

# ITs for you ...

## Internet applied for real users

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**By virtue of the nature of this paper there are many references given to commercial web sites  
- there is no endorsement implied - they are given as illustrative of the available resources.**

### ABSTRACT

*This paper is aimed at potential users of Internet technology but who are currently unsure of the benefits or practicalities.*

*The development of the Internet as an essential tool for practising engineers has broadly been accepted by the larger companies, educational institutions and government. However the greatest benefits may yet to be realised by the smaller practice and the individual - those referred to as the 'SOHO' user in the popular press.*

*This paper considers the practical use of internet technology and covers:-*

- *basic equipment requirements - the current specification of computer/communications*
- *device and software required for internet access*
- *the connection method - eg modem, ISDN and ADSL; and the internet provider, considering national and international needs*
- *the general applications -*
- *email - use for text & file exchange.*
- *web - aspects including research, virtual work groups, file transfer, self-promotion, purchasing and sales.*

### Introduction

In under 15 years the Internet has encroached on all aspects of modern living. Members of CIBSE and ASHRAE can gain enormously from accessing the vast array of resources offered over the Internet. As with all technology there is a certain amount of mystery and jargon associated that, with a little time and effort may be understood and exploited.

### The Internet

Today's Internet has its distant roots in the military ARPANET that linked computers across the USA that was set up in the 1960's as a means of ensuring the integrity of the computer networks in time of war.

The rise in the wider popular use of the network (the Internet) as a means of sharing information was largely due to its wholesale adoption by universities and colleges from where it percolated into commerce and the public arena. As a conduit of communicating between large 'main frame' computers it was hugely popular in the academic and commercial community. However it was with the coming of the world-wide web combined with the falling prices of equipment and telecommunications that launched the Internet into the consciousness of the public.

The web is the term that describes the method by which differing computers may exchange information in a seamless manner so that the end user can access data (typically web pages) held on any connected computer. The web really all began in the late 1980's when physicist Dr. Berners-Lee wrote a small computer program for his own personal use. This program allowed pages, within his computer, to be linked together using keywords. It soon became possible to link documents in different computers, as long as they were connected to the Internet. The document formatting language used to link documents is called HTML (Hypertext Markup Language.)<sup>1</sup>

The medium being so popular that in a recent international survey<sup>2</sup> 61 percent of office workers in the UK and 84 percent of their American counterparts report using the Internet everyday or several times a week.

The small scale internet user, the so-called SOHO user, will typically connect from their office through the local phone lines to an ISP (Internet service provider) who will provide the gateway to the Internet. The required technical knowledge is

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<sup>1</sup> [www2.famvid.com/i101/web.html](http://www2.famvid.com/i101/web.html)

<sup>2</sup> Pitney Bowes (2000) [WWW]

[cyberatlas.internet.com/markets/professional/article/0,,5971\\_431931,00.html](http://cyberatlas.internet.com/markets/professional/article/0,,5971_431931,00.html) (September 12,2000)

becoming increasingly minimal and all modern SOHO directed computer sales include the necessary software (programmes) to communicate with the Internet as well as appropriate hardware (electronics) to do so.

### The Equipment Needs

The basic equipment needs for Internet access are simple and by no means leading edge. The new user should be able to fully equip themselves for well under £1000 (\$1600)

This would typically include a PC or Macintosh computer at around £600<sup>3</sup>. For example

- PC based on a Celeron 600MHz processor (main chip) or an iMac
- 64Mb (64 x 10<sup>6</sup> bytes) RAM (memory)
- 10Gb (10 x 10<sup>9</sup> bytes) hard disc drive
- modem with a speed of 56k (56 x 10<sup>3</sup> bits per sec)
- CD Rom drive
- 15" screen
- basic sound capability
- keyboard and mouse

Additional equipment including a printer and a backup device will bring the total cost to under £1000.

As a basic user a phone line can be shared with the normal phone or fax (however when the computer is communicating with the web the phone/fax line will be engaged).

