ONLINE MEDIA FUNDAMENTALS

What goes on behind the screens?

You'd love to set up your own website, but those acronyms and the 'geek-speak' have you daunted. This chapter offers a simple way to understand how the Internet works.

This chapter introduces the following concepts: **the Internet, domains, hosting, databases, protocols, the World Wide Web, browsers, applications, and "Web 2.0".**
We'll give you a framework to work with, to make sense of the online world and its sometimes fuzzy concepts.

The changes in technology post-2003 that focussed on the easy-to-publish and share platforms and applications of "Web 2.0" (*which we'll examine in the next chapter*) have taken the lion's share of media. There is more to the Internet than social-media. Let's begin:

Reference your glossary (*at chapter's end*) if you encounter terms that need more explanation.

YOUR PAYOFF FOR THIS CHAPTER

Understanding the Internet's backstory can offer

- ☐ Confidence to create your OWN sites.
- ☐ Melt the 'brain-freeze' when clients ask for more technical Internet details.
- ☐ At very least, alternative ice-breaker social currency

GEAR UP:

for practical use of this knowledge you'll want.

- ☐ A computer that can connect to the internet (laptop, desktop or WAP-enabled phone)
- ☐ An internet connection (wifi, office LAN or 3G)
- ☐ A browser installed (IE, Firefox, Opera)

MYTHBUSTING

The myth of the 'interwebs'. Internet=Web.
The Internet and the Web are not the same thing. The Web (*or World Wide Web*) is just one service that operates on the Internet. Which is a global data communications system.

Think of the Internet as a house that supplies electricity, plumbing and structure, and the Web as one of the rooms in the house that use the infrastructure it provides. In the way that different rooms in a house function differently and draw on utilities differently; so it is that the Internet has services like email, chat, VOIP, Usenet, P2P filesharing, that use the massive Internet to support their particular function.

The Internet ≠ The Web

FUNDAMENTALS

TECHNICAL FOCUS

WHAT is the Internet?

The Internet today is a widespread is a **system of interconnected computer networks** that use the standard Internet Protocol Suite (**TCP/IP**) to serve billions of users worldwide. It is also called the **network of networks**. The Web is one it most popular networks, made up of **hypertext-interlinked** content.

WHO owns the Internet?

It is globally-distributed without central command, so no one body or country, owns the whole network. Administrative bodies maintain standards like ICANN (*Internet Corporation for Assigned Names and Numbers*) oversees domain names and IP addresses. Commercial and non-profit interests come together in building and maintaining it.

HOW the Internet works

IP everywhere: The internet's hardest worker IP (internet protocol) is assigned to "**label**" our internet-enabled devices and servers and email data packets with unique addresses to make sense of what's where at any time. It's the IP in TCP/IP that forms the network genius of the Internet. Each unique IP address is made up of 4 batches of numbers separated by dots eg. 4.102.47.9

How WE work with it

The genius = translation. Since machine-friendly IP addresses don't make sense for humans, we employ **translators**.

1. The DNS (*Domain Naming System*) translates **human-meaningful web addresses** or URLs (*Uniform Resource Locator*) -ref. diagram below- into an IP address so the machines know where to link us to.

2.Browsers transformed the primarily text-based Web (pre-1992) into the multi-sensory experience that Web pages can be these days. Again done by translating a machine language - this time HTML - into visuals and sound.

Of all the services on the Internet, the **ease of use, tradability and broadcast of multimedia files**, make the technology of the Web the one best suited to modern marketers.

TIMELINE

The Internet: 40 years young baby!

1969: Sept. 2, two computers at University of California, Los Angeles, exchange meaningless data in first test of Arpanet, an experimental military network. The first connection between two sites: UCLA and the Stanford Research Institute in Menlo Park, Calif. takes place on Oct. 29, though the network crashes after the first two letters of the word "logon" making "**lo**" the first 'interneting' exchange.
1972: Ray Tomlinson brings e-mail to the network, choosing @ symbol for addresses
1974: Vint Cerf & Bob Kahn develop the transfer communications protocol, TCP, creating the basis for Internet scalability.
1976: HM Queen Elizabeth II sends email.
1979: Usenet starts up
1983: Domain name system DNS proposed. Creation of suffixes such as .com organised
1987: gif image born
1988: 1st large attack, Morris worm infects computers, creates denial of service.
1988: IRC born, real-time Internet text messaging (chat) developed
1989: Quantum Computer Services, later AOL, introduces America Online, bringing 27 million Americans online by 2002.
1990: 28 countries sign up to NSFNET, enabling wider globalization of the Internet

The Internet takes a major leap at this juncture from scientific/military network to global popular and commercial utility

