



The Information Society Library  
GETTING THE BEST OUT OF CYBERSPACE



# INTERNET BASICS

FAQs, FACTS AND FFPs

*Stefano Baldi • Eduardo Gelbstein • Jovan Kurbalija*



# P R E F A C E

There is no shortage of books on all matters relating to information management and information technology. This booklet adds to this large collection and attempts to do a number of things:

- offer non-technical readers an insight into the few principles that are important and reasonably stable;
- present the material in a context relevant to the work of those involved in international relations;
- awaken the curiosity of readers enough that they will progress beyond this booklet and investigate and experiment and thus develop knowledge and take actions that will meet their particular needs.

The format of these booklets and their contents evolved from courses given by the authors over the last few years in various environments and the feedback of the attendees. Readers' feedback on these booklets would be greatly appreciated by the authors so that future editions can be improved. The coordinates of the authors are given at the end of this booklet.

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**KEY ABBREVIATIONS:**

- FAQ** — Frequently Asked Questions
  - FFP** — Frequently Found Problems
-





SECTION



1

# Introduction

*You cannot take advantage of  
what you don't understand.*

*Anonymous*



**A**t the beginning of 2003, it was estimated that ten percent of the world population had access to the Internet. This is an amazing number given the fact that the Internet was virtually unknown outside of specialised circles until 1993.

This percentage is not uniform around the world and the relative novelty of the Internet means that among the 90 percent of the population that is not connected, many are unfamiliar with what it is, what it offers and what its global impact might be.

The purpose of this booklet is to introduce readers to the basics of the Internet in a non-technical manner and to provide practical hints on how to take advantage of the services and facilities that the Internet offers.

For those confused by the subtitle of this booklet, FAQ is one of the many new terms and acronyms introduced by Internet users (or Internauts). It stands for Frequently Asked Questions, and many such questions will be discussed in the pages that follow. In addition, the authors felt the need to introduce a new category: Frequently Found Problems (FFP).

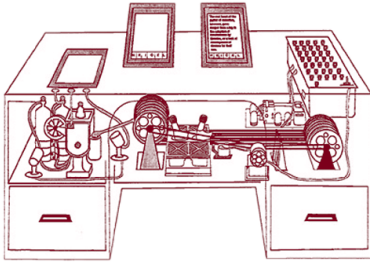
### *In the beginning...*

Although a well-worn opening, the beginning is still a good place to start. In fact, the Internet as we know it today had several beginnings.

In a short story written in 1941, “The Library of Babel”, Argentinean writer Jorge Luis Borges describes a vast library that contains all the information ever written – including everything that is true and everything that is false. In addition, for every argument put forward in one of the books, there is usually a counterargument proposed in another book. The problem, in the story, was that the custodians could not find the library’s catalogue of catalogues. The Internet can be viewed as such a library (and much more to boot) and, like the Library of Babel, it too has no catalogue of catalogues.

In 1945, Vannevar Bush published an article entitled “As We May Think” in the *Atlantic Monthly* in which he described a system, Memex,

that would act like a knowledge base. In this article he introduced the concept of the linking of documents.



A sketch of “Memex” - the first so-called “hypertext machine” designed by Vannevar Bush.

Ted Nelson further developed the idea of linked documents and in 1965 he coined the term “hypertext” and proposed a software framework to create a global knowledge base he called Xanadu. However, it was never fully realised.

In the late 1960s, the US government encouraged the development of a highly resilient computer network, which would remain operational even after a nuclear attack. It was called the Defense Advanced Research Projects network (DARPA net) and linked together various academic institutions and research facilities in the private sector.

In 1973, Vinton Cerf and others formalised the definitions of how information was to be transmitted over the DARPA network. These definitions became known as the Transport Control Protocol and the Internet Protocol (TCP/IP).

For many years, the Internet, as it began to be called, was used to exchange data and to remotely access computer systems. In addition, one of the subsidiary services that was available to the community of people connected to this network was electronic mail (e-mail). This rapidly became so successful that it fuelled the further growth of this network.

In 1989, Tim Berners-Lee, then working at the European Centre for Nuclear Research (CERN) in Geneva, Switzerland, put forward a working model for linking documents through the use of hypertext. This became known as the World Wide Web and quickly replaced earlier attempts to create directories of information that could be shared (such as the Gopher service).

Until then, all of these facilities were not user friendly, in fact quite the contrary, and their use was limited to the world of technically knowledgeable individuals. The late 1980s saw the commercial development



of graphical user interfaces (GUIs), designed to make the use of personal computers more readily accessible to non-technical people.

The concepts of a pointing device (mouse) and GUIs demonstrated many years earlier at the Rank-Xerox research laboratories now first appeared commercially in the Apple III and Macintosh personal computers and shortly afterwards (1990) in the Windows operating system, which has become a de-facto standard.

The last missing components of the Internet puzzle emerged in 1993. The first was the distribution of a free program, MOSAIC, designed by Marc Andriessen – then a 25-year old programmer – which provided a nearly 100 percent intuitive tool for navigating the World Wide Web (www).

The second was the energy and enthusiasm of the thousands, even millions of individuals, companies and organisations that saw the potential of the World Wide Web and populated it with their websites. The world has never been the same since.

## FREQUENTLY ASKED QUESTIONS (FAQ)

A list of all the FAQ relating to the Internet is very long. This booklet explores only those thought to be of most interest to the policy and decision makers in international affairs and also to those dealing with the many perspectives of the digital divide. It is hoped that these FAQ will also prove to be of help to those taking their first tentative steps in exploring the Internet.

The FAQ considered here are divided into four categories, covering the following:

- the Internet as an entity;
- the Internet's essential terminology;
- Internet access;
- how to get things done on the Internet.

The authors are convinced that anyone who is comfortable with the answers to the questions below will be well-equipped to seek answers to

other questions in the same fashion that the Internet has encouraged us all to work, i.e. through self-service.

### *Questions about the Internet as an entity*

- Q.1 Is the Internet the same as cyberspace and the Infosphere?
- Q.2 What exactly *is* the Internet?
- Q.3 How does the Internet work?
- Q.4 Who is responsible for making the Internet work?
- Q.5 Who owns the Internet?
- Q.6 Who pays for the Internet?
- Q.7 Is the Internet “safe”?

### *Questions about the Internet’s essential terminology*

- Q.8 What is a URL?
- Q.9 What is a TLD, what is a DNS?
- Q.10 What are HTML, XML, cgi and perl?
- Q.11 What are cookies, History, cache, Java, Active X, applets and the rest?
- Q.12 What are proxies, firewalls, and VPNs?

### *Questions about Internet access*

- Q.13 Who can have a website?
- Q.14 Who can have an electronic mail account?
- Q.15 Who can use instant messaging?
- Q.16 What is the “digital divide”?
- Q.17 What can we expect in the future?

### *Questions about how to get things done on the Internet*

Perhaps it would be better to refer to this category as Frequently Found Problems, instead of Frequently Asked Questions. This is certain to be the longest of all the lists. However, many of the questions begin with “How do I...?” and are practical in nature.

- FFP 1 How do I read a PDF document?
- FFP 2 How do I download software from the Internet?
- FFP 3 How do I use ZIP files?
- FFP 4 How do I download images from the Internet?

- FFP 5 How do I copy text from a web page into a document?
- FFP 6 How do I easily access the web pages I use frequently?
- FFP 7 How do I subscribe to online services (newsletters)?
- FFP 8 How do I check if I have anti-virus software installed?
- FFP 9 Is it safe to carry out payments online?
- FFP 10 How do I send a web page to somebody?
- FFP 11 How do I change somebody else's web page?
- FFP 12 How do I make a phone call using the Web?
- FFP 13 How do I listen to the radio on the Web?
- FFP 14 How do I watch TV on the Web?
- FFP 15 How do I join a chat group or a newsgroup?
- FFP 16 How do I join a distance learning course?





SECTION



2

# The Internet as an entity

*Once critical mass is attained, social, political and  
economic systems change.*

*from "The Law of Disruption"  
by Larry Downes and Chunka Mui (1998)*



## FREQUENTLY ASKED QUESTIONS ABOUT THE INTERNET AS AN ENTITY

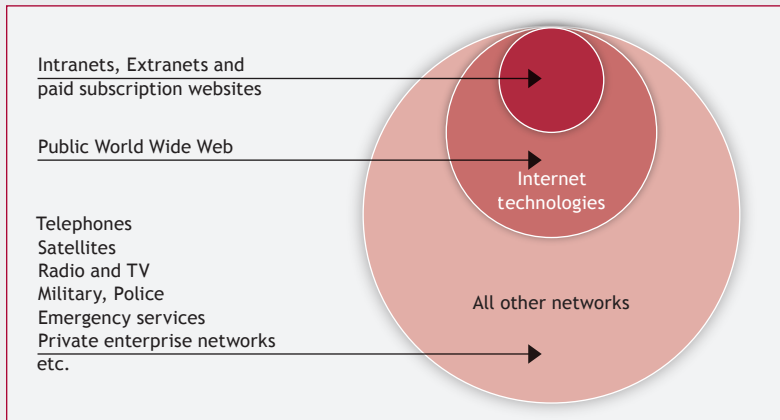
### Q.1 Is the Internet the same as cyberspace and the Infosphere?

No, the Internet is just a constituent part of both. The term “cyberspace” first appeared in a science fiction novel, *Neuromancer*, by William Gibson in 1986, and was quickly adopted to represent the world of data and software.

Prior to its appearance, the term “cybernetics” was frequently used to describe computer-related science and technologies.

In addition to the Internet, cyberspace also includes all other computer and telecommunications systems, which use other standards, such as telephone networks and non-Internet Protocol private data networks, pre-Internet networks and all other networks where security is vital, such as military, intelligence, police, banking and finance.

