Information Society Trends Special Issue:

"An Overview of 1995's Main Trends and Key Events"

EDITORIAL

1995: A Year of Consolidation

"Information superhighway" was the key word in 1994. The hype around the "infobahn" exploded together or soon after the launch of major government initiatives in the United States and in Europe to move towards the information age as well as the first multi-billion Ecu worth industry mergers in the US communications sector.

In 1995, the key word was "information society," a concept launched by the European Union and soon endorsed by a special ministerial conference of the G-7.

This illustrates the understanding by policy and decision makers, the media and the public of the formidable potential offered by new applications and services to revolutionise our daily life as well as the paramount economic, social and cultural issues at stake in the context of an increasingly globalised and knowledge-based economy.

Events in 1995 confirmed, if need be, that the information society is quickly emerging. Against this background, the essential duty of government is to ensure a smooth entry into the information age. That requires that the benefits of the information society, whether it concerns the quality of life, employment or education and training, are evenly distributed.

This is indeed the guiding principle of the European Union's strategy to move towards the information society. In addition to the on-going work, the Commission has launched in 1995 a number of new initiatives in the framework of its 1994 Action Plan.

As 1996 begins, it is useful to freeze the picture for a moment, look back at 1995 and try to identify and understand last's years key events and major trends.

Depending on the addressed area, carrying out this analysis may be more or less easy: policy and regulatory trends for instance are quite easy to identify and understand. Business strategy too can be more or less easily deciphered. Yet this may already be a lot more complex since there is often a part of guessing or gambling behind corporate moves. Consumers' interest can also be guessed, for instance in the light of the skyrocketing popularity of the Internet or the multiplication of commercial on-line PC

services.

The most difficult part of the exercise may in fact be to gauge the economic, social and cultural impact of new applications. Indeed, their visibility is still limited, making it all the more difficult to assess their penetration in the social fabric and in public interest areas.

The aim of this special issue of "Information Society Trends" aims at contributing to keeping abreast with the pace of change as well as evaluating Europe's strengths and weaknesses in the global race for leadership in the information age.

1. LEGISLATION AND POLICIES

Trends: The year 1995 was marked by a generalised trend all around the world towards liberalisation and privatisation in the telecoms sector. While Europe and North America went ahead with their respective plans, Japan showed signs that it intends to follow suit. Several Central and Eastern European countries, in particular the Czech Republic and Poland, as well as Russia, also took significant steps towards liberalisation and privatisation. Similar moves were taken across the Asia-Pacific region, particularly in Hong Kong, India, Indonesia, Singapore, South Korea, Taiwan, Thailand and even in Vietnam. Yet liberalisation measures remained preliminary with steps such as the award of licenses to foreign firms or consortiums including foreigners or the partial sell-off of public operators. Liberalisation also progressed in Latin America, particularly in Mexico, Brazil and Bolivia. In Africa too, several governments, including those of Cameroon, Congo, Ghana and Senegal, unveiled liberalisation plans.

Europe

A landmark event of 1995 was the hosting by the European Commission in February of a G-7 Ministerial Conference on the information society which endorsed a series of core principles that should guide the world's entry into the information age.

They aim at striking a balance between the role of the private sector, which is to make investments for the rapid development of infrastructure and services, and the role of public authorities, which have to remove obstacles to investment, particularly by defining a clear and stable regulatory framework, and promote the social and cultural dimension.

G-7 nations also agreed to launch 11 joint application projects, mainly in areas of collective interest such as electronic libraries, museums and galleries, education and training or the management of the environment and natural resources.

Finally, they pledged to devote particular attention to less developed nations. To concretise this commitment, the G-7 is sponsoring a Conference on the information society and development that will be held in South Africa in May 1996.

As far as the European Union is concerned, it has launched a permanent dialogue on the information society with the associated countries of Central and Eastern Europe. A similar dialogue has been initiated with the Mediterranean and Latin America.

In 1995, the European Commission submitted the last regulatory proposals required to achieve the liberalisation of all telecoms services and infrastructures by 1998.

It drafted in particular a directive setting up a common framework for the attribution of telecoms licenses which would aim at securing that public interest requirements such as universal service are met and that licences are granted on the basis of open, transparent and non-discriminatory procedures. Another important directive is concerned with the harmonisation of conditions for the access to and use of public telecoms networks and services. It would in fact update the existing Open Network Provision (ONP) legislation.

