

# **Usability**

The Key to Accessibility

**“Usability rules the Web.”**  
**“Simply stated, if the customer can’t find a product  
[or service], then he or she will not  
buy [or use] it.”**

*Designing Web Usability – Jakob Nielsen*

## **Introduction**

There’s really not much point in having a web presence if you make it difficult for people – any people – to find the information they want and need. It’s not a difficult concept, but it can involve the adoption of a totally new mindset by the people responsible for providing and disseminating that information.

The web is not a giant brochure, it’s a dynamic, interactive and immediate medium with very high user expectations. Get it wrong and you lose your audience, get it right and they’re with you for ‘life’.

Over the past few years, I have been training a growing number of web authors within the Western Australian Department of Conservation and Land Management. The basic training course was developed in-house and covers the 14 most used HTML tags and the principles of simplicity, usability and accessibility

Many people believe that in website communication, usability and accessibility are two very separate issues, but it’s my belief that if you have a firm grasp of usability principles, you have the basis for creating websites that are accessible by everyone.

By the time you have read this paper, I hope that it will be clear that usability has as much to do with your attitude to your end users as it does with the design, layout and navigation of your site. And that accessibility has as much to do with socio-economics as it does with disabilities.

## **Background**

The Department of Conservation and Land Management entered the online arena early in 1996, when Ron Kawalilak, Director of Strategic Development and Corporate Affairs Division, obtained corporate agreement to develop an online presence. Our department was one of the first WA Govt agencies to go online.

Right from the start, our online strategy was to provide better and more efficient public and employee communication, and so the responsibility for the development, content management, authoring, look and feel of the site has always been the responsibility of the PR area rather than the IT area. This was a deliberate move to

ensure that the project would remain vital, customer-focussed and highly useable, rather than technically complex and possibly difficult to use.

The department has two websites: NatureBase, which was launched in June 1996, and CALMweb, which was launched in January 1997. The content, management and policy development of these sites is handled by the eMedia Unit within the Strategic Development and Corporate Affairs Division.

## **NatureBase**

The planning, navigation, layout, design and initial content (64 pages) for NatureBase was developed in just three months. It was to be a 'no work, no wait' site that would be quick to download and easy to navigate.

Just three months after its launch, NatureBase was awarded the Best Government Website at the inaugural Telstra/Financial Review Australian Internet Awards. Since that time, the site has received several national and international awards for web design and navigation, but more importantly, it has been recognised as an effective public communication site.

NatureBase now has more than 2,500 pages of information and receives in excess of 50,000 hits/day – more than 18 million hits a year. Most information can be found in 2-3 clicks of the mouse.

It's worth mentioning here that because of decisions made in the very early planning stages and in the subsequent development of features and content, NatureBase holds up quite well when viewed using a text browser like Lynx or an audible page reader like WillowTalk or Jaws.

Website accessibility has been included in the department's Disability Services Plan and, because there is always room for improvement, we undertake audits of NatureBase to ensure it is W3C compliant – by using tools such as "Bobby" and manually checking page coding.

But I think the most important point to make is that the structure, navigation and coding philosophy of NatureBase has remained unchanged since its launch in 1996. This is not because we don't know how to do all the whistles and bells, but rather that we made good decisions early on about usability and accessibility and we make a point of practising simplicity in our ongoing design and development.

Every new feature on NatureBase has to earn its place. It's not enough just to be cool, features have to serve a specific purpose otherwise they just doesn't make it onto the site.

## **CALMweb**

The department's intranet site, CALMweb, was launched six months after NatureBase and has received national and international recognition for employee communication.

CALMweb has almost 5,000 pages of information serving approximately 1,000 employees. Pages are created by a virtual workgroup of more than 80 web authors under the guidance of the eMedia unit. Notice I use the word 'guidance' as opposed to control. That's because the various managers of the work groups contributing to the site approve the content for each suite of internal pages, not the eMedia unit.

