# EXHIBIT 3

TOWARDS A DYNAMIC EUROPEAN ECONOMY

# G R E E N  P A P E R

## ON THE DEVELOPMENT OF THE COMMON MARKET

## FOR TELECOMMUNICATIONS SERVICES AND EQUIPMENT

(Communication from the Commission)

## FOREWORD

Facing a telecommunications and information technology world market developing at full speed, the Community needs to establish competitive market structures which will allow it to match the dynamism developed in this field by the United States and Japan. Efficient telecommunications network infrastructures and telecommunications services will be essential for the development of the Community's information technologies sector and the growth and flexibility of its economy as a whole ; for the completion of the Community-wide market for goods and services by 1992 and the development of future trade flows within the Community and with its outside partners; and for the efficient functioning of enterprises;

The current wave of technical innovation resulting from the convergence of telecommunications and data-processing technology has now led to reviews in all Member States of the future organisation of the telecommunications sector and its necessary regulatory adjustment.

No Member State accounts for more than 6% of the world telecommunications market. The United States account for more than 35%, Japan for 11%. National reform of the telecommunications sector in Europe will only be economically successful if it is tied into the larger Community context.

The Green Paper aims at launching the debate and attracting comment from a broad spectrum of opinion : the Council ; the European Parliament and the Economic and Social Committee ; the Telecommunications Administrations and Recognized Private Operating Agencies, hereinafter referred to as "Telecommunications Administrations" ; the European telecommunications, data-processing, and services industry ; the users who must be the main beneficiaries of the new opportunities ; and the trade unions and other organisations representing the social interests in this area.

The Paper aims at creating more freedom of action for the European user ; for European industry ; and for the European Telecommunications Administrations.

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# I SUMMARY

A technically advanced, Europe-wide and low-cost telecommunications network will provide an essential infrastructure for improving the competitiveness of the European economy, achieving the Internal Market and strengthening Community cohesion - which constitute priority Community goals reaffirmed in the Single European Act. This does not only apply to services in general, such as financial services, transport and tourism, which already generate nearly two thirds of Community GDP. It also applies to trade in goods ; and to the goal of European industrial co-operation.

The emerging new telecommunications services - and notably so-called value-added and information services - will have a major impact on the future tradeability of services in general and on the location of economic activities.

Since 1984, the Community has made substantial progress in this field. The objectives have been three-fold :

- promoting the creation of an advanced European telecommunications infrastructure ;
- contributing to the creation of a Community-wide market for services and equipment ;
- contributing to the competitiveness of European industry and service providers.

In following these objectives, the Commission has, within the last two years, made proposals and achieved rapid agreement by Council along five main lines :

- co-ordination regarding future development of telecommunications in the Community and common infrastructure projects. This concerns in particular the principal future stages of network development - the Integrated Services Digital Network (ISDN), digital mobile communications, and the introduction of future broadband communications ;
- creation of a Community-wide market for terminals and equipment. Promotion of Europe-wide open standards, in order to give equal opportunity to all market participants ;

- the launch of a programme of pre-competitive and "pre-normative" R&D covering the technologies required for integrated broadband communications (the RACE programme) ;

- promoting the introduction and development of advanced services and networks in the less-favoured peripheral regions of the Community ;

- building up common European positions with regard to international discussions in this area.

In 1986 alone, Council achieved agreement, on proposal by the Commission, on six major measures which will become fully effective during 1987. A detailed overview of decisions taken and of proposals currently before Council is given in Chapter VII.

In parallel, the Commission has taken up a number of cases, related to the opening of telecommunications markets, under the Treaty's competition rules.

Building on the progress achieved, it now seems timely to initiate a common thinking process regarding the fundamental adjustment of the institutional and regulatory conditions which the telecommunications sector now faces. This world-wide transformation is due to the profound technical change which is currently taking place : the progressive merger of telecommunications, data-processing, and, ultimately, audio-visual and TV technology.

Telecommunications took 140 years to develop from a single service to a dozen services in the early eighties. The new technological capabilities will now lead to explosive growth and multiplication of services and applications within a single decade. [Fig. 1]

It is the management of this transformation which sets the scene for the current adjustment of the organisation of the sector and the reviews in all Member States.

As set out in this Green Paper, the Community must make sure that :

- the necessary European scale and dimension are introduced into the current phase of transformation ;

# TELECOMMUNICATIONS: PROSPECTS FOR THE YEAR 2000

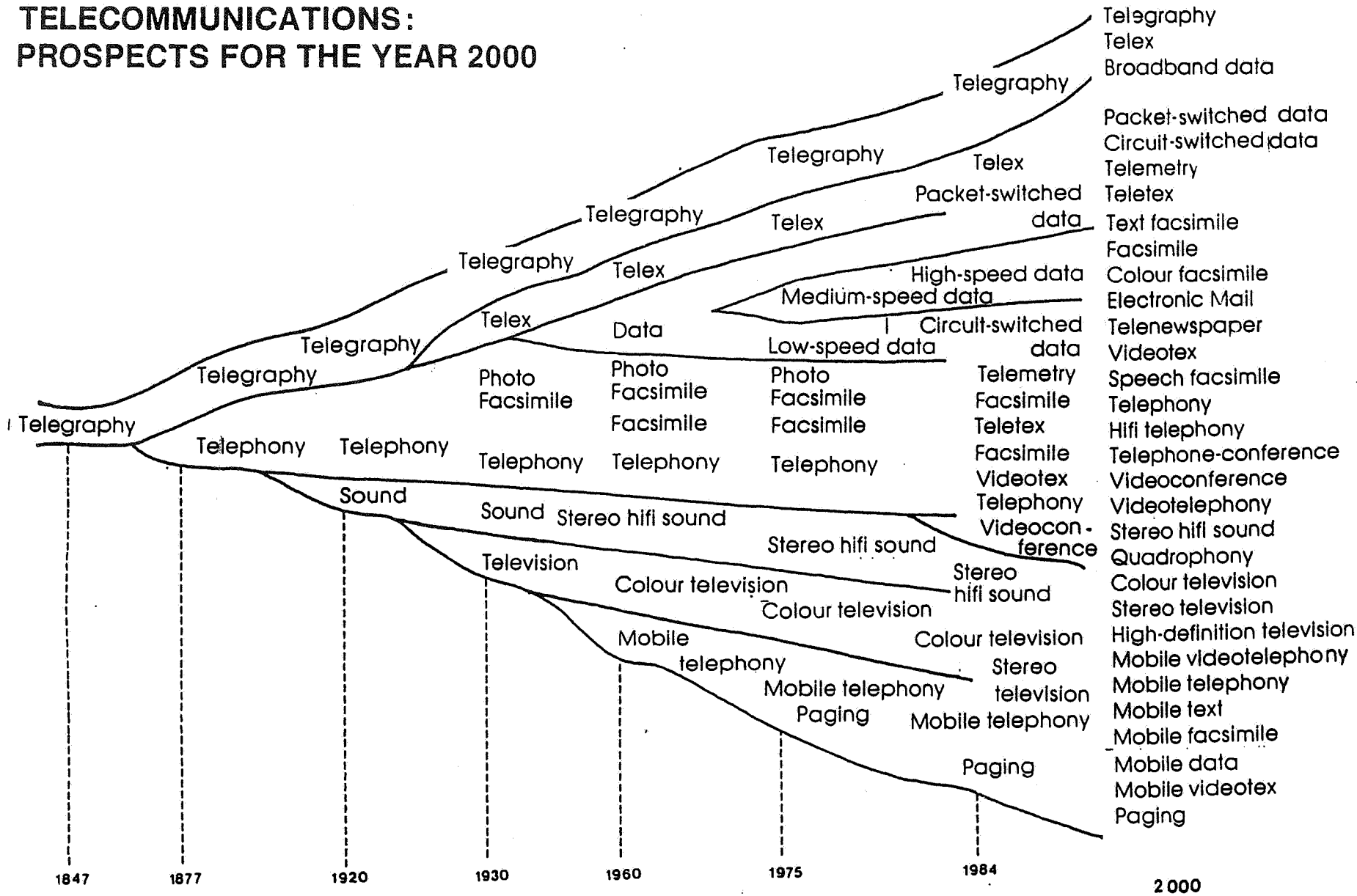



Fig. 1 Source: Consortium British Telconsult/Consultel/Detecon/Nepostel/Sofrecom et al.

- no new barriers are created within the Community during the adjustment of regulatory conditions ;

- existing barriers are removed in the course of the adjustment.

The search for common positions in the complex field of future regulation of the telecommunications sector must take into account a number of major requirements, if it is to contribute to strengthening the European economy :

- firstly, differing regulatory traditions in the sector. Careful analysis of current reviews and debates in the Member States must identify those areas on which common positions can be reached. It is on those areas that efforts towards developing consensus should be concentrated, in order to increase convergence over time in the Community ;

- secondly, opportunities and obligations deriving from the Treaty, in particular regarding : the free movement of goods ; the freedom to provide services ; competition rules ; the common commercial policy ;

- thirdly, the external relations of the Community, in particular regarding its major trading partners - the EFTA countries, the United States and Japan, the Third World. The opportunities and obligations deriving for the Community from the GATT agreement and the new GATT Round must be taken into account. The impact on the Community's industrial and trading position must be kept clearly in mind ;

- fourthly, the convergence of social perceptions in the Member States regarding the new technologies. This concerns the social consequences of the new technologies and associated regulatory policies, the conditions for acceptability in both private and work life, and measures to facilitate the transition by generating new employment opportunities and protecting legitimate interests.

The convergence of telecommunications, data-processing and audio-visual technologies is outdating traditional boundary lines between the telecommunications network and the terminals sector, and between services traditionally provided under monopoly and those provided in a competitive environment. Satellites are now able to provide services within and between countries, at a world level.

There are now many service functions and features that can be performed either by the public network or by a private network or the terminal equipment attached to the network. All countries are confronted by two options :

- either to try to maintain the current regulatory framework, which would imply imposing additional and permanent restrictions and regulations on the use of data-processing equipment connected to the network ;

- or to define the telecommunications regulatory framework more narrowly and to give more room for competition.

The worldwide trend points towards the latter.

In the Community, the situation is in flux, as discussed in Chapter VI of the Paper. The United Kingdom has substantially modified the organisation of its telecommunications sector and issued recently a new comprehensive general licence for value-added services. France has seen substantial changes of legislation in the telecommunications / audio-visual field and will introduce major new proposals for its future telecommunications policy in 1987. Reviews or changes are underway in the Netherlands, Germany, Belgium, Italy, Spain, Portugal, and other Member States. At the same time, the European Conference of Postal and Telecommunications Administrations (CEPT) is reviewing its organisation, in response to, and in close interaction with, the development of Community telecommunications policy, and in close co-operation with the Commission.

Analysis of the regulatory situation and of current trends of adjustment in the Member States shows that there are convergent trends in current thinking. There is therefore the genuine possibility of reaching agreement on broad common regulatory aims for the telecommunications sector in the Community.

There seems to be agreement on the following basic orientations :

- New services and terminals require market conditions which favour innovation, experimentation, and a high degree of flexibility : a more open competitive environment is required ;

- the current and future integrity of the basic network infrastructure must be maintained or created.

This implies in particular a continuing strong role for Telecommunications Administrations in the provision of network infrastructure, and strong emphasis on Europe-wide network standards. It also implies safeguarding the financial viability of Telecommunications Administrations in order to ensure the build-up of the new generations of telecommunications infrastructure and the necessary level of investment ;

- optimal consumer choice requires that Telecommunications Administrations participate together with others in those markets which are opened to competition even if this may involve complex problems of regulation ;

- employment growth requires a policy promoting the shift of jobs from traditional activities to new opportunities, particularly in the future conglomerate sector of telecommunications / information technologies. An intense dialogue with the social partners will be necessary, in order to ensure a smooth transition.

On this basis, proposals for the ingredients of a solution are developed in Chapter X.

The proposals concentrate on those issues which must be resolved at Community level for all Member States. They leave out questions which are important but fall to the national level, such as which status for Telecommunications Administrations is best suited to facing the developing competitive market environment, and related questions of finance, organisation, and employment relations.

The proposals rest on accepting the continuation of those aspects of the current regimes where there is justification and compatibility with the Treaty. Within the framework of the current adjustment and according to their economic appreciation and perception, Member States may, of course, choose their own position with regard to these aspects, such as a more liberal regime regarding the whole or parts of the network infrastructure.

The Paper proposes the following policy orientations :

- phased full opening of the terminal market to competition ;

- substantial opening of the services market to competition, with the exception, at this stage, of a limited number of basic services, where this is considered indispensable to satisfy current public service goals. Basic services reserved for provision by the Telecommunications Administrations should be essentially restricted to voice telephony only.

  The right for transborder provision of services under the Treaty must be translated into operational reality ;

- acceptance of the continuation of the Telecommunications Administrations' monopoly of network infrastructure.

  Recognition of the central role of the Telecommunications Administrations in the establishment of the future generations of infrastructure and of their right to protect their financial viability by legal means.

  Where Member States introduce competition in the whole or parts of network infrastructure, Community-wide integrity of network standards and interoperability must be ensured ;

- separation of the regulatory and operational functions of Telecommunications Administrations where this has not already been effected, in order to allow the participation of both the Telecommunications Administrations and other providers on fair terms.

  The commercial activities of the Telecommunications Administrations, as well as those of other providers are subject to the Treaty's competition provisions ;

- partial opening of the market in satellite ground stations to competition, insofar as such equipment should properly be assimilated with telecommunications terminals rather than with telecommunications infrastructure. This applies in particular to receive-only earth stations ;

- recognition of the fact that telecommunications tariffs should follow cost trends and that a certain amount of rebalancing of tariffs will be inevitable, as far as compatible with public service goals.

A more competitive environment will move tariffs closer to evolving cost patterns ;

- a vital condition for achieving a true common market in this area must be developing consensus in the Member States on the analysis of the social consequences of the new technologies and the associated regulatory evolution.

  Analysis of the conditions for acceptability of new services and activities, and the impact on work life and employment must be intensified.

Substantial differences will continue to exist between Member States but must be accommodated. This concerns the different status of the network operators (public/private) but also the policy regarding provision of leased lines and resale of capacity. All Member States agree currently on the necessity of securing the financial viability of their Administrations, either by excluding pure resale of voice (telephone) on leased lines or by tariff schemes which prevent large "arbitrage gains" by pure resale of voice to third parties, such as usage-based tariffs. Both methods will have to be accommodated in the Community.

However, both methods must be limited to a legitimate level of protection of financial viability and must not represent the misuse of a dominant position. Current charges for leased lines both at the national and Community level show in some cases wide and unexplained divergences.

The proposals aim at progressively introducing full Community-wide competition to the terminal market, and as far as possible and justified at this stage, to telecommunications services. In pursuing the implementation of these proposals, and the lifting of existing restrictions, the Commission will take full account of the fact that the competition rules of the Treaty apply to Telecommunications Administrations to the extent that they engage in commercial activities.

In order to create the environment for reaching the objectives set out, the Commission proposes a number of actions :

- to smooth the transition towards a more competitive Community-wide market ;

- to promote a strong European presence in both the services and industrial field ;

- to prepare the Community for its discussions of future trading relations in this field with its outside partners, in particular in the framework of GATT.

These proposed actions are set out in Chapter X.

## II THE PURPOSE OF THE GREEN PAPER

Telecommunications has become a factor of major economic importance during recent years. It is undergoing a fundamental transformation as a result of changes in technology. It is converging rapidly with information technology. The new conglomerate sector of information movement and management - telecommunications services and telecommunications and data-processing equipment - is now estimated to represent more than ECU 500 billion annually world-wide.

Up to seven per cent of the Community's GDP will derive by the turn of the century from the expanding telecommunications sector - compared with over two per cent today. As stated by a recent report ["Clearing the Lines - A Users' View on Business Communications in Europe", Round Table of European Industrialists, October 1986]

"demand for data communications capacity is growing among Europe's big industrial companies at a rate of as much as 40 per cent a year. New services, new tariffs, new corporate structures are crowding onto the marketplace. Companies which make consumer goods are using these services to find out more rapidly what their customers want ; others are using electronic communications to reduce stocks of parts, to manage cash, to link research centres, to transmit and develop designs, to monitor remote installations and for hundreds of other tasks aimed at securing a competitive edge. In many trading and financial service activities, the availability of the most advanced communications is already essential to commercial success. The same is becoming increasingly true for industry. This applies not only to large companies, which need to move large amounts of data between installations, but to smaller firms for which advanced telecommunications open up markets which were previously out of range".

According to the European Council of Telecommunications Users Associations, "technological and regulatory changes currently being introduced and considered provide the opportunity for a common European telecommunications policy. This policy should be flexible enough to take account of further developments and should be produced with full participation of user representatives" ["ECTUA position on European Telecommunication Policy", March 1987].

Industry's ability to communicate, whether as market participants or within continent-wide networks of research, manufacturing, production, and office systems, is an increasingly crucial element in an integrated European economy.

According to the Union of Industries of the European Community, "it is extremely important to keep abreast of developments in the information and telecommunications technologies if we are to ensure the future competitiveness of European industry and information markets.

"It is therefore vital for the telecommunications sector that national governments and the EEC should take decisions now that will have the desired long-term effects" ["A Telecommunications Policy for Europe", UNICE, January 1987].

The European Committee of Postal, Telegraph and Telephone Trade Unions consider that "the ability to send and receive information and communications is becoming increasingly important, not only for business, but for all individuals if they are to play their full part in society and that to deny access to communications to any sections of the community is unjust and socially divisive" [PTTI - Postal, Telegraph and Telephone International, 19th European Congress, Copenhagen, Denmark, 1986].

The various parties concerned, public and private, will invest between 500 and 1,000 billion ECUs over the next twenty years in the telecommunications sector in the Community - far more than total gross investment in the Community for a single year.

It will be essential for the Community and its Member States to work out the conditions best suited to draw maximum benefit from these enormous investments. They can and must create substantial benefits for the European user and the Community's growing service economy ; for European industry and its future share of the world market ; and for the telecommunications network operators which will grow to be Europe's largest civilian investors in high technology.

At the same time, the telecommunications sector itself will grow to be the largest consumer of information technologies and components and one of the main beneficiaries and supports of current national and Community programmes for developing a new capability in these areas, such as the European Strategic Programme for Research and Development in Information Technologies (ESPRIT).

The purpose of the Green Paper is thus to start a common thinking process and to be a basis for discussions aimed at the achievement of maximum synergy between current developments in the Member States, drawing fully on the potential offered by the Treaty of Rome and the Community framework. This process should center on :

- identifying common positions on the critical elements of the framework conditions currently under review in the Member States ;

- analysing common objectives and agreeing those means for achieving them which are best carried out in the Community framework ;

- examining the external problems posed to all Member States by the rapid evolution of the world market.

Changes in regulation at a European level must take account of and build on the differing regulatory histories and national features of the Member States. This implies that change must be introduced progressively, to allow re-organisation to take place smoothly over the whole of the Community.

The effort can and must build on the consensus achieved since 1984, in order to build a sound basis for European growth and competitiveness in the information sectors of the future.

In its "Progress Report on the Thinking and Work done in the field and initial Proposals for an Action Programme" [Communication from the Commission to Council on Telecommunications COM(84)277, 18.5.1984 ], the Commission undertook a first in-depth analysis of the economic, social and technical importance of the sector. It stated that the "new technologies will fulfil a pump-priming role in the evolutionary process that is taking place. Such technologies are at work not only in telecommunications terminals, but also in the components sphere..... These technologies are, in particular : digitisation, which makes it possible to process much more sophisticated data ; the use of optical fibres, which makes it possible to transmit information at

considerably higher rates and at much lower cost ; the integration of micro-electronics components and software ; the development of cable and satellite links..... The resulting convergence of telecommunications, data-processing and audio-visual media will alter the nature of telecommunications and considerably widen the range of services proposed."

The report emphasised that "the economic and social impact will be considerable" and set out a six-point "Action Programme in the Field of Telecommunications" with the following objectives : "placing at the disposal of users, as quickly as possible and at the lowest cost, the equipment and services they require in order to ensure that they are sufficiently competitive ; stimulating European production of telecommunications equipment and services in order to create a climate in which the Community industry can maintain its strong position on the European market and stay in first place among world exporters ; allowing carriers to take up the technological and industrial challenges with which they will be faced."

The Council of Ministers confirmed these proposals at its meeting of 17th December 1984 and agreed the following programme of work [Minutes of 979th Meeting of the Council, 17th December 1984 ] :

"(a) the creation of a Community market for telecommunication equipment and terminals via :

"- a standardisation policy aimed at the effective implementation in the Community of common standards derived from international standards ;

"- the progressive application of procedures for the mutual recognition of type approval for terminals ;

"- the opening up of access to public telecommunications contracts, the first phase of which was initiated by the Council's Recommendation of 12 November 1984.

"(b) improving the development of advanced telecommunications services and network :

"(i) by opening discussions, based on available studies, on :

"- the implementation of infrastructure projects of common interest ;

"- launching a development programme for the technology required in the long term for the implementation of future wide-band networks ;

"(ii) by defining and progressively setting up a video-communications system to link the various political authorities in the Community ;

"(c) improved access for less-favoured regions of the Community, through the appropriate use of Community financial instruments, to the benefit of the development of advanced services and networks ;

"(d) co-ordination of negotiating positions within the international organisations dealing with telecommunications, based on discussions carried out jointly with the Working Party of Senior Officials on Telecommunications."

In following this programme of work, the Commission has rapidly made proposals and achieved agreement by Council on a number of major decisions.

Details of this progress are given in Chapter VII.

For its part, the European Parliament noted in its resolution of 3rd March 1984 [Report of the European Parliament on Telecommunications in the Community, Doc. 1-477/3, 3rd March 1984]

"the great importance of telecommunications for the Community as a sector in its own right, and in terms of its significance for other industries and services". It pointed out, inter alia, the "need for re-regulation".

According to the resolution, the European Parliament

"considers that the traditional system of Telecommunications Administration regulation has served the public well in the past, but that it lacks the necessary flexibility to permit the development of new products and services at the necessary speed to keep pace with the rapid rate of innovation in this sector ; believes, therefore, that there needs to be a liberalisation of the existing equipment supply monopolies in order to permit greater freedom for individual users to connect their equipment to the telecommunications infrastructure, and for suppliers to sell their products in other Community countries ;

"further believes that other carriers beside the Telecommunications Administrations should be allowed to offer the new value added services which are currently evolving ;

"recognises the vital public service obligations of Telecommunications Administrations, and does not believe that deregulation on the American model could be applied within the Community. Considers, therefore, that what is needed is 're-regulation' which would permit more rapid development while still providing necessary safeguards ;

"recommends that the widest possible competition be encouraged for markets and equipment. The ability of Community undertakings to compete in overseas markets will depend to a large extent on their capacity to do so in the internal Community market."

In the White Paper from the Commission to the European Council of Milan of 28-29 June 1985, concerning the completion of the Internal Market, the Commission stated its view that it was "no exaggeration to see the establishment of a common market in services as one of the main pre-conditions for a return to economic prosperity" [Communication from the Commission to the Council, COM(85)310, 14th June 1985].

The Commission emphasises that

"the development of new technologies has led to the creation and development of new cross-border services which are playing an increasingly important role in the economy. However, these services can develop their full potential only when they serve a large, unobstructed market. This applies equally to audiovisual services, information and data-processing services and to computerised marketing and distribution services.....The information market is also undergoing far reaching changes as a result of the application of new information technologies ".

The Commission stressed that "a market free of obstacles at Community level necessitates the installation of appropriate telecommunications networks with common standards ".

