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DON'T GET CAUGHT IN THE NET: AN INTELLECTUAL PROPERTY PRACTITIONER'S GUIDE TO USING THE INTERNET

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INTRODUCTION

Talk of the Internet, or Net, permeates international business, educational, and professional society. Electronic interactive services such as bulletin boards, e-mail, and other online information services have quickly become one of the most efficient and prevalent forms of communication by both individuals and industries. As most people know, even President Clinton has his own e-mail address.[1]

The Internet is the world's largest computer network and the nearest thing to a working prototype of the information superhighway. It is actually a global network of computer networks that links together the large commercial computer-communications services,[2] as well as tens of thousands of smaller university, government and corporate networks, bound by a common set of communication procedures known as protocols.[3] The United States government helped develop the Internet as a datalink among a handful of academic communities. The Net is still subsidized by the U.S. government but has no central management, nor an owner.

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1. The president may be reached at PRESIDENT@WHITEHOUSE.GOV. Vice President Gore is available at VICE-PRESIDENT@WHITEHOUSE.GOV and First Lady Hillary Clinton's e-mail address is ROOT@WHITEHOUSE.GOV.

2. Such as CompuServe®, Prodigy®, and America OnLine®.

3. The most widely used computer communication protocol is Transmission Control Protocol/Internet Protocol, or TCP/IP. The Internet as we know it was made possible by the success TCP/IP enjoyed in the mid 1970's.

The world of the Internet is a fluid and dynamic realm with a body of users that continues to grow on a daily basis. Net users find themselves discovering a plethora of new information online as new documents, computers and users are added. This decentralization structure has proven to be the Net's strength by providing flexibility over time.

To new users, however, this freeform structure may seem like nothing more than chaos. As a new user, you may feel caught in a paradox: you are well aware that the only way to learn how to navigate the Net is to jump on board and get started. But at the same time, you're not sure how to plot your course once you're logged in.

This paper is intended to help bridge the gap between desire and ability to maneuver your way through the Internet. After a brief history on the origin of the Net, focus turns to a sampling of particular procedures[4] leading to Net resources that may prove valuable. The descriptions of these Internet services are accompanied by detailed instructions to provide you with a guided introductory tour of Net sites.

This article is written primarily with intellectual property practitioners in mind, but the information provided may prove beneficial to general legal practitioners, scientists, and anyone interested in issues surrounding intellectual property. The examples provided are not intended to comprise an exhaustive or conclusive list of relevant Internet resources. Rather, they are meant to spark your interest and serve as a launching pad from which you can take flight. Once you become familiar with the basics of the Internet, many other specific and useful features will make themselves evident.

Although the commands necessary to manipulate various services on the Net will differ from user to user (according to the operating system and Internet access software within your individual computer), the functions, purposes, and basic structures of the Net will remain constant. The authors have attempted to exemplify the basic commands[5] to utilize the Net for each service described herein.[6] These descriptions are premised on the older, text-based interface common to many users of the Internet. The World Wide Web (WWW),[7] a hypertext Net service, can only be fully utilized in conjunction with Windows, for pc users, or other graphical interfaces, such as those available with Macintosh computers.[8]

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4. These pathways include e-mail, newsgroups, gopher, ftp, telnet, and World Wide Web.

5. Throughout this article, the basic internet commands can be found in boldface print.

6. E-mail, newsgroups, ftp, telnet, and gopher.

7. *See infra* notes 40-54 and accompanying text for a discussion of the World Wide Web.

8. Although some limited access to the WWW is available in a DOS, text-only format, full access, which includes access to images, is only available via a graphic interface.

Numerous books are available for those who are looking for more guidance as you explore the capabilities of the Internet.[9] Several useful reference texts are also available from online sources.[10]

I. HISTORY

The Internet sprang from roots in the Defense Department, where the Advanced Research Projects Agency[11] started research on networking in 1969.[12] Prior computer systems relied on a central computer terminal which would disseminate messages to, and relay messages between, remote terminals. Unfortunately, such a system was vulnerable to attack at the hub: destruction of the central terminal meant incapacitation of the entire system. United States Defense required higher security.

In a program called ARPANET,[13] the military devised a network of interlinking computer systems more difficult to sabotage. ARPANET circumvented the need for a centralized super-computer by interconnecting the remote terminals. Rather than incapacitating the entire system, destruction of any number of terminals merely required contacting the next terminal in the string to bridge the gap. For today's users, the Internet's structure allows direct and immediate communication with computer terminals anywhere in the world without mediation by a central computer.

The National Science Foundation (NSF) first transferred the Net from the military to the academic domain. The NSF granted educational institutions full use of the Net in exchange for their research data, thereby broadening the scope of the Internet. The Net's decentralized format, coupled with the increasing prevalence of personal computers in

9. Two books the authors find useful for basic level information are KROLL O'REILLY & ASSOCIATES, INC., THE WHOLE INTERNET USERS GUIDE & CATALOG (1992); and JOHN R. LEVIN AND CAROL BAROUDI, THE INTERNET FOR DUMMIES, (1993). A reference which may be useful to the more advanced Internet user is PAUL GILSTER, THE INTERNET NAVIGATOR, (1993).