This virtual group that has been the cornerstone of the development of CALMweb and it is growing month by month as more work areas within the organisation add their content to the site.

The successes of the group and of CALMweb as a whole are due to a number of factors:

- Each author from the various divisions, geographical regions and branches within CALM is responsible for creating content for their section of CALMweb. This content is then approved by the manager of the section and uploaded to the server.
- In-house training in basic HTML and usability principles is provided to all new CALMweb Authors. This is a one-day hands-on course that deals with the main elements needed to create useable web pages. Participants receive a handbook, complete with cover CD, and a copy of the NatureBase Community CD, which is packed with useful freeware and shareware. By completing the course, participants gain a good grounding in usability/accessibility strategies as well as enough knowledge of HTML to begin creating pages for their areas.
- As well as the CDs, we provide an online toolbox, to which authors can add features and services, share Java scripts and showcase solutions.
- The group has a series of templates to work with and is subject to a few design 'rules'. This means that authors have fair degree of freedom of expression, while maintaining the navigation, and the look and feel of the site.
- This encourages authors to be creative and try new things, and spawns specialists in areas of web development such as Java script, applet building and Perl.
- There is an online web authors' discussion board and a telephone helpline to the eMedia unit.

We also recommend that all our web authors read Jakob Nielsen's book *Designing Web Usability*.

## **Six Reasons Why Websites Fail – according to Jakob Nielsen**

I think that before adopting usability strategies, it's important to understand why so many websites fail to communicate with their visitors. And surely that's the prime reason for having a website. You want to communicate with that vast global audience and explore potential new markets for your products and/or services. You don't just want a website because your competitors have one, do you?

Nielsen's six reasons for failure are really just the most common reasons. Even if you get these right, there are many other pitfalls that will trap you along the way.

### **1. Treating the web as a brochure.**

There are still many websites that simply recycle company brochures by taking the same copy and same images and putting them into a web page. In some cases, authors simply save a MS Word document or a MS Publisher document in HTML and upload it to the server. The resulting HTML is usually awful, because the program tries to mimic what was done in the original document rather than treating it as an HTML page in its own right. This is a very lazy approach to web publishing and organisations that adopt this approach are unlikely ever to take the web seriously.

Instead, organisations need to understand that HTML pages do not need the intricacies of desktop publishing – the mechanism of electronic publishing is an entirely different beast. But it's still publishing.

To be truly successful online, the website must also be an integral part of the organisation's communication strategy. Organisations need to accept that a web presence will inevitably change the way they do business. If it's done right, their customers will know that they really mean business.

### **2. Managing a web project as if it were a traditional corporate project.**

You need to adopt a different approach to the usual way you would prepare a project for your managers or CEOs. Your website is not for their benefit, but for your customers.

Instead, a website should be managed as a customer-focussed project. Your online strategy needs to be run from your public relations branch and not your IT branch. It needs to be customer focussed, with customer needs first and corporate needs a close second. In other words, if it's a choice between what the customer wants to see and what the corporate body wants to push out at them, the customers' needs must prevail.

The reality is that nobody on the web is particularly interested in what your CEO has been up to recently, and you need to be brave enough to point that out. If you do, you'll get the focus right and your customers will keep coming back.

### **3. Structuring the site to mirror the way the organisation is structured.**

The problem here is that you know your organisation and how each section fits together. Unfortunately, your customers aren't privy to the same information about your organisation's structure. It's a criticism that is often - and quite properly - levelled at Government departments because members of the public just aren't able to cut through the red tape and find the right people to talk to or the right place to find the information they want.

Instead, the site should be structured in such a way that users can access information in a subject or needs-related manner. More than ever, you need to empathise with your customers and try to guide them to information they seek.

You need to group your information like with like, even if that means combining information from a number of sections or divisions within the organisation.