The strengthening of European telecommunications is one of the major requirements for improving the competitiveness of the European economy, strengthening Community cohesion and achieving the completion of the Community-wide market for goods and services by 1992. The current wave of technical innovation in the field of telecommunications has now resulted in reviews of the future organisation of the telecommunications sector and its necessary institutional adjustment in all Community Member States.

The Community must now take the necessary steps to benefit fully from these new technological and economic opportunities.

## III THE CURRENT ADJUSTMENT OF THE TELECOMMUNICATIONS SECTOR

### 1. The convergence of the telecommunications, data-processing and audio-visual sectors.

The telecommunications sector is currently undergoing a profound and accelerating transformation world-wide - the convergence of telecommunications, data-processing, office and business information systems, and in the longer term, the audio-visual sector.

Simple office systems are being replaced by office work station terminals ; these in turn are connected via telecommunications networks ; telecommunications networks are integrating transmission, switching and data-processing functions.

Telecommunications took 140 years to develop from a single service to a dozen services in the early eighties. The new technological capabilities will now lead to explosive growth and multiplication of services within one decade.

It is the management of this transformation which sets the scene for the current intense debate and review of the telecommunications sector in all Member States. Special problems are posed for Europe and the implementation of a Community telecommunications market.

Certain of these problems are being dealt with under the current Community initiatives [see Chapter VII] :

- the convergence of telecommunications and data-processing technologies - the application of computer technology to telecommunications - involves first of all digitisation of the networks. Digitisation and the associated new transmission techniques - optical fibre and satellites - have dramatically raised R&D costs in the industry. Co-operation and economies of scale and scope become an indispensable requirement for the European telecommunications sector.

  This is one of the objectives of the RACE programme ;

- digitisation poses major problems for future generations of networks in Europe. The new generations - the Integrated Services Digital Network (ISDN), the future digital mobile communications and the Integrated Broadband Communications (IBC) - will require a new degree of co-operation between the network operators in Europe over co-ordinated introduction strategies if Europe-wide communications are to be maintained.

  This is the objective of the Commission's initiatives on advanced telecommunications infrastructure, carried on in close co-operation with the Senior Officials Group on Telecommunications (SOG-T) and the CEPT, - notably on ISDN and, within the framework of the RACE initiative, on IBC ;

- agreement on high-level protocols for services and on network interface standards for terminals is needed to ensure proper communications between the highly sophisticated computer based terminals of the future. The standardisation bodies in the Community, both in telecommunications and in the computer field, face a situation characterised by a new degree of complexity.

  Coping with this challenge is a major objective of the Commission's initiatives on standards in the field of information technologies and telecommunications. These activities are developed in close collaboration with SOG-T and CEPT on the one hand, the Senior Officials Group on Information Technology Standards (SOGITS) and CEN-CENELEC on the other.

2. New issues on the way towards a Community telecommunications market

The convergence of telecommunications and information technologies leads to a number of new problems.

It involves the "collision" between two differently regulated sectors - between the telecommunications sector, which has been traditionally dominated by state monopolies and subject to strict regulation, and the computer sector which has developed in a competitive environment.

New boundary lines are being drawn between the network sector and the terminal sector and between the network sector and services. Establishing consensus regarding boundaries between these sectors, with compatibility between Member States, is therefore becoming an essential prerequisite of a future Community-wide market.

All countries are subject to these changes. The United States and Japan have reacted according to their perception of the situation. In the Community, Member States have undertaken - or have announced - fundamental changes in the regulation of the telecommunications sector and the status of their Telecommunications Administrations. In all Member States, an in-depth discussion and review is underway.

At the same time, a reconfiguration of industrial alliances and international relations in this field is taking place.

3. The search for common positions

Two separate requirements seem to dominate the current search for solutions in the Member States.

a) There is a need fully to exploit the economies of scale and scope offered by digitisation. This requires strong network operators, able to plan and to create leading-edge markets through the major innovations required in the telecommunications network infrastructure within a long term perspective - such as the ISDN.

b) There is also a requirement to allow for dynamic growth in the sector of terminals and new telecommunications services. There is a growing tendency to give new room in this area for public and private initiatives, in order to promote innovation and diversification.

A delicate balance will have to be struck regarding these two requirements for future growth.

No Community Member State currently represents more than 6% of the world telecommunications market - whereas the United States has more than 35% and Japan 11%. Taken as a whole, the Community's telecommunications market corresponds to more than 20%.

Combined, Europe will be able to build a sound economic base for its telecommunications, information services and information technology industries. In isolation, the current regulatory reforms in the Member States will not be able to bear fully their economic fruit.

Innovative new service offerings require the larger Community market to operate to full dimension, to have the necessary commercial and market potential, and to enjoy the requisite economies of scale.

The current phase of review in all Member States offers a unique opportunity to eliminate old barriers which have separated the Member States' telecommunications markets in the past and to promote convergence.

A debate on common objectives and the means to reach them is required concerning a number of basic regulatory issues :

- future rights and obligations of the network operator(s) ;
- conditions of use of the network infrastructure provided by the network operator(s) ;
- future degree of freedom for the services carried over this network infrastructure ;
- cross-border provision of services in the Community ;
- availability of certain vital "basic" services under reasonably equal conditions everywhere in the Community ;
- conditions for connection of terminal and customer premises equipment to the network infrastructure ;
- the creation of a Community-wide market for this equipment ;
- standardisation and compatibility.

The Community must take up these issues now, if a common market in telecommunications is to become a full reality by 1992.

# IV TECHNICAL ASPECTS

## 1. Main technological developments

Recent years have seen a tremendous change in the technology available for the construction of telecommunications networks.

The developments that have most affected telecommunications have taken place in four major areas as follows :

- micro-electronic development, in particular the manufacture of complex circuits on a single integrated circuit chip ;
- digitisation, i.e. the operation of telecommunications functions, both switching and transmission, in a digital form ;
- the introduction of Stored Program Control (SPC) exchanges ;
- new transmission techniques : optical fibre, improvement in microwave and satellites and the revolution in communications and the audio-visual sector resulting from them.

Regarding impact on the future regulatory environment, major consequences have been:

- growing "intelligence" of network and terminal equipment;
- changes in network economics;
- the trend towards integration, with the resulting development of multipurpose terminal equipment, the multipurpose "neutral" digital network infrastructure, and the blurring of boundary lines between services.

Details and consequences of these developments are reviewed briefly below.

### 1.1. Growing "intelligence" of network and terminals

The technological developments have led to corresponding advances in telecommunications networks.

Firstly, the introduction of digital, transparent networks controlled by sophisticated computers has meant that many of the functions that were previously carried out inside the network (and thus could only be carried out by the controlling administration) can now be performed outside the network by the increasingly sophisticated terminal equipment.

Secondly, the range of services that can be offered by the switching systems is increasing. Telecommunications exchanges can now perform many additional functions in addition to switching simple calls. For example the exchange can also store, process and retrieve information, i.e., it can perform a mixture of telecommunications functions and electronic data-processing (EDP) functions.

## 1.2. Changes of network economics

The cost of technology has dropped dramatically in real terms over the last few years. Thus the cost of implementing a given function in hardware has fallen, or conversely, the level of sophistication available for a given unit cost has increased.

For telecommunications major trends can be summarised as follows :

- the importance of the cost element "distance" has fallen compared with the cost element "usage time" or "connection time". Thus the cost of provision of long distance has fallen much more than the cost of provision of local traffic ;

- the cost base of international, and in particular inter-continental traffic has fallen substantially in real terms ;

- the cost to the user for terminal equipment is declining, at the same time that the level of sophistication is increasing.

Technological developments are, furthermore, changing the distribution of the economic costs of telecommunications.

Years ago the cost of the provision of bandwidth between switches was high compared to that of the switches. Today the reverse is true, with transmission bandwidth being relatively cheap and there being now much less incentive to employ bandwidth saving techniques, except on the longest distance circuits.

The "computerisation" of switches has lowered substantially the per unit cost of switching and other network intelligence. At the same time, the share of software in the overall development cost of switches has risen dramatically over the last decade. It now represents 80% of development costs - one of the main factors behind the current dramatic restructuring of the manufacturing side of telecommunications.

## 1.3. Development of "single" (multifunctional) terminals

Up until recent technological developments, a terminal (for example a single telephone or a telex machine) was a device with a very limited range of capabilities, performing only those functions that were necessary for it to act as a terminal. For example a telephone had a dial, a bell, a handset and passive electronic equipment to perform transmission and signalling.

In order that this terminal interfaced correctly and safely with the telecommunications network, standards were developed by the controlling Telecommunications Administrations that detailed all of the functions that the terminal had to be capable of performing. Thus for a telephone, the dial speed and make / break ratio were defined, as were the impedance and sound output of the bell and the transmission characteristics of the electrical to acoustic conversion.

Over the last ten years, however, it has become possible to construct single terminals with a wide variety of functions, some of which relate to telecommunications needs, some to improving the performance or usability of the terminal when connected to the network (for example a memory dialler) and some which are completely divorced from the telecommunications functions (for example a clock in a telephone or off-line preparation capabilities in a telex terminal).

The trend towards multifunctional terminals will become wide-spread with the introduction of ISDN - capable terminals.

These current and future combinations of telecommunications-related technology and other functions makes it now necessary to review the arrangements whereby specification preparation and approval certification are performed by the Telecommunications Administrations.

## 1.4. Development of the sophisticated multi-purpose Private Branch Exchange (PABX)

As with single terminals, the PABX has seen a considerable number of changes over the last few years.

Modern PABXs provide many features in excess of basic telephony requirements ; for example the PABX will usually have a number of additional telephony-based features (ring back when free, diversion on busy, etc.) as well as providing access to a variety of internal and external resources.

Furthermore the PABX may form the basis of an "office automation" centre, including functions such as word processing, electronic mail distribution, etc. The PABX may also be the hub of an intelligent network and may be programmed to perform as the controller of network routing, including least cost and traffic determined routines.

Thus modern (digital) PABX's are a key locus of the two tendencies of:

- the convergence of EDP functions with telecommunications;
- the blurring of the distinction between network functions and premises equipment functions.

## 1.5. Development of "intelligent" private networks

In a similar way to that indicated in the previous sections, the in-house private network has developed considerably over the last few years.

Private networks may now be very large, may convey a mixture of private and public traffic, may be constructed of a wide variety of equipment operating with a range of different techniques (e.g. PBXs, LANs, etc.) and may have dynamic switching and routing capabilities. They may also simultaneously switch both voice and data traffic.

In particular, because of the introduction of transparent, digital networks, most of the topological constraints that hitherto restricted the development of private networks have been removed and the freedom with which traffic can be routed - at least from a technical point of view - has greatly increased.

At the same time, the absolute cost in real terms of performing switching and transmission within a private network have both fallen, while the relative cost of transmission has diminished.

Thus private networks are increasingly technically able to execute the functions of switching and routing which have hitherto been in the domain of public networks.

2. The trend towards integration : the possibility of carrying many services via one telecommunications network.

The full impact of the new technologies will be felt only during the second half of this decade, with the introduction of full scale digitisation, the Integrated Services Digital Network (ISDN) and later Integrated Broadband Communications (IBC).

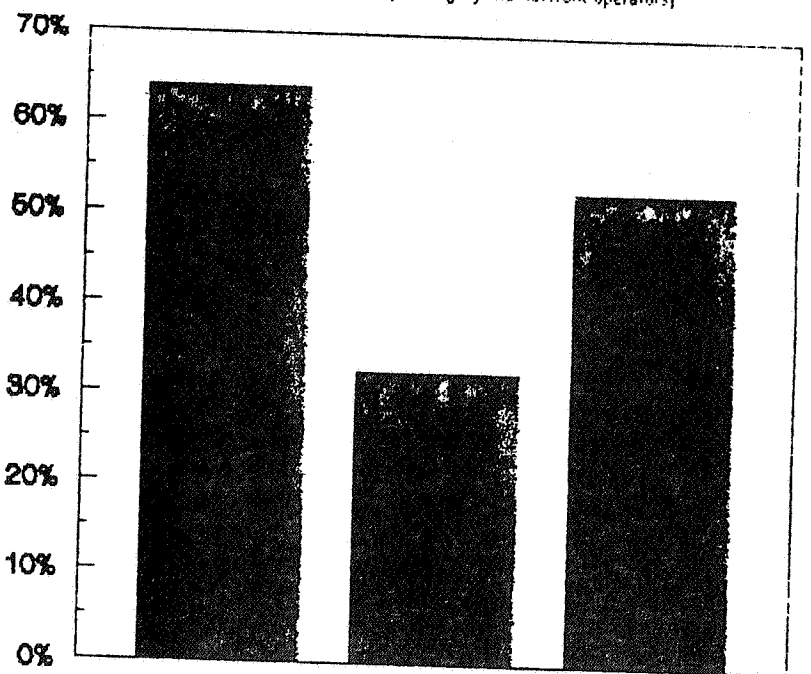
Fig. 2 shows the planned degree of digitisation of networks in the Member States for 1990.

Prior to the introduction of processor controlled telecommunications exchanges and digitisation of the networks, telecommunications transport and data-processing were largely separate.

Fig. 2

# Degree of digitisation of the telephone network in the Community (1990)

(according to current planning by the network operators)




Community total averaged over 12 Member States

Source: CEPT (GSI), CEC studies.

Technological developments have largely removed this division.

Traditional telecommunications networks generally support only a single service. For example, the telephone network supports only telephony while the telex network supports only telex. The introduction of new technological capabilities has caused two moves away from this position.

Firstly there is the introduction of new services where the service is fully defined within the terminal functions, and thus the service is independent of the network over which it is required to run.

Secondly, the introduction of ISDN will create the potential for a service-independent network i.e., one that will support a wide range of services all running on a single "neutral" network.

In the medium- to long-term, modern telecommunications networks will be more and more "neutral", that is, they will be largely independent of the service being carried, or, conversely, they will be able to carry a broad range of services independently of network operation.

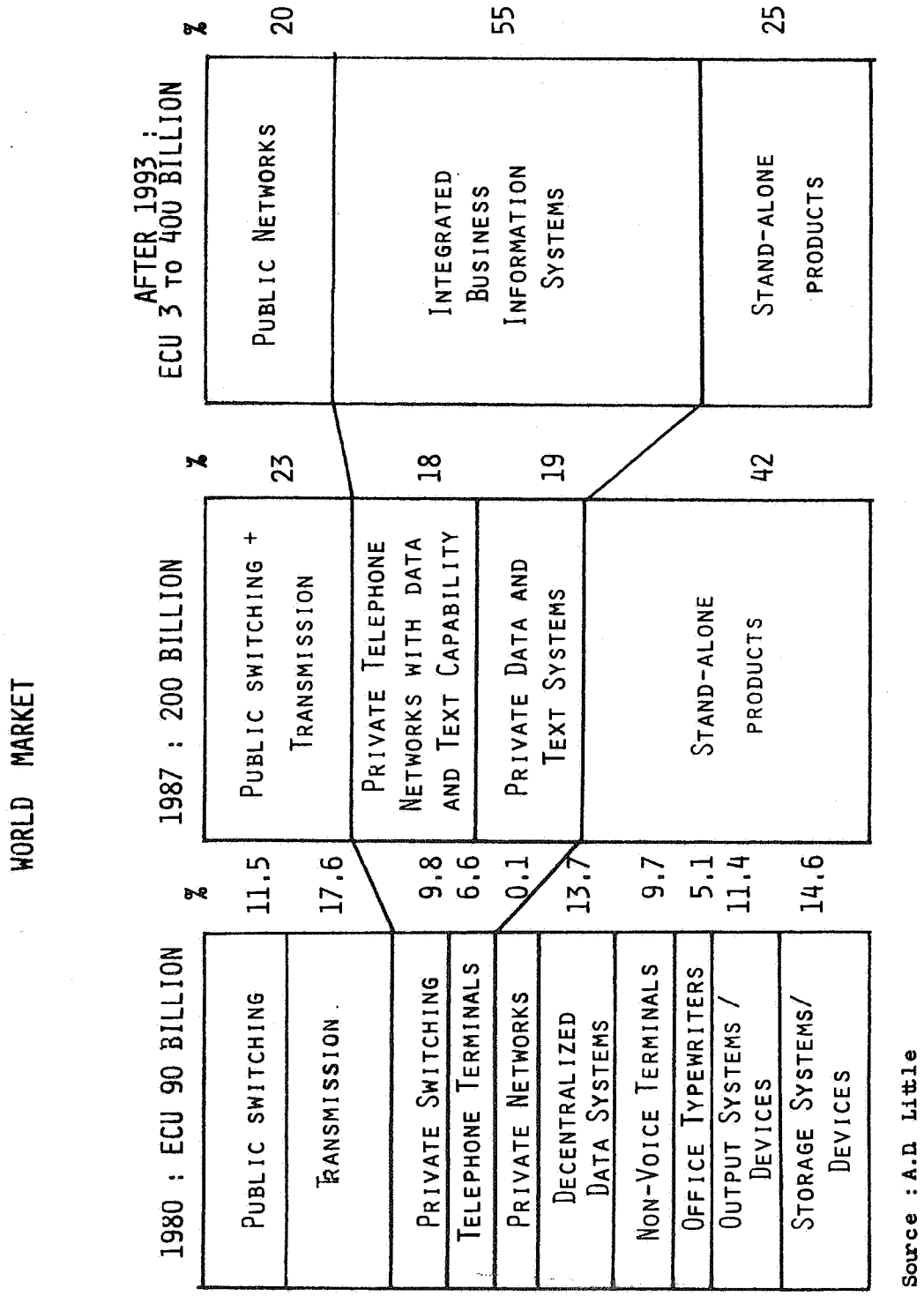
In the terminal equipment market the trend towards integration of functions will show up strongly before the end of this decade. It is estimated that the integrated office systems market will be worth more than $200 bn annually world-wide, with at least 20% of this accounted for by the Community (**Fig. 3**). Recent surveys amongst major industrial companies in Europe show correspondingly large growth expectations for non-voice (data, information and text) communications of 25-40%.

3. The difficulty of defining boundary lines : "basic" services and "value-added" services

The new technological possibilities have led to the emergence of a multitude of new services and to the blurring of traditional boundary lines between services. The future definition of services has become a major issue.

Fig. 3

# TREND TOWARDS INTEGRATED SYSTEMS




Source : A.D Little

## 3.1. "Basic Services"

The traditional "basic" telecommunications services were telephony and telex. These represent world-wide fully interconnected networks which are widely understood and widely used.

The basic principles of these two services have changed very little over the years, although both have benefited from an increasing level of technical sophistication, both in network equipment and terminal equipment.

## 3.2. "New basic services"

As technology has evolved, Telecommunications Administrations have introduced new services, some of which have become accepted as basic services in some Member States (but not in others). Examples of these differ throughout the Community but include :

- Packet Switched Data Networks ;
- Circuit Switched Data Networks ;
- Teletex ;
- Electronic Mail ;
- Videotex.

There is no universal agreement even within the Community Member States on the constitution of "basic services". The impossibility of agreeing on precise "technically-based" definitions is a major new fact resulting from technological development.

## 3.3. Provision of additional functionality

Taking advantage of the technological advances it is possible to enhance the "basic services" by providing additional functionality either :

- in the basic network by incorporating additional features, typically in the exchanges ;

or

- in the customer terminal equipment.

To a large degree both methods can provide equivalent features (for example for telephony it is possible to provide a feature such as "short code dialling" either from the exchange software or incorporated within the terminal).

Similarly it is possible to incorporate a range of complementary features, some implemented from the network, some from the customer terminal equipment and some partly implemented in each.

It becomes more and more difficult for the Telecommunications Administrations to have complete control of the implementation of functions, even within "basic" services.

## 3.4. "Value-Added Services"

As well as a range of "basic" services there is also a growing variety of "value-added" services, defined in some countries as "enhanced" services.

"Enhanced" services are generally services where there are additional functions provided over and above the basic conveyance functions. Indeed, it is just this definition that has been used in some countries to attempt to differentiate between "basic" services and "enhanced" (or "value added") services.

However, the problem in defining enhanced services is to do so in an era of evolving technology and with a rapidly growing number of services.

Therefore if a definition of "value-added" services is used in order to maintain boundary lines between those (basic) services that can be provided as an exclusive function of the Telecommunications Administration and the (value-added or enhanced) services which could be provided by any other operator, then :

- firstly, there would appear to be fundamental difficulties in classifying existing services ;

- secondly, at the very least, the regulatory powers will need to be constantly updated as technical capability evolves.

This second aspect would leave "value-added" service providers in the position of not knowing in advance whether a new service that they may wish to introduce will be classified as "enhanced" or not and whether that classification may change with time. This position could clearly hamper the introduction of new services.

## 3.5. Integrated Services Digital Network (ISDN) Services

Agreement has been achieved on the co-ordinated introduction of ISDN in the Community (see Chaper VII). There is however at present neither an agreement between Member States on which ISDN services may be "basic" and which are not. Nor is there any agreement as to the relationship (if any) to be adopted between basic and enhanced services and the ISDN definitions of "bearer services" and "teleservices".

## 4. Evolution of satellite Technology

Over the last ten years the use of satellites has grown very rapidly and satellites are currently used to provide a number of different services, in particular broadcasting and telecommunications services. A detailed description of satellite services in Europe, current arrangements, and future trends is given in APPENDIX 2.

There have been considerable developments in satellite systems. These have primarily come about as a result of technical innovation, in particular in the design of satellites. The satellites themselves now have more power available for on board transmission, have increasingly lengthened lifetimes and can provide increasing numbers of shaped service area footprints.

The ground station equipment has also substantially evolved, in particular with the advent of the new generation of front end receiving equipment. The recent trend has been towards development of very small satellite antennae (VSAT or "microterminals").

Operational techniques applied to satellite communications have improved with FDM, TDM, TDMA and combinations of these now all in operation, more frequency bands being exploited and moves towards the "intelligent" satellite (i.e. satellite incorporating on-board real-time switching) now at the planning stage.

Satellite based systems are capable of providing transmission capacity with a unique set of attributes, in particular very wide geographic coverage and the ability to provide point to point, point to multi-point, or multi-point to multi-point services. Satellites can also provide transmission capacity between two locations for one way or two way transmission.

Thus satellites present a number of challenges :

- firstly, they can provide services over wide geographic areas usually straddling many country boundaries ;

- furthermore, the economics of providing satellite services have a different structure compared with those that apply for terrestrially based services. Satellites in general have truly distance independent costs, and thus pave the way for the introduction of distance independent tariffs ;

- finally, the cost of bandwidth on a satellite is not a linear function, but, for various technical reasons including spectrum allocation and transponder design, increases disproportionately as bandwidth demands increase.

For the purposes of regulation, traditionally, a distinction has been made between "broadcasting" and "fixed transmission" satellites. These two aspects often come under the control of different arms of government and are typically operated by different organisations having different ownership regimes (public or private). Usually the fixed transmission satellite services are provided in the Community by the Telecommunications Administrations under a monopoly arrangement whereas broadcasting services are provided, at least in part, by government controlled or independent broadcasting companies (for details see APPENDIX 2).

Between the roles of broadcasting and fixed transmission satellites is a growing grey area. This area includes aspects such as fixed satellite services providing a point to multi-point service (which begins to look very much like a broadcast service) or a similar arrangement where the operators of the up-link (to the satellite) and the down-link (from the satellite) may be different parties.

Within Europe, the space segment is currently provided by one of three possibile satellite systems, namely EUTELSAT, INTELSAT and TELECOM 1. The ground station equipment is however provided by the various Administrations concerned. In addition, INMARSAT provides mobile satellite services to ships at sea, and in the longer term may also be providing services to other mobiles, in particular to aircraft and trucks.

