Achieving Good Search Usability

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Introduction to Usability

We say a site has good usability when visitors can quickly, easily and pleasantly achieve their goals there.

Elements of usability

Good overall usability requires high quality in many areas: Suitability of the offering to the target audience, content quality, search and navigation facilities, response time, ease of interaction, readability, and attractive appearance.

If your site competes for visitors, you may aim for an outstanding degree of usability in order to defeat the competition. If the site primarily serves your employees, customers or partners, then outstanding usability may be cost- effective for you as well as building loyalty. It can be useful to think of the user experience at your site as a particularly powerful form of direct branding. Make sure that experience associated with "using" the brand is a positive one!

Users decide if it's usable

Usability is ultimately judged by the users themselves, so site owners should follow a user-oriented design process when establishing or revising a website. To ensure a good result, FAST advises user testing combined with other forms of usability evaluation to collect feedback during the design process.

If the user can't find it, it's not there.

Search Usability: Some Knowns, Some Best Guesses

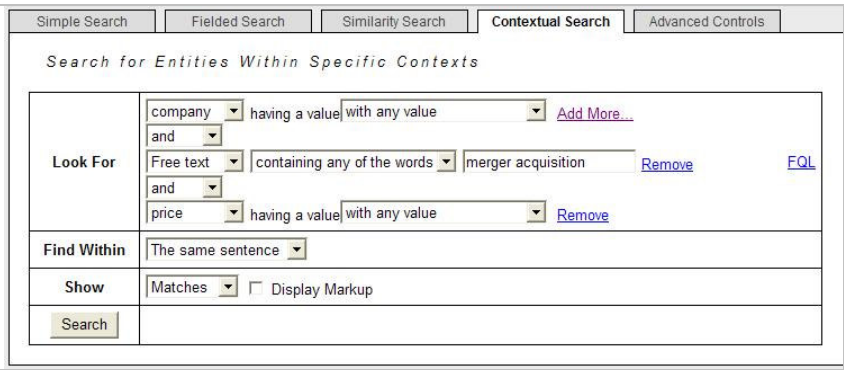
Within the last 24 months we have witnessed an explosion of new search technology and new search-related functionality. Furthermore, FAST's commitment to continual innovation means that FAST customers face a challenge: There are as yet few de facto standards for how the newest search functionality should work, beyond the universal user expectation of a single input field, a search button, and a result list ordered with the presumably most interesting results first.[1]

Questions like these remain, if not wholly unanswered, at least without proven "best practices":

[1] Usability guru Jakob Nielsen in his column "Mental Models for Search" 9 May 2005. http://www.useit.com/alertbox/20050509.html.

- Is a tree-structured search navigator usable for some user groups?
- In faceted browsing, how do we communicate which facets the user has chosen, and how the user may remove a chosen facet?
- How can we make powerful contextual insight searches easy for a broad range of users?

This query builder suits search experts and technical users, but we must find other, simpler ways to let normal people enter their queries.



- When using structurally scoped searches such as "Find these words in the same sentence," hits will be sentences, rather than documents. How should the result list look then? (See an example on page 44).

Because of the current speed of innovation within search, the design and implementation of usable search requires us to use a dual approach:

- Apply established principles for usability when designing a new search experience.
- Plan and carry out usability evaluations of search, and adjust the design accordingly.

In Part 1, we show how to apply the principles of user-centered design to the design of search sites. This part will help you create a helpful description of what you want the design to achieve.

In Part 2, we introduce the principles for visual communication of interaction. This part will help you and your team to discuss site appearance within a more objective, goal-oriented framework.

In Part 3, we give our current recommendations for search interaction design, based on long experience with design and usability testing of many kinds of sites and applications, newer literature, and observations of web best practice.

In Part 4, we present various methods for evaluating usability, and suggest how to customize a usability improvement plan for your search site.

In addition, we suggest that you closely monitor innovative public search sites on the internet. Be alert to the emergence of new de facto standards within the minds of the user population. Our search best practices newsletter will regularly point out sites of interest.

Part 1: Defining the Search User Experience

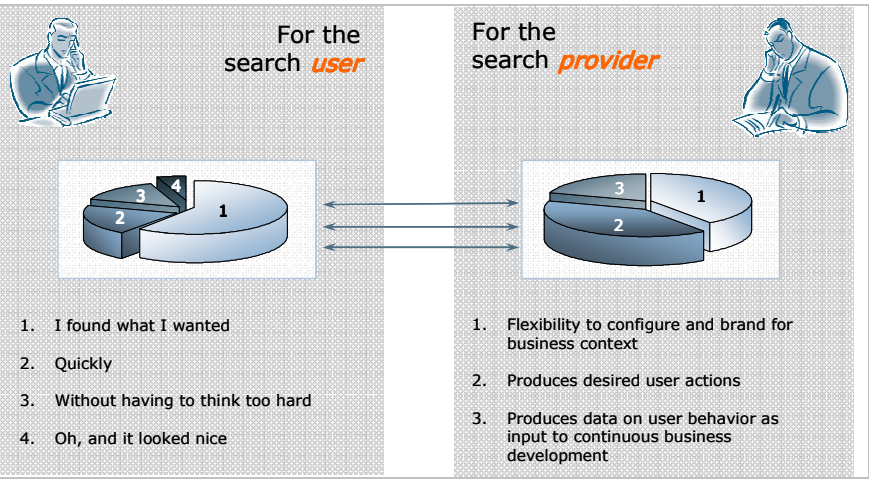
In this part:

- Steps in Defining the User Experience
- What Role Does Search Play At Your Site?
  - Your Content
  - Your Market Situation
- Know Your User. He is Not You.
  - Personas
  - User Categories
- Usability Goals for Search at Your Site
- User Intentions
- Planning for Branding and Visual Design

Steps in Defining the User Experience

As the search provider, you are also a user of the search engine. However, in this paper when we refer to the search user, we are referring to your visitor or customer: The end user of the search. Search users and search providers judge usability for themselves differently.

Each individual user gives his or her own answer: "Is this usable for me personally?" Our challenge is to design an experience that leads many different users to say, "Yes!



In the first phase, aim to define what "a good user experience" would be like for a person who searches for something on your site. You'll be weighing alternatives like these:

- Should your search be very simple to use, or very powerful and flexible? When you give the user more choices about how to search, the user interface naturally becomes more complex.

- Will your users want to compare results, or will they want to find a single, very relevant result? Is it in your interests for the users to find what they want quickly, or do you need to provide users with a good reason to want to stay longer and view more pages?

- As more and more advanced search functionality becomes available, you will also need to ask, "Which are the features that best meet our users' needs and our business goals?"

"Good" varies from site to site

Your answers to these and similar questions should evolve naturally from these major design forces:

- The business reasons for having search at your site;
- The nature of your content;
- ***Who*** your users are and what ***their*** goals are;
- Finally, your goals for the user experience may be influenced by the competitive situation and the need to differentiate your site from others.

What Role Does Search Play at Your Site?

The starting point is to consider what *role* search plays at your site. Stated in a different way, what is the basic business case for the search you will be designing?

- **Who** must have **what kind** of search experience in order to maximize revenue / minimize costs?
- How does search contribute to revenue or reduce costs? How important is that contribution?

Site Type	Search and the Business Case	Role of search usability
Advertising-driven Search Sites	Advertisers pay to meet site visitors. The content available to be searched is what attracts visitors. Content is primarily available through search and search-enabled navigation. Users' search input may generate advertising opportunities.	Second only to content, the usability of the search function will have a direct impact on visitor success, satisfaction, and return visit rate.
Shopping Search	Site visitors purchase products, services or content through the site. Search and search-enabled navigation help visitors locate what they want to purchase or discover new, attractive products.	The user experience of search can impact conversion rate, customer loyalty and the frequency with which a customer visits the site. Product selection, price, shipping practice, site credibility and payment options are other important drivers.
Pay to Search/View	Site visitors pay to search or view content. The content available to be searched and viewed is what attracts customers, and the search function is adapted to the specific content. Search must help visitors find what they are looking for and should provide an opportunity for cross-selling – make visitors aware of other potentially interesting content.	The user experience of search can impact conversion rate, customer loyalty and the frequency with which a customer visits the site, but content quality and freshness are probably the more important drivers.
Self-service Information	Site visitors are self-service customers. They help themselves to information at low cost to the site owner, compared to the cost of manned information or support service.	Ideally, search helps visitors to quickly and easily find answers to their questions or solutions to their problems. The user experience of search – finding the answer - will impact customer satisfaction and brand perception. An equal driver will be perceived quality, usefulness or acceptability of the answer.

Site Type	Search and the Business Case	Role of search usability
Knowledge Worker Enablement	Site visitors are employees, students or in some sense clients of the site owner. The site owner has a legitimate interest in making visitors effective in their work or tasks. Either the site content or the searchable index represents information that the site owner wants to be known and used.	Search enables workers to quickly and easily locate content relevant to their tasks. Search may also assist with basic analysis of large amounts of information. The user experience of search can impact both motivation and productivity.

What is Unique About Your Content?

Pause here for a moment to consider the nature of your content.

What content can you offer that cannot be found elsewhere – or cannot be found so easily elsewhere? Does your content have exceptional quality or structure? Especially rich metadata? Do you offer an unusual and useful combination of content?

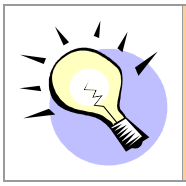
Your content offering will strongly influence who your users are and what kinds of tasks they will perform. Conversely, you may make decisions to obtain new content or process content differently based on which users you want to attract.

What is the Market Situation?

The competitive or market situation may also be an important force influencing your design of the user experience.

Pause again and consider questions like these:

- Who is your competition, and what kind of user experience do they offer?
- What alternative sources of information are open to your potential users? What do users have to do to locate and gain access to the information?
- What can search contribute to superior user experience at your site?



Tip:

Try out similar or competitive sites on the Internet. List strengths and weaknesses

Know Your User. He is Not You.

You are not the user. What you like is not necessarily a good gauge of what the general population of your users will like.

Personas

A useful technique for understanding your users and remembering that they are different from you, is to define a set of **Personas**. Each persona is a description of a fictional user. Give each persona a name. Describe their jobs, backgrounds, skills, hobbies and personalities.

A set of Personas is a small gallery of fictional users

Aim for 3 – 10 personas, depending on the complexity of your offering and the breadth of the user population you are trying to reach. Except for an Intranet your personas should be normally be external users. However, in case you have limited operation and maintenance resources you might choose to define one internal user, "webmaster" or "search maintenance expert" and consider the impacts of your other decisions on this persona's task load.

Taken together, a set of personas should represent the breadth of your target user group across relevant demographic variables. For example, if your search is specifically for medical personnel, you might decide that you need a GP, a specialist, a nurse-practitioner, a nurse and a medical researcher among your personas, because you would expect that type of competence would influence search goals and search vocabulary. But you might not feel that it was especially important whether a user lived in the city, suburbs or countryside. On the other hand, if you are defining a directory of services, you will want to consider how users' goals will vary based on where they live.

As you work with the search design, consider your personas one by one: Would this person understand and like this page? Why or why not? Working in this way also helps you to recognize that all users are not alike.

User categories

We have often found it useful to consider search users in relation to these categories:

Category	Example	Search behavior
Normal users	A second grade teacher searching at www.flowers.com A baseball umpire searching at www.amazon.com	Look at links first Don't always know the right keywords to enter Misspell; make typos Don't understand Boolean logic 49% of their first queries fail
Domain experts	A medical doctor searching a medical abstract database. A stock broker searching a financial site.	Do know the right keywords Make typos Do not formulate Boolean queries correctly May find query entry laborious
Search experts	A software engineer searching at www.flowers.com	Misspell; make typos Don't know the right keywords May find query entry laborious Are especially impatient of irrelevant results
Double experts	A computer science professor searching www.acm.org A programmer who has worked in the financial industry for years, searching a financial site.	Misspell; make typos May find query entry laborious Are especially impatient of irrelevant results

Usability Goals for Search at Your Site

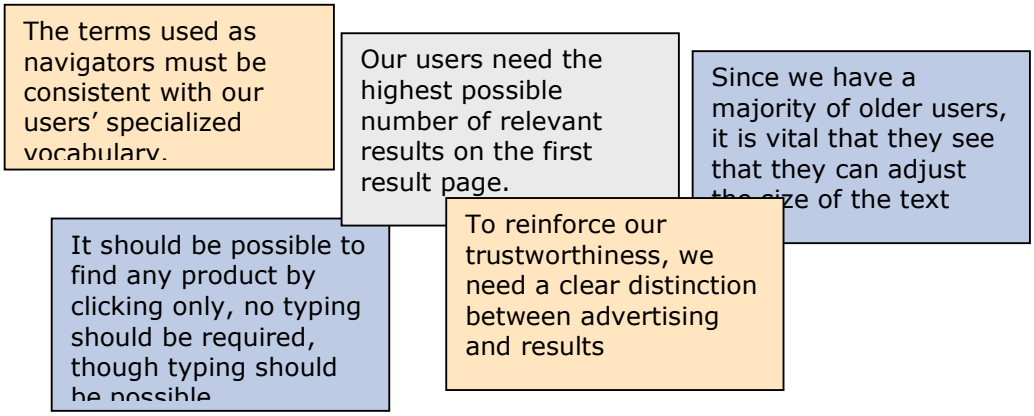
When you've considered your business goals for search, your content, your users, and the competition, you're ready to set the usability goals for search at your site. We suggest that you select a maximum of three to four goals and put them in order of importance.

Prioritizing this list is difficult, but the task helps stakeholders to develop a consistent vision. It helps to prevent later "whipsawing" in the project, where different stakeholders pull in different directions.

The prioritized list guides further design work. It enables your team to resolve disagreements by considering which alternative best supports the most important usability goals.

Sample Usability Goals for Search

These are individual usability goals taken from a variety of different sites. Are any of these goals appropriate for your site?



Sample Prioritized List

Here is an example of a whole prioritized list of usability goals for the search at a classified (ad-driven) site. Would you prioritize in the same way if you were the site owner?

1. **Easy to place an advertisement with picture(s).** 60% of all users who proceed past the price information should succeed in placing an ad. Because ads with pictures are preferred by search users, our pricing policy and interaction should both encourage and simplify the use of several digital photos.

2. **No 0 results**. Search must be designed so that visitors always get something when they search, if not exact matches then links to possibly relevant categories, popular searches, or cooperating sites. We will need to assign people to regularly check the search log for which searches give 0 results and take appropriate actions.

3. **Find out where he is**. Input interaction designed to encourage user to choose or designate a location, so that we can sell advertising space based on what he's looking for and where he is.

4. **Result presentation aids comparison**. Document summaries must be formatted so that comparable information is in the same place in each result, so that the user can easily scan the result list for price, location, or other key factors.