### **4. Creating pages that will blow the socks off the CEO, when demonstrated on a laptop.**

This can be a major problem. The web team, having just managed to squeeze some funds out of the CEO, feels it needs to knock his or her socks off to keep the funding coming along and the project active. They design a site that contains all the whistles and bangs - Flash files, Shockwave, Java and a host of multimedia, and that's only on the homepage! They load it onto a fast PC or Laptop in the office, with none of the usual bandwidth problems experienced by the real-world end users, and show it off to the CEO who, if they know little about the web, is naturally impressed.

Of course when the site gets up to the server and people actually try to use it, the pages and associated multimedia files take so long to download that the potential customers simply give up. But for those who have the time to wait, I'm sure it looks good!

Instead, you must design for optimal user experience under *realistic* conditions, even if your demos will be less 'kewl'. Don't design for anyone other than your online end users. And it's important to remember that with more than 30,000 new websites coming online every day, no one is going to wait more than a few seconds, let alone several minutes, for yours to download.

### **5. Writing in the same linear style as in your traditional printed media.**

I've already mentioned the inappropriate use of brochure's online, but it's important to realise that the language you use online is entirely different from that used in brochures, reports, advertising copy and the like.

Instead, you need to learn to write in a style that is optimised for online readers.

There is plenty of evidence to show that Web users prefer to scan text in search of information and that they prefer shorter 'blocks' of information that are accessed

through hypertext links. In other words, they need short paragraphs, meaningful headings and appropriate links to ‘more information’.

Your information needs to be presented in a new hierarchy that becomes increasingly more detailed as you drill down. You should offer menu or further information options as close to the top of the suite of pages as possible. That way, users will find the information they want much faster.

Also, you should be aware that users might search for information in different ways, so you should provide links to your suites of pages from as many other subject areas as appropriate.

An excellent reference on writing for the web is Steve Morris’s book *Wired Words*.

## **6. Treating your site as the only one that matters.**

This is a major problem for organisations who have not done their research, have no understanding of how the web works, or perhaps are just so arrogant they believe no one would want to look elsewhere.

I have seen some websites that have no external links at all or that make it extremely difficult to leave the site, without being bombarded by advertising and ‘are you sure’ notices. Indeed, some organisations have even had a *policy* of not linking to external sites.

Instead, remember that hypertext is the foundation of the Web and that no site is an island. Choose an appropriate way to link to other sites and other pages that will assist rather than hinder your customers.

NatureBase has links to a large number of external resources. Whenever there is a case for value-adding to our visitors’ experiences, we provide those links - and we get reciprocal links in return, which drive additional traffic to our site.

There is no point in duplicating information or services that already exist somewhere else on the web. For example, NatureBase provides links to tour operator’s sites out of our TourFinder database, to TransPerth’s route planner site for travel to Metropolitan parks via public transport, to local and regional tourist bureaus so people can find accommodation near the parks of their choice, and so on.

## **The Practice of Simplicity.**

I am firmly of the belief that simplicity is the key to good usability. There is simply no justifiable reason for many of the features found on many websites – all they do is get in the way of the information. Of course there are sites that are purely for entertainment, but the vast majority of websites, and particularly company websites, are for the provision of information and communication with that organisation's customers. Visitors who cannot get to the information they want quickly and efficiently will leave your website in favour of another, and even entertainment sites will suffer visitor losses if they take *too* long to download or stall halfway through the process because the end user doesn't have a cable connection.

### **1. Planning**

I can't emphasise enough the importance of planning when going online. Too often, organisations get hung up about how the site looks rather than how people might want to use it. And website designers have to take some of the blame for this - sometimes they seem to be designing for each other rather than for the client or, more importantly, the end user. Maybe they have an eye on the next website design awards.

With good planning, there should be no need to make significant changes to your website's design and layout. There is no truth in the myth that you have to do a make over every 6-12 months. This is a myth propagated largely by designers to get repeat business.

What you must do as an organisation is drive the project yourselves rather than handing it over lock, stock and barrel or having it hijacked by an external design agency.

