

THE INFORMATION SOCIETY



ECIS: 2



Europe
on the move



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European Commission

Directorate-General for Information, Communication, Culture and Audiovisual
Publications Unit — 200 rue de la Loi, B-1049 Brussels

Manuscript completed in December 1995

Cover: EC, Van Parys Media

Drawings: Puig Rosado

Publisher: Office for Official Publications of the European Communities
Luxembourg, 1996

ISBN 92-827-6238-6

Cataloguing data are given at the end of this publication

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Printed in Italy

Printed on white chlorine-free paper

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As information and communications technologies continue to race ahead, they will bring with them sweeping economic and social change in the European Union. Indeed, there is already talk of a third industrial revolution, ushering in the information society. The new technologies provide the EU with some of the tools it needs to embark on some of the urgent tasks facing it, such as maintaining Europe's competitiveness, reducing long-term unemployment and protecting the environment.

In the long term, the information industry will create a great many new occupations and jobs are gradually being created in the information industry. In this new industry, the product, information, is delivered to users on 'pollution-free' information highways. The Europeans need to move quickly to keep up with the global competition. There will always be strong demand for information in Europe, but the suppliers could be anywhere in the world; European suppliers cannot use delivery times as a competitive argument since delivery is instantaneous.

The European Union is running pilot projects aimed at helping Europe become a major information supplier. It is not just an economic challenge that the EU is facing; socially, too, it is important that all citizens of the Union have equal access to information technology.

Information as a commodity

The economic significance of knowledge

On 28 April 1850, Julius Reuter started his career as an information broker with 45 carrier pigeons. At that time, there were no telegraph wires connecting Brussels and Aachen. Reuter's pigeons, which he had hired from a brewer, could cover the 200 km stretch in just over two hours. Reuter demonstrated that information is a commodity like any other. The faster it can be transported from A to B, the more valuable it is to the recipient.

Today, Reuters, the British news agency, is an international company with a turnover running into billions. It uses radio, cable and satellite technology to supply its customers instantaneously with vast amounts of data — the essential element in the functioning of an information society.

Modern data-transmission technology has made the distance between the source of the information and the consumer irrelevant. They may be on different continents; the information will be just as quickly and readily available as if they were next door.

Traditionally, the provision of information has been a one-way activity, for which fees are charged, making information less attractive to the final consumer. If the information society is to become reality, two-way communication at reasonable prices is essential. The information consumer must also be a supplier and vice versa.

The theoretical possibilities offered by telecommunications technology are truly fascinating. A worldwide network, capable of serving millions of users simultaneously will make it easier to find a wider variety of solutions to problems, and faster.

An engineer faced with a tricky problem can either stick with the limited selection of familiar reference books and other sources of information that are in his immediate vicinity or he can throw the question out to other engineers around the world on a data network. The chances of getting an innovative answer are many times higher than if he confines himself to the more conventional sources.

Another advantage from the economic point of view is that, if information can be sent half way around the world, people do not need to be. Suppose you are a specialist in your field and need to talk with other experts from the same field; instead of having to travel for hours on end, you can achieve the same result with a video conference. The same principle applies to teleworking. Human resources are too valuable to be sent out to waste time fighting their way through our overloaded transport networks.

'The information society has the potential to improve the quality of life of Europe's citizens, the efficiency of our social and economic organization and to reinforce cohesion.'

Source: 'Europe and the global information society', recommendations to the European Council.



Victor Pizarro / Shutterstock

Information technology has changed — and in some cases revolutionized — the nature of work in many industries. The picture shows its effect on industrial design in the car-manufacturing industry.

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Teleworking turns the premise underlying traditional work practices on its head: instead of the people going to work, the work comes to the people. The world shrinks to the size of a global village.

International competition

The intensity of global competition between the companies that supply information and transfer it from one place to another is steadily increasing. The United States and Japan have a head start when it comes to promoting information and communications technology and exploring possible applications.

Both countries have two distinct advantages over the EU, which make for more rapid development: they each have a single system of standards and a single national language.

What is worse, the EU Member States are not just competing with the two economic giants for technology and information markets. The newly industrializing countries also see opportunities for business in the information market.

'Preparing Europeans for the advent of the information society is a priority task. Education, training and promotion will necessarily play a central role.'

Source: 'Europe and the global information society', recommendations to the European Council.



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What is Euro-ISDN?