Usability goals may address issues that must be solved in different ways; not only by how web pages are designed, but perhaps through pricing policies, or regular tasks. For example, Goal 2, "no 0 results" can only be achieved by a combination of interaction design, relevance tuning, and continual follow-up activities.

Can you see how business goals influenced the sample list above?

- Goal 1, "easy to place ads with pictures" also sets an objective criterion for whether the goal is achieved. In effect, the site owner is asking for a 60% conversion rate for ad-placing users who have presumably decided to purchase an ad. This type of goal is usually more costly to test and to achieve; such goals should normally be reserved for areas that have a proven direct impact on ROI. Here, that would be ad volume and revenue.

- In goal 3, site owners set a goal for interaction design based on a business goal, rather than from user friendliness motives. This is perfectly legitimate – it's their site. What's important is to get the goal into the list from the beginning, so that the appropriate user interaction can be designed and tested.

"Know your users" also influenced the sample list:

- Goal 1, "easy to place ads with pictures" arose from observing users test competing sites: We saw that they favored ads with pictures. This drives an interaction goal for ad placers (easy to place ads with pictures) and also fuels a business decision: We won't charge extra for placing pictures, because it is a way to improve our site where the ad placers do the work.

- The same observations made it clear that search users preferred a tabular layout for results. Scanning result lists of classified ads is a shopping activity, where ease of comparison was important.

User Intentions: Examples of What the User Wants

User Intentions (sometimes called use case scenarios) is a technique you can use to decide what functionality and content to include at your search site.

Getting the right

It is good business to ask what the users want and then supply that, even if it is harder or more expensive to do so. Saying "This is what we've got, and therefore this is what sensible users will want," often ends badly.

Brainstorming a long list of user intentions can help your designers to keep in mind the variety of needs to be fulfilled.

Take each of your personas and try to write a list of thoughts this person might have foremost in his or her mind when coming to your site or looking for your search function. For example, here is an excerpt from a longer list of user intentions for the Internet Movie Database:

User	User Intention	Ideas for functionality
Fan	"Mmm, I like Viggo Mortensen, what else is he in?"	Names searchable
Agent	"Are my top chaps getting sufficient coverage here?"	"My page" a place to put links to the pages I check often / searches I often perform Easy to see when info was last updated
Agent	"There's some misleading information here, how do I correct it?"	Link for communicating with us on each page. Consider whether to let others than us update. Shall we check everything, or not?
Viewer	"I can't remember the name of it, but I saw it when I was a kid early in the 60's and it was about the Vienna Choir Boys. I sure would like to see it again."	Keywords, era-search, similar search. Remember to include where movies can be obtained. Let others add keywords? Big project to add them ourselves?

User	User Intention	Ideas for functionality
Music lover	"Who did the score for Local Hero, that was great music. I'd like to hear some more music like that."	Include score information, composer and musicians for each movie. Names of tracks?
Actor	"I want a part in Jackson's next movie. Hmm…what else has he done, and does he favor my type of artist?"	Name search, Contextual navigators on person entity. Extract person entities based on role: Director, Producer, Author, Cast, Crew. How granular should we make these roles? Down to title on film?
Gambler	"Before I bet on the Oscars, I want to see who's nominated and what for. Maybe I can figure the odds by finding out more about the movies."	Oscars page. Oscars' archive. Prominent link / promotion in "Oscar season"
Trivia lover	"I'm going to learn the chief grip's name for every movie that ever won an Oscar."	Awards entity extraction?

Do you see that user intentions are very different from functional requirements? Users don't actually come to the site thinking, "I want it to be possible for me to search on the Title field." And the user intention is not satisfied by the existence of a function – the intention is satisfied when the user can achieve her goal; which means the necessary function must not only be present, but must also seem natural and easy to use for the purpose that she has in mind.

A long and creative list of user intentions can help you to think of new, differentiating functionality to include at your site.

User Intentions from Observation or Focus Groups

Although brainstorming user intentions is quick and easy way to get started, you may soon need more certainty that you have chosen the right functionality for your search site. Field techniques such as user observations, interviews and focus groups are more time-consuming and costly, but they allow you to validate and correct your list of top priorities.

Consider using field techniques when:

- You can't afford to swing and miss. "Launch and learn" is cost-effective in some cases, but in high-profile projects, very expensive projects, or very competitive markets, you may only have one chance to make a successful impression on your target customers / users.

- You are launching a new type of service, or launching a service for a user group that is new and unfamiliar to your organization. Reduce some of the unknown variables by gathering user information in the field.

- You have simple and inexpensive access to real users, for example in an Intranet or Extranet situation. Here the users are well known to you, but because the cost is low the cost/benefit ratio can be very favorable. In either case the contact can be motivating to the users and provide good PR for the project.

Planning for Branding and Visual Design

The visual branding of a site may encompass a logo, name, color choices, iconic or photographic style, and sometimes special fonts or type styles. Visual design will also be important in communicating the interaction, see Part 2.

Caution!
Site owners often spend too much time considering the ideal site appearance. A clean, attractive appearance is important, but does not by itself ensure site usability.

If the search front end needs to follow an existing visual standard to conform to a wider brand, the required logo, color palette or other visual elements should be obtained early in the design process.

If the search or search site will have its own visual style, you may need to structure your inputs to the designer to avoid needless iteration. "I don't know much about art, but I know what I like." Heard it before? It is easy to say what we personally like and don't like, but this is rarely productive in the design of a web site or a search function, simply because there will be too many conflicting opinions.

To contribute usefully to a new visual design, stakeholders should agree on a set of 3-4 "emotional value" words as input to the designer. For example:

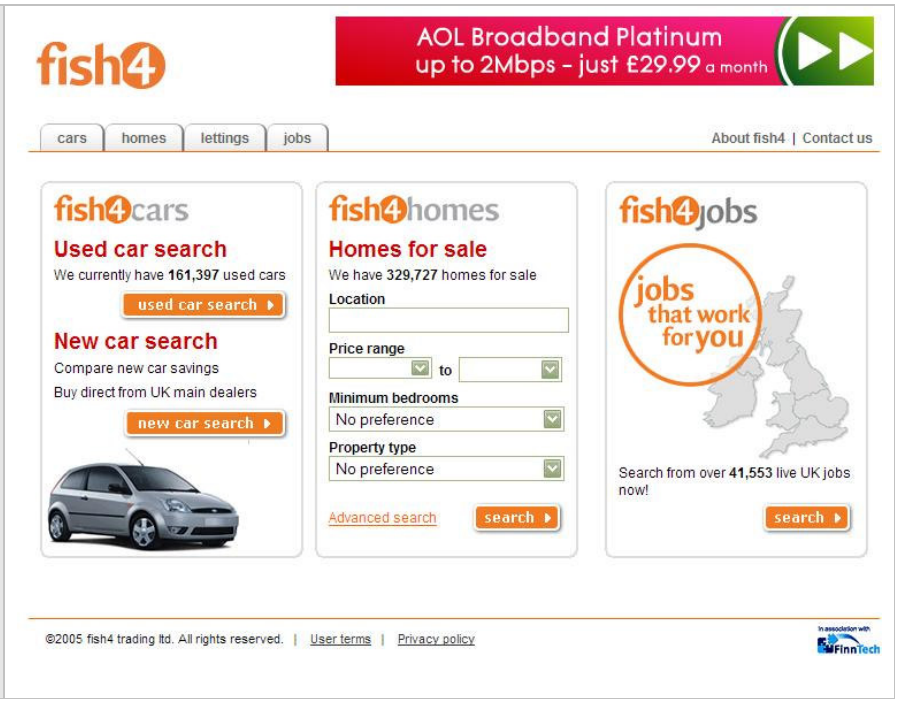
- Objective, intelligent, competent
- Clear, reliable, energetic
- Exciting, modern, exclusive

Which of the three examples of value words best describes the feelings you get from the appearance of this search site?

The use of lots of white space and few, large elements: Clear.

Circles and familiar objects, car and map, as well as familiar words: cars, homes, jobs (not career opportunities): Reliable.

Orange, prominent buttons, circles. Brief, active texts: Energetic.



Source: www.fish4.co.uk

Another constructive exercise is for a stakeholder group to examine five competing sites and rank them in order of attractiveness; try to say why you like the best ones. This provides useful input to a designer trying to please you.

Have the visual designer return with a couple of alternatives; discuss them in relation to the value words. Then it can be sufficient for the designer to make a second iteration, returning with a design that contains favored elements of each initial alternative. There may still be some disagreement based on personal preferences - at this point you can either go on iterating until the cows come home, or accept the visual design. The impact on usability is normally quite small no matter which you do.

Get users' opinions

If the usability goals emphasize that the search must be attractive to users, then the visual designer should produce a pair of alternatives to be reviewed in focus groups, see part 3.

Summary of Part 1

First steps in defining a good, usable search:

- Set usability goals and choose search functionality on the basis of your content, your business reasons for supplying search, the market situation, and a good understanding of the users and their goals.

    - Use personas to explore how users are different from you.

    - Use user intentions to explore what user's goals on the site might be.

- For efficiency, limit stakeholder input to the visual design to saying what feelings you want the design to inspire.

- Give your strategy a reality-check in focus groups with target users.

Part 2: Understanding Visual Communication

In this part:

- Why Keep It Simple
- Can You Tell If This is Good?
- The "What Is This?" Test
- Discussing Visual Design: Use CROCodile
    - Contrast
    - Readability
    - Organization
    - Clickability

Why Keep It Simple

Interaction design is the art of answering the user's two questions "What can this do for me?" and "How do I make it work?" through what we put into the picture on the screen. Ideally, the picture is so clear and uncluttered that the user never even formulates a question, just immediately perceives the relationship between the interaction and his goals.

A key concept is **less**.

- The less text you put in a picture, the more of it is likely to be read.
- The fewer fields you put in a form, the more of them are likely to be used correctly.
- The less you add of color, animation, lines, illustrations and decorations that are not absolutely essential to the interaction – the more likely it is that the user will perceive the interface as easy to use.

As search becomes a more and more powerful tool, good interaction design is needed to ensure that your users can take advantage of the features you choose to offer. See search design guidelines in Part 3.

Since interaction design is about communication, not esthetics, it is essential to carry out user testing – in order to make certain that the screen pictures say what we hope they do. For more about user testing, see Part 4.

Can You Tell If This Is Good?

Stakeholders are often asked to give feedback on screen designs, or choose to do so.

To be very blunt, your personal likes and dislikes are easy to give, but they are rarely constructive input towards improving the communication or user-friendliness of the design to the general public.

The "What is This?" Test

In his delightful book on web design, *Don't Make me Think,* design consultant Steve Krug proposes that any page (and especially a home page) should enable the casual visitor to answer "What is this?" without much thought.

In the same way search query input, results and result navigation must communicate "What is this" to your users without making them think.

Your first concern when evaluating a page should be to consider whether it would be perfectly clear to people without your special knowledge **what this is**.

Consider: Which of the following four examples most immediately conveys the purpose of the site?

Not Good.

What is this? Is it immediately clear to you that this is a real estate search site?

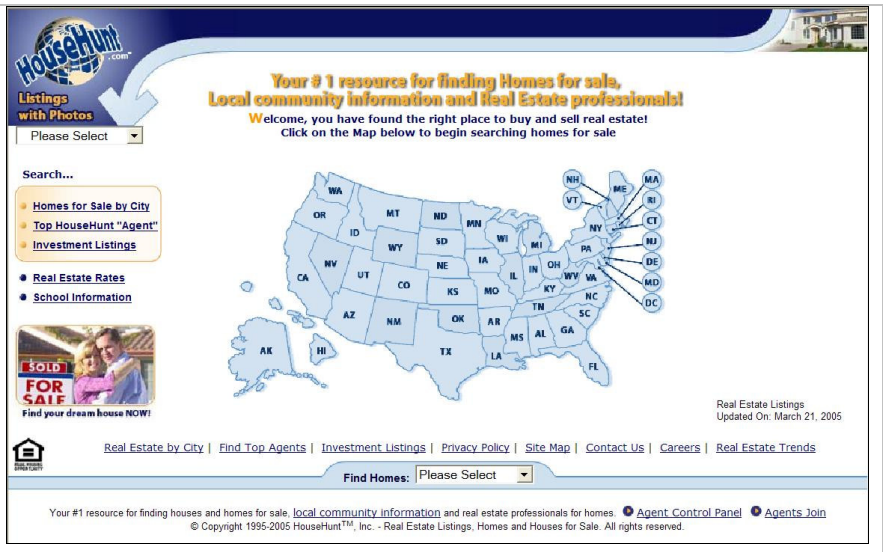
. Weak. Too much text and focus on user registration obscures the fact that you can search for real estate here.

Source www.buyersutopia.com

Better.

What is this? Is it immediately clear to you that this is a real estate search site?

Somewhat better. There is less to read, and the map may suck you into a search immediately. The site name also helps.

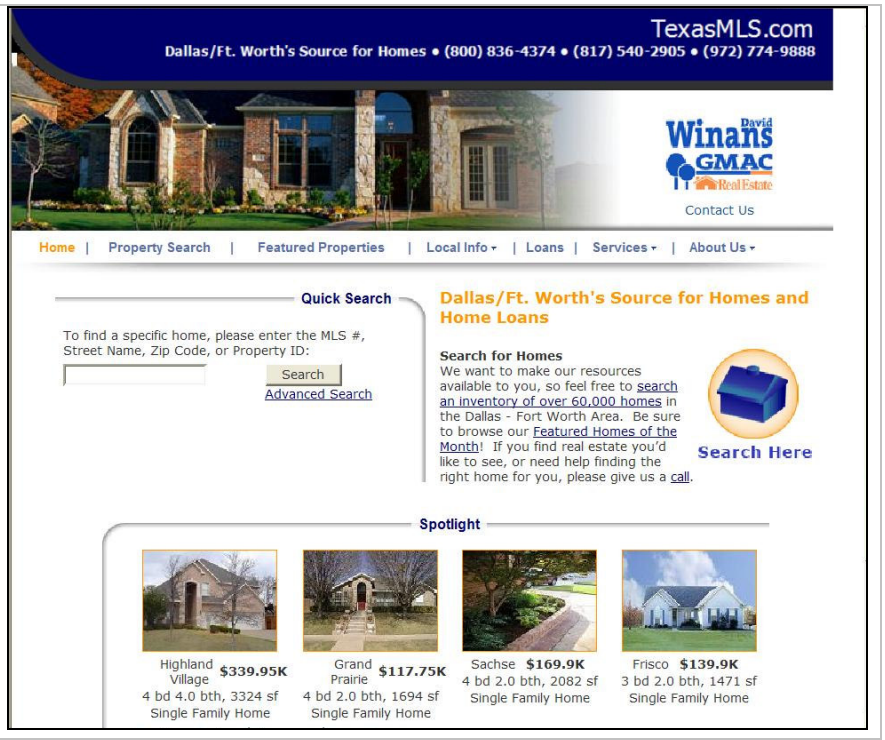


Source www.househunt.com

Better.

