8. The Global Information Infrastructures: The Brave New Digitised World

”Digitisation of information is bringing about the convergence of telecommunications, computing and broadcasting technologies and industries, all of which are regulated separately in most countries.”
Source: OECD: Information Technology Outlook 1995

8.1. The InformationSociety Infrastructure

The Global Information Infrastructures, GIIs, and, with it, the Global Information Society, are being created.

Somehow, it all started with a National Information Structure, NII. This happened in September 1993, when the government of the United States presented a policy paper, called **”The National Information Infrastructure: Agenda for Action”.** The paper outlines how information infrastructures are playing a crucial role in developing the economy and society, in particular so economic competitiveness. Since this declaration by the US government, a number of other OECD countries have presented papers and reports to the same ends. Which in turn lead to the US government releasing a new document in February 1995, called **”Global Information Infrastructure: Agenda for Cooperation”**. The national information infrastructure had become global.

The G-7 Ministerial Conference on the Global Information Society took place in Brussels later that very same month and year. International cooperation was emphasised, and it was decided that the policy focus should cover a very broad range of issues. The G-7 partners agreed to collaborate in order to make their common vision of the Global Information Society come true. The Global Information Society will be achieved by:

a) promotion of interconnectivity and interoperability;
b) development of global markets for network services and applications:
c) ensuring privacy and data security;
d) protection of intellectual property rights;
e) cooperation in research and development and in the development of new applications;
d) monitoring the social and societial implications of the information society.

The basic principles, according to which the G-7 countries are working, are:

1. to promote dynamic competition;
2. to encourage private investment;
3. to define an adaptable regulatory framework;
4. to provide open access to networks.

While working according to these principles, the G-7 countries also decided to:

I. ensure universal provision of and access to services;
II. to promote equal opportunity to the citizens;
III. to promote diversity of content, including cultural and linguistic diversity;
IV. to recognise the necessity of worldwide cooperation with particular attention to less developed countries.

The Ministerial Conference also decided upon the implementation of 11 pilot projects, which are described in the conference papers.

Since then, a number of countries have released policy documents on information structures. In Sweden, a paper was issued by the Government Commission on Information Technology of the Prime Minister's Office, in August 1994 called **"Information Technology: Wings to Human Ability"**.

Sources: TELDOK Rapport 91: NII — USAs elektroniska motorvägar, alias Infobahn by Holst, G-M & Vedin, B-A, Stockholm 1994/OECD: Information Technology Outlook 1995

8.2. GII: The Case of Multimedia

According to the OECD, the growth of multimedia services through the convergence of the information technology, telecommunications, and information, and entertainment industries will affect the member countries' economies profoundly. Among other things, the convergence will make provision of existing services more efficient, and also rebundling of existing services may well increase national economic efficieny.

Most of the OECD member countries are concerning themselves with issues related to this multimedia development, and its emerging markets, which has resulted in a number of new challenges: the development of cost effective physical technical infrastructure; efficient exchange of information over the infrastructure; protection of immaterial rights; the development of applications that will bring the promised economic and social benefits. See OECD *"Information Technology Outlook 1995"* for detailed information.

The provision of multimedia services is taking shape as a distinct economic industry. It largely consist of activities, goods, and services provided by companies in existing industries such as IT hardware and software, telecommunications, communications, information, and entertainment. Technologies like microprocessing and fiber optic transmission have made multimedia services feasible from an economic point of view.

Multimedia services are composed of digital representations of sound, data, and visual content, delivered over digitised media platforms provided by combining computing and communications hardware and software. At present, the services include electronic mail, ordering and payment systems, video-telephony, interactive games and films, just to mention a few. These services can be delivered to individual consumers/users via personal computers, ”intelligent” television sets, CD-ROMs, on-line over the public switched telephone and cable TV networks, and via the Internet.

Infrastructure Development in France, Germany, Italy, Japan, UK and USA 1994

Network development (telecommunications)	Digital main lines (% of total main lines 1993)	PC w/modems (% of households)	ISDN subscriptions per 1 000 population
France	86	1	1.93
Germany	37	3	3.71
Italy	57	1	0.05
Japan	72	N.A.	1.91
UK	75	4.5	0.69
USA	66	15	0.34

Fig 20 Feb 4 (kap 9): The growth of consumer on-line multimedia services is restricted by the capacities of the public networks. Traditional analog public networks are so much slower than the processing power of personal computers. Thus, countries having a high level of digital main lines offer increased availability and declining costs. According to this table, France should be in a good position for future high level growth of multimedia on-line services. Moreover, the public Minitel system in that country, with an installed base of more than 6 million dedicated terminals, and a growing number of firms offering access to the Internet, is the only major European on-line services provider. CompuServe, the US on-line services provider, reported having 200 000 subscribers in Europe by December 1994.