At this stage, the situation is characterised by the introduction of point-to-point satellite business services and by a growing potential of point-to-multipoint applications linked to the emergence of the very small antenna (VSAT) earth stations, suited for receive-only operation or low rate two-way data exchange.

The regulation of satellite services is one of the major problems that has to be faced by the regulatory authorities in the Community. Because of the international nature of satellite transmission, there will need to be a degree of commonality between Member States to ensure the development of Europe-wide satellite communications and the development of the market potential.

5. Evolution of Cable-TV Network Technology

Cable TV networks were originally introduced as a means of providing an improved service to domestic customers of broadcast television services that could be provided by fixed station broadcasting. While this remains the primary aim of most Cable TV networks in Europe, increasing emphasis is being placed on the introduction of other services, running over the Cable TV network. In particular "interactive" (i.e. telecommunications) services (two-way use) are now being introduced on a trial basis on Cable TV networks in a number of countries.

Cable television (CATV) and master antenna televison (MATV) services have been established for many years in various Member States. Regulation has reflected the local character of these services , often treated as local utilities. As long as CATV and MATV consisted of one-way systems relaying terrestrially broadcast services, they could be considered outside the mainstream of telecommunications regulation.

Changes in technology mean that CATV and MATV networks and services can no longer be considered in isolation. The most significant technological change is the incorporation of switching into more recent CATV networks and upgrades to older systems. This enables operators to segment their services and make networks technically capable of offering two-way services, including potentially voice telephony. Inclusion of fibre optic cable means the capacity of CATV networks is increasing.

The long-term technological trend is towards integration into one homogeneous telecommunications network infrastructure - Integrated Broadband Communications (IBC) (see Chapter VII - RACE Programme).

In conclusion, CATV networks can be seen in relative isolation, as long as they are developed for the purpose of one-way TV programme distribution only. As two-way usage becomes a technological possibility in the longer term, the development of economies of scale and scope with a view towards the evolution of general integrated broadband communications is likely to become a major regulatory concern.

## 6. Conclusions

The introduction of modern technology has had, and will increasingly have, a far reaching effect on the development of telecommunications networks and services, and on the future evolution of satellite communications and Cable TV networks. Furthermore, this introduction has highlighted the need for changes to be made in the regulatory control of telecommunications. In particular the convergence of telecommunications and data-processing gives rise to a need to review the situation, since two converging industries are doing so from opposite ends of the regulatory framework.

The implication is that changes will invariably have to be made in the methods of organisation of the telecommunications sector :

- the introduction of digital technology has made it possible that many functions that were previously possible only inside the network can now be performed outside the network by increasingly sophisticated terminal equipment including PABXs. The multiplication of possible functions has led to a substantial potential for service differentiation and innovation which is at the heart of the new so-called value-added services.

- the cost economics of the network have been substantially changed. The cost of provision of long distance traffic has fallen much more than the cost of provision of local traffic.

- modern telecommunications network infrastructure will be technically more and more able to carry a broad range of services independent of the network infrastructure operator and provided by operators outside the network.

- while the digitisation of the network infrastructure has opened new opportunities for other providers, the trend towards integration has led at the same time to substantial economies of scope for integrated service offerings, such as made possible by the Integrated Services Digital Network (ISDN).

- the trend towards integration has also led to a blurring of traditional boundaries between services. There is at present no agreed definition of "basic services" within the Community, nor at the international level such as in the framework of the International Telecommunications Union ;

- both additional "basic services" and enhancements to the existing "basic services" - brought about primarily by technological evolution - mean that it will be extremely difficult to maintain a technically-based definition of "basic services", except on a temporary basis and subject to review ;

- if there is no common definition of basic services, then by extension there is, at present, no common definition of "enhanced" or "value-added" services ;

There are now many service functions and features that can be performed either by the public network or by a private network or the terminal equipment attached to the network.

This factor tends to make traditional regulatory boundary lines of services more and more unstable. All countries are confronted with the option of either extending the application of telecommunications regulation to the sector of data-processing terminals and imposing more and more restrictions (many of which will be difficult to control) on the growing capability of private installations in switching and intelligent functions, such as on digital PABXs or personal computers connected to the network, or defining the telecommunications regulatory framework more narrowly, allowing the full benefits of technical progress to be reaped.

The trend points world-wide towards the latter solution. The question facing Europe is how to translate this trend into a step-by-step transformation of the regulatory measures in force.

Regarding evolution of satellite technology, the future regulatory environment for the new types of point-to-point and point-to-multipoint uses will have to be carefully examined if the technological and market potential is to be realised. Special attention will have to be given to the emergence of very small antenna earth stations (VSAT - "micro-terminals"), suited mainly for receive-only use and low rate data exchange.

Regarding Cable TV network evolution, the growing potential for two-way use brings Cable TV networks into the mainstream of telecommunications policy considerations. Careful consideration will have to be given to their relationship with the telecommunications network infrastructure, if economies of scale and scope deriving from the long-term evolution towards an integrated broadband infrastructure are to be exploited.

## V ECONOMIC ASPECTS

The opportunities presented by the new telecommunications technologies will have a potentially very important impact on future economic growth in the Community. Three distinct but interlinked growth processes are at work:

- firstly, improved access to better information raises productivity throughout the economy;
- secondly, improvements in communications raise the utility, and consequently the marketability, of both old and new services. This leads to their expansion;
- thirdly, transition to the new service-driven and information-based economy requires very large public and private investment in a new infrastructure, both physical - cable, switches, terminals - and human - the development of value-added telecommunications services.

### 1. The growth of the service economy

The quality - both technical and organisational - of telecommunications will be crucial for future economic growth since it determines the capacity of the economy both to generate, and to use efficiently, the single most important factor of modern "production" : knowledge. The geographic organisation of the infrastructure will strongly influence, just like the 19th century railways, the economic, social and cultural space of tomorrow.

By providing the conduit for the enhanced exchange of information and for enhanced information services, the merger of EDP and telecommunications will play the role in the field of knowledge and intelligence which was formerly played by energy in the physical enhancement of human strength.

As pointed out in the Annual Economic Review 1986-87,

"Over the last 25 years, there has been a significant shift in the shares of the major sectors in nominal gross value-added of the Community. The main thrust of this movement has been a steady decline in shares of manufactured and agricultural products on the one hand and an expansion of both market and non-market services on the other hand...

"At current market prices, the share of manufactured products in gross value-added in the Community (EUR 6) has declined from 33% in 1960 to about 26% in 1983... This declining pattern is mirrored by the corresponding share of market services, which expanded from 36% to over 43%. The share of non-market services... also grew steadily... from 11% to 15%. [Annual Economic Review 1986-1987, European Economy, No. 29, July 1986.]

"Between 1970 and 1983, the share of employment in the Community (EUR 6) accounted for by market and non-market services rose from 48% to 59%. [Annual Economic Review 1986-1987, European Economy, No. 30, November 1986]."

Thus services already account for nearly two-thirds of Community output and employment. By the year 2000, two thirds of the GDP of advanced countries will be generated in strongly information related activities.

Indeed, current statistics underestimate by a considerable margin the share of services in the economy : services within manufacturing firms are counted as industrial value-added. Yet, to take an extreme example, up to 80 per cent of the cost of computers (including, for instance, telecommunications switches) is made up of software and other services. Even blue-collar workers on the assembly line may simply exercise a service function, e.g. monitoring tele-guided robots.

The role of telecommunications is crucial in this development. Traditionally, most services, excluding transport and tourism, were produced and consumed locally : through face-to-face contact (e.g. financial services ; legal, technical, and economic consulting) ; or, in the case of informatics, generated through largely local man-machine interactions.

The combined effect of digitisation and the phenomenal increase in carrying capacity of modern telecommunications introduces services into the exchange economy at least on a par with goods.

One result of this opportunity to exchange services is a potentially decisive increase in the productivity - in qualitative and quantitative terms - of the whole economy : of local services; of manufacturing due to techniques such as Computer Integrated Manufacturing (CIM); and of agriculture. **Figure 4** illustrates the manifold links between "exchange services" and the rest of the economy.

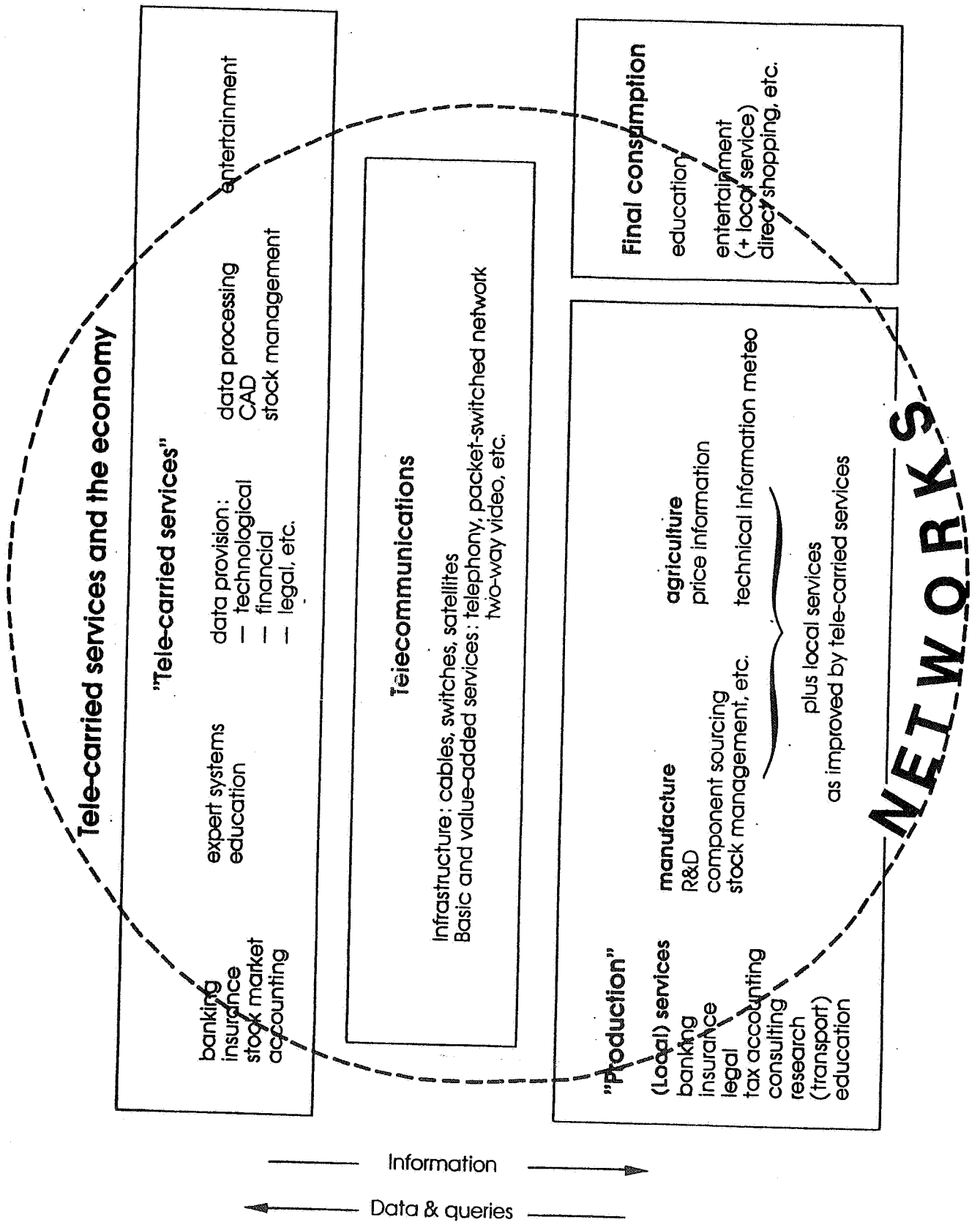
## 2. From local to traded services

Unlike any other factor of production, knowledge has the property that it is not consumed when it is used. It must however be produced, and hence requires a market as an incentive for production. Here lies the "supply-side" significance of creating a European market for services (in addition to the market advantages of scale economies, specialisation, and competition.)

Nevertheless, the final beneficiaries of better access to (more and better) knowledge are the users, especially enterprises. If knowledge is to enter continuously into the production and marketing processes of locally produced goods and services it must be "transported" via an efficient conduit at low cost and high speed. Last, but not least, it must be packaged in ways which maximise its utility. This is the task of a growing part of the services industry, whose productivity, again, depends on the size of the market.

It is in this context that the European dimension of developing an integrated, telecommunications-based services market becomes particularly important. In purely technical terms, modern telecommunications reduce the economic significance of geographic distance. But it depends a) on the physical infrastructure ; and b) on the regulatory environment, whether this property draws Europe closer together or pulls it further apart : the technical and regulatory properties of telecommunications systems may favour the development of predominantly national circuits of information exchange ; or exclude certain parts of the Community with inadequate infrastructure ; or again lead to the Community as a whole occupying a subordinate position in the global information market.

Fig. 4



One example is provided by the problem of the Community's peripheral regions. At present, these are prevented from making a full contribution to the European economy both by physical transport costs and by an often sub-standard telecommunications infrastructure. As the "knowledge-content" of economic output increases, this last factor represents a larger danger of isolation than mere geography ever did.

On the other hand, proper telecommunications can suppress geographic distance like no other technology before. They can also, at very low cost, supply missing inputs in economic regions characterised by an uneven scientific, technological, and services infrastructure. An accelerated programme of investment in digitised, and later broad-band, technologies, as foreseen in the STAR programme (see Chapter VII), could turn the potential danger to the development of the periphery posed by the informatics society, into a unique opportunity to overcome the handicap of geographic isolation.

A second example is the impact of telecommunications infra-structure and regulation on the location of tomorrow's information based-service industries. Services like data banks, data-processing and, more importantly, financial services, are highly sensitive to infrastructure and the conditions under which that infrastructure can be used.

It is on these two elements : technical quality and access conditions to the telecommunications infra-structure, that Europe must compete for the location of the tradeable-services industries of tomorrow.

For the sake of the efficiency and competitiveness of the users of services, access to the best information is crucial. Equally, European firms producing marketable knowledge - engineers, market analysts, etc. - have an interest in a functioning global network of communications through which to sell their products. Easy two-way access of European service providers and users to the global market is therefore necessary.

On the other hand, if Europe's internal services market remains fragmented, and hampered by restrictive access conditions, economies of scale will favour outside suppliers with large home markets. Such an outcome would have obvious effects on employment ; and less tangible effects on the content of knowledge.

The Commission has made, and is making, efforts to create a European information market (see Chapter VIII). It is now for the regulators and providers of telecommunications services to create the technical and regulatory conditions to let that market flourish.

3. Investing in the infra-structure for tomorrow's service economy

Provided the present opportunity for giving a modern regulatory framework to the telecommunications sector is used, short-, medium- and long-term growth and employment in the Community could receive a decisive boost from :

- the investments to be made in telecommunications network infrastructure ;
- the investments stimulated in the terminals manufacturing industry and the new telecommunications services ;
- the lowering of costs in industry and service in the economy as a whole.

Total investment by the Community's Telecommunications Administrations per annum is running currently at approximately 17 billion ECU (1985).

Such investment has a high short-term multiplier in macro-economic terms : 1 billion ECUs invested brings 1.5 billion in extra activity directly. In addition, infrastructure investment has a very high multiplier effect on the terminals market and the market for (new) telecommunications services, doubling its direct impact.

Telecommunications represent the biggest and most significant civil investment in new technologies and services in the Community in the foreseeable future.

At least as important as the macro-economic effects of a flourishing European telecommunications sector is its strategic importance for the micro-electronics and informatics sector of which it is part, and which is generally considered the key to Europe's economic future. Telecommunications not only provides just under a fifth of the market directly for the products - micro-chips, computers, software, etc. - of this sector.

They also create market opportunities for the industry indirectly by enhancing the use, and usefulness, of presently unconnected, non-communicating computers in the home, school, and, above all, office and factory. The ability of the European micro-electronics and telecommunications industries to capture an adequate share of an expanding market at home, and hence to be able to compete abroad, must be a major concern.

To reap these economic benefits, the telecommunications system of the future must fulfil two, partially contradictory, conditions :

- The scope for market forces, competition and innovation must be increased, both for manufacturers and for services providers in the Community ;

- At the same time, the financial viability of the network infrastructure providers must be assured if they are to engage in the massive front-loaded investment needed to prepare the infrastructure of tomorrow's service economy.

4. Developing the basic network infrastructure

The policy framework in which this infrastructure investment takes place has major implications for the supplier industries and the network providers.

The network providers must be in a position to finance the required investments. The obstacles to this lie partly in the regulatory context. But the economics differ for the extension of current first-generation services (telephony and telex) on the one hand, and preparing for second and third-generation services on the other.

Telephone penetration is still relatively low in many parts of the Community. Expanding basic telephony is thus an economic proposition for the carriers, even without taking into account the broader impact on business efficiency and overall welfare. If that investment has not yet been forthcoming, it has often been because of controls on both investment plans and user tariffs in pursuit of laudable short-term macro-economic goals, but damaging a dynamic source of overall economic growth in the process.

The problem is more complex as regards investment in digitised and broad-band capable infrastructure for the future advanced services. This is rendered difficult by the fact that there will be a considerable time lag between the investment and its full commercial benefit. This is a familiar problem in telecommunications. But today it is rendered much more acute by two factors :

- the novelty of the technologies - requiring innovation, investment and market development on the part of the user and industry far more complex than that involved in the spread of simple telephony ;

- the necessity of making assumptions about traffic growth regarding uses which are still not in existence, such as future video-services.

Yet unless investments by the main network infrastructure provider(s) are carried out on the requisite scale now, manufacturers or terminals and service providers will not have the security and incentive to engage in the necessary R&D and capital investment in their turn.

Since it is in the public interest that this potential deadlock be broken, it must be the part most closely under public control, i.e., the central network infrastructure , which takes the lead. It must be ensured that the new digital narrow-band and broadband infrastructure will be provided in all Member States within a reasonably equal time to ensure the pre-requisite for future efficient national, Community-wide and world-wide communications; essential both for future economic and social development but also for emergency and security purposes.

To ensure that this costly investment task is carried out, re-regulation of the telecommunications sector must safeguard the revenue-earning capacity of the central network infrastructure provider(s). This includes reasonable protection against excessive "cream-skimming" : exploitation by competitors of the most profitable parts of the market (i.e., high-density business traffic).

5. The requirement for a more competitive market

Against this must be set the requirements of the rest of the telecommunications system which is served by the central network : new services and an increasingly specialised and sophisticated terminal market.

The digitisation of switching and transmission, and the ever increasing capacity of semi-conductors and transmission media (fibres and satellites) are creating new needs and opportunities for voice, data and ultimately video communications (see Chapter IV). Two facts stand out regarding these developing telecommunications markets : they are an essential part of the emerging information-based service economy ; and they are specialised, innovative, and therefore very different from the centrally provided telecommunications services of the past.

Non-voice "value-added/enhanced services" presently designated as such in Europe (for the definitional problems see Chapter IV) include services such as EDP time-sharing and database services, videotex services, ticket reservation, automatic bank tellers and other financial services, other retail services including teleshopping, electronic data interchange within industries for ordering, supply, etc., mailbox services, wordprocessing/facsimile/telex interfacing/protocol conversion, telemetry and telecontrol services, etc. In addition to non-voice value-added services, new specialised telephony-like services such as conference calls, deferred transmission, telephone message services, are emerging.

Videophone, videoconferencing and other inter-active services to be provided over the future broad-band network are being introduced at the pilot stage in some Member States ; and among several Member States due to Community promotional policies.

Many of these services require specialised software, and many of them special, or specially adapted terminal equipment, i.e., computers which store, switch, and display messages/signals. Even when the terminal is a simple personal computer (in the US 25% of PC's are already connected to the telecommunications network; for the Community this ratio is estimated at 10%), there is a knock-on effect on that market in terms of quantity and performance.

In nearly all Member States, approval of user premises equipment was historically controlled by the Telecommunications Administrations - who often acted as supplier, hence competitor, to the private sector. Similarly, the right to provide new services is in many cases reserved to, or controlled by the Telecommunications Administrations.

This situation was acceptable when the number of services and of different types of user terminals and equipment was very limited. It has now become less appropriate in terms of management of change and of economics. An excessively restricted structure of supply deprives the emerging technologies of the creative impulses of a competitive market. This therefore constitutes one of the reasons for the current efforts of the Member States at re-regulating the telecommunications sector.

In certain cases, the providers of basic network infrastructure and services, may indeed be in the best position to act as innovator : especially when introducing those of the new services which are destined to become universal, such as the basic ISDN network infrastructure and the videophone. They can generate high volumes more quickly, as has been demonstrated with the introduction of the Teletel/Minitel service in France, setting up a positive spiral of lower cost, fast diffusion, hence greater usefulness for subscribers.

But in general, an open, competitive market for new service providers and terminal manufacturers can make a substantial contribution to the rapid spread of the new services, under the current conditions of rapid development of technology and market opportunities.

Securing a wide range of choice for the consumer requires creating this flexibility for all European market participants - including the strongest ones : the Telecommunications Administrations - even if the co-existence of dominant and other providers in a competitive market can lead to complex regulatory problems, as experience elsewhere has shown.

## 6. Employment and social effects

In the Community's co-operative growth strategy for more employment, "paying due regard to the social aspects, the adaptability of markets for goods, services, capital and labour must be improved, and, in particular, the establishment of new firms, the development of vocational training and the introduction of new technologies must be promoted...

"The reinforcement of the potential for growth and the resulting employment performance necessarily go hand in hand with structural adjustment. But this structural adjustment will be that much smoother if it unfolds against a background of dynamic growth in which the social dimension of the adjustment can be more easily taken into consideration." [Annual Economic Review 1986-1987, European Economy, No. 30, November 1986, p. 9, 61.]

The emergence of an advanced and efficient European telecommunications system will cause deep changes in the economy : more efficient organisation of production, narrowing differences in geographic location, growing efficiency / innovation of services, etc. Changes of this magnitude cannot fail to have a deep impact on society and on the nature of work.

The broader social impact ranges from changes in leisure through new forms of inter-personal and inter-group communication made possible through inter-active broadband technologies to decentralised individual education. The possibilities offered for those most isolated in society, invalids and the elderly, are only beginning to be explored. The enhanced possibilities for the flow of information must be matched by the development of legislation serving to protect the public interest in certain key areas, notably the protection of privacy of the individual (see Chapter VIII).

As regards the level of employment, the macro-economic growth effects point clearly in the direction of overall job creation, although, in the short term, labour displacing effects can still be expected in the telecommunications industry and in the Administrations. It has been estimated that by the year 2000, up to 60% of all employment opportunities in the Community will depend heavily on the telematics technologies.

For one sector of the emerging communications market, the exchange of data, i.e., the linking of computers, the impact will come earlier. Present narrow-band networks, upgraded through digitisation and the introduction of ISDN, allow considerable expansion of data exchanges, especially if regulatory obstacles to such expansion are removed. Here the question of the employment and social impact merges with that of informatics in general. For one effect of better telecommunications is simply to increase the value of presently unconnected computers and/or reduce the cost of the services they can provide - and hence accelerate the spread of information. Wordprocessors become terminals for electronic mail or facsimile tele-printing ; data banks become accessible to more customers, etc.

Most directly concerned by the technological changes are those employed by the Telecommunications Administrations and by telecommunications industry.

The Telecommunications Administrations employ nearly one million people in the Member States. The telecommunications equipment industry employs a further 350,000 people. Those whose work is the maintenance and operation of electromechanical telephone exchanges are faced with the prospect of profound changes in the nature of their jobs resulting from the introduction of computer-controlled exchanges.

