CHAPTER- II

Internet and World Wide Web :
An Overview

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2.1. Introduction

A computer network is a group of computers that are linked together via assorted means (wires, phone lines, fiber optic, satellite, etc.) so that they can transfer information among themselves. The Internet is simply a network of networks. The Internet is currently composed of over 30,000 different networks, with close to 3,000,000 host computers connected to them and accessible by approximately 35 million people worldwide. The Internet is growing at the explosive rate of about 10 percent per month. The Internet is also a huge group of worldwide information resources, providing access to over 85 countries throughout the globe. Because it is so vast, there is no way in which an individual or even an organization could be responsible for the Internet. Therefore, the Internet depends on voluntary cooperation among the thousands of network administrators throughout the world to provide the rest of us with access to this network of tremendously varied resources.

Increasingly the Internet is being used to gather a variety of data and gain an extensive range of experience as part of their learning activity. Among the many benefits of the Internet is the facility to produce and edit multimedia communication related material, as well as the ability to provide virtual worlds for an increasing variety of collaborative learning environments. Thus, use of the Internet may be seen to support and encourage the revolution which has been
taking place in education thereby new learning environments have been developed which are based on principles of active learning – reflecting the change in the culture of education from teacher-centred to learner-centred.

Much of the development of learner-centred education has been based on notions of constructivism in which it is recognised that knowledge must be constructed by the learner and, as such, cannot simply be “supplied” by the teacher. Some of the ways in which the Internet can bring new benefits to the student learning experience are:

1. Use of the Internet as a means of supporting a more holistic, multi-faceted approach to education;
2. Removing constraints of time and place, and dependence on conventional resources for learning;
3. Providing a resource for lifetime learning which is already widely available in the workplace and will become increasingly so in people's own homes;
4. Provision of a facility which enable the students and educators to publish their projects, writing and curriculum materials in a way that is both similar to, and different from, traditional methods”.
5. Providing support for collaborative working which various researchers believe to be extreme.
2.2. What Is Internet?

Internet is an electronic network of computers that includes every University, Government, and research organisation in the world. Also included are many commercial sites. It started with four interconnected computers in 1969 and was known as ARPAnet.

As per the Wikipedia Encyclopedia Internet is a worldwide, publicly accessible network of interconnected computer networks that transmit data by packet switching using the standard Internet Protocol (IP). It is a "network of networks" that consists of millions of smaller domestic, academic, business, and government networks, which together carry various information and services, such as electronic mail, online chat, file transfer, and the interlinked Web pages and other documents of the World Wide Web.  

2.3. History of Internet

The roots of Internet has been depicted from United States military which has started a network in 1969, called the ARPANET, to connect the computer at colleges and Universities, where military research work were taken place. As more and more computers were connected, the name ARPANET was replaced by the NSFNET.

Licklider moved from the Psycho-Acoustic Laboratory at Harvard University to MIT in 1950, after becoming interested in information technology.
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At MIT, he served on a committee that established Lincoln Laboratory and worked on the SAGE project. In 1957 he became a Vice President at BBN, where he bought the first production of PDP-1 computer and conducted the first public demonstration of time-sharing.\textsuperscript{5}

At the IPTO, Licklider recruited Lawrence Roberts to head a project to implement a network, further Roberts based on the study conducted by Paul Baran on technology who had written an exhaustive study for the U.S. Air Force that recommended packet switching (as opposed to circuit switching) to make a network highly robust and survivable. After much work, the first node went live at UCLA on October 29, 1969 later that it would be called the ARPANET, one of the "eve" networks of today's Internet. After this, the British Post Office, Western Union International and Tymnet in collaboration created the first international packet switched network, referred to as the International Packet Switched Service (IPSS), in 1978. This network grew from Europe and the US to cover Canada, Hong Kong and Australia by 1981.

