How SAS® Software Users Can Benefit from the Internet
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"By means of electricity, the world of matter has become a great nerve, vibrating thousand of miles in a breathless point of time ... The round globe is a vast brain, instinct with intelligence!"
Nathaniel Hawthorne, 1851

Abstract
The Internet is the largest collection of interconnected networks in the world. As the Internet grows exponentially, so does the number of SAS software users accessing it as part of their daily work activities.

The vast amount of information on the Internet can be overwhelming. This paper describes the access tools of the Internet, the location of helpful SAS resources, reasons for using the Internet, and how to find information so that you benefit from the Internet and not just access it. You can enjoy an enormous amount of information on the Internet.

Introduction
The Internet is the largest collection of interconnected networks in the world. The Internet is a global collection of people and computers communicating. It connects more than 80 countries and millions of people and computers. They are all linked together by cable, telephone lines, satellite links, and wireless networks. It has been called cyberspace, the Net, I-Net, the Information Super Highway, the door to the universe.

The Internet is one of the most important revolutions in data communications.

Why Use the Internet?
As the Internet grows exponentially, so does the number of SAS software users accessing it as part of their daily work activities. A typical work day may be: get coffee, listen to voice mail, read and reply to email, read news from SAS-L and other discussion groups, open and read regular mail, work on projects, and leave a clean desk.

In your daily use of the Internet, you can send questions or respond to the SAS-L discussion group; send files to a colleague; get files described in the SUGI Proceedings; share the draft of a paper with a colleague; search and find specific papers, pictures, programs and data; order publications from SAS Institute and do some shopping on the Internet. Also you can read some of the hundreds of documents available on the Internet about Internet services.

The Internet will eventually enable many of us to telecommute, instead of driving to work, do videoconferencing and be entertained from home.

In his book Information Anxiety, Richard Saul Wurman writes:

If Orwell were writing 1984 today, he would not say, "Destroy the information." He would say, "Inundate people with information, they'll think they're free. Don't deny them. Give them more." Undigested information is no information at all, but it creates the fiction that you have accessed it, even though you didn't benefit from it.

On the Internet, you are inundated with information. It can seem overwhelming. The Internet is growing so rapidly that it is difficult to keep up with all the information and services. At the same time, more and better tools to find the information are being made available. There will be a blending of information and entertainment.

A Very Brief History
First, let's briefly review some history of the Internet. Over 30 years ago, the think-tank people at RAND Corporation were pondering the problem of how the US could successfully communicate after a nuclear war. Any network center and its wires and links would surely be the first to go. RAND's proposal was that the network would have no central authority and would be designed from the beginning to assume to be unreliable and operate when nodes in the network were down. Each node would be equal.
The messages would be divided into separately addressed packets. Each packet would be sent separately, going from one node to another until it reached its final destination. Which route each individual packet took did not matter. The TCP/IP protocol is the way that computers on the Internet exchange information.

Such a concept was funded by the Pentagon’s Advanced Research Projects Agency and the first node of the ARPANET, the beginning of the Internet, was installed in Fall 1969. By December, there were 4 nodes. Researchers could transfer data and even program remotely from the other nodes, thus sharing computing facilities. It wasn’t long before the main traffic was mail, not computer sharing. From 4 nodes in 1969 to millions today.

**Getting on the Internet**

To get on the Internet, you need a computer, software, a connection to the network and a subscription to a network provider. The network connection is either through a direct connection via your local area network at work or through a dial-in connection using a modem. Most universities offer dial-in PPP or slip connections for their students, faculty, and staff. On-line services that provide Internet access are America Online, Prodigy and CompuServe. However, businesses for local information service providers are being started every day. Many local providers will offer flat monthly rates. When choosing a network provider, compare prices, accessibility, support, and value-added services. Also get as fast a modem as is supported by the dial-in service.

Three a a number of ways to try out the Internet. You can get a trial membership on a on-line service or sign up with a information service provider. Large nationwide book stores have a few PCs and Macintoshes in their stores so you can use the Internet, get hooked, and buy their books. Hawaii and other cities now have Internet cafes. Buy food and use Internet services while you eat. The Internet is being used as a marketing tool in a variety of ways.

**The Access Tools**

There are many resources on the Internet and there are usually many ways or services to get to a particular resource.