Ways to counter-balance this must be found. The most important compensation can be achieved on the basis of the active introduction of new telecommunications services. "PTT's must meet the needs and demands of all customers by extending the range and improving the quality of services they provide". "To this end PTTs must have the possibility to master and use technological developments and must ensure the most efficient use of public resources" (19th European Congress, Postal, Telegraph and Telephone International (PTTI) Unions, Copenhagen 1986).

In order to ensure a smooth transition towards new job opportunities created by the growth of new services, appropriate schemes for retraining and mobility of personnel are needed. In a period of far-reaching changes in the job content of a high number of employees sufficient consideration for employees' needs for security and for assistance will need to be shown by all those concerned. Moreover, mobility schemes should be so designed as to take into account the social problems which may arise for the workers concerned, particularly when they imply the relocation of the workers and their families. Only with the full co-operation of all personnel can the needed changes in the methods, tasks and technology of telecommunications operations take place.

It will be in the employees' medium-and long-term interest to create in Europe for this sector a growth-oriented stable environment. But acceptance of change and a smooth transition can only result from an intensive dialogue with the social partners at the national and the Community level. This must be an important consideration for any modification of the conditions under which the sector operates.

In the long-term, the most important factor for the future evolution of the telecommunications and information technology sector and its regulatory environment will be the degree of social consensus which can be achieved regarding the new technologies.

As pointed out in a joint statement of UNICE, CEEP and ETUC, "the internal market must be completed rapidly. This will make it possible to release considerable growth potential which will reinforce the positive effects which the implementation of the co-operative strategy will have on investment and growth. Completion of the internal market should be accompanied by taking account of social policy and by the development of structural policies to strengthen the Community's economic and social cohesion as it is defined in the Single European Act." [Joint opinion of the Social Partners on the co-operative strategy for more employment, European Economy, November 1986, p. 109.]

## 7. Conclusions

With the emergence of the service economy, a strong telecommunications infrastructure becomes an essential component for promoting a harmonious development of economic activities throughout the Community and for achieving the Community-wide market for goods and services by 1992.

- The emerging new telecommunications services - and notably value-added services - will play a major role in the future tradeability of services in general and the location of economic activities ;

- The financial viability of the Telecommunications Administrations must be maintained in order to ensure the build-up of the new generations of telecommunications' infrastructure and the required investments and to guarantee efficient national, Community-wide and world-wide communications, essential both for the future economic and social development but also for emergency and security purposes ;

- The new services and terminals require market conditions which favour innovation, experimentation, and a high degree of flexibility : a more open competitive environment is required ;

- Securing a wide range of choice for the consumer requires that the Telecommunications Administrations be able to participate together with others in those markets which are opened to competition even if the co-existence of dominant and other providers in a competitive market may involve complex problems of regulation.

- The emergence of an advanced European telecommunications system will have a deep impact on society and on the nature of work.

- The broader possibilities for information flow must be matched by the development of legislation serving to protect the privacy of the individual.

- Questions of employment are a major aspect of the transition. In the Community, Telecommunications Administrations employ one million people, while the telecommunications equipment industry employs a further 350,000 people.

- Employment growth requires a growth-oriented policy, particularly in the future conglomerate sector of communications/information technologies within which jobs will shift from traditional activities to new opportunities. An intensive dialogue with the social partners will be necessary in order to ensure a smooth transition.

- In the long term the most important factor for the future evolution of the telecommunications and information technology sector and its regulatory environment will be the degree of social consensus which can be achieved regarding the new technologies.

**Fig 5a/b** summarises key data on the economic importance of Telecommunications in the Community.

Fig. 5 (a)

## OVERVIEW OF TELECOMMUNICATIONS IN THE COMMUNITY

| | 1984 | 1985 |
|---|---|---|
| Telephone Sets connected to the public Network ('000) | 160,290 | 167,715 |
| Number of Main lines ('000) | 108,411 | 113,805 |
| Total Staff in Telecommunications Services ('000) | 940 | 936 |
| Total Income from the Telephone Service (million ECU) | 48,182 | 53,127 |
| Total Income from all Telecommunications Services (million ECU) | 54,459 | 62,556 |
| Total annual gross investment in Telecommunications excluding land and buildings (million ECU) | 15,872 (1) | 17,037 (3) |
| Annual gross investments in telephone switching equipment (million ECU) | 3,075 (2) | 3,100 (4) |
| Telephone main lines per 100 inhabitants (% average) | 33.7% | 35.3% |
| Telephone stations (sets) of all kinds per 100 inhabitants (% average) | 49.9% | 52.1% |

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Source : latest edition of the International Telecommunications Union (ITU) Yearbook available - 1987 edition

(1) Ireland 1983 - Italy excluded
(2) Ireland 1983 - Denmark, Italy and United Kingdom excluded
(3) France and Greece 1984 - Italy excluded
(4) France and Greece 1984 - Denmark, Italy and United Kingdom excluded

Figure 5 (b)

| Country | N° of telephone sets connected to the public network ('000) | Main lines ('000) | Total Staff in telecommunications services ('000) | Total income from all telecommunications services (million ECU) |
|---|---|---|---|---|
| Belgium | 4346 | 3061 | 28 | 1394 |
| Denmark | 4005 | 2543 | 17 (1) | 1179 |
| France | 34347 | 23032 | 167 | 14182 |
| Germany F.R. | 37899 | 25589 | 212 | 15108 |
| Greece (2) | 3721 | 3111 | 31 | 714 |
| Ireland | 942 | 703 | 16 | 624 |
| Italy | 25615 | 17396 | 110 | 8351 |
| Luxembourg | 252 (3) | 154 | 0.7 | 74 |
| The Netherlands | 8840 | 5822 | 29 | 2542 |
| Portugal | 1835 | 1400 | 23 | 856 |
| Spain | 14259 | 9340 | 72 | 3293 |
| UK | 31654 (4) | 21654 | 230 | 14239 |
| EEC | 167715 | 113805 | 936 | 62556 |

Source : ITU Yearbook of Common Carrier Telecommunications Statistics - 1987
Reference year : 1985

(1) Source : Statens Teletjeneste
(2) Source : OTE
(3) Source : Luxconsult
(4) estimate

## VI. OUTLINE OF A REGULATORY FRAMEWORK TOWARDS WHICH CURRENT TRENDS COULD DEVELOP

The main aims for the Community compatible with technical and economic development and with current trends in the Member States should be the following :

- a common market in telecommunications terminal equipment ;
- a common market in telecommunications services ;
- a common market in telecommunications network equipment ;

### 1. National approaches

An overview of the main characteristics of regulatory developments in each Member State is provided in APPENDIX 1, covering :

- current features of telecommunications ;
- the current regulatory environment ;
- the main features of the current regulatory debate and expected developments.

**Fig 6 and 7** illustrate the current situation in the Community. Certain Member States have already separated the regulatory from the operational function, others have not. The United Kingdom has licensed two Public Telecommunications Operators, which are in competition ; the other Member States either only one each, or provision by several, but non-competing entities such as in Denmark and Italy. Postal and telecommunications functions are split in the United Kingdom, Belgium, Greece, Ireland and Portugal and are about to be in the Netherlands, while they are not in others. Telecommunications Administrations in the United Kingdom, Spain and Italy are involved in manufacturing; in Germany the Bundespost is forbidden from entering the manufacturing sector.

Figure 6

## CHANGES IN THE PROVISION OF TELECOMMUNICATIONS IN THE COMMUNITY

| Country | 1977 | 1987 (changes since 1977 and future orientations) |
|---|---|---|
| Belgium | RTT (Régie des Télégraphes et des Téléphones), reporting to the Secretary of State of the Ministry of Posts and Telecommunications. | Possibility of transforming RTT into an entity with a much greater degree of autonomy is under discussion ("four wise men" commission). |
| Denmark | P&T, Government Department, reporting to Minister of Public Works. Telegraphs, some telephone<br>KTAS, JTAS (50% state-owned) and PKT (owned by local authorities) telephone only. | Following the report of the Bernstein Committee (1985), some restructuring took place in 1986. Statens Teletjenste runs national trunk network and international services. |
| France | DGT (Direction Générale des Télécommunications), department of Ministry of Posts and Telecommunications.<br><br>FCR (France Cable et Radio), state-owned Company. | - Setting up of COGECOM (Compagnie Générale des Communications), holding company of all the PTT subsidiaries (Société Transpac, Telesystèmes, FCR, Entreprise Générale des Télécommunications)<br>- Communication Law of 30th September 1986 ; a further law on competition in telecommunications is to be introduced by the end of 1987.<br>- 1987: opening of mobile radio service provision to competition |
| Germany FR | DBP, Deutsche BundesPost, a Federal Administration | Setting up of a "Government Commission" to report on future regulation of telecommunications in August 1987. |
| Greece | OTE, publicly-owned but financially autonomous corporation, founded 1949. | No change |
| Ireland | P&T, headed by Minister of Posts and Telegraphs. | TE, state owned public corporation set-up in 1984. The regulatory authority lies with the Department of Communications. |

| Country | 1977 | 1987 (changes since 1977 and future orientations) |
|---|---|---|
| Italy | ASST (Azienda di Stato per i Servizi Telefonici), DCST (Direzione Centrale Servizi Telegrafici), DCSR (Direzione Centrale Servizi Radioelettrici), directly controlled by Ministry of Posts and Telecommunications SIP, Italcable, Telespazio: concessionary companies, subsidiaries of the state-controlled STET group. | Increase of SIP privatisation. Bill on the institutional reorganization of the sector proposed by the PT Minister. Bill on the liberalisation of maintenance has been approved (March 1987). Bill on discipline of telematic services is in discussion. |
| Luxembourg | P&T, government administration. | Government is considering whether to introduce a new law on telecommunications to redefine boundaries between the monopoly and the competitive sectors. |
| The Netherlands | PTT, statal organization under responsibility of the Ministry of Traffic and Civil Works. | Government decision to convert PTT from a state organisation to a limited liability company (government owned),starting from 1989, following reports from Swarttouw and Steenbergen Committees. |
| Portugal | CTT for services outside Lisbon and Oporto, TLP for Lisbon and Oporto ; both state-owned but financially autonomous. CPRM for intercontinental services. | CTT & TLP boards merged in 1978 ; operationally still independent. Two commissions have been appointed to report on a new telecommunications law, and on reorganisation of the sector (reports expected in first half 1987). |
| Spain | CYT, Government Department for Telegram, telex services. CTNE, set-up by ITT in 1924 but large state share since 1945, for telephone, data transmission. | CTNE re-named Telefonica and granted greater autonomy. A new comprehensive bill on telecommunications has been drafted February 1987, and is being considered by Parliament. |
| UK | Post Office, state-owned corporation reporting to the Secretary of State for Industry. | British Telecom, 49% government owned private company. Mercury Communications Limited, private company. Private services providers supplying mobile and value-added services, new general VADS license has been issued in February 1987. |

On the protection of network operators from "cream-skimming" by operators of leased lines, the positions adopted by the Member States also vary. All currently prevent simple resale (for voice traffic) on leased circuits. Some plan to approach the problem in the future by a general system of volume-sensitive tariffing. Other Member States are likely to introduce a selective element of usage-sensitive tariffs on leased lines used to supply value-added services to third parties.

The situation is changing rapidly. The United Kingdom has substantially modified the organisation of its telecommunications sector and recently issued a general licence for value-added and data services. France has undergone substantial change of legislation in the telecommunications / audio-visual field and will introduce major new legislation on future telecommunications policy in 1987. As indicated in APPENDIX 1, reviews or changes are underway in the Netherlands, Germany, Belgium, Italy, Spain, Portugal, and other Member States.

At the same time, the European Conference of Postal and Telecommunications Administrations is reviewing its organisation, in close interaction with, and in response to, the development of Community telecommunications policy (see Chapter VII).

2. Convergent trends

Yet despite the current diversity of national situations, convergent regulatory trends are becoming apparent. These trends are towards :

- opening of the terminal markets to competition ;
- a competitive value-added services (VANs) sector ;
- separation of the regulatory and operational functions ;
- maintenance of exclusive or special rights for the provision of the network infrastructure and a restricted number of basic services ; and
- more cost-oriented pricing for these services.

Telecommunications Administrations would be able to compete in the competitive markets.

01.06.87

PRESENT TELECOMMUNICATIONS MARKET STRUCTURES IN THE EUROPEAN COMMUNITIES [1]

| COUNTRIES | Belgium | Denmark | France | Germany | Greece | Ireland |
|---|---|---|---|---|---|---|
| 1. Relations with postal services | S (1) | PTT (5) | PTT | PTT | S | S |
| 2. Basic Service Network | | | | | | |
| a) Local | GM (PC) | OM (5) | GM | GM | GM (PC) | GM (PC) |
| b) Long-distance | GM (PC) | OM | GM | GM | GM (PC) | GM (PC) |
| c) International | GM (PC) | GM | GM | GM | GM (PC) | GM (PC) |
| d) Mobile | GM (PC) | OM | GM (6) | GM | PL | GM (PC) |
| Terminal Equipment | | | | | | |

PRESENT TELECOMMUNICATIONS MARKET STRUCTURES IN THE EUROPEAN COMMUNITIES [1]

| COUNTRIES | Italy | Luxembourg | The Netherlands | Portugal | Spain | United Kingdom |
|---|---|---|---|---|---|---|
| 1. Relations with postal services | S/PTT (5) | PTT | PTT (10) | PTT (5) | S (16) | S |
| 2. Basic Service Network | | | | | | |
| a) Local | GM (PC) | GM | GM (11) | GM (PC) | OM (16) | RC (LIM) |
| b) Long-distance | GM (PC) | GM | GM (11) | GM (PC) | OM (16) | RC (LIM) |
| c) International | GM (PC) | GM | GM (11) | GM (PC + OM) (5) | OM (16) | RC (LIM) |
| d) Mobile | GM (PC) | GM | GM (11) | - | OM (16) | RC (LIM) |
| 3. Terminal Equipment | | | | | | |
| a) Supply : | | | | | | |
| Main Telephone set | M | M | M (12) | M | M | L |
| PBX | L | L | M | L | RC (LIB) (19) | L |
| Telex | M (3) | L | M | M | L | L |
| Modem | M (3) | PL | L | PL | M | L |
| Data Terminal | L | L | L | L | L | L |
| Mobile | L | L | M (13) | - | L | L |
| b) Maintenance : | | | | | | |
| Main Telephone set | M | M | M | M | M | L |
| PBX | L | L | M | L | L | L |
| Telex | M | L | M | M | L | L |
| Modem | M | PL | L | PL | M | L |
| Data Terminal | L | L | L | L | L | L |
| Mobile | L | L | M (13) | - | L | L |
| 4. Use of leased circuits | | | | | | |
| a) Domestic : | | | | | | |
| Shared use/resale | N (9) | N | N (14) | N (15) | N | Y (17) |
| Interconnection with public network | N (9) | | N (14) | N (15) | N | Y (17) |
| b) International : | | | | | | |
| Shared use/resale | N | N (4) | N (4) | N (4) | N (4) | Y (18) |
| Interconnection with public network | N | N (4) | N (4) | N (4) | N (4) | Y (18) |

[1] SOURCES : Member States (SOG-T)
Abbreviations : see following page

**LEGEND** :

| | |
|---|---|
| PTT | Posts and telecommunications services provided by the same organisation |
| S | Separate organisation |
| M | Monopoly |
| PL | Partly liberalised (some types liberalised, others not) |
| L | Liberalised |
| GM | Government monopoly (government agency) |
| GM (PC) | Government monopoly (public corporation) |
| OM | Monopoly of other types (private entity, etc). |
| RC (LIM) | Regulated competition with limited entry |
| RC (LIB) | Regulated competition with liberalised entry |
| FC (LIB) | Free competition with liberalised entry |
| Y | Generally permitted |
| N | Generally prohibited |

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**NOTES**

(1) RTT and Régie des Postes depend on the same PTT Minister
(2) First telex terminal under monopoly, progressive liberalisation announced.
(3) On request by the CEC, progressive liberalisation announced.

The outline of the new situation that appears to be emerging is reflected in three "freedoms" - to use the network, to provide services over the network and to connect terminals to the network.

Current trends are converging. These converging trends provide the opportunity to achieve a common regulatory framework in the Community, allowing a common market for telecommunications to develop rapidly.

The Community has an obligation to ensure that no new barriers to trade in goods or services are erected between Member States during this de/re-regulation process, and that existing barriers are dismantled. It should benefit from the opportunity afforded by current changes to promote a single Community-wide market for telecommunications equipment and services.

3. The Common Market in terminal equipment

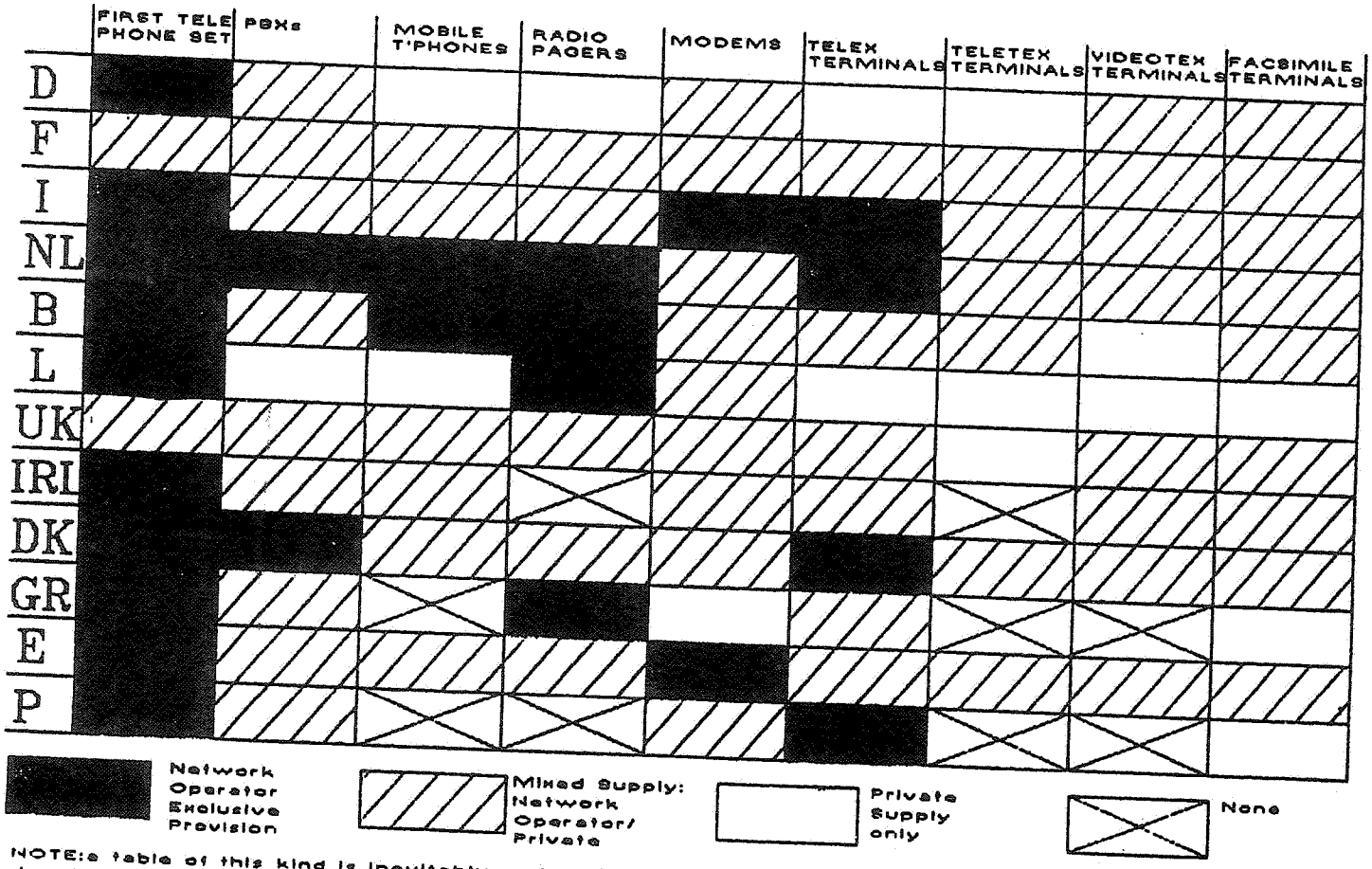
The current regulatory situation regarding the terminal sector in the Community is shown in Fig 8.

The trend in all Member States is towards progressive full opening of the terminal market to competition. However, provision is still currently reserved for the Telecommunications Administrations for a number of items of terminal equipment, in particular the first telephone set.

The current technological evolution towards multifunctional computer based terminal equipment, including ISDN terminals (see Chapter IV), will make the current trend towards competitive provision more and more inevitable. However, the change from the existing situation of sole supply of certain terminal equipment, in particular the first telephone set, to a competitive environment will have to allow, in certain instances, for a sufficient but defined time period for industry to adapt to the new situation.

Fig. 8

## Survey of Terminal Equipment Regulatory Supply Conditions




NOTE: a table of this kind is inevitably a simplification; it describes the dominant features of the regulatory situation in each country for public network terminating equipment

The framework for synchronising the current move towards full competition in the terminal sector at the Community level does exist : it is supplied by the provisions of the Treaty on the free movement of goods, by the decisions taken on common standards and mutual recognition of type approval, and by progress on the opening of public procurement.

It consists of the following main elements (for details see Chapter VII) :

i) the general surveillance and control function imposed by the Treaty regarding the free movement of goods and the adjustment of state monopolies of a commercial character. The Commission has made clear in the past that it will apply Articles 37 and 86 of the Treaty directly, as well as Article 90 in conjunction with Article 86 and more particularly the means at its disposal under Article 90(3) of the Treaty, progressively to terminal equipment, in order to support the current opening process.

ii) rapid and effective application of :

- Council Directive 86/361/EEC concerning the first phase of the establishment of mutual recognition of type approval for telecommunications terminal equipment, which was adopted by the Council on 9 June 1986 ;

- Council Decision 87/95/EEC on standardisation in the field of information technology and telecommunications, which was adopted on December 22nd, 1986.

iii) on this basis, Community-wide definition of the technical interfaces of the network with the subscriber terminal equipment, i.e. the Network Termination Points (NTPs).

Clear guidelines in this respect are given in Council Recommendation 86/659/EEC on the co-ordinated introduction of ISDN.

iv) Extensive application of Recommendation 84/550/EEC under which Member States agreed to open bidding on a proportion of the supply contracts being awarded by their Telecommunications Administrations to suppliers in other Member States. Regarding terminal equipment, the Recommendation provides for an experimental period during which network operators will give unrestricted access to their tender calls for all new terminals and for 10% by value of their total annual orders of conventional terminal equipment.

Telecommunications Administrations would be able to offer terminal equipment in a competitive environment alongside other equipment suppliers. A key issue here will be careful supervision under competition rules.

The transition towards a Community-wide competitive terminal equipment market could be substantially accelerated by three measures :

- clear definition of network termination points in the overall context of fixing the conditions under which the network infrastructure is provided by the Telecommunications Administrations to users and competitive services providers (Open Network Provision - ONP, see VI.4.2.3). This could build on the guidelines provided by Recommendation 86/659/EEC ;

- rapid extension of Directive 86/361/EEC to full mutual recognition of type approval (see Chapter VII) ;

- regarding future participation of Telecommunications Administrations in the market, broadening of Recommendation 84/550/EEC into a binding Directive on terminal equipment, in order to establish full transparency and Community-wide opening of procurement by Telecommunications Administrations in the terminal market. (see Chapter VII).

4. The Common Market in telecommunication services

As shown in the preceding chapter, telecommunication services are increasingly characterised by two trends:

- technical progress makes a multitude of new uses and services possible ;

- the network infrastructure can carry more and more services operated independently of network operation. Telecommunications services are becoming more and more tradeable.

