

THE INTERNET and E-COMMERCE: An Introduction

What opportunities are available as the result of the information super high way?

The Virtual Worlds:

- e- mail
- e-government
- e-education
- social networks (aka social media)

and so much more ...



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1. The Internet

1.1 What is the Internet?

The Internet is the international connections and interconnections of computers forming a global network. In this global network computers have ability to communicate with one another and pass information from a machine to a machine. For this global network to serve as a global database of information, each “key node” (i.e. a computer called a server) must have what is known as server software. This software will include: electronic mail (e-mail), Hyper Text Trans(fer/port) Protocol (http) software normally known as just web server software, File Trans(fer/port) Protocol (ftp) software and

many more. Each server machine can have its satellite network. This server machine acts as a gateway for the satellite network to the outside world (i.e. the Internet).

A server machine is usually just a “huge” UNIX, Linux (i.e. little UNIX) or windows machine with interfaces for other operating systems and a variety of network hardware and software. The qualification “huge” refers to the storage and speed capabilities of the machine.

1.2 Uses of the Internet

The main use of the Internet is to store, publish or offer on-line services at repositories called websites.

a) Uses of Storing or Publishing Information on the Internet

1. to disseminate the information world wide (since the Internet is global)
2. to disseminate the information as less costly as possible (since printing materials are no longer needed and editing is no longer costly since everything is done electronically).

b) Uses of Offering On-Line Services on the Internet

1. Global sharing of resources:-

If resource services are available on the Internet then their accessibility is global - making it possible for them to be shared globally. In this way, therefore, people who, otherwise would have to do without these resources, could then be able to use them. For example, one can use a printing facility in Chicago at a touch of a button while in Lesotho. Or one can download a book which is somewhere in Tokyo in a matter of minutes and print it at the cost which is in cents as opposed to having the same book sent by post or fax at a much higher price.

2. Virtual Libraries:-

A virtual library has all or most of its books on-line. Using the Internet one can browse through these libraries and read and sometimes download materials.

3. Electronic Commerce, Tele-medicine, etc:-

Electronic commerce, sometimes referred to as just e-commerce, is a term used to mean commercial (i.e. business) transactions on the Internet. More and more businesses are going on-line. That is, they advertise their commodities on the Internet using multimedia like pictures, sound or video. The prospective buyer can inspect any item at the place where s(he) is. When interested one can buy on-line via credit cards or bank accounts. The items will be shipped to the required destination, using the customer's physical address.

Along the lines of e-commerce we can have e-health and offer tele-medicine services. That is, for example, a hospital can offer

medical services like diagnosis and drug prescriptions over the internet.

There are many conventional methods that can be replicated on the internet: e-education, e-governance, etc.

4. Video Conferencing:-

When holding a conference or a seminar, it is possible to conduct the session with individuals at different places in the world. No need to arrange for a place for the conference and organise transport for the participants.

5. Electronic Post Offices:-

Sending and receiving messages by computers is cheaper than the conventional post office method since computers are very fast in transmitting the information and the method is reliable

Electronic post offices are made possible by the electronic mail (e-mail) service.

1.3 Some Internet Services

a) **Electronic mail service**

With an e-mail service people can send and receive typed messages to and from one another anywhere in the world. In order to send another person an e-mail message one needs to know the e-mail address of that person. An e-mail address is something like:

name@domain-name-server.

For example, the following are typical e-mail addresses:

mofana@nul.ls and msefika@cbc.co.ls.

The last two characters in the domain-name-server (DNS) like “ls” is the country domain name. Countries other than the USA all have country domain names. A country domain name is a two letter word like “ls”. For example, the following is a few countries domain names:

ls = Lesotho

za = South Africa

bw = Botswana

uk = United Kingdom

As we mentioned above, there is no country domain name for the USA, instead domain name servers have extensions, which are mostly three letters long, which describe the characteristics of the

establishment owning the DNS. For example, the following is some of those extensions with some descriptions:

GOV This is for government establishments. For example, `usa.gov` for the federal government of the USA.

EDU This is for educational establishments. For example, `mit.edu` for the Massachusetts Institute of Technology - educational establishment.

COM This is for commercial establishments. For example, `yahoo.com` for YAHOO! Company.

ORG This is for non-profit making organisations. For example, `fools.org` would be for the FOOLS organisation.

NET This is for community/society networks. For example, lesbian&gay.net would be for the Lesbian and Gay Society network.

In the past popular e-mail programs for personal computers (PCs) were Eudora, Netscape Messenger and Microsoft Outlook(Express). These were what we called email client servers as they were used mainly for post office protocol (POP) accounts. Nowadays, email programs would be Internet based. Pioneers were companies like hotmail and yahoo. The Google company turned the business of web-based email into a revolution, culminating eventually in the enterprise of social media!

b) The World Wide Web service

Information organised as hyper text material on the Internet can be browsed with the help of a web browser. Since the information spans the entire globe it is referred to as world wide and since each piece of information could be linked to other hyper text pages or sites it is regarded as forming a web hence the name the world wide web (www).

