



6. Internet and Intranets

"It's Not a Medium, It's a Disease".

Source: *Wired*, October, 1996

6.1. A Brief Background for the Internet Novice

The Internet is the network of all computer networks, linked together for common traffic, based on Internet technology. In simple terms, this means that everyone is using the IP protocol (IP = Internet Protocol). All kinds of users, all kinds of organisations, and all kinds of computers are hooked up to the Internet. It is as fast and easy — or slow to send a message to President Clinton in the White House — or to Socks — as it is to get information about the current issues in the Swedish Government via "Information Rosenbad".

Growth in E-mail Traffic on the NFSNet backbone November 1992 to November 1994

Millions

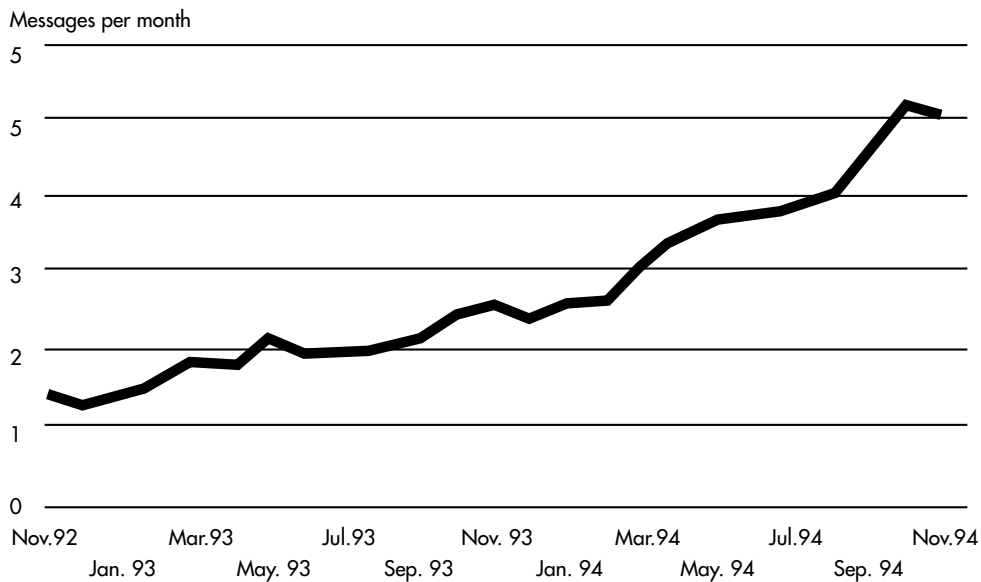


Fig 20 Feb 9 (kap 7): By November 1994, more than 1 000 000 e-mail messages were sent per month via the NSFNet, i.e. the original Internet backbone, managed by the National Foundation of Science. Today, in February 1997, the Internet is largely self-funded, and is so large that volymes have lost importance.

Sources: *Internet Society/OECD: Information Technology Outlook 1995*, © OECD, reproduced with the permission of the OECD

E-mail is only one of the services available via the Internet. Several thousands of databases, distributed ones as well as central ones, on hundreds of highly differing topics can be reached. Many, many international magazines and dailies are published on the Internet, as are scientific dissertations and books. Software can be downloaded from the Internet, some for free, some to be paid for. Pictures, movies, music... whatever you need or want, you are likely to find it on the Internet. There is no central administration. All traffic on the Internet is regulated via bilateral and multilateral agreements between regional computer networks associations.

Once you have typed whatever address you want to reach, and you are connected, you just don't know where on the Internet you are, what computer is providing you with what material from where. You are in Cyberspace where longitudes and latitudes have no relevance.

Now, the development of the Internet has not been as smooth as all that. In Europe, there has been so intense controversies that some people even have been talking about a "protocol war". The reasons are, very briefly, and very simply, that it is not selfevident that one computer can communicate with any other computer. Mutual communication demands one common protocol. The fast growth of global computer usage, the development by the computer manufacturers of several competing technologies for proprietary communication, and industrial politics, among other things, have resulted in there being no protocol, common to every computer in the world. There are several. The net result is, very simply put, that each communicating computer is hooked up to another communicating computer, which has one task only: to solve the protocol problem, and see to it that my message gets to its address, whatever the protocols involved may be.

The protocol war may be over, but now there is a battle over bandwidth — users of the WorldWideWeb are now talking about WorldWideWait. Why? Because there are so many millions of people wanting to use the Internet, that there is simply not room enough for everybody. But the Internet lets everyone join the traffic jam by letting everyone have his or her share of the waiting time. In Cyberspace.

How big is the Internet? There is no answer to that question. The number of users, computers, and nodes hooked up is just very large as a result of exponential growth over the last few years. For estimates, see the diagrams at the beginning of this chapter. Also see the following chapter.

6.2 The Basic Facts

The Internet and Its Exponential Growth by January 1996 Number of hosts worldwide

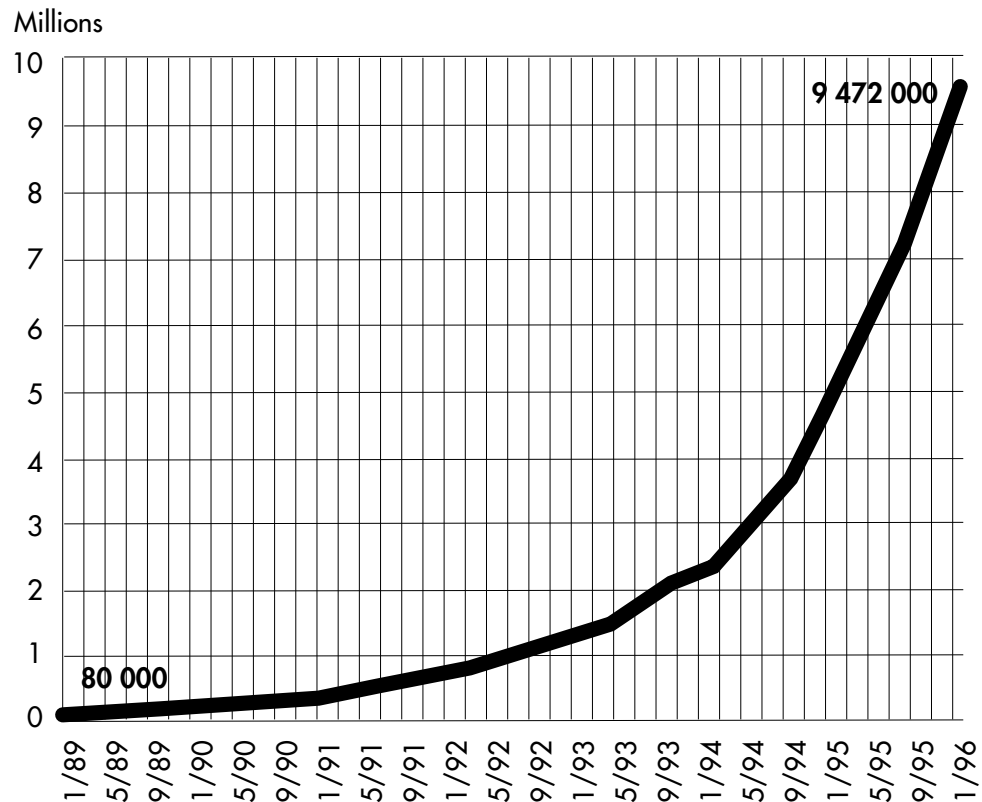


Fig. 12 mars 18: The number of host computers making up the Internet universe is growing exponentially, as can be seen from this diagram. A host is a computer with a distinct Internet Protocol (IP) address. When it comes to deciding how many users there are per host, so far the figures are rather uncertain. Thus, we do not really know how many Internet users there are in the world — we can only guess. Compare to the following diagram.

Source: Network Wizards (<http://www.nw.com>)

Number of Internet Host Computers Worldwide Growth August 1981 — January 1995 (Millions)

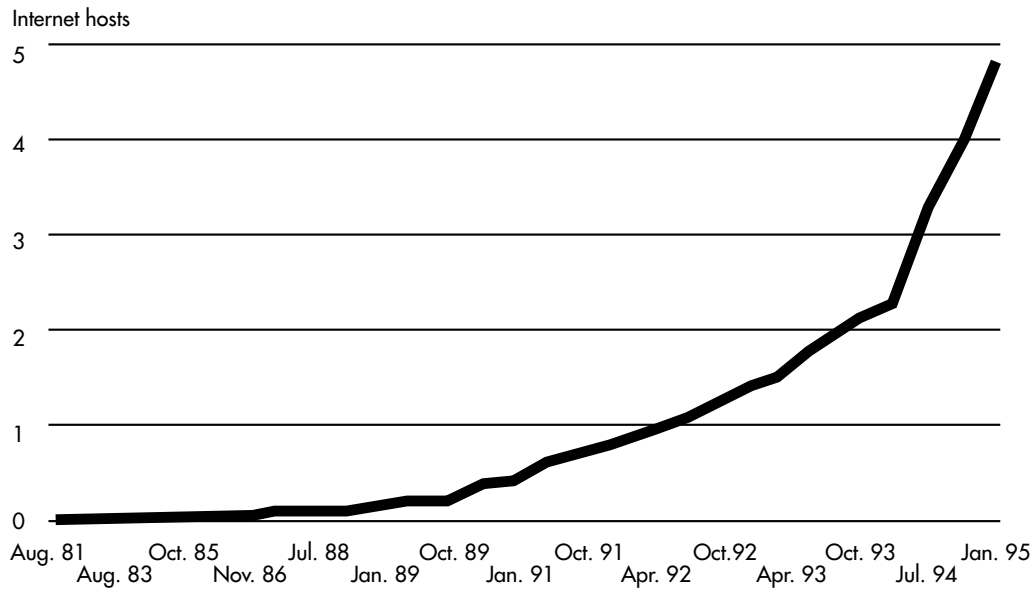


Fig. 20 Feb 5 (kap 7): How many Internet users are there? is a frequent question. According to specialists, the number of Internet host computers grew from 1 000 in 1984, to 100 000 in 1989, and to some 4.85 million in January 1995. By mid-1995, the number of Internet users probably passed 30 million, and by October 1996 there may well have been about 70 million users, according to some sources. These estimates are difficult to verify. Anyway by January 1995, 65% of the hosts connected to the Internet were in the United States, 22% were in Europe, and 7% in Asia-Oceania.