The Commission also took immediate steps towards increased competition, including legislation liberalising cable TV networks and allowing cable operators to supply telecoms services from 1996, as well as legislation liberalising mobile and personal communications services and infrastructures in 1996. Another directive liberalising alternative infrastructures in 1996 (the networks of public utilities) is to be adopted in early 1996.

The Commission proposed new programmes to promote the European information-related industry, particularly the multimedia content industry (INFO 2000), the language-based industry and the multimedia exploitation of Europe's cultural heritage (RAPHAEL). A new MEDIA II programme worth 310 million Ecus from 1996 to 2000 was also adopted to support the European movie industry.

To boost the development of trans-European networks, the Commission drafted a Decision proposing a mechanism to identify common interest projects that can receive Community support in domains of collective interest, for instance health or education.

The Commission reviewed several information-related ventures under the European merger regulation to verify whether they posed a threat to competition in Europe.

A number of ventures were cleared, for instance in the telecoms sectors Vebacom and Cable & Wireless Europe, two companies respectively set up in the German and European market by Germany's Veba and Britain's Cable & Wireless (C&W).

Atlas, a joint venture between Deutsche Telekom and France Télécom was cleared in principle. An official decision is expected together with that on Phoenix (France Télécom, Deutsche Telekom and the US long distance operator Sprint) around mid-1996. Phoenix has already been cleared by US competition authorities.

Some ventures are currently under Commission scrutiny, for instance in the area of commercial on-line services AOL-Europe, an alliance between America OnLine and the German media giant Bertelsmann as well as an alliance between AOL-Europe and Telekom-OnLine, another commercial on-line service owned by Deutsche Telekom.

European Union Member States are progressively getting ready for 1998. Hence, most countries have taken steps to introduce more competition in the telecoms sector.

Some are proceeding carefully, for instance France, who has authorised the railway company SNCF to lease transmission capacity to mobile operators as well as the US telecoms group MFS to build its own fibre optic network in Paris to supply corporate services. France has also pledged to liberalise alternative infrastructures by July 1996.

Some other countries have taken more ambitious steps, for instance Britain, who has granted the American telecoms giant AT&T a nationwide operator license. Overall, the mobile sector has been liberalised all across Europe.

Regarding the preparation of national telecoms operators to a liberalised environment, most Member States have opted for at least partial privatisation of their public operators, even though this is not required by European Union legislation. Again, France acted carefully by postponing any decision until 1996, while Belgium boldly decided to sell 49% of Belgacom to a consortium led by America's Ameritech.

United States

After the death, in September 1994, of draft bill overhauling the 1934 US Communications Act, US Congress resumed work in 1995 on a new piece of legislation.

The aim of the new bill remained unchanged: liberalising America's communications sector by letting cable operators, local telecoms companies and long distance operators enter each other's business with almost no restrictions. The new legislation would also relax media ownership rules and introduce the V-chip, a device that would allow parents to ban pre-selected kid-unfriendly programming of a violent or sexual nature.

The US House and Senate adopted separate bills but failed to merge them into a single before the end of 1995. Based on the provisions of the two draft bills, the Clinton Administration threatened to veto the new legislation because it would encourage media concentration and lead to higher cable TV and local phone prices. But strong support for the bills in both Chambers suggest that such veto could be overturned.

In the meantime, the Federal Communications Commission and federal courts have started introducing limited deregulation. Bell Atlantic for instance has been authorised to offer video programming and services over its telecoms network in Virginia and TV programming nationwide by satellite, and to buy radio and TV stations outside its area.

The FCC has also adopted new rules for foreign ownership of US telecoms groups which will allow foreign companies to own up to 100% of a US telecoms firm while foreign ownership had so far been limited to a maximum of 25%.

But the new rules aren't that liberal since the purchase of more than 25% of a US telecoms firm would only be cleared if the foreign company's home telecoms market is sufficiently open to US companies. That evaluation will of course be left to the FCC.

The FCC has even more leeway in accepting or rejecting a venture, whether or not they meet the required criteria, depending on it serving the US public interest or being in contradiction with US foreign policy or national security interests.

