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The internet revolution

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This chapter examines:

- why the world wide web has become such an important medium
- the things that people and organizations do on their websites
- some basics about the way the world wide web works.

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The success of the internet has been remarkable. Internet historians will point out that it has a considerable history stretching over more than 30 years in military and academic circles, but to the general public the internet is synonymous with the world wide web. Public awareness is now almost universal and many organizations are starting to regard the internet as a mass medium. They now include it in their strategies just as they plan to use newspapers, magazines, television and radio. How did this come about? And why does it matter to LIS professionals?

The importance of the world wide web

This new generation of interfaces frees users from having to understand a set of protocols developed by scientists more than 20 years ago. Novices no longer have to join a clique of knowledgeable people and go through an apprenticeship. Instead they can concentrate on finding and sharing infor-

mation and communicating with friends and colleagues. There's an ever-expanding list of services on the internet today to explore The internet is evolving beyond its anarchistic nature and haphazard interfaces to become the basis for an international information structure. The network is expanding beyond government labs and universities to commercial organizations, local schools, and into homes. Increasing numbers of businesses – large and small – are beginning to make use of the Internet, and the Net is now accessible to anyone with a terminal, modem and phone line.¹

The sense of wonder is still apparent in that introduction to 'next-generation interfaces' (web browsers to you and me) written in 1994, one year after the Mosaic browser was released and web pages in HTML began to supplant the text-based information retrieved using tools such as Archie and Gopher, and services such as Hytelnet. Some elements of those early days are still important: the Lynx browser popular for text-based services is still going strong. On the other hand, the prediction in the same article that we would all be surfing using verbal commands to a speech-based recognition system by 1997 proved to be a little too far-sighted.

The web has become a mass medium in around five years. We have gone rapidly from expressing surprise when a newspaper or television advertisement includes a web address (or URL) to surprise when it does not. Even on the advertisements in London Underground trains (one place where nobody can yet get a connection to their ISP,² companies now include e-mail address and URL in their advertisements as a matter of course. The web has become all pervasive and is the constant subject of media attention and fascination.

This sudden development of the mass medium has had some important effects on the environment that readers of this book are likely to work in.

- Most managers are aware of the web. They know that most companies and many public bodies have a site there. It has been said that the risk of not having a website is now greater than the risk of having one. Companies and their managers feel that a website makes them appear to be modern and progressive, and in tune with their business. Being without one is like being without a telephone in a previous business generation, although many businesses seem unconcerned about the impression the site itself gives to callers. Managers may have some idea about who can run the site – usually they think of the computer depart-

ment. However, the instinct to give the computer department the first option on creating and managing a website is wrong. A corporate website is no longer an interesting side line for the IT department or for an enthusiastic amateur. It is the place where the organization advertises itself to the world and, as the saying goes, you only get one chance to make a first impression.

- Businesses seem to have got past the stage where they entrust developing a website to a single person who happens to have some kind of technical background or interest, or to the IT section as a purely technical project. But they usually have rather less idea of what should go into a website, of who in the organization is presently sitting on that information, and what should be done to get it onto the web and so to the user community. In recent years organizations have become more aware of the potential of their intranets to provide useful content for the web, although there is also confusion about how this content can be managed. There is an important role for LIS professionals whose training and experience allow them to combine an understanding of the world wide web with a knowledge of the way that information is created, stored and used. The difficulty is likely to be in persuading their own managers that creating a website is a major project that involves a range of management and organizational skills, and that it is their LIS colleagues who have acquired many of those skills through their professional training and experience.
- Managers are constantly being told in their own professional reading that the corporate website is vitally important for the health of the organization. They read that a good site will provide them with a shortcut to addressing current concerns such as knowledge management, although the map of this shortcut is still not very clearly drawn. This leads many organizations to enter areas that they know little about and where few real skills are available to them. The websites that they build can be models of bad navigation and poor content. On the web, they confuse customers; on intranets, they waste not only the resources that developed them but the time of every member of the user community.³ What organizations and communities desperately need are websites that are managed by people who understand what users do when they visit websites – how they navigate and how they seek information.
- The world wide web has attracted vast amounts of coverage in other media, with the result that there is an awareness of the web and its contents that was never achieved by other information services such as

traditional online searching. It is also the first truly democratic medium, because anyone can create a website, either directly or through an agent, at low cost. These personal sites can stand alongside the efforts of transnational corporations and have sometimes shamed those very companies into doing the job properly themselves.