Sources: Network Wizards/OECD: Information Technology Outlook 1995, © OECD, reproduced with the permission of the OECD

Internet Hosts per 100 Inhabitants 1994 & 1995

In countries studied by DTI

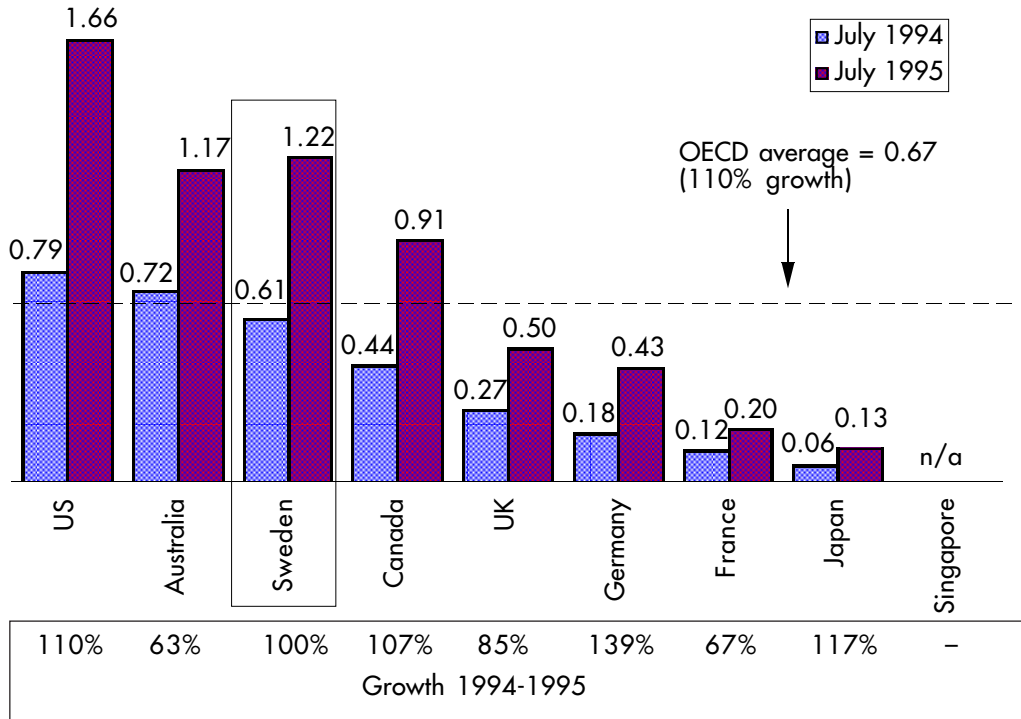


Fig. 12 mars 7: The fact that the Internet penetration per 100 inhabitants is dominated by the US may reflect a number of factors, according to the researchers of DTI. Factors like a critical mass of local content — in this should be included content available in the national languages — high PC penetration, competitive pricing of high speed access, and a broad base of information and communication culture, influence users' reactions to new technology. In 1995, Sweden had the second highest penetration after the US. The growth rate is strongest in Germany, followed by Japan, US, and Sweden. See chapter 6 for more detailed information.

Sources: ITU/Network Wizards, OECD: 1996 Information infrastructure Convergence and Pricing/Department of Trade and Industry & Spectrum: Development of the Information Society, 1996

North America Dominated the Internet in January 1996 Hosts by region in percent

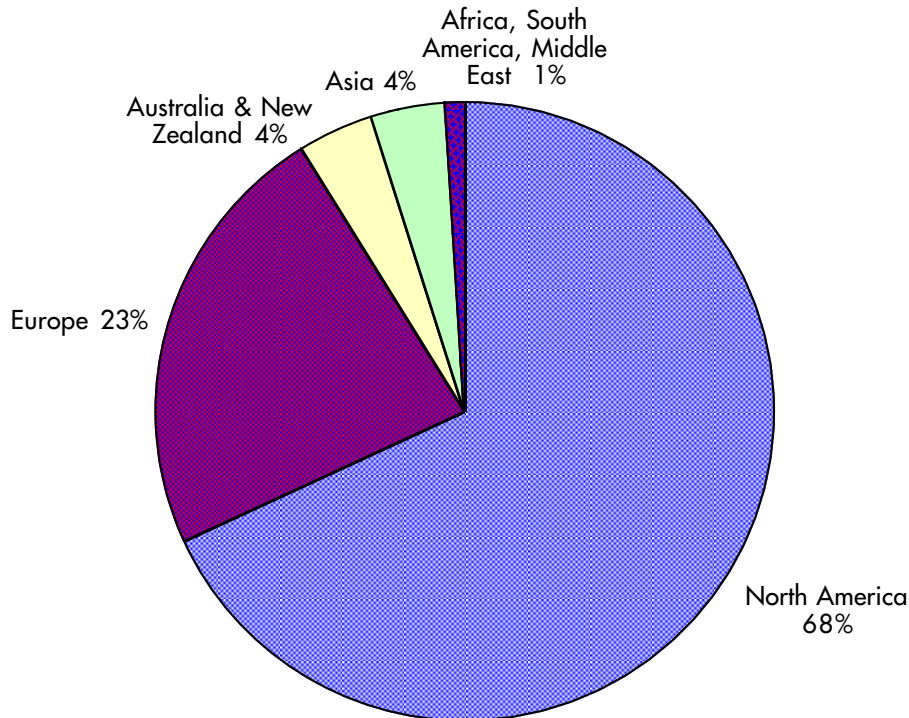


Fig. 12 mars 19: This diagram shows the distribution of Internet host computers per region by January 1996, in percent of total number of hosts. So far, North America is dominating, but the Asian countries are showing the fastest growth, so the picture certainly has changed since January 1996.

Source: Network Wizards (<http://www.nw.com>)

Growth of Internet Hosts by Region 1994 — 95

In actual numbers

Internet hosts	Jan. 1994	Jan. 1995	Growth %
North America	1 685 715	3 372 551	100
Central & South America	7 392	N.A.	N.A.
Western Europe	550 933	1 039 192	89
Eastern Europe	19 876	46 125	132
Middle East	6 946	13 776	98
Africa	10 951	27 130	148
Asia	81 355	151 733	87
Pacific	113 482	192 390	70
Total	2 476 641	4 851 873	96

Fig. 20 Feb 6 (kap 7): When it comes to growth of the number of Internet hosts, Africa and Eastern Europe are the regions showing the fastest growth rate of the regions, according to this chart. Central and South America seem to be lagging behind. In real numbers, the US is dominating, followed by western Europe.

Sources: Network Wizards/Internet Society/OECD:Information Technology Outlook 1995, © OECD, reproduced with the permission of the OECD

The Global Market in Shares per Program for Web-server Programs

In percent, January 1997

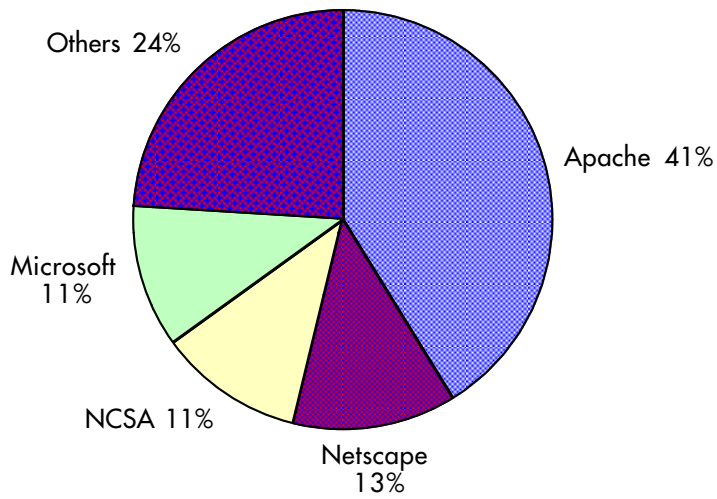


Fig. 25 Feb 22: Netcraft makes regular surveys of web server usage, among other things. The one reported here is from December 1996.

Type: <http://www.netcraft.com/survey/> for further information.