Japan

The Japanese government outlined plans to introduce more competition and openness in the telecoms market by removing the distinction between local, long distance and international communications, facilitating market access for foreigners as well as relaxing foreign ownership rules. Government advisory panels also launched the debate about the splitting up of the national operator NTT. The threat of dismantling has already pushed NTT to yield to competitors' pressure to let them connect to its local network.

Japan also unveiled ambitious plans to connect all Japanese households to the information superhighway by 2010 at an estimated cost of 860 billion Ecus and launched several technological ventures between the public and private sectors.

In spite of these moves, the situation remains uncertain. The planned deregulation would be a complex and lengthy process. As for Japan's information society plans, they are likely to be slowed down by rivalries between ministries.

Nevertheless, given the fact that both government and the powerful employers' association Keidaren are pushing towards deregulation, one can anticipate some degree of liberalisation and opening to foreign firms in Japan in the coming years.

Africa

A trend towards liberalisation has emerged in Africa too, but governments' motivation behind these plans are not always easy to identify. In the case of Cameroon for instance, the move could be a mere sign of good will towards the International Monetary Fund as two previous privatisation plans have already collapsed.

The example of South Africa also questions the appropriateness of such plans. Indeed, the South African government said that liberalisation and privatisation would not be on the agenda until the country manages to significantly narrow the gap in access to a simple telephone between its black and white population. Indeed, as a result of residential segregation South Africa has 60 phones per 100 Whites and 1 per 100 Blacks .

With an average of 1.6 phone per 100 people, the information society could seem to be a remote dream seen from the African continent. As regards to the Internet, 15 African nations have no access to the Internet while only five have access to all Internet facilities and the other only access to e-mail.

2. INFORMATION INFRASTRUCTURES

Trends: A key trend is the emergence of multimedia satellite communications systems capable of providing interactive multimedia communications around the world, a sector in which the USA are taking a leadership with the launch of ambitious projects. Also significant was the deployment of new networks in Europe and in the USA in preparation for the liberalisation of the telecoms sector.

Europe

The most significant infrastructure development was the growing importance of alternative networks as many railway companies and electricity utilities take steps to build on their private networks to become leading telecoms players after the 1998 liberalisation.

Hence Hitrail, a consortium comprising 11 European railway companies, agreed with America's Global Telesystems Group (GTS) to set up a telecoms joint venture, Hermes Europe Railtel, to develop a trans-European infrastructure along railway tracks.

At a national level, Germany's Deutsche Bahn and France's SNCF both set up a telecoms unit and are now seeking strategic partners. As for the Dutch railway company NS, it has already found a telecoms partner: the British telecoms operator BT.

Meanwhile, Germany's largest electricity utility, RWE, launched talks with its smaller counterparts to interconnect their networks, a process that has started bearing fruits.

United States

The key infrastructure development in the USA was the multiplication of projects aimed at creating global interactive multimedia satellite communication systems.

There are now four of them: Astrolink, launched by the US aerospace group Lockheed Martin ($4 billion); Voicestar, sponsored by the telecoms giant AT&T; Teledesic, backed by Microsoft chairman Gates and cellular entrepreneur McCaw ($9 billion); and Spaceway, a project of Hughes Aircraft, the aerospace arm of General Motors ($3.2 billion). A fifth system, CyberStar, sponsored by the US aerospace group Loral would only cover the USA but cost only $400 to $500 million.

The five companies have applied for a license with the US Federal Communications Commission (FCC) which will review the applications in 1996.

This dynamism contrast sharply with the absence of any similar plans in Europe, suggesting that this type of infrastructure and the related markets and services could be entirely left to US companies. So far, European firms are only involved in the global voice and data satellite systems Iridium, Globalstar and Odyssey, which are also US-led.

Another important trend in the United States was the strategy of long distance operators and cable operators to deploy local networks which would allow them to bypass the networks of the seven local telecoms monopolies (Baby Bells) to offer local telecoms services once the liberalisation of the US communications market has been completed.

Hence, the long distance operator MCI said it would spend $600 million on a terrestrial network. But most other firms plan to rely on mobile networks as illustrates the success of a government auction to sell 100 cellular licenses in 50 markets for "personal communications services" (PCS) which raised $7 billion. Top bidders were the long distance operators AT&T and Sprint and the cable operators TCI, Comcast and Cox.