Since around the middle of 1996 the emphasis has been on the rise of commercial sites and the development of sound business reasons for organizations and communities of all sizes to be on the web. This has led to some considerable differences compared with the early days.

- It has become easier to produce websites. A critical mass has been reached so that it is now worthwhile for companies like Microsoft to produce programs that will deliver a half-decent web page with little more skill than it takes to use a word processor.
- Even though there are millions of amateur pages and the numbers continue to swell, the world wide web has become a serious means of communication. Amateur efforts just will not do any longer for an organization that wants to be taken seriously. With the tools available, even many of the 'hobby' sites on the web are of a quality way beyond that of many commercial sites of two years ago.
- The arrival of commercial websites has made it possible to find reliable and authoritative information on the web. Government policies in many countries are now encouraging electronic commerce (e-commerce) and the provision of public terminals to allow access for as many people as possible.

Who uses the internet?

The initial public image of an internet user was of a young male person, either one with inadequate social skills, or one with large amounts of disposable cash to enable him to maintain his computer at the leading edge of technology. As the web has developed and become a serious medium this has greatly changed. Although there are still some references to this type of user, it is clear that an increasing proportion of users are female, that family use is being encouraged, and that serious use of the web for commercial purposes continues to grow.

Information about users has been charted by a number of organizations

from the early days of the world wide web as a public service. Perhaps the best known are the surveys by the Graphics, Visualization and Usability Center (GVU) at Georgia Tech, which undertook ten surveys between 1994 and 1998⁴ although their planned eleventh survey has not yet taken place. A useful source for information about other surveys is the Nua⁵ website, while information on current developments can be gathered from a range of sources to which search directories provide ready access. Official sources such as the office of the UK's e-envoy⁶ (with its monthly reports on current official developments) can also be helpful in tracking developments: current issues of internet journals will supply further news. Other long-running surveys include the American Interactive Consumer Survey⁷ and A. C. Nielsen.⁸

Commercial use of the internet has led to rapid development of software tools and a wide range of sophisticated uses for the web. Sites have developed quickly from being simple presentations of selections from publicity material for the site owner. This is one way in which the development of websites has been characterized:

Stage 1: Brochureware

The website reflects corporate publicity and structures. There are news updates, copies of corporate documents that often slavishly reflect the printed form, and corporate public relations branding is everywhere.

Stage 2: Interaction

Users can obtain forms by download from the site. It is possible to provide some information back to the site through an interactive process. Information provision on the site is managed through an interface that allows some form of searching.

Stage 3: Advanced interaction

Users can return forms online and enter transactions by e-mail. Information provision on the site is managed through a sophisticated interface that allows advanced searching.

Stage 4: Transaction

Users interact with databases, carry out transactions and are able to discover the state of their order or a process – for example they can track packages in transit.

Stage 5: Advanced transaction

Users can maintain online accounts and the system can respond based on constantly updated information about that account and its history.

Telling or selling?

The events described above have brought about a fundamental change in the nature of the web. Until the mid-1990s it was a tool for research and collaboration, and users were typically academics, researchers or the military (who originally devised it).

Commercial websites came on the scene in around 1994 and 1995. At the same time the level of available interactivity grew as new browsers were launched. Scripts made it possible to interact with the site owner. At first, information went from the website to the user who stored it on disk, often briefly because of the cost of storage. More recently, the information has flowed in two directions and allowed electronic commerce. The cost of storage has also fallen dramatically, leading to expansive websites and increased use of multimedia effects.

Since the arrival of commercial websites, most sites have fallen into one of two broad categories:

- sites that tell people something
- sites that sell people something (or at least collect money in exchange for something).

Much of the literature on web management assumes that these are synonymous, or that selling follows on directly from telling and should occur during the same visit by the user to the website. Telling and selling are not necessarily linked, and especially not in many of the areas where librarians and other information professionals work. While it is certainly true that public services are operating in ways unheard of 20 years ago, they are still essentially in the business of service and of telling people things that help them.