On-line Hosts for Multimedia Services in the World 1994

On-line services Internet	Connections (host computers with direct access — thousands)
World	4 850
United States	3 370
Europe	1 090
of which	
France	101
Germany	301
Italy	35
UK	270
Asia	340
Others	50

Fig. 20 Feb. 1: The United States had three times as many host computers with direct access to the Internet than Europe — 3 370 000 compared to 1 090 000, in 1994. Among the European countries, Germany had the most host computers, 301 000.

Sources: The Economist, April 15 1995/ European Electronic Messaging Association/©OECD: Information Technology Outlook 1995 (reproduced by permission of the OECD)

On-line Consumer Subscription for Multimedia Services in The World 1993 — 1994

In millions

On-line services by commercial providers	1993	1994
World	4.9	6.3
United States	3.13	5.36
Europe	< 0.05	0.2
Japan	1.4	1.9

Fig. 20 Feb. 2 (kap 9): The United States were having some twentysix times more consumer subscriptions for multimedia services than Europe in 1994. The Japanese had 9.5 times as many as Europe.

Sources: Business Week, 13 Feb 1995/Financial Times, 6 March 1995/Association for New Media Developments/©OECD: Information Technology Outlook 1995 (reproduced by permission of the OECD)

Revenues for the Multimedia Industry Sectors in the US, Europe, and Japan, 1994
Billion of US $, converted by 1994 exchange rates

	Content (print and audio-visual)	IT	Telecommunications
United States	255	151	160
Europe	178	134	158
Japan	254	50	78.5

Fig 20 Feb 3 (kap 9): In telecommunications, Europe was spending almost as much as the US in 1994, 158 billion US $ in comparison to 160 billion. The Japanese were spending about half of what Europe spent on telecommunications, and a third of what the US spent on IT, while the content industries of the US and Japan were almost equal, 255 billion US $ to 254 billion. In this segment, Europe spent 178 billion US $.

Sources: European Commission/Ministry of Posts and Telecommunications, Japan/©OECD: Information Technology Outlook 1995 (reproduced by permission of the OECD)

Video Conferencing Systems via Desk Tops Growing in the US

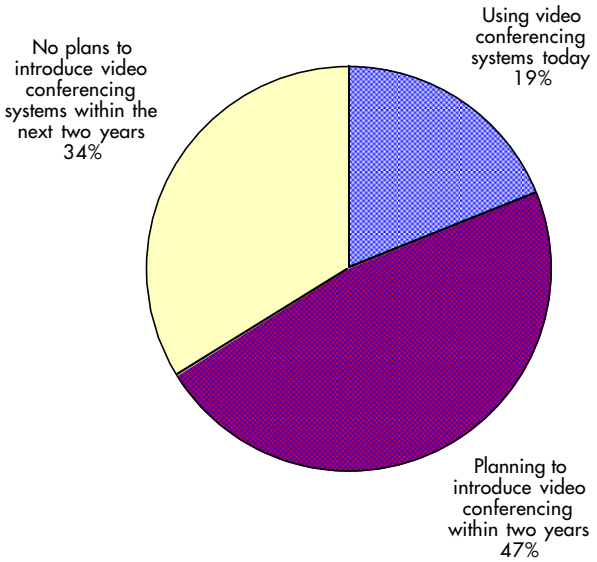

Fig. 25 Feb 23: 19% of companies responding to a study made by Sage Reseach in the US said that they are already using video conferencing systems from their desk top computers. 47% are planning to introduce such systems within two years, and the rest of the businesses questioned, 34%, are not planning any within two years.