The term “Infosphere” is seen as an extension of the concept of the biosphere, first coined by the Russian geochemist Vernadski in 1929, to describe the “envelope of life” as an interdependent planetary web.



The Internet is that part of cyberspace (or the Infosphere) which mainly operates using the TCP/IP and http (HyperText Transfer Protocol) standards in addition to a few others, which will be described below.

The Internet also has two close relatives:

*Intranets*: these are networks that use the same technologies as the Internet but which are essentially private, allowing access only to authorised individuals. These networks are typically only used within the confines of companies and organisations.

*Extranets*: these are networks just like intranets but which give access to authorised individuals from other companies and organisations who, by design, share information. Extranets are used in business-to-business electronic commerce as well as in joint design or research ventures.

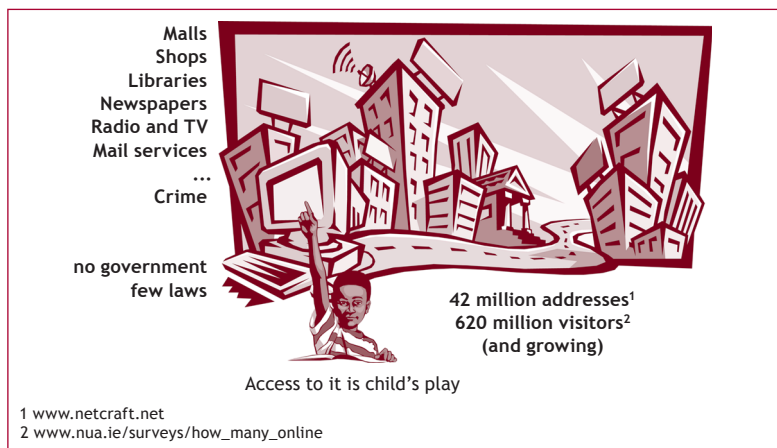
The main advantages of utilising Internet technologies in intra- and extranets are the ubiquity of the technologies and their consequent modest price plus the usability associated with a common browser end-user interface.

## Q.2 What exactly *is* the Internet?

Many different views exist of what the Internet really is. Each depends on the point of view of the viewer. Here are a few of these definitions:

### *From a non-technical person's viewpoint*

The Internet is just like a large city, only without a physical manifestation, i.e. a virtual city.





It contains most of the bodies you would expect to find in a real city: libraries, banks and other financial institutions, newspapers, magazines and other publishers, shops and auctions, radio stations and television channels, hobby clubs, advertisers and common interest groups.

It is an intensely democratic environment where freedom of expression dominates.

This also means that anybody can become a publisher, bypassing the traditional processes of editorial review and that consequently, information found on the Internet can range from the authoritative (the websites of the United Nations and its Specialised Agencies, for example) to the bizarre and absurd (we will not give any examples but they exist in very large numbers!) and comprise much that is offensive and/or illegal such as pornography and copyrighted material.

However, the Internet is a fairly unique kind of city because it has no elected (or even formal) government, no police force and relatively little legislation. Crime is highly profitable on the Internet and takes many forms, including the theft and misuse of credit card and personal information, theft of intellectual property, as well as other various scams that part innocents from their money. Cyber-crime is discussed in more detail in other booklets in this series.

### *From a technical person's viewpoint*

The Internet is a network of interconnected networks using the TCP/IP set of protocols, as well as http and other related standards.

This definition is correct but unhelpful to non-technical people.

A non-technical person does not need to understand the components and standards on which the world's telephone system is based, all he needs to know is which numbers to use to make a call to another party anywhere in the world.

A major difference between the telephone network and the Internet is that the telephone network was developed at a time when the end-device, the telephone itself, did not possess any processing power of its own, just a dial, a bell, a microphone and a small loudspeaker.

To overcome the limitations of these devices, the telephone network evolved to include many smart capabilities: metring of calls, sophisticated charging mechanisms, worldwide systems for the division of receipts between operators and apparatus for performing all the logical functions needed to initiate, connect and terminate a call.

### *From an economic perspective*

Electronic commerce, both business-to-consumer (B2C) and business-to-business (B2B), has transformed the Internet into an economic entity in its own right. Both forms of e-commerce are growing fast and are projected to become major economic forces in the next three to five years.

### *From a legal perspective*

The Internet challenges traditional legal systems in many ways. The virtual nature of the Internet easily circumvents physical boundaries and international borders. Thus, Internet transactions and their unclear anchor points in the physical world raise many legal questions such as: “Where do transactions actually take place?” and, “How is legal jurisdiction to be established?”

Lawyers will need to find new ways of regulating property rights given that a sizable proportion of Internet based property is developed through intensive interaction and collaboration rather than through the creative process of a single individual.



These and many more issues, particularly in the sphere of computer crime, are rapidly becoming a global challenge. For an overview of the areas currently under discussion, the interested reader may visit the Cyberlaw Encyclopedia (<http://www.gahtan.com/cyberlaw/>) and DiploFoundation’s Information Society Portal (<http://www.diplomacy.edu/is/>).

### *From a political perspective*

The Internet has changed both the vertical and horizontal stratification of modern society. Vertically, people who possess the right technical knowledge are forming new social groups and accumulating wealth

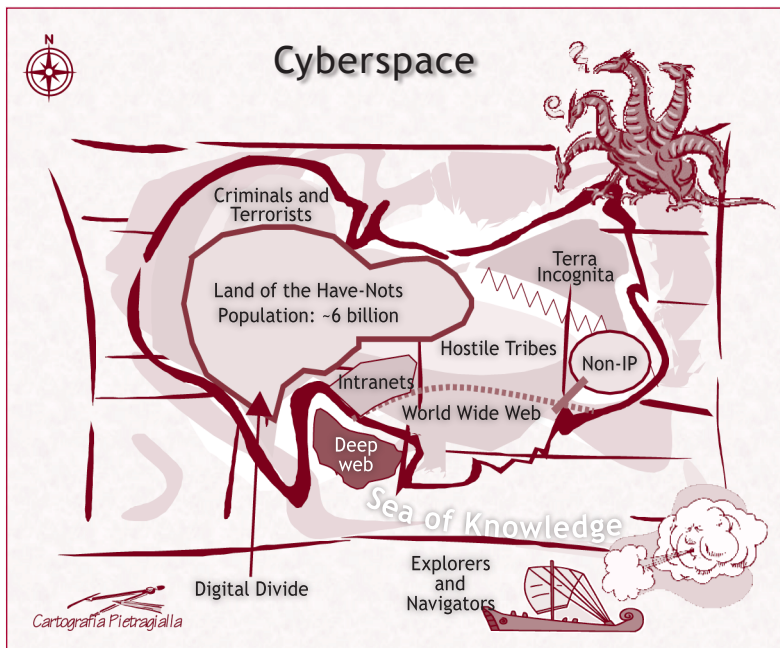
through new opportunities that exploit the combining of good ideas (for example, Microsoft and Yahoo!). Similarly, new regions and countries are emerging as major economic centres (for example, Silicon Valley and Bangalore – hub of the Indian software development industry).

These changes have already affected the distribution of political power at the local, national and international levels. And this is just the beginning of the Information Age.

### *From a global perspective*

The Internet is just one territory in cyberspace. Cyberspace remains, as the illustration below suggests, a frontier land, still being explored and not subject to too many controls and too much legislation.

This territory is an island in the **Sea of Knowledge** – an enormous and rich environment providing, to those who can access it and possess the knowledge to do so effectively, data and information vastly in excess of anything in human history.



Other territories on this map of cyberspace include those of the **Intranets** and **Extranets**, with their concomitant closed borders, and that of the non-Internet Protocol systems and networks.

Today, the largest part of the territory is made up of the **Have-Nots**, numbering some six billion people who do not have access to the **Sea of Knowledge** because of one or more of the following: lack of infrastructure, affordability and a lack of knowledge on how to benefit from it. The boundary of the land of the **Have-Nots** is called the **Digital Divide**.

Not to be ignored on this map is the presence of **Terra Incognita**, a large, uncharted territory full of potential treasures and unknown threats. The map also shows that there are criminals prowling in cyberspace, taking advantage of the ease with which they can hide and the lack of effective, ratified international legislation.

The **Hostile Tribes**, which seem to exist in every frontier land, include hackers, crackers, phreakers, malicious code builders and many others who are intent on disrupting the peaceful existence of the many territories of cyberspace.

### **Q.3** How does the Internet work?

This is a simple question that does not have a simple answer, as there are many elements to consider. Rather than enter into a technical discussion about the technological standards of the Internet, we will present an analogy that works well.

#### *Communication protocols – How information is sent on the Internet*

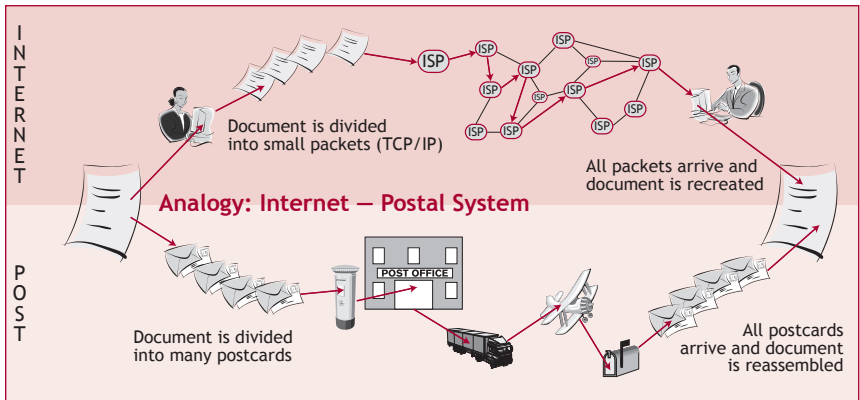
Vinton Cerf, a key figure in the development of TCP/IP and often referred to as the “father of the Internet”, describes the workings of these protocols as the equivalent of mailing a novel on a number of postcards.