Many early websites (and not a few still) tell people little or nothing of any use to them. Personal home pages (with apologies to readers who maintain one and to the owners of the undoubted good ones) are by and large fairly awful. They serve mainly to present selective information about people's personal hobby-horses and obsessions, and under-

developed photographs of their relatives, to the world. They may steal other people's copyrights and intellectual property or provide a mass of unsubstantiated opinion masquerading as fact. They clog up the search engines with trivia. Their only saving grace is that just sometimes they show up organizations that should have thought to provide a website by doing the job better than the real owners of the information.

Because the Web is so new, few companies have dedicated personnel assigned to creating and updating their site. Instead, it's likely to be the enthusiast – the one who browses the Web in his or her spare time, who knows a little bit about the structure of Web sites – who will be asked to manage the Company's site. *PC Magazine*, March 1997

As interest in the web has grown, many organizations have decided that they need a website. What senior managers typically do next is to hand over control of it to one of two people: either the head of the computer section or somebody who is known to use a computer at home. Neither of these is a good idea.

A website built by the computer section may well have every latest bell and whistle attached to it. Technology will drive the site, which will display the combined expertise of the section. It will probably run very slowly because so much has to be downloaded to make it work, and finding information will be difficult because the content will be secondary to the technology.

Somebody who uses a computer at home is likely to use the web and have some idea of what goes on there; they may well have some good ideas on how to achieve it. They will probably have rather less idea about how to get this into a web page, and if they do know they should consider working for the computer section.

A home-grown enthusiast may produce a good-looking website, and may produce an impressively flashy one. He or she is much less likely to produce one that helps people to find information (or the products they want to buy) and finish their transaction by going away with the knowledge they wanted or having placed an order.

The following chapters will examine the case for giving management responsibility for websites to library and information professionals. Although they may need to contract with others inside or outside their employing organization or community in order to obtain all the technical

services that are needed, their business and technical skills are sufficiently well developed to manage these contracts effectively. LIS skills are at a premium when it comes to indexing and organizing the information within a website. Suddenly the traditional and sometimes despised library skills are in great demand. Chapter 2 looks at the reasons for this in more detail and suggests why LIS professionals should be involved in the management of websites in many organizations.

Intranets and extranets

Many organizations have developed closed and private internal versions of the internet. These so-called intranets provide information services within organizations – across a global community in the case of some of the major international corporations. In some cases extranets provide important customers with access to selected parts of the intranet, such as ordering systems and other information about the company that supplies them. Because these are information products that are typically limited to users connected to a company network, they tend to be more detailed, more inward-looking and more confidential in nature than much of the world wide web. Because of this, their management and organization often demands a level of skill even greater than for a public website. There is more jargon to be organized into a meaningful structure, and frequently issues of organizational culture to be managed. Information still represents power in many communities, and the fact that the work of LIS professionals is to map and organize this information gives a political as well as a technical and professional dimension to these tasks. Intranets are increasingly being used as a tool to develop internal communication, and they play a pivotal role in the introduction of knowledge management to many organizations.

What is happening to the technology?

This book is avowedly non-technical. However, in order to follow the remainder of the book you need to understand some of the technology and what developments are taking place.

The bulk of websites are made up of linked pages of information or data, which are generally coded in HyperText Mark-up Language (HTML). This tells the browser – software such as Internet Explorer or

Netscape Navigator – how to lay out the various elements of the page. Related pages are connected to each other within the site using hyperlinks. These are live links within the document that, when clicked on by the mouse, take the reader to related information that the writer has identified elsewhere. This may be on another page on the same website or it may be on another site somewhere else on the world wide web.

HTML has evolved through several versions and is about to evolve again into something called eXtensible Mark-up Language (XML). This emerging standard offers greater flexibility and gives you better ways to distinguish between the various content elements on your site. Microsoft's Office software makes considerable use of it, so it will be increasingly easy to output browser compatible XML code even if you are not comfortable writing code. (Surveys consistently find that around 20% of HTML authors prefer using Windows Notepad and coding everything 'by hand'.) New code protocols are constantly being developed for a range of applications – for example Wireless Application Protocol (WAP), which will allow you to send information to suitably equipped mobile telephones. Chapter 11 contains a glimpse into the crystal ball and suggests ways to stay ahead of the markup language game.