What is this? Is it immediately clear to you that this is a real estate search site?

Better. Two prominent search buttons – a strong communication.



Source www.texasmls.com

Best.

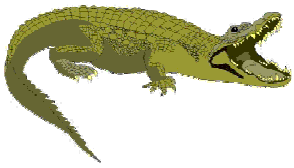
What is this? Is it immediately clear to you that this is a real estate search site?

Best communication of "This is a search site." The upfront interaction shows you can search for homes, agents or loans. Again, the site logo helps.

Source www.homeseekers.com

Discussing Visual Design: CROCodile

CROCodile is a simple checklist technique you can use when considering and talking about screen pictures. This technique will help you to move away from debating likes and dislikes, and focus more on how the pictures communicate.



Contrast: What stands out?

Readability: Do you want to read it? Is it easy to read?

Organization: Is it easy to see parts, groups and order?

Clickability: Is it easy to see what's clickable and what's not?

After a CROC analysis, your team should be able to agree on a list of changes to the screen design; furthermore, you'll be able to give a reason for each change that you request.

Contrast: What stands out?

Squint at the page or screen. What jumps out at you? These are the elements with highest visual contrast, and thus the items that the user will usually notice first.

If these high contrast items are also the most important items, the things the user needs to notice first in order to understand the picture, then all is well. If not, then a visual redesign may be called

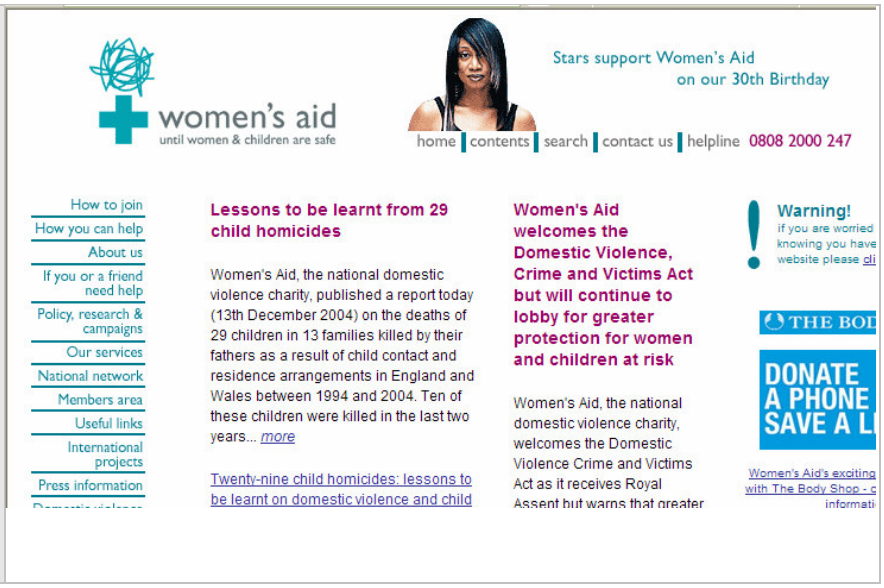
for. For a usable search it is essential that users can easily spot the search function.

Is there nothing that seems particularly prominent? Then everything is just about equally noisy or quiet, and the picture is not helping the user to see what is important. Again, a visual redesign may be called for.

Everything can't be equally prominent. At this charity site, search is (rightly) downplayed:

The highest contrast items are the photo of the woman and the request for donations: Appropriate for this site.

The search link is a little hard to spot, it does not contrast with its surroundings. That is as it should be, since search is not especially important on this site.



Source: www.womensaid.org.uk/

Here's an example of a large corporate information site where search is hard to find. Since this is a typical "self service information" situation, search should probably be more prominent.

The photos, logo and large icons grab your attention first.

The entire top menu with its light colored text and pale background is easy to overlook.

Poor contrast between the white search box and its background. Two small icons do help Search stand

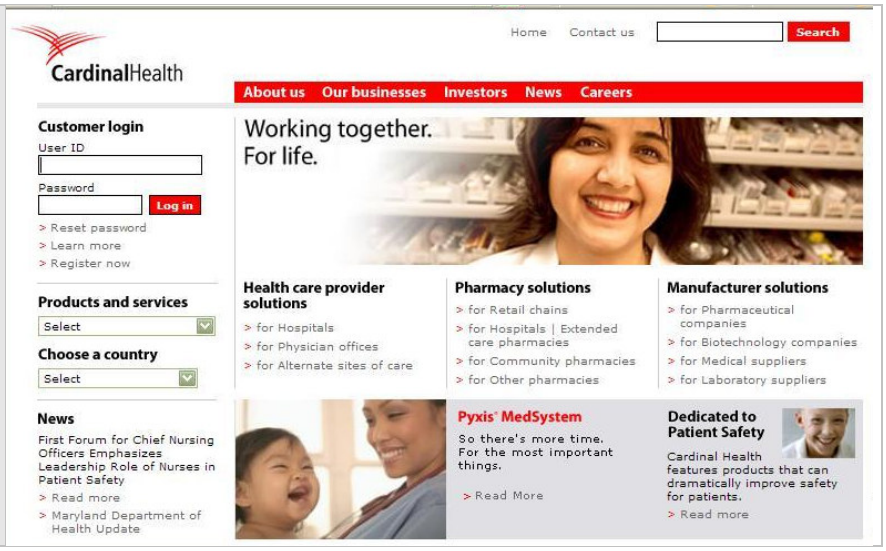
out a little bit.	

Source: www.telenor.com

The same type of large corporate information site as above, but here it is easier to locate the search function:

Better.

Search stands out because it is surrounded by white space and because of the color of the search button.



Source: www.cardinal.com

Readability: Will They Want to Scan It? Can They?

In search, readability issues are especially important for results pages. Ask to see typical results pages with real data in order to judge readability.

When you glance at a page, ask yourself, do I want to read this? If your answer is no, there may be too much unbroken text on the page. Shorter line lengths, short paragraphs, subtitles and call outs can make the same text appear more inviting.

A wall of text will turn people away from your site. Instead, invite them in with short texts and links.

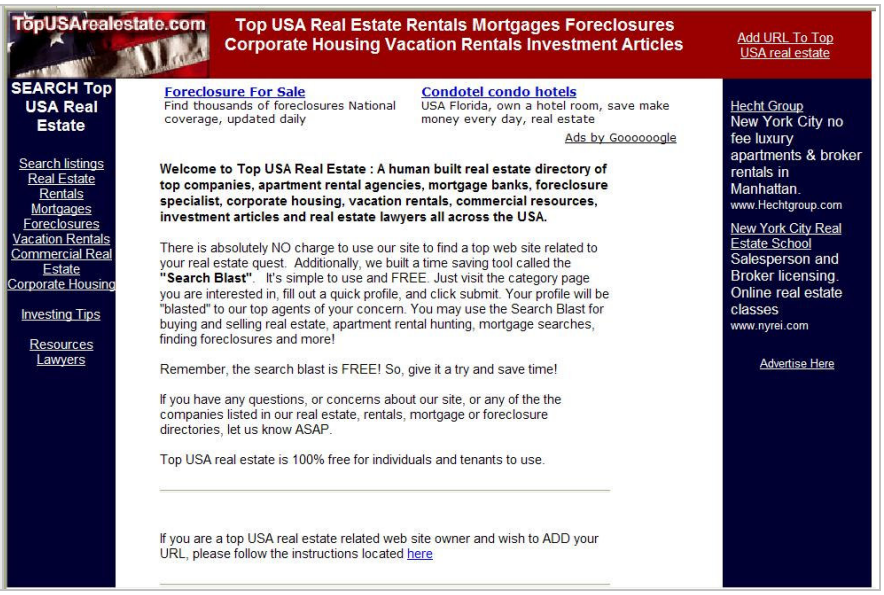
Which of the following two pages would you be most likely to skim?

Not Good.

Long line length and a four line, bold ingress.

No headline, no subtitles, no illustrations, no callouts.

It seems as if this site will be a lot of work to understand.



Source: www.topusarealestate.com

Titles, links, bullet points and a shorter lines and paragraphs make this text appear more readable.

Source: www.boston.com/realestate/guides/selling/

Size Matters

Check that on buttons and leading texts text is either fairly large or resizable by the user. Varying screen resolution and varying visual acuity affect almost everybody – sooner or later. Make sure that your pages are readable by people other than 28-year-old designers in perfect lighting with the best monitor technology money can buy.

On this Norwegian site the font size seems extra small.

Source: www.opplysningen.no

When I enlarge the text, the really essential parts – the text on buttons and some links – remains small and hard to read.

Source: www.opplysningen.no

Good Contrast Between Text and Background

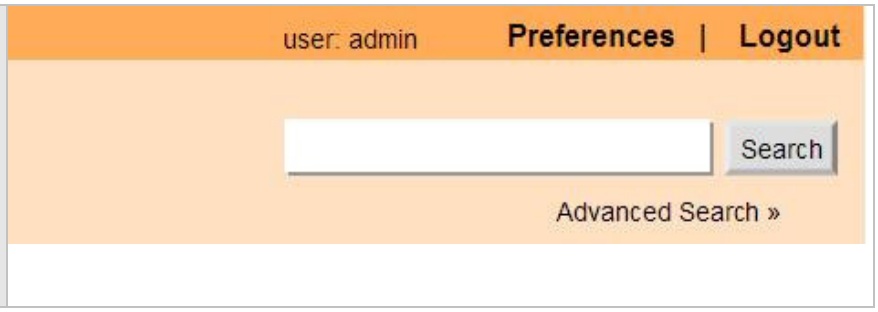
Readability of button texts and leading texts is especially important in query input forms or other input areas. Here, check to see that there is good contrast between text and background. One needs to be dark and the other light. (Which is which doesn't matter.)

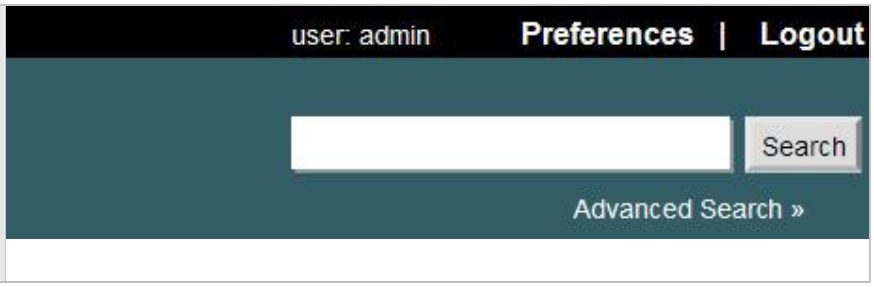
Avoid background colors that are medium – neither dark, nor light, because it is hard to find a text color that gives good contrast.

Which of the following three samples look easy to read?

Bad.

Here: Royal blue text on medium blue background – about as bad as it gets.

Good Use black or very dark text on light background colors. If you want to use colored text, choose a white background.	

Good. For good readability, use light text when you choose a dark background.	

Bad Contrast Between Text and Background

If you're using colored text on a colored background, avoid using contrasting bright, saturated colors. These combinations tend to make people see spots or afterimages.

Organization: Easy to see Parts, Groups and Order?

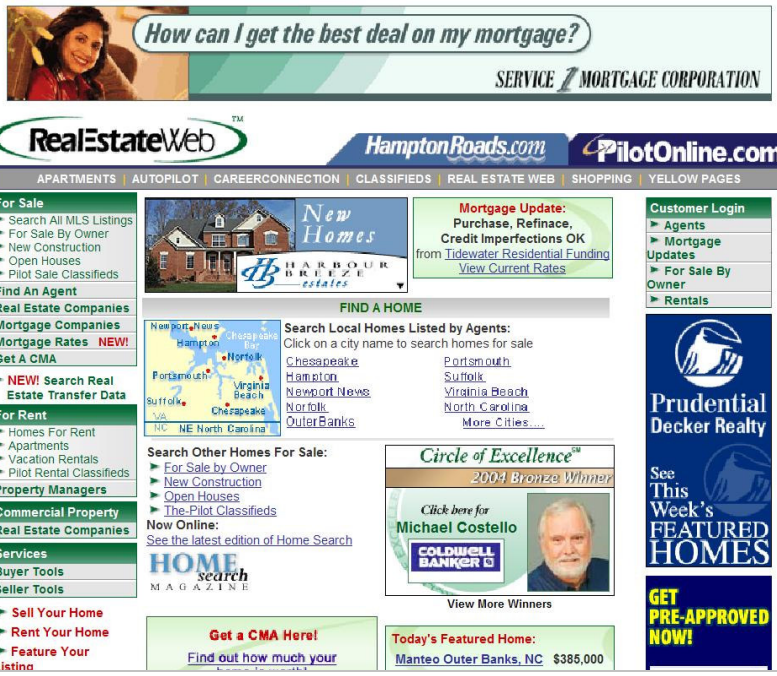
Is the picture divided into easily perceived parts or groups?

When we organize a lot of information into a small number of sensible chunks, the picture looks easier to understand. In practice, users prefer well-organized pictures, and understand them more quickly, too.

This example looks overloaded:

How many parts do you see here?

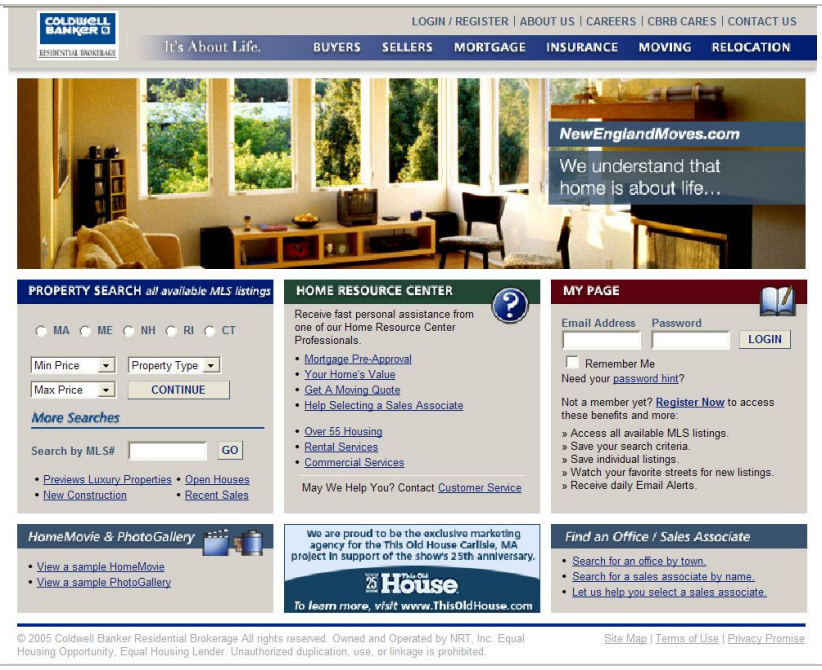
A large number of different blocks, irregularly presented, make it hard to count – and impossible to perceive at a glance.