In the planning stage there are several things to consider:

- Identify your audience(s).
- Get to know them - get under their skin - think the way they think. Then you'll have a clearer picture of what they need from you and your website.
- Design your site on paper first - don't switch on the computer or look at the graphics until you have planned the hierarchy of information for your site.
- You need to group information into customer-focussed subject areas and decide on the pathways that will lead to the information.
- And for ease of navigation, leave a trail (links showing the hierarchy) so users know exactly where they are in the site at any one time.
- When you finally get online, provide good lines of communication - encourage feedback, act on suggestions and respond positively to criticisms or suggestions from users – perhaps contacting them when you have implemented the change.

With NatureBase, we have healthy feedback from our visitors. We provide regular email links, a feedback form and a Guestbook facility that asks specific question about how we might improve the site. Over the years, we have put in place around 80% of visitor suggestions and we're working on the other 20%. When we add a new feature, we try to email the person who first suggested it, telling them where to find it and inviting further comment.

## 2. Content Authoring and Management

So now you've decided on the site's layout and philosophy, you can start writing the content. It's a really important point to make, because if you don't plan the way the information is to be presented you'll not be able to write the content effectively.

You need to decide whether or not your site will have multiple authors, perhaps with a single editor or quality controller, or whether there will be a single author/editor, either producing content from scratch or working with raw material supplied by the various sections of your organisation. Whichever way you choose, your site needs to appear seamless, with a uniform writing style.

Here are some things to consider when writing for the web:

- Be succinct and use meaningful headings, short paragraphs and appropriate menu options so users can scan for the information they want.
- Write with attitude. Be punchy, casual and friendly, but not gushy. Remember that you are talking to one person at a time. Don't talk down to them or alienate them - you want them to come back.
- Use hypertext wisely - don't link *every* word or phrase, you'll just confuse the user by presenting too many choices. Link to the key points only and preferably from a menu. Overlinking can cause severe problems for users of text-based browsers or audible page readers.
- Stick to the agreed hierarchy of information and pathways to that information defined in your plan - offer users the opportunity to drill deeper for more detailed information rather than presenting everything up front.
- And, if you can afford it, use editors with experience in presenting online information.

## 3. Home Page versus Splash Page

This is a pet hate of mine so forgive me if I appear harsh.

Splash screens are those so-called 'welcome' pages that invariably contain a large and impressive graphic or Shockwave movie that takes a long time to download or a long time to play. When it's finished doing what it has to do, there's a button or other link saying 'welcome' or 'enter' - which is all you really wanted to do in the first place!

But the big problem is that after waiting for the thing to download or play, you still don't necessarily know if the site will offer you the information that you want. And if you're using a text-based page browser or audible reader, because you are visually impaired, you wouldn't have clue what's been going on.

Your Home Page should *always* be the first page visitors see. It is the flagship of your organisation's website, and the entry point to your site's navigation system.

Splash screens, on the other hand, are a waste of users' time, an unnecessary hurdle to finding information and a barrier to many users.

Because the home page is the most important page on your website, you need to spend an appropriate amount of time considering its design.

- Speed is imperative; your home page must download quickly if it is to survive in the real world.
- It should be designed to adjust to the end user's screen resolution and the important parts of the page must be visible at a resolution of 640x480 pixels. Remember that many users do not have the latest computers or software and might still be viewing your site with a basic 640x480 svga monitor. This is particularly true of those people who rely on charitable organisations to help them get online, so you must consider their needs, too, when designing your site.
- Always present the standard version of your website first with links to enhanced version from the home page - the Shocked, Flashed or framed versions (more on frames later). This will reduce waiting time and the need to download plug-ins before the end user can view anything at all. And avoid the kinds of statements suggesting that if you don't go for the enhanced or shocked version of the site, then you're something of a lesser human being and don't deserve to be there anyway.
- Make sure your standard version is fully navigable using a text reader or with the images turned off
- The key areas of information should be presented intuitively and icons or graphical menus (both with appropriate descriptive ALT tags), as well as a text-based menu should provide instant access to those areas. And remember to carry the text-based menu throughout the site's navigation system.
- You should always aim to offer instant access to new features or hot news directly from the home page.
- And finally, you should provide quick access to a search facility and/or site map from the home page.