Each postcard would have a destination address and an identification field (a name or an address) specifying who was sending it. The text of the novel would be written on each postcard as far as space allowed, the text continuing on subsequent (sequentially numbered) postcards.

The Internet Protocol (IP) works in a similar way: it provides a “to” address, a “from” address, space for some “text” and an indication of the

position of this text within the message. These electronic postcards are called “packets”.

Once the postcards have been dropped into a mailbox, they are taken to a sorting office where they are grouped and sent to another sorting office, and so on until they reach the nearest sorting office to the final destination. The same process occurs with packets that are routed from one network node to another.



As the postcards (packets) start reaching the recipient, there will be a check to ensure that they have all been received and that the information to reassemble them in the proper sequence is also present. Should a packet not have been received, the receiving sorting office would request the sender to retransmit it. The Transport Control Protocol (TCP) carries out all of these functions.

Other questions, explored later in this booklet, will deal with the details of how Internet addresses are defined and composed, how hyper-text works and other practical information needed to make effective use of the Internet and the three basic services it provides: the World Wide Web (www), the File Transfer Protocol (ftp) and electronic mail (through the Simple Mail Transfer Protocol (smtp) and the Post Office Protocol (pop)).

### *Domain names and Domain Name Servers (DNSs)*

Staying with the postal analogy, domain names are simply the addresses of the computers capable of exchanging messages, i.e. which are con-

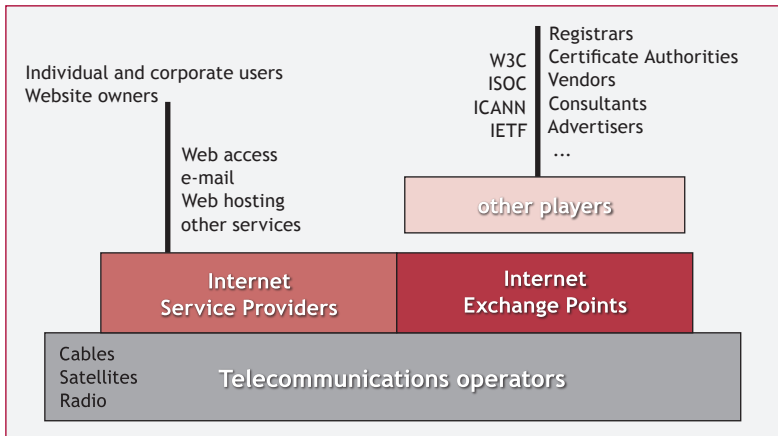
nected to the Internet, and domain name servers are the devices that act like directories, keeping a list of all the addresses (called IP addresses) on the Internet. IP addresses and their use are discussed in more detail in Q.8 and Q.9 below.

To make the Internet function efficiently it is essential that domain name servers (DNSs) be well managed. This is a particularly challenging task considering that:

- no duplicate domain names or IP addresses are allowed;
- there are billions of IP addresses;
- domain names and IP addresses are created every day somewhere in the world;
- there are millions of requests for IP addresses every day.

The DNS tables are stored in a very large distributed database. ICANN is the ultimate authority for registering domain names and guaranteeing their uniqueness (for more information about ICANN read the section *Bodies with key roles in the administration of the Internet* in Q. 4 below). The company Network Solutions is responsible for maintaining this list. Its work is funded through registration fees.

The database however is distributed because large companies (for example Microsoft) and countries (for example Australia) wish to retain control of their respective domains ([www.microsoft.com](http://www.microsoft.com) and [www.xyzzyzx.au](http://www.xyzzyzx.au))



#### **Q.4** Who is responsible for making the Internet work?

The apparent simplicity of the Internet masks an unprecedented collaborative effort involving many parties, which allows it to work as a single global network.

The figure on p.22 illustrates the major players, each with its own very specific roles and responsibilities.

#### *Telecommunications operators*

Starting at the physical level, providing cable and wireless distribution of digital signals to buildings and mobile individuals, are the telecommunications operators. These operators are responsible for the performance (absence of technical faults, repair work when needed, and quality of service) of the link between an individual or building and the Internet.

The right to access the networks of a telecommunications operator is subject to a charge. The cost of such access may comprise two separate components, a connection or line rental charge and a usage charge reflecting the volume of traffic on the line, although in recent times, high speed access to the Internet using Digital Subscriber Line (DSL) services is charged as a fixed tariff regardless of the volume of traffic.

The level of these charges depends on the level of competition in this market and on the infrastructure investments that have been carried out to develop these services. The cost of satellite communications or specially laid submarine cables is high and may result in Internet access charges in many countries exceeding what most of the population can afford.

#### *Internet Service Providers (ISPs)*

Many telecommunications operators are also Internet Service Providers (ISPs). An ISP is a separate organisational entity, usually operating on a commercial basis, dedicated to providing a full range of Internet services for its subscribers.

Some other ISPs work through contracts with telecommunications operators to provide such services, usually in competition with the operators.

An ISP provides at least two services: an Internet account and one or more e-mail accounts.

An Internet account gives the subscriber the right to access the Internet (via www, ftp, smtp, pop as well as other protocols). The ISP gives the subscriber all the necessary information on how to connect to the Internet:

- a telephone number for Internet access via a dial-up modem or an IP address for Internet access via a digital high-speed connection;
- a user name for identifying the customer of the service;
- a password for granting access to its services;

...as well as the details of the subscriber's e-mail accounts:

- a choice of e-mail identity (e.g. john.doe@isp.com);
- a password to ensure the privacy and confidentiality of the service.



#### **ISP Liability**

It has been suggested that ISPs should be made liable for the websites they host, i.e. for any spam or attacks originating from their clients.

Some governments have already made moves in this direction. The ISPs' counter-argument is that this puts an unfair burden on them. They compare themselves to telephone companies, pointing out that telephone companies are not responsible for what is said over the telephone.

Although some ISPs offer free services, these are becoming rarer and are usually free only for a limited period of time. ISP charges vary greatly from country to country, and are influenced by the following: the charges made by the telecommunications operator (even when it is a separate part of the same company), the level of competition and the range of services included in the subscription.

ISPs usually also provide additional services such as: a Help Desk or technical support (often these are separately charged services), the sale of equipment and software as well as the hosting of small websites of individuals, companies or organisations.

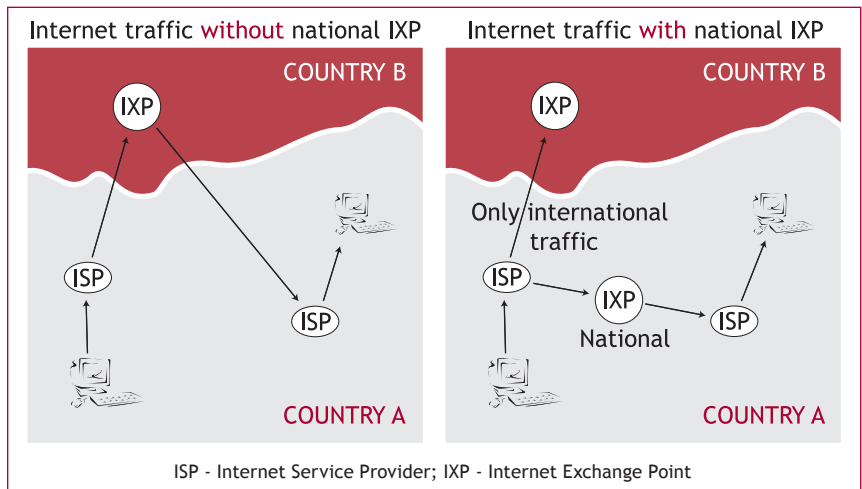
Large, complex websites such as those used in electronic commerce, are either hosted and operated by their owners or by specialised outsourcing companies that contractually guarantee a predefined level of service. This kind of hosting involves considerable human and financial resources.



### *Network Access Points (NAPs) / Internet Exchange Points (IXPs)*

Both of these terms are in current use and are synonymous. NAPs or IXPs are the locations where ISPs interchange traffic so that the users accessing the Internet through the services of one ISP can exchange information with those using the services of other ISPs. These facilities are funded by the charges raised by ISPs.

These points can also play an important role in reducing the digital divide. Imagine a country with two Internet service providers but no national IXP. All the exchanges of traffic between the clients of these two ISPs would need to be routed through another country, thus increasing the volume of long distance international data traffic and the cost of providing Internet service.



The situation shown in the fictional map above is real enough and there are many countries facing this very obstacle.

### *Standards and policy-making bodies*

The World Wide Web Consortium (<http://www.w3c.org>) develops interoperable technologies (specifications, guidelines, software, and tools) in order to help lead the Web to its full potential. W3C is a forum for information, commerce, communication and collective understanding.

Founded by Tim Berners-Lee in 1994, the W3C is an association of some 450 member organisations with three principal goals:

1. *Universal Access*: To make the Web accessible to all by promoting technologies that take into account the vast differences in culture, language, education, ability, material resources, access devices, and physical limitations of users on all continents;
2. *Semantic Web*: To develop a software environment that will permit each user to make the best use of the resources available on the Web;
3. *Web of Trust*: To guide the Web's development with careful consideration of the novel legal, commercial, and social issues raised by this technology.

The Internet Society (<http://www.isoc.org>) is a non-profit association established in 1992 to oversee the development and implementation of policies and standards that define how we use and interact with the Internet.

The society consists of more than 150 organisations and 11,000 individual members from over 182 countries and is the organisational base for the groups responsible for Internet infrastructure standards, including the Internet Engineering Task Force (IETF) and the Internet Architecture Board (IAB).

