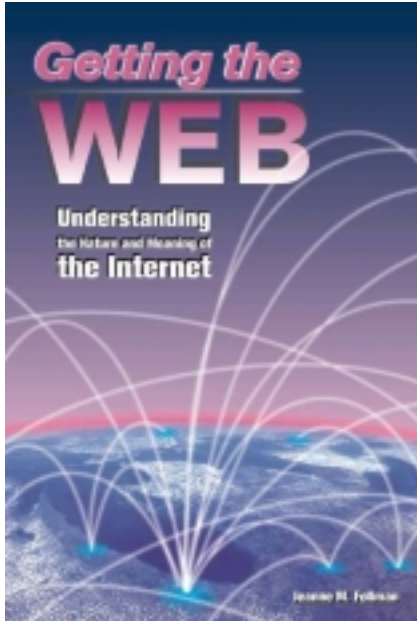


Read Me and Pass Me On  
chapter excerpt & annotated Table of Contents

## *Getting the Web: Understanding the Nature and Meaning of the Internet*



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*an eTaste of*  
**Getting the Web**

Understanding the  
Nature and Meaning  
of the Internet

Jeanne M. Follman

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# Glossary

**Asymmetric Digital Subscriber Line (ADSL)** – a technology for bringing broadband Internet access to homes over ordinary copper telephone wires. ADSL is the most familiar of a family of DSL (Digital Subscriber Line) technologies and is referred to as Asymmetric because it is designed to provide quicker downloads than uploads.

**Backbone** – On the Internet, a set of high-speed communication lines (e.g., T1, T3, optical carriers) that connect other networks and carry network traffic to distant locations. Local and regional networks connect to the Internet backbone via Network Access Points (NAPs) in various locations in the country and the world. For example, an email from Chicago to Washington, D.C. might travel over a local telephone network to the NAP in downtown Chicago, over the backbone to the D.C. area, and then on to its destination via a local network in Washington, D.C.

**Bandwidth** – a measure of how much information can flow from one place to another in a given amount of time. Bandwidth is a function of both capacity and speed. On the Internet it is purely a matter of capacity since speed is determined by the physics of electricity and light. Capacity, however, depends on the communication line. A high-speed line is fast because it's fat; it allows many bits to march side by side rather than in single file. Therefore more of them reach their destination in the same amount of time. The wider the line, the greater the bandwidth. On the Internet, we measure bandwidth by measuring how many bits can move from one place to another in one second. We call it bits per second, or bps. See Broadband

**Bit** – a digit in Base 2 with a value of either 0 or 1. All the information on computers and the Internet is encoded using combinations of bits as

defined by various standards. For example, here's how you use bits to say "Hello" as encoded using the American Standard Code for Information Interchange (ASCII):

01001000 01100101 01101100 01101100 01101111

Bits can be arranged in files to create digitized representations of just about anything, including words, pictures, sound and motion, and programs.

**bps (bits per second)** – a measure of bandwidth on the Internet. See Bits, Bandwidth

**Broadband** – a type of communication line that is high-speed and permanently connected. The high-speed capacity allows more bits to travel side by side rather than in single file so more of them reach their destination in the same amount of time. The always-on nature of the connection means that you do not have to dial into the Internet – you are always connected. The T1 line that connects some schools to the Internet is an example of a broadband connection. Via such technologies as Digital Subscriber Line (DSL) and cable modems, broadband access to the Internet is becoming available to individuals as well as institutions. It will slowly replace dial-up access. See Bandwidth

**Browser** – a software program that allows you to look at and interact with information on the World Wide Web. Netscape Navigator and Internet Explorer are examples of popular browsers. In the client/server framework, a browser is a client (e.g., a program whose main job is to request and receive information). See Client/Server

**Cable TV Internet Access** – a technology for bringing broadband Internet access to homes over cable TV lines through the use of a cable modem.

**Client/Server** – on the Internet, a way to structure software that divides programs into those that send and those that receive. Every communication has a sender, a signal, and a receiver. On the Internet, it's the same:

- Sender – the server – a software program whose function is to present files so they can be obtained by clients.
- Signal – the file – the content of the communication (e.g., files of words, pictures, sound, motion, logic).

- Receiver – the client – a software program whose function is to obtain files from a distant server and display or play them so they can be seen or heard. For example, a Web browser is a client software program that downloads and displays Web files from all over the planet.

Clients require specific servers and servers expect certain clients; both must agree on the format of the file. A standard defines each specific client/server interaction and file format.