#### **4. Simplicity of Design**

As with the homepage, it's desirable that the important information and the important elements of the navigation system are visible in the first screen full (640x480).

The entire site navigation should be intuitive and the user should be able to determine exactly where they are in your site in relation to the home page and other subject areas. That way they can hop around the site rather than having to climb back up to the homepage and drill down another information pathway.

You need to balance the breadth and depth of your site. Users should not have to drill down too far before they get to the information they want or to options that will lead them there. Equally, you shouldn't present everything in the first couple of levels. Remember the hierarchy of information in your site plan.

Your HTML should be simplified as much as possible so it is compatible across the widest possible range of browsers and platforms.

The information contained in the META tags at the top of each page must be meaningful and targeted so users can find you in a range of search engines. There are many tools available to help you achieve this.

Because most of the world's Internet users still use 28.8k or 33.3k modems and many have poor telecommunication connectivity, you must design your pages to minimise the download time. Make good use of tables and trim your graphics for web use. Again, there are many tools to help you do this. You should try to keep your page files, as small as possible.

And remember, people use the internet to get information, so content is king!

### **So what should you avoid?**

- **Frames**

The most obvious design element you should avoid is the use of Frames – primarily because most people get them wrong.

While it can be argued that having one navigation bar for the entire site is efficient, the things that can go wrong with frames far outweigh the advantages. It is so easy to finish up with a set of nested frames that that are harder to break out of than Alcatraz.

But the most important points about frames are that:

- it's almost impossible for users to bookmark interesting pages they find on your site, which means that have to start from the home page and work their way through each and every time they visit your site, and
- it's impossible for a text browser like Lynx to get around the site at all.

The simple answer is to 'say NO! to frames'.

### **Browser specific standards and features**

You must avoid using any non-standard HTML or browser-specific elements in your pages, otherwise you will immediately alienate half of your audience.

Some proprietary WYSIWYG HTML editors offer a range of tempting features that often only work if you chose that same vendor's server software. Others offer features such as exact positioning, which can cause havoc when viewed on different browsers at different resolutions. And when you want to create a site that dynamically adjusts to the end user's screen resolution, you might ask why you would want exact positioning anyway?

Electronic publishing is *not* like desktop publishing. The first requires a degree of flexibility in the positioning of images and other objects, while the second seeks to be prescriptive.

Remember, if your site can only be viewed on one browser type at a specific

resolution, you are effectively telling all other users to go away!

A 1999 report by Jupiter Communications found that nearly two-thirds of the top 100 consumer websites were built in multiple versions and that working around browser incompatibilities added at least 25% to the cost of websites. But if your site is designed using simple HTML, you'll avoid those extra costs and your site will be infinitely more accessible.

- Don't clutter your pages with ads or other useless bits of information.
- Don't use any features or design elements you can't justify. Always ask yourself if the element or feature will add anything to the end user's experience of your page or site. Don't add 'eye candy' for the sake of it.
- And finally, remember that content is still king!

## **Graphics**

It's imperative to minimise the download time of web pages and, invariably, the biggest overhead comes from images and animations.

You should use one of many tools for compressing the file sizes of images. You can compare the before and after quality on screen and you will be surprised just how small some files will go. Also, ensure you save photographic files as 'progressive' jpeg images so users can see it is downloading OK. And remember that scanning an image at a resolution higher than 72dpi is wasted on a computer monitor.

Try to use text rather than images in a menu bar or navigation system. But if you have to use graphical menu bars or large mapped images, use an image cutter to reduce the overall size of the image and increase the speed of download, and remember to preload images in a menu system.

If you want to display large images or maps for people to print out, use thumbnails on your page and link these to the large image with an indication of the file size. That way, users can choose whether or not to download the larger image and save precious bandwidth.