The society's members share a commitment towards the viability and global scaling of the Internet.

The Internet Engineering Task Force (<http://www.ietf.org>) is a large, open international community of network designers, operators, vendors, and researchers concerned with the evolution of Internet architecture and the smooth operation of the Internet. It is open to any interested individual. The oversight body of the IETF, composed of members of the IETF, is called the Internet Architecture Board (IAB).

It is interesting to note that the Internet emerged through consensus of an ever growing number of users and that none of the international standards organisations was involved at its inception.

The International Telecommunications Union has developed various recommendations, for example X.509, regarding public key infrastructures for encryption that have since been adopted by the Internet Engineering Task Force.

### *Bodies with key roles in the administration of the Internet*

The previous section has shown that there is no single management team in charge of the Internet. How does a mechanism of this size actually work in the real world?

This is the role of a number of bodies that deal with the day-to-day administration of the Internet.

The Internet Corporation for Assigned Names and Numbers (<http://www.icann.org>) is a non-profit corporation which was formed to assume responsibility for IP address space allocation, protocol parameter assignment, domain name system management, and root server system management functions that were previously performed under US government contract by IANA and other entities.

The Internet Assigned Numbers Authority (<http://www.iana.org>) consists of a group of individuals who work at the University of Southern California's Information Science Institute.

No single organisation could perform the function of registering every domain name (there are tens of millions of them and they change all the time). ICANN has established a list of accredited registrars all over the world, all accessible from ICANN's website.

As discussed in more detail in Q.9, a domain name contains at least one, and sometimes two components: the "Top Level Domain" (TLD) and the "Country Code Top Level Domain" (ccTLD), which help to define the nature of the organisation that registered the domain (for example the TLD "int" is reserved for international organisations) and the country in which the domain was registered (for example the ccTLD "ar" is that of Argentina).

In many countries the registration process has been licensed to private sector companies, and some of these companies retain a specific responsibility for some of the top level domains, such as ".org" used to identify non-profit organisations working for the public good.

For example, until 31<sup>st</sup> December 2002, the accredited registrar for the ".org" domain was the company Verisign (<http://www.verisign-grs.com>). As of 1<sup>st</sup> January 2003 this responsibility was transferred to the Public Interest Registry, founded by the Internet Society (<http://www.publicintrestregistry.org>).

For more information about registrars from different countries and the Top Level Domains they are licensed to register, please consult InterNIC's website ([www.internic.net](http://www.internic.net)). This is a registered service mark of the US Department of Commerce, licensed to the Internet Corporation for Assigned Names and Numbers.

### *Cybersquatters and WIPO*

In a highly democratic environment such as the Internet everything is possible and there is always somebody willing to take unfair advantage of such freedom. Cybersquatters are people who register a domain name that they have no intention of using themselves, only to prevent a person, organisation or company with a genuine need for such a domain name from doing so.

In reality, most cybersquatters have a financial motive in mind: to sell the rights to this domain name for a considerably greater sum than the registration fee they paid (invariably less than 50 dollars).

The easy and legal way to sell domain names is through a domain name exchange; these are organisations existing on the Internet created to trade in domain names. There are many such exchanges and they can be easily found through any search engine by typing the following: "domain name" AND "for sale".

A somewhat less attractive situation occurs when this proposed sale turns into a form of blackmail, involving the stipulation of terms and conditions that are patently unfair. In such situations it is possible to call on the Domain Name Dispute Resolution Service offered by the World Intellectual Property Organisation (WIPO).

Details of this service can be found at <http://arbitrator.wipo.int/domains/>.

### *Public Key encryption and Certificate Authorities*

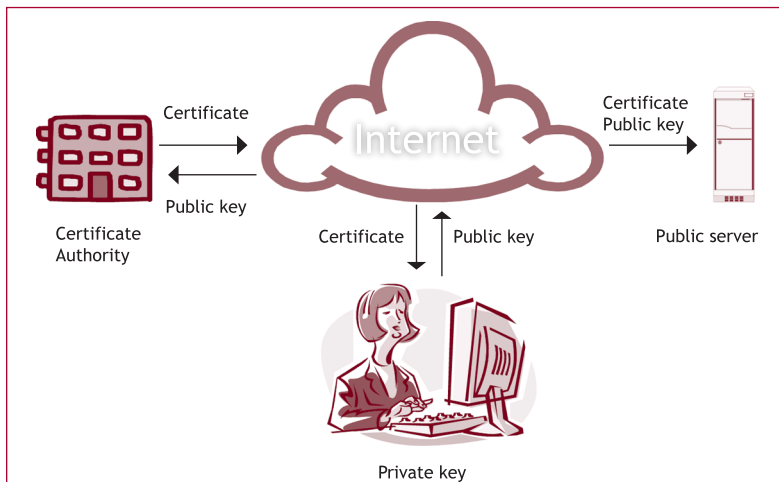
In an environment such as the Internet it is becoming increasingly important to ensure the authenticity of documents and transactions. For example, it may be necessary to achieve trust that a particular document originated from a known source and that it has not been modified during transmission.

The two processes used to achieve this trust are *encryption* and *authentication*.

- Encryption consists of transforming the information using an appropriate method into something that can only be converted back into a meaningful format at the recipient's end.
- Authentication consists of verifying that the information comes from a trusted source.

Both of these processes involve the concept of digital certificates.

For a secure web server – such as is used in e-commerce or diplomacy, with a large number of correspondents, a digital certificate is essentially a guarantee that the web server is trusted by an independent source known as a Certificate Authority (CA). The CA acts as a trusted intermediary between two computers, confirming that each computer is in fact the one it says it is, and then providing the public key of each computer to the other.



Digital certificates are available from a substantial number of licensed commercial companies.

### *Commercial service providers*

The Internet could not exist without a wide range of various other service providers (other than ISPs).

These services include:

- website design;

- usability testing and website evaluation;
- website hosting;
- call centre support;
- e-business services such as credit card processing and other logistics;
- systems integration—the linking of other systems and databases to a website;
- all forms of consultancy;

...and many others.

### Q.5 Who owns the Internet?

Nobody owns the Internet.

Nevertheless, hundreds of millions of dollars are invested in the Internet every year, much of this by commercial interests expecting a return on their investment. In Q.6 below, we try to clarify this *prima facie* paradox of investing in something that nobody owns.

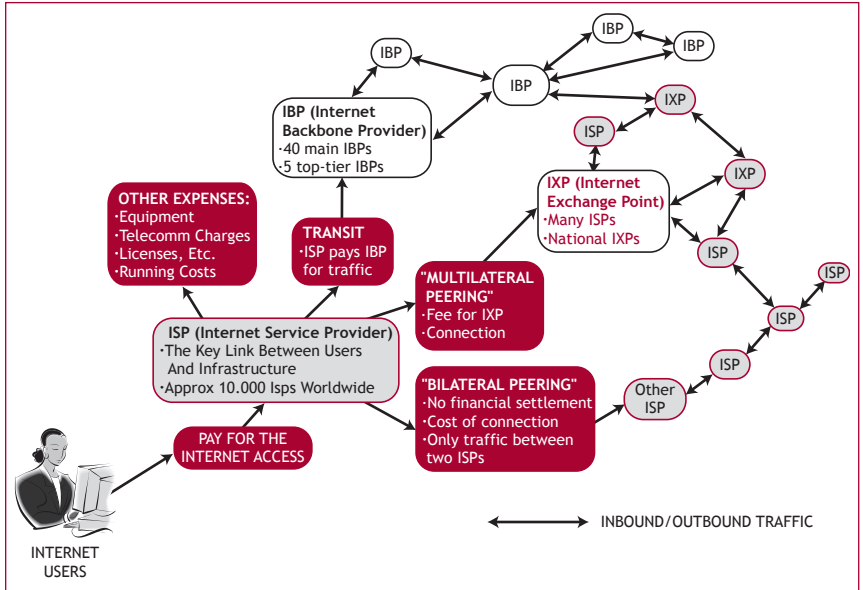
### Q.6 Who pays for the Internet?

There are many financial transactions among the many parties involved with the Internet.

- Individual subscribers and companies pay the ISPs.
- ISPs pay for the services of telecommunications operators and Internet exchange points.
- ISPs pay the vendors for equipment, software and maintenance (including diagnostic tools as well as support for the staff to operate their facilities, help desks and administrative services).
- Parties registering a domain name with a registrar pay not only the registrar but also IANA for their services.
- The Internet Society, the Internet Engineering Task Force and the World Wide Consortium are financed from voluntary contributions.

Telecommunications operators pay cable and satellite manufacturers and service providers to supply them with the necessary links – as

these operators are often in debt, they pay interest to the banks and consortia.



The list continues and the truth is, “There ain’t no such thing as a free lunch.”

**Q.7** Is the Internet “safe”?

There are two aspects to this question:

**Crime and the Internet**

There are many forms of malicious activity and crime on the Internet (see the booklets *Good Hygiene for Data and Personal Computers* and *Information Security and Organisations* for more information). The most common are:

- malicious code (viruses, worms, Trojan Horses) designed to interfere with the operation of end users’ personal computers and data;
- scams – typically e-mail messages offering the recipient the chance of becoming extremely rich by helping an unknown per-

son to transfer large sums of money (or diamonds) from another country (of course, the target always needs to part with some money first...);

- theft of credit card and other personal information;
- industrial and other forms of espionage;
- blackmail, extortion and other crimes.

You can take several measures, most of them simple and based on applied common sense, to reduce the risk of becoming a victim of crime on the Internet. However, the fact that crime does occur should not become a barrier to the exploitation of the many valuable features and facilities of the Internet.