Sources: Sage Research/Computer Sweden, 17 January 1997

* 1% of all telecommunications lines in the world are ISDN lines. Germany is leading by 5%. Sweden has 0.22% of all ISDN lines.
Source: Computer Sweden 17 January 1997

Television and VCR Penetration in Countries Analysed by DTI, 1995
In percent of all homes

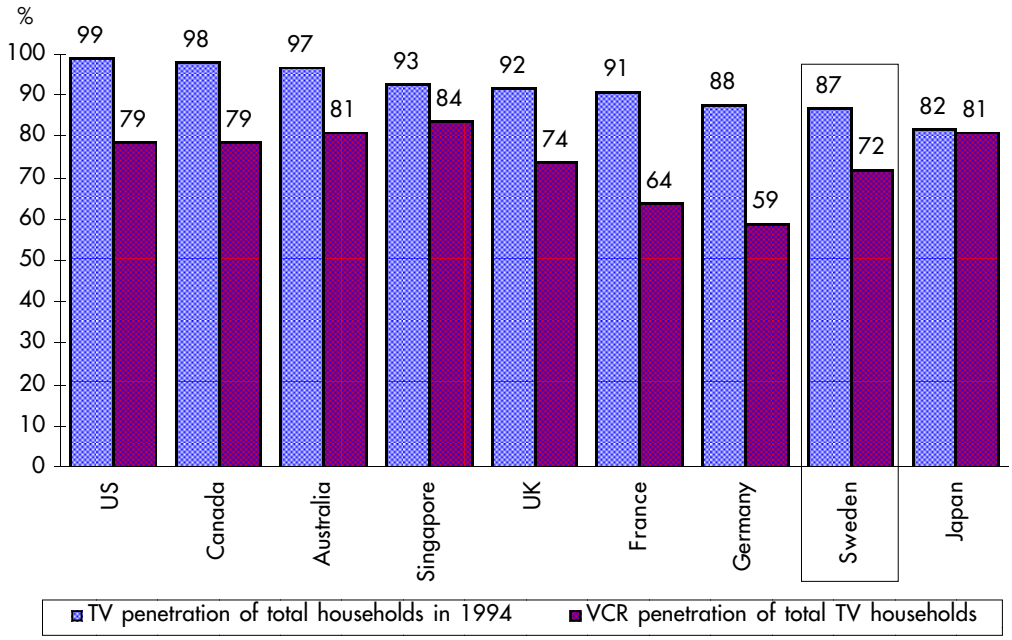

Fig. 12 mars 13: According to the DTI researchers, there is much debate as to whether consumer uptake will be PC-based or TV-based. The great advantage of the TV over the PC is the high installed base. As can be seen from this diagram, almost every home in the countries studied has a television set, and a majority have access to a VCR. It should be remembered, that the vast majority of the world's inhabitants are not included in these figures.
Sources: ITU/TBI Yearbook 1996/DTI: Development of the Information Society, An International Analysis, 1996

Multichannel Penetration of TV Households in 1995
In countries studied by DTI, in percent of total TV households, divided between DTH satellite connections and cable, plus total