Here are the tools that you can use to reap the **B E N E F I T S** of the Internet:

- **B** Browsing - looking up information
- **E** Email - writing and reading messages
- **N** Newsgroups - discussing common topics
- **E** Electronic friends
- **F** FTP - moving files
- **I** Internet Relay Chats - talking
- **T** Telnet - remote logins
- **S** Search tools - searching for information

Even though, we have the acrostic BENEFITS, let’s look at the access tools in a different order starting with the basic tools of email, ftp and telnet. Next we will look at browsing gopher sites and the World-Wide Web. We will finish with searching for information and electronic friends.

**Email**

AT&T has the slogan “reach out and touch someone.” AT&T would prefer that you use the telephone but the Internet offers electronic mail (email) -- an excellent way to keep in touch with your peers and be informed of changes and happenings at the Institute.

I imagine most everyone here has an email account through work or through a provider, like MCIMAIL. Some companies only have internal mail systems because of security concerns. When you get an email account, there will be instructions on how to use it.

You can have email and be able to send and receive mail from outside your company or service provider but not have access to the Internet tools, such as FTP, telnet, gopher, etc. which require the TCP/IP protocol. Even with just email, there is still a lot you can do.

With electronic mail, you can create, receive, and forward messages. The messages are usually just text but can include spreadsheet programs, and word processing documents. During the planning of the WUSS '95 conference, Ginger, the cochair, was sending Excel spreadsheets and Word documents to Louise, the registrar. The files had to be encoded so that all the special characters in the file got their correctly.
Internet Primer by Email

You can get the Internet primer written by Paul Marsh and Tim Arnold by email. Send an email message addressed to archive@isstat.npsu.edu

In the body of the message, put the command: send software/info/internet.primer

A computer program will send you about a thousand line of plain text via, of course, email within 24 hours depending on the load on the system. It has information on connecting to the net, listservs, ftp, archie, wais, gopher and WWW. It contains the email address of where to look for information on information service providers in your area and the email address for the list of listservs - electronic mailing lists or discussion groups.

LISTSERVs - Electronic Mailing Lists

Electronic mailing lists are a way that groups of people with common interests can send mail to the entire group and discuss their common interests, such as the SAS System. Listservs (list server) are computer programs that administer computerized mailing lists. In other words, you subscribe to a listserv discussion group by sending special commands to the computer program at the site that maintains the desired list.

You can also send commands, such as HELP, to get more information about listserv commands.

SAS-L Listserv

There is a group of people on the Internet whose common interest is SAS. SAS-L is the most active SAS Users Group. It is a listserv group, that has been in existence since 1988. It is a way to ask questions of many people interested in SAS and receive an answer.

If you join SAS-L, you will get approximately 20 to 50 messages daily, unless you subscribe to it in digest form. Over two thousand people subscribe to this list and there are over ten thousand readers worldwide. Most people access it through a newsreader, which will be discussed later. Netiquette is the term used to describe the etiquette of the network. You may want to find and read articles or documents about netiquette.

You can subscribe to the SAS-L discussion group by sending to the address
LISTSERV@UGA.CC.UGA.EDU
or
LISTSERV@UGA for Bitnet users.
In the body of the message, type:
SUBSCRIBE SAS-L your name

Before asking questions on discussion groups, you want to first search their archives, if they have one, or read their FAQ (frequently asked questions). The question may have been asked, answered and discussed previously.

To leave the list, send the command
UNSUBSCRIBE SAS-L to
LISTSERV@UGA.CC.UGA.EDU

Searching SAS-L Archives

SAS-L does have archives, which is a superb source of information.

SAS-L Archives is the repository of previous messages of the SAS-L group. You can search the archives by sending an email search request to
LISTSERV@UGA.CC.UGA.EDU
such as

//SEARCH JOB ECHO=NO
DATABASE SEARCH DD=RULES
//RULES DD *
SEARCH GIS MAP -
IN SAS-L -
SINCE JULY 1994
INDEX
PRINT

This request found 16 messages, including 2 with the word "registration", which, as you can see, contains the letters "gis".

It is recommended that you put the above lines in a file and then copy it into your email message and change it appropriately. Notice that the hyphens at the end of the two lines are necessary and are used to continue the SEARCH command.

I searched the archives when I needed help with writing bar codes on an IBM mainframe laser printer from a SAS program and needed any information. I was excited when someone asked my exact question earlier. However, when I called him in Louisiana, he said that it was too difficult so he switched to using PCs. That still was useful information.
Send the command INFO DATABASES to a listserv address to get more information on how to search the SAS-L archives by email.