Both facts set the framework for current regulatory trends in the Community.

## 4.1. Growing consensus : giving room for new technological opportunities

All Member States now envisage allowing more room for the use of technological opportunities to users of the network and to competitive service providers. This consensus is strongest in the field nearest to that of computer services, i.e., in the field of "value-added services".

### 4.1.1. Competitive environment for "value-added services"

As set out in Chapters IV and V, there is no agreement between the Member States on the precise definition of "value-added services". "Value-added services" range from services where the "transport-component" is low (eg 5-15%) such as for computer bureau service offerings, to services where this component is high (eg 90%) such as for telex agencies. Given the technological development, the trend in the Member States currently is clearly towards a competitive environment for more and more of these services with a correspondingly narrower interpretation of those traditional "basic services" which continue to be reserved for exclusive provision by the Telecommunication Administrations.

### 4.1.2. Narrow definition of exclusive provision

The new technological opportunities (see Chapter IV) allow the provision of many functions and services by users which were previously only possible technically and economically for the Telecommunications Administrations. The maintenance of the principle of exclusive provision therefore inevitably translates into imposing certain restrictions on the ways in which terminal equipment connected to the network such as PABXs may be used.

Although the Commission has under normal circumstances limited power to forbid the granting of exclusive rights it can monitor the use Telecommunications Administrations are making of such rights (Article 90 (1) of the Treaty).

Competition rules of the Treaty are applicable to undertakings entrusted with the operation of services of general economic interest "insofar as the application of such rules does not obstruct the performance, in law or in fact of the particular tasks assigned to them. Furthermore, Article 90 (2) provides that "the development of trade must not be affected to such an extent as would be contrary to the interests of the Community".

The European Court of Justice has explicitly recognised the right of network users to benefit fully from new opportunities offered by technological progress (British Telecom Case 41/83, Commission -v- Italy of 20th March 1985, see Chapter VII).

The justification of continued exclusive provision of certain basic services must therefore be weighed carefully against the restrictions which this may impose on users' applications for their own use, shared use or provision of services to third parties. Major conclusions are :

- exclusive provision of services must be narrowly construed ;

- the ongoing integration of services caused by the technological trend makes it necessary that exclusive provision is made subject to periodic review.

4.1.3. "Competitive services"

Given the blurring of boundary lines between value-added services and basic services and the impossibility of a stable natural distinction, the discussion will concentrate therefore more and more on the distinction between those services which may still be reserved for exclusive provision and those services for which competitive provision should be allowed.

The relevant distinction in the future will therefore be between services for which exclusive provision by the Telecommunications Administrations continues to be acceptable for the time being ("reserved services") and all other services open to competition ("competitive services"). "Competitive services" will by definition comprise all services not explicitly reserved.

Competitive services will in particular include "value-added services".

Historically, reserved services in the Member States have been telephony and telex, which have been regarded generally as "basic services". Both services are offered on a universal basis. This is taken to mean :

i) provided with general geographical coverage ;

ii) provided on demand to all users on reasonably the same terms regardless of the users' location within the service provider's territory or franchise area and the cost of connection to the network.

Voice telephony alone currently accounts for 85%-90% of the ECU 63 billion per annum which make up telecommunications revenues in the Community (cf. Fig.5).

In the forthcoming years, the financial revenues of the Telecommunications Administrations - and thus their financial viability - will continue to be essentially determined by voice revenue. Competitive provision of non-voice services, including value-added services, with unrestricted shared use or provision to third parties, is unlikely to have substantial impact on the revenues of the Telecommunications Administrations and therefore on their ability to carry out the particular tasks assigned to them.

Telex services are converging rapidly with data and value-added services. Moreover, technological development is likely to make it more and more difficult to maintain a strict telex service monopoly. Even now personal computers are available on the market which can operate data and telex services via both the telephone and telex networks.

With its decision of 20th March 1985, the European Court of Justice has clearly authorised the operation of telex agencies which receive telexes via the telex network and retransmit them via more efficient telecommunications means, e.g. the voice telephone network (British Telecom Case 41/83, id. cit.).

In conclusion,

- "reserved services" are defined as services reserved for exclusive provision by the Telecommunications Administrations. Reserved services must be narrowly defined, in order to avoid restrictions or distortions of competition. They must be provided on a universal basis. "Competitive services" would include all other services, in particular "value-added services".

- as far as exclusive provision of services is currently justified by the need to safeguard the financial viability of Telecommunications Administrations, only voice telephony seems to be an obvious candidate.

- maintaining or extending exclusive provision over other services will lead to the imposition of additional restrictions on users : restrictions which will become more and more difficult to control.

- current trends in a number of Member States seem to point towards convergence on this position.

## 4.2 Evolving towards a competitive Community market

### 4.2.1 Growing tradeability of telecommunications services

The provision of telecommunications network infrastructure and services is characterised by certain trends :

- the provision of telecommunications network infrastructures continues generally to require the physical presence of the provider in the geographical area in question ;

- the provision of telecommunications services can increasingly take place across borders, without any major technical constraints being involved ;

- the position of telecommunications satellites is somewhat hybrid since they can form part of network infrastructure on the one hand whilst on the other they can be part of provision of services.

The technological possibility of providing services across borders makes the issue of access to network infrastructure and the implementation of a common market for telecommunications services a major issue.

4.2.2.Cross border provision of services

The framework for the effective development of a Community-wide market for telecommunications services is given by the Treaty. Article 59 guarantees, as a general rule, the freedom to provide cross-border services.

Article 59 deals with the case of a service provider in Member State A who wishes to make a service available to persons in Member State B without the former's residing there. This could lead to a conflict if Member State B wished to reserve such service exclusively to its Telecommunications Administration, or if it imposed restrictions on such service provided by others.

According to Article 90 (1), Member States "shall neither enact or maintain in force any measure contrary to the rules contained in this Treaty, regarding public undertakings and undertakings to which Member States grant special or exclusive rights".

Measures which would restrict service providers from other Member States from exercising their rights under Article 59 will therefore have to be abolished unless they fall under the exceptions to which Article 59 is subject.

Exceptions must be interpreted narrowly.

The potential for conflict will be reduced if :

- comparable definitions of services which may be reserved exist in the Member States ;

- reserved services are defined narrowly.

In practice, given existing differences in definitions in the field of non-voice services, and the likely narrow interpretation of exceptions by the Court of Justice, reservation of services which goes substantially beyond voice services is likely to lead to conflict.

4.2.3. Open Network Provision (ONP)

If a series of contentious cases and lengthy conflict (which would have to be resolved by the Commission under Articles 52, 59, 85, 86, and 90 of the Treaty) is to be avoided, the Community will have to develop common principles regarding the general conditions for the provision of the network infrastructure by the Telecommunications Administrations to users and competitive service providers, in particular for trans-frontier provision.

The conditions of access to the network concern mainly : standards and interfaces offered for interconnection ; tariff principles ; and provision of frequencies.

The transition towards a Community-wide competitive services market could therefore be substantially accelerated by Community Directives on Open Network Provision (ONP), based on Articles 100 A and 90(3) for technical specifications and network access respectively.

Such Directives would aim at the Community-wide harmonisation of principles of access.

These Directives would have to include clear access conditions by Telecommunications Administrations for trans-frontier service providers for use of the network, regarding at least three "layers" :

- technical interfaces, i.e. specification of facilities and standards requirements, building in particular on Council Directive 86/361/EEC, Decision 87/95/EEC and Recommendation 86/659/EEC ;

  This may include conditions for availability of frequencies where of relevance.

- tariff principles, in particular separate tariffing ("unbundling") of "bearer" and "value-added" capabilities (cf. VI.4.3.5.) ;

- restrictions of use which may be inevitable for the time being, such as implied by reservation of certain services, e.g. voice telephony. Restrictions would have to be subject to review within given time intervals, taking account of technological developments.

## 4.3. Strong Telecommunications Administrations in a competitive Community market

The evolution of a competitive services sector and the need to allow other service providers fair access to the networks will have a major impact on the future operations of the Telecommunications Administrations. On the other hand, participation in the competitive market will offer new opportunities to them, if at the same time organisational and financial constraints imposed on them are relaxed.

An outline of the framework towards which developments in the Member States could converge is given in **Fig 9.**

### 4.3.1. Provision of network infrastructure

Currently, all Member States have granted exclusive rights for the provision of the network infrastructure to their Telecommunications Administrations.

In the case of the United Kingdom, these functions are run on the basis of a duopoly (British Telecom / Mercury) with competition between the two providers. In Italy these functions are split between different (non-competing) publicly owned entities while in Denmark they are run regionally on the basis of public concessions.

## CHANGES IN ROLE OF TELECOMMUNICATIONS ADMINISTRATIONS

| | operation | at present | in future |
|---|---|---|---|
| a) | exclusive provision of network infrastructure (monopoly/duopoly) | yes | yes |
| b) | exclusive provision of limited number of basic services ("reserved services") | yes | yes (1) |
| c) | participation in competitive services market (including VANS) | yes | yes |
| d) | combination of regulatory and operational functions | YES | NO |
| e) | protection from "cream skimming" | yes | yes |
| f) | acceptance of common interconnect and access obligations for trans-frontier service providers | NO | YES |
| g) | offer of certain terminal equipment on exclusive basis | YES | NO |
| h) | offer of terminal equipment on competitive basis | yes | yes |

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(1) In the future, exclusive provision of services will have to be defined narrowly and be subject to review. Voice telephone service seems to be the only obvious candidate.

As set out, the provision of telecommunications network infrastructures generally requires the physical presence of the provider in the geographical area in question.

Article 90 (1) implies that Member States are entitled to grant exclusive rights to undertakings. Thus per se Member States enjoy the right to provide that telecommunications network be operated and/or owned by the Telecommunications Administrations. On the other hand Article 90 (1) states unequivocally that such undertakings are subject to the provisions of the Treaty, although the exception provided by Article 90(2) might apply in certain limited circumstances.

Article 222 provides that the Community shall in no way prejudice the system of property ownership in Member States. Therefore, the determination of the appropriate ownership of Telecommunications Administrations - in particular whether they should be in public or private ownership - falls to the Member States.

However, Article 222 does not withdraw Telecommunications Administrations from the full application of the Treaty.

Currently, in a number of Member States, an intense debate is under way at the economic and political level regarding the advantages and disadvantages of maintaining the current concept of exclusive provision of network infrastructure by one Telecommunications Administration, or whether some degree of competition should be introduced, as has been done by the United States and Japan, and in the Community, by the United Kingdom.

Generally, the situations in Europe, and in the United States and Japan regarding network infrastructure differ substantially.

The United States had a vast, homogeneous, vertically integrated system - the Bell system : one supplier of equipment, one network, one market corresponding to more than 35% of the world market. This system has been broken up after the 1982 divestiture agreement. The long-distance market continues to be dominated by AT&T, now followed by MCI and GTE-Sprint, each of which has the size of a smaller European Telecommunications Administration. The major part of the Bell system has been re-arranged under the seven Regional Holding Companies. Regarding technical standards and specifications, the Bell Operating

Companies remain closely co-ordinated through a jointly owned organisation, Bellcore, thus maintaining the technical integrity of the system (for details see APPENDIX 1, Analysis of trends in the United States).

In the Community, none of the twelve Member States has more than a 6% share of the world market. No Telecommunications Administration in any Member State is substantially larger than any of the seven US Regional Holding Companies which continue to operate under monopoly conditions, as far as network provision is concerned.

Given the more limited national dimension in Europe, public service goals, required economies of scale, and the trade-off to be made between more flexibility from competition on the one hand and higher transaction costs which can result from parallel networks on the other, it seems likely that the positions in the Member States will converge on maintaining exclusive provision of network infrastructure on their territory by a single Telecommunications Administration or a very limited number of Administrations (cf. APPENDIX 1, national trends).

From a Community perspective the following seems most relevant :

- whichever organisational scheme the Member States choose for provision of the network infrastructure by their Telecommunications Administrations, the short and long term integrity of the network infrastructure should be safeguarded.

  Member States should ensure that Telecommunications Administrations provide efficient national, Community-wide and world-wide communications ;

- The Treaty, and in particular Community competition rules, apply to Telecommunications Administrations whether they have an absolute monopoly or merely a dominant position ;

- Exclusive network infrastructure provision must be narrowly defined. New technologies in adjacent fields, such as in satellite communications, mobile radio and cable-TV networks will need special consideration (see V1.5,6,7).

4.3.2. Three essential changes required

**Fig 9.** lists three essential changes concerning Telecommunications Administrations which seem required to advance towards a competitive common market :

(1) Progressive lifting of remaining exclusive provision of certain terminal equipment

This is the action needed on the part of the Telecommunications Administrations to allow the establishment of a Community-wide fully competitive terminal market (cf. above, Chapter VI.3).

(2) Acceptance by the Telecommunications Administrations of clear obligations to interconnect with and provide access for trans-frontier service providers

This is the action needed on the part of the Telecommunications Administrations to allow cross-border provision of services (cf. above, Chapter VI.4).

Two requirements will have to be met :

- Telecommunications Administrations must interconnect their own network infrastructures with appropriate means and at the appropriate technical level in order to allow efficient Community-wide communications ;

- details for allowing access for competitive service providers to the network infrastructures must be fixed. An appropriate means would seem to be the development of a Directive on Open Network Provision (O N P) (cf. above, Chapter VI 4.2.3.).

(3) Clear separation of regulatory functions from operational functions

This is a fundamental pre-condition for the establishment of a competitive market and the participation of the Telecommunications Administrations in this market.

In a more competitive environment, the Telecommunications Administrations cannot continue to be both regulator and market participant, i.e. referee and player.

Regulatory functions concern in particular licensing, control of type approval and mandatory specifications, frequency allocation and surveillance of usage conditions.

The need for this separation is confirmed by trends and debates in all Member States which are envisaging more competition for the sector. The separation of regulatory and operational activities is a most important prerequisite for any effective application of competition rules to the providers of telecommunications services.

4.3.3. Financial viability

There seems to be general agreement in the Member States on the need to safeguard the financial viability of the Telecommunications Administrations, especially in view of the massive investments in network infrastructure that are going to be required in the future, in order to comply with their public service mandate.

The biggest - and under present conditions only real - threat is the potential loss of voice traffic - which currently accounts for 85 to 90% of all telecommunications revenues - by the public switched network. Competitive service providers could make their leased lines available for the pure resale of voice capacity (with very limited or zero "value-added").

They could thus be able to "cream off" traffic on the most profitable routes, diverting traffic away from the public switched network to leased lines hired by themselves.

Telecommunications Administrations may not be able to compete with them pricewise on these high-profit routes because of their requirement to provide universal basic service at comparable prices throughout their national territory.

There are currently two approaches followed - or considered - in the Member States to avoid extreme cases of "cream skimming".

1. banning simple voice resale on leased lines ;

2. apply usage-based tariff elements to leased lines.

Re: 1. Most Member States ban simple voice resale. Some of them, such as the United Kingdom and the Netherlands are committed to reviewing the ban after a predetermined time period.

For example, in the new value-added and data services (VADS) license which will replace the existing VANS license, the UK government announces that simple voice resale will be banned at this stage. Conditions are attached to carrying voice traffic as part of a wider enhanced service which make pure resale of the voice element unattractive.

Re: 2. Some Member States, such as Germany, are proposing usage-based tariffs on leased lines as the main instrument of avoiding extreme cases of cream-skimming. Some are envisaging applying a mixed system of flat-rate and usage based elements for the tariffing of leased lines, based on the principle of proportionality. Other Member States are considering the issue.

Leased circuits have traditionally been priced at a flat rate and it has been argued that this price structure is required if the development of value-added services and the attendant innovation are to be encouraged. But if a Member State wants to be liberal in allowing voice re-sale (perhaps on the grounds that technically it will become difficult to control it at some future stage), it may have to find another means of securing financial viability. Thus it may propose to introduce usage-based tariff elements for leased lines.

Usage-based tariffs raise two difficult and interlinked issues. One is that by increasing the relative cost of leased lines in certain cases (very large usage), the incentive to stimulate the development of competitive services will be diminished, especially if this makes their relative cost more than that in Member States who have chosen a less costly (for the private-sector service provider) form of tariff regime.

The other is that usage-based tariffing, if its impact on potential service providers is to make access to the national market more difficult - because more expensive - than entry into other Community markets, may be an obstacle in certain cases to the transfrontier provision of services.

The decision whether to charge usage-sensitive or flat-rate or a mixture of both tariffs for leased lines is essentially a decision to be taken by each Telecommunications Administration subject to the power of the Commission to investigate and terminate abuses coming to its attention. Any method must follow the principle of proportionality and not go beyond what is absolutely necessary to ensure the fulfilment of the tasks assigned to the Telecommunications Administrations.

Thus neither must the application of usage-based tariffs lead to excessive burdens for certain user categories, nor must a ban on resale of voice operate to bring services with only a voice element into the Telecommunications Administrations' monopoly.

A major potential for hindering the trans-border provision of services arises in the case of differences in policies between Member States. Potential for conflict would be reduced if a set of tariff principles governing the access to the network for trans-frontier providers were established (see above VI.4.2.3., O N P ; see below VI.4.3.5., tariff principles).

4.3.4. Transparency and problems of cross-subsidisation

There is a broad consensus in the Member States that Telecommunications Administrations should be allowed to participate in the newly emerging competitive services and terminal market, in order to provide for a broad range of choice for the consumer.

The participation of the Telecommunications Administrations in the competitive sector of the market will require careful attention, in order to avoid cases of distortion of competition.

Transparency must be created regarding the activities of the Administrations, especially regarding cross-subsidisation between activities in the monopoly sector and the competitive services and terminal equipment sectors. A sufficient degree of transparency will also be required concerning the Telecommunications Administrations' financial and fiscal environment.

The term cross-subsidisation can be used to cover at least the following practices:

(i) the financing of the launch of new products until demand puts supply into profit ;

(ii) the financing of Research and Development, again in areas of potential future growth, obviously out of profits realised elsewhere ;

(iii) the financing of a loss-making subsidiary or product-line by profits made elsewhere in the same group. In the case of Telecommunications Administrations, such operations may have to be carried out in order to achieve, in certain cases, certain public service goals, such as universal service for certain basic services or emergency services.

A certain amount of cross-subsidisation is permissible in any commercial venture. Existing product lines may subsidise new product lines during their crucial phase of initial market entry in virtually every corporate marketing strategy.

However, where a dominant undertaking - Telecommunications Administration or other provider - engages in predatory pricing to weaken or drive out competitors, it abuses its dominant position. Where the funds for predatory pricing are taken from another product line in the same group, a form of cross-subsidisation would take place, but it should be noted that any abuse would not consist in the act of cross-subsidisation, but in the act of predatory pricing.

Close surveillance of cross-subsidisation practices in the operational activities of both Telecommunications Administrations and private providers in the newly opened competitive services and

terminal sectors will be required, in order to avoid illegal practices and misuse of dominant positions. While details of the organisation of the sector fall to the Member States, the conditions of transparency created must be sufficient to allow this surveillance to take place.

Transparency of the activities of Telecommunications Administrations should include transparency regarding activities in non-telecommunications areas, in particular postal services. Transparency should also be established regarding the financial and fiscal environment.

Regarding combined provision of postal and telecommunications services by a single administration, most Member States currently seem to be moving towards a gradual separation of their postal and telecommunications services. While the details of organisation of the Telecommunications Administrations and combination with other tasks, such as combined provision of telecommunications services and postal services, falls under the authority of the Member States, it would seem incompatible with the Treaty if a combined Posts and Telecommunications Administration used its exclusive rights in both fields in a way distorting competition.

Regarding the financial environment of Telecommunications Administrations, Directive 80/723/EEC requires transparency in the financial relations between Member States' governments and their public undertakings. The Directive has been expanded to apply to the telecommunications sector.

Regarding the fiscal environment of Telecommunications Administrations, it is notable that a number of Member States currently exempt public telecommunications from Value-Added Tax. This treatment is a result of the right to derogate from the taxation provisions in Directive 77/388/EEC. In view of the abolition of fiscal frontiers and in order to arrive at a state of equal competitive conditions in this sector the Commission will shortly present an amended proposal for an 18th VAT Directive which will make provision for obligatory taxation of those supplies with effect from 1.1.1990.

With the increased introduction of competition into the telecommunications services sector, the fiscal environment of Telecommunications Administrations will therefore need thorough review.

4.3.5. Tariff principles

One important determinant of the implementation of a Community-wide market for competitive telecommunications services is the tariff principles applied by the Telecommunications Administrations for use of network infrastructure and services.

Tariff principles applied by the Telecommunications Administrations have developed historically out of a complex trade-off between commercial considerations and universal service goals, such as subsidising telephone service in rural areas from revenue from higher density routes. For international services, tariff-setting has been greatly influenced by the respective CCITT recommendations (cf. APPENDIX 4).

Tariff structures are currently undergoing major changes in all Member States, and internationally in the Community, for a number of reasons, notably the following :

- rapid technological development has dramatically changed the cost structure of the network. The cost of provision of long distance traffic has fallen much more than the cost of provision of local traffic (see Chapter IV) ;

- growing international competition is increasingly leading international tariffs to follow basic cost trends ;

- fair and open access of users and competitive service providers requires a clear definition of tariff principles by the Telecommunications Administrations.

According to a report previously cited ["Clearing the Lines A Users' View on Business Communications in Europe", Round Table of European Industrialists, October 1986], "although comparison of telecommunications tariffs in different countries is made difficult by volatile exchange rates, the scale of inconsistencies is evident ..." The report goes on to make two central points : "that charges for trans-European services are generally much higher than domestic charges (between half and four times as much in the case of packet switching volume charges, for example) and that charges vary greatly and according to no self-evident logic between countries. In particular, trans-European prices look high in comparison with US prices. There is a danger that excessive long-distance communications charges are creating a significant handicap to the efficient development of the European internal market".

International tariffs in Europe are based on bilateral agreements (including transit agreements). Mutually agreed accounting rates are multiplied by the Administrations by so-called K-factors, in order to arrive at the final collection charge. K-factors are applied with a wide variance. As a consequence, the charge for a telephone call from country A to country B may vary by well over 100% from the charge collected for the same call from country B to country A, as is the case for certain Member States.

Regarding leased lines, current charges both at the national and the Community level show in some cases wide and unexplained divergences.

In its resolution of 3rd March 1984, the European Parliament noted the "current divergence of tariff structures within the Community, both for switched and leased circuits" [Report of the European Parliament on Telecommunications in the Community, Doc. 1-477/3, 3rd March 1984, OJC 117/80, 30.4.1984].

The Parliament went on to state that it "considers it necessary, as a first step towards establishing a Community preferential area for telecommunications, to adopt a single method for determining the tariffs applied within the Community for all international intra-Community telecommunications services, based on the principle that national frontiers are irrelevant to the calculation of the tariffs, which should be expressed in ECUs. This system for international intra-Community services should subsequently be harmonised, as regards the structure of the tariffs, with national tariff systems."

In Council Recommendation 86/659/EEC of 22nd December 1986, the Council has invited the Telecommunications Administrations to study, inter alia, the following tariff principles regarding the co-ordinated introduction of ISDN, the future basic network infrastructure (see Chapter VII) :

"
.....

- In accordance with current trends, tariffs for all services, including telephony, should be less dependent on distance than at present (always bearing in mind the problems of transit costs through other countries) ;

- tariffs for teleservices which use the same bearer capabilities should be independent of the teleservice. On the contrary, all value-added by the network should be charged independently of the utilisation of the bearer capabilities.

.....

(emphasis added).

Separate tariff offerings for "bearer" and "value-added" components (as implied by the last indent) could be one general principle in the overall context of Open Network Provision (cf. above, Chapter VI 4.2.3). There seems to be an opportunity to agree on a broad set of tariff principles for O N P.