The first TCP/IP wide area network was operational by January 1, 1983, when the United States' National Science Foundation (NSF) constructed a university network backbone that would later become the NSFNET, which was run by the National science foundation. By the late 1980's, the Internet has shed its military and research heritage and was available for the use by the general public. Internet service providers (ISP's) began offering dialup Internet accounts for a monthly fee, giving user an email, discussion group and file transfers.
services. In 1989, the World Wide Web was born and in 1990's the combination of e-mail, the web and online chat propelled the Internet in to national and international prominences.⁶

i) Today's Internet

Besides from the complex physical connections that make up its infrastructure, the Internet is facilitated by bi or multi-lateral commercial contracts (e.g., peering agreements), and by technical specifications or protocols that describe how to exchange data over the network. Indeed, the Internet is essentially defined by its interconnections and routing policies.

As of June 10, 2007, 1.133 billion people use the Internet according to Internet World Stats. It is evident from the writings of N.J. Slabbert, photosphere and writer on policy issues for the Washington DC based urban land institute the article published in the Harvard International Review has asserted that the Internet is becoming fast basic feature of global civilization, so that what has traditionally been called "civil society" is now becoming identical with information technology society as defined by Internet use.

2.4. Internet Tools

The following are the important tools of Internet

- Email

A system of exchanging messages and computer files by means of computers attached to a network. Messages, usually text, sent from one person to another via computer. E-mail can also be sent automatically to a large number of addresses.⁷
Messages are exchanged between hosts using the Simple Mail Transfer Protocol with software programs called mail transport agents. Users can download their messages from servers with standard protocols such as the POP or IMAP protocols, or, as is more likely in a large corporate environment, with a proprietary protocol specific to Lotus Notes or Microsoft Exchange Servers.

Mail can be stored either on the client, on the server side, or in both places. Standard formats for mailboxes include Maildir and mbox. Several prominent e-mail clients use their own proprietary format and conversion software to transfer e-mail between them.
- **World Wide Web**

Viewing a web page on the World Wide Web normally begins either by typing the URL of the page into a web browser, or by following a hypertext link to that page or resource. The first step behind the scene is for the server-name part of the URL to be resolved into an IP address by the global, distributed Internet database known as the domain name system, or DNS.

The browser then requests the resource by sending an HTTP request to the web server at that IP address. In the case of a typical web page, the HTML text is requested first and parsed by the browser, which then makes additional requests for graphics and any other files that form a part of the page in quick succession. When considering website popularity statistics, these additional file requests give rise to the difference between a single 'page view' and an associated number of server 'hits'.

The web browser then renders the page as described by the HTML, CSS, and other files received, incorporating the images and other resources as necessary. This produces the on-screen page that the viewer sees. Most web pages will themselves contain hyperlinks to other related pages and perhaps to downloads, source documents, definitions and other web resources.

Such a collection of useful related resources interconnected via hypertext links is called what has been dubbed a "web" of information. This web of information is available on the Internet created by Tim Berners-Lee first called the World Wide Web in 1990.
Many people use the terms Internet and World Wide Web (or just the Web) interchangeably, but as discussed above, the two terms are not synonymous.

The World Wide Web is a huge set of interlinked documents, images and other resources, linked by hyperlinks and URLs. These hyperlinks and URLs allow the web-servers and other machines that store originals and cached copies, of these resources to deliver them as required using HTTP. HTTP is only one communication protocols used on the Internet.

Web services also use HTTP to allow software systems to communicate in order to share and exchange business logic and data.

Software products that can access the resources of the Web are correctly termed as user agents. In normal use, Web browsers, such as Internet Explorer and Firefox access Web pages and allow users to navigate from one to another via hyperlinks. Web documents may contain almost any combination of computer data including photographs, graphics, sounds, text, video, multimedia and interactive content including games, office applications and scientific demonstrations.

- Through keyword-driven Internet search using search engines, like Yahoo!, and Google, millions of people worldwide have easy, instant access to a vast and diverse amount of online information. Compared to encyclopedias and traditional libraries, the World Wide Web has enabled a sudden and extreme decentralization of information and data.
• Remote Access

The Internet allows computer users to connect to other computers and information stores easily wherever they may be in across the world. They may do this with or without the use of security, authentication and encryption technologies, depending on the requirements.

This is encouraging new ways of working from home, collaboration and information sharing in many industries. An accountant sitting at home can audit the books of a company sitting in another country, on a server situated in a third country that is remotely maintained by IT specialists.