1990: Dr Tim Berners-Lee creates the World Wide Web at CERN to make his work easier
1991: WWW released freely to the world
1993:: Marc Andreessen & colleagues at University of Illinois create Mosaic, the first Web browser to combine graphics and text
1994: 1st commercial browser: Netscape
1994: Yahoo! is launched, as web directory.
1994: Two immigration lawyers introduce spam, ads for green card lottery services.
1995: Amazon.com & EBay launch
1996: RSS created
1998: Google gets funding.
1998: US government forms ICANN to oversee assigned IP domains
1999: Napster starts, scares music industry
1999: World Internet population - 250 mill
2000: I Love You email virus shuts email at Pentagon, the CIA, and British Parliament
2001: Wikipedia and Wordpress launch
2002: Bittorrent 1.0 and Friendster launch
2002: World Internet population - 500 mill
2003: iTunes store opens. Myspace launches
2004: Gmail, Flickr and Digg start their ride
2005:: Launch of YouTube
2006: World Internet population - 1 billion.
2006: Twitter launches
2006: Google buys YouTube for $1.6 billion.
2006: Facebook membership opens
2006: Time Magazine names "You" as person of the year, due to 'Web2.0' activity
2007: Apple releases iPhone, introducing millions more to wireless Internet access.
2008: World Internet population - 1.5 billion
2010: Biggest traffic day on the Internet to date on 11 June - World Cup Day1

MAKING IT USEFUL

Imagine you'd like to publish a website or blog. Let's track your interactions with the Internet as you do:

GET ONLINE

Your ISP (*or your company's or the cafe's wifi provider's*) offers the speed/hardware/software through your chosen data package to **connect you to the Internet** via phone-lines or satellite.

Access it through your chosen device, laptop, PC, phone (*which is assigned its IP address to transact and track activity online*) via ADSL, WAP, 3G modem, satellite, T-line etc. Generally you'll be using a router/modem (even wirelessly) which is your 1st line of defense against 'evil', it sifts and directs the packets of data coming into your machine.

RENT SOME SPACE

Using your favourite **Web browser** (*which translates machine-friendly data into human-friendly pages*), you're looking for space to build your site. What you need is a web-server to house your database (*the framework/ structure of your site*).
You can rent or buy server-space.

The easiest route is to **lease server space from a hosting company**. With your hosting package you usually get an **easy-to-use dashboard to interact with your server** (*like plumbing and electricity on a new property*) so you can add email, set up databases and scripts to begin to build something on your apportioned piece of the Web.

CHOOSE AN ADDRESS

You'll need to **choose and buy a domain** (*easiest through your hosting company*), which serves as the address where people (*and browsers*) can find your site once it's ready. An **IP address is assigned once it's been registered**. 2 Nameservers are assigned to **translate your IP address to its human-recognizable name and map it** on the distributed databases of the DNS (*the machine-friendly way to answer any queries to your address*) so your site can be found.

BUILD ON YOUR SITE

So now you have an address, a bit of 'land' with utilities connected, you've registered with the domain authorities and you're on the Internet map. But you're still in the 'Invisible Web'.

Time to build.
Most hosts these days have easy-to-install scripts that **set up a database and prepare a basic publishing platform** like Wordpress for you through your user panel. Hooray. No geekery.

BEGIN DECORATING

Decide what you want your site to do for you, and **design** accordingly. **Write content** to fit the function and attract your crowd.

GOING PUBLIC

When you're ready, make your site public, which means you'll invite browser's spiders to index and list your site which generally takes a few days.
Share your new address liberally.

We'll be building on ways to help you stand out from the billions of other sites on the Web and make your website valuable property in the chapters to come.

But for now, you have your corner of the Internet, on the Web, to do with what you will.

PRACTICAL APPLICATION

now you know, give these a go:

- ☐ Buy your <u>own</u> domain (easiest through your chosen host)
- ☐ Choose and buy a hosting package for your domain
- ☐ Build a website - eg. install Wordpress through your host's server interface panel
- ☐ Publish your site and make it publicly visible on the Web
- ☐ Practice safe web practices, secure your internet access, and remember do backups of your precious data to the 'cloud' or an external hard-drive.

THE BIG 3 ESSENTIAL IDEAS

(the least you'll need to know)

Idea #1 The Internet is a *global, decentralized, interconnected communications utility* network supporting many services, of which the **Web is only one**.

Idea #2 The Web, in providing a platform for easy sharing, creating, collaborating, and trading multimedia files has liberated control of broadcast from the **control of the many by the few**.

Idea #3 It's fairly simple to begin to build your OWN sites. You **no longer have to be a geek** to get it right. A good hosting service can make all the difference.

REFERENCE WORKS

& RECOMMENDED RESEARCH LINKS

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Technical Focus read more here:
Internet Society isoc.org
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THE FLIP-SIDE

The Internet's Dog Problem

The **anonymity** that nurtured the growth of the early Internet has also opened the way for destructive forces threatening the trust and stability of the Internet infrastructure. Malware, trojans, viruses, hacks and worms are co-evolving alongside the positive growth.
Identity theft, hacked sites, destroyed reputations, zombied machines and cybercrime await the unprotected.
Access the internet safely, use virus-protection, have strong passwords and always do backups, for you and your brands.