Source: http://homes.hamptonroads.com

At this site you quickly notice the three main sections in the middle of the page, and perhaps the menu area at the top.

These areas represent all the important functionality on the site.



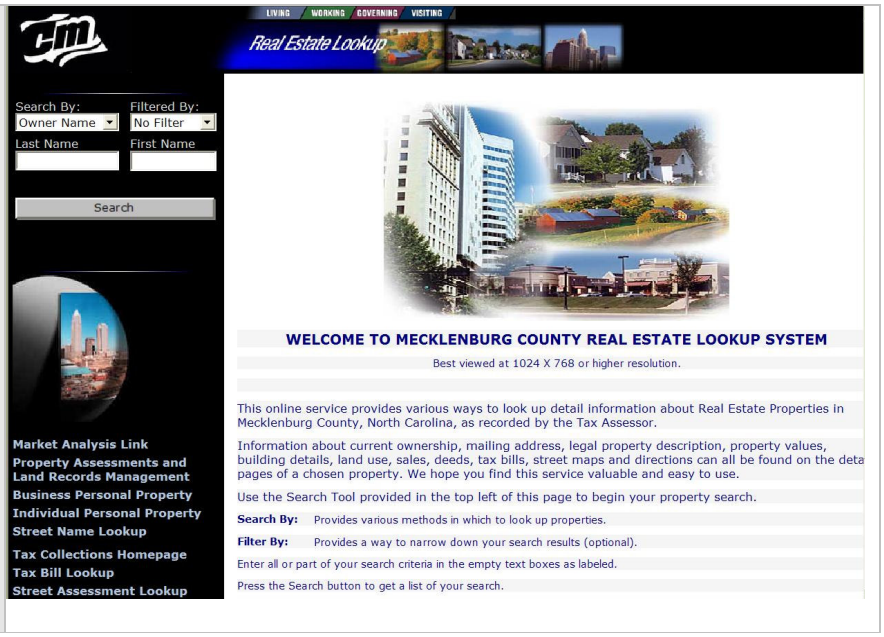
Source: www.newenglandmoves.com

Ideally, groups are arranged in the order that the user needs to look at them or work with them – from top left to lower right.

At the following site, Search and Filter fields come first, and directions later – in an entirely separate part of the picture:

Less than ideal: Search and Filter fields here…

Are explained to the right down here…



Source: http://meckcama.co.mecklenburg.nc.us/relookup/

Groups do not have to be fenced in with lines and boxes – use empty space as a separator whenever possible. The less you put on the page, the easier it looks. Compare these two result lists:

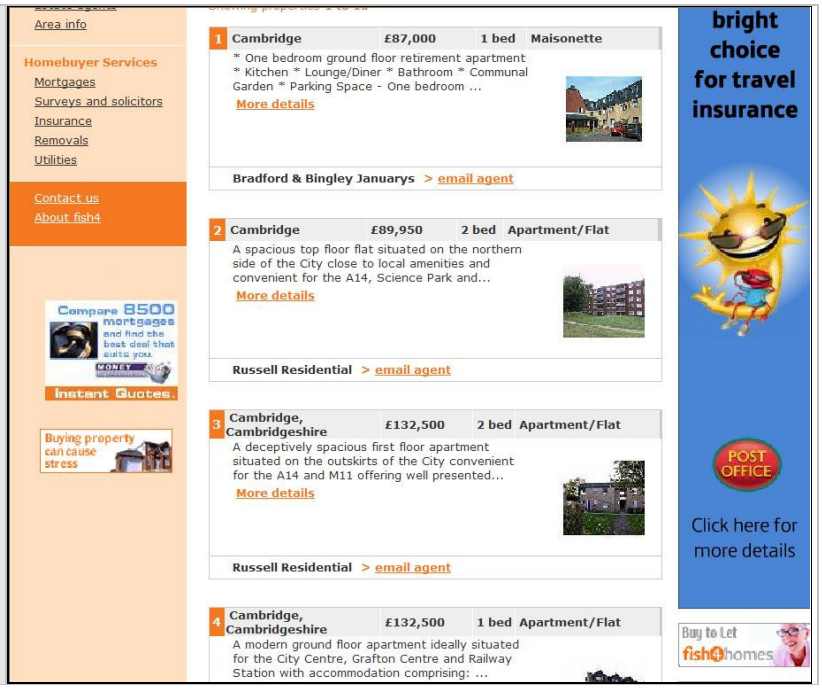
In this example results are separated with different background color, and text is placed flush to the edges of the different areas.

The overall impression is messy and restless.

Source: www.utahrealestate.com

In this result list there is white space between each result, making the whole list seem more tidy.

Note the problem that arises in results 3 and 4, where the location is too long for the space assigned to it.



Source: www.fish4.co.uk/homes

Clickability: What's Clickable, and What's Not?

It should be immediately clear to your users what is clickable.

Usability tests of many different websites have repeatedly demonstrated the following points:

- Many users don't realize that a logo in the upper left corner is usually a clickable link to the home page.
- Users do not think it is fun to wave the mouse around to see what is clickable.
- Clickable text links are easier for users to notice than clickable pictures or graphics without text.
- How "clickable" a link looks depends on what's around it. (Contrast again!)

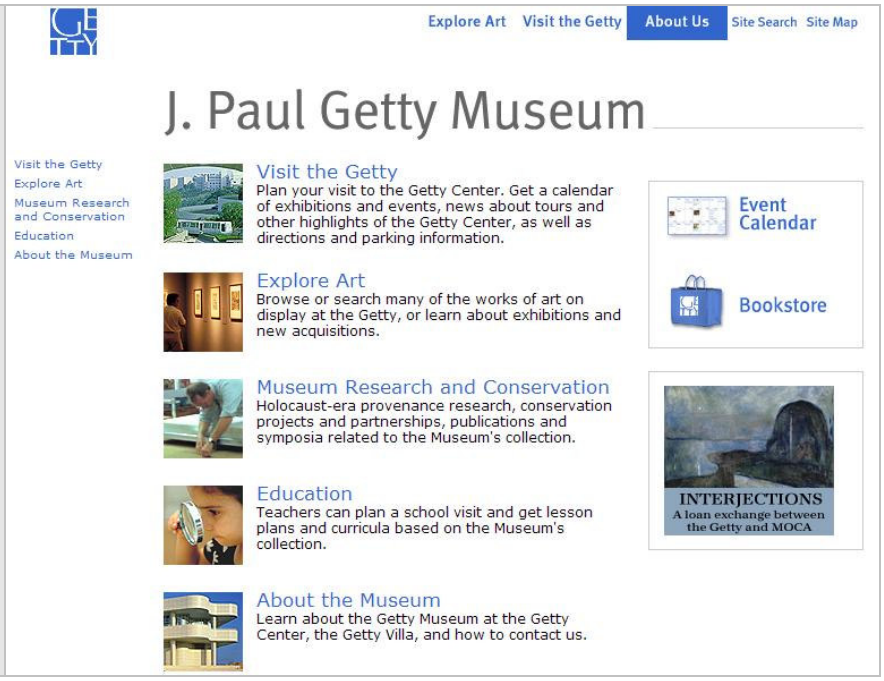
In general, underlined text is assumed to be clickable. So are buttons - rectangular, oval or round shapes with 3D effect or very clear edges.

Can you quickly see what is clickable in the next example?

What's clickable?

The Getty Museum homepage is miserly with its clues to clickability.

Blue text is clickable – but not very compelling.



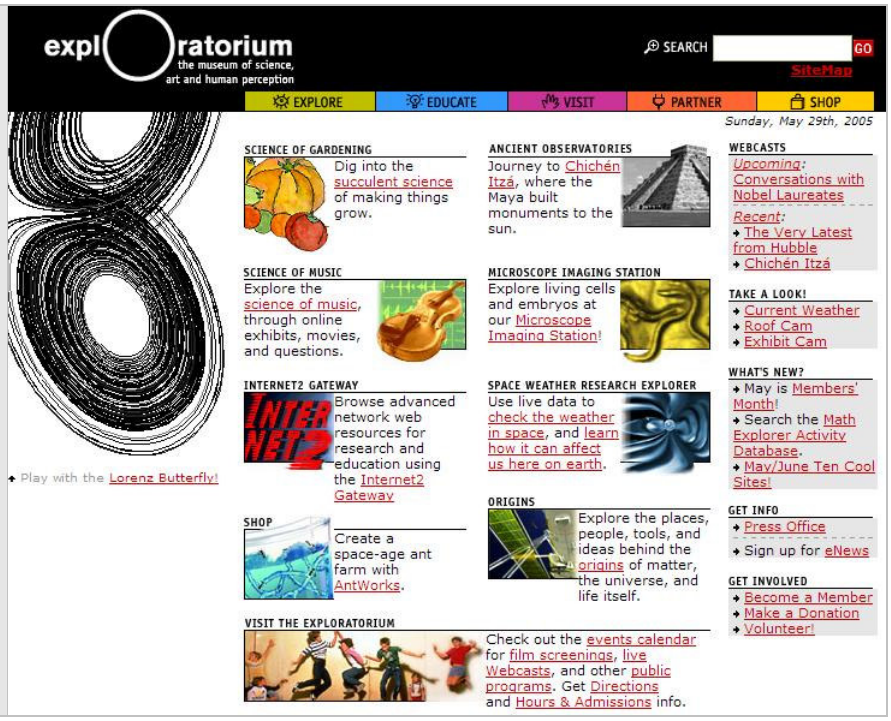
Source: www.getty.edu

The titles in the Getty example are difficult to perceive as clickable; at some level many of assume that they are blue because they are titles, not because they can be clicked.

In the following example, the links are more obviously clickable:

Underlined text links are usually easier to find.

They shout "click me!"



Source: www.exploratorium.edu

Summary of Part 2

When giving feedback on screen designs, don't consider your own personal preferences. Instead, evaluate how well the picture communicates its purpose and use to the proposed user.

Is there good reason to believe that the user can immediately see query input? Identify results and result navigation for what they are?

Use CROCodile:

- Contrast: What stands out?
- Readability: Will the users want to read it? Can they?
- Organization: Parts, groups & order
- Clickability: What is clickable, what is not?

Part 3: Search Interaction Guidelines

In this part:

About Guidelines

Use these as a starting point for your design, not a checklist when you're finished. Like all general advice they will work for most sites and most users most of the time, but they are not universally valid.

Start here, prototype and then test. And refine, and test. Isn't it nice to know that there is a way guaranteed to ensure success?

Minimize Waiting

Slow system response always irritates users.

The following threshold values were established by researchers in the mid- 1900's and are frequently quoted within the field of human computer interaction:

1/10 second	A response within 1/10 of a second is perceived by the user as instantaneous.
1 second	From 1/10 second up to 1 second, a lag is noticeable but not problematic. After 1 second, users will begin to be irritated. The degree of irritation will vary with the individual's temperament - and grow as the lag lengthens.

10 seconds	Loss of attention. The user will stop waiting and start thinking about something else.

If you provide meaningful visual feedback such as a progress bar, it tends to raise the thresholds; that is, users wait a bit longer before getting irritated or thinking about something else.

Make Search Easy to Find

When search is a supporting function on your site rather than the main reason people visit the site, you need to ensure that users can locate the search function.

- Use an input field and a Search button.
- Put search near the top of the page, usually at the top right or at the top of a left-hand menu area.
- Make sure search has good visual contrast to its surroundings.
- Keep search in the same place throughout the site.

If search is the main reason for your site, you should normally make search a very prominent element of your home page.

Google: the epitome of making search prominent

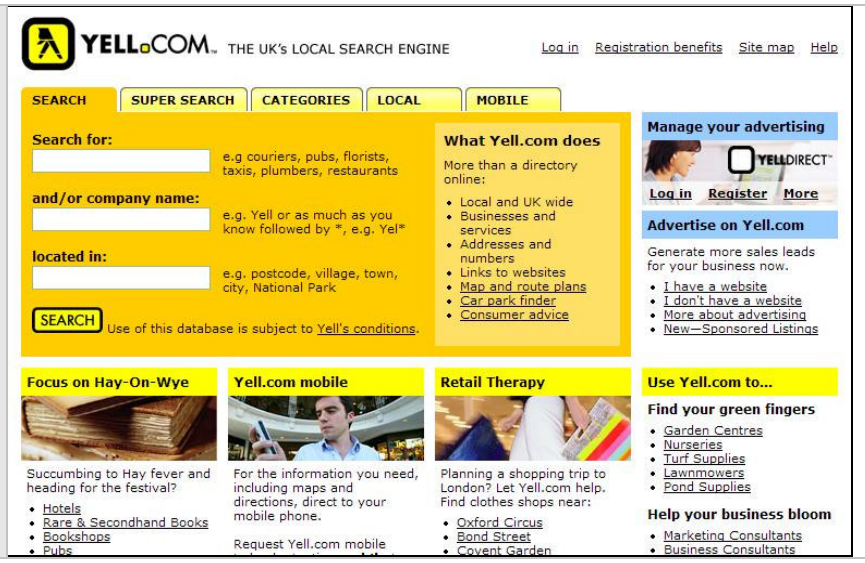
Source: www.google.com

Compare these two business search portals:

Hoover's Search is well-placed, but still fairly difficult to spot in a forest of links and icons.

Source: www.hoovers.com

Yell.com manages to make it clear that search is the main thing.



Source: www.yell.com

Provide Different Ways to Search

Keep in mind that your site supports the user's search activity in many different ways: A user may search for something by scanning with his eyes, clicking a promising text link or graphical link, by filling in an input field and clicking search, or by filling in an input form and clicking search.

If you provide more than one way to search the same data, many users will move seamlessly from one form to the other on the way to their goal.

Provide access to search with:

- Input field and search button. Consider setting the focus so that the user's cursor is automatically placed in the search box when the page is loaded.
- Search by browsing and clicking text links
- Text links to search and advanced search

Be Careful With Bounded Search

Be very cautious about providing search of different data sets (domains) on the same site. Users are frequently confused about which data set or which search they are using.

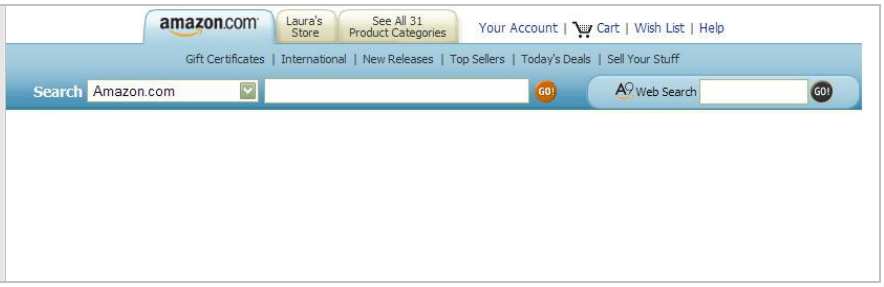
Good.