3. MARKETS AND COMPANIES

Trends: The most striking trend was the intense degree of corporate preparation in the information-related sectors for the now imminent liberalisation of communications infrastructures and services. This led to major ventures in each economic region as well as important cross-regional alliances. The level of activity around each sector varied from one region to another. In Europe and at a trans-Atlantic level, the emphasis was clearly on telecoms, while it was on the audiovisual sector in America and on the electronics industry in Japan. Also important was the progress made towards industrial convergence but not as quickly and deeply as one could have expected.

Europe

In the face of the prospect of worldwide liberalisation of the telecoms sector, European telecoms companies started to anticipate the change, thus leading to major alliances. These ventures are often characterised by the growing presence of new entrants with no telecoms background as well as North American companies.

Germany, Europe's largest telecoms market, has attracted the greatest attention with not less than five major ventures, including two between German and North American companies (Thyssen-BellSouth and DASA-Northern Telecom), two between German and British firms (Viag Interkom-BT, Veba-Cable & Wireless) and the last between Germany's CNI (Mannesmann-Deutsche Bank), America's AT&T and Europe's Unisource (alliance of the Dutch, Spanish, Swedish and Swiss national operators).

Italy too raised a lot of interest with the setting up of three major alliances revolving around Olivetti: a telecoms alliance with the US Baby Bell Bell Atlantic (Infostrada); a telecoms alliance between Infostrada and France Télécom; and a cable TV venture with another Baby Bell, US West (Videostrada).

A significant move in the French market was the setting up of Iris, a telecoms venture between the French mobile operator CGE and Uniworld, a venture between the European consortium Unisource and AT&T, thus giving AT&T a foothold in France.

At European level, the Unisource consortium was reinforced by the entry of Spain's Telefonica. In addition, a global telecoms alliance was sealed by the Italian national telecoms company STET and the US computer giant IBM. It is the fourth transatlantic venture after Concert (BT-MCI), Uniworld and Phoenix.

The audiovisual sector was marked by the multiplication of alliances between European television or movie groups and American media powerhouses.

That includes a movie production and distribution alliance between France's UGC and 20th Century Fox, a production accord between France Télévision and Time Warner, and the launch of Disney channels by CLT in Germany and by BSkyB in the UK.

This search for US partners reflects the increasing weakness of Europe's audiovisual industry, which is highlighted by the latest figures on the Europe-American audiovisual trade imbalance released by the French research institute IDATE. A further degradation of 10% took place between 1992 and 1993, bringing the total deficit to a record 3 billion Ecus -- almost twice the 1988 figure.

United States

A key trend in 1995 was the multiplication of mega-merger in the US audiovisual sector. First came the purchase from the Japanese electronics group Matsushita by the Canadian wine, spirituous and fruit juice group Seagram of 80% worth $5.7 billion of the US music and audiovisual giant MCA, which controls the Hollywood studio Universal.

Second came Walt Disney's decision to spend $19 billion on buying the media empire of Capital Cities, which comprises the network ABC. It would be the second largest merger in US history, and would turn Disney into the world's largest media group.

It was closely followed by the decision by the US industry conglomerate with TV assets Westinghouse to spend $5.4 billion on buying the CBS network.

Finally came the decision by Time Warner, the second largest US cable operator and owner of the Warner Bros. studio, to purchase for $8 billion the media group Turner Broadcasting System, which controls the cable news channel CNN. The venture would actually create a media powerhouse even larger than Disney-Capital Cities.

Behind the Disney-Capital Cities and Time Warner-Turner ventures are vertical integration strategies which aim at controlling the entire audiovisual added-value chain, from production to distribution. Earlier in 1995, Time Warner made a first attempt to strengthen its distribution operation with the launch of a new network, WB.

This strategy was inaugurated in 1994 with the purchase by the media giant Viacom, which controls the worldwide successful musical channel MTV, of the Paramount movie studio, worth $9.6 billion. In 1995, it launched its own network, United Paramount.

Another motivation behind this media merger mania is a US justice decision authorising broadcasters to produce their own prime-time programming, thus allowing them to compete with studios. A merger strategy actually prevents such rivalry.