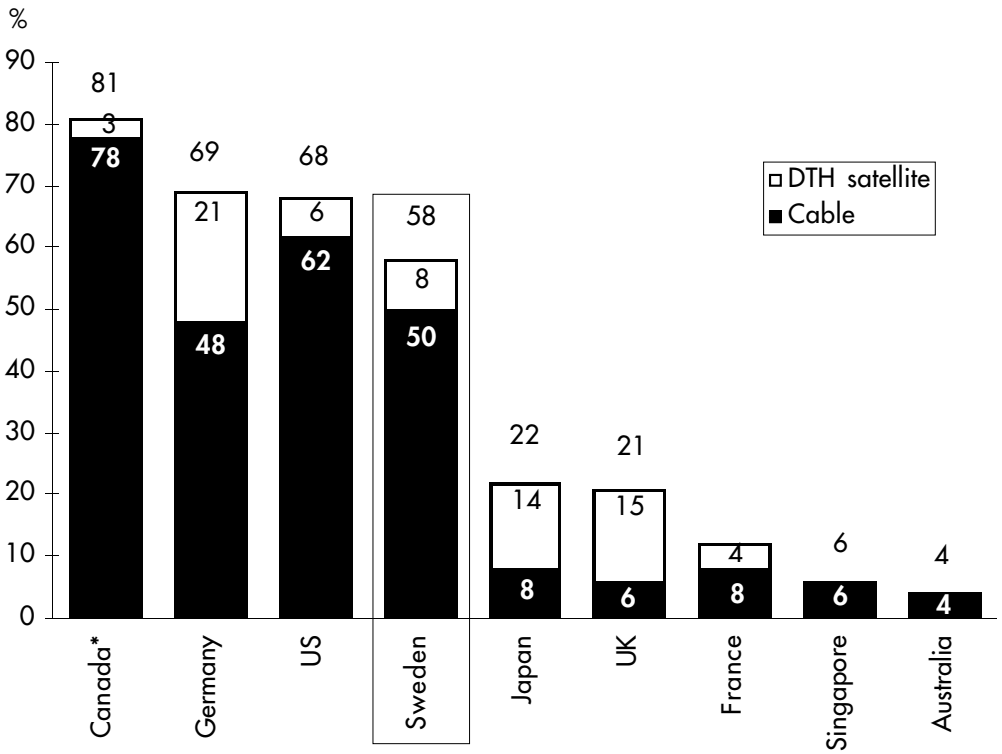

Fig. 12 mars 14: There is considerable differences in multichannel penetration through cable or satellite between the countries compared by DTI.
Sources: TBI Yearbook 1996/TV International Sourcebook 1996/DTI: Development of the Information Society, An International Analysis, 1996

Cable Subscribers in Percent of Homes Passed by Cable, 1995
In countries studied by DTI

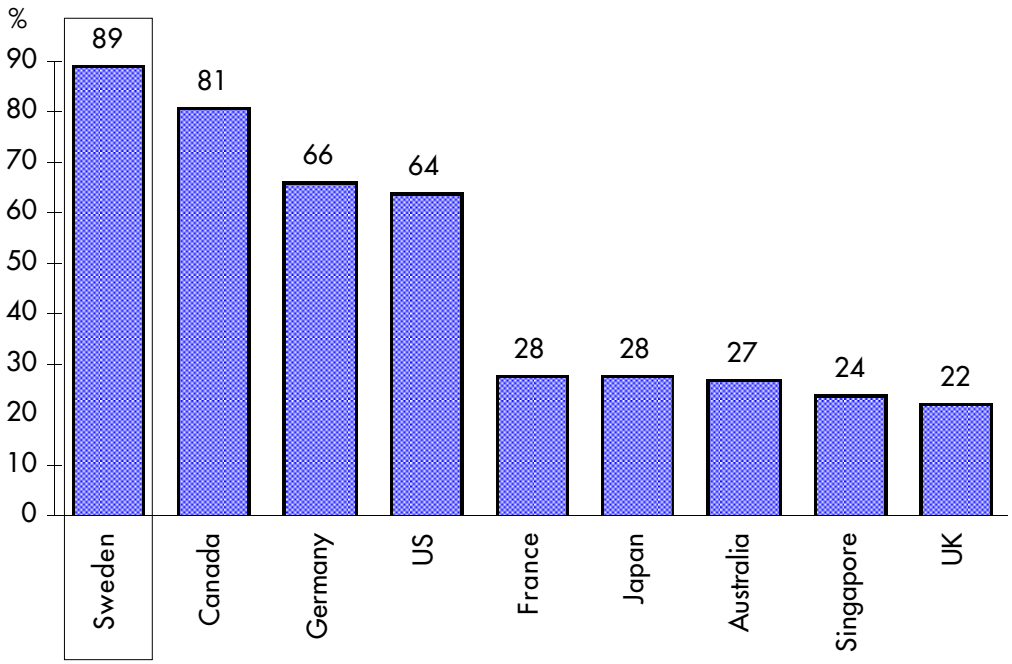

Fig. 12 mars 15: This diagram shows the percentage of households subscribing to cable television services among those homes passed by cable. In Sweden, 89% of all households passed by cable are subscribers; in the UK 22% are subscribers. France, Singapore, and Australia have a low cable TV penetration as well as a low satellite penetration. 68% of all TV households in Sweden has Teletext, compared to 47.8% in the UK, 42.2% in Germany, 42% In Singapore, and 6% in Australia. In 1994, 60.3% of all Swedish homes were passed by cable, in comparison to 99.3% in the US, 88.4% in Canada, 64.7% in Germany, 35.5% in Singapore, 30% In Japan, 25.8% in France, and 17.8% in the UK.