An office worker away from his desk, perhaps the other side of the world on a business trip or a holiday, can open a remote desktop session into their normal office PC using a secure Virtual Private Network (VPN) connection via the Internet. This gives the worker a complete access to all of their normal files and data, including e-mail and other applications, while away from the office.

This concept is also referred to by some network security people as the Virtual Private Nightmare, because it extends the secure perimeter of a corporate network into its employees homes; this has been the source of some notable security breaches, but also provides security for the workers.

• Collaboration

The low cost and instantaneous sharing of ideas, knowledge, and skills has made collaborative work dramatically easier. Not only a group can cheaply
communicate and test, but the wide reach of the Internet allows such groups to form even among niche interests.

Internet chat, via instant messaging systems allows colleagues to stay in touch in a very convenient way when working at their computers during the day. Messages can be sent and viewed even more quickly and conveniently than via e-mail. Extension to these systems may allow files to be exchanged, 'whiteboard' drawings to be shared as well as voice and video contact between team members.

- **File Sharing**

A computer file can be e-mailed to customers, colleagues and friends as an attachment. It can be uploaded to a Web site or FTP server for easy download by others. It can be put into a "shared location" or onto a file server for instant use by colleagues. The load of bulk downloads to many users can be eased by the use of "mirror" servers or peer-to-peer networks. In any of these cases, access to the file may be controlled by user authentication; the transit of the file over the Internet may be obscured by encryption and money may change hands before or after access to the file.

These simple features of the Internet, over a world-wide basis, are changing the basis for the production, sale, and distribution of anything that can be reduced to a computer file for transmission. This includes all manner of office documents, publications, software products, music, photography, video, animations, graphics and the other arts. This in turn is causing seismic shifts in each of the existing industry associations.
• **Streaming Media**

Many existing radio and television broadcasters provide Internet 'feeds' of their live audio and video streams (for example, the BBC and Rush Limbaugh). They may also allow time-shift viewing or listening such as Preview, Classic Clips and Listen Again features. These providers have been joined by a range of pure Internet 'broadcasters' who never had on-air licenses. This means that an Internet-connected device, such as a computer or something more specific, can be used to access on-line media in much the same way as was previously possible only with a television or radio receiver. Podcasting is a variation on this theme, where usually audio material is first downloaded in full and then may be played back on a computer or shifted to a digital audio player to be listened to on the move. These techniques using simple equipment allow anybody, with little censorship or licensing control, to broadcast audio-visual material on a worldwide basis.

• **VOIP (Voice over IP)**

VOIP stands for Voice over IP, where IP refers to the Internet Protocol that underlies all Internet communication. This phenomenon began as an optional two-way voice extension to some of the Instant Messaging systems that took off around the year 2000. In recent years many VoIP systems have become as easy to use and as convenient as a normal telephone. The benefit is that, as the Internet carries the actual voice traffic, VoIP can be free or cost much less than a normal telephone call, especially over long distances and especially for those with always-on Internet connections such as cable or ADSL.
Thus VoIP is maturing into a viable alternative to traditional telephones. Interoperability between different providers has improved and the ability to call or receive a call from a traditional telephone is available. Simple inexpensive VoIP modems are now available that eliminate the need for a PC. Voice quality can still vary from call to call but is often equal to and can even exceed that of traditional calls. Most VoIP providers offer unlimited national calling but the direction in VoIP is clearly toward global coverage with unlimited minutes for a low monthly fee.

2.5. Search Engines

Search engine is a program that enables users to search the Internet using keywords. It's a program that searches documents for specified keywords and returns a list of the documents where the keywords were found. Some search engines also mine the data available in newsgroups, databases, or open directories. Unlike Web directories, which are maintained by human editors, search engines operate algorithmically or in a mixture of algorithmic and human input.