The Westinghouse-CBS and Seagram-MCA ventures don't fit any of these schemes. In fact, Westinghouse would become the largest US broadcaster but would remain weak in production while Seagram has no distribution network.

In the computer sector, a major event has been IBM's decision to buy the software producer Lotus Development for $3.5 billion. This move, which would be the largest merger in the history of the computer software industry, is part of IBM's counterattack against Microsoft. It intends to build on Lotus' Notes software for on-line group working.

Microsoft has also come under increasing pressure from smaller rivals which are leaders in a specific market segment such as Netscape (Internet navigation software), Sun Microsystems (corporate networking equipment and software), Silicon Graphics (graphics software and workstations) or Oracle (database software). But Microsoft looks set to launch products allowing it to fire back on all fronts.

The consolidation of the cable TV industry continued in 1995 with the largest companies growing yet larger thanks to the purchase of their smaller competitors.

TCI remains number one and Time Warner number two, but they are now almost neck to neck with roughly 11 million subscribers each. Next comes Comcast with 4.3 million customers, followed by Continental Cablevision, Cox and Cablevision Systems which, with only three to four million customers, do not play in the same league.

The big bang in the US telecoms sector was AT&T's decision to split itself by the end of 1996 into three separately quoted companies specialising in telecoms services, telecoms equipment and computers. The decision is part of a drive to rationalise its activities in view of deregulation and to prevent them from impeding one another. Baby Bells and European operators for instance are less willing to buy AT&T equipment as they face the prospect of direct rivalry with AT&T in the services segment.

The move certainly questions the success of vertical integration in the telecoms industry and the marriage of telecoms and computers. Indirectly, it also raises questions about the viability of multimedia convergence or at least about its real scope: does the marriage of technologies really lead to a marriage of professions?

Concerning the convergence of the information-related sectors, there have been numerous rapprochement between companies for limited-scope collaborations.

One of the most striking example is the setting up of a joint venture by the long distance operator MCI and the media giant News Corp. (MCI also agreed to take a 13.5% stake in News Corp.). The two partners would build on their respective strengths in transmission and programming to jointly develop new information services worldwide.

Yet overall, the merger of the telecoms, computer, electronics and media sectors into a single multimedia industry remains extremely uncertain.

So far, only Microsoft, the world's leader in PC software, emerged in 1995 as a truly multimedia firm with operations in most information-related activities, including the distribution platform with the Microsoft Network and the technological platform, for instance with the video-on-demand server Tiger, the operating system MS-DOS, the presentation interface Windows 95, a partnership with Visa to secure on-line payments.

As for Microsoft's content activities, they include movie production through a stake in the DreamWorks SKG studio, television through an alliance with the network NBC, production and licensing of interactive video games through two joint ventures (DreamWorks Interactive set up with DreamWorks, and Gamebank set up with the Japan's Softbank), the purchase of electronic reproduction rights of art treasures through its subsidiaries Continuum and Corbis, and the production of CD-ROM titles.

Japan

In Japan, the electronics industry is increasingly emerging as the key actor in the multimedia sector. This situation contrasts with Europe, where telecoms companies and publishers seem to be the main players, and the United States, where the key players seem to be operators as well as computer and audiovisual groups. In fact, this mainly reflects the respective strengths and weaknesses of each of these economic regions.

For Japanese electronics groups, playing in the multimedia market means stepping into the computer business, often in collaboration with US companies.

Pioneer for instance has launched a line of multimedia PCs based on Apple's MacIntosh operating system and building on its expertise in entertainment (hi-fi, video, TV). Pioneer also agreed to set up a joint venture, Sierra Pioneer, with the US video game producer Sierra On-Line to develop or adapt existing video games for the specific needs of Asia's market.

Sony is following a similar strategy. It has in particular sealed an alliance with America's Intel, the world's leader in microprocessors, to launch in the second half of 1996 a line of multimedia PCs as easy to use as a television set.

As for Hitachi, it has agreed to team up with America's Oracle to jointly develop and produce video-on-demand servers and set-top boxes for interactive television.

Latin America

Satellite broadcasting seems to be a promising market in Latin America as leading Latin American and US corporations are making multi-million dollar investments.