Sources: Netcraft/Computer Sweden, 17 January 1997

Internet Hosts per 1 000 Inhabitants, January 1995

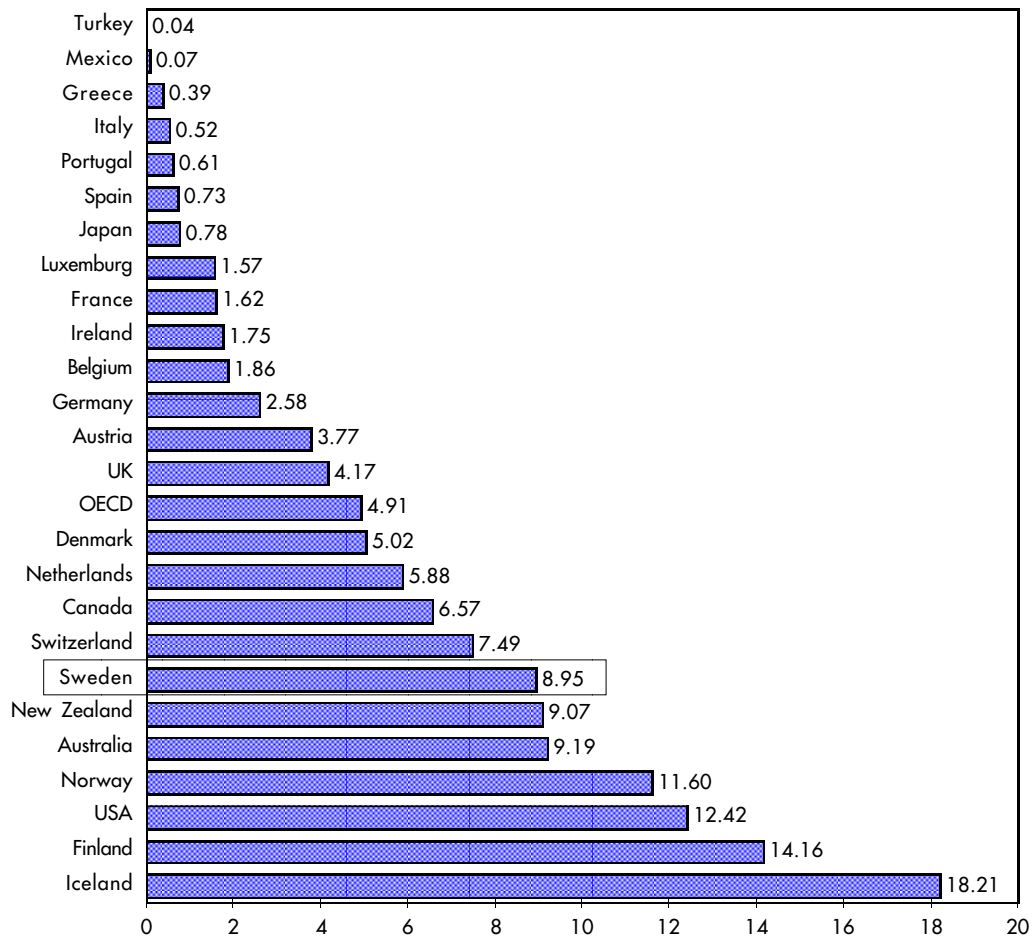


Fig. 20 Feb 7 (kap 7): The OECD average is 4.91 Internet hosts per 1 000 inhabitants. Small nations like Iceland and Finland have the most Internet hosts per inhabitants, 18.21 and 14.16 respectively. USA has 12.42 per 1 000 inhabitants, and Sweden, had 8.95 hosts per 1 000 inhabitants in January 1995.

Sources: Network Wizards/Internet Society/OECD Secretariat/OECD: Information Technology Outlook 1995, © OECD, reproduced with the permission of the OECD

Growth in Traffic on the NSFNet* Backbone From Internet January 1992 — November 1994, In gigabytes

* NSF = National Science Foundation

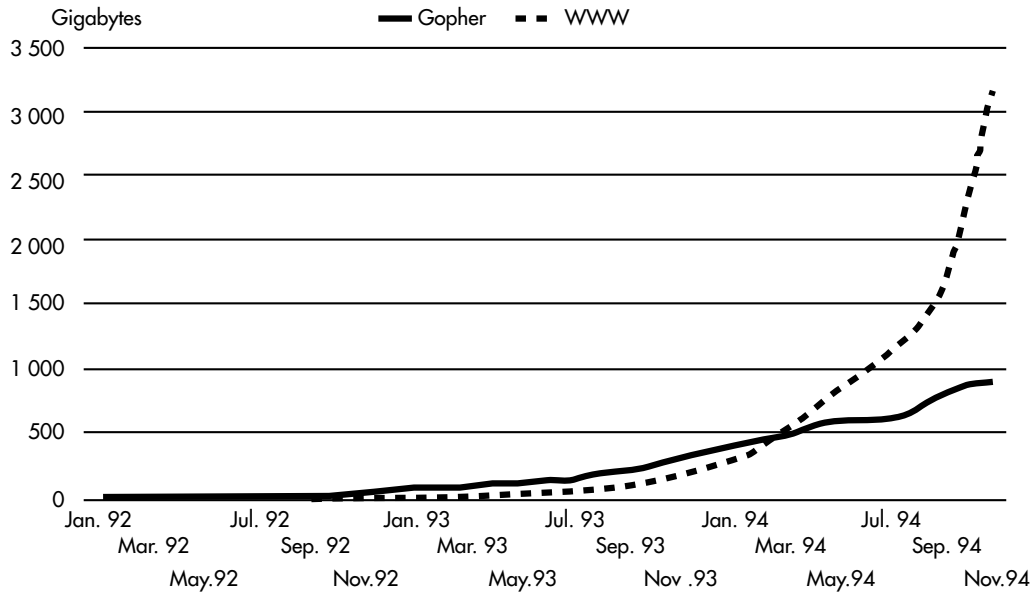


Fig 20 Feb 8 (kap 7): *At the beginning of the 1990s, applications linking information stored in different computers appeared. Gopher is a menu-based textual system that played a transitory role. Today, WorldWideWeb, www, based on a hypertext multimedia protocol, is linking together text, sound, and pictures from machines all over the world. Graphical user interfaces such as Mosaic and Netscape have made Internet available to a broad audience.*

Sources: Internet Society/OECD: Information Technology Outlook 1995, © OECD, reproduced with the permission of the OECD

Projected Sales of Internet Related Products and Services 1995 & 2000 In US\$ billion

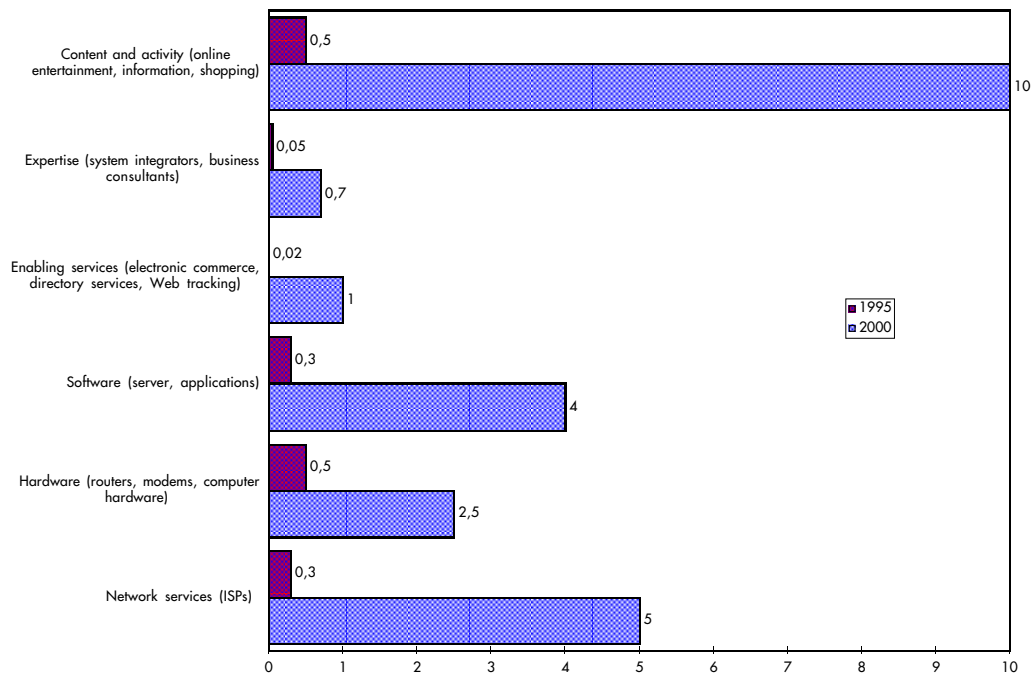


Fig. 12 mars 20: The Internet content and activity market is estimated to be worth US\$10 billion by 2000. Online entertainment, information, and shopping are believed to be the major segments of this market. Network services is likely to be worth half of that, US\$5 billion, all according to the business consultants Hambrecht & Quist.

Source: Hambrecht & Quist (<http://www.hamquist.com>)

E-mail Software for the Internet Is High Growth News

Percentage of total number of new e-mail users for 1996 = 32 million

Lotus 26%
Netscape 17%
Microsoft 14%
Qualcomm 9%
Novell 7%
Software com. 4%
HP 3%
Others 20%

Fig. 28 april 5: During 1996, some 32 million e-mail users joined the existing mass of e-mailers in the world. The total market for message handling grew by 46%, while Internet based e-mail grew by 727%. The diagram shows the percentual distribution of e-mail programs among new e-mailers in 1996. Sources: IDC/Computer Sweden, 7 March 1997

6.3. The Internet — What is it?

by Jill Melançon

According to the American analysts Hambrecht & Quist, "the Internet is arguably the most significant phenomenon impacting our commerce and culture for the remainder of the twentieth century". Built in 1969 as a network for government and academic communities, in recent years, the "Net" has grown faster and larger than all prognoses. Basically, all the Internet is, is a worldwide, open, collective network of computers. Yet, despite all the talk about the Internet, it has not even truly reached the mainstream in the U.S., let alone the rest of the world as yet.

From being mostly used by scientists and university students, the Internet took off in 1990, when Tim Berners-Lee of CERN, the European Laboratory for Particle Physics, created the World Wide Web, www. The Web allowed people to publish a "Web page" and let the audience come to them, rather than needing to mail the message directly to each individual addressee as previously. — Ignore the Web and you're dead, is the current catch phrase.

Until the Web, the Internet was mostly used for electronic mail — e-mail. Some of the impediments that have plagued the Internet, such as transmission speed, information and network security, and payment and transaction services, may probably find technical solutions during the next few years. This will allow Internet to enter a new surge of growth.

To sum up, the Internet is different from all standard practices of computer systems in that it is an open, standard system of relatively high bandwidth. Moreover, it is open to anyone, and costs are independent of distance. (At least they were in November 1996.)

Current Business Use of the Internet in the U.S.