10. The best note of which is entitled "Zen and the Art of the Internet," by Brendan Kehoe, which offer beginners a guide to using the Internet. Obtaining these journals presents a "Catch-22." To obtain the journals, which were written to provide instruction to the use of the Net, Internet users must contact various Internet sites by methods taught in the books themselves.

11. ARPA was established, in response to Sputnik, to lead the United States in science and technology. *See* Mark Gordon and Diana McKenzie, *A Lawyer's Roadmap of the Information Superhighway*, 13 J. MARSHALL J. COMPUTER & INFO. L. 177, 182 (1995) (discussing the history of the Internet).

12. *See* HTTP://WWW.AMDAHL.COM/INTERNET/EVENTS/TIMELINE.HTML for a more complete timeline of events pertaining to the Internet. *See infra* note 41 and accompanying text for instructions on how to access this World Wide Web site.

13. Advanced Research Projects Agency NETwork.

the early 1980's led to a rapid rise in the number of Net users. The Internet comprised roughly 100 networks in 1985, 500 networks in 1989, and over 2,000 in January 1990.[14]

By June of 1991, the NSF estimated close to 4000 Net users, and by 1993, the Net's user population doubled again. Extrapolation of current figures estimates that the Internet could reach 40 million people by 1995 and 100 million by 1998.[15] Strangely, the burgeoning growth in the Net's popularity does not appear to hold true among intellectual property practitioners. Newsgroups concerning intellectual property matters have developed slowly, indicating limited interest. Intellectual property practitioners not utilizing the vast Net resources available to them often ask, "what is it that I'm missing?" What follows is a partial answer.

II. NETWORK RESOURCES

A. Electronic Mail

Electronic mail, or e-mail, is the most widely used Net service. E-mail can be seen as a blend of communication methods available from telephone and traditional postal services. Like traditional mail, e-mail consists of individual messages composed at one site and sent to another. However, due to the ease of receiving and responding to electronic messages, e-mail has the potential to become nearly as simultaneous as a telephone conversation, with the added advantage that the sender and receiver need not be available at the same time.

The delivery of electronic mail parallels that of traditional mail in that once messages are sent, they are stored and forwarded at each subsequent site along their path until they reach their final destination. This means that after a message has been sent, the e-mail service passes it along to the appropriate computing system until the message arrives at the recipient's mailbox, where it is held until it is read.

E-mail is a practical tool for communication within groups, even if they are quite large and dispersed, because it allows the fast and complete distribution of a message. Immediate dissemination of a common message is possible with e-mail without regard for the size of the group or the locations of its members. Group discussions are facilitated by e-mail because members may address any portion of the group with no practical barriers. For example, a message may be sent from one site to another, from one site to select others, or from one site to all others, depending on the particular circumstances. Moreover, accessory documents may be uploaded and included with a message as a compressed

14. Gilster, *supra* note 11, at 13.

15. *Id. See also* Gordon and McKenzie, *supra* note 11, at 183.

file,[16] thereby decreasing the bulk of the message and time required to relay it.

Although e-mail is associated with a general tone of informality, it should be kept in mind that a written message carries with it more permanence and accountability than spoken conversations. Therefore, professionals who deal regularly with information regarded as privileged and/or confidential should not assume that this information sent through e-mail will necessarily remain as such. Fortunately, mathematically sophisticated encryption software programs such as PGP[17] allow Internet users to freely exchange e-mail messages without fear of compromising privileged information. These precautions make communication via Internet e-mail significantly more secure than sending information to clients and fellow practitioners via facsimile transmissions (fax).

E-mail is the primary reason that most legal practitioners obtain Internet connections. Such use allows attorneys and their clients to remain in communication at all times and virtually all places where telephone service is available. It allows both parties to send copies of documents back and forth without the necessity of time delays caused by traditional mail, or problems associated with fax.

B. USENET NEWSGROUPS

Newsgroups are the collective online exchange of ideas among people sharing a particular interest. Ongoing discussions consist of posted e-mail messages organized according to the addressed subject matter, which may run the gamut from serious and professional to casual and even trivial.

Participation in newsgroups is as easy as running e-mail, but doesn't require as personal a commitment. A user's degree of involvement from group to group may vary greatly based on interest level and mood. A user may remain a lurker,[18] choose to respond to something he read, or subscribe to a newsgroup.[19] Furthermore, if users just cannot find a dis-

16. *See infra* note 43 and accompanying text for a discussion of how to acquire decompression software.