### *Unsuitable content and the Internet*

As the Internet, and in particular the World Wide Web, is a totally democratic environment where anyone can become a publisher, the consequence is a substantial amount of content that is untrue, offensive, in bad taste or inappropriate in other ways for many people, and in particular the very young.

There is currently no answer to this problem and although unsuitable sites are deplorable, there is a wide consensus that they are a lesser evil than controls and censorship would be.



In the “Yahoo! Case”, the French court prohibited the online sale of Nazi-related material to users in France. The case raised several legal and technical issues.

Legal: Is it possible for the French court to extend jurisdiction over a website located in another country? (In this case the United States). The American court refused the ruling of the French one on the basis that it went against the First Amendment of the USA Constitution (Freedom of Speech).

Technical: Can Yahoo! always recognise the geographic location of a person visiting its website? Although geo-location software has been improved it is still possible to hide one’s origin. For Yahoo! the technical possibilities for segregating French from non-French visitors are limited.

The “Yahoo! Case” opened more questions than it answered. The main issue today is how to integrate the Internet into the existing legal system.





SECTION



3

# The Internet's alphabet soup terminology

*'Twas brillig, and the slithy toves  
Did gyre and gimble in the wabe:  
All mimsy were the borogoves,  
And the mome raths outgrabe.*

...

*"It fills my head with ideas,  
but I don't know exactly what they are..."*

*from "Alice Through the Looking-Glass" by Lewis Carroll (1872)*



**W**elcome to the world of alphabet soup terms and TLAs (Three Letter Acronyms). The majority of these have long histories and reflect the world of high-IQ'd, logical individuals who designed all the systems we today take for granted.

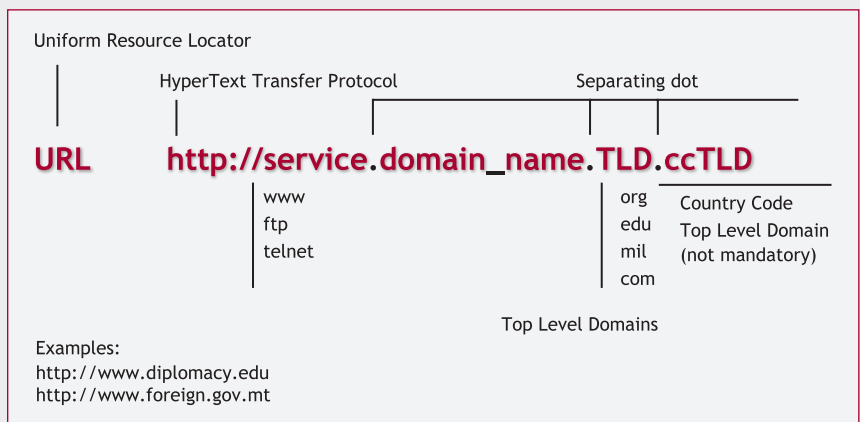
As an observer of the information technology world said, "ICT has lost its magic but not its mystery." However, there is nothing particularly mysterious about these important acronyms. The descriptions that follow are as succinct as possible and any readers who need to know more about the topics they cover can make use of one of the many websites devoted to these themes in multiple locations and languages.

Two examples of such sites are: <http://www.whatis.com> and <http://www.howstuffworks.com>.

### Q.8 What is a URL?

The letters stand for Uniform Resource Locator and they represent nothing more than a reference to the address of a website on the Internet. The URL consists of several elements, each providing an essential piece of information.

The first element, before the double slash (//) describes the specific Internet service that is required. The most commonly used services are http (HyperText Transfer Protocol) and https (Secure HyperText Transfer Protocol). More experienced or technically minded users also use



the ftp service (File Transfer Protocol) to transfer large files from one location to another, as is required, for example, when updating the contents of a website.

Other services in current use include chat, such as Internet Relay Chat (IRC) (a text based real time communication tool) and ICQ (“I seek you”) (effectively a paging system that has been introduced by many service providers).

There were other services in the past such as Telnet and Gopher that have now been relegated to history.

The element of the URL that follows the double slash indicates the address of the computer where the desired information is located. The rest of the URL elements are explained in more detail in Q. 9 below.

The URL is written in a format that is understandable to people. Computers however do not understand words, only the binary digits 0 and 1 in various combinations. This is further discussed in the second part of Q. 9.

### Q.9 What is a TLD, what is a DNS?

#### PART I: TOP LEVEL DOMAINS

As shown in the diagram above, all URLs are composed of several words separated by dots. This question will explore the last two of those words, known as the Top Level Domain and Country Code. At least one of them is required to define a valid URL.

The Top Level Domain indicates the profile of the website owners. For example:

- **.com** is normally associated with businesses;
- **.org** is primarily used by non-profit organisations;
- **.int** is strictly reserved for accredited international organisations;
- **.gov** is used by government departments;

...and so on.

The two letter combination that may appear at the end of a web or e-mail address is known as the Country Code Top Level Domain – each

country in the world has been assigned a two letter abbreviation (for example: **it** for Italy and **ca** for Canada).

## PART II: DOMAIN NAME SERVERS

Domain Name Servers perform a vital role in the operation of the Internet and have already been mentioned briefly in Q.3, “How does the Internet work?” These servers translate the URL into a format that the computers and devices that route traffic over the Internet can understand.

On the Internet every address is translated into a group of four numbers separated by dots. For example, 192.0.34.163 is the Internet address of the website of <http://www.icann.org>, where you can find the complete listing of all Top Level Domains and Country Codes.

If we type the numbers instead of the name in the address line of a browser we will reach the same web page that we would have had we typed the full domain name. As it is much easier to remember a name rather than a sequence of numbers, URLs are generally provided in alphabetical format.

### **Q.10** What are HTML, XML, cgi and perl?

HTML stands for **H**yper**T**ext **M**ark-up **L**anguage. A mark-up language is used to describe how a page should be formatted. Therefore, HTML is a tool that is used to change fonts, add colours, create headlines and embed graphics in a web page.

Although essentially a programming language, HTML is simple enough for anyone to learn how to use. Besides, many current word processing programs include the option of saving a document as a web page, whereby all the necessary HTML tags (indicators of how to display each section of the document) are automatically applied.

The limitation of HTML is that it only handles how information is presented and consequently is not capable of providing context for any part of a web page.

XML, **e**Xtended **M**ark-up **L**anguage, formally proposed by the W3C (World Wide Web Consortium) overcomes this limitation by providing additional tags that define what every particular part of a page means.

For example, the tag “phonenum” followed by a string of numbers will indicate that these numbers correspond to a telephone number. The advantage of using XML is that searches can be much more targeted and the results can be processed by a computer – in this example, a telephone number would be retrieved and could also be automatically dialled if required.



Because the use of XML is very flexible and any group sharing a common interest can define appropriate tags, an opportunity exists for the development of a “Diplomatic XML” (DiploML) – a set of tags that would facilitate the handling, storage and retrieval of various diplomatic documents such as resolutions, treaties, statements and *notes verbales*.

**Q.11** What are cookies, History, cache, Java, Active X, applets and the rest?

*Cookies:* Cookies are small data files that some websites are programmed to place on your computer in order to track your visits and to store your registration details such as passwords.

There is no consensus on cookies – many people consider them a useful tool while others see them as a means of spying and tracking people on the Internet. Fortunately, this is something that every Internet user can easily control as the browsers in common use (Internet Explorer and Netscape) have the option of enabling or disabling cookies. These features are discussed further in the booklet *Good Hygiene for Data and Personal Computers*.

*History:* When you surf the Internet, you leave traces of which websites you have visited. One of these is a history log of your browsing: all the addresses that you have visited are saved in your browser’s history file. This can be useful as you may wish to revisit some of these pages. However, it can also be detrimental, if, for example, your computer is audited and you are found to have visited websites considered inappropriate by your employer.

As with cookies, browsers give you the option of removing all records (Clear History) of the web pages you have visited or to have them erased after an elapsed time you can define yourself. However, you cannot remove all traces of the sites you have visited in this way. Even after the

cache and History are cleared, traces will remain which technical people can access.

*Cache:* A feature of most browsers is their ability to store on your hard disk pages that you have visited. This is handy as you may be able to access these pages without having to connect to the Internet. Again, you have complete control over the cache and can clear it at any time.

*Java and ActiveX:* These are two different programming methodologies. Java is a standard originally developed by Sun Microsystems, a well-known computer manufacturer. ActiveX is Microsoft's answer to Java.

*Applet:* An applet is a small program that can be included with a web page. Java applets (called ActiveX controls by Microsoft) can perform interactive animations, instant calculations, or other simple tasks without having to send a user request back to the server.

Much more could be discussed here – products such as Flash, Shockwave, RealPlayer, MP3 players and more. Interested readers are referred to the websites of these products to gain a better insight of what such products can offer.

### **Q.12** What are proxies, firewalls, and VPNs?

In many organisations that use the Internet, a proxy server is placed between the workstation of an end user and the Internet. A proxy server, or proxy for short, is a program that mediates between a workstation user in a networked environment and the Internet beyond. It is associated with a “gateway”, which separates the internal network from the outside; a “firewall”, which screens all incoming traffic and protects the network from unwelcome intruders; and a “caching” program, which looks locally for previously downloaded web pages.

When a proxy server receives a request for an Internet service (such as a web page request) from a user, it will first check whether it passes the organisation's filtering criteria. If it does, the proxy server, often also called a cache server, will look for it in its local cache to see if this page has been previously downloaded.

If it finds the page, it returns it to the user without needing to forward the request to the Internet. If the page is not in the cache, the proxy server, acting as a client on behalf of the user, uses one of its own IP ad-

dresses to request the page from the server out on the Internet. When the page is returned, the proxy server links it to the original request and forwards it to the user.