The first Web search engine was Wandex, a now-defunct index collected by the World Wide Web Wanderer, a web crawler developed by Matthew Gray at MIT in 1993. Another very early search engine is Aliweb it appeared in 1993, and still runs today. JumpStation (released in early 1994) used a crawler to find web pages for searching, but search was limited to the title of web pages only. One of the first full text crawler-based search engine was WebCrawler, which came out in
1994. Unlike its predecessors, it let users search for any word in any webpage, which became the standard for all major search engines. It was also the first one to be widely known by the public. Also in 1994 Lycos (which started at Carnegie Mellon University) was launched, and became a major commercial endeavor.

Soon after, many search engines appeared and vied for popularity they are Excite, Infoseek, Inktomi, Northern Light, and AltaVista. In some ways, they competed with popular directories such as Yahoo and Google. Later, the directories integrated or added on search engine technology for greater functionality.

i) **Type of Search Engines**

- **General search engines**

  General search engines are those, which searches for the information from its own database/index. They save the index terms as its directory that includes index searching mechanisms that gives user an option to search by subject too. Their indexes follow single term indexing and multi term or phrase indexing. These are based on generic retrieval tools customized for searching performance, indexing speed, security, searching interface alternatives, user tracking and other administrative tasks. They easily install and maintain the use of Internet robot.

  They index different websites available on the Internet by using their software robot or crawler also by way of requests made by webmasters to index
their sites. They index sites depending upon their policy. It is not necessary that they will index all the sites submitted to them. They provide searchable interface on their website to users to search for information. The number of records retrieved again depends upon their policy. It could be minimum of 10 and maximum of 100.

The structure of general search engines differs from one to another and also the query format for processing query terms. They use either Boolean operators or statistical methods or probabilistic methods or mathematical symbols to search for information from their database. There is also a difference in indexing websites. Some take words, which appear in title and first page of website and some take from whole of website i.e. from different pages. The information searched on each search engine varies as none of them are alike because of different methods used to index sites and some index more WebPages than others.

They do rank WebPages based on set of rules, involving the location and frequency of keywords on a webpage. Pages with keywords appearing in the title are assumed to be more relevant to the topic. Similarly, keywords appearing near the top of a webpage such as in the headline or in the first few paragraphs of the text. Frequency is the other major factor in how search engines determine relevancy. A search engine will analyze how often keywords appear in relation to other words in a webpage.
Some of the popular general purpose search engines available on the net are:

- http://www.google.com
- http://www.lycos.com
- http://www.hotbot.com
- http://www.altavista.com
- http://www.looksmart.com
- http://www.infoseek.com
- http://www.alltheweb.com

*Meta Search Engines*

In order to avoid 'Searcher' going from one to another search engine and to overcome flood of unwanted information, Meta search engines made their presence more effectively. Meta search engines act as a gateway that link users automatically and transparently to multiple and may be competing search engines. These use variety of techniques through all of them work with a fundamental searching unit of text.

The concept behind 'Meta search Engine' is smart and simple. Searcher submit a query to only one site that in turn goes out and searches through sites of
different search engines including directories like Yahoo, filter results and bring them back to the searcher. At one shot searcher gets consolidated list of results searched from different general search engines.

The Meta search engines usually contain three components viz. Dispatch mechanism, interface agents and display mechanism. Each of them functions in coordination with each other. Dispatch chooses search engines for a specific query; interface agent 'translates' the users search query into the format required by a specific search engines or directories. When the results are obtained from different search tools, the display mechanism merges them. Display mechanism of the Meta search engine is such that which remove duplicate links and then gives results.

The number of search from Meta search Engine depends on their search policy. It varies from one to another. These can be used in getting quick overview, since every search engine differs in their functioning, whereas Meta search engines provide limited results per each search engine, the outcome is incomplete. In addition, some Meta search engines are rather slow and create another problem i.e. duplication search.

Some of Meta search engines available on the net are:

- http://www.mamma.com
- http://www.dogpile.com
- http://www.kar too.com
- http://www.surf wax.com
Intelligent search engines are those, which try to give the solution on overcrowded Internet as well as intranet. The search engines can be maintained by intelligent agents, which automatically rank the results or products according to personal preferences of the user. In other words, they use concept-based search systems, using a technique called clustering, which tries to determine what one means, not just what one say. Such engines return hits on documents that are 'about' the subject that are being explored, even if the words in the document don't precisely match the words one enter into the query. The key features of the intelligent search engines are; they allow natural language searching. Instead of entering 'Keywords', a sentence in the form of question can be entered in search box to search for information on a particular topic. Secondly, they use Thesaurus for improved keyword searching, which helps in ranking the retrieved results. Thirdly 'Push technology' to provide personalized services at definite intervals to surfers. Fourthly, neural net is used to develop a search category, which best meets interest of the largest number of users in a particular category. Finally, automated collaboration filtering is used to provide results.