17. PGP, or *Pretty Good Privacy*, is an encryption program for scrambling computer messages written by Phillip Zimmermann. This program, which is freely available from various sources on the Net, is a virtually uncrackable encryption program widely used by professionals using e-mail who are concerned about maintaining the privacy of their communications. William M. Bulkeley, THE WALL STREET JOURNAL, Thursday, Apr. 28, 1994, at A1. col. 1.

18. A *lurker* is a Net term for someone who monitors discussions in either newgroups or listservs, but chooses not to actively participate. Lurking is recommended for newcomers.

19. In addition to newsgroups, various *listservs* are also available, covering a variety of topics. A listserv works like a mailing list; every message posted to the listserv is sent to the list's subscribers via e-mail. Most lists are open to the public, but some are by invita-

cussion that suits their taste, a user may choose to start an original newsgroup. By posting a message online and reading the responding messages that accumulate, you can form a new thread[20] in cyberspace.

Newsgroups require a newsreader, which is an interface between the user and the available newsgroups. Some commercial services and some Net connections include built-in newsreaders. A user can even download a full-service, easy to use newsreader for your own computer through freeware/shareware.[21]

After obtaining access to a newsreader, the following newsgroups of possible interest to attorneys, particularly intellectual property practitioners, may be good places to start scanning and reading newsgroups.

1. COMP.PATENTS - A discussion of patents relating to computer technology.

2. COMP.SOCIETY - Postings deal with technology's impact on society.

3. COMP.SOFTWARE.LICENSING - Regular participants discuss the latest issues in software licensing.

4. MISC.INT.PROPERTY - A discussion of various domestic and international intellectual property topics. Postings to this group are most frequently concerned with issues of patent law.

5. MISC.LEGAL - This general legal newsgroup usually contains over a thousand postings on various legal topics, some of which deal with intellectual property matters.

6. MISC.LEGAL.MODERATED - This is a moderated newsgroup that deliberates general legal issues. Discussions of intellectual property mat-

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tion only. Further, some *listservs* are moderated, as well as some newsgroups, which means that all messages are sent to a central organization or individual, who decides whether the message should be sent out to the list. Many lists are archived, allowing a user to browse through posted messages of various newsgroups. Access to the archived messages from the following listservs (and more) can be accessed through the Web, courtesy of the John Marshall Law School: HTTP://WWW.JMLS.EDU/LAW-ARCH.HTML. For example:

1. Artificial Intelligence and the Law
2. Computer Assisted Legal Instruction
3. Coalition for Networked Information's Copyright Intellectual Property Forum
4. The Law and Policy of Computer Networks.

See infra notes 40-54 and accompanying text for information on how to access this WWW site.

20. A *thread* is an on-going discussion that maintains a consistent subject matter.

21. One of the most popular newsreaders is the Trumpet Newsreader, created by Peter Tattum and available free by File Transfer Protocol (ftp) from FTP.UTAS.EDU.AU in the PUB/PC directory. Both DOS and Windows versions are available. A Macintosh newsreader, Mews, is also available at this site in the PUB/MAC directory. *See infra* notes 25-32 and accompanying text for instructions on how to ftp or file transfer protocol. However, the newsreader may be available in compressed form only; thus, it would have to be expanded to be used. *See infra* note 43 and accompanying text for information on how to decompress files.

ters sometimes arise. In addition, *The Legal List*[22] is posted here on a regular basis.

7. MISC.LEGAL.COMPUTING - A broad discussion of legal issues about computing.

C. File Transfer Protocol

File Transfer Protocol, commonly known by its abbreviation ftp,[23] allows an Internet user to move files from one computer to another. It does not matter where the two computers are located, how they are connected, or even whether or not they use the same operating system. Files can be transferred by ftp, provided that both computers have access to the Internet and can communicate in the ftp protocol. In order to use ftp, the Internet user is required to specify the address of the remote machine with which the user desires to exchange files.

Many computers maintain so-called "anonymous ftp sites," which allow random Net users to log on and remove files. To do this, the Net user logs onto the other computer using the ftp command and the name of the remote computer desired. Then the user must go to the directory where the file is located and bring the file back to your home account. The following is an example of how to successfully accomplish an ftp.

1. At the Internet system prompt, type: FTP [RETURN]. (This will return an ftp prompt.)

2. Enter the name of the ftp site you wish to reach. For example, if you wish to obtain a copy of a recent article concerning software licensing, type: FTP.EFF.ORG [RETURN].[24]

3. The local computer will then connect to the remote computer, in the present case the remote computer is located at Case Western Reserve University. The remote computer system will then prompt you for a login ID. Most of the ftp sites support anonymous login by accepting the login ID of "anonymous." Therefore, at the user ID prompt, type: ANONYMOUS [RETURN].