In Brazil, the leading Brazilian media group Globo has agreed to join forces with the US media group News Corp. to invest 200-350 million Ecus over five years in the development of a satellite TV service. The two partners would rival another satellite venture comprising Globo's main rival, TV Abril, Mexico's leading broadcaster Grupo Televisa and America's Hughes Communications.

At a continental level, Globo, Grupo Televisa, News Corp. and the US cable operator TCI have agreed to jointly offer direct-to-the-home TV services.

As regards to satellite infrastructure, the battle is looming between PanAmSat, Intelsat and a new comer, NahuelSat, a direct-to-the-home satellite TV system covering the entire continent due to be launched in 1996 by a Euro-Latin American consortium.

Another new Eldorado, particularly from the point of view of US broadcasters, is Asia. Indeed, companies such as Turner Broadcasting System (CNN, TNT-Cartoon), Viacom (MTV), Time Warner (HBO), News Corp. (Star TV) and several smaller TV channels have significantly reinforced their presence in the regions, despite censorship threats in countries such as China and Singapore.

4. MULTIMEDIA APPLICATIONS AND PRODUCTS

Trends: The year 1995 was marked by the boom of the on-line sector. That includes the continued skyrocketing popularity of the Internet in America and its explosion in Europe as well as the continued growth of commercial on-line services in the USA and their mushrooming in Europe and to a lesser extent Japan. Also striking was the launch of a multitude of interactive TV trials, particularly in Europe and also Japan. The launch of similar was also announced in Chile and China. Yet the fast decreasing enthusiasm surrounding interactive TV in the USA, which had taken an early start, casts a shadow over the success and viability of interactive TV. Meanwhile, a compromise between Philips-Sony and Toshiba avoided a worldwide war over the format of future video CDs.

Europe

Interactive television trials exploded all across Europe. They mainly aim at testing the technological platform of new interactive video services such as video-on-demand, home-shopping and banking, on-line travel agencies, etc., as well as analysing whether their content meets the needs and expectations of private and corporate test users.

The launch of such trials was announced in Germany by RWE (Multimedia Gelsenkirchen), Vebacom (Infocity NRW) and Deutsche Telekom, in Britain by BT and the US-controlled cable operators Bell Cable Media, Nynex-Cablecomms and Telewest, in Spain by Telefonica (InfoVia) and in France by France Télécom.

In Helsingborg, a Swedish city of 108,000, the telecoms operator Telia launched CityNet, an urban infobahn consisting of fibre optic network passing 98% of businesses and 75% of homes. Fibre links to the home or the office will be established on demand.

Meanwhile, leading German and European TV, media and telecoms groups gathered around the German media giant Bertelsmann and the French private TV group Canal+ to jointly develop TV set-top boxes for the development of interactive television services.

Connected between the TV set and the transmission network, so-called set-top boxes are required for the management and

decoding of the huge amounts of digitised information required by new services, in particular video-on-demand.

The alliance, MMBG, comprises the German telecoms operator Deutsche Telekom, the British-German telecoms group Vebacom, the German media group Kirch, the German TV channels ARD, ZDF and RTL, as well as the European media group CLT.

Bertelsmann, Canal+ and CLT have also agreed to jointly develop set-top boxes for digital satellite broadcasting which will start in 1996 in Europe.

Commercial on-line PC services have mushroomed in Europe. The launch of at least a dozen of them was announced, including Vnet (by Britain's Virgin), Wanadoo (by France Télécom and the French publisher Havas), Infonie (by the French interactive game software manufacturer Infogrames Entertainment) and Olivetti's Italia OnLine.

Particularly promising is AOL-Europe, a venture between the leading US on-line service America OnLine and the German media giant Bertelsmann. It was succesfully launched in Germany in December 1995 and linked to Deutsche Telekom's T-OnLine.

Europe OnLine on the other hand faced difficulties with partners such as the French and British publishers Hachette and Pearson stepping in and out almost overnight. Sponsored by the German publisher Burda, it was finally launched in December 1995.

Regarding new multimedia products and equipment, European computer manufacturers have shown a lot of creativity. The Italian computer group Olivetti for instance has launched the world's first hybrid, Envision, a multimedia PC that connects to a TV, has the functions of a fax or an answering machine, can play CD-Roms, audio, photo and new video CDs, and allows for easy connection to the Internet.