In the second annual survey of technology executives made by "Upside Magazine" and KPMG Peat Marwick LLP in March 1996, the following facts became evident:

- * 70% of the respondents believed it was "very" or "somewhat" important for their companies to have Web sites;
- * Some 33% actually had a Web site;
- * Many CEOs did not know what they were using the Web site for — but having a Web site is thought to be "cool" and therefore necessary!

Source: Upside Magazine, March 1996

The Internet is evidently being used more for distributing information than to enable actual business transactions. According to an Information Week survey of 225 IS managers, **more than 70% of the respondents used the Internet as an intranet** for information distribution or for external Web sites to distribute marketing information. Less than 30% used Internet Web sites for actual supplier transactions.

How American Business Uses The Internet, April 1996

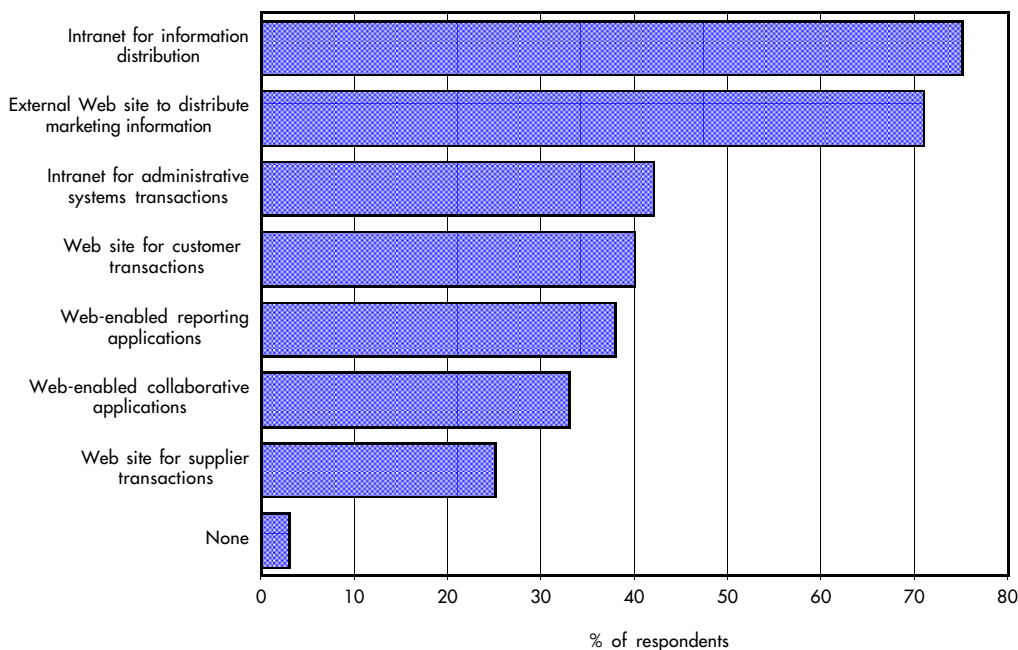
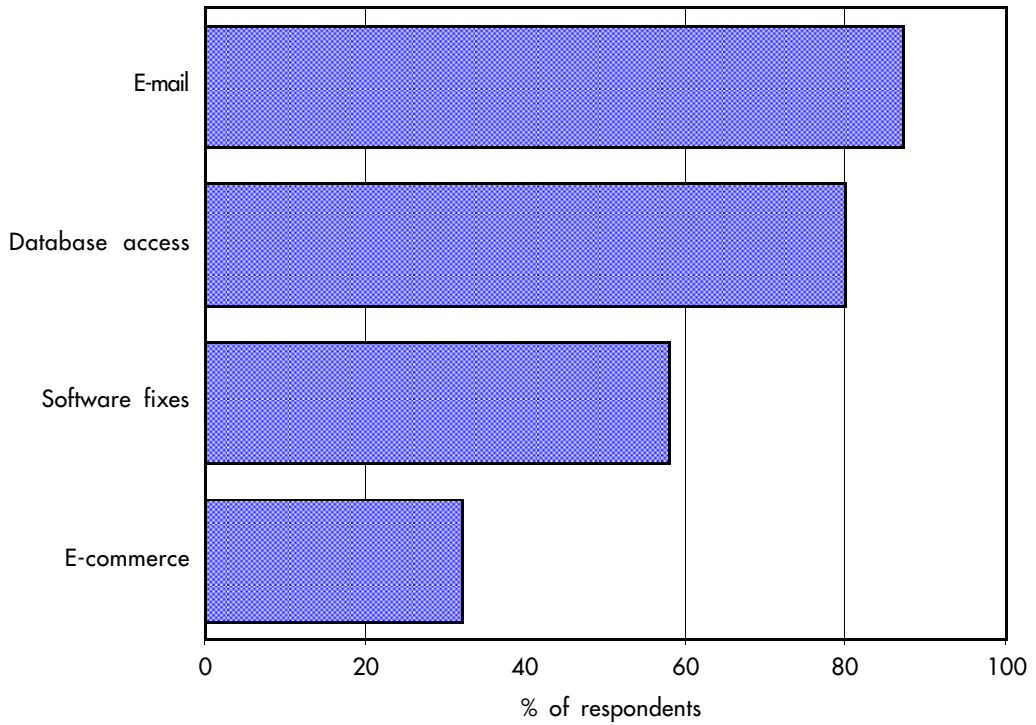


Fig A: Information Week interviewed 225 IS managers in the U.S. about how their companies use the Internet. More than 70% are using it as an intranet for internal distribution of information, and 40% use it for administrative systems transactions. The Internet serves more as an intranet! Some 25% use their Web site for supplier transactions. This was in March—April 1996.

Source: Information Week, April 8, 1996

According to the seventh annual survey of North American telecommunications professionals, carried out by Deloitte & Touche Consulting Group, e-mail is the main use of the Internet, used by over 80%, followed closely by database access. Electronic commerce is used by less than 40% of the respondents in this survey.

Important Internet Uses by North American Telecommunications Professionals — May 1996



(Diagram A2): More than 100 telecom professionals were interviewed in an annual survey made by Deloitte & Touche Consulting Group in May 1996. When asked about Internet usage, more than 80% responded that E-mail is the major task, followed by database access, used by almost 80%. 55% are using the Internet for software fixes, and some 35% for e-commerce.

Source: Information Week, May 13, 1996/Deloitte & Touche Consulting Group

Many Internet applications have yet to be fully implemented but among the key uses are the following:

- * **Electronic mail**
- * **Corporate information:** The annual report is available on-line; up-to-date products and prices
- * **Interactive services:** Reservations, bank account information, applications of all kinds and areas, where a clerk was needed before; now the Internet user can access the information directly, as well as provide an input, saving time as well as money;
- * **Virtual Private Network:** In effect, a corporate WAN at a fraction of the cost;
- * **Entertainment:** Hollywood goes on the Net with graphics and trivia on news movies;
- * **Audio:** Still to be fully realized, audio broadcasts, or voice over the Internet puts the Net in direct competition with the broadcasting and telecom operators;
- * **Malls:** Shopping on the Net is currently available but for a very limited range of products and services.

Who are The Current Internet Users — and The Future Ones?

The size and the growth of the Internet varies, depending on the source and exactly what is being measured. Below are some of what I have judged as the more trustworthy statements and estimates:

First a general statement from a survey made by the Georgia Institute of Technology:

- * On-line customers to the Internet — have high incomes
 - are well educated
 - are mostly male.

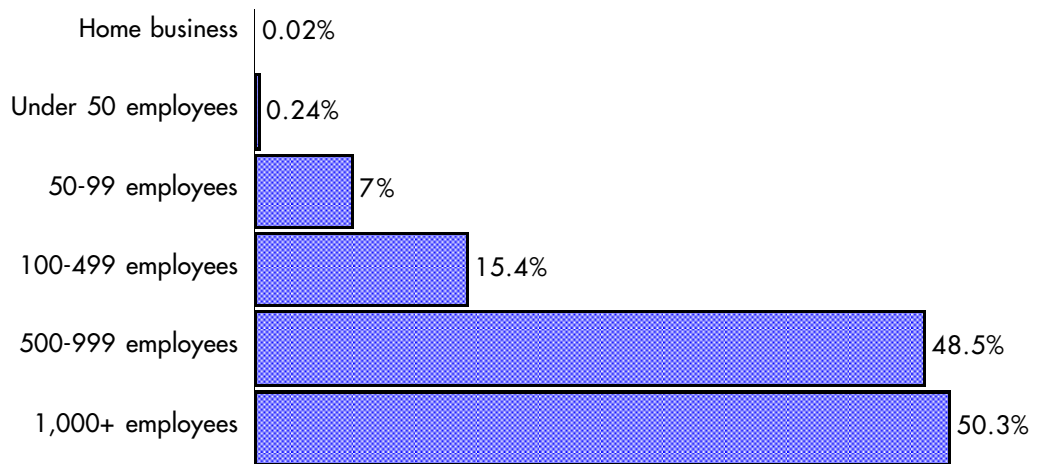
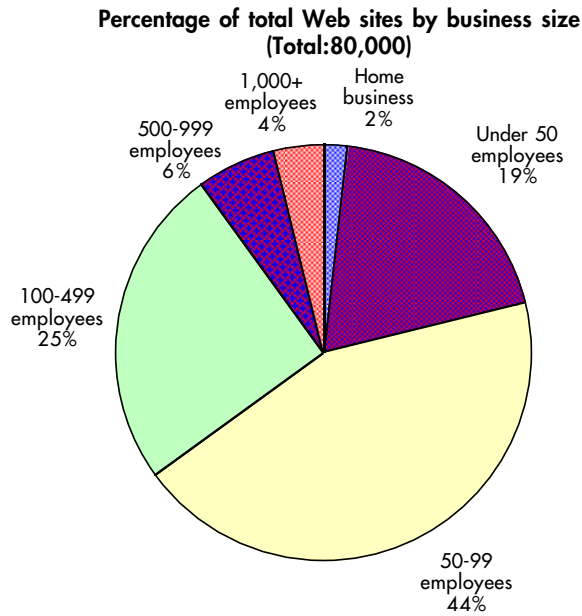
There are no surprises in this, most technology user research and studies will confirm this picture.