In a small office with up to 15 users the Internet may well deserve a dedicated phone line or, faster and more conveniently, an ISDN line or an ADSL connection that can be shared across all users through a computer network. An ISDN line will provide faster connections with little delay when connecting to the Internet and an ADSL connection will provide a continuous, always on, connection to the Internet through an existing phone line without interrupting normal calls. (see [www.howstuffworks.com/dsl1.htm](http://www.howstuffworks.com/dsl1.htm)) The costs of these connections can vary greatly dependent upon the telephone provider. The total cost per networked user is similar (or slightly less) than standalone machines as each machine will not require a modem but will need a network card and appropriate cabling. All machines link together using a hub (a multipoint connector) and then a router (electronics to route Internet request to the ISP).

A basic setup for such a networked facility would require a more knowledgeable user to implement it with the occasional need for maintenance.

### Internet Service Provider (ISP)

The link from the computer to the wider world of the Internet is normally via an ISP. There are many companies offering Internet connection services. Some for free; (gaining their income from a portion of the phone call cost as well as charging premium rate phone fees for helplines); and the others at around £10 (\$15) per month.

There are numerous other deals available that link in the use of a particular telecommunications company with reduced rate Internet access. See [thelist.internet.com/countrycode/44/](http://thelist.internet.com/countrycode/44/) for the vast array of possible ISPs. As with any product it is useful to talk with a colleague with personal experience or IT professional to determine the best option.

For a casual user the selection of a particular ISP is not critical to long term success however careful consideration should be given to potential future requirements. For example, for a world traveller, it can be important that the ISP has local phone numbers in international locations. The use of the ever increasing number of Internet cafés for maintaining business contacts whilst on a trip abroad is frequently impractical especially if security and accessibility are important. Many of the larger ISPs provide international 'phone access.

### Email

Email is the main workhorse of the Internet. The public imagination was sparked in 1976 when Queen Elizabeth went online with the first royal email message<sup>4</sup> In the 24 years since that landmark message the usability of email technology has led to a massive uptake of email as the preferred method of communication amongst many. It is through the ISP that email would be sent and received; each account with a particular ISP will have one (or more) email addresses. The email will stay on the ISP's computer at some distant location until the email software on the user's PC requests it.

The email address would normally be of the form  
Joebloggs@internetprovider.co.uk

For business use it is normally preferred to have an email address that reflects the business. This is simply achieved by registering an unique web name (domain name) for the particular business such as

Dublin2020.co.uk

Frequently the cheapest and most flexible way of achieving this is to register the domain name

<sup>3</sup> Computer Shopper, October 2000

<sup>4</sup> [www.pbs.org/internet/timeline/](http://www.pbs.org/internet/timeline/)

using one of the many Internet based companies who will then redirect any email that is sent to [Joebloggs@Dublin2020co.uk](mailto:Joebloggs@Dublin2020co.uk) to the existing email address provided by the ISP. (For an example of such a service see [www.freeparking.co.uk](http://www.freeparking.co.uk))

This can be done at a cost of under £10 per year - the main problem is finding a domain name that has not already been registered by anyone else! With current email software there is normally only a need to be connected to the ISP when sending and receiving mail. Emails can be written and read 'off-line' ie without having the phone connection open and then the connection to the Internet only made when sending the resulting emails.

For the technology and mechanics of email see [www.howstuffworks.com/email.htm](http://www.howstuffworks.com/email.htm)

Since increasing numbers of people work on a number of different computers at various locations there has been a huge growth of purely 'web based' email services. These provide a facility where no matter which computer is used to access the Internet the user can read and send email from the web based account. This would normally mean that the user would have an email address such as

[Joebloggs@freeinternetmail.com](mailto:Joebloggs@freeinternetmail.com)

however the use of a personalised domain name and web redirection can overcome this limitation. The cost of web based email services is generally nothing and access can be gained internationally from Internet cafés, libraries, colleges, etc.

For further information on web based email see [hotwired.lycos.com/webmonkey/98/08/index3a.html?tw=html](http://hotwired.lycos.com/webmonkey/98/08/index3a.html?tw=html)

and for the technique of effective emails see [www.webfoot.com/advice/email.top.html](http://www.webfoot.com/advice/email.top.html).

## Web Presence

Together with an ISP account comes the opportunity to put web pages on the Internet. There is little or no control on what may appear on a web page. This will mean that any web page will join many millions of others that exist on the web. Web pages can be developed using the simplest text processor that comes with any modern computer. A web page being a set of simple formatting words such as **BOLD** and **CENTER** together with the actual text that is displayed to the person viewing the page. Additionally pages would incorporate links to other pages and pictures (images). (See [www.howstuffworks.com/web-page.htm](http://www.howstuffworks.com/web-page.htm) for a full introduction to the structure and mechanics of a web page.)