A web browser uses the http format to access information on the web. The information is normally in multimedia form: text, video, pictures, sound, etc. A web address, normally referred to as a Uniform Resource Locator (URL) address, is of the form:

ProtocolType://UnixWebDirectory.

The two most used protocol types are http and ftp. If the protocol type is omitted, the http format is normally assumed. Depending on the web server configuration, a UNIX web directory may begin with the three letters “www” followed by a period and a complete path. For example, the following are web addresses:

<http://nul.ls>

www.cbs.co.ls

<http://www.nul/~mnzmpbaka>

<http://mopheme/mac>

Information on the web is written in a Hyper Text Mark up Language (HTML) or its variant equivalents. For example, the following is a simple HTML code that will display:

Darling, Sweet-Heart ...
Sweet Dreams and Best Wishes Always

*****BYE*****

on the screen when browsed.

<HTML>

<BODY>

<P> Darling, Sweet-Heart ...</P>

<P> Sweet Dreams and Best Wishes Always</P>

<P>*****BYE*****</P>

</BODY>

</HTML>

In the past, popular web browsers used to be Netscape Navigator, Internet Explorer and Mosaic. Nowadays popular web browsers are those that can run on PCs as well as mobile phones. Popular names include: Microsoft Edge, Mozilla, Firefox, Google Chrome, etc.

c) FTP and TelNet service

With an FTP service one can upload information (i.e. files) to a server or download information from a server to the local computer. In ordinary Internet jargon when people download files from a server we say that they are downloading from the Internet!

With a TelNet service one can logon onto a remote machine and begin working on that machine as if it were local. Most operating systems for PCs and smart phones would have these services.

d) Internet Relay Chats (IRCs)

With IRC service individuals can enter into a real time chatting. IRCs work more or less like e-mail, except that in IRCs the individuals are radioing to one another in real time. That is, one will type something and when finished he may type something like “over” or hit a special key like “enter”. Then the other person on the other side will start typing the response. Nowadays, even smart phones would have most, if not all, the Internet services.

e) Game Playing

Nowadays there are more and more internet games. Internet games are better than PCs games in that they are accessible to a much wider audience and can be played simultaneously by many people.

1.4 Surfing The Internet

When one is looking for some information on the Internet we say that s(he) is surfing the Internet. Since there is no table of contents for all the information that is possibly out there, one will use at least one search engine. A search engine is a service that accepts a query from a user in a more or less simple ordinary language and returns to the user all web pages that contain the text s(he) asked for. Without a search engine service, surfing the Internet for any information would be near impossible.

A place where one can surf the internet and/or use some of the on-line services available on the internet for some “nominal” fee is called an Internet café.

Nowadays, there is no need for Internet cafes as more and more people use smart phones which have Internet access enabled by their respective cellular network providers.

Pioneering search engines include:

AltaVista at <http://www.altavista.com>

InfoSeek at <http://www.infoseek.com>

Lycos at <http://www.lycos.com>

Yahoo ! at <http://www.yahoo.com>

Nowadays, the most popularly used Internet search engine would be Google (<http://www.google.com>) The service is even localised per country, e.g. <http://www.google.co.ls> for Google Lesotho. So popular is the Google search engine that colloquially, to search for information on the Internet, is now referred to as “to Google the information”!

1.5 Publishing on The Internet

a) Introduction

First, in order to have somewhere to publish to, one needs to register with some server administrator who will give some space (on his server machine) onto which one can upload his files. In this way the administrator will be giving out an account. The whole service is then called an Internet Service Provider (ISP).

Alternatively, one can buy the server machines and software and become his own ISP. This of course, makes sense only if one is a relatively big organisation since the equipment and the software prices may look very prohibitive.

The emergence of content management systems (CMS) have given rise to social media platforms that make it easy for individuals to publish on the Internet. For example, Facebook allows individuals to create what are called Facebook pages and owners of these pages can upload and manipulate their content with ease. There is Twitter, Instagram and the rest. This technology is now referred to as social media.

b) A Web Page

Just before the social media platform technology, There was an intermediate technology that made it easier to publish on the web (i.e. the Internet) since, although web pages were HTML text, there came many web publishing tools which rendered proficiency in HTML somewhat irrelevant. For example, one could type a

document in Microsoft Word or Corel WordPerfect and ask the wordprocessor to save the document as a HTML document. One could later use web publishing tools like Netscape Composer or Microsoft Front Page to edit the document and then upload it to a web server. In this way then one could have a web page on the Internet.