The Euro-ISDN operating standard was introduced in 1994. The Integrated Services Digital Network (ISDN) is a computerized transmission network capable of transmitting text, data, speech and images at a rate of 64 000 bits per second (compared with a standard rate of 4 800 bits per second for a telephone network). Standardization of the ISDN, with 26 network operators in 20 different countries in 1995, makes problem-free information exchange in Europe a reality.

Companies are already having large amounts of data recorded in places like India, rather than the industrialized countries, where the cost of labour is that much higher.

To give another example, robots on a production line can be monitored via high-speed data networks from locations far removed from the factory, making a new division of labour possible: at the end of a working day, when the late shift has finished, the machines in the factory in Europe can be serviced and programmed by people in another part of the world where the day is just starting.

Where machines are controlled by computers, people no longer need to be on the production site itself.

Potential for new services

The new technologies are generating a lot of potential for new services. In many cases, all that is required is a computer and a telephone link. Investment costs are relatively low, as are the fees for transmitting and receiving data, making it a more attractive proposition than building new plant for countries where capital is in short supply.

The EU countries are facing an enormous challenge. Despite the fact that two thirds of people currently alive on this planet have never held a telephone in their hand, the development of the information society has to be seen in global terms. The European Union has no alternative but to create whatever structures are required to stay on top of the expanding information market.

The EU as initiator

At their last summit meeting, the Heads of State or Government of the 15 Member States laid the foundations for the construction of a European information society. Article 3 of the EC Treaty offers great scope for promoting its development and creating a Community-based legal framework.

The basis for Community involvement in building the information society is to be found in the Treaty provisions on the upholding of the four internal market freedoms (i.e. the free movement of people, goods, capital and services), competition policy, the common commercial policy and the construction of trans-European networks.

Major EU initiatives are also needed in the field of vocational training, to familiarize the workforce with the new job possibilities created by the information society. A start has already been made with the ADAPT programme, aimed at supporting vocational training in industries where fundamental change and job losses are expected.

In many areas, the new information technologies are still at the experimental stage. They will not become widespread without public support and coordination. For the sake of the single market, it is imperative that the EU Member States set about this task together and, in particular, put the European Commission in charge of coordination.

What is the information society?

While the idea of information as a commodity predates the advent of the information society, the notion of value added in relation to information has been revolutionized by the new information and communications technologies. The falling cost of hardware (PCs, modems, telephones, etc.) and software has played a particularly important role in spreading the technology and increasing the number of users. The following factors are of primary importance:

- inexpensive ways of recording large amounts of data on data mediums, e.g. via scanners;
- storage of information in mass stores, e.g. on hard disks;
- fast computers for processing information;
- user-friendly software to enable users to find and cross-reference data;
- transmission technology enabling data to be transferred from A to B in the shortest possible time.

With access to information stored anywhere in the world and, above all, the ability to combine and analyse large quantities of data, it is possible to create new knowledge, which other people do not have and which has (added) value. In an information society, information is the most important commodity.

Advantages: new occupations and markets are created; the environment benefits from the use of electronic 'highways' instead of the tarmac variety; peripheral areas are linked to the centre with no increase in the volume of traffic; new possibilities for creating knowledge help us to find innovative answers to the problems of tomorrow.

Possible risks: new electronic services are not used by consumers; employers and employees fail to agree on new forms of working (e.g. teleworking from home); jobs are lost to other countries, where business costs and the level of data protection are lower; access to information is not equally distributed in the Union; knowledge can be used as an instrument for abusing power.

Information has always been a force for progress, ever since man first combined language and pictures to form writing some 5 000 years ago, enabling information to be passed on and stored. Inventions like Gutenberg's process for printing by movable type in the 15th century and radio, television and electronic data-processing in the 20th century, have all revolutionized and speeded up the exchange of information. All these different media complement and enhance each other; the new ones do not necessarily supersede the old. As the 21st century approaches, the world is preparing for a quantum leap into a multi-media information society.



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Kim Parys-Mirada



FOTOMACK



EKA

ERASMVVS
ROTERODAMVVS
 ORNATISSIMO IACOBO
 Tutori in Civitate Amstelredamensi
 pueris Vestimento,
 S. D.