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22. One of the most useful electronic publications for attorneys available through the Net is *The Legal List, Law-Related Resources on the Internet and Elsewhere*, written and compiled by Erik J. Heels. The *Legal List* provides a wide ranging list of useful law-related resources available both on the Net and elsewhere. The Legal List may also be obtained from several ftp sites, Web sites and newsgroups on the Net, or directly from the author by sending an e-mail message to LEGAL-LIST-REQUEST@JUSTICE.ELIOT.ME.US with "subscribe-[your name and e-mail address]" as the message.

23. *FTP*, written in either capital or lower case letters, is used as many forms of speech, including a noun, adjective, and verb, as in "I ftped Supreme Court decisions off the Net."

24. This site, maintained by the Electronic Frontier Foundation (EFF), contains a vast store of legal information. This information may also by accessed by the EFF's other Internet nodes by gopher: GOPHER.EFF.ORG or by the World Wide Web: HTTP://WWW.EFF.ORG.

4. The user is then prompted for his full e-mail address as a password. Enter the complete e-mail address at the prompt, for example: JKKASSEL@STUDENTS.WISC.EDU [RETURN].

5. At this point the user will be in the remote computer. The user may want to browse around or go directly to the documentation they are seeking. Most systems provide text files that contain a full description of the contents of the site. These files are usually identified by the words "index," "1st.doc," "readme.1st" or other similar language in their title. To read these or other documents found by ftp, it is necessary to transfer the documents from the remote computer to the local computer. The command prompt by the remote computer is usually an asterisk. From this prompt, the user moves to the directory where the file to be transferred is located. To browse directories of topics available at the remote site, type: DIR[RETURN].

This lists all the primary directories of information available. To move to one of these directories, type the change directory command (cd) and give the path of the new directory. In the present case, to access the article regarding software licensing, type: CD PUB/CAF/LAW [return].

(Note that the remote computer is case sensitive; directory names must be typed in with the appropriate capitalization exactly as they appear.) At the remote computer prompt, type: DIR [RETURN] to view the files available in the "law" directory.

6. To retrieve a copy of a file in this directory, use the "get" command, followed by the filename.[25] This will transfer a copy of the file to the your system. (Executable program files are usually in a binary format, and must be transferred by binary transfer protocol. To set the protocol to binary transfer, type BIN [RETURN] before using the "get" command.) To retrieve a copy of the software licensing article, type: GET SOFTWARE-LICENSING [RETURN].

This transfers a copy of the software-licensing file from the remote computer to the local computer. The user may then transfer the file from their Internet account to their personal computer in the manner prescribed by the Internet connection vendor.

7. To exit from the ftp site, type: EXIT [RETURN].

Other ftp sites exist that may be of interest to the intellectual property practitioner. Perhaps the most valuable of these is the site maintained by the United States federal government. A large number of documents from various governmental agencies, including the PTO, are stored at this site.[26] These documents include lists of government inventions available for licensing, statistics involving industrial patent activ-

25. Many files that are available from ftp sites will be compressed files. *See infra* note 43 and accompanying text for a discussion on how to view compressed files.

26. FTP.FEDWORLD.GOV.

ity in the United States, and information concerning Japanese semiconductor activity.

Recent United States Supreme Court decisions are available through the Internet as part of "Project Hermes." On May 11, 1990, the United States Supreme Court announced that it was beginning a two year experimental program which has continued to the present. The objective of the U.S. Supreme Court in initiating Project Hermes was to provide copies of the Court's opinions in electronic form as quickly as possible to as large an audience as possible. Through this service, it is possible to receive the full text of the Court's opinions within minutes of their release, absolutely free.[27] It is also possible to have the Court's opinions sent directly to a user's Internet account. Or the files may be downloaded from various sources on the Net.[28]

Various compendiums of frequently asked questions (FAQs) regarding intellectual property issues exist, and may be copied using ftp. The latest copy of a regularly revised FAQ regarding patents is available from several anonymous ftp sites.[29] In addition, a list of frequently asked questions and their answers regarding copyright law is available by anonymous ftp.[30]

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27. The only cost associated with obtaining the Court's decisions through this method is, of course, the user's Internet access fee.

28. The Court's rulings may be obtained from a number of anonymous ftp sites. For example, the Court's decisions may be obtained as follows:

ftp: FTP.CWRU.EDU
login: ANONYMOUS
password: YOUR COMPLETE E-MAIL ADDRESS or the following site may be used:
ftp: FTP.UU.NET
login: ANONYMOUS
password: YOUR COMPLETE E-MAIL ADDRESS
directory: ARCHIVE/OPINIONS/SUPREME-COURT

In addition, a searchable (by topic, keyword, or party) database of recent Supreme Court decisions may be accessed through the World Wide Web at the following site: http://www.law.cornell.edu/supct/supct.table.html. *See infra* notes 40-54 and accompanying text for a discussion of how to get access to the World Wide Web.