Envision's first American competitor, Apple's Pippin, will not be released until September 1996. The same applies to Japan, where Mitsubishi is planning to launch an hybrid, Intelligent TV, in 1996. It would be a multimedia television set with an in-built PC, CD-ROM player and modem which would offer direct Internet access.

Europe could also be at the forefront as regards to network computers. Priced less than 400 Ecus, they would consist of PCs stripped of their hard drive that would only be able to perform the routine functions of a PC but allow users to easily exploit on-line resources via a high-speed modem. The British computer maker Acorn, which is controlled by Olivetti, is likely to be the first to come up with a network PC by mid-1996.

Unites States

US sponsors of interactive TV trials have experienced a number of setbacks. A striking example is the Orlando experiment which was launched with a lot of jamboree by the cable operator Time Warner and the Baby Bell US West. But actual testing was delayed by eight months and tested households reduced to a handful instead of 4,000.

Another Baby Bell, Bell Atlantic, dropped plans, at least temporarily, to build interactive video networks, and its counterpart Pacific Telesis down-scaled its own plans to build up a fibre optic network capable of carrying new services across California.

They instead preferred to step into one-way broadcasting whose short-term profitability looks more promising and which could prove a faster track into the TV business. Bell Atlantic, Pacific Telesis and Nynex for instance have launched plans to build up a wireless system providing 120 TV channels via a set top box.

These developments raise questions both as regards to the technological maturity and financial viability of interactive TV services, at least in the short term. The ball is now in Europe and one can only wait on see whether European trials will be as ill-fated.

Already well established in the USA, commercial on-line PC services have been joined in 1995 by a newcomer, the Microsoft Network (MSN), launched by Microsoft with the backing of the cable TV operator TCI with a 20% stake. MSN is a serious contender which is soon expected to play in the top league together with America OnLine with 3.9 million subscribers, Compuserve with 3.5 million and Prodigy with 1.7 million.

The raise of the Internet and its multimedia section, the World Wide Web, could be questioning the long-term viability of commercial on-line services. Those are trying to harness the Web phenomenon rather than allowing it to erode their markets by offering Web access through user-friendly interfaces. Providing Internet access is in fact becoming a must for telecoms operators on both sides of the Atlantic as well as for cable operators.

Even Microsoft has been caught off guard by this success. Hence, it has been forced within a single year to entirely redirect its strategy, originally focused on MSN, towards an ever increasing emphasis on the Internet. It now aims at becoming a leading supplier of Internet products by linking all its products, even MSN, to the Internet.

Visibility on the Net has in fact become a necessity for big corporations in the USA and increasingly in Europe. The issues at stake are a company's image as well as a new business outlet as on-line marketing and transactions are on the rise.

A major remaining obstacle to the development of on-line business is the lack of security of on-line payments and commercial transactions. To solve this problem, leading companies from around the world have embarked on a quest for Holly Grail of cyberspace, a software or encryption technology that would offer the ultimate security guarantees against hackers. That includes financial institutions like Visa, MasterCard or Bank of America and software manufacturers such as Microsoft or Netscape.

Japan

Like in Europe, 1995 has seen the launch of several interactive video services trials and projects in Japan. For instance, the electronics group Fujitsu, Japan's leading business newspaper Nihon Business Publications, the Japan Travel Bureau, the national broadcaster NHK and the national telecoms operator Nippon Telegraph & Telephone (NTT) have agreed to jointly launch a multimedia experiment.

NTT has also joined forces with the electronics giant Sony and the US telecoms giant AT&T to launch a on-line PC trial, NTT Future Agent Network, worth 4.5 million Ecus

An industry-academic multimedia consortium has also been set up by three Japanese universities and 11 Japanese and US corporations to launch multimedia projects.

A number of ventures have been sealed in order to launch commercial on-line services, for instance between NTT, Sony, the electronics group Yamaha, the computer maker Victor and the video game leader Sega, with a small 750,000 Ecus investment.

Sony also joined forces with the US credit card giant Visa, while Fujitsu and Sega teamed up to supply on-line services via Sega's Saturn game-station.

