't live in isolation from one another.

Searching Should Conform to the Site's Look and Feel

Search engine interfaces, and more importantly, retrieval results, should look and behave like the rest of your site. This advice may seem painfully obvious, but because many search engines are packaged as ready-to-go add-ons to a site, site developers don't bother to customize them.

Search Options Should Be Clear

Because so many different variables are involved with searching, there are many opportunities for things to go wrong. On a Help or Documentation page, consider letting the user know the following:

What is being searched. Users often assume that their search query is being run against the full text of every page in your site. Instead your site may support fielded searching or another type of selective searching. If they're curious, users should be able to find out exactly what they are searching.

How they can formulate search queries. What good is it to build in advanced querying capabilities if the user never knows about them? In other words, make sure your examples actually work and retrieve relevant documents if the user decides to test them. *User options.* Can the user do other neat things such as changing the sorting order of retrieval results? Show them off as well

What to do if the user can't find the right information. It's important to provide the user with some tricks to handle the following three situations:

- a "I'm getting too much stuff."
- b. "I'm not getting anything."
- c. "The stuff I'm getting stinks!"

Choose a Search Engine That Fits Users' Needs

At this point, you ideally will know something about the sorts of searching capabilities that your site's users will require. So select a search engine that satisfies those needs as much as possible.

Display Search Results Sensibly

You can configure how your search engine displays search results in many ways. There is no right way to do it. How you configure your search engine's results depends on two factors.

The first factor is the degree of structure your content has. The other factor is what your site's users really want.

More About Relevance

How relevant the results displayed are.

Always Provide the User with Feedback

When a user executes a search, he or she expects results. Usually, a query will retrieve at least one document, so the user's expectation is fulfilled. But sometimes a search retrieves zero results. Let the user know by creating a different results page specially for these cases

Other Considerations

You might also consider including a few easy-to-implement but very useful things in your engine's search results:

Repeat back the original search query prominently on the results page.

As users browse through search results, they may forget what they searched for in the first place. Remind them. Also include the query in the page's title; this will make it easier for users to find it in their browser's history lists.

Let the user know how many documents in total were retrieved.

Users want to know how many documents have been retrieved before they begin reviewing the results. Let them know; if the number is too large, they should have the option to refine their search.

Let the user know where he or she is in the current retrieval set.

It's helpful to let users know that they're viewing documents 31- 40 of the 83 total that they've retrieved.

Always make it easy for the user to revise a search or start a new one.

Give them these options on every results page, and display the current search query on the Revise Search page so they can modify it without reentering it.