Sources: TV International Sourcebook 1996/DTI: Development of the Information Society, An International Analysis, 1996

Percentage of Day Spent Watching TV in 1995
In countries studied by DTI

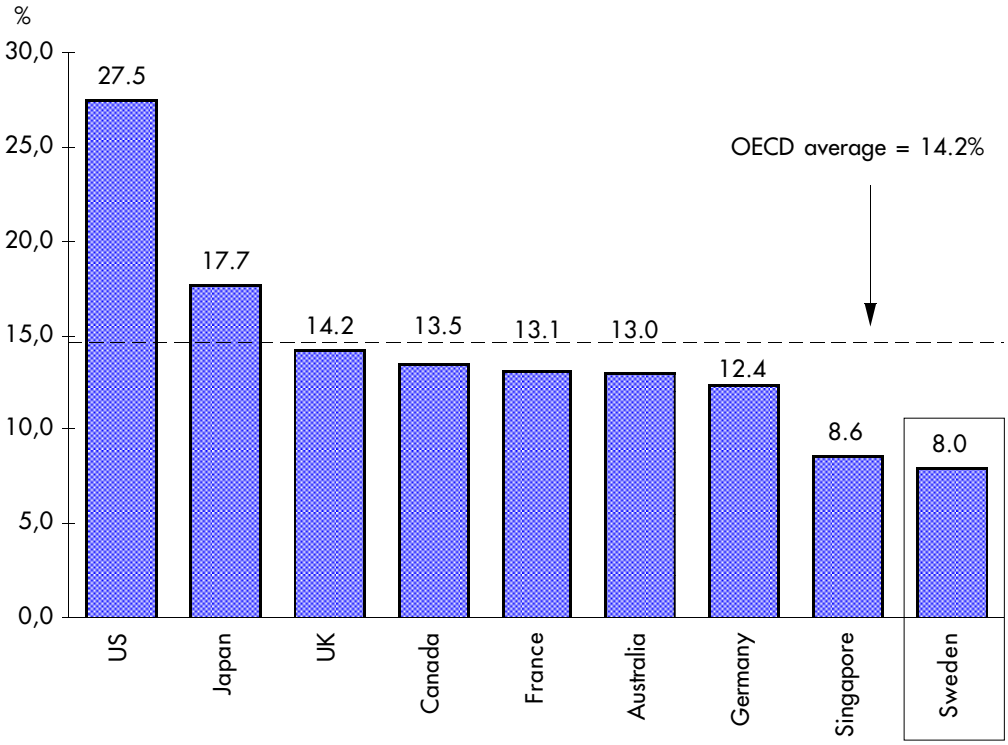

Fig. 12 mars 16: In spite of having TV sets available, Swedes are spending the least time watching television among the nationalities studied by the DTI. According to recent research, Swedes tend to spend less rather than more time watching TV. N.B. "day" is defined as "time awake"

Sources: TBI Yearbook 1996/DTI: Development of the Information Society, An International Analysis, 1996

8.3. Digital Television

*** Three Countries Have Formal Plans for DTT**

By autumn 1996, three countries had formal plans to launch digital terrestrial television — DTT: Australia, UK, and Sweden.

The Swedish government has decided that the digital ground network for digital television shall start broadcasting in 1998. The existing analogue network is planned to shut down in 2008. Before the shut-down, all viewers must exchange their old TV-sets for new ones in order to be able to watch television.

Digital Television is Growing Fastest in Europe
Number of Set Top Boxes per Region 1995 and 2000