Phil Mason has been putting SASTips on SAS-L since August 1994. If you did a search on SASTIPS, you would get a list of more tips than you can print. You would then need to divide it up by months to limit the search. The better way is to search for the word SASTip and the topic that you are interested in. Phil’s SASTips are also accessible and searchable via the Web site at http://www.tju.edu/tju/dis/stats/sas/. This will be discussed under browsers.)

**SAS Institute’s listserv**

TSNEWS-L is a LISTSERV that you can subscribe to in order to receive timely announcements and information from the Institute’s Technical Support Division. You can also request files such as the technical notes and the SAS Communications index.

Subscribe and request notification of new notes by sending the email message to listserv@vm.sas.com:

```
subscribe tsnews-l Your Name
af add * technote tsnews-l pw=password
```

The AFD (automatic file distribution) tells listserv that you want to receive an announcement of new technote. When you receive an announcement then, if interested, you can send a command to the listserv to get the file.

For example, you will receive the announcement of the holiday hours for the Institute, such as the time they close for the July 4th holiday. Yes, as I sat at my computer in balmy Hawaii, I was alerted to the early closing of SAS Institute one day in January because of the blizzard of 1996.

Also you will receive ALERT NOTES which alert you to problems or misunderstandings in using the SAS software.

You can get the SUGI Consultant’s Registry, a list of SAS consultants that have registered with the Institute by sending to listserv@vm.sas.com the email message

```
get consultant announce tsnews-l
```

SUPPORT@SAS.COM is for the SAS representative from your site to send questions to Technical Support.

SASDOC-L@VM.SAS.COM, maintained by the Publications Division, contains SAS Online Samples from books that you can electronically download.

You can also search the SAS Notes via email.

Pick up flyers at the conference on how to use these services via email if you are interested. There are easier ways through FTP, gopher or WWW, if you have access to these Internet services.

Nancy Hill’s paper “Don’t Be RoadKill on the Internet Superhighway: Using the Internet to Support SAS Software” presented at SUGI 20 (describes these Institute services, listserv commands, in addition to other access tools).

**Telnet - Remote Login**

Telnet is used for logging into other computers on the Internet and running the computer programs which that remote computer provides.

Why would you want to do that? You may need to run your program at another site or help a colleague with his SAS program and want to run it at his site. You may be visiting another site and want to login to your computer to check your email. In these cases, you need to have a user login id and password on the remote computer to be able to login.

To use telnet, you simple type telnet followed by the host name, such as

```
telnet locis.loc.gov
```

You will then be prompted for the userid and password, if one is required.

Later in the paper, we will be discussing specific client/server programs for searching and finding specific files or information located somewhere on the Internet. Remember that a client is a program that makes a request for information or service and a server serves up the information. If you do not have the particular client on your machine, there are certain sites that allow you to telnet to them and use their client. One example is the Archie client for requesting searches for files. You can telnet to an Archie server to do the search.
Telnet also is used to access some of the public services, such as library card catalogs and other databases. In fact, you can telnet to the library of Congress at locs.loc.gov and search their card catalog.

**FTP - Moving Files**

File Transfer Protocol (FTP), is a fast and efficient way to move files from one computer to another, including SAS transport files created from SAS libraries. To use this service, you need to have the FTP client software on your computer and be familiar with standard FTP commands unless you access FTP through a browser, which handles the commands for you. You can use anonymous FTP (the login id is anonymous) to download files from many sites.

**SAS Institute's FTP Servers**

SAS Institute’s FTP server is ftp.sas.com and has available SAS code, including the SAS sample library, SAS Notes, technical notes, compiled code, zaps, and SAS programs listed in *Observations*.

Technical Notes include informal documents that discuss problems and topics not covered in the Institute's publications and copies of Institute mailouts. Technical notes are located in the directory techsup/download/technote. Some of the Technical Notes, such as ts273.ps, “Multinomial Logit, Discrete Choice Modeling” are postscript files. Postscript files can be downloaded and must be printed on a postscript printer. The filename extension is *ps*.

**Sample Library File Contribution Server**

Rick Langston presented a paper at SUGI 20 and also at WUSS '95 on the repository of user-contributed SAS applications software that resides on the FTP server at the University of Georgia. The paper describes how to make contributions to the library and how to download contributions. The FTP site is ftp.sas.com.