And finally, avoid filling your page with irritating animated images, unless they serve a specific and useful purpose for the end user. An example of a good use of animated GIF files is to simulate a slide show or demonstrate the steps in a process, or even as a storyboard to illustrate changes over time.

## **Multimedia**

When it comes to adding multimedia to your website, the same basic rules apply. Use multimedia only where it serves a specific purpose and adds to the user's experience and understanding. Don't cram your pages with Flash or Shockwave files just to make them look good.

If you do use multimedia – and particularly video – you should choose to stream the video rather than force users to download the entire file. By using streaming media, users get a pretty good idea after the first few seconds, whether or not they want to continue. If you force users to download the entire file, which could be several MBs, before they can see if it is what they want, you're making them waste valuable time and bandwidth.

Having decided you have a need to use multimedia on your site and having decided to stream the video content, you should try to standardise on the media type – RealMedia, Quicktime or MS Media – to reduce the number of plugins required to view all parts of your site.

Video content should have a meaningful audio commentary as well as an optional text transcript for sight-impaired users with text browsers or audible page readers, as well as for the benefit of deaf users.

But above all, don't let your designers cram your pages with visual effects just to make them look good - learn how to rein your designers in when special effects begin to affect the usability and accessibility.

In a recent article in Design Harbor ([www.designharbor.org](http://www.designharbor.org)) Nathan Matias describes this phenomenon as “Feature Lust” and states:

“Web designers have contributed to the problem [of browser incompatibility] whether they realize it or not. Demand for special effects, multimedia features, and the "next cool thing" have turned a simple machine independent document system into a full multimedia showcase at the expense of machine independence and stability. “But that 'rich' experience comes at a price. Sure, it's fun to make flashy pages that sparkle with ... design prowess. But by pushing the limits of current browser technology, we not only encourage rifts in browser compatibility but also goad developers to move on to better, brighter browser features when current functions aren't fully mature.”

## **The socio-economics of accessibility**

At the start of this paper, I made the point that accessibility has as much to do with socio-economics as it does with disabilities.

As governments and other institutions, such as banks, scale down their face-to-face services in favour of (at least for them) cheaper and arguably more cost effective online services, they must consider the barriers that users face in trying to access that information. And that includes people who suffer from socio-economic hardships as well as those with hardships resulting from physical or mental disabilities.

People in lower socio-economic groups with little disposable income or who rely entirely on welfare payments, often have difficulty obtaining access to the internet. They may have to rely on free but limited access from libraries or telecentres, expensive short-term access from Internet cafés, or just affordable monthly dial-up rates with limited hours that attract high download charges.

People in rural Australia frequently have poor connections to the telecommunication infrastructure, as well as costly, timed connection charges such as STD.

And whilst it's acknowledged that it's difficult enough for visually impaired people to access information from many of today's highly interactive websites, imagine how much more difficult it would be if those same people were living in a small country town or on a remote property at the end of an ageing telephone line.

For ALL of these people, speed is of the essence. So websites need to be fast and easy to navigate - they must be designed to be useable and accessible by EVERYONE.

### **Summary: Six ways to a successful website**

- Make your site enjoyable to visit
- Make it easy to navigate
- Make it fast
- Keep it current
- Keep it clean and uncluttered
- Make it useable and you'll make it accessible

If visiting your website is a pain not a pleasure, people just won't come back. Make sure you always have something new and genuinely interesting to say.

Help your visitors to find their way around your site with a clearly visible and intuitive navigation system. Don't be cryptic – think as they think.

In today's world, nobody can be bothered to wait for a top heavy, bandwidth hungry site to trickle through his or her phone line. Optimise your code and images for fast downloads.

Try not to let information get outdated. If you know you won't be updating pages very often, don't put 'Last Updated' statements on them. All they do is make your site look old. And if you don't get many visitors, don't put statements like 'You are Visitor number 234 since May 1997' on your homepage. All they do is make your site look unpopular. Instead, do something positive to increase traffic.