By March 1996, "*Upside*" stated that there are more than 40 000 Web servers and more than 76 000 domain names ending in ".com".

"*CommunicationsWeek*", April 15, 1996, refers to a survey made by the Yankee Group in Boston, U.S.:

"The Yankee Group, Boston, made a telephone and mail survey in January 1996 (in order to understand the use of) Web sites among U.S. businesses. According to their results, about 50% of all U.S. businesses with more than 500 employees already have established Web sites. Many of these companies have earmarked U.S.\$ 500 000 for Web activities alone."

Current Web Use by U.S. Businesses, January 1996



Size of business	Total # of business	Web budget
Home business	7.6 million	\$260-\$500
Under 50 employees	6.3 million	\$4k-\$6k
50-99 employees	503,000	\$15k-\$25k
100-499 employees	130,000	\$75k-\$125k
500-999 employees	9,000	\$250k-\$350k
1,000+ employees	6,360	\$500k+

(Diagram D:) Small and medium-sized businesses account for the largest number of commercial Web sites, but the large corporations are more likely to have a Web site, according to the results of this survey made by the Yankee Group in Boston. The total number of Web sites when the survey was made in January 1996 was 80 000. It will be interesting to follow what home businesses and small businesses will do — can they make money via Web sites?

Sources: CommunicationsWeek April 15, 1996/The Yankee Group, Boston

The number of commercial domains registered with InterNIC, the Internet clearing organisation, grew 160% — from 29 202 to 75 875 — in the seven months ending July 31, 1995.

Source: The Internet Webbing the Digital Economy, J. Neil Weintraut, Daniel H. Rimer, Hambrecht & Quist, LLC Institutional Research, September 22, 1995

Hambrecht & Quist also estimates that the industry providing the enabling technologies of the Internet will grow from a US\$ 1.1 billion market, focused primarily on equipment, in 1995, to a US\$ 13.2 billion market, focused on network services and software in the year 2000. The greatest growth, according to H&Q is the market for Internet based content and activities, which is expected to grow from US\$ 50 million in 1995 to more than US\$ 10 billion by the year 2000.

**Internet Enabling Technologies Industry in the U.S.
1995 — 2000 (in millions of US\$)**

	Equipment	Network services *	Software	Enabling services	Expertise	Total
1995	500	300	260	20	50	1 130
2000	2 500	5 000	4 000	1 000	700	13 200
CAGR	38%	76%	73%	119%	70%	63%

* Excludes approximately US\$ 2.8 billion of revenues associated with consumer online service providers in the year 2000.

(Diagram A3:) The table shows the estimated growth in million of US dollars of sales of equipment and services related to the Internet enabling technologies. The total growth is estimated to be more than tenfold from 1995 to the year 2000. Enabling services are the ones representing the highest growth of all the technologies considered in this study.

Source: The Internet Webbing the Digital Economy, J. Neil Weintraut, Daniel H. Rimer, Hambrecht & Quist, LLC Institutional Research, September 22, 1995

The same study estimates that there were approximately 35 million Internet users worldwide. 10 million of these use the Web. By the year 2000, they predict over 300 million Internet users, and among these, 200 million will use the Web.

Estimated Worldwide Network Community 1995 and 2000

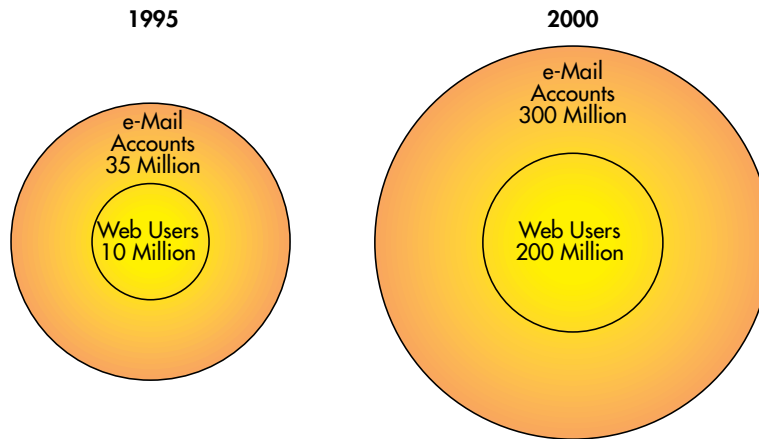


Diagram A4: The number of Internet users worldwide will grow tenfold according to this study in just five years, from 35 million to 300 million. The estimates are made on the number of existing e-mail accounts in 1995.

Source: The Internet Webbing the Digital Economy, J. Neil Weintraut, Daniel H. Rimer, Hambrecht & Quist, LLC Institutional Research, September 22, 1995

The researchers at H&Q also state, that the Internet entering the U.S. mainstream will be followed by further stimulation as the international markets, which are approximately one to two years behind the United States, grow to equal the U.S. market in size.

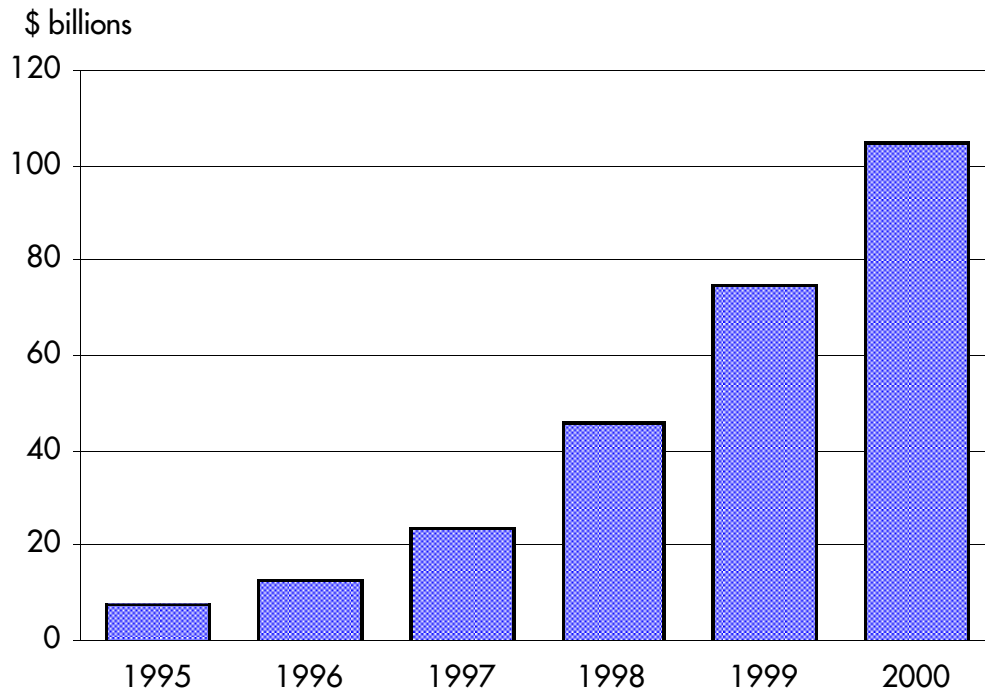
According to another study entitled "*Internet Use in the United States*", Internet address (<http://www.2000.osgm.vanderbilt.edu/baseline/1995.Internet.estimate.html>) made by researchers at the Vanderbilt University and the University of North Carolina, the following facts were stated:

- * 28.8 million Americans of the age 16 and above have potential or actual access to the Internet;
- * 16.4 million Americans use the Internet;
- * 11.5 million use the Web;
- * 1.5 million Americans have used the Web to make a purchase

Source: Web Week, April 29, 1996

Input, a research firm in Mountain View, California, estimates that global corporate spending on Internet and intranets will grow from US\$ 12 billion in 1995 to US\$ 208 billion by the year 2000. US\$ 104 billion of these will be for services such as consultant, training, systems integration, and outsourcing. In 1995, spending on Internet services was US\$ 5.8 billion.

**Worldwide Spending on Internet Services 1995 — 2000
(in billion of US dollars)**



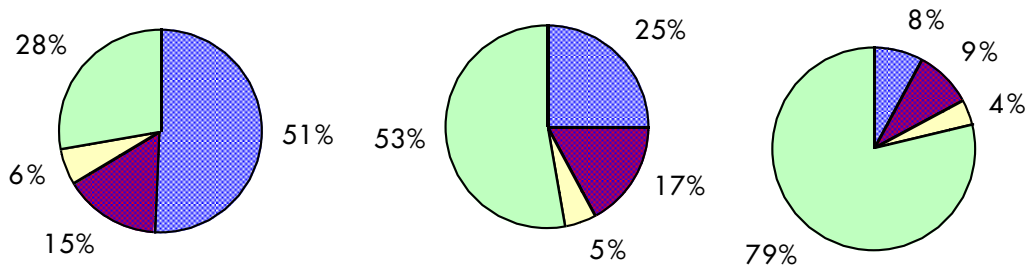
(Diagram B:) The Mountain View-based Californian research firm Input makes these estimates for worldwide spending on Internet services up till the year 2000. Half of the projected spending will be for services, including consulting, training, systems integration, and outsourcing. The figures in this diagram should be put into the total perspective: In 1994, companies spent US\$ 295 billion on all of their computer services.

Input has also begun a study to see which applications are likely to move to an Internet platform.

Source: Information Week, March 25, 1996/INPUT

But not everyone is jumping on to the Internet Information Highway according to a survey made by O'Reilly Associates, Sebastopol, California. Interviews with 1 003 MIS directors and Webmasters at U.S. and Canadian companies, randomly selected from a Dun & Bradstreet database of 7 million, showed that 28% of large businesses, 53% of mid-sized companies, and 79% of small businesses said they have no plans to use the Net now, or in the future.