The setting of tariffs is a major component of a Telecommunications Administration's overall commercial strategy. The Commission has made clear in the past that measures to halt the abuse of dominant positions cannot be converted into systematic monitoring of prices [5th Report on Competition Policy, 1978 ]. However, Telecommunications Administrations are subject to Competition Rules, in particular Article 85 and 86 of the Treaty, and Member States are subject to Article 90(1) as regards the use of exclusive rights made by these Administrations. Cases of unfair pricing must be avoided.

Building consensus on tariff principles would substantially reduce the possibility of conflict.

Tariff principles could include :

- recognition of the fact that telecommunications tariffs should follow overall cost trends and that a certain amount of rebalancing of tariffs will be inevitable, as far as compatible with public service goals. This applies in particular to tariffs for national and intra-Community long-distance traffic.

  A fair trade-off between cost-orientation and the aim of universal service on reasonably the same terms for all will have to be developed ;

- regarding intra-Community and international tariffs, higher transparency and convergence of accounting rates and K-values should be sought, in order to avoid excessive divergences of tariffs and possible distortion of competition. This should show the way to the gradual emergence of a European tariff zone ;

- consensus should be achieved on general tariff principles for access by users and providers of competitive services, in the framework of Open Network Provision. This should include agreement on the degree of "unbundling" of tariffs required for fair access, and general principles for the provision of leased lines.

## 4.4 Adjacent infrastructures / services

A number of infrastructures / services adjacent to the main network infrastructure need special consideration. This concerns in particular satellite communications, mobile radio communications and cable TV networks.

4.4.1 Satellite Communications

As stated previously, telecommunications satellites are hybrid in the sense that they can either form part of the network infrastructure, or they can be part of the provision of services.

As set out in Chapter IV, over the last ten years the use of satellites has grown very rapidly. Satellites are currently used to provide a number of different services, in particular broadcasting and telecommunications services.

From a regulatory point of view, satellite systems may be divided into three distinct elements, namely

- uplink
- satellite or space segment
- downlink

For details see APPENDIX 2.

The uplink is always considered a fixed point-to-point service, and in general it is linked to the right to transmit a radio signal. In Europe at present monopoly rights are normally held by the Telecommunications Administrations.

The availability of space segment capacity in Europe is governed mainly by the following factors :

- the exclusive right of the EUTELSAT / INTELSAT signatories of the respective operating agreements to purchase and resell EUTELSAT / INTELSAT space segment capacity.
- the virtually exclusive rights of EUTELSAT and INTELSAT to provide space segment capacity " to meet the requirements of international public telecommunications services" within the respective services as specified by Articles XVI and XIV of their respective Operating Agreements.

- the ability of European Telecommunications Administrations to utilise the space segment capacity of these organisations to fulfil their market objectives in Europe.

The downlink is specified in terms of services such as a fixed service, a broadcasting service, a mobile service, etc.

Traditionally, in most Member States the Telecommunications Administrations had the exclusive monopoly position on the ownership and operation of all satellite communications links, including down links where the ground station provided only receive capability.

However, regarding satellite broadcasting, from 1984 there was considerable pressure to relax this position and to allow both private companies and individual consumers to own and operate (at least) receive-only satellite equipment. Now Cable TV companies and individual subscribers are able to install, operate and maintain reception equipment for satellite broadcast reception in most Member States.

The general trend in Europe now seems to be that domestic receive-only installations (TVROs) designed to receive high power DBS (Direct Broadcast Satellite) services will not require a licence.

Regarding the use of satellite links for telecommunications services, a detailed review of the situation in the Community is given in APPENDIX 2.

Technological advances are causing a discernible trend within Europe to allow the private supply and operation of satellite ground stations, in particular for those providing only down-link capability.

It further appears that in a number of Member States, the Telecommunications Administrations are permitting the installation of ground stations for "own-use" in limited circumstances.

At the same time, as set out in Chapter IV. 4, there is a growing grey area of point-to-multipoint services serving large user groups, closely linked to the emergence of very small antenna (VSAT or micro-terminals) earth stations. VSAT systems operate in star network configuration, offering uni-directional - and in certain cases bi-directional - low data-rate communications between relatively large central hub earth stations and a large number of VSATs located at user premises.

In the United States, receive-only VSATs have been available for a number of years. Transmit / receive VSATs have become available more recently.

Very small satellite antenna systems for receive only purposes now have dish sizes of 0.6 metres in diameter, for low data rate receive / transmit 1.2 - 1.8 metres. This compares with diameters of 30 metres for Type A INTELSAT earth stations which traditionally have been considered as part of the Telecommunications Administrations' network infrastructure.

VSAT earth stations should therefore be more properly considered as "micro-terminals", the operation of which should be associated with the regime under which telecommunications terminals are supplied and operated. Given technological development, it will become more and more difficult to justify for VSAT terminals a regulatory regime different from the regime applied to domestic receive-only DBS antennae (TVROs).

In parallel to the technological development of the ground segment, the space segment accessible in Europe will develop dramatically over the next few years. As set out in APPENDIX 2, both new generations of satellites and services of EUTELSAT, INTELSAT and INMARSAT will enter into operation, as well as a number of national and private satellite systems with both broadcasting and point-to- point and point-to-multipoint capabilities. Together with technological development in the ground segment, this will make a review of regulatory conditions for the provision of both the space segment and the ground segment inevitable.

From a Community perspective the following seems most relevant:

- users should have the possibility fully to benefit from technical progress. This will make the review of certain regulatory arrangements necessary.

- Article 59 of the Treaty guarantees, as a general rule, the freedom to provide cross-border services. Regarding satellite broadcasting services, the Commission has stated the full implementation of this principle as a principal goal of its audio-visual policy (see Chapter VII. 4).

- satellites for telecommunications purposes can form part of network infrastructures on the one hand whilst on the other they can be part of the provision of services. However, as a general rule, exclusive provision of network infrastructure must be narrowly defined.

Given these positions and current trends, the following should be envisaged :

(1) Given the hybrid nature of satellites as both provision of infrastructure and service, two-way satellite communications and the regulation of up-links will need case-by-case consideration. However, given the principle of narrow definition of exclusive provision of network infrastructure, competition should be a possibility in those cases where unacceptable interference with other satellite or radio communication systems is not to be expected and where the revenue base and the financial viability of the general network infrastructure provider is not put into question. In the case of VSAT antennae (micro-terminals) suitable for low rate data exchange only, authorisation should be given automatically. Special consideration should be given to the development of Europe-wide satellite services.

(2) Given the trend in satellite communication towards point-to-multipoint "broadcast" applications for closed user groups, the regulatory regime for receive-only earth stations (ROES) for satellite downlinks should be fully assimilated with the regime for telecommunications terminals and TV receive-only antennae (TVROs) and should be fully open to competition, subject only to appropriate type approval procedures.

(3) given the expected dramatic changes in technology in the provision of both satellite ground and space segments, the Community urgently needs the definition of a coherent European position regarding:

- development of the earth station market in Europe, in particular with regard to common standards ;

- common positions regarding the future development of the space segment, in particular the relationships between Eutelsat, national and private systems, and the full use of the technological potential of the European Space Agency.

  This should include common positions on ownership and operation of uplink earth stations and direct access to space segment capability in certain cases ;

- common positions regarding the future development of INTELSAT and INMARSAT (cf. Chapter IX).

4.4.2. Mobile radio communications

The evolution of mobile communications in the Community has been particularly affected by two characteristics:

- mobile communications are dependent on the availability of frequencies, which are a limited resource. The use of frequencies is therefore closely regulated in all Member States.

- On a local basis, a number of systems for specific private purposes have developed, such as despatch systems for car fleets, emergency purposes, etc. In a number of Member States the number of users of local licensed private systems for specific purposes currently exceeds by far the number of subscribers to the public systems.

With the development of the current generation of cellular systems allowing frequency re-use in neighbouring cells, a way has been found to circumvent the shortage of frequencies and substantially to increase the future number of subscribers to the public systems. Efficiency of systems will be further increased with the introduction of digital mobile communications.

While in most Member States a single public system is operated by the Telecommunications Administrations, the United Kingdom has licensed two operators in competition (see APPENDIX 1). France has announced its intention to authorise a second system.

Mobile communications thus is seen by a number of Member States as a major candidate for competitive supply. Exclusive provision of the main network infrastructure must not hinder the use of new technological opportunities by private systems. On the other hand, compatibility of mobile systems with the main network infrastructure will be a precondition for achieving truly efficient mobile communications, allowing full communications between any fixed and mobile telephone terminals both at the national and the European level.

Mobile systems have been one of the worst examples of lack of Community-wide compatibility. Regarding public systems, five different incompatible systems have been implemented in the Member States.

Close surveillance will be needed to ensure the integrity of mobile communication and the main network infrastructure. The Commission has submitted proposals to Council to ensure the co-ordinated introduction of public pan-European digital mobile communications in the Community by 1991 (cf. Chapter VII).

### 4.4.3 Cable TV networks

The European cable TV market is highly fragmented. The range of regulatory regimes currently applied in the Member States includes the situation where only public ownership is permitted; where public and private ownership is permitted; and where no public ownership exists. .

In a number of Member States the typical unit of operation is the municipality. Networks are often run as utility services in the same way as gas or electricity distribution. For example, in the BENELUX countries, the growth of cable television has been an extension of the electricity supply industry. This has occured without the participation of the Telecommunications Administrations. In other countries, such as Germany and France the Telecommunications Administrations have played a central role in cable TV, in France jointly with the municipalities.

As stated in Chapter IV, as long as cable TV systems consist of one-way systems relaying broadcast services only, they can be considered outside the mainstream of telecommunications regulation.

As two-way usage becomes a technological possibility, the relationship of cable TV networks to the general telecommunications network infrastructure will have to be more closely defined.

Current trends indicate that there will be a growing number of two-way cable TV applications in the Community. Technically, the main network infrastructure and cable TV networks will grow more and more closely together, as part of the general evolution towards integrated broad-band communications. In the long term the future relationship of Telecommunications Administrations and cable TV operators will have to be more clearly defined, in order to ensure the future overall integrity of the telecommunications infrastructure.

5. The Common Market in network equipment

The network equipment market - transmission and public switching equipment - currently accounts for 65 - 70% of the ECU 17.5 billion telecommunications equipment market in the Community. This market is dominated by the purchasing behaviour of the Telecommunications Administrations.

The economics of the network equipment market have changed dramatically over recent years.

Digitisation - and the associated new transmission techniques of optical fibre and satellite - have dramatically pushed up the industry's research and development costs. In one of Europe's traditionally strong sectors - public switching systems - the cost structures have been completely reversed. In 1970, software, the major component of R & D costs, accounted for 20% of total development costs, while hardware accounted for 80%. By 1990, this ratio will be reversed - 80% for software development and 20% for hardware. Currently, the software to operate a public switching system comprises some one million programmed instructions. For the early 1990s, with the growing complexity of switches, it is estimated that this figure will have risen to three million. A new public digital switching system will have to secure 8% of the world market in order to obtain sound economic viability (see below) . But no national telecommunications market in the Community - the traditional base of manufacturers in the Community - corresponds to more than 6% of this market.

According to the Union of Industries of the European Community, "in the future the size of national markets will be increasingly inadequate for dealing in the quantities necessary to cover the costs of the research, development and marketing of most telecommunications products. The cost of developing a digital telephone exchange system, including the development of the software, is over US$ 1 billion. If the introduction of a digital telephone exchange system is to be economically viable, the system must reach 8% of the world market. It is therefore important, while exercising appropriate caution in opening up the markets, to bring about the common internal market - which accounts for 20% of the world market - without undue delay"

"....in future the rules of competition in Europe must be geared more to world market requirements, and should not hinder cross-border consortia of telecommunications companies. Telecommunications requirements must be tackled on a common front, not individually. To ensure the future international competitiveness of European firms, it is vital to have increased cross-border co-operation in R & D. The European Community has an important initiating and co-ordinating function in this regard."

("A Telecommunications Policy for Europe", Report by UNICE, Dec 1986).

This change in the economics of the sector has led to substantial restructuring of the Community's telecommunications industry recently. European industry has reacted and has formed new trans-national alliances to build a new economic base for successful competition on the world market.

This restructuring of the supply side of the Community's telecommunications market must now be matched by a reorientation of the Telecommunications Administrations' procurement policies away from a purely national base towards a European base.

According to the report cited above, the Telecommunications Administrations "...are able to exert a very substantial influence on the telecommunications markets and thus on their countries' economies as a whole... "

"...In the medium term the solution to the European "problématique" lies in opening up the system of public procurement in Europe." (UNICE, Report, op. cit. )

The Telecommunications Administrations dominate traditional telecommunications equipment markets. The development of a common market in network equipment must therefore go hand in hand with a substantial increase in the transparency of procurement procedures of the Telecommunications Administrations, in order to ensure an open market in telecommunications equipment.

As the Commission has pointed out previously, an efficient policy aimed at opening up public procurement in the network equipment market

"must take account of the objective constraints imposed by the co-existence of different products within the same network ; the components of a network must:

"a) be compatible with one another as regards their basic functions, such as interconnectability. These problems are solved, as far as international telecommunications are concerned, by the CCITT recommendations ;

"b) mesh with the method of operation of the network under consideration ;

"c) be able to be covered by pre-existing maintenance schemes and arrangements under favourable economic conditions."

("Progress Report on the Thinking and Work done in the field of Telecommunications and initial Proposals for an Action Programme", Communication from the Commission to the Council on Telecommunications, COM (84) 277, 18.5.1984)

The Commission has made it clear that it considers the opening of public procurement as a precondition for achieving the completion of the internal market by 1992. Given the specifics of the telecommunications network equipment market, a step-by-step approach is called for.

The main elements needed are as follows (for details see Chapter VII):

1) Rapid progress towards common specifications for network equipment. Open specifications for network equipment are a precondition for progress towards open procurement. Council Recommendation 84/549/EEC calls on the Member States to ensure that Telecommunications Administrations "from 1986 onwards, when they order digital transmission and switching systems... do so taking full account of recognised standards in the Community."

2) Full application of Council Recommendation 84/550/EEC requiring that Member States ensure that Telecommunications Administrations provide opportunities for undertakings established in other Community countries to tender for at least 10% in value of their annual orders regarding contracts for switching and transmission apparatus.

3) Close surveillance to ensure that tenderers from other Member States are not discriminated against. Article 7 of the Treaty expressly prohibits discrimination on the grounds of nationality. This surveillance must also ensure that no breach of Article 30 is occasioned.

The transition towards a Community-wide market for network equipment could be substantially accelerated by rapid progress towards more transparency in procurement orders by Telecommunications Administrations, in particular by :

- Substantial acceleration of the use of common specifications. While network equipment is currently excluded from application of Council Decision 87/95/EEC the Commission has announced its intention to present a further proposal requiring common specifications to be used in public purchasing.

- Progressive extension of the application of Recommendation 84/550/EEC to a larger percentage of the total volume of orders by Telecommunications Administrations. The final aim should be replacement of the Recommendation by a Directive, in order to establish a firm basis for market transparency in the sector.

6. Conclusions

Analysis of the regulatory situation and the current trends of adjustment in the Member States shows that there are convergent trends in current thinking. There is therefore the genuine possibility of reaching agreement on broad common regulatory aims for the telecommunications sector in the Community.

Trends are converging towards :

- opening of the terminal markets to competition ;
- a competitive value-added services (VANs) sector ;
- separation of the regulatory and operational functions ;
- maintenance of exclusive or special rights for the provision of the network infrastructure and a restricted number of basic services ; and
- more cost-oriented pricing for these services.

Telecommunications Administrations would be able to compete in the competitive markets.

The common objectives at the Community level should lead to the progressive implementation of :

- a common market in telecommunications terminal equipment ;
- a common market in telecommunications services ;
- a common market in telecommunications network equipment.

**Fig. 9** lists three essential changes required to advance towards a competitive common market.

- Progressive complete opening of the terminal market to competition.

  The change from the existing situation of sole supply of certain terminal equipment, in particular the first telephone set, to a competitive environment will have to allow, in certain instances, for a sufficient but defined time period for industry to adapt to the new situation.

- Acceptance of clear interconnect and access obligations by the Telecommunications Administrations for trans-frontier service providers within the Community.

  Details of ways of allowing access for competitive service providers to the network infrastructure must be defined. An appropriate means would seem the development of a Directive on Open Network Provision (O N P).

- A clear separation of regulatory and operational functions where this still has not been brought about. In a more competitive environment, the Telecommunications Administrations cannot continue to be both referee and player.

All Member States currently face the difficult task of adapting their Telecommunications Administrations to their future role as participants in the new competitive markets and to choose a status (public/private) most appropriate, according to their perception, to match the new market conditions.

While it seems likely that the positions in the Member States will converge on maintaining exclusive provision of network infrastructure on their territory by a single Telecommunications Administration, or a very limited number of Administrations, their future interface with the competitive sector must be defined anew :

- regarding service provision, and given the blurring of boundary lines between basic services and enhanced services, the relevant distinction in the future will be between those services for which exclusive provision by the Telecommunications Administrations continues to be acceptable for the time being, and all other services which will be open to competition ("competitive services"). Voice telephony seems to be the only obvious candidate for exclusive provision. "Value-added services" and other services would fall under "competitive services" ;

- regarding the provision of leased lines and resale of capacity, all Member States currently agree on the necessity of securing the financial viability of their Administrations, either by excluding pure resale of voice on leased lines or by tariff schemes which make pure resale of voice to third parties unattractive, such as usage-based tariffs. Both methods will have to be accommodated in the Community. However, both methods must be limited to a legitimate level of protection of financial viability and must not represent the misuse of a dominant position ;

- regarding tariff principles, tariff structures are currently undergoing major changes in all Member States, and internationally. There is growing recognition of the fact that telecommunications tariffs should follow overall cost trends and that a certain amount of re-balancing of tariffs will be inevitable. A fair trade-off between cost-orientation and the aim of universal service on reasonably the same terms for all will have to be developed ;

- regarding adjacent infrastructures / services, exclusive provision will have to be narrowly defined.

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Given the trend in satellite communications towards point to multi-point 'broadcasting' applications for closed user groups, the regulatory regime for receive only earth stations (ROES) for satellite communications should be assimilated to the regime for telecommunications terminals and TV receive-only satellite antennae and fully opened to competition.

Two-way satellite communications and the regulation of up-links will need case-by-case consideration. Competition should be a possibility in those cases where interference with other satellite or radio communications systems is not to be expected and where the revenue base and financial viability of the general network infrastructure provider is not put into question. In the case of very small satellite antennae (VSAT or "microterminals") suitable for data exchange only, these conditions should normally be automatically assumed to be met.

Where cable-TV network infrastructure is also used for two-way communications, its relationship and interfacing with the overall telecommunications network will have to be more clearly defined, in order to ensure the long-term overall integrity of the telecommunications infrastructure.

## VII COMMUNITY TELECOMMUNICATIONS POLICY : THE ACHIEVEMENTS TO DATE

The overall policy framework for Community goals and initiatives was made explicit and formalised in the Commission's Telecommunications Action Programme, detailed after intensive consultation with the Senior Officials' Group on Telecommunications (SOG-T) [Communication by the Commission to Council on Telecommunications, COM (84)277, 18.5.1984] and approved by Council the same year [Minutes of 979th Meeting of the Council, 17.12.1984].

In following the Action Programme, the Commission has, within the last two years, made proposals along five main lines :

- co-ordination regarding future development of telecommunications in the Community and common infrastructure projects. This concerns in particular the principal future stages of network development - the Integrated Services Digital Network (ISDN), digital mobile communications, and the introduction of future broadband communications ;

- creation of a Community-wide market for terminals and equipment. Promotion of Europe-wide open standards, in order to give equal opportunity to all market participants ;

- the launch of a programme of pre-competitive and "pre-normative" R&D, covering the technologies required for Integrated Broadband Communications (the RACE Programme) ;

- promoting the introduction and development of advanced services and networks in the less-favoured peripheral regions of the Community ;

- building up common European positions with regard to international discussions in this area.

Since then, in close co-operation with the Senior Officials Group on Telecommunications (SOG-T), substantial progress has been made. **Fig. 10** shows the Decisions, Regulations, Directives and Recommendations adopted and the major proposals currently before Council.

Progress to date has been founded mainly on three factors :

- implementation within the context of a consistent Action Programme fully backed by Council and the SOG-T ;
- creation of a framework of co-operation with the Telecommunications Administrations and industry, in particular with CEPT and CEN-CENELEC ;
- full alignment with the main broad goals of the Community : completion of the Internal Market ; general policy on standardisation ; Research/Development/ Technology policy ; economic and social cohesion ; competition policy.

A detailed review of progress is given in Communication from the Commission to the Council on European Telecommunications Policy, COM(86)325, 5.6.1986 .

Those decisions most essential to the current restructuring process are reviewed below.

1. Standardisation in Information Technologies and telecommunications, and co-operation with CEPT

Digitisation requires agreement on high-level protocols for services and on network interface standards for terminals to ensure proper communications. Standardisation therefore has become a cornerstone of a policy for :

- ensuring the future integrity of the telecommunications infrastructure in the Community ;
- ensuring future open competitive markets ;
- promoting future interoperability of telecommunications services.

## COUNCIL DECISIONS TAKEN IN THE FIELD OF TELECOMMUNICATIONS

## SINCE 1984

COUNCIL RECOMMENDATION OF 12 NOVEMBER 1984 concerning the implementation of a common approach in the field of telecommunications (84/549/EEC)

COUNCIL RECOMMENDATION OF 12 NOVEMBER 1984 concerning the first phase of opening up access to public telecommunications contracts (84/550/EEC)

COUNCIL DECISION OF 25 JULY 1985 on a definition phase for an R&D programme in advanced communications technologies for Europe (RACE) (85/372/EEC)

COUNCIL RESOLUTION OF 9 JUNE 1986 on the use of videoconference and videophone techniques for intergovernmental applications (86/C 160/01)

COUNCIL DIRECTIVE OF 24 JULY 1986 on the initial stage of the mutual recognition of type approval for telecommunications terminal equipment (86/361/EEC)

COUNCIL REGULATION OF 27 OCTOBER 1986 instituting a Community programme for the development of certain less-favoured regions of the Community by improving access to advanced telecommunications services (STAR programme) (86/3300/EEC)

COUNCIL DIRECTIVE OF 3 NOVEMBER 1986 on the adoption of common technical specifications of the MAC/packet family of standards for direct satellite television broadcasting (86/529/EEC)

COUNCIL DECISION OF 22 DECEMBER 1986 on standardisation in the field of information technology and telecommunications (87/95/EEC)

COUNCIL RECOMMENDATION OF 22 DECEMBER 1986 on the co-ordinated introduction of the Integrated Services Digital Network (ISDN) in the European Community (86/659/EEC)

PROPOSALS CURRENTLY BEFORE COUNCIL

PROPOSAL FOR A COUNCIL REGULATION OF 29 OCTOBER 1986 on a Community action in the field of telecommunications technologies (RACE)

PROPOSAL FOR A COUNCIL REGULATION OF 1 DECEMBER 1986 introducing the preparatory phase of a Community programme on trade electronic data interchange systems (TEDIS)

PROPOSAL FOR A COUNCIL RECOMMENDATION OF 9 FEBRUARY 1987 on the co-ordinated introduction of public pan-European digital mobile communications in the European Community and PROPOSAL FOR A COUNCIL DIRECTIVE on the frequency bands to be made available for the co-ordinated introduction of public pan-European digital mobile communications in the European Community (*).