29. This posting may be retrieved from the following sources:

ftp: FTP.SU.OZ.AU
login: ANONYMOUS
password: YOUR COMPLETE E-MAIL ADDRESS
directory: PUB\PATENT\INCOMING
This listing may also be obtained from:
ftp: FTP.UNI-STUTTGART.DE
login: ANONYMOUS
password: YOUR COMPLETE E-MAIL ADDRESS
directory: PUB\DOC\COMP.PATENTS

Further information regarding this posting can be obtained by direct correspondence with the moderator of the newsgroup "comp.patents," Peter Treloar, who may be contacted at his e-mail address: PJT@RESEARCH.CANON.OZ.AU.

30. To access this FAQ, FTP as follows:

D. TELNET

Telnet is used for logging into other computers on the Internet and accessing many public services, including library card catalogs and computer systems maintained by universities and governments. Unlike ftp, which is used solely to move files back and forth between computers, telnet allows you to sit at your keyboard and manipulate a computer system at some remote location. In fact, when using telnet, your commands directly control the remote system as you work within that system's parameters. One advantage this affords is that, once online with telnet, you can move freely from one interconnected electronic site to another without closing down and dialing up again between each session.

An example of an application of this telnetting capability is the card catalog of the Library of Congress which may be accessed via telnet.[31]

1. At your internet system prompt, type: TELNET DRA.COM [return] (This will connect you to the Library of Congress computer).

2. Follow the directions given to preform your desired search.

Several other telnet sites may prove valuable to readers. Westlaw maintains a free legal directory, with over 675,000 listings of law firms, branch offices, and biographical records of attorneys from all fifty states, the District of Columbia, Puerto Rico, the Virgin Islands and Guam. This site may be accessed by typing: TELNET WLD.WESTLAW.COM and following the instructions provided.

One of the most valuable sites for the intellectual property practitioner may be the governmental bulletin boards maintained by the United States federal government and accessible through the Fed World™ system.[32] Fed World is a pilot project set up by the National Technical Information Service. Fed World allows users to connect electronically to over 100 bulletin boards from various government agencies.

The Patent and Trademark Office (PTO) maintains a bulletin board

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ftp: RTFM.MIT.EDU
login: ANONYMOUS
password: YOUR COMPLETE E-MAIL ADDRESS
directory: PUB\USENET\NEWS.ANSWERS\LAW\COPYRIGHT-FAQ
The complete FAQ is available in a series of files (numbered 1-6) at the above referenced site.

31. The Library of Congress may be accessed through two separate telnet sources, a LOCIS (Library of Congress Information System) source and a DRA (Data Research Associates, Inc.) source. LOCIS access to the Library of Congress is available by telnetting to TELNET LOCIS.LOC.GOV. A user-friendly help screen assists the researcher in searching the Library of Congress via this system. The DRA system provides a standard searching capability for the Library of Congress including searching by subject, title, author, call number and control number. These services are freely accessible to Internet users between the hours of 8 a.m. and 5 p.m. Central Time.

32. To access Fed World, type TELNET FEDWORLD.GOV.

which may be accessed 24 hours a day through Fed World.[33] Each user is assigned a password upon initial contact and allowed 240 minutes a day free access. The PTO bulletin board posts notices of interest to patent practitioners, including Official Gazette (OG) notices, expired patent files, and patent fee schedules. Additionally, various news items concerning the PTO are available online through this system, and may be downloaded to the user's Internet account and passed to the user's personal computer.[34]

Various reports generated by the PTO are also available through this service, including the *All Technologies Report*, which tallies the number of utility patents granted since 1963. This report provides yearly totals for the most recent fourteen years and also gives yearly patent counts for the 35 foreign countries receiving the most U.S. patents during this period. Totals are divided according to general categories of ownership such as corporate-owned, government-owned, and so on.

Other reports available at this site deal with patent counts by country/state and year, with totals provided for the last 21 years. Further, the PTO reports concerning patenting trends for the 1992 calendar year are available. OG notices are posted here, as well as an attorney roster containing a listing of all those currently registered to practice before the Patent and Trademark Office.

Perhaps most importantly, the complete Manual of Patent Examining Procedure (MPEP)[35] may be electronically obtained from the PTO

33. Reaching the PTO bulletin board via Fed World is a rather circuitous route. Follow these steps:

1. At the Internet prompt, type TELNET FEDWORLD.GOV [RETURN]
2. AT THE FED WORLD™ ACCOUNT PROMPT, TYPE NEW [RETURN]
3. Complete the questions posed to establish a Fed World™ account.
4. Press [RETURN] until the main menu is reached.
5. At the main menu enter U [RETURN].
6. You will now be at the utility menu. Enter D [RETURN].
7. Enter L [RETURN] and find the number corresponding to the PTO bulletin board. At the time of this writing, the number was 116.
8. Enter the correct number and [RETURN].
9. You will now be connected to the PTO bulletin board.
10. You will be asked to enter your name and select a password. After doing so, select C [RETURN].
11. At the main menu, select F [RETURN] for files to download.
12. Select M [RETURN] for miscellaneous files.
13. At this point you may choose to download either the TMEP or the MPEP following instructions provided.

