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## The World-Wide Web and sustainable development

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## The World-Wide Web and sustainable development



Rod Shaw, WEDC

SINCE WEDC WAS formed in 1971, it has been committed to keeping alumni, their sponsors and other supporters in touch with current activities and new initiatives; to disseminating the results of its research; and to sharing experiences gained from consultancy assignments undertaken in many low- and middle-income countries throughout the world.

As a means of extending this commitment, WEDC is developing a site on the World-Wide Web, one of the latest developments of the Internet — the global network of hundreds of thousands of personal computers. This paper examines the nature of the 'Web' and considers the extent to which it may be used as an effective communication tool for sustainable development. It introduces the WEDC site and those with which WEDC is closely linked.

### The Internet

The Internet was originally conceived in the 1970s by the United States military as a global communication network to be used in the event of nuclear war. An important feature of the early network (known as ARPAnet) was the use it made of an electronic communications protocol called TCP/IP. This enabled a computer to send and receive data to and from another computer. Local computer networks evolved and were linked to others to form much larger networks comprising many organizations. The vision, at that time, was to provide the opportunity of maintaining communication with as much of the world as possible, should any region or countries be devastated by

war. The advantage of an international network based on TCP/IP is that it is decentralized — many computer file servers across the world maintain the links between organizations and institutions.

With the threat of global nuclear war diminished since the end of the Cold War, the Internet is now widely used by academic institutions, businesses, and other organizations. It provides services for millions of people — typically the sending and receiving of electronic mail (email), electronic conferencing and, with the development of the World-Wide Web, personal publishing and broadcasting (Figure 1).

### The World-Wide Web

The World-Wide Web (WWW) is a means of providing and retrieving information across the Internet. It makes use of a programming language, developed by the then Conseil Européen pour la Recherche Nucléaire (CERN) in Switzerland in the early 1990s, which is now known as the European Laboratory of Particle Physics (Segal, 1995). This language is known as the *hypertext mark-up language* or *html*. Related html files can be linked directly to one another using the *hypertext transfer protocol (http)*. This is the case whether the files reside on the same computer or on other computers situated in different parts of the world. A passage of text is highlighted in the source file and contains a reference to a related file (Figure 2). The selected text is usually underlined and displayed in mid-grey, on black and white monitors, or in blue on colour

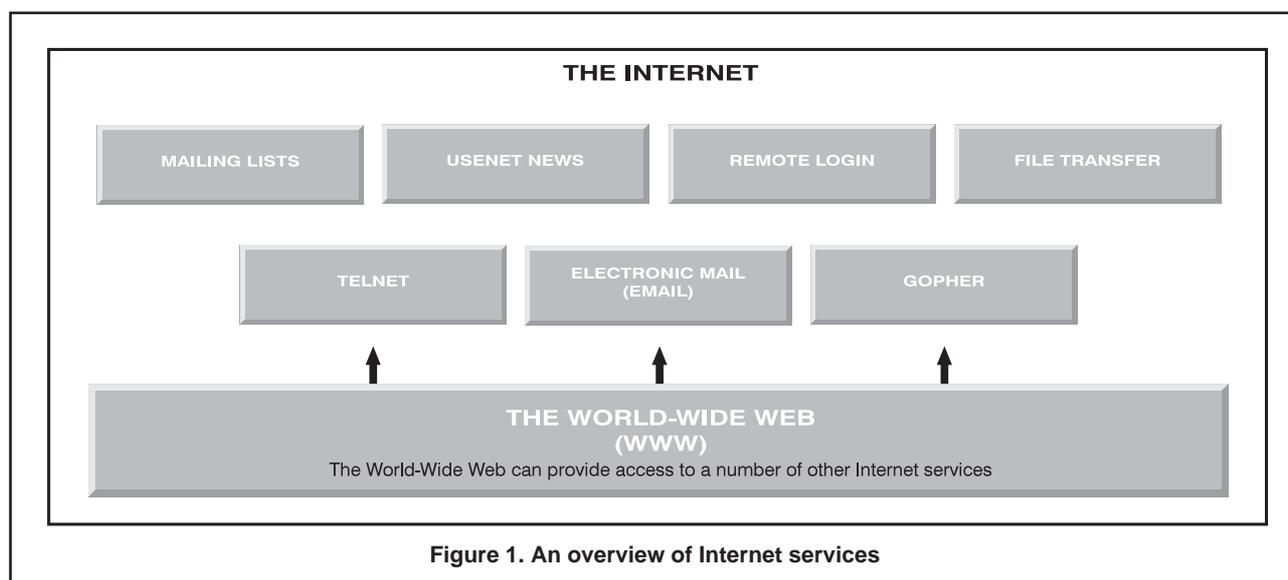
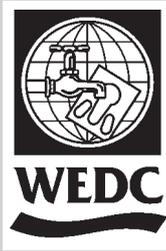


Figure 1. An overview of Internet services



## Water, Engineering and Development Centre

Welcome to the Water, Engineering and Development Centre at Loughborough University of Technology, UK. WEDC is concerned with education, training, research and consultancy for the planning, provision and management of physical infrastructure for development in low- and middle-income countries.