Some examples of intelligent search engines:

- http://www.excite.com
- http://www.profusion.com
- http://www.ask.com
Subject specific search engines

As their name suggests, they index only sites related to a particular subject(s) or material. Their presence necessitated because of growth of information on the Internet. Average user started finding it difficult to search for information on a particular aspect as more 'Junk' material used to retrieve from general purpose search engines. These also act like any other search engine except the fact they include only sites on a particular subject(s) or materials.

Few such search engines are:

- http://www.scirus.com
- http://www.ipsearchengine.com
- http://www.sosig.ac.uk/harvester.html
- http://ww.fishhoo.com

Specialized search engines

These categories of search engines provide access to such information, which is not provided by other types of search engines. These are broadly categorized as deep web, domain names, multimedia/image and new page tracking search engines. The "deep" or "invisible" web consists of content stored in searchable databases mounted on the web. These databases usually cover a targeted topic or aspect of a topic. Search engine spiders cannot index this information. Under "domain name" search engines can find out the availability of a particular domain based on Internic's 'whois' database. In multimedia and
image, one can find out sites which contain multimedia or image objects. Lastly, new page tracking search engines provide information based on user profile to their members on a regular basis over e-mail. Some of such sites are:

- [http://citeseer.nj.nec.com/cs](http://citeseer.nj.nec.com/cs)
- [http://www.eevl.ac.uk/eese](http://www.eevl.ac.uk/eese) [Engineer E-journal searching]
- [http://www.invisibleweb.com](http://www.invisibleweb.com)
- [http://www.checkdomain.com](http://www.checkdomain.com)
- [http://www.akoo.com](http://www.akoo.com)
- [http://www.dittoo.com](http://www.dittoo.com)
- [http://www.axie.com](http://www.axie.com)
- [http://images.google.com](http://images.google.com)

**Open source search engines**

Open source search engines allow participants to make changes and contribute to the improvement of the software. They are generally free and use the GPL or other open source licensing schemes. In most cases, anyone can use the software on a site or incorporate it in a product, but must share improvements and additional functionality with the other source users. Technical support is generally available from other users and developers via mailing list or online conferencing, or by paying consultants. Some such sites are:

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• **ASPSeek** (free)

• **Datapark Search** (free)

• **ht://Dig** (free)

• **JXTA Search** (free)

• **Lucene** (free engine, no crawler)

• **People search engines**

  People search engines is a search engine that indexes people and their links on the web. Some of such sites are:

  • **PeekYou**
  
  • **Ex.pplode.us**
  
  • **InfoSpace**
  
  • **Spock**
  
  • **Spokeo**
  
  • **Wink**
  
  • **Zabasearch.com**
  
  • **ZoomInfo**

• **Search engines for kids**

  Like their parents and teachers, most kids use Google to find their way online. But there are plenty of great search engines made especially for children out there. Here is a list of the top 5 search engines for kids:
ii) **How Search engine works**

A search engine operates, in the following order

- Web crawling
- Indexing
- Searching

Web search engines work by storing information about a large number of web pages, which they retrieve from the WWW itself. These pages are retrieved by a Web crawler (sometimes also known as a spider) an automated Web browser which follows every link it sees. Exclusions can be made by the use of robots.txt. The contents of each page are then analyzed to determine how it should be indexed (for example, words are extracted from the titles, headings, or special fields called Meta tags). Data about web pages are stored in an index database for use in later queries. Some search engines, such as Google, store all or part of the source page (referred to as a cache) as well as information about the web pages,
whereas others, such as AltaVista, store every word of every page they find. This cached page always holds the actual search text since it is the one that was actually indexed, so it can be very useful when the content of the current page has been updated and the search terms are no longer in it. This problem might be considered to be a mild form of linkrot, and Google's handling of it increases usability by satisfying user expectations that the search terms will be on the returned webpage. This satisfies the principle of least astonishment since the user normally expects the search terms to be on the returned pages. Increased search relevance makes these cached pages very useful, even beyond the fact that they may contain data that may no longer be available elsewhere.