Sears sets "all" as default; a good way to go if you provide search in different domains.

Source: www.sears.com

Not good.

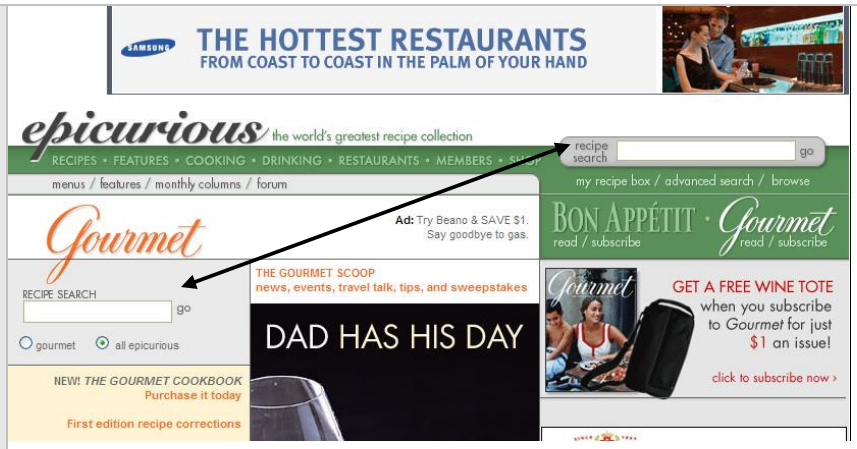
In our opinion, it is a mistake to provide a web search competing with the Amazon site search.



Source: www.amazon.com

Not good.

Do these two searches give the same result?
If this is recipe search, how do I search for restaurants?



Source: www.epicurious.com

Make the Input Field Long Enough

Make the input field long enough to encourage users to type at least two or three words, since longer queries are more likely to produce the results that the user wants.

Good.

Yes. This search box allows for an average three word query.

Source: www.firstgov.gov

Not good.

The same query in this tiny search box is more likely to be misspelled. Or entered as fewer words.

Source: www.timesonline.co.uk

Support Search by Browsing

Search by browsing helps the user find what he is looking for by presenting textual aids relevant to that particular search. This has been proven popular with users in usability tests. They say things like "This is lots easier." "It lets me know what is there." Many users switch back and forth between entering a search text, and search by browsing.

To support search by browsing:

- Make sure links look clickable to your users. Check this with a usability test, don't take the designer's word for it.
- Get the text right. Text on links needs to be concrete and descriptive – and most of all, to distinguish each link well from the ones right beside it.
- Make groups of links, but don't make any single group too big. 5 – 9 items is all right. Keep to a fewer groups and smaller groups (3-7 links) to make the page look easier. Put a title on each group, and separate groups visually.

The many links on this portal are not completely overwhelming because they are grouped and titled.

Most users scan the titled first, then just one group of links.

www.firstgov.gov

Presenting Faceted Browsing

Faceted browsing lets your users refine a set of results by simply clicking links - without filling out the advanced search forms that so often return 0 results.

In order to provide faceted browsing, your site should search a homogenous collection of high quality, structured data.

- A **facet** is equivalent to a database field name, for example "price" "brand" "size" or "season."

A successful facet has a limited number or range of possible **values**. For example "Bedrooms" with values "1,2,3,4,5 or more" or "Square feet" with 5 **bins** might be useful facets in a real estate search, but not "Street Address".

Facet	Shoe type	Bedrooms	Price	Square Feet
Typical Links	Men's Women's Children's	0-1 bdr 2 bdr 3 bdr 4 bedr 5 bedr 6 or more	Under $20 $20 - $50 $50 - $100 over $100	Under 400 400 – 1000 1000 – 2000 2000 – 4000 Over 4000
Link type	Values	Values	Bins	Bins

Compare these presentations of the same facet:

Size of home	**Size of home**
0 – 399 m²	Under 400 m²
400 – 999 m²	400 – 1000 m²
1000 – 1999 m²	1000 – 2000 m²
2000 – 3999 m²	2000 – 4000 m²
≥ 4000	Over 4000 m²

While the first is most mathematically correct, the second is easier to read. If you use the second list, a property of 400 m² would occur in *both* result sets. This is unlikely to be a problem for the user.

Epicurious has a successful implementation of faceted browsing with many facets, some of which have many values:

Facet "breadcrumbs"

Available facets

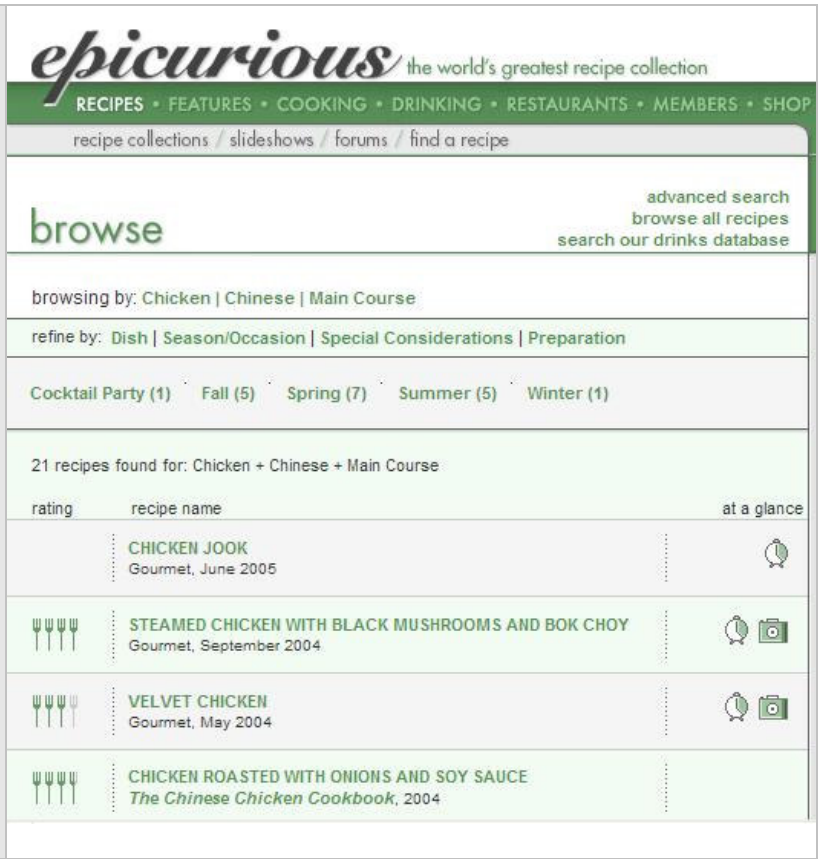
Values for the facet Season/Occasion

Results description:

Two problems:

You can't see that Season/Occasion is the facet for which you are displaying values

How do you change from Chinese to African?



Source: www.epicurious.com

We would suggest:

- Adding check boxes to the breadcrumbs would allow the user to remove any selected facet value.
- The visual presentation of available facets needs to show the relationship between the chosen facet and the values displayed.

Note that there is no reason to require users to input a text string in order to begin faceted browsing. You can simply list the values of one or more facets as a starting point.

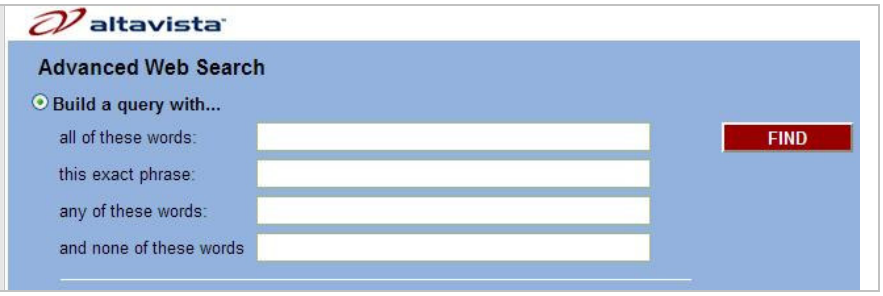
Match Advanced Search Input to Users' Needs and Ability

If you need to have an Advanced Search function, put a text link to Advanced Search near the Search Button.

Even though it's called Advanced Search, unless your target user group are all search experts (see page 11) do **not** expose the Boolean operators AND and OR in your advanced search interface. Also avoid the term "string" as in "search string" or "exact string."

Instead, use Any, All, and Exact:

Most users who make an attempt can fill out one or more of these fields correctly.



Source: www.altavista.com

What you choose to offer as Advanced Search should depend on your content, your users and their tasks. And of course, the capabilities of your search engine.

Consider the range of these two different Advanced Search interfaces, each reasonably appropriate to its audience and content:

A very simple Advanced search:

Shoebuy shows that they understand their users.

Their users won't be frustrated by being unable to search in Women and Kids at the same time.

Source: www.shoebuy.com

The librarians' Index is for double experts: they know how to search, and they understand cataloging.

Therefore, it's OK for this search to use Boolean operators and cataloging terminology.

Source: www.lii.org

Typical Errors in Advanced Search

The real estate search below demonstrates several of the most common design pitfalls for fielded Advanced Search:

Many users feel they must fill out all fields, and will ignore the OR here. Better to put a link to "single zip code" since this is the more

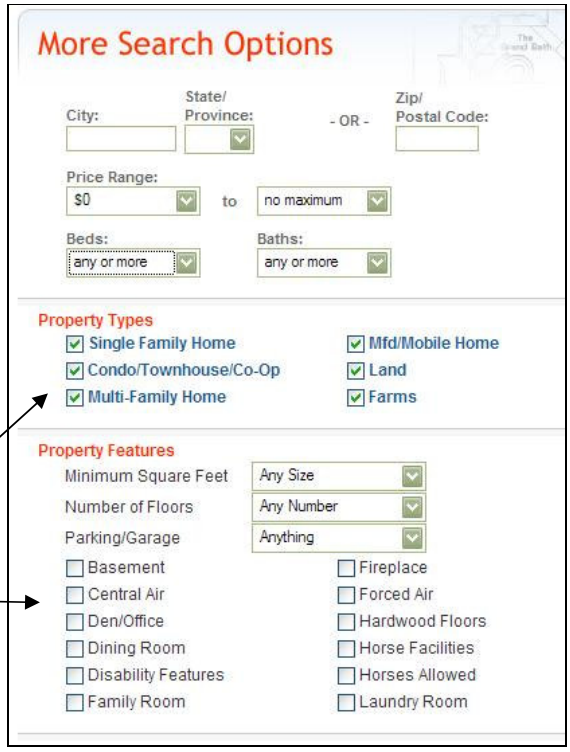
A common user error is to enter maximum price in the first field, since that is the price they think about most. To solve this problem, simply have the system use the largest number as max and the smallest as minimum.

No wonder users get mixed up. Here adding a check mark makes the result list longer, because there is a hidden "OR."

But here, each check mark makes the result list shorter, because there is often a hidden "AND." And many users will simply check anything they theoretically would like, and end up with no results.

Add "Must have" as a title – or even to each line if you have an implicit AND.

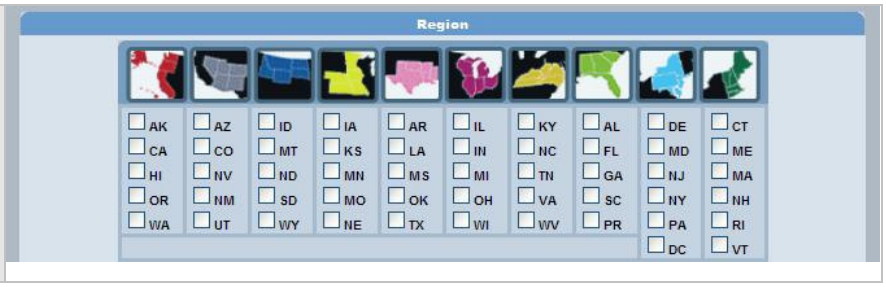
Alternatively, title this section "Nice



Stick to Established Patterns

Consider what problem you are trying to solve for the user. Below, the designer has attempted to free the user from having to remember or type in state abbreviations. But the attempt fails, because the graphical presentation of the regions is completely non-standard, and thus more puzzling than helpful.

The graphical presentation of regions doesn't work because the familiar silhouette is broken.



Source: www.collegenet.com

Optimize Result Lists for Scanning or Shopping

Consider your users' tasks and the nature of your content.

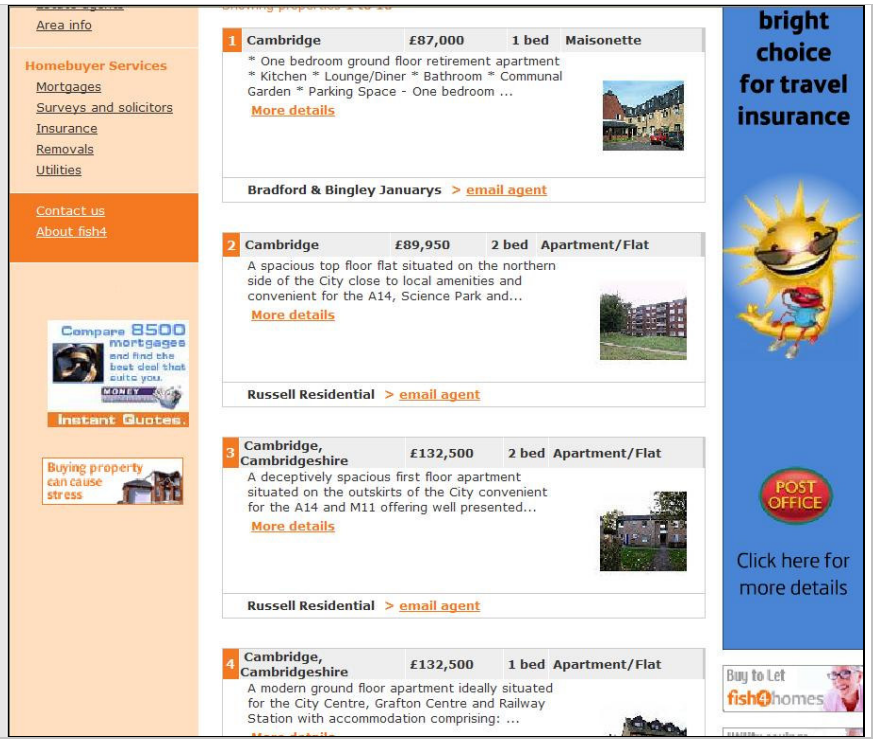
At a site with shopping search, items in result lists should be easy to compare, and illustrations are highly desirable. Use a tabular format where each result is the same height, with similar information consistently positioned.

This example from Fish4 works well for comparisons:

Example of good result presentation for shopping search:

Tabular arrangement with the same data in the same position in each result.

Pictures are greatly appreciated – in fact, users demand them – in user tests of shopping sites.



Source: www.fish4.co.uk/homes

At a pay to search / view site or a knowledge-worker enabling site, result lists should be easy to scan. The user will be looking for information that characterizes the document.