If you have useful SAS programs, please consider contributing them to this library. Contributions are located in the directory pub/sas/contrib. Some SAS documents written at the University of Georgia are located in the directory pub/sas/docs.

**Newsgroups**

What are you interested in? More than likely there is a USENET discussion forum on the subject. Our culture is changing. I have observed that children and college students are comfortable asking others in a discussion group or through the Internet Relay Chat how to solve a problem, accomplish a task, or find an answer. While I am still reading manuals, my student assistant has received the answer from across the ocean.

USENET provides a forum for asking and answering questions, discussing and arguing topics, and distributing shareware, free software, digitized pictures and sound files. There are thousands of newsgroups on topics ranging from humor to scholarly disciplines. There are over 10,000 discussion groups available through USENET. You will only be able to read a newsgroup if your local newsserver carries it. Sites differ in which sets of news they deem useful and appropriate. When you use a newreader, you can see the list of groups available at the news server that you use.

For a list of Internet newsgroup, use your Web browser and go to the URL:

http://www12.w3.org/hypertext/DataSources/News/Groups/Overview.html

If you have access to the Web, use the DejaNews search tool to find a particular discussion group.

**SAS-L Discussion Group**

Many of the listserver discussion groups are also available as a USENET newsgroup. Probably more people view the SAS-L messages using a newreader to read the comp.soft-sys.sas USENET newsgroup than subscribe to SAS-L. This newsgroup mirrors all SAS-L traffic. Many people prefer to read messages this way than having the messages come to their mailbox. Messages stay in the newsgroup for a limited number of days, such as 10 days.

**Reading News**

Popular newreaders are TIN and RN on UNIX and Trumpet for DOS/Windows. There are readers for other operating systems. If you have trouble reading news, its probably because you
haven't told your newsreader what news server to use. Using the newsreader in a World Wide Web browser, like Netscape, is easier after you have configured your browser to point to your news site. It's just a matter of clicking on the Newsgroup button. Like Trumpet, the newsreader in your browser normally lists the articles by threads. That is, the articles with the same subject are grouped together. It also highlights any URL (uniform resource location) so that you can click on it and follow the link. If the URL is not highlighted, you can copy the text (in Windows highlight the text and press ctrl-C) and paste it (in Windows, use ctrl-V) into the URL location and then press enter to go to that location.

**Browsers**

**Introduction**

With telnet and FTP, you need to know addresses of a specific computer that you want to connect to. There are two browsers that enable you to FTP, telnet, do index searches and view text. All you need to do is start the program and make choices. They are Gopher and the World Wide Web browsers. They offer services for finding resources on the Internet.

**Gopher**

Gopher was initially developed by the University of Minnesota and has grown into a world-wide information system. The key to its success is its quick and easy access to information. The disadvantage is that it does not have the graphics available on Web sites and many useful sites, such as the Census Bureau gopher and the Thomas Jefferson University gopher have or are going out of business. They are now putting their information up on their Web sites.

You must access gopher client software either on your own computer or telnet to a computer that has one. With Gopher, you find resources by looking through a sequence of menus until you find what you want. This is also known as burrowing.

Veronica is a search tool which searches all of the Gopher sites in the world. Many gopher menus will include a pointer to Veronica. Just enter a search word or words, and directories, programs, and articles with those words in them will show up in a menu for you to browse.

**Useful Gophers for SAS Information**

**jse.stat.ncsu.edu**

The Journal of Statistics Education Information Service. jse.stat.ncsu.edu has access to a collection of SAS macros, programs, and other useful tools. Their menu looks like:

<table>
<thead>
<tr>
<th>Gopher Menu</th>
</tr>
</thead>
<tbody>
<tr>
<td>About the Journal of Statistics Education</td>
</tr>
<tr>
<td>Information Service</td>
</tr>
<tr>
<td>Methods of Access</td>
</tr>
<tr>
<td>Index to the Information Service</td>
</tr>
<tr>
<td>The Journal of Statistics Education</td>
</tr>
<tr>
<td>EdStat-L Archives</td>
</tr>
<tr>
<td>Software Tools and Information</td>
</tr>
<tr>
<td>Other Discussion Groups</td>
</tr>
<tr>
<td>Other Services (Census, Statlib, etc)</td>
</tr>
</tbody>
</table>

Select "Software Tools and Information" to get:

| Index to the Software Tools Area |
| Frequently Asked Questions |
| Networking and Related Software |
| Graphics and Related Software |
| Statistics and Related Software |
| SAS Software Archive |
| Utility Programs and Misc Software |

Or choose "Other Discussion Groups" to reach the SAS SAS-L Discussion Archives which has a searchable Gopher Index. You can then enter keywords to use to search the archives.