To the end user, the proxy server is invisible; all transactions (such as Internet requests and returned responses) appear to take place directly with the addressed Internet server. (The proxy is not quite invisible; its IP address has to be specified as a configuration setting to the browser or other protocol program.)

One of the advantages of a proxy server is that its cache is capable of serving all the users in an organisation. If one or more Internet sites are frequently requested, these are likely to remain in the proxy's cache.

A firewall is a separate device that examines each network packet to determine whether it should be forwarded to its destination. This is done in order to protect the resources of a private network from access by outside networks and its use implies the existence of established security policies that are reflected in its programs.

While there are commercial and free software programs available designed to circumvent firewalls and give end users more flexibility as to what they can do on the Internet, these should NEVER be used in a corporate environment as they would undermine the security arrangements of the organisation and could prove to be a serious Career Limiting Move.

A Virtual Private Network, or VPN, is in reality a purposely designed opening in a firewall, which allows trusted external parties to access a protected network.





SECTION



4

# Internet access

*The usefulness of a network grows with the square  
of the number of users.*

*Robert Metcalfe – developer of Ethernet and founder of 3Com*



## FREQUENTLY ASKED QUESTIONS ABOUT ACCESS TO THE INTERNET

### Q.13 Who can have a website?

In principle anyone can have a website. Millions of individuals already do, in addition to the millions of websites of commercial companies, government departments, non-governmental organisations, international organisations and common interest groups.

In order to have a website, the following activities need to be carried out first:

1. *Designing and building the website.* This can be done using very basic tools – web pages can be built using Microsoft Word and many other programs. You can also use more sophisticated tools and programs for more professional design and more flexibility in designing layouts.

At the top end of the spectrum, websites such as those capable of database searches and electronic commerce transactions require professional design and programming skills to implement.

2. *Hosting the website.* The website, including all of its related documents, needs to reside on a computer system that is online seven days a week, twenty-four hours a day, with sufficient capacity to respond to requests for pages or downloads from the site's visitors.

While this may fall within the scope of a “do-it-yourself” initiative, most ISPs offer a hosting service either for free, as part of an Internet access subscription, or for a fairly modest charge.

The hosting of a large, complex and highly interactive website is a matter for professional data centre operators and many choices are available. For high performance and high security, the charges may be significant.

3. *Registering a domain name* – discussed briefly in Q.3. Every country has accredited registrars ([www.icann.org](http://www.icann.org)) and in addition, many ISPs, if not most, also offer a domain name registration serv-

ice. Most commercial hosting services also offer the possibility of taking care of registering the domain for you.

4. *Creating and maintaining the content of the website.* This involves deciding which documents will be placed online and how they will be linked to each other and to other websites. This is by far the most time consuming task as websites usually need to be updated frequently in order to be of value to their target audience.
5. *Registering the website with search engines.* The metaphor of looking for a needle in a haystack applies particularly well to searching for a particular website on the Internet as literally tens of millions of websites are available, and more are being added every day.

Search engines are a good instrument to render individual websites visible to those looking for specific items of information. The details of how this is achieved are beyond the scope of this booklet. More information can be found by conducting a search using the following query string: registration AND website AND “search engine”.

Several commercial service providers will register websites with search engines for a fee, and may also provide clear guidelines on how to construct the website (through the proper use of tags and metatags) and register with selected search engines.

A discussion of search engines can be found in a separate booklet in this series entitled *Finding Information in Cyberspace*.

6. *Securing the website.* In “Internet time” everything is available all the time and happens instantly. This means that anyone wanting to own and manage a website is in for a big challenge.

Security features need to be incorporated to ensure that no unauthorised persons can modify the website’s contents (all they would need to do is access the server on which the website is hosted, which would normally be protected by at least a password).

For more information please consult another booklet in this series called *Information Security and Organisations*.

Websites dealing with confidential personal and financial information need additional protection against data theft, corruption and misuse.

While it is relatively easy to create a simple website, subsequently maintaining and updating it is quite a different story. And this is the reason why nowadays there are thousands of outdated websites.



DiploFoundation's publication *Building.org* provides information about web-management in general and about web-management for international organisations in particular (*Building.org* by Igor Nuk and Michal Olejanek, 2002, DiploProjects, Mediterranean Academy of Diplomatic Studies, Malta, Paperback, 152 pages, ISBN 99909-55-17-4).

#### **Q.14** Who can have an electronic mail account?

Anyone can have an electronic mail account, or even an unlimited number of such accounts. These can be opened using a pseudonym or a real name (including somebody else's) either through the services of an ISP, which would normally provide a number of accounts to a subscriber or through one of the many (currently) free web-based services such as Hotmail (<http://www.hotmail.com>), Yahoo! (<http://www.yahoo.com> or one of its local sites, for example <http://www.yahoo.co.uk>) or any other of a substantial number of providers of this kind.

In terms of services, you actually get what you pay for as free web-based accounts impose tighter restrictions on the volume of mail that you can receive and on the size of attachments that you are allowed to send and receive.

#### **Q.15** Who can use instant messaging?

Instant messaging (sometimes called IM or IMing for short) is software with the ability to easily recognise whether a specific person, friend or colleague, is connected to the Internet and, if he is, to exchange messages with him in an instantaneous manner, allowing for a continuous exchange, which is much more efficient than sending e-mail messages back and forth.

To be able to use IM, both parties must subscribe to the service through their ISPs and be online at the same time.

In addition, as it is possible for the software to be set to reject such messages, you must purposely configure it to accept them.

When it all works as intended, IM can alert the recipient of an incoming message in several different ways: with a distinctive sound, with a pop-up window that indicates that an IM has arrived and which allows the recipient to accept or reject it, or simply with a pop-up window containing the incoming message.

#### **Q.16** What is the “digital divide”?

All technologies need time to propagate from the point of invention to the point of wide availability. In the case of IT in general and the Internet in particular, the boundary between those who have and those who do not have access is called the “digital divide” (see the map on page 19). In the case of the Internet, propagation has been remarkably swift since it has reached over 600 million people in less than 10 years.

The digital divide is a multidimensional concept, which includes, at a minimum, the following:

- a technical dimension – availability of a technical infrastructure;
- an educational dimension – literacy levels and computer skills;
- an economic dimension – relative Internet access costs;
- a cultural dimension – impact of local customs and regulations.

#### **Q.17** What can we expect in the future?

The website of the World Wide Web Consortium ([www.w3.org](http://www.w3.org)) is a recommended source of information for the many initiatives for the development of Internet services over the next few years.

The consortium groups its activities into four categories:

- architecture (which comprises internationalisation, web services and XML);
- interaction (which deals primarily with technical standards for images, voice and documents);
- technology and society (which covers patents, privacy and the Semantic Web);

- Web accessibility initiative (which focuses on education and outreach programs).

### About the Semantic Web

The W3C projects for creating a Semantic Web will have a tremendous impact on the ways in which we can benefit from the World Wide Web. In essence, the vast majority of today's Web content was designed for humans to read. This has had the immediate effect of computer programs not being able to manipulate such information in a meaningful way.

Computers can adeptly deal with web pages in terms of layout and routine processing: "this line needs to be shown as a title", "this is a link to another page" and so on. The computer does not understand that the title signifies that this is the home page of Stefano Baldi or that the link mentioned there takes you to his curriculum vitae.

The purpose of the Semantic Web is to bring structure to the meaningful content of web pages, creating an environment where software agents roaming from page to page can readily carry out fairly sophisticated tasks.

If such an agent were to come across Stefano Baldi's web pages, for example, it would know not only that the page contains such keywords as "diplomat", and "author" as it does today but also that Stefano Baldi works at Italy's Permanent Mission to the United Nations in New York and that in order to make an appointment to see him, a program script would consult a certain date range (in *dd-mm-yyyy* format) of his calendar system and return a number of possible appointment times.

Many complex problems of knowledge representation remain to be solved, and no doubt some of them will not be solved if Gödel's theorem from mathematics remains valid: "any system that is complex enough to be useful encompasses unanswerable questions." A computer is no better able than a person to deal with paradoxes such as:

Is the following sentence true or false? "This sentence is false."

Nevertheless, it is clear that the promise of a Semantic Web is very likely to come to fruition in a very useful practical implementation in the foreseeable future without the need for supercomputers, and may bring us closer to the dream of a usable form of artificial intelligence.







SECTION



5

# Getting things done: From FAQ to FFP

*Technical skill is the mastery of complexity,  
creativity is the mastery of simplicity.*

*from "Catastrophe Theory" by Chris Zeeman (1977)*



**N**ow is the time to make a big assumption: most people who access the Internet do so because they know that they can get good value for their access charge, regardless of whether this is a 30 minute session in an Internet café or a permanent high-speed connection at home.

This booklet has discussed the World Wide Web, e-mail and other Internet-related concepts. However, much more is on offer for those who have the time to become familiar with the procedures needed to exploit these features and to use them to good advantage.

In addition to the information available from tens of millions of websites in many languages and e-mail services that rapidly become irreplaceable, other possibilities abound. No list can be comprehensive and the few pages that follow are merely an attempt to pique the curiosity of readers about what else might be available and encourage them to actively go and look for it!

The authors strongly believe that the complexities of the Internet are extremely well hidden from end-users by the attention given by developers to designing websites and tools in such a way that they become as close to intuitive to use as possible.

At the same time, because of the innumerable choices and options to be made, the navigators and explorers of cyberspace must use all their creativity to get the best out of everything that is out there.

## FREQUENTLY FOUND PROBLEMS – AND THEIR SOLUTIONS

### **FFP 1** How do I read PDF documents?

PDF stands for Portable Document Format. This format was developed by Adobe Systems Incorporated (a company established over 20 years ago specialising in electronic publishing).



International organisations such as the UN are increasingly making official documents available online using the PDF format.