34. Some of these news items include the following: *PTO Issues Record Number of Patents in 1992*, *PTO Hearings Scheduled on Patent Harmonization*, *PTO Chief Discusses NAFTA With California Bar Association*, and *Clinton Appoints Hampton as Assistant PTO Commissioner*.

35. *See supra* note 35 and accompanying text for a discussion on how to reach the PTO bulletin board.

using this source. The user may download MPEP, thereby having an electronic copy which may be subsequently searched as required. Additionally, the complete Trademark Manual of Examining Procedure (TMEP) may be obtained in electronic form from this source and downloaded to the user's computer.[36] Other trademark information from the PTO service includes trademark notices from the Official Gazette.

E. GOPHER

Gopher is an integrated service using menus to show what is available at a glance. Gopher connects various information services under the topic heading of your choice. Keyword searches allow you to browse through information, move directly to resources of interest to you, and retrieve them at will, working all the time within gopher.

Gopher gives an easy to work with interface that organizes and arranges a great deal of information into a sense of order. Gopher systems automatically integrate commands as needed for your search. If what you want is a file, gopher uses ftp. If what you want is a log-in resource, gopher sets up a telnet session. Gopher translates what you say into the appropriate commands for each application. You need not worry about the correct protocol — gopher does that for you. Prior to the advent of the World Wide Web,[37] gopher was the fastest and easiest way to wander about the Net.

An example of gopher is the full text U.S. patents for 1994, which are available for keyword searching. This patent database may be accessed via gopher as follows:

1. At your internet system prompt, type: GOPHER TOWN.HALL.ORG [RETURN]. (This will connect you to the remote computer.)
2. Follow the directions given to perform your desired search.

Although many other gopher sites exist which may be of use to intellectual property practitioners, most if not all of these may be reached through a Web access site. Users are encouraged to utilize the Web access because it provides an easier means of accessing essentially the same information as the gopher sites.

F. THE WORLD WIDE WEB

The World Wide Web[38] is the latest and greatest addition to the Internet and one that brings us one step closer to establishing an informa-

36. *See* supra note 35 and accompanying text for a discussion of downloading PTO information.

37. *See infra* notes 40-54 and accompanying text for a discussion of how to access the World Wide Webb.

38. Also denoted by WWW and commonly called the Web.

tion superhighway. WWW has all the advantages of gopher, and more. The Web links together textual, audio, and pictorial information, allowing the user to retrieve not only standard textual material via the Net, but also to directly view images and hear sound recordings that supplement the texts on Web sites.

For example, if you had always wanted to take a trip to Paris and visit the Louvre, but were never able to do so (because the demands of being an intellectual property attorney never afforded you the time or opportunity), now you may travel on a computer guided tour of the world's artistic masterpieces without leaving your desk. All that is required for you to view images of works by artists such as Botticelli, Dali, Rembrandt and Picasso is to access the proper Web site.[39]

More important, and perhaps even more impressive than the Web's access to graphics and sound recordings, is its organization. The Web is arranged in a way that facilitates fast, easy, and intuitive access to information on the Net by connecting data through hypertext links.[40] These links allow the user to follow a continuous trail of information wherever it may lead, whether to another part of the document you are in or to a remote terminal located around the world, simply by clicking your mouse on the appropriate hypertext link. Hypertext links connect relevant information in a complex, variable web of your choosing.

At the time of this article, there are several shortcomings concerning use of the Web. The first is that although it may be possible to utilize the Web with a text-based interface, full and efficient utilization of the Web requires a Macintosh™ computer or the capability and software to run Windows™. Further, most commercial services do not currently allow Web access. However, most if not all of the major commercial providers are in the process of making the Web available. Finally, proper access to the Web requires an interface. The best way to gain access to the Web is through an interface program called a "browser" that has been designed specifically for the Web. Fortunately, two of the best browsers, along with the related software necessary to listen to audio recordings and view maps, pictures, and movies, are available through the Net at no cost.[41]

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39. *Le WebLouvre* is an unsupported project (with no connection with the Louvre in Paris) containing computer images of many of the famous paintings residing in the Louvre. To reach this site, connect to: HTTP://SUNSITE.UNC.EDU/LOUVRE/NET/ as explained *infra* note 43.

40. A *hypertext* link is a portion of the text, be it a number, letter, or word, that is highlighted or enclosed by dashed lines to make it stand out.

41. Two of the most popular browsers are Mosaic and Cello. Mosaic is available free of charge from The National Center for Supercomputing Applications (NCSA). To retrieve the Mosaic software, ftp to: FTP.NCSA.UIUC.EDU and choose either the /PC directory (for IBM-compatible Mosaic software) or the /MAC directory (for Macintosh-compatible Mosaic

software). The software is located in the /WEB/MOSAIC directory. This software may be compressed and/or encoded, and therefore may require decompression and/or decoding before it can be run.