CUM ADMODVM qui sunt à Scorpij idē solent ab ista dem remedia ptere, ita mihi convenire videtur, iacobe iurisperitularum eruditissime, ut qui literis finem additis, animi laetitia, aut corporis afflictionem à studijs generatim contraham, ab istis studijs, sed amantibus recedam. Etiam qui verè studiosi sunt, per cunctam vitam nihil aliud agunt, quam ut licet illis suo arbitrata vi et casibus moderari: nec tam intera mittunt studiis, quam remittunt, et relaxant aliquantisper ingenii, cessant nonquam, sciantur interitū, sed interea agentes aliquantisper, ut aliqando, sed sic, ut ei ratio non pulchre queant redire. Et si licet cessant eius non nonquam, sed ut horum cessatio plus adferat bonæ frangit, quam sporadicam negotiosissime occupationes. Sic utinam fortis, et generosus miles, consuetam enim exemplū similes, dum in afflicto, aut hyberna agō, aut dunt in dunt ea praevalent, ut necesse sit in actu stare, aut excubare.

EKA



EKA

Information society task force

The Commission's White Paper on growth, competitiveness and employment, published in December 1993, gave an initial indication of what measures were to be taken to create a European information society.

In the same month, the European Commission set up a group of experts, composed of eminent persons from the European industries concerned and chaired by Martin Bangemann, a Member of the Commission. Both information users and producers were represented. In May 1994, the group, known as the Bangemann group, published its report entitled 'Europe and the global information society'. In addition to the main points it made, the report also suggested 10 priority applications.

Then, in July 1994, the Commission presented 'Europe's way to the information society: an action plan', focusing on four areas — the regulatory framework; information networks, services, applications and content; social and cultural aspects; and promotion of the information society.

At about the same time, the Commission adopted a Green Paper on audiovisual policy, in which it put forward proposals aimed at strengthening the European programme industry, without which the European information society will be unable to realize its full potential for development.

Interactive computers can help people who are put off by technology to access information quickly and easily. Here, for example, a visitor is getting information on the museum.



Timetable for the opening-up of the telecommunications market

January 1996

- It will be possible to use available television cable networks, energy supply networks and railway power cables for telecommunications services.
- Companies providing mobile communications services will be able to build up their own networks or choose from available existing ones.

January 1997

- The Member States will inform the Commission of their licensing conditions for new network operators and service providers.

January 1998

- Telecommunications markets should be completely open in most Member States.

Need for action across the board

The European Union is creating the right environment with its policies: it is promoting the development of new communication technologies and regulating the setting up of new telecommunications networks. As competition between service providers increases, charges are expected to come down.

Another important aspect on which some form of agreement has to be found, not only amongst the Member States but also between them and other countries that supply information, is the protection of copyright and personal data. Since information can now be stored and sent anywhere, there is a risk that sensitive information may be sent to countries where there are practically no data-protection laws.

The EU is also running pilot projects concerned with exploring possible applications of the new information technologies.

Whether new structures for the information society do actually emerge from these pilot projects will depend to a large extent on the national governments and, in particular, the social partners. Ultimately, though, it is the people who will have to decide whether they are prepared to learn new skills and accept teleworking or, indeed, whether they want to use the information services available.

Consequently, one of the most important tasks of the European Union is to find a social consensus on this matter.

Ten 'test drives' on the information super-highway

The Bangemann report proposes 10 initiatives concerning experimental applications of the new information technologies. The purpose is to promote more widespread use by demonstration. Suppliers can also use them as a way of fine-tuning their applications to suit user-demands.

1 — Teleworking

A PC and a telephone link at home or in a local suboffice can save workers from having to commute long distances without losing their 'link' to the production process. Pilot teleworking centres are being set up in 20 cities involving at least 20 000 workers. By the year 2000, 10 million teleworking jobs should have been created.

2 — Distance learning

The workforce's willingness to participate in lifelong learning is very important for Europe's competitiveness. Distance learning is a way of making training and further education more accessible and attractive.

There are pilot projects in at least five countries involving businesses (of which at least 10% are small businesses), public authorities, trade organizations and schools.



3 — Network for universities and research centres

Industry has benefited for some time from EU-promoted cooperation between universities and research centres. Thanks to the new communication networks, cooperation is possible on an unprecedented scale: by 1997, 30% of European universities and research centres should be exchanging data via high-speed links and accessing each other's libraries on-line.

4 — Remote processing services for small businesses

Big companies have been using remote processing facilities for some time now (in some cases, facilities they provide themselves). But small businesses could also benefit from the new technology. By 1996, 40% of small businesses with more than 50 employees should be hooked up to networks. Links will be established with authorities, associations, customers and suppliers.

5 — Road traffic management

Driver information, route guidance, fleet management, road pricing — these are just a few of the key words connected with this project. By the end of 1996, road management data systems should have been installed along 2 000 km of motorway and in 10 cities (30 by the year 2000).