PDF allows documents to be exchanged in electronic form while preserving all of their features: fonts, images and graphics, and overall formatting in such a way that they can be viewed and printed on a variety of technical platforms without the need for a copy of the software that created the document. Once the document has been converted into PDF it cannot be modified (unlike documents created by a word processor).

PDF has become a widely adopted standard across the world by governments and enterprises alike.

The software needed to read and print PDF documents is called the Adobe Reader and is available free of charge from: <http://www.adobe.com/products/acrobat/readstep2.html>

This software must be downloaded and installed on your PC.

There are several options available to create documents in PDF format. The top end of the options consists of buying a product such as Adobe Acrobat, which has many sophisticated document creation and control features, and a price that reflects this.

At the bottom end of the spectrum are a number of freeware packages – software that can be downloaded free of charge from the Internet – that convert documents to the PDF format but with less features and options than the full Adobe Acrobat product.

Those interested in further exploring these possibilities can perform a search for: PDF AND convert AND freeware (or shareware).

## **FFP 2** How do I download software from the Internet?

In a professional environment, whether an office at the headquarters of a Foreign Ministry, in a country office of an international organisation or in any other form of organisation, it is vital to determine if you have permission to download and install your own choice of software.

The reason for this is that such actions could interfere with the correct configuration and functioning of your computer and create problems for the help desk and other individuals involved with supporting the networked computers of the organisation.

An example of software that may create problems is KaZaA, primarily used to exchange music files in MP3 format. In addition, the legality

of such exchanges is in serious doubt and if any are traced by copyright owners to an organisation, potentially it could create legal problems or at the very least, embarrassment.

Once you have ensured that you have permission to download software, the first step consists of finding a website that provides the software you need (or any other files of interest). Such sites are numerous, and include:

- vendor websites (for example: <http://www.microsoft.com>, <http://www.symantec.com>, <http://www.adobe.com>);
- general sales and advice websites (for example: [www.zdnet.com](http://www.zdnet.com));
- user groups, enthusiasts and other individual providers of free-ware and shareware (no examples of these are given as there is no guarantee that the software on offer has undergone appropriate testing and quality assurance procedures).

The techniques for finding suitable websites are described in the booklet, *Search and Find - From Irritation to Inspiration*.

The concept of “downloading” simply means the process of transferring a digital file from the place where it is made available for sharing (a server) to your own computer. There are two ways of doing this: 1) a general one implemented in most websites that have been specifically designed to share files across the Internet, using the http protocol and a specialised interface; and 2) a more specific one, using a combination of the File Transfer Protocol (ftp) and websites designed to specifically support this protocol.

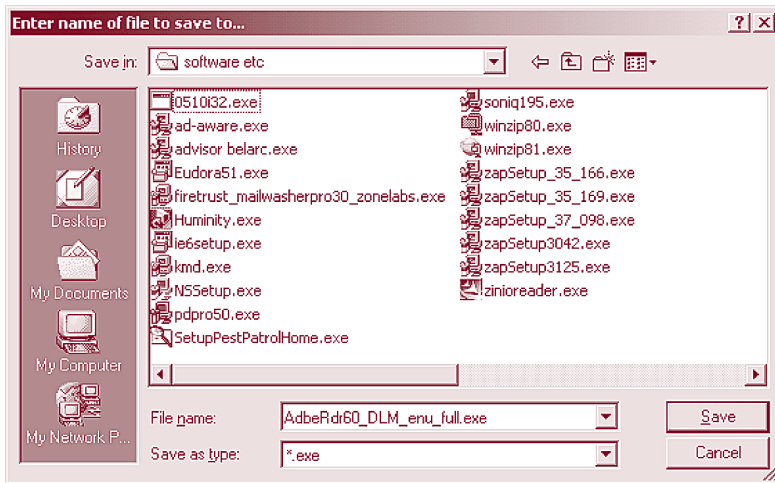
By downloading software from the Adobe Web site, you agree to the terms of our license agreement. [Please read it before downloading.](#)

▶ DOWNLOAD

The usual interface designed by software distributors is easy to use by non-savvy users as it generally involves just clicking on a link or a button labelled “DOWNLOAD” as shown in the picture above.

A dialogue box will then open requiring you to specify the directory or subdirectory where this file is to be saved.

You may choose to create a dedicated directory labelled “Downloads” or something similar.



Depending on the website and software selected, it may be necessary to complete one or more forms providing personal information ranging from that needed to register to credit card details (see FFP 7) if the software is not free.

Once you have completed all of these tasks, the file will be transferred to your computer. In most cases, the file is transferred in one of two formats: an executable file (.exe) or a compressed file in the (.zip) format (see: FFP 3).

In the case of an executable file, it is sufficient to open the file to install the software. This can be done by using the “My Computer” folder or the “Windows Explorer” utility to locate the file and then double-clicking on it.

Once you have downloaded and installed the software, you may still need to activate it with a code or key from the software manufacturer. In this case, the code or key is usually sent to you via a separate e-mail after registration (and payment if required). It is very important to make a backup copy of the software and make a careful note of the code or key in case you ever need to reinstall the software.

One more word on downloading: always check the size of the file before you start the download to determine how long it will take. With a dial-up connection the speed of transfer is around 4 KB (kilobytes) per second, and with a well-functioning DSL connection the speed is around 50 KB per second. If the intended file is 5 MB in size, you are looking at a 20 to 30 minute transfer with a dial-up connection and a 2 to 3 minute transfer using DSL or a cable modem.



#### **Downloading software and large files using ftp:**

This is a slightly more advanced subject and somewhat less user friendly than the process described above. However, ftp is a more efficient protocol for transferring large files as it allows the transfer to be resumed if it is interrupted and the transmission overhead is more efficient than that of http, making transfers a little faster.

One of the many packages available to manage the use of ftp is called CuteFTP, available for download from: <http://www.globalscape.com/cuteftp/>. There are many ftp sites on the Internet designed for distributing software. One example is: <http://www.gnu.org/prep/ftp.html>.

#### **FFP 3** How do I use ZIP files?

The process of zipping a file compresses it in order to reduce its size and to facilitate its transmission. If you receive a ZIP file you can unzip it using WinZip, PKZip or a similar utility.

If WinZip has not been installed and is not part of your Operating System (i.e. Windows XP) you can download it from many websites including: <http://downloads-zdnet.com.com/>. You are usually entitled to a free 30-day trial period, after which you must purchase the product for about US\$30.

#### **FFP 4** How do I download images from the Internet?

The process of downloading images is simpler than downloading software, as all you have to do is save the image you want and the process is finished.

As with software, the first step in the process is to find an appropriate image (vector clip art, drawings, photographs). You may find what you want on a web page.



Some images are under copyright protection, and you must obtain the prior formal consent of the owner in order to use them in a paper, presentation or publication.

The easiest method of saving an image on your personal computer consists of pointing at the image with the mouse and clicking the right mouse button. At this point select the Save Image As... option and specify the name under which you wish to save this image and a location to save it.

As well as websites, there are many other sources of images on the World Wide Web, ranging from the clip art gallery at <http://dgl.microsoft.com/?CAG=1> in which the material is free, subject to first agreeing to the terms and conditions of use, to images that can be found using search engines that offer image searching capabilities, for instance <http://images.google.com/> and <http://www.altavista.com/image/default>.

Two formats are generally used for images, jpeg and gif. “jpeg” is frequently used for photos while “gif” is more frequently used for other types of images.

Also, there are several commercial sources of visual material on the World Wide Web with vast collections of graphic material, usually protected with a watermark that can only be removed after payment of a fee for the right to use the material (for example: <http://www.corbis.com>).

### **FFP 5** How do I copy text from a web page into a document?

Assuming that you are aware of the copyright implications of such an action, the process itself is quite simple: You need to have two open windows: 1) the document you are working on; and 2) the web page from which you wish to copy text.

Using the mouse you first click on the place where the text you wish to copy begins, and highlight it by keeping the left mouse button depressed and moving the mouse over the text you wish to select.

Copy the highlighted text to your computer Clipboard by simultaneously pressing the keys Ctrl and C (Ctrl-C). Now move to the window with the document where you want to copy the text, click on the place where

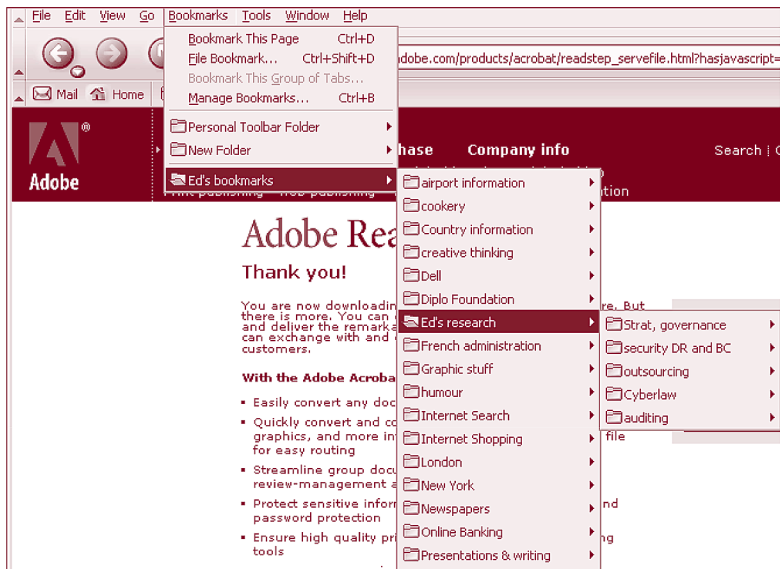


you want to insert the text and press the keys Ctrl and V (Ctrl-V) to paste the text from the Clipboard.