When a user enters a query into a search engine (typically by using key words), the engine examines its index and provides a listing of best-matching web pages according to its criteria, usually with a short summary containing the document's title and sometimes parts of the text. Most search engines support the use of the Boolean operators AND, OR and NOT to further specify the search query. Some search engines provide an advanced feature called proximity search which allow users to define the distance between keywords.

The usefulness of a search engine depends on the relevance of the result set it gives back. While there may be millions of webpages that include a particular word or phrase, some pages may be more relevant, popular, or authoritative than others. Most search engines employ methods to rank the results to provide the
"best" results first. How does a search engine decides which pages are the best matches, and what order the results should be shown in, varies widely from one engine to another. The methods also change over time as Internet usage changes and new techniques evolve.

Most Web search engines are commercial ventures supported by advertising revenue and, as a result, some employ the controversial practice of allowing advertisers to pay money to have their listings ranked higher in search results. Those search engines which do not accept money for their search engine results make money by running search related ads alongside the regular search engine results. The search engines make money every time someone clicks on one of these ads. The vast majorities of search engines are run by private companies using proprietary algorithms and closed databases, though some are open source.

2.6. **Evaluation Criteria for World Wide Web**

The following are the criteria used for evaluating World Wide Web

i) **Author**

Anyone with access to a server can publish anything on the web. It's important to identify the author of a web document and verify his or her qualifications to write on the topic. The answer to the following questions authorship will help to validate the author's credibility.
• Is there an author listed? Is the document signed?

• Is there any way of getting more information about the author from this site?

• Are the author's credentials provided? Is he or she qualified to write on this subject?

• Is contact information provided for the author? Or, is contact information provided for the institution or company with which the author is associated in order to determine the author's qualifications?

• Remember to look for a physical address and phone number – a simple email address is not sufficient if you need to contact someone to verify information.

**Tips to determine the credentials of an author**

Go to the home page of the website that contains the document and search for the author’s name and his or her affiliation with the site.

Try to find pages about or by the same author by performing an Internet search on the author’s name.

**ii) Publisher**

It's essential to identify and evaluate the credentials and motivations of the organization or people responsible for maintaining a website. Answers to the
following questions about the website’s publisher or sponsoring agency will help to find the credibility.¹⁰

• Does the site clearly identify the organization responsible for publishing the information found on it?

• Is there a link at the top or bottom of the page linking back to information about the website’s publisher or sponsor?

• NOTE: You can often find such info from an "About Us" or "Frequently Asked Questions" link.

• From examining the website’s URL, can you determine if the page is part of someone’s personal account or part of an official site?

   NOTE: A tilde (–) in the URL usually indicates a personal web page rather than an institutional website.

• Can you find the sponsoring organization’s homepage by deleting all the information in the URL after the website’s domain name?

   For example, www.unca.edu/students/current/ is the UNCA Current Students resource page. The University of North Carolina – Asheville homepage is www.unca.edu/.

• Can you determine if the information has been published elsewhere, such as in a scholarly journal?

• Does the document have consistent headers or wallpaper that imply an association with a larger website?
iii) Audience and Purpose

For whom is this source intended and for what purpose? If, for example, you find an article, "How Plants Grow," and children are the intended audience, then the material may be too simplified for your college botany paper. More important to the evaluation of information is the purpose for which the information was created. Be sure, then, that the intended audience and purpose of the article are appropriate to your requirements or at least clearly in evidence so that you may take them into account. Information pretending to objectivity but possessing a hidden agenda of persuasion or a hidden bias is among the most common kind of information in our culture.

iv) Accuracy

Editors and publishers don't necessarily examine and evaluate the content of web sites. The information contained within a web document must be carefully scrutinized for errors and misleading statements. Answering to the following questions will provide the insight about accuracy and reliability information published on web:

- Is there a way to verify any background information provided in the document?
- Does the document contain any spelling or grammar errors?
- If the document quotes or refers to other sources, does it include a bibliography or link to the original source documents mentioned?
If you're looking at a research article, is the source of the information clearly identified? Does the article include the gathered data and explain the research methods used to gather and interpret it?