**gopher.uga.edu**

This is another gopher will SAS information and has the links to the SAS Sample library file contribution server. This is an example of one of its menus and you can see the variety of SAS information.

| SAS-PC Introduction |
| SAS-PC Tips |
| File SAS-L FAQs, Frequently Asked Questions about SAS-L |
| SAS User's Group, Browse the SAS User's Groups Database |
| SAS-L Archives (jse.stat.ncsu.edu) |
| SAS User's Group |
| Navigate, Connect SAS Related FTP/Gopher Sites |
| Search SUG - SAS User's Groups Database |
| SAS |
| SAS Institute's Anonymous FTP Site (ftp.sas.com) |

As you can see, these gophers point to each other. You can start with one of these gophers and then get information at another gopher.

**How to use Gopher**

There are Gopher programs for Unix and IBM mainframes, usually with the name of Gopher or accessible through a menu. If you have a microcomputer and TCP/IP connection, then you may want to use a Gopher client. However, you
can access gopher servers from WWW browsers by specifying the URL (uniform resource locator) for the gopher server such as:

URL: gopher://gopher.uga.edu

You can save the host (site) and menu (path) information in a bookmark feature provided by the program you use. You will want to bookmark sites that you visit or want to revisit. This is highly recommended because it may not be as easy to find the second time or when you need it in a hurry. One time I found the longitude and latitude information for cities and towns in the U.S. but didn’t bookmark it. When I told a colleague about it, he couldn’t find the it. I stumbled across it again one month later when I visited the Bureau of Census site.

**Messages**

Not everything works the first time. Some of the messages that you will eventually get are:

- connection refused
- too many connections try again soon
- please wait
- host not found or unable to locate host
  - This message means the host name may have changed so that the link does not work or the name server cannot find the name or is temporarily having problems. Sometimes you just need to try again later.
- directory not found
  - The directory on the server cannot be found. You will not be able to get the information.

**World Wide Webs (WWWs)**

The most exciting service on the Internet is the World Wide Web, which is also referred to as WWW, W3 or just the Web. It is a graphical interface and requires a browser on the computer you are using. Instead of having menus, it has hypertext links within the text or picture -- pointers to other resources.

The Web uses URLs to link to other information. A URL is a Uniform Resource Locator. Think of it as an extension of the filename concept. You can point to a file in a directory. That directory can exist on any machine on the network, be served via any of several different methods, such as gophers, FTPs, or http (hypertext transfer protocol). It might not even be a file. URLs can also point to queries, documents stored deep within databases, the results of a Veronica command or running a SAS program, or whatever.

The best way to learn about the Web is to get on and use net searches, net directories, and list of cool sites to find out about the many resources on the Web.

**SAS Institute Web Site**

SAS Institute Inc. has their own Web, which can be accessed as

http://www.sas.com

On the opening menu, you can select from What’s New at SAS Institute, Corporate Information, Software Overview, Support Services, Spotlight on SAS Software Users.

You can easily search Version 6 SAS Notes at SAS’s WWW by typing in the search keywords for your problem. You can get SAS Sample programs that are taken from some of their publications.

**Thomas Jefferson Web Site**

Another useful Web site is the SAS Support at Thomas Jefferson University. Their URL is:

http://www.tju.edu/tju/dis/stats/sas/

**Journal of Statistics Education Site**

The JSE Web site carries useful SAS information Their URL is:

http://www2.ncsu.edu/ncsu/pams/stat/info/jse/homepage.html

The topics available through this Web site include:

**Journal of Statistics Education**

An electronic refereed journal devoted to postsecondary teaching of statistics.
Software
A repository of software for statisticians.
Searchable Archives of Statistics-Related
Discussion Groups
EdStat-L, SAS-L, SPSSx-L, ASA Consultants
Discussion and Stat-L.
Statistics Education Resources
International Association of Statistics Education,
EdStat-L Archives, Chance Newsletter, and more.
Data Resources
Datasets useful for teaching statistics.
Statistics Information Sources
Links to other statistics servers.
The Internet Primer Manual
An orientation manual for the Internet.
Access Methods
How to retrieve text, graphics, and software files
from the JSE Information Service via e-mail, gopher,
anonymous ftp, telnet, and World Wide Web.