Nowadays, with the social media platforms technology, publishing on the Internet is just like typing a document and then hitting a button to put it on the Internet, almost similar to hitting a print button to print that document!

c) A Web Site

A collection of linked web pages, in a way, can be called a web site though in general website building may mean more than just that.

Website building requires thorough understanding of the following:

1. computer programming in at least C++ or Java and at least one scripting language: Jscript, JavaScript, VBScript etc,
2. Relational Databases
3. networking operating system like UNIX and
4. HTML.

In short, one needs to have some sound computing skills as a basis since what needs to be done is to write an across the platform computer program.

Beside having “appropriate” content, a “good” website should provide a search facility for the visitors so that they can search for information of their interest in a more or less natural manner like typing something like “articles on murder cases” and then all “web” pages related to that concept on this website are presented to the visitor, ranked in some agreed hierarchy, and hypertext (i.e. clicakable). Seasoned website developers know that “menus” aren’t always the best way to guide the website visitor to the right topic. Hence, why the provision of a search facility would be almost mandatory.

A “good” website is the one with relevant, accurate and timely content, good navigational controls such as logical menus and effective search engine, sufficient links to related websites and social media.

Being able to publish to and read from the Internet raises a lot of issues concerning security to individuals, copyrighted materials, etc.

However, the above content notwithstanding, once again the social media platform technology has made tasks which would originally be left to IT experts to tackle, now doable even by an ordinary person!

1.6 Security Issues on The Internet

a) Access to and Usage of Copyright Material on the Web

In as much as information on the web is publicly available and easy to copy, copyright protection still exists in as much the same way as

it is in printed materials. For example, having one's book and having access to a photocopier does not give one the legal right to photocopy the book!

It is a generally good policy to ask owner's copyright permission to copy and use one's text, image, video or sound even if it is seemingly there on the web for grabs! Absence of the owner's copyright notice on any web material does not remove the exclusive copyright ownership of the published material.

It is suggested that when publishing to the Internet, one should paste copyright notices at the beginning and at the end of web pages, although failure to do so would not signal an automatic forfeiture of copyright ownership.

b) Information Security on the Web

Putting information on the web undoubtedly puts it in a slightly higher risk than putting the same information in a locked filing cabinet, although the latter can hardly be described as the ultimate method in guarding against illegal access and usage of the secured information! As a matter of fact, there is no known method which can guarantee complete security against illegal access and usage of anything!

If information is very confidential then it is definitely not worth publishing - especially on the web. If the information is confidential to the extent that only certain individuals, within the organisation, can access it then the usage of hierarchical passwords or firewalls

may suffice. Policy is thus required to decide which information requires what level of security (for an organisation).

c) Privacy and Confidentiality on the Web

Any wide dissemination of any of the following, on the web, may have potential violation of privacy and confidentiality of the affected persons:

1. Property, Tax and Credit Assessments:-

These will make people find out who are those with lots of properties (or money). The information might fall in the wrong hands of robbers, malicious murderers etc.

2. Arrests and Indictments:-

People's integrity and reputation could seriously be damaged if their arrests or indictments can be widely known only to be found not guilty later on.

3. Voting Lists or Names and Addresses of the Public:-

This kind of information could easily be abused by scrupulous politicians and marketers by easily manipulating the information to suit their own creed.

4. Contract/Tender Awards and Amounts:-

The information may breed bad blood among losers against the winner, consequently resulting in sabotage or similar actions.

It is suggested that an organisation put in place policies regarding collection of data from the public, its storage, usage and correctness. The public have the right to know why data is being collected about them, how it is going to be used and who will have access to it. In any case, the public must have been the ones to give the information willingly in the first place. Care should be taken to protect the individuals rights to privacy and confidentiality at all times!

1.7 Costing Information on the Internet

Not all information on the web has to be free. An organisation may decide to charge for some information and give the rest for free.

It has been found that once information has been posted on the web, the cost of serving it becomes very minimal to the extent that many organisations may find that whereas the same information in printed form needed to be sold to cover publishing costs, the same cannot be said once the information is set on the web.

In the light of this, care should be taken in deciding which information to charge for and for how much. The US OMB Circular A-130 suggests:

“avoid imposing improperly restrictive practices on subsequent uses of information by others - particularly with respect to establishing exclusive distribution arrangements, charging fees or royalties on subsequent re-dissemination of information, and charging user charges in excess of actual dissemination costs [Section 8.a.(7)]”.

2 The Electronic Commerce (E-Commerce)

2.1 Introduction

As we mentioned before, the E-Commerce concept is that all business that currently uses traditional methods of post or customer visiting the business, will be replaced, wherever possible, with their electronic equivalent. In the foregoing we discuss some of the e-commerce solutions that are possible.