U.S. Businesses Heading for the Net Early 1996



■ Currently have access ■ Will have access by year-end □ Plan access eventually □ No plans for access ever

(Diagram C:) O'Reilly Associates; Sebastopol, California, found that while many businesses are jumping onto the Internet as fast as they can, more than expected are adamantly refusing to consider such a move at all. 28% of large businesses, 53% of medium-size concerns, and 79% of small companies said they have no plans to use the Net now or in the future.

Sources: *CommunicationWeek*, March 25, 1996/O'Reilly Associates

To Advertise on the Web Is to Exist?

For the fourth quarter of 1995, 270 companies surveyed spent US\$ 12.4 million for advertising on 175 Web sites, according to Webtrack, New York. AT&T advertised the most, spending US\$ 567 000 for the fourth quarter. Netscape Communications was number two, buying ads for US\$ 556 000 during the fourth quarter. Netscape was number one in receiving money with advertising revenues of nearly US\$ 1.8 million. Activ Media estimates, that companies spent an additional US\$ 83 million worldwide on Web site development. Webtrack found that 75% of the ad dollars spent on Web advertising in the fourth quarter of 1995 went to only 10 companies. US\$ 4.2 million, equivalent to 34%, was spent by the top 15 advertisers, with US\$ 6.3 million, 51%, spent by the top 30. Alex Brown & Sons estimates that Web ad revenue will jump to US\$ 1.4 billion in 1998, from an estimated US\$ 20 million in 1995. This is according to an article in the *Wall Street Journals*, December 8, 1995.

In the same article, an expert states that "even though the flow of dollars into Web advertising is a minuscule part of today's ad budgets, it is subtly changing the industry." How remains to be seen — ad agency creativity may have a challenge.

Possible to Make Money on the Internet?

With individuals' and companies' usage of the Internet increasing, the great growth in number of Web sites and greater and greater bandwidth requirements, Hambrecht & Quist expects, that the market for network services will grow from less than US\$ 2 billion today to nearly US\$ 8 billion by the year 2000. The researchers believe that most major corporations will have 20 to 200 connections and that the number of direct individual Internet connections, currently less than one million, will grow to more than 30 million by the end of the decade. Which are the business opportunities in this growth?

The software market may be one. The Internet market contains ten primary software segments, which are expected to grow fifteenfold from US\$ 260 million in 1995 to US\$ 4 billion by the year 2000, a 74% compound annual growth rate.

Hardware to utilise the Internet may be another, since it is required by the organisations and individuals wishing to access the Net. Network service providers build the Internet's infrastructure. From a US\$ 500 million market in 1995, equipment is expected to grow fivefold to US\$ 2.5 billion by the year 2000.

The service industries, including a number of service providers will most likely show at least equivalent growth. Regarding applications, we just have to wait and see which ones will find Internet platforms. The information from Input, the Redwood City research company, may provide some answers in the years to come.

How Secure Is the Internet?

There are several security issues related to the Internet, a statement familiar to all Internet users. But according to David Pensak, principal consultant for advanced computing technology at E.I. du Pont de Nemours & Co., the weakest link in every organisation is its — people! Anyone can be bribed to give away corporate secrets, which is far less expensive for competitors than breaking into a network. So, employers have better keep employees happy because they must trust them with corporate information.

Apart from this statement, primary results from a new U.S. survey by the Computer Security Institute and the FBI's Computer Crime Division show that nearly half of the 5 000 Fortune 500 companies, federal institutions, and universities polled had experienced computer security breaches within the last 12 months. These breaches ranged from unauthorised access by employees, to break-ins from unknown intruders.

In 1995, Computer Security Institute, San Francisco, surveyed 242 Fortune 500 companies concerning Internet security. Although for 1995, only 12% of the companies reported any losses as a result of system penetration, these totaled US\$ 50 million. Specifically notable is, that there were two US\$ 1 million losses because of telecommunications eavesdropping. Moreover, there were losses reported of US\$ 300 000 and US\$ 1 million as a result of address spoofing and active wiretapping, and losses of US\$ 1 million and US\$ 10 million from unauthorised access by insiders.

One major roadblock to uniform encryption implementation worldwide is the U.S. National Security Agency's tight restriction on the export of encryption technology. Without strong encryption, financial losses from breaches of computer security will mount to between US\$ 40 billion and US\$ 80 billion by the year 2000, according to estimates made by the Computer Systems Policy Project, a coalition of CEOs at major U.S. computer companies, including AT&T, IBM, and others.

Number of Fire Walls Sold in the World by 2000

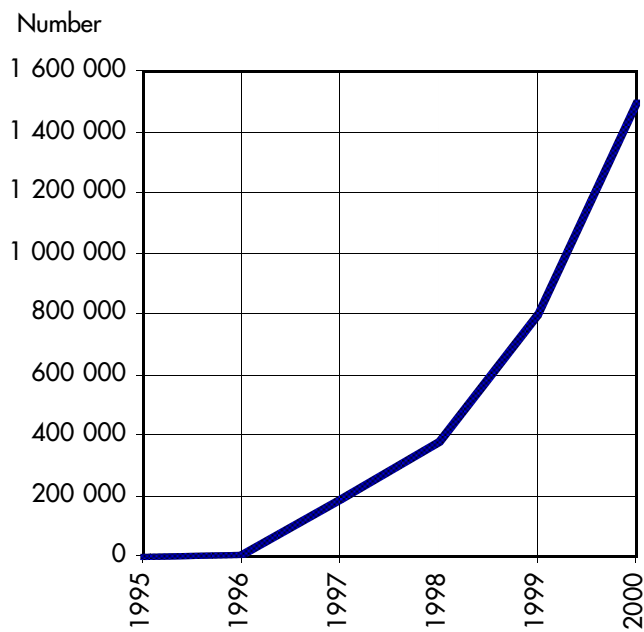


Fig. 25 Feb 7: According to IDC, more than 1.5 million fire walls will be installed by 2000. In 1993, there were in total three companies supplying fire walls. Today there are at least 120.

Sources: IDC/Computer Sweden 21 February 1997, (diagram after Fredrik Persson)

Intranets — Miniature Web Sites

The American journalist Ingrid Meyer has written a most interesting — and beautiful! — article in "*CommunicationsWeek*" of April 3, 1996, where she describes an intranet in the following way (may she forgive us for borrowing her words!):

"Think of the Internet and World Wide Web as a vast sea of information, punctuated by a few sharks in the form of hackers who would love to steal or confuse proprietary data. Fortunately, some companies have discovered they can avoid such sharks by using Web technology to create internal Internets, called "intranets".

These miniature Webs are like private company beaches, sheltered behind firewalls that keep unwanted intruders at bay. Resembling a combination of groupware and the Internet, intranets let users do the same kinds of things they can do on the Web — post documents, send electronic mail, chat with one another, and keep employees up to date — but on a more intimate scale."

Can intranets be explained in a better way?

Moreover, intranets permit users to collaborate on documents in real time, to access internal data bases about for instance sales, financial reports, product availability, manufacturing plans, service schedules, etc., all continuously updated, to set up video conferences, meeting schedules and much, much more.

Intranets have become one of the main means of communication within quite a few companies. Some corporations, among those Digital Equipment, are even planning to integrate employee home pages into their intranets' electronic directory, in order to create a kind of "electronic camaraderie".

One intranet user, CBS, generating news 24 hours a day, has always had problems sharing information with its 208 network affiliates. By now, they have created an intranet, to which any affiliate with a computer and a modem can dial into the pass-word protected CBS Newspath World Wide Web home page and find organised information about national and regional news, sports, weather, and features, and, in addition, advise about news programming. This is according to "*InformationWeek*", April 1, 1996.

Stanford University in Palo Alto uses an intranet to post documents on campus life. Subjects like public safety, student housing, and a large collection of other documents are electronically available to students and other users.

Intranets can, of course, be expanded to more than one partner. This kind of extended intranets to include others than those directly employed or involved, is called **extranet**.

In the US, large corporations like National Semiconductor, Marshall Industries, Lockheed Martin, and Caterpillar have been running extranets for some time.

Extranets a Growing Global Market Global Turnover in Billion SEK

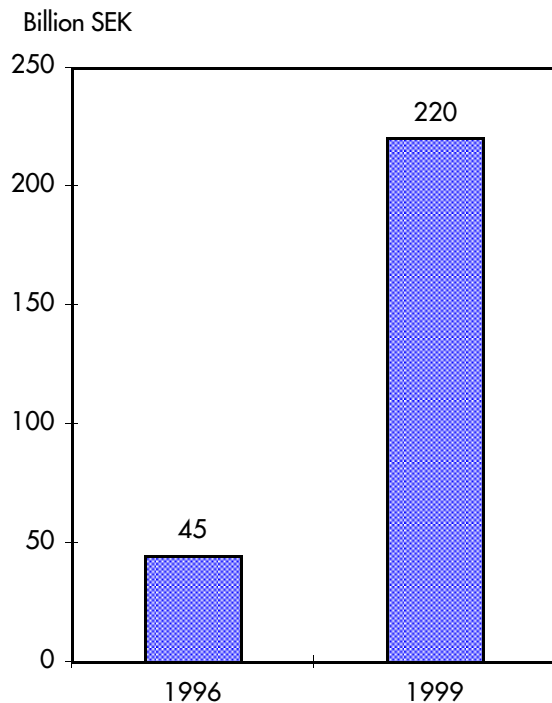


Fig. 25 Feb 8: According to Zona Research, the market for extranets will have grown manyfold by 1999.