In the very early stages of planning, make sure your site, and particularly your homepage, is clean and uncluttered. If you get it right, your site will look as fresh as the day you launched it, and you won't be hauled into a redevelopment cycle every 6-12 months.

And if you adopt the principles of simplicity and usability outlined in this paper, you'll be well on the way to making a website easy to use and accessible by all.

**“The Web is the ultimate customer-empowering environment.**

**“He or she who clicks the mouse gets to decide everything.**

**“It’s so easy to go elsewhere; all the competitors in the world are but a mouse click away.”**

*Designing Web Usability – Jakob Nielsen*

## APPENDIX

### A word or two about servers, operating systems and open source

Website designers/developers also need to understand the limitations imposed on design by the underlying web server and network technologies. There would be no point in designing a website that employs xyz technology, when the web server it's loaded on will not support it, or worse, requires the use of abc technology to achieve the same result.

For example, if you use Microsoft Active Server Pages (ASP), don't expect them to run on a UNIX server. The ASP solution must be run on a Microsoft-based server.

As with all proprietary solutions, there is a monetary cost for the software itself and frequently for upgrades and per seat licences. But there is another solution that is not as deviant as some would have you believe. That solution is Open Source. At the server level, lean, fast, reliable websites have often deployed perl for interactive CGI programming, Apache for web serving, PHP and/or perl in association with MySQL or PostgreSQL for dynamic database-driven content, and Sendmail, Qmail or Postfix as the mail transfer agent. These are all commonly used open source solutions and they come with little or no monetary cost.

If you've used the Internet at all, you've used free, supported, industrial-strength open-source software like the above:

- **Yahoo!:** The world's largest and most successful website is built around freely available open-source software: FreeBSD (UNIX) operating system, Apache web server and the perl scripting language.
- **Amazon:** Amazon.com, the world's largest online bookseller, is powered by Apache and perl.
- **Hotmail:** for a long time after Microsoft acquired Hotmail, it elected to use FreeBSD as the operating system for the server farm in preference to its own proprietary operating systems.

Some quick open-source statistics:

- 60% of the world's web servers run Apache,
- 80% of all Internet sites use Sendmail as their mail transfer agent (email server),
- Linux (a popular UNIX clone) is the fastest growing server operating system,
- The entire Internet Domain Name Service, which associates computer names with their IP addresses so computers can connect with each other, runs on BIND, the open source Berkeley Internet Name Daemon.

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*Web Design: The Complete Reference* – Powell, Thomas A., (2000) Osborne/McGraw Hill; ISBN: 0072122978

**Useful Reading:**

*How to Lose Friends & Infuriate People* – Nader, Jonar C., 1999, Plutonium;  
ISBN: 0957716508

*Web Site Usability Handbook* – Pearrow, Mark, (July, 2000)  
Charles River Media; ISBN: 1584500263

*Don't Make Me Think! A Common Sense Approach to Web Usability* – Krug, Steve,  
and Black, Roger, 1st edition (October, 2000) Que; ISBN: 0789723107

## David Gough

David Gough joined the Western Australian Department of Conservation and Land Management's Strategic Development and Corporate Affairs Division in 1990, shortly after migrating from the UK, where he worked in advertising and PR.



In 1996, David began work on the development of the NatureBase project – brainchild of the division's Director Ron Kawalilak – and soon after its launch, began developing CALMweb. Since then, he has guided the development of both sites, provided leadership and support for the CALMweb Authors' Group and introduced a range of features through the recently formed eMedia Section within the Division, which he manages.

The eMedia section also services the 'new media' needs of a range of internal clients by providing resources such as Corporate PowerPoint templates, training in the use of electronic presentation, managing outsourced multimedia projects and developing specific online content.

A regular speaker on website usability and accessibility, David is passionate about all things wired and is a firm believer in the philosophies of Jakob Nielsen (author of *Designing Web Usability: The Practice of Simplicity*). When he's not at work, he looks after his two boys (9 & 11). In his 'spare' time he is an avid movie-goer, loves to read and is a pretty good cook.

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