The following list is designed to help you to browse easily through the information about WEDC. Please note that you may return to this or another appropriate WEDC page by using the icons.

- [An Introduction](#)
- [Education and Training Opportunities](#)
- [Research and Consultancy](#)
- [Specialist Areas of Activity](#)
- [Staff](#)
- [Conferences](#)
- [Publications](#)
- [GARNET](#)
- [Bulletin: Recent WEDC News](#)



*The WEDC Web provides useful links to other related institutions and organizations*



**Return to: Academic Departments and Sections**

*For detailed printed information, please contact:*

WEDC  
Loughborough University of Technology  
Leicestershire LE11 3TU UK

Email: [WEDC@lut.ac.uk](mailto:WEDC@lut.ac.uk)  
Telephone: 0 (44) 1509 222885  
Fax: 0 (44) 01509 211079

June 1995

**Figure 2. The WEDC 'home page' on the World-Wide Web**

Note: The linked page will appear by selecting one of the underlined options

monitors. The reference itself is not displayed but is hidden within the hypertext document. Such documents are viewed by using one of several programs known as 'browsers'. Connections to the Internet, and hence the World-Wide Web, are usually made via modems. These are small, and relatively inexpensive, units which make use of telephone infrastructure.

The World-Wide Web has developed into a huge electronic library of information (of both text and images) which is growing by an estimated ten per cent per month. Because its growth is so explosive, no-one can be sure exactly how many people are now using it. During May, estimates ranged from between 10 and 50 million people. Web sites hold information on many subjects — some very specialized — from architecture to zoology, and from the study of bats to the study of human behaviour (Yates and Leavy, 1995).

### Benefits of the World-Wide Web

The World-Wide Web offers millions of people the opportunity of rapidly sharing their ideas, information and experiences. In this respect it is similar to email or electronic conferencing. Unlike email, however, it is not interpersonal. Instead, it enables contributors to instantly 'publish' or 'broadcast' literature globally for any other user of the Web to view — and it does not require the intervention of an external publisher or broadcaster.

After the initial investment in equipment, the use of the Web is charged at the price of a local telephone call. Publishers are attracted to the Web as there are no printing, paper or postage costs incurred. The main attraction for development professionals is the access the Web provides to remote (and hitherto inaccessible) information. The World-Wide Web is also rapidly becoming an international standard for access to databases of many types (Segal, 1995).

Reardon (1994) describes the ways in which the UNDP has facilitated the global exchange of information by establishing national computer networks in many developing countries. He notes that *Sustainable Development Networks (SDNs)* are now operating in Angola, Bolivia, China, Honduras, Indonesia, Nicaragua, Pakistan, the Philippines, Poland, the Republic of Korea and Tunisia, as well as 22 island countries in the South Pacific. He maintains that "SDNs provide a timely and cost-efficient medium for individuals, organizations and governments to communicate ideas, share information and relate experiences that bear on the environment and development." He goes on to suggest that, in some instances, they can even help to "breakdown antagonisms among users and help overcome the tendency in many countries to deny access to information".

### Limitations of the Web

Clearly, the Web has limitations. Most of the material is published in English and access demands a significant level of computer literacy, appropriate hardware and

software, and a link to a participating file server. As a result, most sites are currently found in the North. 'Downloading' files between countries can be slow. Cabling is expensive too, and beyond the reach of the economies of many southern countries.

Not least of the Web's limitations is the present difficulty of easily locating relevant and useful material. Literature available on the 'information superhighway' is seemingly without limit, and much of it seems trivial. It is possible to search the Web using keywords, but the facilities available to do this can be unreliable. Furthermore, because the World-Wide Web is constantly changing, an index will soon be out of date. The response of many users to this problem is to create attractive sites which provide a focus for a particular area of interest and encourage new links. The World-Wide Web 'address' (known as the *Uniform Resource Locator* or *URL*) is then advertised in other, more traditional, ways.