Mouse enthusiasts can perform the copy and paste operations using the top menu Edit and then selecting the options Copy and Paste as appropriate, or by clicking on the right mouse button and selecting the Copy and Paste options from the pop-up menu.

### FFP 6 How do I easily access the web pages I use frequently?

Essentially this is achieved in the same way in which you mark pages in a book (but not by folding a corner of the page!) – you place an invisible marker (called a bookmark) on the page you wish to re-access later.



The two most common browsers today are Internet Explorer (IE), incorporated into the overall Windows operating system and Netscape. Both of them allow you to mark pages in this way. In Internet Explorer, these marks are called Favourites and in Netscape, Bookmarks.

Both browsers also allow you to organise these markers.

**FFP 7** How do I subscribe to online services (newsletters)?

Once you have identified a website which provides such services, all you need to do is fill in an online form, which always requires your e-mail address. Some service providers also require payment.

You can use one of the many search engines and an appropriate search string (for example: newsletter AND (the topic that you need) AND subscribe) if you are having difficulty in locating such a site.

Such newsletters usually also provide instructions on how to unsubscribe.

Some websites offer a menu of options for such newsletters, so that you can customise them to meet your specific interests, while others offer just a standard newsletter.

**FFP 8** How do I check if I have anti-virus software installed?**WARNING**

if your virus definitions are not up to date, you will have NO PROTECTION AT ALL – not just limited. All the malicious software we need to worry about are the new ones that are ahead of the antivirus defences. There are very few old viruses in circulation today...

If you have anti-virus software installed, it will load automatically when you start-up your computer. Once it is loaded an icon will appear on the system tray (bottom right-hand corner of the screen). In order to determine which programs the icons represent, move the mouse pointer over each of them until you find the anti-virus icon.

Double-clicking on this icon causes the software interface window to pop-up. This window shows the product used, its version and the date it was last updated. This topic is discussed in more detail in the booklet *Good Hygiene for Data and Personal Computers*.

**FFP 9** Is it safe to carry out payments online?

Regrettably, the best (and worst) answer to this is “Yes, but...”

Many electronic commerce sites are reputable and reliable. These include banks, insurance and other financial service providers and many retailers, auction operators and others.

The technology used to encrypt and transfer confidential information such as financial transactions is robust and well proven. Nonetheless, fraud and crime do exist on the World Wide Web and some essential precautions should be taken.


**WARNING**

On 20<sup>th</sup> June 2003, newspapers reported a scam in which people were contacted by e-mail telling them that there had been criminal activity involving a particular website (Best Buy) and inviting them to go to a special web page (deceitfully set up by the fraudsters) in order to validate their credit card and social security numbers online. This was a fraudulent fraud alert used with the intent to commit fraud!

The first basic precaution requires that any transaction involving confidential data such as credit card numbers or personal identity details, should be carried out via the SSL protocol. SSL stands for Secure Sockets Layer, and is included in both IE and Netscape and in most other web browsers.


SSL uses encryption to protect the information entered on a web page and if it is being used this will be indicated in two ways: the URL of the web page used for the transaction will begin with https:// and a small padlock will be shown on the bottom of the screen (closed when SSL is active and open when it is not).

NEVER enter confidential information on a web page that does not show these features. And, by the way, NEVER give such information in an e-mail message either – e-mails are simply machine-readable post-cards.

### **FFP 10** How do I send a web page to somebody?

Both IE and Netscape possess a feature in their File menus that allows you to send either the page or the URL from your own computer to anyone by creating a specialised e-mail for you.

Many websites also have the user-friendly options of offering you a “Printer-friendly Version” and an “E-mail this Article”, such as shown in the picture on the right.

- ▶ Printer-friendly Version
- ▶ E-mail this Article
- ▶ Request Reprint
- ▶ Subscribe to CIO
- ▶  SAVE THIS

Some pages cannot be sent due to their structures. In this case it is advisable to use the command “Send Link...” to provide a reference (URL) to the page.

**FFP 11** How do I change somebody else’s web page?

Why would you want to do this?

In principle, web pages other than forms where you fill out personal information (see FFP 7 above), are designed to be Read Only and this feature is enforced by limiting access to the directories where the web pages are stored only to those authorised to create, update or remove content.

This is done through the use of well-designed and well-managed user name–password combinations.

Hackers, however, do attempt to, and often succeed in, modifying web pages by breaking such user name–password combinations. When these are not well-designed, this is relatively easy as for example, in the worst case scenario, where the system administrator does not bother to change the user name–password combination that came with the software when it was first purchased (the default values). Hackers will always try this tactic first, and then escalate their ploys by using password-breaking software.

This topic is discussed in a little more detail in the booklet on *Information Security and Organisations*.

**FFP 12** How do I make a phone call using the Web?

Voice can be digitally encoded in the same way as music and the equipment needed to do so is modest: a microphone, loudspeakers and a sound card (the latter two are usually available in a personal computer) and finally a suitable software package.

Why should this be of interest to anyone? For the same reason that e-mail has become so popular – at the end of 2002 more than six hundred million people could exchange messages from anywhere in the world for a very modest amount of money, invariably cheaper and quicker than a postage stamp or a long distance phone call.

If this is the case, why is Internet telephony not as popular as e-mail? There are several reasons. Initially, Internet telephony was restricted to traffic from computer to computer and frankly, the quality of service of these communications left a lot to be desired. This is due partly to bandwidth limitations (the speed of your connection) and also to the nature of TCP/IP, as good quality sound requires the individual packets to arrive in the right sequence and without transit delays.

Some countries have authorised the connection of calls originating on the Internet to a conventional telephone. For example, the company Go2call (<http://www.go2call.com>) offers a service where Internet calls originating in the USA can be made to telephones in the USA, Canada, the UK, Ireland and Germany.

Many telephone operators see Internet telephony as a serious threat to their revenues, particularly long distance telephony, and do not allow this service to be connected to conventional telephones.

Many software packages are available for Internet telephony (computer to computer). One example is Phonefree (<http://www.phonefree.com>) but you may wish to research what else is available. A word of caution: your corporate firewall may have been set up to prevent this use of the Internet. For more details, references and links on this subject please refer to: <http://www.cs.columbia.edu/~hgs/internet/internet-telephony.html>.

### **FFP 13** How do I listen to the radio on the Web?

While on the subject of sound on the Internet, there are thousands of radio stations on the Web, in a very large number of countries and languages, broadcasting a fascinating range of programs.

The equipment needed to listen to the radio (a sound card and loudspeakers) is now quite standard in recent personal computer models. Recent computers running the Windows operating system also have access to the Microsoft Media Player. Another software package favoured by Internet radio enthusiasts is RealPlayer which can be downloaded free of charge from: <http://forms.real.com/real/player/player.html>.

Your particular Internet connection is the remaining variable. Speed matters and anyone using a dial-up modem connection that is metred by the minute may find that this is not a cost-effective method of listen-

ing to the radio. On the other hand, people with a high-speed connection such as a cable modem or DSL usually have an unmetered service and can use this facility at no additional cost.

For a catalogue of the world's Internet radio stations please refer to <http://www.radio-locator.com>, which has links to over 10,000 radio stations. All the stations on the Web are reasonably user friendly and require no further discussion.



#### **FFP 14** How do I watch TV on the Web?

The answer depends on what you mean by “watching TV”. For about US\$150 you can buy a card for a personal computer that will turn it into a TV receiver for terrestrial television, provided you also install a suitable antenna.

However, this is not what this section explores. Hundreds of stations transmit television programs, and in particular news programs on the World Wide Web, and these can be viewed with the same two software packages mentioned above for radio, Windows Media Player and RealPlayer.

For a listing of which stations are available – from over 100 countries – consult the website of Watch Internet Television at <http://wwitv.com/ns.htm>. If you have a dial-up link you should not expect high quality images, and even with a high-speed link the results are not comparable to those of a real television set.

#### **FFP 15** How do I join a chat group or a newsgroup?

Thousands of chat and newsgroups are available, covering every conceivable topic (and a few inconceivable ones as well). Like with most

things on the Internet, the first step is to find one that is relevant to and appropriate for you.

There is only one difference between a chat group and a user/newsgroup: chat groups allow synchronous online dialogue. Newsgroups are effectively message boards where individuals may post messages and participate in discussions generated by other messages.

One good way to find which groups are available is to rely on Web search engines. The Google search engine has a directory dedicated to newsgroups at: <http://groups.google.com/>.

Another booklet in this series entitled *Appropriate Use* deals with the protocols and practices of such groups and other aspects of netiquette.

The process of joining (or subscribing) to such a group usually involves filling out an online form or exchanging e-mail messages. In the latter case, the person joining needs to consider the potential loss of privacy that would be incurred by disclosing their e-mail account details.

### **FFP 16** How do I join a distance learning course?

Distance learning through the Internet represents a major shift in education and training. It offers a mixture of self-paced and self-assessed online tutorial material coupled with the support of a mentor or advisor and a certain amount of assigned work, which is monitored and graded by the learning institution.

There are many benefits to distance learning, the most important being access to quality material at a modest price from anywhere in the world. Distance learning is becoming available in many languages and starting to cover many subjects.

No special equipment or facilities are needed to join a distance learning program. As discussed above, the hardest choice to be made is in selecting the right program, as this requires the comparison of many syllabi, costs, user-friendliness of the material and the way in which it is presented, plus many other factors.

For an entry point into this subject, <http://www.hoyle.com/distance.htm> offers a good summary of distance learning on the Web.

For distance learning in the fields of diplomacy and international affairs please consult the following web page: <http://www.diplomacy.edu/Edu>.

A collection of references covering all the topics discussed in the Information Society Library (ISL) can be found in the booklet entitled IS Library – Yellow Pages or on the online “addendum” to the Information Society Library at: <http://www.diplomacy.edu/islibrary/>.



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# NOTES



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