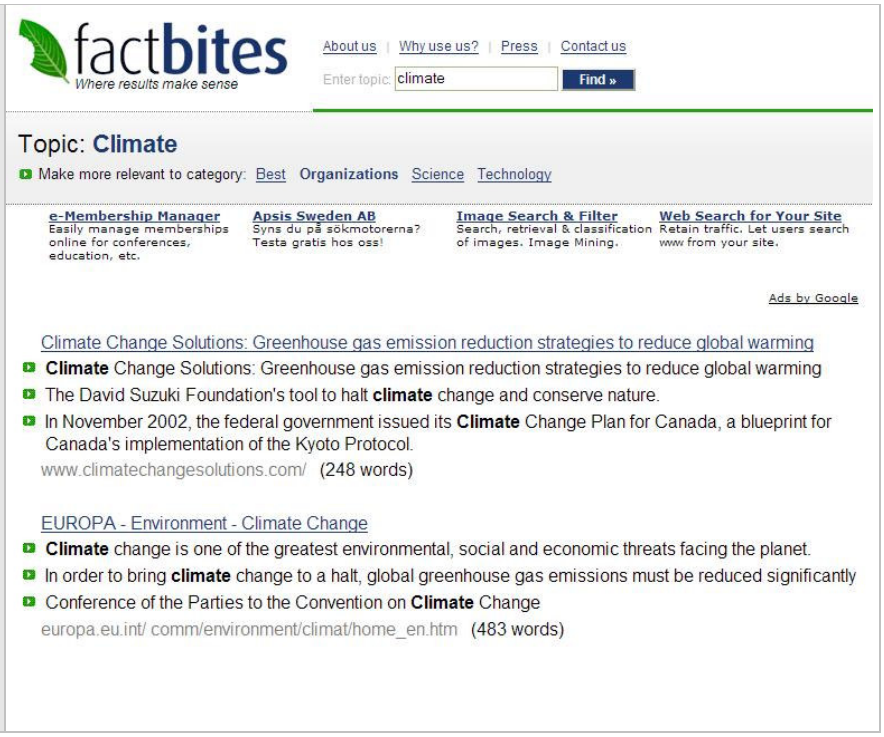
- Highlight document titles and, if necessary, source site – but not the whole URL.
- Highlight searched terms.
- Present sufficient content in the teaser to characterize the document.
- Show cues for the smart searcher, such as when the item was last updated.

This example from FactBites shows how presenting whole sentences and several hits from the same document makes it unnecessary for the user to guess whether this is the document he needs or not:

Note that this site does not aim to present large numbers of results, but rather highly relevant results to "information seeking" searches.

Good result presentation for scanning / reading.

Notice that titles and hits are highlighted. Hits are presented in a user-friendly context: Whole sentences.



Source: www.factbites.com

Preserve Result Credibility

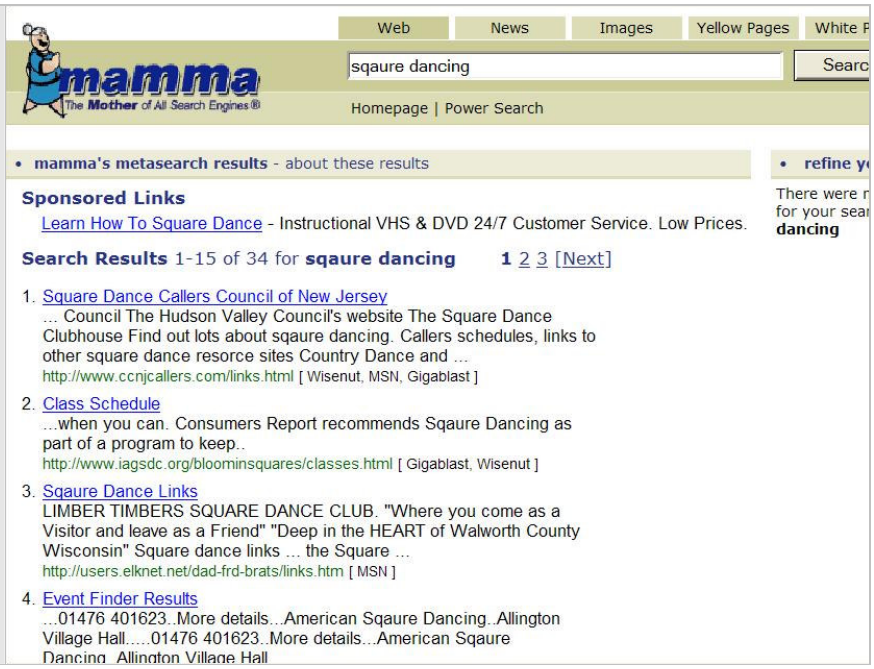
Users expect results in order of goodness, where goodness is judged as "relevant to my search input".

To maintain credibility, separate and clearly identify sponsored or featured results – even if you present them first.

Ensure that the starting point for "natural" results will be normally visible above the fold – that is, without the user needing to scroll down to find this point.

Good.

Distinguish between sponsored and "natural" results.



Source: www.mamma.com

Supply a Few Good Result Navigators

Navigators help the user maneuver and refine the result set of the search. For the most part the navigators that you want to use with search results need to be present in the individual documents in your searchable index. That means that you must decide which types of navigators to offer ***before*** you feed the content into the index.

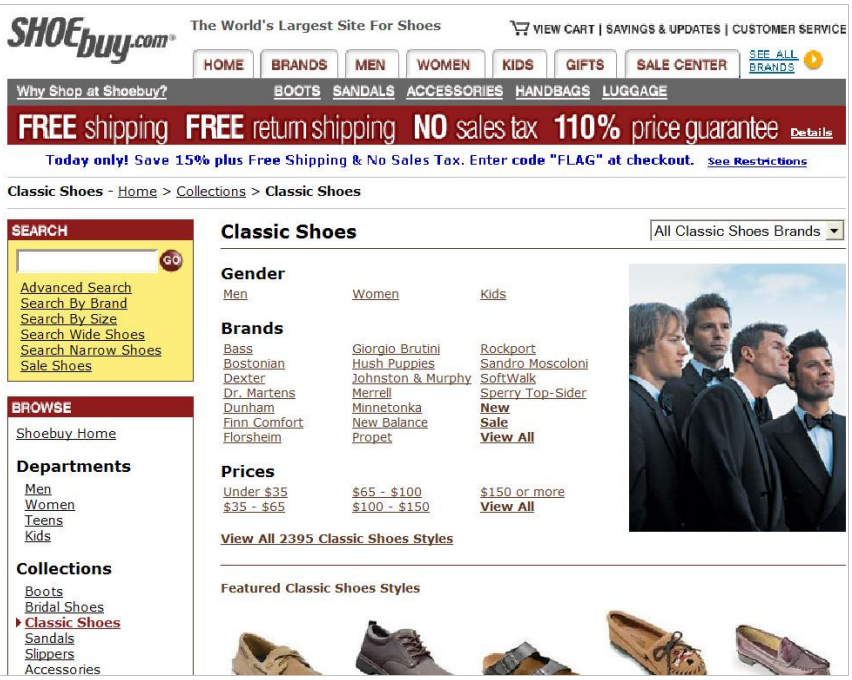
There are many different ways to allow your users to navigate once they are working within a result set. One thing we can guarantee: Showing too many navigation and refinement options "hides" your functionality from the users. So you'll need to consider carefully which types of navigators are best for your users and your content.

Shoebuy.com uses too many here, in our opinion:

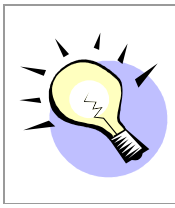
Too many.

When I browse, the proffered navigation completely overwhelms the products I was looking for.

The shoes barely made it above the fold!



Source: www.shoebuy.com



Tip:

A small number of usability tests seem to show that users take more advantage of result navigators when you place them to the left of the result list. This seems reasonable because many web sites concentrate link collections across the top and at the left

Which Type of Navigators?

Depending on your content and users, choose one or two of the following:

- Facets
- Suggested Keywords
- Taxonomy Tree
- Entities
- Meta data

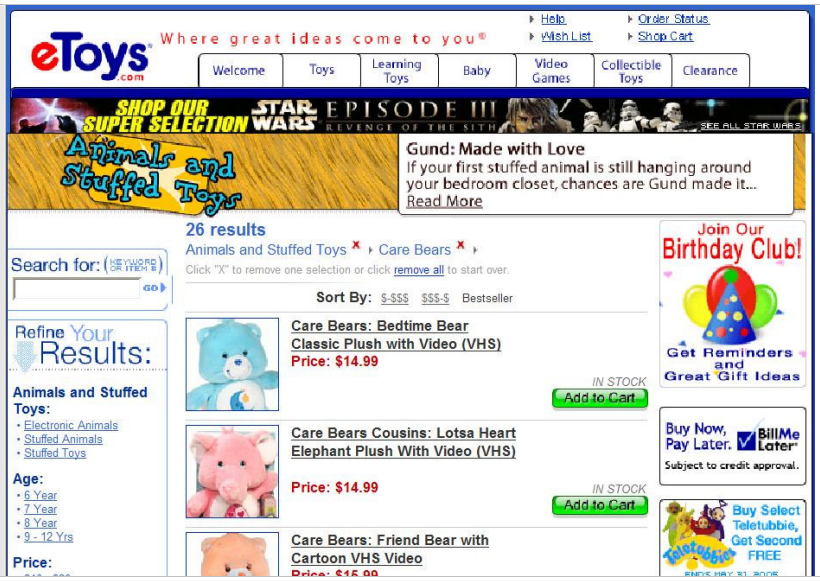
Facets for locating by attribute

Facets are typically present in product catalogs or structured databases. They are helpful when the user's task can be solved by selecting desired attributes for the goal of the search.

Here, eToys uses Facets to help shoppers find appropriate toys:

eToys does a good job of grouping prioritizing facets.

Navigators are confined to the left side, and results fill the center of the page.



Source: www.etoys.com

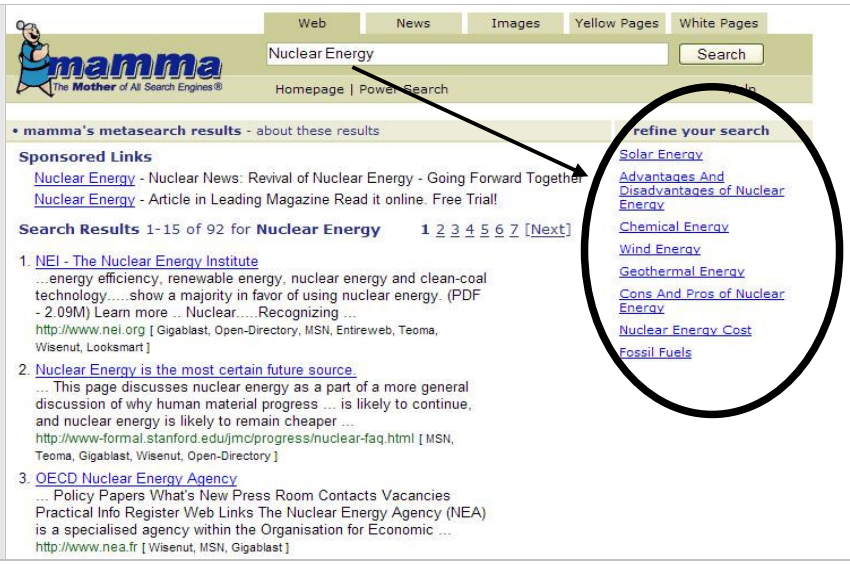
Suggested keywords for locating by ideas or concepts

Suggested Keywords help to refine results based on ideas or concepts. They are appropriate for general web search, where users often enter a one or two word query that yields too many results. Suggested keywords can also be helpful in a knowledge worker or knowledge discovery context, for example an Intranet with a lot of subject matter content, or a subject matter site.

Suggested keywords are one of the simplest navigators to understand and use, and are appropriate for most non-shopping sites.

The search engine www.mamma.com makes use of suggested keywords as navigators or refiners for result lists. Suggested keywords may be generated from the query logs (other queries that contained one or more of the user's keywords) or from dynamic analysis of the result list to find central topics.

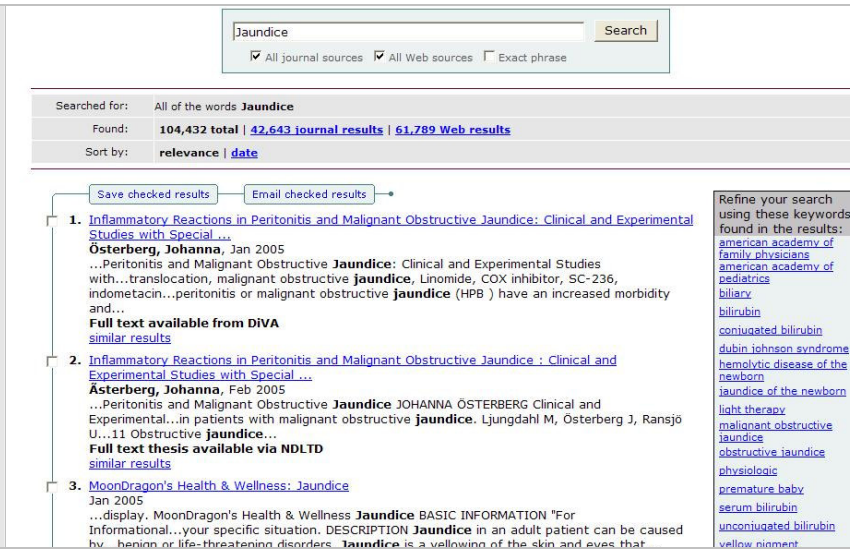
Here a search for the keywords Nuclear Energy results in suggested keywords shown on the right.



Source: www.mamma.com

Scirus.com uses FAST to pull important terms out of the result list and suggest possible directions for a search that began with a single-word query:

Here a search for the keyword Jaundice results in suggested keywords shown on the right.



Source: www.scirus.com

Scirus is also notable because of its excellent support for knowledge workers in using the results: They can be saved or e-mailed.

Taxonomy trees for well-understood hierarchical relationships

Taxonomy Trees are common navigators for search results in content that is known and owned by the search owner, but nonetheless extensive and unstructured: For example, in publishers' bases of digital textbooks.

Taxonomy Trees are almost always presented hierarchically.

The hierarchical tree component can be difficult for users who are not computer experts. We have observed that users who make an incorrect choice at the first level often fail to consider backing up; probably because their other first level choice moved or disappeared when the tree opened. Closing an open branch is the act of a "tree-savvy" user. However, the more familiar users are with the information in the hierarchy, the more likely they are to succeed in using the tree component.

A taxonomy tree is a good choice for an Intranet or any search for subject matter experts, where your users are quite likely to be familiar with the subject matter terminology. If the results do not actually have a hierarchical conceptual structure, presenting them in a taxonomy tree will cause more problems than it solves.