2.2 Advertising

A business can have its own website where it advertises its business services and/or products. Potential clients can read the adverts while surfing the Internet. When interested, they can get in contact either by using e-mail or, if an on-line information system is available on the site, register interactively with the business. Business partners or donors can similarly be solicited.

2.3 On-Line Purchasing

When a business has advertised on the Internet, customers are able to do online window shopping (by browsing the business site). When satisfied, customers can order on-line, if the business has an information system on the website. Customers can even pay via

credit cards, provided, of course, that their credit banks offer Internet banking. Customers would be able to pick items they want and place an order. The items can then be downloaded if they are things like software or music. If the items are not downloadable, the physical customer address will be used for human delivery.

2.4 On-Line Banking

Online banking or e-banking is the term given to the concept of banks offering banking services via the Internet. These services are sometimes referred to as paperless bank transactions. The services encompass: money transfers, balance enquiries, financial statements, credit card payments and more. For transaction security, digital signatures can be used for validation, verification and control.

2.5 E-Health

E-health refers to health services (being made) available on the Internet. There are many websites now available which offer health services ranging from offering information on illnesses, their diagnosis, the antidotal drugs and administration to web conferencing where patients can actually have some doctor-patient session.

2.6 E-Education

Internet can be used for education in a variety of ways. For example, educational material can be posted on a website in a browsable or downloadable form. This educational material will then become available to the world audience. For example, some parts of this

lecture material exist in my website. Some of the references that I used are other people's websites. This is the idea behind virtual libraries.

Interactive e-education could be achieved with the help of IRCs, web or video conferencing.

2.7 Other Es On the Internet

Nowadays there are so many e's on the Internet. There is e-this, e-that, etc. For example, we now know that there is e-dating. People meet on the Internet through IRCs, websites and e-mails. They eventually enter into an e-marriage (and live happily thereafter). One wonders: could there be e-sex (and a possible e-birth)?

3. Social Media Platforms – Opening a Can of Worms or ...?

3.1 Introduction

The introduction of the Internet technology in the world brought about the new era: The Information Age, following from the other older eras: The Stone Age, The Iron Age and The Nuclear Age.

Since humans consume information and thrive on it, The Information Age has brought about what one can term “an information snowball”, spiralling out to everywhere, almost or totally uncontrolled, now that everyone is or can be the originator of any “public” information

without any prior editing or authorisation by or from any institutionalised authority!

This is possible thanks to the social media platforms technology!

3.2 The Technology of the Social Media Platforms – a Social Perspective

Social media platforms aid the user to: (1) create his/her page, (2) type his/her information including multimedia information like graphics, audio and video, (3) post that information on his/her page (i.e. the Internet), (4) edit contents of his/her page i.e. modify or delete, (5) set public/private/security attributes on any information on his/her page.

Social media platforms are engineered with data analytics tools and artificial intelligence (AI) bots to help users to find friends and advertised products and information. The bots sort of analyse behavioural patterns of the users and based on this analysis they can suggest things such as friends, products or websites.

Although the technology looks simple to use, research has shown that most social media users either ignorantly or obliviously never learn to use the features of the technology which can protect their data and privacy!

Although the engineers of the social media platforms meant their technology to be used for social upliftment, development and

entertainment, research has shown, once again, that social media is greatly abused!

3.3 Potential “Good” Use of Social Media

Since social media content is, by and large, monitored and analysed by bots, it is the easiest and fastest way to produce and disseminate information throughout the world. The platform also provides a fast and reliable way of searching and finding information on the web. Once one is on social media, all his/her public content is accessible to all in the world. Such information can be obtained by simply “googling it”, or it could be suggested to one by a bot!

Since in social media individuals can create (interest) groups and invite (interested) people to join the groups, a healthy discussion

among interest groups or professionals can be formed. Such groups could be used to design and develop solutions to their societal problems. Diverse problems, including that of political nature, could be tackled!

In recent times, social media has been used effectively to counteract main stream news media which would be used by states and institutions to control societies through propaganda, indoctrination or misinformation. Social media has been used even to bring down totalitarian or autocratic governments. A good example, arguably, could be that of the so called “Arab Spring” phenomena in North Africa and The Middle East.

Here in Lesotho, it is arguable that the 2015 “Khokanyan’a Phiri” government was brought down, almost singlehandedly, by social media, in the name of Makhaola Qalo!

3.4 Potential “Bad” Use of Social Media

Because of the very nature of the social media technology, it is prone to abuse. For example, one can take advantage of the bots and spread “fake” news or, even worse, manipulate peoples perception on some topic or concept. A good example could be the 2016 US Elections, where we now know that social media was used, not only to spread fake news, but to effectively sway the US electorate away from Hillary Clinton to Donald Trump, resulting ultimately in Trump winning the elections!

Social media has been in ordinary criminal behaviour such as (child) pornography, prostitution, human trafficking and terrorism.

THANK YOU