When downloading Macintosh files, if the file ends with the extension ".sit," the file is compressed and may be uncompressed with the shareware program StuffIt or the public domain program UnStuffIt, both of which are available at this ftp site in the /MAC/UTILITIES directory. If the file ends with the extension ".hqx", the file must be decoded. The file may be decoded with the BinHex program which is also available in the /MAC/UTILITIES directory. Note that the StuffIt program itself must be decoded before it can be used.

To decode a BinHexed file (a file with the ".hqx" extension) simply follow this procedure:

1. Download the BinHex program using the ftp commands. *See supra* notes 25-34 and accompanying text for a discussion of how to use ftp protocol.
2. Download the chosen file your Macintosh computer.
3. Start the application BinHex by double-clicking on it.
4. From the "File" menu in BinHex, choose "Upload -> Application."
5. Choose the ".hqx" file to be decoded and select "Open."
6. Select "Save" to decode the file.

Similarly, to uncompress a file having the ".sit" extension (i.e. a stuffed file) complete the following procedure:

1. Download and decode the StuffIt program.
2. Download the chosen compressed file (i.e. "filename. sit") to your Macintosh.
3. Begin the StuffIt application by double-clicking on it.
4. From the "File" menu in StuffIt, choose "Open Archive. . ."
5. Choose the ".sit" file to be unstuffed and select "Open." A window with all the files contained in the stuffed file will appear.
6. Choose "Select All" in the "Edit" menu to select all of the files.
7. Click on the "Extract" box at the bottom of the window.
8. Select "Save All" in the dialog box to save all the selected files in the current directory.

IBM-compatible files for Mosaic are compressed using a utility called "pkzip" and need to be "unzipped" using a utility entitled "pkunzip" before they can be used. If you don't have pkunzip on your computer, you can find a copy of the program at this ftp site in the / PC/TELNET/CONTRIBUTIONS directory. The file name is PKZ110.EXE for this program. Run this program on your computer and several files will be self extracted, including one entitled "pkunzip.exe." To unzip compressed files:

1. Download the chosen compressed file (i.e "filename.zip") to your pc.
2. Begin the pkunzip application by typing PKUNZIP.EXE from the directory where the pkunzip application is located.
3. At the dos prompt type PKUNZIP -D FILENAME.ZIP where "filename.zip" is the name of the file you wish to unarchive.

Note that any software having one of these extensions, including copies of other software that may be compressed, can be decompressed or decoded using the above software.

Cello is the other major browser available for use with the Web. This Web browser was created and is maintained by the Legal Information Institute. The software for this browser may be obtained from ftp at the following site: FTP.LAW.CORNELL.EDU in the /PUB/ LII/CELLO directory. This software is available for PCs only and is compressed using pkzip. Therefore, it is necessary to use the pkunzip software on this program, as detailed above.

To access Web sites, simply click on the appropriate icon or word that allows you to "launch via URL." For example, in Cello, simply double-click on the word "jump" in the menu bar at the top of the screen. Then select "launch via URL" by double-clicking on the

The following is a list of some Web "home pages" that may be of interest to the intellectual property practitioner. Home pages are simply the first link in a set of hypertext documents. The home page is maintained by a source which places hypertext links within the page to other home pages, documents, images, maps, etc.

The PTO maintains its own Web home page.[42] This home page contains hypertext links to a plethora of information and can be found at the following address: HTTP://WWW.USPTO.GOV. Some of these links lead to online publications by the PTO, including pamphlets containing general information on patents and trademarks. There is a hypertext link from the PTO home page to the Web home page maintained by the Copyright Office.

Links also exist to documents concerning PTO collaborative projects with other government agencies, including the Clearinghouse of Networked Information Discovery and Retrieval (CNIDR), the National Science Foundation (NSF), the National Center for Biotechnology Information (NCBI), and the World Intellectual Property Organization (WIPO). Recent Federal Register Notices concerning the PTO can also be retrieved. A variety of other information may be accessed through the PTO's home page, including The Commissioner's Annual Report for 1993[43] and job openings at the PTO.

In addition, there are many more sources of interesting information available through the PTO home page. Accessing the site HTTP://WWW.USPTO.GOV/CGI-BIN/ELFS.PL will put you in the PTO's employee locator. The patent practitioner may use this locator to determine a PTO employee's phone number and art unit affiliation. It is also possible to determine all members of a particular art unit or perform a search by art unit or by phone number.

The Preliminary Draft Report, which examines the intellectual property implications of the National Information Infrastructure prepared by the Working Group on Intellectual Property Rights,[44] is available via the PTO Web site. There is also a link available to a searchable database containing AIDS-related patents.