Sources: Zona Research, California/Computer Sweden, 21 February 1997

The US Election 1996 A Test for the Mass Medium Internet

The 1996 presidential election of the US became a full scale test of the Internet as a mass medium, at least according to the Swedish magazine "Ny teknik", 1996:46. The large news providers had millions of visitors, many of them ten times more than on a normal day. It was possible for viewers/visitors to follow the local elections in detail, which never is possible via TV, for instance. And it was possible for the information providers to evaluate the need for constant input to their home pages — quite a few were not very fast when it came to updating the figures, which caused certain irritation among curious visitors.

Irritation was also the dominant feeling among a fairly large number of users who never succeeded in logging on. Moreover, the technical capacity of the Internet was tested to the brink of collapse. A number of earlier unknown weak points were revealed, both locally and in the backbone capacity. These capacity problems must be solved before the Internet really can take over from TV news for the average viewer. But in spite of this and, evidently, a certain information chaos, the average Internet visitor was pleased with the experience.

6.4. The Internet in Sweden

* A Swedish Internet index is available via <http://www.punkt.se>

*** 25% of the Swedish population have access to the Internet at home or at work**

* 300 000 Swedes subscribed to Telia's Internet service

* 100 000 Swedes subscribed to Tele 2's Internet service

Sources: Dagens Nyheter, Oct. 22, 1996/Skop

During the first six months of 1996, the Internet finally became everybody's network in Sweden. The three large operators offering Internet to the Swedish subscribers are Telia, Telenordia, and Tele 2. By the end of 1996, Telia had some 300 000 subscribers, and Tele 2 about 100 000. According to a survey made by Skop, a Swedish research institute, 25% of the Swedish population have Internet access at home or at work. Some 350 000 persons are connected to Internet at least five days a week.

Source: Dagens Nyheter, Oct. 22, 1996

* **Useful Internet addresses for Swedes who want to:**

- know everything there is to know about illnesses, plagues, and their remedy, and use the Swedish data base Medical Link and via links reach the rest of the world. Type: <http://www.medicalink.se>
- find information about exotic places to visit and their maps, what epidemic diseases are current, what creeps may sting, what places to visit, and how to avoid "Montezuma's revenge", is recommended to start via America Travelers Health and Graphical travel map. Type: <http://www.cdc.gov/>
- receive good advice about how to treat skin spots, colds, allergies, or menstrual problems, can turn to the Swedish pharmacies via: <http://www.apoteket.se>

Source: Dagens Nyheter, 10 April, 1997

*** Swedes are Leading Intranet Users**

According to the analyst firm The Butler Group, almost 90% of 150 Swedish companies asked are using some form of intranet. In the UK, 40% are using intranets, and in Switzerland and Germany 25%. The Butler Group sees the less hierarchic structures of Swedish organisations in general as one reason for the widespread intranet usage.

Source: The Butler Group

*** 85% of Swedish Executives See Internet as a Must**

According to a recent study (the results were announced to the public on March 2, 1997) carried out by Svenska Arbetsgivareföreningen, SAF, (The Swedish Employers' Federation), in which the chief executives of some 1 000 Swedish companies were asked to answer a number of questions regarding their IT usage, 85% said they will be using Internet within six months. The study indicates, that 50% of the executives in companies having more than 100 employees have access to Internet. In small companies, with less than 5 employees, 15% of the executives have Internet access.

On an average, 20% of all Swedish companies have E-mail. 50% of all large corporations have it and use it. 5 — 10% of the small companies have E-mail. Among those companies having E-mail, 31% of all executives use it daily.

The SAF survey also indicates that 63% of the executives in large companies regard Internet as a very important tool for communication, while 32% of the small company executives feel it is a must.

SAF, having 42 000 members — companies only — is planning an extranet service for their members. Type <http://www.saf.se> for access.

Source: Interaktiv Tid Analys # 8, 28 February, 1997

Why Will Swedish Companies Invest in the Internet?

Increased business 34%
Better company information 20%
Increased income 18%
Decreased costs 16%
Improved image 8%
Other reasons 4%

Fig. 28 april 2: The Swedish research firm Analysexperten AAA has looked into the reasons Swedish firms have to install the Internet for the web bureau i2i. 34% of all respondents said they wanted to increase business; 20% wanted to provide better information about their company; 18% responded that they wanted to increase their income; 16% thought it a good way to decrease costs; 8% thought they could improve their image by the Net; and 4% gave other reasons. 306 companies were interviewed.

Source: Computer Sweden, 28 February 1997

Intranets Common in Sweden Share of companies using intranets

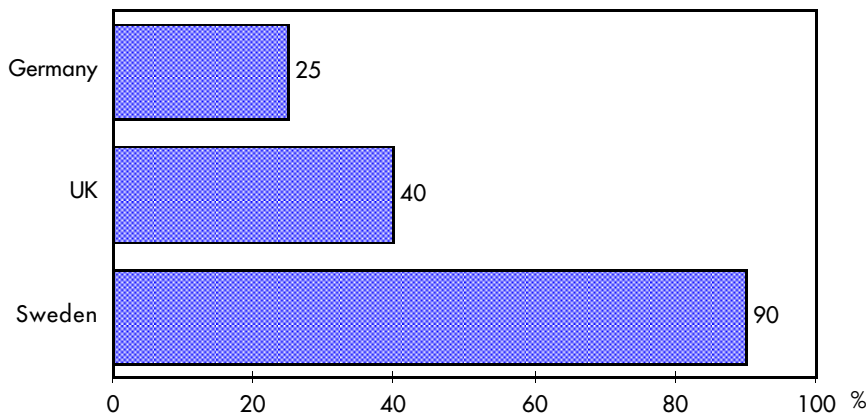


Fig. 25 Feb 12: A majority of Swedish firms seems to be using intranets, at least according to a survey made by the British analysts The Butler Group. Sources: The Butler Group/Computer Sweden 21 February 1997

* Swedes Learn about the Internet via Exhibition

A mobile exhibition, dedicated to the Internet and its usage is touring Sweden's public libraries. It started off in the south, in Malmö, in June 1996, and will slowly move its way through the country during the next two years to come. Nine computers are connected to the Internet, demonstrating among other things multi-media software, and how various persons utilise the Internet. A professor, a college student, a librarian, a journalist, and a university student are sharing their experiences with the audiences.

The exhibition is produced by Riksställningar, in collaboration with the Telecom Museum, Apple Computers and Telia.

Source: Telia: Bilagan, # 3, 1996

* Swedish Minority People on the Internet

The Same people, the samoiedic minority group living in northern Sweden, has created a home page on the Web, providing a lot of information about the Same language, history, culture, and industries. The Same Parliament is also represented, so local politics can be followed. The address is: <http://www.sametinget.se>

Source: MacWorld, # 7, September 1996

*** The Swedish Dailies Go Internet**

The Swedish research group TidningsStatistik, TS, charged with keeping count of the printed media circulation, is also keeping track of Internet visits to the electronic versions of the various media, dailies and weeklies. TS publishes its figures regularly. For January 1997 TS reported, that the four Stockholm-based dailies had the following number of visitors:

- + Aftonbladet 26 879
- + Expressen 12 012
- + DNet (Dagens Nyheter) 11 695
- + Svenska Dagbladet 7 598

Sources: TS/Dagens Nyheter 19 februari 1997

*** Virtual Companies**

Virtual companies seem to spread among Swedish small enterprises. PC/Fax Gruppen, set up in 1991, is a pool made up of 13 small IT companies, offering other groups of small businesses help in forming virtual companies.

Source: IT Nyheterna # 8 1996

*** Look for a Job in Sweden via the Net!**

Arbetsförmedlingen, the Swedish public labour exchange, is offering job hunters to look for new employment via the Internet. Employers are offered links to their own home pages. The service covers all of Sweden. Type <http://jobb.amv.se/> to find out what is available.

Source: PC Hemma december 1996

*** Sweden and the US are helping Lithuania to Democracy via the Internet**

In November 1995, 100 schools in Lithuania, whose school system totally collapsed after the fall of the Soviet Union, were connected to the Internet. The objective of the Swedish and American aid organisations working on the project is to provide all 1 600 schools with Internet access. Not only distance education and training will be available in this way — the organisations are also trying to help the rather confused Lithuanians to understand how they can govern their country by democratic means. Part of the Internet packet is an art gallery, providing local artists with their own home pages.

Source: Dagens Nyheter, 27 November 1995

*** Internet Access via GSM Tried by Scania**

Scania, Telia, and Ericsson are collaborating in testing a system for Internet access via the GSM networks. The idea is to give every Scania employee access to information in the corporate intranet.

Source: Computer Sweden, 21 February 1997

*** Keep Sweden Clean**

The oldest Swedish environmental foundation is most likely "Håll Sverige Rent" (Keep Sweden Clean). Type <http://www.hsr.se/> for information about recycling, ongoing environmental projects in Sweden and Europe, and links to other environmental organisations.

Source: PC Hemma december 1996

*** The Swedish Local Authorities on the Net**

Should you wish to learn more about your own "kommun", i.e. your local public government, and you live in Sweden, information is available via this address: <http://www.it-kompetens.se/swedish/kommun.html>

Source: PC Hemma december 1996

*** The City of Stockholm via Internet**

Anyone interested in the local politics of the City of Stockholm can get detailed information about politicians and their politics as well as events and potential business partners in the city. Just type the following Internet address: www.stockholm.se/frames

Source: Svenska Dagbladet 22 January 1997

*** Swede from Umeå Finds His Lady in Philadelphia, USA — on the Net**

It has happened before! People, who normally would not meet, get in contact via the Internet. In this case, a young student in the northern city of Umeå met with a young lady in Philadelphia, USA, on the Net. After a number of hours chatting, and long telephone conversations, they decided to meet, a meeting that turned out memorable...

— Computers are OK, says the young man. But when it goes about human relations, one realises that they are nothing but machines. They cannot express feelings and nuances.