6 — Air traffic control

Better communication between planes and air traffic control centres makes flying safer. A European system of standards for communication procedures and the exchange of data and voice messages should be in place by the year 2000. The aim is to create a single, trans-European air traffic control system.

Increased individual mobility in modern society has its downside too — more traffic and more congestion. Accurate, up-to-the-minute traffic information on congestion, accidents and the like could, if quickly accessible whenever required, provide a practical solution to stress on the road. The screen shows the driver the best route to take.

Research teams the world over can exchange their results in fields like medicine very quickly using global on-line data networks. Robots and virtual reality technology enable surgeons to perform operations at a distance of thousands of kilometres from the patient. If no specialist is available locally, this saves both precious time, which could make the difference between life and death, and money in terms of travelling costs.



Europe/Slide

7 — Health care networks

Better diagnoses thanks to on-line connections with specialists throughout Europe, on-line access to analysis and hospital services for practitioners, transplant-matching on a wider scale — these are all examples of applications of the planned Community-wide network of existing national networks, which will enable doctors, hospitals, rehabilitation centres and health insurance organizations to exchange information.

8 — Electronic tendering

The process of tendering for public contracts on a Community-wide scale will be made easier and thus more attractive by the use of communication networks. The Member States need to agree on common standards and must require that awarding authorities use computers to process the information they receive. Ten percent of awarding authorities could be using electronic procedures for their procurement needs in a few years' time.

9 — Trans-European public administration network

The volume of correspondence between the authorities of the EU Member States has increased in recent years, not least because of the single market. Exchanging data via communication networks is simpler and more efficient. A network for the exchange of tax and customs information, statistics, social security data, etc. should have been set up by the end of 1996.

10 — City information highways

Ordering goods for home delivery, studying a language from home, home-banking, calling up a favourite video — it can all be done through a television set at home, linked up to the network. Five cities will have the chance to find out what it might be like to live in an information society.

Europeans' views

Technology and the different requirements made of it

Public expectations of what the information society may bring can vary greatly between Member States. As a Eurobarometer survey showed in February 1995, attitudes depend on people's willingness to take advantage of the opportunities afforded by the new technologies and on how much they know about the information society. Of the 8 000 people surveyed, around half had heard of the 'information superhighway' and the 'information society'. 'Information superhighway' was the more popular term.

When asked whether the new information and communications technologies would give them more freedom, 57% thought that they would. The figure was 66% for the French — significantly higher than the 43% of Austrians replying positively.

The majority of people were afraid that a less fulfilling private life, particularly in relation to the family, would be the price for increased job opportunities and better information. Most Europeans did not think that telecommunication services would bring people closer together, make society more humane or increase solidarity.

Respondents were asked about their feelings towards two practical applications. 71% said they would use an on-board computer to find the best route in a car. Only 55% would be prepared to accept an on-line consultation with the doctor via a data network. On this matter, the Germans and the Danes were rather more sceptical than the South Europeans and the British.

The question of whether people would pay for new services of this kind met with a lukewarm response, with just under 40% saying they would. Over 80% thought that laws were needed to ensure that no one suffered as the information society evolved, though a quarter of German and Austrian respondents saw no particular need for such laws.

The poorer EU Member States seem to attach great hopes to the information and communications technologies as a way of linking up with their more prosperous partners via the information superhighway.



Communication is a skill that most of us start learning through play at a very early age. For those of us who have difficulties communicating, the PC can be a very useful tool.

European Commission

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Luxembourg: Office for Official Publications of the European Communities