STATS & SOUNDBITE SOCIAL CURRENCY *(circa 2010)*

- 1,802,330,457 = internet users, representing 26.6% of the world's population
- Google.com indexes 23.5 billion public web pages but approximately 80% of the Internet is invisible to browsers in what is called the Deep or Invisible Web
- Google software engineers Jesse Alpert and Nissan Hajaj announced that Google Search had discovered 1 trillion unique URLs by July 25, 2008
- 300+ billion database-driven pages are completely invisible to Google. These invisible pages like dynamic database reports and those part of private intranets
- Though Chinese is the world's most widely spoken language, English is the top language of the Internet (due to early keyboard limitations)
- Globally, 47 billion Instant Messages are sent every day. And 1.2 billion IM users [April 2010]
- Roughly 1 in 3 internet users across the 26 countries regard the internet as a good place to find a boyfriend or girlfriend
- An average of 247 billion emails are sent per day - 81% of which are spam
- Most common screen resolution is 1024x768 (24.4% of users)

JARGON-BUSTING GLOSSARY

Internet Fundamentals

ADSL: Asymmetric Digital Subscriber Line. A lot faster than ISDN, ADSL is a high speed method of accessing the internet.

Apache: An open source web server, Apache HTTP server is the most popular web server in use today.

Bandwidth: The amount of data a connection is capable of moving, generally measured in bits per second.

CSS Cascading Style Sheets: This is a machine-friendy code language used to describe how an HTML document should be formatted on a browser (web-designers wax lyrical on CSS).

DNS: Domain Name System. DNS translates a domain name (such as odma.biz) into an IP address (such as 238 . 17 . 159 . 4)

Domain Name: The name of a server that distinguishes it from other systems on the world wide web. A domain name is an identification label that defines which administrative realm this address is registered to.

Download: Transferring files from one computer to another. When you are online you are downloading files from a web site server to your computer.

Email: Electronic mail is a method of exchanging digital messages. E-mail systems are based on a store-and-forward model in which e-mail computer server systems accept, forward, deliver and store messages on behalf of users, who only need to connect to the e-mail infrastructure, typically an e-mail server, with a network-enabled device for the duration of message submission or retrieval. Originally, e-mail was always transmitted directly from one user's device to another's; nowadays this is rarely the case. (Wapedia.com)

FTP: File Transfer Protocol is a standardised method of moving files across the internet.

HTML: The abbreviation for Hyper Text Markup Language, read by web browsers. Certain HTML "tags" are used to structure the information and features within a web page. It makes it possible for browsers to translate pictures and sound for us humans.

HTTP: The Hypertext Transfer Protocol (HTTP) that the Web uses to interface with the Internet

Hyperlink: A link in a document that allows you, once you click on it, to follow the link to the relevant web page.

IP Address: The Internet Protocol (IP) address is a unique number which is used to represent a connected device in an online network. IP addresses consist of four numbers separated by dots and look something like 72.3.218.115 (*which is the IP address of TED.com - try typing the IP address in to your browser instead of the Domain Name - you'll end up on the site anyway.*)

Since these numbers are usually assigned to internet service providers within region-based blocks, an IP address can often be used to identify the region or country from which a computer is connecting to the Internet. An IP address can sometimes be used to show the user's general location.
Try this if you're ever lost and want to see where you are on a map, by checking your current internet connection IP address: whatismyipaddress.com

ISP: Internet Service Provider, a company offering data packages, software and hardware where necessary to access the Internet.

Link: A link is a URL embedded on a web page that can be clicked to access another webpage that the URL specifies.

LAN: Local Area Network. A network of workstations sharing a server within a relatively small geographic area. Like an office.

Linux: An open source operating system based on UNIX that is often used to run web servers. Ubuntu Linux is a desktop operating system considered as an alternative to Windows or MacOS.

SMTP: Simple Mail Transfer Protocol - a protocol for sending messages from one server to another (email).

Technology: "*Anything that was invented after you were born.*" - Allan Kaye

TCP/IP: The Internet Protocol Suite (commonly known as TCP/IP) is the set of communications protocols used for the Internet and other similar networks. It is named from two of the most important protocols in it: the Transmission Control Protocol (TCP) and the Internet Protocol (IP), which were the first two networking protocols defined in this standard.

URI: Uniform Resource Identifier - commonly known as a website address.

URL: Uniform Resource Locator (same as above but in more common use)

W3C: World Wide Web Consortium, an organisation that oversees the Web Standards Project www.w3c.org to ensure accessibility for the greatest number of people to the Web

Web Standards: Best Practices for building websites. The web standards are issued by the W3C.

Web Browser: These allow us to browse the Web and see pictures and hear sound rather than a text-based code - example of browsers include Internet Explorer, Safari, Opera, Chrome, Flock and highly recommended: Firefox.

WWW: The World Wide Web is a complete collection of files written in various markup languages (like HTML) on the Internet.