When you use Clusty to cluster by topics, you get a taxonomy tree.

The typical plus and minus controls are not necessarily intuitive for normal users; though many computer experts are convinced that everyone understands them.

Source: www.clusty.com

Entities expose dimensions in unstructured information in web pages and

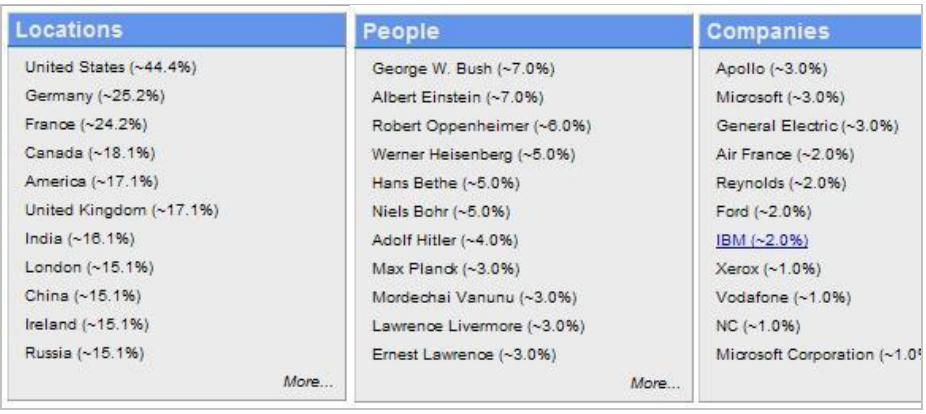
Entities are word or words in a text document that can be recognized, either by comparison with a continually updated list (All Universities) or with programmatic rules: If it is capitalized and followed by Inc. it is a Company.

Entities are usually identified and marked in typically free-structured documents from the web or from file servers when the documents are added to the index.

While relatively expensive to extract and index, entity navigators have their benefits for knowledge discovery: They can reveal previously unknown connections and dimensions in the result set.

A search for "Nuclear energy" in wikipedia with FAST produces these entities.

Some will be familiar and expected, but others may help the user to discover new dimensions of the subject.



Suggest Solutions Instead of Pointing Out Errors

What do you do when the user enters a "bad" query – one that is misspelled, or simply doesn't hit anything?

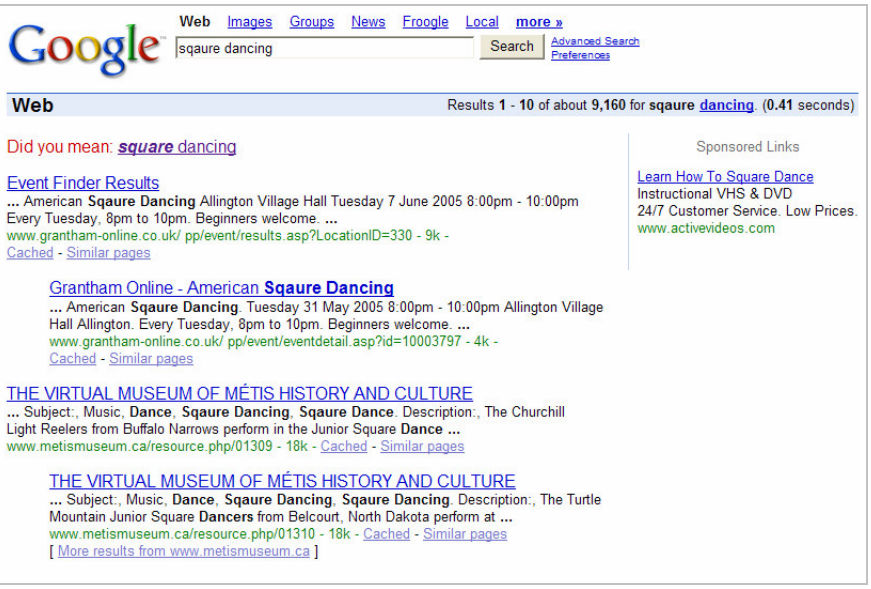
Base your actions on this paradigm of what users want:

1. First, they want what they think they asked for.
2. Next, they want results more than they want to be corrected.

If there are results for what they asked for, **give** them what they asked for, even if they misspelled. If you can catch the misspelling, also offer them a link to the results for the correct spelling.

Ideal:

Here I got what I asked for, incorrect spelling and all – plus a discreet indication that more results await me behind the link to the correct spelling.

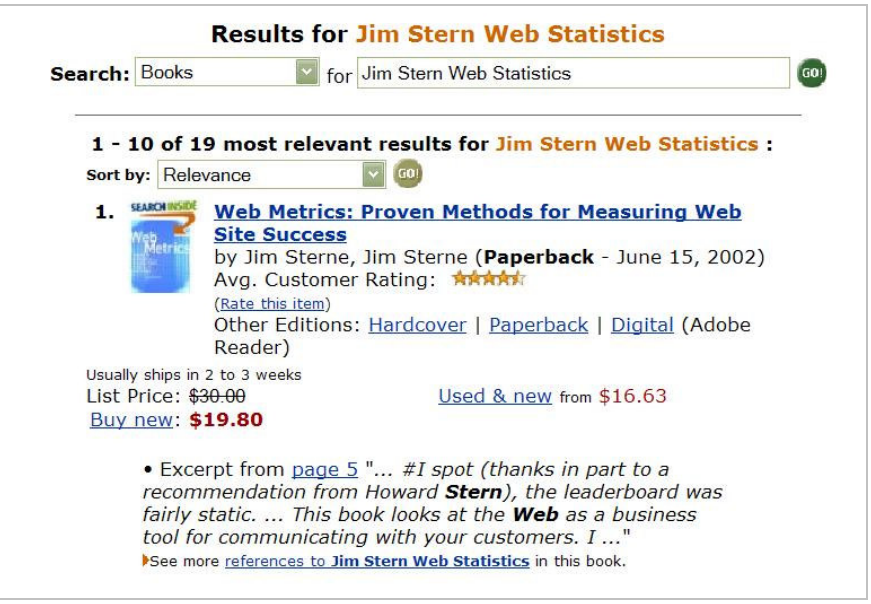


Source: www.google.com

If there are 0 results for what they asked for, but a spelling correction or synonym gives results, discreetly tell them what happened **while** giving them the results.

Ideal:

Here I spelled the author's name incorrectly, but I still got the result I wanted – and no scolding.

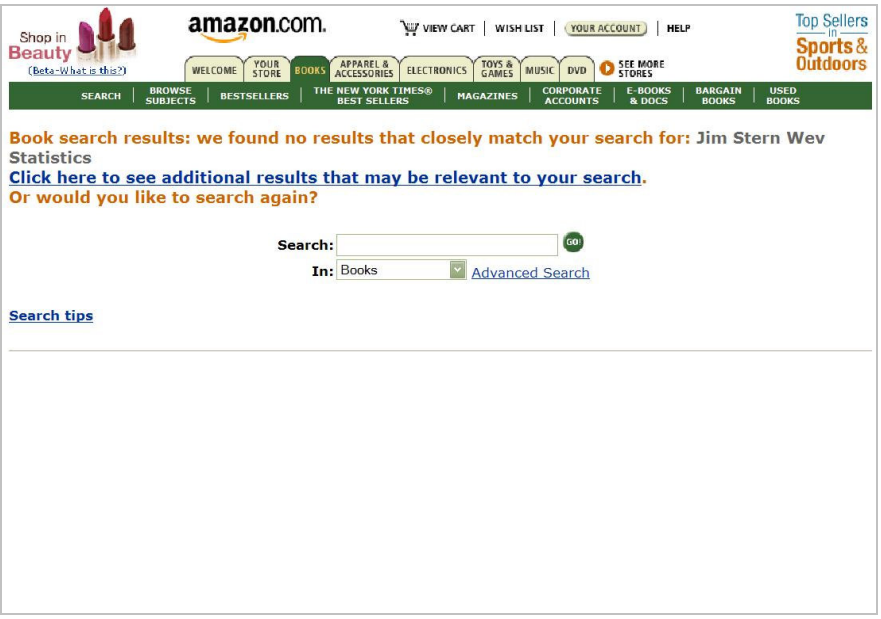


Source: www.amazon.com

The point about giving them some results is important. The following interaction creates a more negative user experience:

Less successful – I misspelled web as wev.

Here, the possibly relevant results are not provided directly – I have to go look for them.

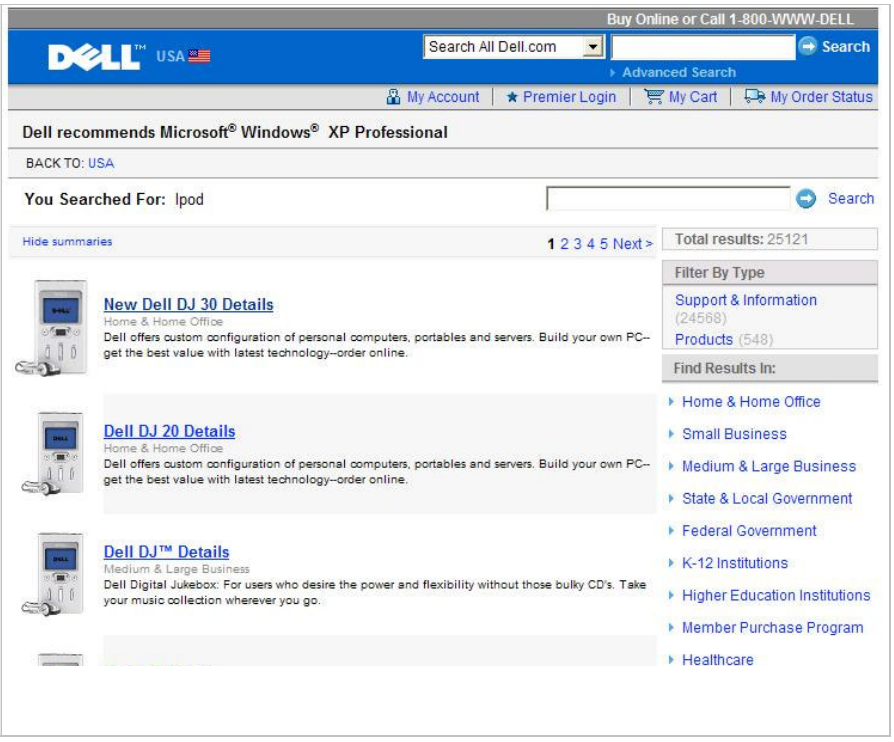


Source: www.amazon.com

If you changed the user's query completely for some business reason of your own, politely say what you did and give the results you want to: "We're sorry, we don't have Nike, but you might be interested in these Asics products."

Dell doesn't sell the Ipod, but they give the searcher relevant results anyway.

In our opinion Dell should say "Here are our products similar to what you asked for." It's probably better for credibility. But we will concede that it may not be the best thing for sales!



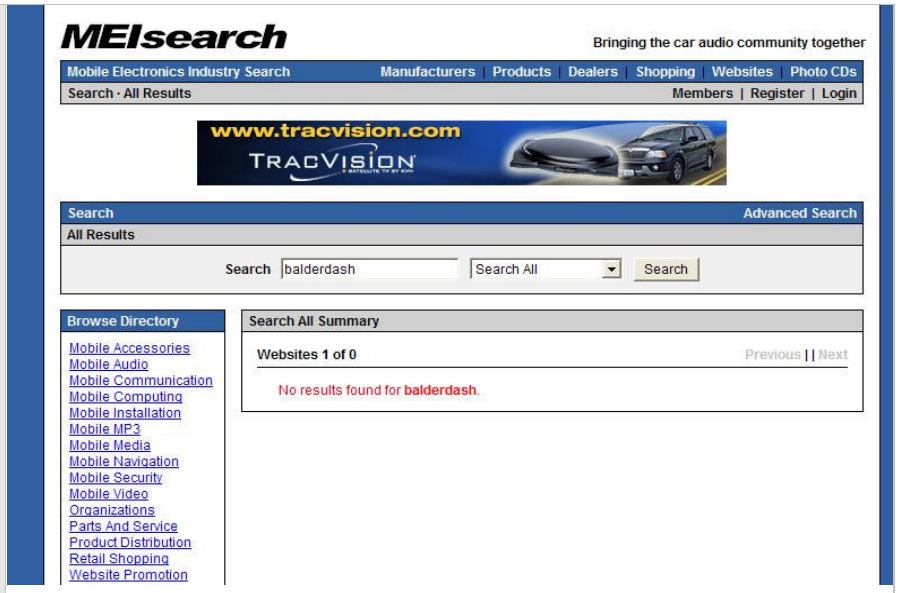
Source: www.dell.com

If there is no way to tell what they wanted, repeat the query to make it easy for them to re-evaluate or edit, say what happened **without blaming the *user*** and give them some links to browse with.

This is fine.

MEIsearch couldn't find "balderdash" but they did not throw away my query. They keep it where I can edit it.

Right beside "no results" are links to browse, so I am not absolutely stuck.



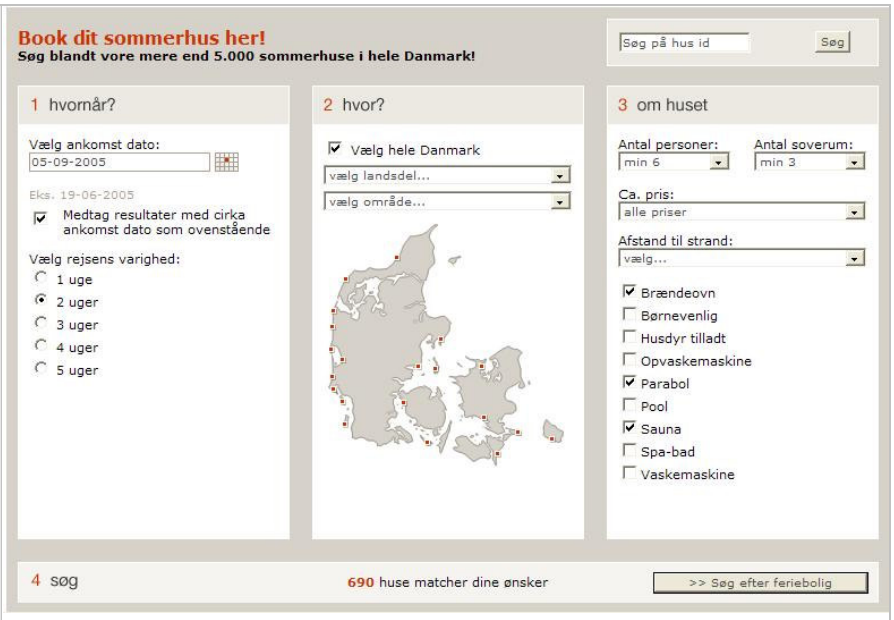
Source: www.MEIsearch.com

The most frequent source of the unfortunate "0 results" situation is advanced search. Manu users submit too many criteria, and some find it difficult to understand that they need to be less, not more, specific.