Questel/Orbit™, an international company providing online patent, trademark, and scientific information also maintains a Web home page

words. Finally, type the complete Web address in the box that appears, remembering to type the address precisely as it is shown, because addresses are case sensitive.

42. Intellectual property practitioners may also find the Web site maintained by the Department of Justice regarding antitrust matters a useful resource. This Web site may be found at: HTTP://GOPHER.USDOJ.GOV/ATR/ATR.HTML.

43. The report is available in Adobe's PDF format, including all figures and graphs. The PTO also provides Acrobat 2.0, the free PDF viewer software from Adobe, in versions for both Microsoft Windows® and the Macintosh®.

44. Chaired by PTO Commissioner Bruce Lehman.

that groups intellectual property resources on the Net. This page can be accessed from the address: HTTP://WWW.QUESTEL.ORBIT.COM/PATENTS/ for documents and hypertext links to a variety of resources, including a Web access to the gopher site[45] of searchable full text patents from 1994.[46] Also included are links to various essays and articles relating to patents and trademarks. Other commercial vendors have established patent related Web sites as well.[47]

Ohio State University maintains a Web site of frequently asked questions (FAQs) regarding copyright law at: HTTP://WWW.CIS.OHIOSTATE.EDU/HYPERTEXT/FAQ/USENET/COPYRIGHT-FAQ/TOP.HTML. These questions and answers deal with the basics and international aspects of copyright law, and also contain a hypertext link to other copyright resources on the Net.[48]

Numerous sources for general legal materials are also available through the Web. These sites are excellent places to start spinning your way through the Web, untangling the strands to other topically related legal material. To begin your search, try the *World Wide Web Virtual Library: Law* maintained by Indiana University;[49] the Chicago-Kent College of Law Web home page;[50] which includes a page concerning intellectual property resources available on the Net;[51] or the John Marshall Law School Web page.[52]

III. MISCELLANEOUS USES FOR THE INTERNET

The Net has a variety of other uses for the intellectual property professional. Perhaps the most important of these deals with prior art searches in the area of biotechnology. Although a few commercial sources exist for prior art searching of DNA, RNA and especially protein sequences, by far the most complete sources for such information are available at no cost through the Net. It is virtually impossible to perform

45. *See supra* note 39 and accompanying text for a discussion of gopher sites.

46. The TOWN.HALL.ORG gopher full text patents for 1994 is created and maintained by Carl Malamud. Mr. Malamud has been trying for some time to put the full text of all United States patents since 1970 onto the Net. Recently, he has announced that he has received support from MIT, NYU, MCI, SUN and others to help him. Reportedly, two sites with full Internet access and 200 gigabytes of disk space are being supported and established.

47. For some interesting material, take a look at the Web site established by Patent Drawing Unlimited, found at: HTTP:/WWW.WEBCOM.COM/~SCPATENT.

48. A Web site for information concerning Japanese copyright law is also available at HTTP://WWW.NTT.JP/JAPAN/MISC/COPYRIGHT.HTML. Note, however, that this site is only available in Japanese.

49. HTTP://WWW.LAW.INDIANA.EDU/LAW/LAWINDEX.HTML.

50. HTTP://WWW.KENTLAW.EDU/.

51. HTTP://WWW.KENTLAW.EDU/LAWLINKS/IP.HTML.

52. HTTP://WWW.JMLS.EDU/JMLSHOME.HTML.

as thorough a prior art search regarding novel proteins without utilizing Net resources. Numerous sources for protein databases are accessible through a variety of Internet-navigational tools, including ftp, gopher, and more increasingly, the Web. There are several major depositories of genetic information, but it is unfortunately beyond the scope of this paper to discuss them.[53]

Furthermore, the Net may provide the best forum for finding appropriate experts in various scientific areas. By monitoring and/or posting to relevant news groups, referrals to experts even in somewhat obscure arts may be uncovered.

CONCLUSION

By the end of 1993, the Internet network was carrying approximately 45 billion packets of information a month.[54] "The latest estimate is that the Internet connects about 2.2 million computers and more than 20 million users in 135 countries, and this electronic population is expected to double each year for the foreseeable future."[55] We are optimistic that the numbers of new users among intellectual property practitioners will also continue to soar.

As evidenced in the body of this article, there are many valuable services available to provide a great deal of information applicable to an intellectual property practice. The resources cited here merely scratch the surface of the Internet. And yet we hope to have given you enough information to point you in the right direction.

When you get hooked up to the Net, drop us an e-mail.

53. The authors regret being unable to supply information concerning protein and DNA searching in this article. However, please feel free to e-mail the authors, if you would like to know more. We will supply interested parties with further information upon request.

54. Hellman, *Implications of Encryption Policy on a National Information Infrastructure*, 11 COMPUTER LAW 28 (1994).

55. Heinke and Rafter, *Rough Justice in Cyberspace: Liability on the Electronic Frontier*, 11 COMPUTER LAW 1 (1994).