- Does the document contain any broken links?

\textit{v)} \textit{Currency}

Currency refers to the timeliness of information. In printed documents, the date of publication is the first indicator of currency. For some types of information, currency is not an issue: authorship or place in the historical record is more important. For many other types of data, however, currency is extremely important, as is the regularity with which the data is updated. Answering to the following criteria will help us to ascertain the currency of web resources:

- The document includes the date(s) at which the information was gathered
- The document refers to clearly dated information (e.g., "Based on 1990 US Census data.").
- Where there is a need to add data or update it on a constant basis, the document includes information on the regularity of updates.
- The document includes a publication date or a "last updated" date.
- The document includes a date of copyright.
- If no date is given in an electronic document, you can view the directory in which it resides and read the date of latest modification.
vi) **Dimensions of Quality**

There are many dimensions of quality; each measure will pertain to a particular Website in varying degrees. Here are some common measures:

- **Timeliness**: Websites change often and rapidly. How much has a Website changed since the last upgrade? How do you highlight the parts that have changed?

- **Structural Quality**: How well do all of the parts of the Website hold together? Are all links inside and outside the Website working? Do all of the images work? Are there parts of the Website that are not connected?

- **Content**: Does the content of critical pages match what is supposed to be there? Do key phrases exist continually in highly-changeable pages? Do critical pages maintain quality content from version to version? What about dynamically generated HTML (DHTML) pages?

- **Accuracy and Consistency**: Are today's copies of the pages downloaded the same as yesterday's? Close enough? Is the data presented to the user accurate enough? How do you know?

- **Response Time and Latency**: Does the Website server respond to a browser request within certain performance parameters? In an e-commerce context, how is the end-to-end response time after a SUBMIT? Are there parts of a site that are so slow the user discontinues working?
• **Performance**: Is the Browser --> Web --> ebSite --> Web --> Browser connection quick enough? How does the performance vary by time of day, by load and usage? Is performance adequate for e-commerce applications? Taking 10 minutes -- or maybe even only 1 minute -- to respond to an e-commerce purchase may be unacceptable!

**vii) Navigation and Usability**

• **Hyperlinks**

In legal documents that refer to other legal documents at the same web site, are those documents connected by hyperlinks? The use of hyperlinks between legal documents facilitates legal research and increases the use of legal materials posted at the web site.

• **Ease of Use**

In long documents are tables of contents used? Can visitors move easily within parts of documents? If it is an Adobe work, are hyperlinks to the individual sections inserted in the table of contents for ease of navigation through a long document?

Is the table of contents in outline format, for ease of expanding a chapter to show the individual sections or collapsing the sections to return to the chapter designation?
viii) Load Time

When web page loads in a browser, the browser sends an HTTP request to the web server for the page in the URL. Then, as the HTML is delivered, the browser parses it and looks for additional requests for images, scripts, CSS, Flash, and so on. Every time it sees a request for a new element, it sends another HTTP request to the server. The more images, scripts, CSS, Flash, etc. that page has the more requests will be made and the slower your pages will load.

The easiest way to reduce the number of HTTP requests on your pages is to not use many (or any) images, scripts, CSS, Flash, etc. But pages that are just text are boring.\textsuperscript{12-13}

2.7. Conclusion

The Internet is a massive expanding body of information, which is likely to play a significant role in information dissemination for researchers and faculty members. This expansion has been matched by an increase in the number of individuals using the Internet. Now a day's researchers and faculty members are establishing web resources and providing subject gateway on World Wide Web.

With the increase in usage of web resources, it is very important to provide right information to the right users. In this regard this chapter highlights on evaluation criteria which can be effectively used by the research scholars and faculty members in selecting and developing the web resources.
References


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