This Danish site shows one way of reducing the problem – though the counter may be a little too hard to notice while the user is entering criteria, the position of the counter right in front of the search button is very sensible.

This Danish site lets users search for a beach house.

As each criterion is added, the counter next to the search button tells how many results you'll get.



Source: www.feriepartner.dk

Summary of Part 3

Minimize waiting: Irritation begins at waits of 1 second or longer.

Make search easy to find: Use an input box and an action button. Put them on the same place on each page, with good contrast top their surroundings.

Provide different ways to search: Simple text input, Search by browsing or facets, and Advanced search all have their uses.

Be careful with bounded search: Set "all" as the default.

Make the input field long enough: Give your users space for at least three words

Support search by browsing: Make clickable links with distinct texts; group links in bunches of 3-7.

Match Advanced Search to your users: Avoid Boolean, provide fields for things your users care about – and no more.

Optimize Result Lists: Tabular result lists with pictures for comparisons and shopping; Textual result lists with full sentences and highlighted hit words for knowledge discovery.

Choose a Few Good Navigators: If you want users to notice navigators, don't overwhelm them with too many.

Part 4: Planning Your Design and Evaluation Strategy

In this part:

- User Centered Evaluation
- The Design and Evaluate Cycle
    - Test Early and Often
- Which Forms of Evaluation?
    - Internal Walkthroughs
    - Expert Reviews
    - Focus Groups
    - User Tests or Usability Tests
    - Analysis of Web Statistics or Logs
    - Pilot Users or Beta Tests
    - Online Surveys and Online Feedback
- Optimize Result Lists For Scanning or Shopping

User Centered Evaluation

The best way to ensure a good search user experience is to incorporate user-centered evaluation activities into your design and implementation process, planning for them from the beginning.

- If you have an existing service, start by usability testing the existing search to gather factual information about what problems need to be solved, and areas of potential improvement.

- If you are planning for an entirely new service, start with focus groups to verify who your users are, what *they* want to do at the site, and the business case for the service.

The Design and Evaluate Cycle

Here's a normal way to proceed, ensuring good usability through a process of controlled iteration:

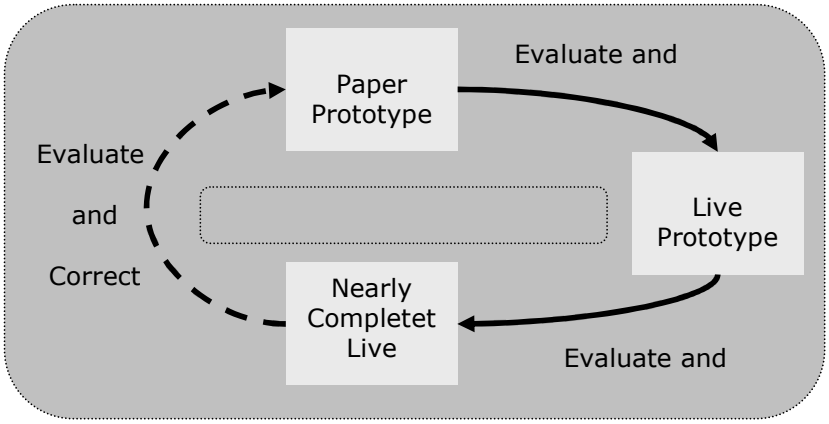
1. Do a first draft design on paper or with some drawing tool. Evaluate and correct the design before proceeding.

2. Do a second draft of the screen pictures in the development tool. Evaluate and correct the design before continuing.

3. Begin the actual implementation process. While still in the quality testing and de-bugging phase, do live usability

testing to identify remaining problems; make corrections in the final days or weeks of development.

4. As part of the design, consider how you will measure usability once the system is in production: Through logging, online surveys, feedback mechanisms and / or continuous usability testing. Once the system is in production, track usability and attempt to identify required changes for the next version.



Test Early and Often

It is axiomatic that the earlier in a development project you find a problem, the less it costs to fix that problem.

Evaluation is thus best used to gather feedback early, when the feedback can be taken into account, and not as a "give the project a pass or fail mark" type of activity once it is too late to make constructive changes.

Consider involving designers or developers and any hands-on stakeholders as first-hand observers of evaluation activities such as focus groups or user tests, rather than outsourcing the work entirely. Observers more easily reach consensus about which problems remain, and also about the relative importance of various problems, and focus their efforts accordingly.

Which Forms of Evaluation?

There are different ways to collect feedback on your site's functionality and design. Consider budget and schedule – and how critical usability is at your site – when planning evaluation activities.

Internal Walkthroughs

Internal usability reviews are inexpensive and fast.

A simple technique is to assign one team member as the advocate.

1. Choose one of your personas "Linda" and one of the tasks that is appropriate for this persona.

2. The designer explains what Linda would do, step by step, to carry out the task.

3. For each step Linda's advocate looks at the interface from her point of view and asks "why would Linda understand that she should do this now?"

You can usually find and remove some problems this way. You will miss some problems, and you may also find false positives – things that the project agrees are problems that real users don't care about at all.

It's often sensible to use an internal walkthrough before a usability test. Internal walkthroughs work best when you are familiar with your users and their tasks.

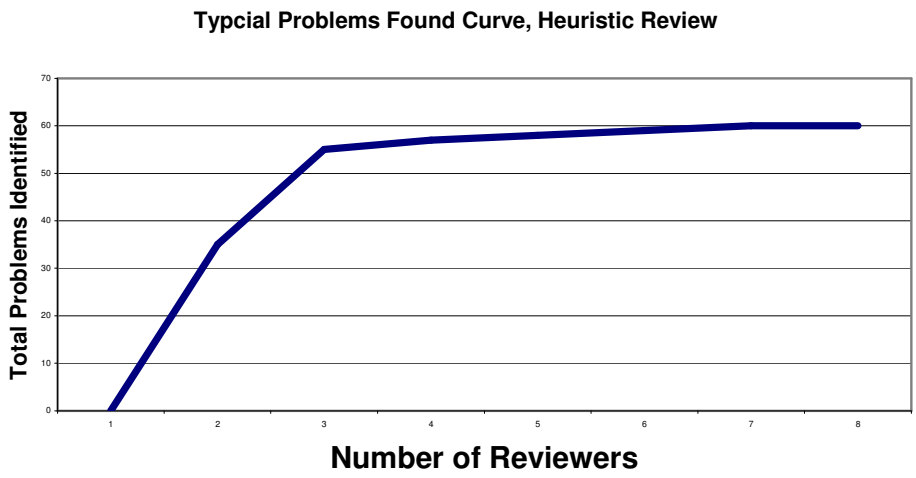
Expert Reviews

People who perform many usability tests tend to develop their ability to predict what is likely to cause problems for users. We call these people "Usability experts."

In an Expert Review, you simply have such an expert look through your system and list potential problems.

Closely related to Expert Reviews are Heuristic Reviews. A heuristic is a guideline. For this type of review, write a short list of guidelines. The Search Interaction Guidelines in this white paper would be suitable for reviewing a search function, for example. Collect a group of reviewers and go over the guidelines to make certain that they are understood. Then ask each reviewer to look at your system independently and make a list of potential problems.

Because research has shown that the curve for new problems found tends to rise steeply and then flatten when you use enough reviewers, there is some reason to infer that you can find most usability problems by using an appropriate number of reviewers.



One disadvantage of any form of expert review is that you can only find the problems that can be found with this method. No matter how many experts you have, usability testing with a variety of users will turn up new and different problems – although maybe not so many, if you've already done an expert review and taken the results into account. A second drawback is that experts tend to identify a few problems that never bother the users at all: Users don't read guidelines, after all!

Focus groups

Typical users or customers are invited to view your site on a large screen in an informal group setting. A trained facilitator asks open-ended questions and guides the discussion so that each participant is heard.

Focus groups are good for testing out site names, content ideas and content presentation, general layout and the emotional values conveyed by visual design. Focus groups can also elicit user intentions: What would I go to this site for? You can also garner users' opinions about competing sites and information about how competing sites are used. If we conceal information about who is asking, a focus group can produce obtain frank opinions about how our site measures up to the competition.

Because they take place in a group setting, focus group results may be invalid if one or two opinionated people have been permitted to dominate a group, or if the facilitator asks leading questions or otherwise indicates which answers are most welcome. Therefore it is wise to use an experienced and objective facilitator, and to observe facilitator behavior carefully.

User Tests or Usability Tests

User tests are generally conducted one-on-one with a test user and a facilitator. Any number of observers may also be present. In more formal usability testing, observers are concealed behind one-way glass or observe via closed-circuit TV.

Prior to the test someone must make appointments with a representative group of test users, write a test script, set up a test locale and agree on who will observe each test.

Steps in a typical user test

Opening interview	A user test often includes an opening interview where we seek to clarify how the user fits – or doesn't fit – into our target group: what skills, background and goals this user has. Sometimes we try to establish the user's initial feelings about our brand, or about our site and the competition. We can also use the initial interview period to lead the user to create their own list of tasks to be performed on the site.
Task observation	The essential part of a user test is the task observation section. Here we give the user tasks to carry out and then observe, *without helping*, as the user tries to use the site. We record or take notes to capture what goes wrong.
Closing interview	At the end of the task section we may have a closing interview to ask the user to revisit problems and explain what he or she was thinking. We may also ask for a closing evaluation of our site or brand to compare with the opening evaluation.

After each user leaves observers should gather and list the problems they noted, saving discussions of how to solve the problems for later.

After the final user has left, observers and facilitator compile, categorize and prioritize problems, and to discuss possible solutions. This work may result in a test report and an action list.

By including designers, developers and stakeholders as observers, you can use usability testing to ensure a shared understanding of what problems it is important to solve, and why.

Usability tests can be performed on prototypes or early versions of site; it can also be very helpful to make comparative tests of a competitor's site and one's own site.

It is important to schedule usability tests early enough that there are time and resources available to make the necessary changes. A test scheduled when you are not motivated to make changes is called a ***user acceptance test***. This is usually a good test of the development organization's sales ability, but not a test of usability.

Analysis of Web Statistics or Logs

This form of evaluation is especially useful for a site that is already up and running. Try to put in place a logging and reporting system that reveals whether the site is achieving your usability goals.

At a minimum, check regularly to see:

- What visitors are typing into your search field, and what results they get.

- Which queries yield no results.

Logging and analysis tools can show you click streams for a single user and aggregate click streams. They can show you how your site is used.

Logs and statistics are valuable for uncovering potential problem areas, but they are not sufficient tools to ensure usability.

What you cannot see is whether a given stream represents a user who achieved his goal, because logging does not capture the **user's intention** – just what he does. Use logs and statistics together with other techniques for maximum benefit.

Pilot Users or Beta Tests

In a pilot or beta test situation, the system is often made available to certain trusted users or customers, who are then asked to report back about any problems they experience.

Pilot tests can be very useful for checking if installation and configuration are problem-free. They can be valid for getting the customer or user's evaluation of how useful efficient, useful or helpful a new site or system is, once they had a chance to use it in a real working context.

Pilot tests are usually less helpful for checking ease of interaction and whether the system tends to provoke user errors, because it is difficult to collect feedback at this level of detail.

If you want to use a Pilot Test, make sure to budget time and resources for feedback collection and evaluation. In order to obtain useful feedback, you will need to take initiative towards the users. Consider formalizing the process with interviews or questionnaires to be filled out.

Online Surveys and Online Feedback

Online surveys are sometimes called "departure surveys" because they are triggered by a user completing a process or taking some action that indicates that she is finished.

A page or pop-up invites the user to give feedback on the experience they have just had with the site, and user input is automatically stored and may even automatically be summarized and reported.

- The biggest advantage of online surveys is that you can ask the user what his intention was, and whether or not he was satisfied. By adding this contextual information to the web log of what he did, you can gain a true understanding of why he was satisfied – or not.

- The biggest disadvantage of online surveys is that respondents are self-selecting. Those who are articulate, technology-oriented

and dissatisfied will answer often – and what they ask for may not be same as what they user who gave up in despair would have asked for – if he had dared or been willing to take the survey.

While costly, such systems can potentially give good cost/benefit. If the surveys are relevant and well-designed, they will help you to quickly identify problem areas.

By asking the same questions over time, you can compare user response to other key performance indicators (such as conversion rate or number of results viewed). By correlating online survey data with changes made to the site and changes in key performance indicators, you will eventually be able to form a clear, factual picture of what is important and what is not.

Summary of Part 4

Phase	What We Need To Know	Appropriate Types of Evaluation
Planning a new service	Who will use it? What do they want? How do they respond to our offering? What is the competition doing?	Interviews Field Observations Focus Groups on questions Competitor Analysis Usability Tests of Competing or similar sites
Design Phase	How will they get to our site? What are the user's search tasks? How will they use our search? Can they find the search? Do they understand our search input? Do our result pages seem to work? Does our result navigation work? What feelings does our visual design produce?	Internal and external reviews Focus groups on prototypes Usabilty Tests on prototypes Online Pilots with Surveys, Query logs
Implementation Phase	Can they find the site? What do they want to do with it? What do they try to do with it? Do they succeed? If not, what stops them?	Online Pilots with surveys Usability Tests on pre-release

	Do they enjoy the experience? Do they plan to come back?	
Operational Phase	Is our conversion rate rising? Is our return visit rate rising? Is user satisfaction increasing? Is user productivity increasing? What hindrances remain? Where can we improve?	Field Observations Interviews Online Surveys Regular Usability Tests of Own and Competing Sites Query Log mining Web Log mining

Additional Usability Resources

http://home.earthlink.net/~searchworkshop/ Papers submitted to CHI 2003 - Best Practices and Future Visions for Search UIs: A Workshop.

www.useit.com Jacob Nielsen's columns. See especially: Search and You May Find, July 1997. Mental Models for Search are Getting Firmer, May 2005. Search, Visible and Simple, May 2001

http://www.nngroup.com/reports/ecommerce/search.html Donald Norman / Jacob Nielsen; E-commerce user experience / Design Guidelines for search (PDF downloadable commercial report)

http://www.iawiki.net/IAwiki Information Architecture Site, good resource for faceted browsing.

www.uie.com Jared Spool's firm publishing articles on findings in their usability tests; See especially 6 articles on search http://www.uie.com/browse/search/

Sterne, Jim, *Web Metrics: Proven Methods for Measuring Web Site Success*, Wiley Publishing, Inc. © 2002 ISBN 0-471-22072-8

Rubin, Jeffrey, *Handbook of Usability Testing*, Wiley Technical Communication Library, © 1994 ISBN 0-471-59403-2

Van Duyne, Douglas; James A. Landay; Jason Hong; The Design of Sites: Patterns, Principles, and Processes for Crafting a Customer-Centered Web Experience, © 2003. Addison-Wesley. ISBN 0-201-72149-X.