(*) approved by Council on 11th June 1987

The Community's standardisation policy in information technologies and telecommunications must be seen in the context of the general new approach to harmonisation, as approved by Council in 1985 [Council (Internal Market meetings) on 26.10.1983, 25.11.1983, 8.3.1984, 7.5.1985.] :

- concentrating harmonisation on essential aspects and acting to promote the drawing up of advanced standards and technical specifications through European standardisation bodies. The Commission is to ensure that common standards become binding on all Member States through Directives and be used in calls for tender for public contracts.

- determining whether national regulations are excessive in relation to the mandatory requirements thus created and, if so judged, designating them as unjustified barriers to trade as defined in Articles 30-36 of the Treaty ;

- application of Directive 83/189/EEC aiming to prevent the introduction of new national regulations potentially impeding intra-Community trade. This obliges Member States to notify the Commission in advance of all draft regulations concerning technical specifications that they intend to introduce. A legislative standstill must be observed by the notifying State, following the examination of the draft regulation, if the Commission or a Member State has expressed a justified opinion, as in the case where the proposed regulation might create barriers to trade and especially if specific action under Articles 30 or 100 is envisaged. A similar obligation exists regarding the advance notification of drafts of national standards by the National Standard Bodies. This Directive also makes it possible to realise European Standards.

As the Commission has pointed out in its White Paper concerning the Internal Market [White Paper concerning the completion of the Internal Market, Communication from the Commission to the Council, COM(85)310, 14.6.1985 ] :

"while a strategy based purely on mutual recognition would remove barriers to trade and lead to the creation of a genuine common trading market, it might well prove inadequate for the purposes of the building up of an expanding market based on the competitiveness which a continental-scale uniform market can generate. On the other hand, experience has shown that the alternative of relying on a strategy based totally on harmonisation would be over-regulatory, would take a long time to implement, would be inflexible and stifle innovation.

"What is needed is a strategy that combines the best of both approaches but, above all, allows for progress to be made more quickly than in the past."

However, within this general framework, standardisation in information technologies and telecommunications must take account of the specifics of the sector :

- guaranteeing a maximum of interoperability and inter-working between systems ;

- recognising the importance of international standardisation in this field (in particular CCITT, ISO) and the need to achieve common interpretation of these international standards for the Community ;

- insisting on the requirement for open systems, such as guaranteed by the OSI and ISDN standards system.

In May 1984, the Council of Ministers expressed its agreement with the following general points :

- the priority to be given to international standardisation (ISO, IEC, CCITT, CCIR) and in particular to the most recent work leading to the preparation of standards furthering Open Systems Interconnection (OSI) ;

- the essential need to ensure harmonised application, at European level, of international standards to ensure data communication and interfunctioning between systems ;

- the creation of a Senior Officials Group on Information Technology Standards (SOGITS) in the field of Information Technologies which, in conjunction with the Senior Officials Group on Telecommunications (SOG-T), assists the Commission in the implementation of a European policy.

- the systematic use of the structures and procedures already available ;

- the convergence of Information and Telecommunications Technologies, with the consequences for maintaining coherence in standards relating to these two fields ;

- encouragement of the creation of strong, co-ordinated support for the European standardisation policy.

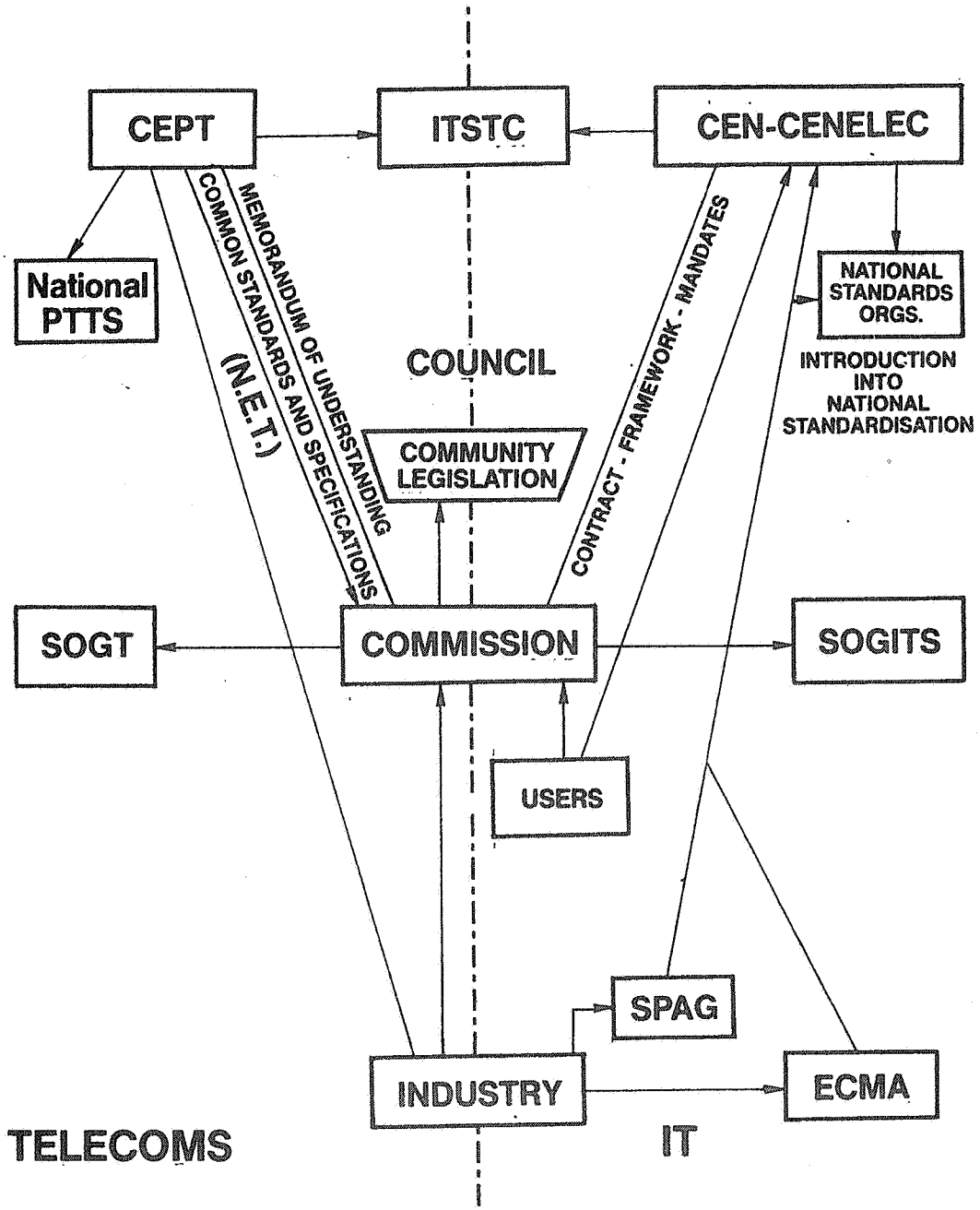
The Council of Ministers stressed the need to implement this policy urgently.

The implementation of these guidelines has led to a number of Council Directives and Decisions, reviewed below. It has further led to close co-operation with CEPT (on telecommunications standards), CEN-CENELEC (on information technology standards) and industrial organisations such as ECMA and the newly formed SPAG.

Details of these relationships are given in **Fig.11**. Further details of the co-operation with, and the set-up of, CEPT are given in APPENDIX 3.

Objectives, legal instruments, organisational framework and current problems are briefly reviewed below.

# ORGANISATIONAL RELATIONSHIPS IN STANDARDS DEVELOPMENT IN EUROPE




Legend

| | |
|---|---|
| CEN-CENELEC: | Joint European Standards Institution (European Committee for standardisation / European Committee for electro-technical standardisation) |
| CEPT: | European Conference of Postal and Telecommunications Administrations |
| ECMA: | European Computer Manufacturers' Association |
| ITSTC: | Information Technology Steering Committee (made up of representatives from CEN-CENELEC and CEPT) |
| NET: | Normes Européennes de Télécommunications |
| SOG-T: | Senior Officials Group on Telecommunications |
| SOGITS: | Senior Officials Group on Information Technology Standards |
| SPAG: | Standards Promotion and Application Group |

1.1. Objectives

The Community aims to use to the maximum standards and specifications based on international standards and recommendations. This concerns in particular the recommendations of CCITT and CEPT.

These international standards or recommendations must be reviewed at the technical level in order to make them

a) precise ;

b) unambiguous ;

c) complete, and this might include the addition of conformance testing procedures.

On this basis are produced :

- common standards and
- common conformity specifications

with the aim of

- development of a Community-wide market and
- Community-wide compatibility of terminal equipment.

1.2. Legal Instruments

Since 1984, the Community has built up a set of legal instruments which will form the framework for Community standardisation policy in information and telecommunications standardisation, as they come into force.

1.2.1. Council Directive 86/361/EEC on the initial stage of the mutual recognition of type approval for telecommunications terminal equipment of 24th July 1986.

In July 1986, an important step forward was taken with the adoption by the Council of a Directive on the mutual recognition of the results of conformity tests on terminal equipment. The directive, which will come into force in July 1987, says that no further tests for a particular type of terminal equipment are needed where the results of tests carried out have already led to the issuing of a certificate of conformity with the relevant common conformity specification. With a few exceptions, such certificates of conformity shall be recognised for the purpose of type approval of the terminal equipment in question by all Member States. The common conformity specifications should be drawn up in view of their uniform application in all Member States of the Community.

Member States shall also ensure that the Telecommunications Administrations use common conformity specifications when purchasing terminal equipment covered by such specifications.

The Directive gives the Commission a brief :

- to draw up each year a list of international standards and technical specifications in telecommunications to be harmonised, and a list of terminal equipment for which common conformity test specifications should be drafted as a matter of priority ;

- to draw up a timetable for this work ;

- to request the CEPT to draw up the common conformity specifications in the form of European Telecommunications Specifications (NETs - Normes Européennes de Télécommunications - see below and APPENDIX 3).

- the Commission shall be assisted in its work by a Committee which shall be the Senior Officials Group on Telecommunications (SOG-T).

The Directive defines "essential requirements" as

"those aspects of common conformity specifications of such importance as to necessitate compliance as a matter of legal obligation for the implementation of the mutual recognition of the results of conformity tests on terminal equipment as an integral part of the type approval procedure. These essential requirements are at present :

"- user safety in so far as this requirement is not covered by directive 73/23/EEC ;

"- safety of employees of public telecommunications network operators in so far as this requirement is not covered by Directive 73/23/EEC ;

"- protection of public telecommunications networks from harm ;

"- interworking of terminal equipment in justified cases."

The last point applies, in the Commission's interpretation, in particular to terminals related to services for universal provision, in particular those services recommended by Council for Community-wide provision, such as according to Council Recommendation 86/659/EEC on the Co-ordinated Introduction of ISDN (see below). This may require, depending on the case given, specifying NETs up to layers 6 and 7 of the OSI seven layer model.

The Commission has also announced that it will submit to Council shortly a general Directive on safety of machines and radio-electric compatibility which together with Directive 73/23/EEC will be of relevance regarding general requirements for telecommunications equipment.

Mutual recognition of type approval will play a central role for a Community-wide terminal market (see Chapter VI). According to the Directive, the Commission should make proposals to extend the current Directive to full recognition of type approval before July 1989. Given the importance of rapid progress, the submission of these proposals is to be accelerated.

### 1.2.2. Decision 87/95/EEC on standardisation in the field of information technology and telecommunications, of 22nd December 1986

The Decision was adopted in December 1986. It will come into force in February 1988, one year after its publication in the Official Journal.

The Decision covers :

"- standards in the field of information technology

"- functional specifications for the services specifically offered over the public telecommunications networks for exchange of information and data".

It excludes common technical specifications for terminal equipment covered by Directive 86/361/EEC (see above) and equipment belonging to any part of the telecommunications network infrastructures themselves.

According to the Decision, the following measures will apply :

- regular, at least annual, determination of priority standardisation requirements ;

- requesting European standards institutions and specialised technical bodies in the information technology sector to establish "European standards" (ENs), "European pre-standards" (ENVs) or telecommunications functional specifications based, as far as possible, on international standards. If necessary, they will have recourse to the drafting of functional standards to ensure the precision required by users for the exchange of information and data and system interoperability ;

- facilitating the application of standards in the verification and certification of products ;

- Member States shall ensure that reference is made to ENs and ENVs and international standards in public procurement orders.

The application of standards in public procurement is an inseparable part of the proposed approach and is justified by a dual relationship :

- the preparation of national and proprietary specifications is a serious obstacle to the opening-up of the market ;

- the use of standards for public procurement helps to promote them, and many users outside the public sector readily follow the example given once they know that these standards are in common use.

Regarding network equipment, currently excluded from the application of the Decision, the Council and the Commission have asked the CEPT to work progressively towards specifications for such equipment. The Commission has stated its intention to present a further proposal to require such specifications to be used in public purchasing [Statements for the Council Minutes, Council Meeting of 22.12.1986].

Network equipment specifications are currently excluded in relation to procurement; but it should be noted that, in the new digital environment, the provision of end to end compatibility requires that functional specifications should be well harmonised, especially in relation to signalling.

Regarding telecommunications network interface specifications, the Decision states (Article 5.2) :

"In order to provide end-to-end compatibility, Member States shall take the necessary steps to ensure that their Telecommunications Administrations use functional specifications for the means of access to their public telecommunication networks for those services specifically intended for exchange of information and data between information technology systems which themselves use the standards mentioned in paragraph 1."

This means that network interface specifications of Telecommunications Administrations will have to be based on NETs, ENs, ENVs or other accepted international standards.

## 1.3. Organisational framework

### 1.3.1. Memorandum of Understanding between the European Conference of Postal and Telecommunications Administrations and the Commission concerning standards and type approval

The Memorandum of Understanding establishing a framework of co-operation between the Community and CEPT was signed in July 1984. According to the Memorandum, the CEPT produces common standards and specifications for type approval in priority sectors, determined at Community level.

Current priorities considered under the agreement are : ISDN, OSI, mobile telephony, teletex, telefax group IV, videotex and criteria for recognised test laboratories.

Parallel to the adoption of the Directive on the mutual recognition of type approval for telecommunications terminal equipment (see above), the CEPT took complementary action to streamline its work and to make the application of its own recommendations more effective. It therefore established mechanisms to select those recommendations which should become binding in those countries which signed an agreement drawn up by the CEPT at Copenhagen on 15th November 1985, in the form of so-called NETs (Normes Européennes de Télécommunications) (see above).

Similar to the provisions in the Directive, those signatories of the agreement which are not Member States of the Community have also resolved to use NETs or parts thereof for type approval purposes. They have furthermore decided to create within CEPT an autonomous Technical Recommendations Application Committee (TRAC) which will be responsible for the implementation of the agreement. Within this Committee unanimity is required to decide which terminal equipment technical recommendations are candidates for mandatory application. The decision whether a terminal equipment technical recommendation shall become a NET is taken by (weighted) majority voting.

1.3.2. The general guidelines approved with the joint standardisation organisation European Committee for Standardisation/European Committee for Electro-technical Standardisation (CEN/CENELEC)

The Commission has concluded an agreement with CEN/CENELEC similar to the Memorandum of Understanding with CEPT. Since June 1984, these bodies have agreed to carry out the necessary work in the field of information technology and have reorganised their structure and procedures.

Under the arrangement :

- CEN/CENELEC can be commissioned to carry out the necessary technical work, in particular for the preparation of an EN standard. According to framework contracts signed in 1985 between CEN/CENELEC on the one hand and the EC and EFTA on the other, the placing of orders for such work can involve a financial participation.

- The adoption of rules common to CEN and CENELEC now facilitates work carried out jointly (for example standards are now adopted by the same weighted majority balloting system).

- The setting-up of a Steering Committee specific to information technology (ITSTC) enables the work to be monitored and ensures proper links with other committees responsible, for example, for certification or standardisation of advanced manufacturing equipment.

- The reverse procedures also provide for a first stage whereby development standards (ENV standards) can be rapidly adopted and verified experimentally. After a two-year period, the ENV standard becomes an EN standard in accordance with the normal procedure.

The current priorities, determined in October 1984, include :

- OSI - layers 1 to 3
  network interface, LAN connectors, etc.
- OSI - higher layers
  transport, file transfer, etc.
- electronic message handling and document transfer
  MHS - teletex
- character sets
- formal description techniques - security
- supplements to standards for exchange of data stored on magnetic media and printer interfaces

This list has been updated and CEN/CENELEC/CEPT is following up the proposed work programme, published under the reference "IT - Memorandum N 2".

### 1.3.3 Promoting the development of recognised conformance testing centers

The Community has given high priority to the area of testing by launching projects for the promotion of conformance testing services capable of verifying conformity with functional standards.

On the basis of a Call for Proposals published in 1985, a programme for the development of test facilities and provision of conformance testing services was launched at the end of 1985 and the contracts were signed early in 1986.

### 1.3.4. Co-operation with industry

The European telecommunications and information industry has substantially stepped up its commitment to open international standardisation, in particular based on co-operation and commmon projects in the framework of ESPRIT and RACE.

As early as January 1984, twelve major European IT companies clearly indicated their support for a standardisation policy based on a harmonised implementation of international OSI (Open Systems Interconnection) standards and expressed their commitment to the implementation of such standards in their products.

The creation of the Standards Promotion and Applications Group (SPAG) has allowed these companies to strengthen their contribution to the standardisation work and to establish further links with other similar organisations (USA and Japan) to promote international co-operation in this field.

At the same time, European industry has created a broader organisational base for this work. In 1985, the European Telecommunications and Professional Electronics Association (ECTEL) was founded as a joint conference by ECREEA and EUCATEL ("European Conference of Radio and Electronic Equipment Associations" and "European Conference of Associations of Telecommunications Industries"). ECTEL has created the "ECTEL Study Group for CEPT harmonisation" in order closely to interact with standardisation work in CEPT.

### 1.3.5. The continuing lack of resources

Common standards and specifications are a pre-condition for an open competitive market. The substantial reinforcement of the international standards process and its application to network infrastructure and services is a pre-condition for the development of a Common Market for equipment and services.

The framework for accelerating the process is in place :

- the Directives set out above provide a firm legal basis ;
- the co-operation agreements with CEPT and CEN-CENELEC provide the framework for working out NETs, ENs, and ENVs with the required technical authority.

The major objective must now be to make this framework work. Directive 86/361/EEC and Decision 87/95/EEC can only become effective if NETs and EN/ENVs are produced by the standards organisations on time and in sufficient quantity.

As discussed in Chapter III, the convergence of telecommunications and information technology has made the international standardisation process substantially more complex. Agreement on highly detailed network interface standards and on high-level protocols is needed to ensure proper connection and interworking of the highly sophisticated digital terminals of the future.

If Telecommunications Administrations are to provide open network access to competitive services, and if they want to guarantee efficient national, Community-wide and world-wide communications, the production of standards will have to be dramatically accelerated.

Shortages in standardisation have been one reason for the insufficient provision of Community-wide communications in new services - such as X.25 networks, teletex, videotex [see "Clearing the Lines, a User's view on Business Communications in Europe", Round Table of European Industrialists, October 1986].

CEPT and CEN-CENELEC have shown a noteworthy ability to adapt to the new requirements. In the framework of their co-operation agreements with the Commission, they have streamlined their working methods and a number of NETs and EN/ENVs are expected to be produced on schedule.

But the two organisations have to continue to work on the basis of non-industrial working methods, based on working group meetings and part-time availability of Telecommunications Administrations' experts. Co-ordination with industry which is now indispensable, has been strengthened, but is still not on a permanent working level.

In the past, lack of resources for the international standards process has been one major contributing factor leading to incompatible national or proprietary specifications. National or proprietary specifications can be anti-competitive.

The United States have substantially strengthened their standards setting process and input to CCITT in the wake of deregulation. Within BELLCORE, jointly owned by the now independent Bell Operating Companies (see APPENDIX 1), 8000 permanent staff work jointly on technological development, at least 20-30% of which is on standards and specifications [Fact Finding Mission Report by the Commission of the European Communities, June 1986].

The establishment of a more competitive market must go in parallel with a substantial strengthening of resources in the standardisation process. The Community can contribute substantially, as has been shown by the programme for the promotion of recognised conformance testing centers, carried out jointly with the Telecommunications Administrations.

It is now time to consider together with CEPT and CEN-CENELEC the best way to establish industrial working methods based on permanent teams, including an increased contribution by industrial and user experts. The strengthening of the process must go substantially beyond current resources available for the TRAC mechanisms and for a number of permanent nuclei which have been set up by CEPT. The only efficient solution for creating a permanent basis will be the establishment of a stable physical centre. Such a European Telecommunications Standards Institute could provide the permanent core functions on which the acceleration of standards work can be based. In this way it would create the institutional conditions for a strengthening of the current framework of co-operation of the Telecommunications Administrations and industry within CEPT and CEN-CENELEC.

2. Promoting the co-operative development of advanced telecommunications in Europe

A future Common Market in services and equipment in the Community will only become effective if efficient Community-wide advanced network infrastructures is made available. The Action Programme since 1984 has strongly emphasised this aspect, closely related to the establishment of Community-wide specifications for network infrastructure and services.

Depending on the time horizon, advanced infrastructure and service development need a combination of :

- R&D, in areas where technology still needs to be developed and "pre-normative" work needs to be undertaken ;

- agreement on standards, in areas where technological feasibility and capability has been established but agreement on specifications is needed to create the necessary economies of scale and scope ;

- investment,in areas where the economic and technological basis has been established.

It is with this framework in mind that within the mandate given by Council, the Action Programme in telecommunications has been developed.

Details are set out below. The actions aim at developing a favourable environment for telecommunications investments. Beyond the programmes set out the Community makes, via its financial instruments, a substantial contribution to telecommunications investment. In 1985, loans for telecommunications investment by the European Investment Bank and the New Community Lending Instrument (NIC) have totalled 572 million ECUs. Total contributions from the European Regional Fund, within the framework of its annual operations were 162 million ECUs.

In order to facilitate the determination of concrete medium- and long-term objectives the Analysis and Forecasting Group (GAP) has been set up as a sub-group of the Senior Officials Group on Telecommunications (SOG-T). GAP is composed of representatives of the Telecommunications Administrations and their ministries, officials from the ministries of economics, industry and science and representatives of the Commission.

In addition to the GAP members, designated participants from supplier industries have taken part in the deliberations on specific subjects. Detailed work undertaken in GAP and confirmed by the SCG-T has been the basis of important Community initiatives, notably on the co-ordinated introduction of ISDN and on second-generation mobile communications. GAP has also worked on the introduction of broadband services and has contributed to the development of the RACE programme.

The RACE programme itself was conceived and developed since 1984 on the basis of broad consultation and participation of industry and the European Telecommunications Administrations.

2.1. The RACE programme

In March and April 1985, the Commission submitted proposals to the Council for a programme on R&D in Advanced Communications technologies for Europe (RACE) [Report of the Commission to the Council on R&D Requirements in Telecommunications Technologies as a contribution to the preparation of the R&D programme RACE, COM(85)145, 25.03.85 ; Proposal for a Council Decision on a Preparatory Action for a Community Research and Development Programme in the field of Telecommunications Technologies, COM(85)113, 01.04.85]. In July 1985 the Council authorised an 18 month RACE Definition Phase beginning on 1st July 1985 [Council Decision on a Definition Phase for a Community action in the field of telecommunications technologies (85/372/EEC), L210/24, 07.08.85].

In October 1986, with the Definition Phase drawing to a close, the Commission submitted proposals and a workplan for RACE Main Phase [Proposal for a Council Regulation on a Community action in the field of telecommunications technologies, COM(86)547 final, 29.10.86]. The Council is still considering this proposal.