1996 — 15 pp. — 16.2 x 22.9 cm

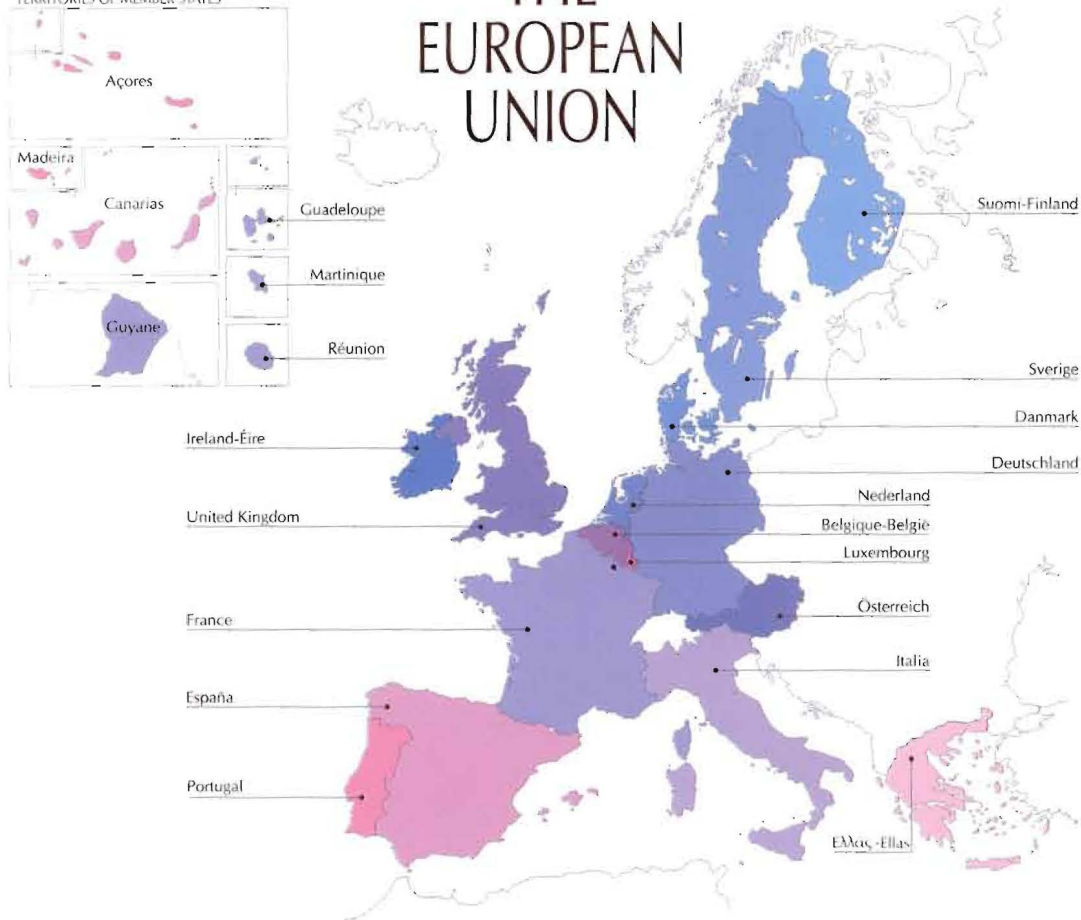
ISBN 92-827-6238-6

This brochure examines the economic and social implications of the information society for Europe and explains the EU's response. It also gives details of 10 European pilot projects.



THE EUROPEAN UNION

NON-CONTINENTAL AND OVERSEAS TERRITORIES OF MEMBER STATES



BASIC STATISTICS OF THE EUROPEAN UNION AND ITS FIFTEEN MEMBER STATES: COMPARISON BETWEEN THE EUROPEAN UNION (EUR 15), THE UNITED STATES AND JAPAN

(1994 figures)

Area 1 000 km ²	31	45	157	132	505	544	69	301	3	41	84	92	338	450	244	3 236	9 373	378
Population millions	10.1	5.2	61.3	10.4	39.2	58	3.6	57.3	0.4	15.4	8.0	9.9	5.1	8.8	58.5	371.6	261.8	125
Population density inhabitants per km ²	312	121	228	79	77	107	52	190	157	376	96	108	15	20	242	115	28	331
Gross domestic product at market prices(*) 1 000 million PPS'	190.2	99.6	1 492.1	109.9	495.1	1 035.7	50.6	995.2	10.9	266.4	151.2	114.5	76.8	142.5	959.6	6 190.4	6 245.0	2 408.9
Per capita gross domestic product(*) PPS'	18 800	19 143	18 326	10 561	12 634	18 140	14 171	17 086	26 979	17 317	18 829	11 591	15 099	16 230	16 442	16 680	23 928	19 264
	B	DK	D	GR	E	F	IRL	I	L	NL	A	P	FIN	S	UK	EUR 15	USA	Japan

(*) Estimate

Source: Eurostat

(') PPS = Purchasing power standard – a common unit representing an identical volume of goods and services for each country.

1 PPS = BFR 40.4; DM 2.225; DKR 9.365; PTA 130.5; FF 7.122; UKL 0.6942; DRA 211; 1 649.0 LIT, IRL 0.6865, LFR 43.02; HFL 2.284; ESC 127; OS 14.97; SKR 10.64; FMK 6.61; USD 1.08; YEN 194.79.

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OFFICE FOR OFFICIAL PUBLICATIONS
OF THE EUROPEAN COMMUNITIES
L-2985 Luxembourg

ISBN 92-827-6238-6



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