Other SAS Resource Sites
Another site with SAS resources is the
Computing Information for the Department of
Statistics, NCSU. They make available training
material for their students such as the SAS
Insight/Assist Manual (ST311) User Guide for
Statistics 311 Computer Lab. Their URL is
http://www2.ncsu.edu/ncsu/pams/stat/
facilities/compute.html

Also Michael Friendly’s Home Page is another
source of SAS programs and material. It contains
pictures and a verbal welcome. It includes links
to the SAS macro programs for statistical
graphics used in his book, SAS for Statistical
Graphics. Its URL is
http://www.math.yorku.ca/SCS/friendly.html

Also by searching on the Web, you can find sites
that run SAS programs, such as calculating the
number of days since you were born.

Other WWW sites
Visit the Internet Town Hall at
http://www.townhall.org/ and from there visit
Internet 1996 World Exposition. This world’s
fair is described:
As we leave the industrial age and enter a new
age of information, it is time for a new kind of
world’s fair. This one will last all of 1996. This is
the first world’s fair where anybody can open a
pavilion, where anybody can participate...it is a
real world’s fair. Cyberspace is part of the real
world, and this fair is not a virtual project. It is
also an ever-changing fair:

Another interesting source of information is your
your federal government at
http://www.house.gov/
http://www.senate.gov/
http://www.whitehouse.gov/
http://www.census.gov/

At the Census Bensus, choose “Data Access Tools” and then “LOOKUP.” “LOOKUP” is an
experimental WWW server for retrieving data
from 1990 U.S. Census Summary Tape Files. A
WWW client with forms capability is required.

World Wide Web Browsers
A popular browser for the desktop is Netscape.
Unix has Lynx, which is a text-only browser.

Using any WWW browser can be very slow.
Some connections, as those to popular sites
in Europe can be very slow and may not make
the connection. You can turn off images to speed
up access of text.

Search Tools
You can use search tools and net directories to
search for papers, pictures, programs and data at
FTP sites, Gopher servers and World Wide Webs
using the Internet search tools. Each search tool
or engine works differently. Some search titles or
headers of documents, others search the
documents themselves, and still others search
other indexes or directories. Also each uses
different syntax to construct the search request.
Check their help to find out how to construct the
query. If you cannot find the information using
one search engine, either change your query and
try another search engine.

To use a search tool in the WWW browser
Netscape, you can choose the button “Net
Search” and choose from a variety of search
ingines. However, there are additional search
tools besides those available through Nescapes
“Net Search” button. Using the button “Net
Directory” takes you to some useful directories.

DejaNews, available through the WWW at
http://www.dejanews.com/, is used to search
USENET news groups.

One of the very well-known and pioneer net
directory and search tool is Yahoo located at
http://www.yahoo.com/. Another is “The
clearinghouse for Subject-Oriented Internet
Resource Guides". It serves as a central location for topical guides to Internet resources. It's URL is http://www.lib.umn.edu/chome.

**WAIS**

Some directories use WAIS. WAIS (wayz) is the Wide Area Information Service, used to index the contents of documents versus just the titles. There are many indexed WAIS databases available. WAIS supports retrieval of documents from databases via full-text search. There are many WAIS servers throughout the network. A directory-of-servers database is available at several sites, which can be queried to find out what databases are available on a particular subject.

**Scout Toolkit**

The Scout Toolkit is a InterNIC service designed to help fine needed network tools. The Scout Toolkit was built by collecting, organizing, and annotating a subset of the most effective network information tools available. It contains links to "Notable Browsers", "Search Tools", "Staying Current", and "Specialized Tools."

Their URL is: http://rs.internic.net/scout/toolkit/

**ALL-IN-ONE**

This Web site contains a compilation of various forms-based search tools found on the Internet. They provide a consistent interface and convenient ALL-IN-ONE search point. The All-in-One Search Page is located at:

http://www.albany.net/allinone/

**Agents**

New utilities are appearing on the Web almost daily. IBM has created aqui (pronounced ah/key). aqui's role is simply to keep track of links between web pages even though the links aren't actually in the web pages. These links, known as aqui links, are kept in a separate server and are visible to everyone on the web. Using aqui, you can create and view these links. To try this out, use the URL: http://www.aqui.ibm.com/

and for the Web page location enter the URL http://www.sas.com to see what links have been entered for SAS Institute. To see the links for Microsoft, their URL is http://www.microsoft.com.