The aspiring web publisher would be well advised to buy one of the many web page design packages that are available (for under £50 (\$75)). As with any publishing activity the success of the web page will be determined by the quality of design as well as the currency and relevance of the material. Although the initial cost of setting up a web page is low the proper maintenance of that page will require proper consideration.

A step by step guide to the creation and publishing of a web page may be seen at [www.1stsitefree.com](http://www.1stsitefree.com).

The location of a particular page on the web is given by its unique address known as its URL. If a personalised domain name has been registered it is a simple matter to use that in place of the less effective URL allocated by the ISP eg [www.joebloggs.co.uk](http://www.joebloggs.co.uk).

## Web Searching

When encountering the web for the first time it is akin to being given an enormous encyclopaedia, the pages of which having been torn from their binding and scattered randomly. The web is a truly freeform information source. It is this freedom that, as well as providing an almost limitless resource, inevitably provides much noise. To discover quality information whilst minimising irrelevant material is a skill that comes from experience. However there is a large number of web based search mechanisms that will ease the way. For example [www.askjeeves.com](http://www.askjeeves.com) collects together several different search technologies to provide an interactive list of available web locations in response to typing in the required search term (such as 'air conditioning'). Sometimes simpler is to use an email based search by sending an email to [search@inquiremail.com](mailto:search@inquiremail.com) with the subject line containing the words you want to search for. An email will be returned to you with a list of sites that may be relevant to your requirements. These methods tend to generate a surfeit of information. Frequently greater success may be obtained from specialised indexes. Examples that are particularly relevant to the built environment can be seen at :-

[www.umich.edu/~nppcpub/resources/compendia/architecture.html/](http://www.umich.edu/~nppcpub/resources/compendia/architecture.html/)

[www.energydesignresources.com](http://www.energydesignresources.com)

[cyburbia.ap.buffalo.edu/pairc](http://cyburbia.ap.buffalo.edu/pairc)

[www.cica.org.uk/ConstructionResources.htm](http://www.cica.org.uk/ConstructionResources.htm)

## Newsgroups and Mailing Lists

As a means of sharing and discussing information with others there are thousands of groups that have been set up on the Internet. (See [www.liszt.com](http://www.liszt.com)

for an ordered list of groups) These variously allow the dissemination of information to many like interested Internet users by automated emails or through a newsgroup reader. Newsgroup readers are included with the freely available software that is used to access the web and provide a mechanism for the reading and participating in the discussion topics. There are many email lists that provide targeted email newsletters to members. An excellent example of such is Greenclips - a summary of news on sustainable building design and related government and business issues emailed out every two weeks.

([solstice.crest.org/environment/greenclips](http://solstice.crest.org/environment/greenclips)). The ASHRAE International Committee utilises the free facilities offered by [www.egroups.com](http://www.egroups.com) to run mailing lists, discussion groups and, potentially, member polls. The price that is paid is that when automated emails are received by members they include a short product advert.

## **Libraries**

The web hosts on-line catalogues and reservation systems to numerous libraries across the world. However there are web 'gateways' into traditional libraries that provide a far greater functionality than that of a standard system. The British Library has such a gateway ([www.bl.uk](http://www.bl.uk)). There are many facilities that traditional libraries would not be able to offer (such as 24 hour immediate access to electronic versions of documents) that can now be globally accessible. For an overview of the extent of this broad range see [www.libraryspot.com](http://www.libraryspot.com) - this links into numerous international libraries. Some of the best information sources can be accessed through so called virtual libraries. An excellent example of this that is of particular interest to Engineers is the Edinburgh Engineering Virtual Library at [www.eevl.ac.uk](http://www.eevl.ac.uk).

## **Get Surfing**

It is clear that the web holds an enormous trove of information that can be accessed at the click of a mouse. There follows some examples of general and specific resources that will provide direct information or a springboard to sites of use to the engineer working with the built environment. These links are worth trying out.