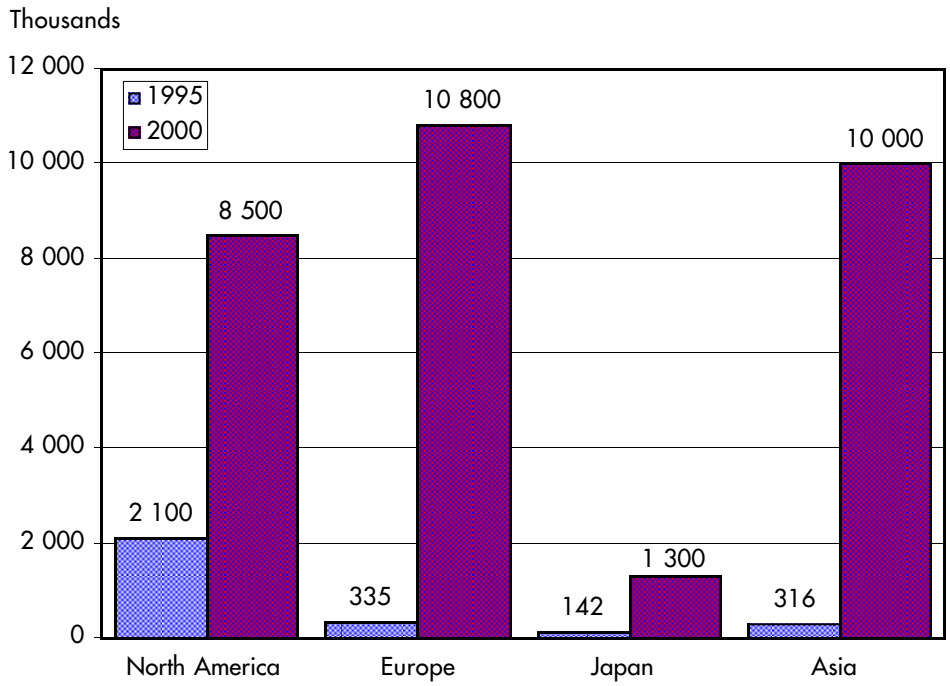

Fig. 25 Feb 25: The diagram shows the number of set top boxes in 1995 and 2000.The trend towards digital television is boosting the global semiconductor industry, according to the analysts firm Dataquest. The transition from analog to digital television will grow the semiconductor industry from US$ 575 million today to US$ 4.4 billion over the next years. Today's technical systems will propably survive until 1998 or 1999, when the first high resolution television sets will be available for a broader market. There are already systems for digital TV transmission in the market, for instance DirecTV, Primestar, and Echostar.
Sources: Dataquest/Computer Sweden, 17 January 1997 (After Fredrik Persson)

Within the ten years to come, digitisation will hit the world's television systems. Digital TV is part of the general digitisation of today's information systems — data communications, CD-technology and mobile communications. Digital TV opens up for interactive communication via whatever networks your TV-set is connected to. It can be used for training and education, for entertainment, for home shopping... you name it! Some 500 TV-channels will become available.

The common standard for the compression of digital TV and video signals agreed upon is called MPEG, an acronym for the Moving Picture Experts Group.

* Digital interactive TV will have a deep impact on High Definition TV. The USA FCC will soon define as a standard the digital system, which should be based on the MPEG-2. Europe which together with Japan has invested in analog HDTV according to the standard D2-MAC and HD-MAC via satellite, is now moving towards the digital logic.
Source: EITO: European Information Technology Observatory 94

8.4. Digital Audio

No sooner have electronics companies agreed on a single standard for building high-density video CDs than they are fighting again. This time the row is about the sound systems to be used on the new discs. The companies cannot agree on a system for redording the soundtrack on movie video discs, nor on which of several completely new sound systems to use for an audio-only version of discs, aimed at hi-fi buffs.

8.5. Do You Know This About The Brave New Media World in Sweden?

*** MTG to the Stockholm Stock Exchange?**

Modern Times Group, MTG AB, may be the next Swedish media conglomerate to become registered at the Stockholm Stock Exchange. The group is operating in five sectors - broadcasting, radio, publishing, electronic retailing, and media services. Currently, the Swedish conglomerate is active in Sweden, Norway, Denmark, The Czech Republic, France, and Finland. TV4, a popular Swedish television channel, belongs to MTG. In 1996, the MTG group had a media turnover of 3.6 billion SEK.
Source: Svenska Dagbladet, May 20, 1997

*** Largest VOD Tests in Jarlaberg, Stockholm**

The largest test of Video-on-Demand services in the world are carried out in Jarlaberg, Stockholm. The tests started in 1995, and are now entering a new stage. As off December 1996, clients participating in the test are using a so called home terminal instead of the decoder they started out with. The new terminal will allow the user to take a break in their viewing of a film in order to follow a live TV-program or just stop watching for any reason. This test is called ”Raket” (Rocket). Films and services are available via a video server, holding 250 GB, about equivalent to 100 films.

Source: Nätvärlden # 1, 1997

*** Swedish Media go Internet**

On March 7 1997, it was possible to look up 14 Swedish advertising newspapers, 49 Swedish dailies, and 249 Swedish magazines on the Internet via Sunet massmedia.

Source: The Internet: Sun Massmedia

8.6. Do You Know This About The Brave New Media World Everywhere Else?

*** Toy Story** has in some contexts been named ”film of the year” (in 1995). Two generations of playthings, a cloth cowboy and an action-figure rocket man fight and finally become friends in this animated film about all-too-human toys and thoughtless, even sadistic children. The film is computer created to 100%.