**Internet Relay Chat (IRC)**

IRC is a program that lets you hold live keyboard conversations with people around the world. It is a realtime message board, just like CB radio. IRC is divided into different channels, or rooms, based on the interests of the people on that channel. You can always start your own channel. A couple of the servers are irc-2.mit.edu and irc.colorado.edu. Don't try to print out all the channels because it runs into the hundreds. People can spend hours each day chatting.

**Electronic Friends**

The network is not only cable, links, programs and computer, but also the people. They are the ones that make it happen. The friends that you make on the net and the ease in which it is to contact people that you have met face-to-face make then also a tool for finding information. Often, they will just share information or humor.

Be sure to include your email address on your business card and stationary.

If you need to find someone's email address, you may need to call them up and ask them. However, one of the search tools for email addresses is the Internet Address Finder (IAF). It is an easy-to-use, email white pages on the Internet and has about 4 million entries. Their URL is: http://www.iaf.net/

**Use Your Resources Wisely**

Be careful in your use of the Internet so that you don't waste resources - your time, other people's time, disk space, paper and trees, and bandwidth.

The Internet can be a time sponge. A Doonesbury cartoon by Garry Trudeau in the February 1995 Sunday newspaper shows Mike chatting on his computer with others. The final panel shows his son saying "Mommy! Daddy stayed up all night again!"

It is fun to go "gophering", exploring the World Wide Web, reading discussion groups, or, in general, to do what is known as surfing the Internet. Just remember to watch your time.

Shareware, freeware programs and documents that you can download to your computer abound on the Internet. Only get what you plan to use
soon, because the information and programs are constantly being updated and can be gotten when you actually need them. When you get files, go ahead and see if it's what you want and delete what you don't want to save your disk space. If you wait, you will spend more time figuring out why you got the file and if you want it.

Judiciously print only what you need to have on paper. Many documents can be read on-line and don't need to be printed. You may not realize how long some of the documents are. Save trees!

Finally, learn and observe your company policies on using the Internet.

Summary
The Internet is a useful resource. You can spend hours reading discussion groups and searching for information. You can find an enormous amount of information of which only a small portion is useful or you can find some beneficial information. Use your time and resources wisely.

Internet Manuals
These Internet manuals were written over a year ago but still contain some useful information about SAS resources on the Internet.

"The One-Eyed Guide to Internet, E-Mail, LISTSERV, SAS-L, and EMITS" by Michael Davis is highly recommended reading. The title tells all. It was published in the SUGI 18 Proceedings.

"Information Exploration and Retrieval: A Brief Introduction to the Internet", North Carolina State University, Department of Statistics, 6/94: Compiled from several network sources by Paul Marsh and Tim Arnold. Available at:
http://www2.ncsu.edu/nscu/pams/statinfo/manual.html


Useful Books
You may not want to invest in a book because there is so much free information on the Internet. I feel that a good book may cost you money but save you a lot of time in learning the basics of the Internet and finding resources. Information on the Internet may be more up-to-date, particularly concerning the latest search tools. The Internet is changing so quickly that you probably want to check the date of publication to get the most recent books. Here are some books that I have found useful.

The Whole Internet, User's Guide and Catalog, Second edition, Ed Krol, O'Reilly and Associates, Inc. This book comes highly recommended. It is the book given to the attendees at the INET '95 workshops. The author has a chatty way of explaining each topic. At the end of the book, there is a catalog of resources on the Internet.

How to Use the Internet, Mark Butler. 1994, Ziff-Davis Press. This is an affordable (usually sold at Costco or Sam's) visual guide. The pictures are fun and helpful in getting across basic concepts.

The Internet Yellow Pages, Harley Hahn and Rick Stout. Osborne McGraw-Hill
Contains over 5,000 entries of things to do and find on the Net. It's better than having lots of scrap paper with your notes lying around. Remember the Internet is changing so write in your book, rather than on a piece of paper, any changes in location of material that you were looking for.

References

Hawthorne quote is from remarks prepared for delivery by Vice President Al Gore, Internation Telecommunication Union, March 21, 1994.

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