Finally, the electronics group Mitsubishi has agreed with People World, Japan's third largest PC communications firm, and the US software producer Worlds to launch in April 1996 a three-dimensional on-line PC shopping mall, People Space.

A worldwide industry war over the format of future digital video compact discs (DVD) has been avoided thanks to a compromise struck between the proponents of the two rival technologies, the Euro-Japanese tandem Sony-Philips on one side and their Japanese competitor Toshiba on the other. DVDs would replace both audio CDs and video tapes.

The accord opens the way to the manufacturing and marketing, probably in the autumn of 1996, of the first DVD players and DVD titles. Manufacturers hope to introduce a recording facility within the next three years or so.

Japan seems to be taking a worldwide leadership in the development of the plasma technology for the next generation of high-definition flat TV screens which will replace cathode-ray tubes at the horizon 2000. Leaders in this field are electronics manufacturers such as Fujitsu, Sony, NEC or Matsushita.

5. SOCIAL, SOCIETAL AND CULTURAL ISSUES

Trends: Last year's social trends were extremely contrasted. On the negative side was the increasing number of lay-offs in the telecoms sector. On the positive side, there was increasing emphasis on the education and training dimension and their importance for a balanced entry into the information society. In fact, the two trends are closely related since education and training are certainly the major weapon against unemployment.

Europe

The liberalisation of telecoms and the privatisation of public telecoms operators are raising serious worries regarding employment trends, at least in the short term.

Britain's former public operator BT for instance decided to axe 12,000 jobs in 1996, halving its staff to 120,000 from 244,000 since 1989. A similar trend was observed in Sweden where Telia cut its workforce to 30,000 from 48,000 in 1991.

In fact, growing competition in the telecoms sector does not only put pressure on newly privatised operators, as is demonstrated by AT&T's recent decision to lay-off 40,000 employees out of 158,000 over three years. The move will bring total cuts to 125,000 since the break up of the company's former telecoms monopoly 12 years ago.

This trend shouldn't however hide the fact that a number of new information-related activities is on the rise, for instance mobile telephony or corporate telecoms services, which impact in terms of creation of jobs is more difficult to evaluate than lay-offs.

In 1995, the European Commission established two independent bodies -- an Information Society Forum and a high-level group of experts -- which role is to analyse social, societal and cultural issues related to the information society. They will also submit recommendations on ways to address related concerns.

The stakes of education and training are particularly high in the context of the information society, especially in the context of unemployment, since investing in these domains would significantly improve people's ability to find a job. Key issues here would be to adapt learning schemes and institutions to the requirements of the information age.

Amongst the initiatives the Commission has launched to meet the challenges of education and training were the release of a White Paper on teaching and learning in the cognitive society which emphasises the importance of new technologies in the life-long learning process, and the setting up of a Task Force on educational multimedia software.

The importance of education in and for the information society is also increasingly recognised at the level of Member States.

In Britain for instance, government has launched "Superhighways for Education - The Way Forwards," an initiative that has established public-private partnership for the funding of 23 pilot projects which overall will receive 8.5 million Ecus.

As for the French government, it has decided to fund 170 public interest projects, including 27 in education and 11 in culture. They would receive over 45 million Ecus in 1996, while another 4.5 million Ecus would go to multimedia publishing.

A growing number of information-society initiatives have also been launched at local level, for instance in the area of on-line government in Antwerp, Bologne and Rotterdam.

These projects provide citizens with electronic facilities that aim at improving access to public information, facilitating contacts with local administration or providing guidance for filling in administrative forms. They also contribute to the revival of democratic life and participation in the local public life by allowing people to easily express their views on government or communicate on-line with local administrators.

United States

As in Europe, a main focus is the introduction of new technologies in schools. Indeed, US President Bill Clinton has launched a nationwide initiative to connect all US classrooms to the Internet by 2000. This would be achieved through public-private partnerships with no involvement of federal money.

US firms are willing to pay. They are sponsoring a nationwide scheme, Technology Learning Challenge Grants, worth $370 million. In California, Pacific Telesis and a dozen of high-tech firms have launched Education First, worth $100 million.

The degree of industry commitment to public interest projects seems to be one of the most striking difference between the USA and Europe, where the main initiatives in sectors of collective interest are driven by government rather then businesses.