**Compression** – a technique to reduce the size of a file so that it takes up less space and can be more quickly transmitted.

**Dial-up** – a means to access the Internet by using a modem to dial into an Internet Service Provider (ISP). The ISP then completes your connection to the Internet. Dial-up access to the Internet will eventually be replaced by broadband access.

**Digital Subscriber Line (DSL)**. See ADSL

**Digitize** – the process of translating words, pictures, sound, and video into a series of bits so they can be manipulated by a computer and transmitted on the Internet.

**Domain Name** – that portion of a Web address (i.e., URL) that is used to identify the network address of a server on the Internet. Wigglesbits.com is an example of a domain name. The domain name system is the telephone book of the Internet.

**Download** – the act of obtaining a file from a distant computer (i.e., server).

**File** – a chunk of bits in a computer that represent words, pictures, sound, video, or logic. On the Internet, each Web page is typically a file, as is each image. See Client/Server

**HTML (Hyper Text Markup Language)** – an open standard that defines the way in which hypertext Web pages display and are linked to one another. HTML is one of the three open standards – HTML, HTTP and URL – that Tim Berners-Lee wrote, thereby inventing the World Wide Web.

**HTTP (Hyper Text Transfer Protocol)** – an open standard that defines how files of information move between clients and servers on the Web. HTTP is one of the three open standards – HTML, HTTP and URL –

that Tim Berners-Lee wrote, thereby inventing the World Wide Web.

**Hypertext** – a mechanism to organize content. Each component of the content can contain a connection (i.e., link) to another component of the content that displays when the link is clicked. The World Wide Web is the most obvious example of hypertext, but there are others. Help files, for example, often use hypertext as the means to present help information.

**Internet** – a public, worldwide system of computer networks – the telephone company for computers. It is a collection of interconnected networks using the TCP/IP protocol.

**Internet Service Provider (ISP)** – a company that provides access to the Internet as well as other services such as email, news, and Web site hosting. If your school or organization has its own direct link to the Internet (e.g., a T1 line), it would not need the services of an ISP since it would perform similar services internally.

**Link** – in hypertext, the connection between one hypertext object (e.g., words, images) and another. Clicking the link causes the display of the connected hypertext object.

**Metadata** – information about information. On the Web, it refers to the information contained in a Web site, usable by search engines, that describes the Web site itself, such as its description and keywords.

**Modem** – a device between your computer and the voice telephone network that translates bits into various tones audible to the network. Newer digital modems used in broadband access manage the transmission of our bits to the Internet in a digital fashion.

**Network** – a series of communication lines connecting computers and other communications devices. The Internet is a network of networks.

**Open Standard** – a set of rules, interfaces, or procedures that is agreed upon by those involved so that any object adhering to the standard can interact with any other object adhering to the same standard. An open standard is a published standard that is possessed by no one and used by all. See Proprietary Standard

**Optical Carrier** – the standards and technology associated with the transmission of information across fiber optic communication lines. These babies are the fastest (i.e., widest) of the broadband communication

## GLOSSARY

lines available today, allowing bits to travel at speeds of over 13 billion bps.

**Packet** – a piece of a file. When files travel across the Internet, they are broken into chunks called packets. Each packet contains an identification and the address of where it is going. When the packets arrive at their destination, they are reassembled into a file and displayed in a browser. See TCP/IP

**Pixel** – a dot of color on a computer monitor. The color in the dot is defined by some combination of red, green, and blue. The more bits you use to define how much of each color the dot contains, the greater the range of color the dot can have.

**Plug-in** – a software program that acts as a client and is integrated into a browser rather than being launched separately.

**Proprietary Standard** – a set of rules, interfaces, or procedures that exists so that any object adhering to the standard can interact with any other object adhering to the same standard. A proprietary standard is typically owned by a corporation. Its internals cannot be inspected. Its use is licensed by its owners. It can be changed at will. See Open Standard

**Pull** – a means of communication in which the receiver controls the nature, timing and extent of a communication. Web surfing is an example of *Pull*.

**Push** – a means of communication that delivers information to the user rather than waiting for the user to specifically request it. In *Push*, the nature and timing of the communication is controlled by the sender. Junk mail is an example of *Push*.

**Server** – see Client/Server

**Streaming** – a technique for downloading an audio or video file that allows the client to start playing the file while it is still being transmitted. The client and server work together to manage the transmission, play the file as it downloads, and keep the playing smooth despite network traffic.