## **Government**

[www.open.gov.uk](http://www.open.gov.uk)  
[www.loc.gov/global/explore.html](http://www.loc.gov/global/explore.html)  
[www.parliament.uk](http://www.parliament.uk)  
[europa.eu.int/en/comm/dg17/dg17home.htm](http://europa.eu.int/en/comm/dg17/dg17home.htm)

## **Standards**

[www.bsi.org.uk](http://www.bsi.org.uk)  
[www.iso.ch](http://www.iso.ch)

## **Research Centres**

[www.bsria.com](http://www.bsria.com)  
[www.aivc.org](http://www.aivc.org)  
[www.bre.co.uk](http://www.bre.co.uk)

## **IT for Building Services**

[itc.fgg.uni-lj.si](http://itc.fgg.uni-lj.si)  
[www.forAEC.com](http://www.forAEC.com)

## **On Line Publications**

[www.caddet-ee.org](http://www.caddet-ee.org)  
[www.eren.doe.gov/buildings](http://www.eren.doe.gov/buildings)

## **International Resources**

[eande.lbl.gov/EAP/EAP.html](http://eande.lbl.gov/EAP/EAP.html)  
[www.homeenergysaver.lbl.gov](http://www.homeenergysaver.lbl.gov)

## **Design Tools**

[www.lbl.gov](http://www.lbl.gov)  
[eetd.lbl.gov/news/EETDNews.html](http://eetd.lbl.gov/news/EETDNews.html)  
[www.energydesignresources.com/tools.html](http://www.energydesignresources.com/tools.html)  
[radsite.lbl.gov/radiance/HOME.html](http://radsite.lbl.gov/radiance/HOME.html)  
[www.eren.doe.gov/buildings/tools\\_directory](http://www.eren.doe.gov/buildings/tools_directory)

## **Regulations**

[www.detr.gov.uk](http://www.detr.gov.uk)  
[www.construction.detr.gov.uk/br/brads.htm](http://www.construction.detr.gov.uk/br/brads.htm)

## **Guidelines**

[solstice.crest.org/environment/gotwh/general/lbl-daylight/html/guides2.html](http://solstice.crest.org/environment/gotwh/general/lbl-daylight/html/guides2.html)

## **Background Information**

[www.efunda.com/home.cfm](http://www.efunda.com/home.cfm)  
[www.archeire.com](http://www.archeire.com)  
[www.local.ie/general/map](http://www.local.ie/general/map)  
[www.mapquest.com](http://www.mapquest.com)

## **Professional Institutions**

[www.cibse.org](http://www.cibse.org)  
[www.ashrae.org](http://www.ashrae.org)  
[www.imeche.org.uk](http://www.imeche.org.uk)

## **Learning the Net**

[www.learnthenet.com](http://www.learnthenet.com)  
[www.smarteric.com](http://www.smarteric.com)

## **On Line Conferencing**

[www.n2h2.com/KOVACS](http://www.n2h2.com/KOVACS)  
[www.cusemeworld.com/](http://www.cusemeworld.com/)  
[www.microsoft.com/windows/netmeeting/](http://www.microsoft.com/windows/netmeeting/)

### **Tendering**

[www.equalandapproved.com](http://www.equalandapproved.com)  
[www.bidbuybuild.com](http://www.bidbuybuild.com)

### **Control via the Web**

[www.bacnet.org](http://www.bacnet.org)  
[www.total-control.co.uk](http://www.total-control.co.uk)  
[www.echelon.com](http://www.echelon.com)

### **Conclusion and further links**

The application on Internet technology is changing and broadening day by day. As with much technology employed by engineers there are lessons and skills that need sharing across the whole engineering community. Maybe the Internet itself can help to share experiences and practices between engineers across the world to

establish best practice guidance for the use of the Internet for building services.

For further explanations and introductory tutorials the following sites are particularly good:-

[www.howstuffworks.com/category-internet.htm](http://www.howstuffworks.com/category-internet.htm)

[msnhomepages.talkcity.com/LibraryLawn/brownbr/internet/instart.htm](http://msnhomepages.talkcity.com/LibraryLawn/brownbr/internet/instart.htm)

[www2.famvid.com/i101](http://www2.famvid.com/i101)

[www.learnlots.com/webskins/heading.cfm?heading\\_ID=266&LL\\_Style=1](http://www.learnlots.com/webskins/heading.cfm?heading_ID=266&LL_Style=1)

And finally to discover the meanings of all Internet jargon visit [www.webopedia.com](http://www.webopedia.com).