You can include many other types of document on your website. Documents created for word processors can be included, as can spreadsheets and presentations. Software is available that will produce copies of the pages of a printed document in a format that can be viewed and printed almost like a photograph of the page; many sites use Adobe Acrobat, and although at first many people were wary of introducing a proprietary file format onto their pages, Adobe's Portable Document Format (.pdf) is now a de facto standard on the web.

Software to read .pdf files and for a number of other purposes can be downloaded from the web. The latest versions of browser software are capable of reading many different types of file format, but the earlier versions that many people still use are not. They rely on 'plug-in' software, which is extra programs downloaded from the suppliers' sites and then loaded into the browser so that the user can read files in the format in question. Why are these reader files provided free? Because the vendors make their money from selling software to website owners in order to create the document or graphics files that they put on the web. Thus in order to create copies of documents in .pdf format, you need a copy of the full Adobe Acrobat software rather than the Acrobat reader that is widely and

freely distributed. Similarly, if you are going to provide audio or video files in Real Media formats, you need a copy of the full software package, not just the Real Media player.

Visitors to your website will be using a wide variety of computers. Although many people assume that their readers are using Microsoft software on a PC machine, this is not so. You should remember that people also use Mac, Unix, Linux and a variety of other machines and operating systems. Many people use systems that cannot easily handle graphics, and others deliberately turn them off in order to reduce the time it takes to load web pages. (More about this in Chapter 8, which discusses the things that annoy website users, and questions of accessibility.)

To help to provide every user with the same experience of your site, such techniques as the use of cascading style sheets (CSS) are available. These allow you to specify the way that headings, text and some layout elements appear on screen.

Not everyone has the same software packages as you: think before you issue a file only in Word XP, as you are limiting access to other users of this package. However, offering a text document in a variety of formats is a good way of including longer publications on your site without having to carry out hours of processing to convert it into short HTML files.

There is plenty of help available with the technical issues on the web. A good place to start is the website of the World Wide Web Consortium, otherwise the W3C,⁹ where you can read about HTML, XML and related issues.

Summary

In this chapter we looked at the nature and recent history of the internet. We saw that there had been a fundamental change in the nature of the internet with the arrival of the world wide web, which was followed by the introduction of a commercial approach to what had been a research and collaborative tool. More recently the web has caught the public imagination, and government and other official policies are now helping to shape it. We took a first glance at some of the subjects that this book will cover, and recalled some of the basic technology of the web.

References

- 1 Miller, D. (1994) The Many Faces of the Internet, *Internet World*, 5 (7), (October), 34–8.
- 2 Or, to be precise, in deep tunnels, although on some cities' metro systems – such as line 14 in Paris – mobile telephones will work even 50m below ground.
- 3 In 2002 Jakob Nielsen estimated that average US companies could save up to \$5 million a year by improving their intranets – see his Intranet Usability: the Trillion Dollar Question, *Alertbox*, 11 November 2002, www.useit.com/alertbox/20021111.html. Nielsen reported that employee time (and therefore company revenue) was being wasted by poor search features, which accounted for 43% of the difference in employee productivity. He found search mechanisms that didn't index all the intranet pages, poorly prioritized search results, poorly written page titles that couldn't be scanned easily and poor page summaries. LIS professionals have skills in handling all these areas and can make a significant contribution to realizing these potential savings.
- 4 www.gvu.gatech.edu/user_surveys/.
- 5 www.nua.com/surveys/ or www.nua.ie/surveys, now part of cyberatlas.internet.com.
- 6 www.e-envoy.gov.uk.
- 7 Formerly the American Internet User Survey; see www.thedrg.com (Dieringer Research Group) for 2003 surveys onward and www.cyberdialogue.com for earlier surveys.
- 8 www.acnielsen.com/ and www.nielsen-netratings.com.
- 9 www.w3c.org.