**T1, T3** – broadband communication lines that carry information at around 1.5 and 45 million bps.

**TCP/IP (Transmission Control Protocol / Internet Protocol)** – an open standard that defines how files are broken into packets, routed across the Internet, and put back together again at their destination. The Transmission Control Protocol (TCP) layer of TCP/IP manages the disassembling and reassembling of files and packets and the Internet Protocol (IP) layer gets them to where they belong.

**URL (Uniform Resource Locator)** – an open standard originally written by Tim Berners-Lee that defines how information in files is located on the Web. The URL identifies both the location of the server on the Internet as well as the location of the files within the folders on the server. URL is one of the three open standards – HTML, HTTP and URL – that Tim Berners-Lee wrote, thereby inventing the World Wide Web.

**Web, WWW (World Wide Web)** – the “clickable” part of the Internet accessible via a browser. Tim Berners-Lee invented the World Wide Web by writing three open standards – HTML, HTTP and URL.

**Web Site** – a collection of Web pages linked to a home page which is usually registered in a search engine so it can be found on the Web. From the home page, users can find other pages within the site.

# *Getting the Web*

## Annotated Table of Contents

*A quick look at the other chapters in the book.*

### **The Big Picture**

The pictures taken by the Apollo 8 astronauts were the first to show us Earth, floating alone and majestic in space; these pictures forever changed the way we think about ourselves. Likewise, the Internet is now forever changing the way in which we interact. It is launching us into the new millennium by giving to each individual the powers of communication and exchange that in the past were held only by governments and corporations. This book explores what the Internet is, how computers and telephones shape the internet, and how the Internet shapes communication and exchange and ultimately, us. Technically, it's all quite complex and sophisticated. Conceptually it's a simple matter of moving files back and forth between servers and clients to engage people in communication and exchange. Chapter topics: Looking at What, Not How — Structure of the Book

### **Part I**

In Part I, we see what happens when individuals exchange words, pictures, sound, motion, and logic by putting them in files and moving them back and forth on the Internet – the telephone company for computers.

### **The Telephone Company for Computers**

How the telephone network and computers, as either clients or servers, make up the fabric of the Internet and create the basic mechanism for communication. Chapter topics: *Computers — The Telephone Network — Clients and Servers — Summary: The Telephone Company for Computers*

### **Files**

Traffic on the Internet is no more or no less than billions of requests and files, flying back and forth all over the world, between clients that have requested the files and servers that have served them. Chapter topics: *Signals — Suck It and See*

### **Files of Words**

How the Internet fits into the written tradition and how it turbocharges the power of the word, visualizing discourse and giving each individual the power to create complex repositories of thought and to enter into a conversation on that thought with anyone else on the planet. Chapter topics: *Visualizing Discourse — A Changing Relationship with Text — Mesopotamia dot COM — The Solitary Reader — The Logic of the Book — The Flavor of Text on the Internet — Hypertext - Connection Made Manifest — Breaking Down Barriers — What We Were After All Along?*

### **Files of Pictures**

How images on the Web can be used to convey complex information that can only be fully done pictorially. Chapter topics: *Image File Guts - Pictures as 0s and 1s — Pictures are Cool — Visual Knowledge — Photographs — Art*

### **Files of Sound and Motion**

How the Web can enable each one of us to become radio and

video broadcasters. Chapter topics: *Sound as 0s and 1s* — *Streaming Audio* — *MP3* — *Internet Radio* — *Broadcasting Internet Radio* — *Video on the Web*

### **Files of Logic**

Smart clients, smart servers, B2B: what happens when we start creating Web clients and servers that not only do “show and tell” (i.e., transmit files of words and pictures), but do the million other things that software is known for. Chapter topics: *Smart Servers* — *Smart Servers - Business to Business* — *Smart Clients* — *Downloading Programs* — *The Telephone Company for Computers*

## **Part II**

Part II explores why the Internet is the way it is: how computers and telephone networks shape the nature of the Internet. We see how open standards successfully orchestrate the daily movement of millions of files, we look at search engines, we see why bandwidth is an issue, and we explore the crucial difference in a public network between content and connection.