The Internet seems likely to overcome some of these limitations in the near future. Satellite technology promises access to the Web from anywhere in the world without the need for a cable link. Already, email, faxes, data and telex messages can be sent and received in this way following the launch of GemSat for Windows. Developments in technology should also increase the speed at which information is sought and transferred.

### Information or communication?

The real concern among some observers is that an increasing dependence on information technology, not only diverts economic and human resources away from core development activities, but also contributes to the "process of detachment" of the North from the South. Zadek (1992) argues that an interest in communicating with one social group directly affects the ability of an individual or organization to communicate with other social groups. He refers to examples of some NGOs who, by developing an international, if influential, role in development affairs (aimed at bringing about political change) diminished their ability to communicate with the very people they had first set out to help.

Another fear is of the effect that electronic-based media may have in undermining other patterns of indigenous communication which may already be fragile because of weak domestic and regional support. Certainly, the World-Wide Web has produced a surfing subculture comprising an international population far removed from real life in the South. It is also apparent that innovations in information technology can lead to an excess of information or 'information overload', if improperly managed. It is clearly important to remember that information about something we already know is worthless as information, and that information about something we do not already know is equally worthless unless we have a need to know about it. A further criticism of information technology *per se* is that it has blurred the boundary between information and communication. Fuglesang (1982) reminds us that

“we do not communicate by cramming an enormous quantity of information bits together in a monologue, but by being socially intelligent and capable of listening to what others have in mind before we respond”.

### The WEDC site

The WEDC site is being developed with sensitivity to the benefits and problems the World-Wide Web presents and with the acknowledgement that the information super-highway is only one of many communication tools. The site focuses on water, sanitation and other infrastructure, management and environmental issues. Information available about WEDC currently includes:

- details of education and training opportunities;
- an overview of specialist areas of WEDC activity;
- profiles of WEDC staff;
- monthly bulletin updates; and
- WEDC publications.

Future developments will include:

- further reports of research and consultancy projects;
- free access to selected papers from over twenty years of annual WEDC conferences; and
- regular additions to ‘The WEDC Web’ — a database of other useful World-Wide Web sites with common interests such as United Nations’ agencies, the World Health Organization, and non-governmental organizations.

### GARNET

In line with plans to promote the network as widely as possible, the Global Applied Research Network (GARNET) has also established a home page on the World-Wide Web. This is designed to compliment normal, traditional networking methods. Users are able to obtain a range of information about GARNET including:

- background information to the initiative - purpose, history, structure;
- profiles of individual topic networks — aims, activities, recent output;
- recent publications from GARNET;
- previous WSS applied research output, organized by keywords; and
- pointers to other Internet sites with specific interest for WSS researchers (Saywell, 1995).

### One-World On-line

One of the most significant sites concerning development in the South so far is *One World On-Line*, an initiative of the One World Broadcasting Trust. One World On-line provides access to the World-Wide Web for over eighty non-governmental organizations and a number of other institutions. Oxfam, for example, is sending out press releases and first hand reports from potential disaster ‘hot-spots’. The WEDC site is also linked to this experimental venture.

### Conclusions

Despite the limitations of electronic-based media, and the additional fear that the Internet may be dominated in the future by multinational corporations demanding payment for access to their data, the World-Wide Web presents a growing percentage of those who have a genuine desire to build a better world with a new and exciting means of cooperation and collaboration. Within its own context, the Web is truly democratic. It has no hierarchy, and there is, as yet, no censorship. Of course, there is the potential to misinform, to bias and to corrupt, but this has always been the case with mass-communication media. In 1932, Berthold Brecht lamented the limitations of broadcasting:

*“What a wonderful apparatus broadcasting could be if it would only receive as well as transmit, make the recipient speak instead of just listen, relate him to others, instead of isolating him from them”.*

The Web experiment is a step towards the realization of Brecht’s dream. One World On-line hopes to take a further step forward at the end of this year by offering NGOs the opportunity of introducing audio and video clips to their sites. Video conferencing is on the agenda for the next millennium when people in different parts of the world will be able to participate in live visual discussions.

The long-term success of the World-Wide Web as a serious communication tool for sustainable development, however, will ultimately depend on the wide-spread introduction of low-cost connections in the South, and on the generous and regular provision of appropriate and accessible information.

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### World-Wide Web addresses:

WEDC and GARNET:

<http://info.lut.ac.uk/departments/cv/wedc/index.html>

One-World On-Line:

<http://www.bbcnc.org.uk/online/oneworld/top.html>