Source: Time International, December 25, 1996

***BSkyB**

BSkyB is a satellite-television broadcaster in the UK, having some 4.7 million households as subscribers, offering them 28 channels, most of them proprietory. BSkyB builds its network past another 250 000 British homes per month, and counts on adding 500 000 new subscribers over the next year. Sales of satellite dishes in Great Britain were higher in the first half of 1995 than they had been in the same period of 1994.

Source: The Economist February 10th 1996

*** Multimedia Programs in France**

In 1995, the French bought more than two million multimedia CD software packages, which is more than two and a half times as many as they bought in 1994. Some 15% of all households own PCs powerful enough to run these programs. 500 000 PCs dedicated to multimedia were sold for Christmas 1995. About the same percentage, 15%, of French households own a camcorder. This can be compared to 86% owing a car and 75% owing a hi-fi-machine.

Source: Le Nouvel Observateur, # 1631, du 8 au 14 fevrier 1996

*** The Future of Satellite TV in France**

According to a market research carried out by Télé Câble Hebdo in France on the prospects of the French adopting CTV and satellite TV, 82% of all viewers watching only the six established broadcasters, found that there were too many programs and that they did not have time to watch them all. 47% of those viewers who already receive cable TV programs, wanted more. 65% of all viewers did not want to pay anything for the reception of CTV, 13% could accept to pay 30 to 74 French francs, and 7% 150 French francs or more.
Source: Le Nouvel Observateur, # 1631, du 8 au 14 fevrier 1996

*** Mobile Telecom to All via Satellites**

Several large scale projects, based on a number of low-orbit satellites are on the drawing boards in several parts of the world. Two of them belong to two American consortia. One is the Iridium project, headed by Motorola, which is intended to bring global mobile GSM-quality telecommunications to every subscriber to a mobile telephone. 66 satellites will be needed to provide this service to be launched by 1998. There are Japanese, Chinese, Russian, Italian, Corean, German, and Thai partners involved in this project.

The second American project, Teledesic, is headed by Bill Gates of Microsoft. 840 low-orbit satellites are required for this project, which is intended to give every single inhabitant on our globe ”Internet in Space”, i.e. access to telecommunications, the Internet, and www. Mr. Gates is considering buying scrapped Russian missiles to bring his satellites into orbit, according to some sources.

But several more projects are in the pipeline. ACeS, Globalstar, ICO, Odyssey, Orbcom, and Planet 1, are some of the names. Globalstar is planning to launch 50 satellites to bring telecommunications to the underdeveloped part of the world. USA, Germany, France, and Corea, are among the partners. This is an interesting idea, taking into consideration that the present mobile telecommunications systems only covers 15% of ”terra firma” of our planet. Orbcom is a project to launch low-cost e-mail services via satellite. The US, Canada, and some European firms are partners. Among these, is Swedish Rymdbolaget. ACeS, Asian Cellular Satellite, is planned to provide 2 000 000 Asian users with mobile telecommunications by 1999.
Source: Computer Sweden, 25 February, 1997

* In April 1997, it was announced that Microsoft buys WebTV, a company that has developed an access system to the Internet for an ordinary television set. This means that Microsoft is getting involved in technology for net computers, NCs, simple computers without a hard disc. In simple terms, an NC goes to the Internet to collect the software it needs in order to execute a program. Microsoft had said until now, that the firm will not get involved in NCs and

set-top-boxes, which also is part of the business deal. The NCs and set-top-boxes will be provided with Windows CE and Explorer, well-known Microsoft software. Microsoft is planning to launch a new Windows version, into which the capability ”Broadcast Architecture” is integrated, and will give access to the Internet and television at the same time.
Source: Ny Teknik, 10 April 1997

* Some European media conglomerates belong to the leading audiovisual providers in the world. Among the 15 largest ones, are German ARD, with a turnover of US$ 5.7 billion; Dutch PolyGram, turning over US$ 4.7 billion; the German Kirch Gruppe with a turnover of US$ 4.2 billion; and likewise German Bertelsmann, which is generating US$ 3.8 billion, or 34.1% of its total turnover of US$ 11.3 billion, in the audiovisual business.

Further down the list, we find other important European audiovisual producers like the British companies Thorn EMI, BBC, Carlton, BSkyB, and Rank; Italian RAI and Fininvest; CLT of Luxemburg, and Canal Plus, and TF1 of France.
Source: OECD: Communications Outlook 1997, vol.1