### **Open Standards**

Open standards are the power that fuels phenomenal growth, providing the clarity and stability necessary to create new forms of communication and exchange. They provide an elegant, transparent way for people to interact in a cooperative fashion. As Tim Berners-Lee says, “As long as we accept the rules of sending packets around, we can send packets containing anything to anyone.” Chapter topics: *Standards and Communication* — *File Types* — *File Standards* — *Standards and the Birth of the Web* — *Standards Today* — *Open Standards* — *Open vs. Proprietary Standards* — *Open Standards and Growth* — *The Power of Cooperation*

### **Searching the Web**

Push vs. Pull, metadata, and why it's so hard to \*find what you're looking for on the Web. Chapter topics: *Push vs. Pull — Catalogs, Search Engines, and Portals — Mechanizing Meaning — Metadata — Sort of Meta — Real Metadata*

### **Bandwidth and the World Wide Wait**

A quick tour of the Internet, why squeezing bits through the voice telephone network is such a slow process and what forthcoming "broadband" solutions, especially ADSL and cable, can do to help the situation. Chapter topics: *The Local Loop — The Internet — The Internet Service Provider (ISP) — Traffic on the Internet — Bandwidth — Speeding up the Internet Network — Speeding Up the Local Loop — In the Interim — Speed in Both Directions — Broadband Solutions — Asymmetric Digital Subscriber Line (ADSL) and the Pooz Deaf Telephone Company — Cable TV — Fiber — Wireless Options — Accessibility Issues — Cost and Convergence — Why Bandwidth Matters*

### **Content and Connection**

What happens when a number of centralized, private networks such as TV broadcast and cable networks crunch into the distributed, decentralized public network that is the Internet. Chapter topics: *Bundling — Bundling in a Broadband World — Bundling Access and ISPs — Public Networks Connect — Content, Connection and Convergence — History Repeats Itself — The Pricing Issue — The Infrastructure Challenge*

## **Part III**

In Part III, we discuss the ways in which the Internet shapes communication and exchange and ultimately, us. The Internet gives us a splendid mechanism to hold an enriched conversation or to

do business with anyone on the planet. And when people start talking on the Internet, information flows freely, anyone can publish, barriers to entry for many businesses are virtually eliminated, intellectual capital increases, feedback shapes content, communities of interest gain voice, local communities thrive, and complex and differentiated entities form and emerge, like the open source movement and the Internet itself. Information illuminates. The Internet will make obvious new ways of doing things and create new ways of looking at life. With it, we can more easily see ourselves in the full context of who we really are and ensure that our institutions truly function the way they should.

### **Individuals in Conversation**

On the Internet, the vast complexity and storage capacity of computers fuses with the reach of the telephone network, dramatically enriching our conversations. If your interests, your business, or your mission in life lay within the realm of communication or exchange, the Internet is the tool for you. Are you ready? Chapter topics: *Communication and Exchange — The Power of Publishing — The Power To Exchange — The Creator's Tool of Choice — Using Files for Communication and Exchange — Visualizing Discourse — Internet Time — Discourse and the Shaping of Content — Sharing and Amplifying Intellectual Capital*

### **Formation of Community**

On the Internet, it's not unusual for people who would otherwise be complete strangers to do cool stuff as a community for no other reason than their love of doing cool stuff. Far from being a force for social isolation, for people of like minds or similar interests, the Internet is a wellspring of community formation, and is itself the product of such a community. The Internet dissolves barriers, the main but not the only one being distance, and provides a forum for conversation, debate, and interaction. Chapter

topics: *Conveying Presence — Reaching the Niche Audience — A Small Corner of Cyberspace — Victorian Email — Enhancing Physical Communities — The Virtual Corporation — The Community that Created the Internet — Doing Good and Showing Off — Open Source — Transparency and Complexity — Cyberspace is Earth*

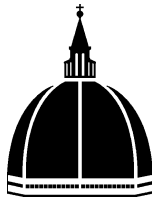
### **Conversations Driving Change**

The Internet doesn't cause change but the people using it certainly do. If there are conversations between people and within communities that the Internet can bring about, it is from these conversations that change will come. Information and access have become both democratic and global, generating deep structural changes in the way we communicate and do business. Chapter topics: *The Free Flow of Information — Access Changes Structure — Everyone's an Operator — The Price in the Marketplace — The Marketplace Itself — A Market of One*

### **An Outbreak of Sanity**

Information illuminates. With it, we can see ourselves in the full context of who we really are and insure through transparency that our organizations function the way they should. Using the Internet, each individual, alone or in communities of interest and knowledge, finally has the power to trump the agenda of the institution and shape it to serve those who give it meaning. It may be just the thing we need to permanently nail into place the mother of all paradigm shifts: the idea that the person gives meaning to the institution, not the other way around. Chapter topics: *Illumination and Formalization — Transparency — Epiphanies of Context — Welcome to the Renaissance*

Glossary, Bibliography, Index



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