Source: Dagens Nyheter, 22 February 1997

*** Petted Perk for Swedes, the Corporate Car, Interactive on the Net**

To get a car along with your pay package has become something of a status symbol for some Swedes. The tax authorities have, of course, for a long time kept their eyes on this perk, that thanks to various complicated formulas, were more or less tax exempt. By now, the tax rules for corporate cars are so complex, that nobody can say without intense calculation to what extent it is good or bad business for the driver of the car to get a corporate car or to buy a private one. But there is interactive remedy on the Internet! Type <http://www.mrf.se> and you will get the home page of the MRF, Motormännens Riksförbund. This association for motorists will help out.

Source: Bilbranschen, # 1, February 1997

* **Web advertising** in Sweden took off after a rather hesitant start, during the later half of 1996. So far, web-advertising is not a general project in the marketing plans of Swedish companies, but most of them are following the developments with interest.

Source: e.magasinet # 6, 1996

6.5. Intranets

* **Ericsson**, the world's leading telecommunications equipment manufacturer, is using the Internet as well as their own intranet for interactive services, business intelligence, and for marketing of the company and its products to customers as well as to employees. Time to Market, or TTM, is an important competitive factor for Ericsson, and they see the Internet as one opportunity to bring their products to the market as fast as possible. It is also a tool for business development.

Source: Ny teknik, 1996:46

* **Distribution in Cyberspace:** Sweden's largest distributor of electronic components, Ericsson Electronic Distribution AB, has entered Cyberspace and is offering its electronic components from the company catalogue on-line via the Web on the Ericsson intranet. During the first two days on-line, last August, 8 559 visitors were registered.

Source: Ericsson "Kontakten" # 13, September 13, 1996

6.6. Do You Know This About Surfing, Netting, Webbing...?

* **The Embedded Internet** will be the next big thing to hit the Net. This means that the Internet will be wiring together millions of tiny computers embedded into everything we use. According to David Kline in "Wired" of October 1996, "this is no future vision — the products are hitting the market now."

Kline goes on, explaining:

"Embedded systems are tiny crash-proof computers, that are embedded or hardwired within everyday products and dedicated to the performance of specific tasks or groups of tasks."

He gives a number of examples of the omnipresence of these embedded systems in industrial products as well as consumer goods — you can find them in microwave ovens, in VCRs and antilock brakes, in copiers, printers, telephones, and almost any electronic artifact you can think of. Technological development has by now come so far that the embedded systems are ready for the Internet.

But until the ordinary consumer becomes hooked up to the Internet via his or her embedded systems in the microwave or the faronmover, the potential of what is called the Industrial Net is far more powerful.

In the US, a number of industries are collaborating to develop the embedded technology, incidently saving lots of money by collaborating via the Net. Some of these collaborative efforts develop into Intranets, dedicated Internets with restricted access, if you so wish. There is nothing restrictive about embedded technology, however. It is everywhere. Or as Kline summarizes: "Here the Net becomes the omnipresent glue that binds society into a truly connected civilization". Those who want to know more are recommended to read David Kline's article "The Embedded Internet" in "Wired", October 1996.

*** Suffering from the Internet Addiction?**

The results of the first study ever carried out of the psychological effects of frequent Internet usage is available at <http://www.mu.edu>. They show clear indications that some Internet users really suffer from the same kind of symptoms as some gamblers, who constantly crave for more and more gambling.

The study is carried out at the University of Buffalo, New York, USA. 185 persons were interviewed about their internet usage. 17% said that they "needed" Internet for more than 40 hours a week. Bad Internet addiction may lead to the final collapse of all social relations with real people. Among other things.

Source: IT Nyheterna # 8 1996

*** Chatting**

There are several ways of chatting via the Internet — for instance via World Wide Web, web readers, or special programs called Internet Relay Chat, IRC. Or via virtual worlds, 3D, telephony — you mention it, and it is likely to be there. Links to web chats can be found via DNet: <http://www.dn.se>

Source: Dagens Nyheter, 7 January 1997

*** Web Advertising in the US**

During the first six months of 1996, web-advertising generated some 71 million US\$. In 2000, the estimated value of web-advertising is at least 3 billion US\$.

Source: e.magasinet, # 6, 1996

*** Few Internet Bugs**

According to IDG, 91% of Internet users have never found any **bugs** in material they have downloaded from the Net. For more information, type: <http://www.idg.se/cs>

Source: Computer Sweden, 21 February 1997

*** 50+ Surfers on Seniorsnet**

Have you turned 50, there is a home page that may interest you. Type <http://www.seniorsnet.com/> and you will get a chance to be elected the oldest surfer on the Net!

Source: PC Hemma december 1996

* According to Nicholas Negroponte of the MIT Media Lab, the number of **Web sites** is doubling every 53 days. Moreover, he is convinced that sending fax is the wrong thing to do — we must learn to transport bits instead of transporting atoms.

Source: Communication World, January/February 1996

*** SET, Secure Electronic Transaction to Come**

SET, Secure Electronic Transaction, is a standard for automated encryption of credit card numbers used for payment over the Internet, under development by software producers Microsoft and Netscape and credit card companies Visa International and MasterCard International. The idea is that whenever anyone is sending a credit card number over the net, it will be encrypted automatically, and stay so throughout the transaction. SET is based on the wellknown Data Encryption Standard. If the development program runs according to plan, SET can be in commercial utilisation by the end of 1996.

Source: Ny Teknik 1996:6

*** Cyberlanguage Clean Up?**

”The advance of prudery in the US continues apace, but every now and then it receives a setback. According to *The Chicago Tribune*, America Online, the country’s leading online service company, banned the word ”breast” from its computer communication service shortly before Christmas (1995) in order to ”clean up cyberlanguage”. But then it quickly unbanned it again after complaints from breast cancer patients who use the service to share information and support. This was the second time in six months that America Online has disrupted communication among breast cancer survivors by banning the word ”breast”.”

Source: New Scientist, 13 January 1996

* **Virtual Privacy**

The Economist (February 10th 1996) is warning its readers about the ever more transparent world. Prying, spying eyes can enter into anybody's life, collecting data about from what you last bought when you used your credit card, to your personal medical history, via sophisticated databases and their ability to talk to each other. Should anything be done about this? Well, the suggestion is that a consent-rule should be applied, i.e. anybody using a database should be asked if information can be sold to other marketing groups, for instance. Now, the magazine concedes that this may not be the best of ways to protect your individual privacy, but on the other side we are just seeing the beginning of how per se harmless scraps of information can be used to create something else.

Source: The Economist February 10th 1996

* **First Virtual Museum in Tokyo?**

In Shinjuku, a part of Tokyo, a very modern one, the curious visitor can make her way to the Virtual Electronic Museum of Art, has she made an appointment beforehand. Because the museum, owned and run by Toshiba, is also a demo center for new high speed fiber technology and compression techniques in real time. The visitor is placed before a large high definition screen (280 cm) and provided with a 3D mouse, which allows her to chose at what distance and from which angle she wants to scrutinize a particular work of art. Of course, real close-ups are possible. Available are some hundred works of Vincent van Gogh.

Source: Connaissance des arts, # 529, June 1996

* **Netday 96** took place on March 9 — 10, 1996, in California, USA. During that weekend, more than 20 percent of California's schools were connected to the Internet, according to the Financial Times. This could happen thanks to some 16 000 computer industry employees, who gave their spare time to help wire up the schools, working with hardware and software donated by some 1 000 companies in the state. The total value of donated working time and equipment is estimated to 300 million USD.

Source: Computer Sweden # 20, March 26, 1996

* Everybody, **virtually everybody, is on the Internet.** Type <http://www.zpub.com/un/pope>, and you will be connected to a web-site about the Pope. Type <http://www.christusrex.org>. and you will be connected to the Catholic church.

Source: Ny Teknik 1997:9

* **Japanese Internet surfers:** When a Japanese person wants to surf on the net, he or she connects via a "set top box", either built into the T.V.-set or placed on top of it. A special web software has been developed to make surfing by remote control easy. Internet is regarded more as a private fun and games arcade, rather than as a place for serious business.

Source: Dagens Nyheter, Oct. 19, 1996

* **Telephoning via the Internet** is rapidly becoming more and more popular — and you don't even need a computer. Special Internet-servers can be called directly and they will link the call via the Internet. It is possible to make such calls from telephone to telephone, from computer to telephone or to link private switches. Internet-calls are less costly for those who make longdistance calls, talking for a long time and frequently. The draw-back? The sound quality seems to be suffering.

One example of Internet telephony services is the AT&T **Worldnet Internet**, offering its users electronic shopping, publishing and marketing.

Source: Ny Teknik Data, September 5, 1996/Anon

* **The British Parliament on the Internet**

The daily transcripts of what is said by British MPs are published in *the "Hansard"*. This publication is now available in searchable form online, along with other parliamentary publications. Start at the home page by typing: <http://www.parliament.uk/>

In September 1995, 12 of Britain's 600 MPs (members of parliament) had e-mail addresses. Now the number has increased to 32, and 15 have their own web pages. The Conservative Party can be reached at <http://www.conservative-party.org.uk/index/html>, the Labour Party at <http://www.poptel.org.uk/Labour-Party/index-t.html>, and the Liberal Democrats at <http://www.libdems.org.uk/> And anybody interested in getting in contact with one of the parties not represented in Parliament, can type <http://www.raving-loony.pv.org./> and reach the Monster Raving Loony Party.

Source: New Scientist, 9 November 1996/http://www.newscientist.com/

* **Booking plane travel online** is one of the latest Net-based services to take off. Several services are available, among them Microsoft Expedia, Preview Travel, and United Connection. Travelocity and EasySabre are two other such services. They all provide timetables, fares, alternative routings, bargains, and special offers. And they offer possibilities to book hotel rooms and rental car service along with your airline ticket. Many Americans already find these services far more attractive, for business travel as well as for leisure travel, than ordinary telephone or face-to-face conversations with live agents.

Source: Business Week, February 17, 1997