This work-plan proposed a contribution of 800 million ECUs for the first phase (1987-1991).

The objectives of RACE are ambitious. It aims at the introduction of Integrated Broadband Communications (IBC) taking into account the evolving ISDN and national introduction strategies, progressing to Community-wide services by 1995. Moreover, RACE requires co-operation between a large number of players, including the Telecommunications Administrations and telecommunications user industries and services. It involves concrete planning of the introduction of broadband services in the Community ; and it involves the elaboration of common standards and specifications.

The "pre-normative" activities are extremely important. They not only avoid the familiar difficulties of ex-post harmonisation and hence create the conditions for an efficient, unified single market in a key technology ; they also ensure the interoperability of the future systems.

The RACE Definition Phase (July 1985-December 1986) allowed the work on performance requirements and technical specifications to be conducted at Community level - and, through the participation of CEPT, involving Western Europe as a whole. 400 experts belonging to 109 public and private organisations and firms participated in this definition phase.

The elaboration of an IBC reference model - the basic design of the European broadband network and services - was carried out by three groups :

- "networks", which defined standards requirements, and was handled by GSLB ("Groupe Spécial Large Bande") of CEPT. For this purpose a permanent technical team has been established in Darmstadt ;

- "terminals", involving shared cost contracts with manufacturers, research laboratories and Telecommunications Administrations ; and

- "services" carried out in the SOG-T/GAP.

RACE will provide a major tool for ensuring Community-wide network integrity for the telecommunications infrastructure of the 1990s. Regulatory reform of the European telecommunications environment must now catch up with the potential created by technological planning and technology development. Manufacturers and service providers require clear indications of the terms under which they will be allowed to operate, and of the prospects for a single European market. Certainty on these points will help to determine the degree of enthusiasm with which industry will tackle the R&D phase of RACE and the formation of cross-national alliances between Telecommunications Administrations and industry.

While clarifying the technical and regulatory environment is vital for business planning, the network operators must provide the needed network infrastructure well ahead of full commercial use. The Commission has studied, together with the network operators, proposals for a Community-wide pilot joint infrastructure project, the Transnational Broadband Backbone (TBB) which is to accelerate the establishment of high bandwidth cross-frontier transmission links. This is at the final stage of evaluation in GAP and SOG-T. The Commission has announced for 1987 a communication to Council on this proposal.

## 2.2. The Integrated Services Digital Network

In December 1986 the Council issued a Recommendation for Co-ordinated Introduction of ISDN [Council Recommendation on the co-ordinated introduction of the integrated services digital network (ISDN) in the European Community (86/659/EEC), O.J. L382/36, 31.12.86].

The co-ordinated introduction of ISDN provides a stepping stone towards a future broadband network. By adapting the increasingly available digital narrowband infrastructure, ISDN will allow voice, data, text and simple video communication on the existing network. At the same time ISDN allows the creation of a single market for advanced terminals, and lays the basis for the Community-wide introduction of new services (see Chapter IV).

Unlike RACE which reaches further into the future, ISDN does not require substantial R&D at Community-level. Rather it is based on the on-going digitisation of the telephone network.

Joint planning at Community level was only initiated after some national Administrations had already advanced considerably on the elaboration of different ISDN versions. On these definitional problems, the Recommendation lays down timetables for agreement on the various elements, notably with CEPT, and a requirement for annual progress reports to the European Parliament.

As to the co-ordinated introduction of ISDN, the Recommendation :

- sets an objective for 1993 market penetration, for a number equivalent to 5% of main lines ;
- sets an objective for 1993 availability, with 80% of customers having the option of ISDN access ;
- invites the Telecommunications Administrations to study, within CEPT, the question of tariffs, with a view to establishing tariffing principles and rate levels which favour rapid acceptance of new services by business and other users ;
- calls for the Community's financial instruments to contribute to the extra investments required for ISDN.

ISDN should become the Community's future-oriented open network infrastructure on which services can develop.

The Recommendation sets forth essential elements for providing such an open environment :

- specification of interfaces between the network and terminals ;
- specification of a number of end-to-end services to be provided with universal availability ;
- general tariff principles for ensuring an open use of the network infrastructure.

## 2.3 Advanced telecommunications services for the less-favoured regions (STAR Programme)

In October 1986 the Council issued a Regulation instituting a Community programme for the development of certain less-favoured regions of the Community by improving access to advanced telecommunications services (STAR programme) [Council Regulation instituting a Community programme for the development of certain less-favoured regions of the Community by improving access to advanced telecommunications servies (STAR programme), 3300/86, O.J. L305/1, 31.10.86].

This programme is an application of the Regulation covering the European Regional Development Fund (ERDF) [Article 7(4), Council Regulation 1787/84] which entered into force in 1985. This regulation permits a better linkage between regional development objectives and other Community goals, in this case including peripheral regions in the development of an integrated and advanced telecommunications network in the Community.

The programme concerns peripheral regions in Greece, Italy, Spain, Portugal, Ireland, the United Kingdom (Northern Ireland) and France. The programme will provide during the period 1986-1990 780 million ECUs.

STAR starts from the recognition that the telecommunications infrastructure of certain peripheral regions lags badly behind the rest of the Community, while at the same time, the availability of telecommunications services will be a growing factor in the location of new industries and the viability of existing ones. Of particular concern are small to medium size enterprises (SMEs) which form the backbone of the economy in most of these regions.

Accordingly, the programme involves :

- substantial contributions to investment in telecommunications network infrastructure;
- finance for the development of telecommunications service centres, especially for SMEs;
- support, especially to SMEs for the use of terminals, modems, and other equipment;
- other promotional measures including technical assistance.

2.4 Mobile Communications

In Feburary 1987 the Commission submitted two proposals to the Council :

- for the co-ordinated introduction of public pan-European digital mobile communications in the Community; and

- on the frequency bands to be made available for this purpose [Proposal for a Council Recommendation on the co-ordinated introduction of public pan-European digital mobile communications in the Community; Proposal for a Council Directive on the frequency bands to be made available for the co-ordinated introduction of public pan-European digital mobile communications in the Community, COM(87)35 final, 09.02.87].

In the past, mobile communications has been one of the worst examples of lack of Community-wide compatibility. With the growing importance of mobile services, the Commission has acted together with the Telecommunications Administrations.

A first objective of the Community has been to achieve agreement by Member States firmly to reserve frequencies for the second generation pan-European digital system. Reservation of frequencies is the major precondition for a future Community-wide system. The Commission's proposal referred to above follows from 1985 GAP proposals, as discussed by CEPT, the Telecommunications Administrations and industry.

2.5. Trade Electronic Data Interchange Systems (TEDIS)

In December 1986, the Commission proposed a programme on Trade Electronic Data Interchange Systems [Communication from the Commission to the Council on Trade Electronic Data Interchange Systems (TEDIS) ; Proposal for a Council programme on trade electronic data interchange systems (TEDIS), COM(86) 662 final, Brussels, 01.12.86].

Trade increasingly requires a vast volume of data exchange between business partners ; and a high proportion is international. Often this data exchange is more time consuming than the actual manufacture or delivery of the traded goods or provision of the traded services. Currently data exchange is carried out on paper and through a multiplicity of incompatible computer systems.

Standardised Electronic Data Interchange (EDI) has therefore developed as one of the most promising lines of value-added services, based on co-operative ventures mainly established by industry associations. It can afford great savings for European business - up to 10% of the cost of exported finished products and 10-15% of final transport costs. This would clearly enhance the competitiveness of European economies, at a time when EDI is developing fast elsewhere, notably in the US.

The proposed preparatory phase (6 million ECUs in 1987/88) would concentrate on developing work on standardisation, on promotional activities and other conditions for EDI at Community level, and the development of a strategy for a full programme phase.

3. Application of Community competition policy to the telecommunications sector to date

Rapid technological change and the related growing number of new opportunities have led to a rising number of cases relating to Community competition law being brought before the Commission.

While the general application of the Treaty to telecommunications must be seen against the broader background of the Treaty and case-law set by the Court of Justice a number of specific cases and decisions are reported below.

Telecommunications cases have been treated by the Commission under competition law basically according to two aspects :

- a state monopoly's or a public undertaking's (including Telecommunications Administrations) anti-competitive behaviour may be due to domestic laws or government instructions. In such cases action has been taken under Articles 37 and 90(1) and (3) against the infringing Member States ;

- enterprises in the telecommunications or information technology field may be involved in anti-competitive arrangements or behaviour. This may concern public network operators (Telecommunications Administrations) or "undertakings" within the meaning of Articles 85 and/or 86 when they are not simply implementing laws or government instructions but are performing independent entrepreneurial activities.

3.1. The "British Telecom case"

The case originated from a complaint lodged by a private UK message-forwarding agency against the UK telecommunications authorities. It concerned prohibitions imposed by the Post Office and, after the Telecommunications Act 1981, by British Telecom as to the transit of telexes between third countries, e.g. between Continental Europe and North America, and as to the forwarding in telex or telefax form of messages received via computer connections.

A Commission decision of 10 December 1982 (OJ L 360, 21 Dec. 1982, p.36; 12th Competition Report (1982), point 94) condemned such prohibitions as abuses of a dominant position. The Italian government challenged the decision before the European Court of Justice. The UK government supported the Commission's defence before the Court (Case 41/83).

In its judgement of 20 March 1985 the Court dismissed in its entirety the action brought by the Italian Republic. The judgement was reported in the 15th Competition report (1985, points 95-101) as follows:

> "In its decision, the Commission had accused BT - a public corporation established by statute holding a statutory monopoly on the running of telecommunications systems in the United Kingdom - of abusing its dominant position within the meaning of Article 86. The main infringement of this provision recorded by the Commission was the fact that BT prohibited private message-forwarding agencies in the United Kingdom from transmitting via the British network messages whose originators and recipients were resident in other countries. In point of fact, several schemes adopted by BT between 1975 and 1981 governing the use of the public telecommunications network by private subscribers contained such restrictions.

"The schemes adopted by BT constituted, in the Commission's view, an abuse because they (a) prevented British message-forwarding agencies from offering a new service also to their customers in other Member States, (b) subjected the use of public telecommunications equipment to obligations which were neither technically nor commercially necessary and (c) placed the private agencies concerned at a competitive disadvantage vis-à-vis the national authorities and agencies in other Member States.

"....In this connection the Court - like the Commission before it - came to the conclusion that, when it took action against private message-forwarding agencies, BT was acting not as an official body but as an undertaking. The management of public telecommunications equipment and the placing of such equipment at the disposal of private users on payment of a fee amounted by its very nature to a business activity. The same reasoning must apply to the introduction of the contested schemes, which merely laid down charges and conditions for the services provided by BT to users of the British telecommunications network.....

"....The Court also rejected the submission to the effect that the application of Article 86 to the case in point infringed Article 222 because it encroached on Member States' rights to create or preserve national monopolies for particular economic activities. It noted that, whilst BT had a statutory monopoly with regard to the management of the telecommunications network and to making it available to users, it held no monopoly over the provision of ancillary services such as the retransmission of messages on behalf of third parties....

"....The employment of new apparatus and methods which accelerated the transmission of messages constituted technical progress in conformity with the public interest and could not be regarded as an abuse.

"Nor were the measures at issue covered by Article 90(2)....

> "....In the case in point, however, the conditions for the application of the provision were not met. The applicant had failed to demonstrate that the Commission's censure of BT's schemes had put the performance of the particular tasks entrusted to BT in jeopardy from the economic point of view. Whilst the speed of message transmission made possible by technological advances undoubtedly led to some decrease in revenue for BT, the presence of private agencies attracted to the British public network a certain volume of international messages and the revenue which went with it. Taken as a whole, the results were therefore in no way unfavourable to BT...."

The British Telecom judgement clearly confirmed the Commission's view that the competition rules of the Treaty apply to Telecommunications Administrations.

It made also clear that the Court would favour a narrow interpretation of monopoly rights and would strongly disfavour the extension of a service monopoly, as new technologies arise.

The Court's judgement must be seen as a cornerstone for the future interpretation of the Treaty with regard to telecommunications.

3.2. The terminal equipment cases

The Commission raised these cases with Germany, Belgium, Italy, the Netherlands and Denmark. They concern the illegality of extending the monopoly in the terminal equipment sector.

The cases raised in Germany are :

The "cordless telephone case" which was reported in the 15th Competition Report (1985) as follows:

> "....The Commission challenged the German Federal Republic's plans to extend the Bundespost's monopoly to cordless telephones.

"The German Government wished to give the Bundespost the exclusive right to supply almost all equipment connected to the public telephone network. The only equipment excluded was that to be connected to private automatic branch exchanges (PABXs) supplied by independent firms. The Commission considered that even such a partial monopoly fell within the second subparagraph of Article 37(1) EEC, since equipment imported from other Member States could thereby not be freely sold in Germany even if it met the country's technical standards. After the Commission's intervention, the German Government dropped its plans to extend the Bundespost's monopoly to cordless telephones."

The modem case was also reported in the 15th Competition Report which says :

"....The Commission also challenged the extension of the Bundespost's monopoly to modems (devices which allow equipment operating in digital mode to be connected via a telephone network operating in analogue mode). Here too, the German Government took the view that such equipment was an integral part of the telephone network and therefore could be supplied only by the Bundespost. The only exceptions were modems used to connect private digital equipment otherwise than via the public telephone network.

"The Commission considered that such an extension of the Bundespost's monopoly fell within the second paragraph of Article 37(1) and that the tying of the provision of telephone network services to the purchase of modems was also an abuse of the Bundespost's dominant position as network operator contrary to Article 86. To terminate the infringements of Articles 37 and 86, the Commission informed the German Government that it was contemplating issuing a decision under Article 90 (3)..."

In June 1986, the Commission agreed with the Bundespost on adequate measures to amend the law which made the Bundespost the sole distributor and owner of modems in Germany.

As regards the situation in Belgium :

The Commission received a complaint about the exclusive rights given to the Belgian telecommunications authority to import and supply low-speed modems and first telex terminals. After being informed that the monopoly was incompatible with the EEC Treaty because it denied suppliers of equipment from other Member States direct access to the Belgian market, the Belgian Government told the Commission that it intended to reform the provisions within three years.

Action against Italy :

A similar complaint was made about a monopoly of importing and sale of modems and first telex terminals in Italy.

Here, modems and first telex terminals to be connected to the public network may be supplied and installed only by the SIP (Società italiana per l'esercizio Telefonico) and the DCST (Direzione Centrale Servizi Telegrafici). This arrangement affects imports of modems and telex terminals from other Member States as the manufacturers of such equipment in other countries cannot approach Italian users directly.

After intervention by the Commission, the Italian Government announced that it was going to reform the provisions.

Action against the Netherlands and Denmark :

The Commission enquired about the existence of exclusive rights on importing and sale of terminal equipment in these two countries. The Dutch government announced that it was going to reform the provisions and negotiations are still going on with the Danish authorities.

Global action :

The Commission is currently examining the possible use of the provisions of Article 90 (3) to tackle this problem on a global basis.

3.3. The IBM undertaking on SNA interfaces

Systems Network Architecture (SNA) is the proprietary network standard used by IBM for interconnecting computer systems and networks.

On 1 August 1984, the Commission accepted a unilateral undertaking from IBM to provide other manufacturers with the technical interface information needed to permit competitive products to be used with IBM's most powerful range of computers, the System/370. The Commission thereupon suspended the proceedings under Article 86 EEC which it had initiated against IBM in December 1980.

In the course of the proceedings, towards the end of 1983, some major European computer manufacturers expressed concern that IBM's interface disclosure practice was also having an adverse effect in the European market for data communication products (the interconnection and interaction of data-processing systems). Accordingly, the SNA issue was included in the informal discussions on interface disclosure.

The IBM Undertaking was reproduced in full in EC Bulletin 10-1984 (point 3.4.1.). The commitment relating to SNA formats and protocols reads as follows:

"14. IBM recognizes the widespread interest in interconnecting systems and networks of different manufacturers. IBM favours such interconnections and has published and will publish extensive information about it including formats and protocols which facilitate attachment by competitors of their systems or networks to IBM SNA networks. IBM understands that to the extent that SNA is different from OSI, competitors depend on IBM information to be able to interconnect their products with IBM SNA products. IBM has an interest in issuing information on SNA formats and protocols as soon as possible and it confirms that it will take all reasonable steps to expedite the availability of the relevant documentation.

"Accordingly:

"a) On accouncement of a System/370 product that implements enhancements to SNA on System/370, IBM will identify the functions in such products that implement such enhancements. At announcement, IBM will, upon request from interested persons, identify use of existing formats and protocols. Where that product uses enhanced SNA formats and protocols, then subject to paragraph 7, IBM will as soon after announcement as the relevant SNA formats and protocols are reasonably stable and the architecture has been formulated and described or at general availability whichever is the earlier, publish the SNA formats and protocols that implement such enhancements, together with appropriate product documentation, in order to enable attachment of other systems (which may be comprised of multiple products) and networks to IBM SNA networks.

"b) IBM will update the IBM SNA formats and protocols manual by the following:

"i) IBM will publish by the end of 1984 such an SNA format and protocol manual that will describe LU 6.2.

"ii) IBM will make available within 60 days of the effective date of this Undertaking a services description manual for LU 6.2 and an SNA format and protocol manual for SNADS.

Apart from the foregoing, IBM believes that all essential information regarding SNA has been made available.

"c) IBM will identify, in future announcements of the first ACF/NCP or successor products that implement enhancements to SNA not already identified pursuant to paragraph (a), the functions that implement the enhancements. IBM will release software externals for ACF/NCP and successor products on the terms and within the periods set forth for System/370 software products in Appendix A.

"d) IBM has actively participated in international standards efforts in support of open system interconnection (OSI) and will continue its active support of OSI as the standard for interconnecting systems, products and networks of different manufacturers."

3.4. Other Cases

The Commission has treated a number of other cases of close relevance to the telecommunications sector. Amongst these are: The International Air Couriers case (Articles 90 (1) and 86 EEC) relating to freedom of international air couriers activities (EC Bulletin 1-1985, point 2.1.10 Germany, EC Bulletin 12 - 1985, point 2.1.79 France); Telemarketing -v- Cie Luxembourgeoise de Télédiffusion (Art. 177, 86 EEC) (ECJ preliminary ruling of 3rd October 1985 in case 311/84) relating to the abusive extension of a dominant position to a neighbouring but separate market; SWIFT (Society for Worldwide Interbank Financial Telecommunications) and SITA (Airlines worldwide telecommunications network) relating to the pricing of international leased lines; exemption of Corning Glass Works' joint ventures with BICC PLC and Siemens AG for the manufacture of optical fibres in the UK and Germany. (Commission decision of 14 July 1986, OJ L 236, 22 August 1986, p.30; 16th Competition Report 1986.)

In the context of the International Air Couriers' case, the Commission took the opportunity presented by this case to point out:

> "that it regards the Member States' postal and telecommunications authorities as commercial undertakings since they supply goods and services for payment and that any extension by one or more of these undertakings of their dominant positions may constitute an abuse under Article 86 of the EEC Treaty"

National courts may apply the prohibitions contained in Articles 85 (1) and 86. For a number of years, and especially in the last two years, the Commission has tried to move the domestic courts to enforce the EEC Competition rules more often. The Brussels court summary injunction of 31st July 1986 based on the Tele-marketing ruling (see above), relating to the attempt by the Belgian Telecommunications Administration to expand its monopoly to PABXs with 50 to 150 extensions, is an example of this approach.

4. Transparency of public procurement procedures

In November 1984 the Council approved Council Recommendation 84/550/EEC concerning the first phase of opening up access to public telecommunications contracts (16.11.84, OJ L298/51)

According to the recommendation, Member States should "ensure that the telecommunications administrations provide opportunities for undertakings established in the other Community countries, following their usual procedures and on a non-discriminatory basis, to tender for:

"1. all new telematic terminals and all conventional terminals for which there are common type approval specifications;

"2. their contracts for switching and transmission apparatus and conventional terminal apparatus for which there are no common type-approval specifications for at least 10% in value of their annual orders"

The implementation of the recommendation was to be overseen by the Commission, in consultation with the Senior Official's Group on Telecommunications.

The detailed procedures for implementing this Recommendation were agreed in 1986.

The Recommendation, after agreement on certain details of implementation had been established, has led to an increasing number of calls for tender published in the Official Journal according to the procedure agreed.

In the context of the work plan for achieving completion of the Internal Market by 1992, according to the White Paper, further steps have been announced for introducing Community-wide competition inter alia in the sector of telecommunications. The Work Programme of the Commission for 1987 envisages that the necessary proposals will be introduced this year.

Amongst the measures announced, a major initiative (decided by the Commission on 18th March 1987) will be the extension of existing Community legislation on the opening of public procurement, to the sectors currently still excluded from the supply Directive 77/62/EEC, amongst them telecommunications.

The Telecommunications Administrations dominate 75 to 90% of the traditional telecommunications equipment market in the Community.

As set out in Chapter VI, the development of a common market in network and terminal equipment must therefore go hand in hand with a substantial increase in the transparency of the procurement procedures of the Telecommunications Administrations.

A realistic policy regarding the opening of procurement in the telecommunications sector must take into account the specifics of the sector. This relates closely to the availability and use of common specifications. As set out above, Directive 86/361/EEC and Decision 87/95/EEC promote the application of standards and functional specifications relating to information technology and telecommunications in public sector orders and technical regulations.

Terminal equipment and network equipment may have to be dealt with in different ways :

Regarding new terminal equipment for which the current Recommendation already foresees open procurement procedures, transparency will be established by a Directive replacing the current Recommendation;

Regarding network equipment and conventional terminals, for which the current Recommendation foresees open tendering at 10% of total tenders, objective technical constraints exist. Full opening could be reached progressively, for example, by increasing the current rate of 10% to 40%, within the framework of the Recommendation. A Directive could be envisaged for 1989, after careful discussion and evaluation of mutual benefits and of the results obtained in this sector by Recommendation 84/550/EEC (part 2), in order gradually to achieve full opening of these markets by 1992.

Progress towards effective opening of the procurement procedures of the Public Telecommunications Operators is closely related to progress on the Community's policy on standardisation. As set out above, Directive 86/361/EEC and Decision 87/95/EEC promote the application of standards and functional specifications relating to information technology and telecommunications in public sector orders and technical regulations.

5. Conclusions

The achievements of the Community's telecommunications policy since 1984 demonstrate the willingness and determination of the Member States to create the framework conditions required for the current restructuring of the Community's telecommunications market and industry.

The decisions taken to date have contributed substantially to

- promotion of European telecommunication services and industry ; and
- preparation for a more competitive Community-wide market.

Regarding standardisation in information technologies and telecommunications,

- The Community's policy on standards is based on the international standardisation process. This concerns in particular OSI and ISDN.
- Directive 86/361/EEC on the initial stage of mutual recognition of type approval for telecommunications terminal equipment and Decision 87/95/EEC on standardisation in the field of information technology and telecommunications have created a comprehensive framework in this field, by establishing
  - "essential requirements" for testing and type approval.
  - binding common network interface specifications, with the future introduction of NETS (Normes européennes des télécommunications),in conjunction with the CEPT.
  - a firm framework for the common interpretation of international standards in the information technology field, with the introduction of ENs and ENVs in conjunction with CEN/CENELEC.
  - clear objectives and obligations for the use of common specifications and standards in purchasing orders.
  - clear objectives and obligations for the means of access to public telecommunications networks and services, and to services of comparable importance.

- In certain cases, standardisation requirements must ensure full inter-operability of systems. This may include specifications up to Layer 7 of the OSI model. This concerns in particular ensuring the interworking of terminals for those services recommended for Community-wide provision, such as according to Recommendation 86/659/EEC on the co-ordinated introduction of the integrated services digital network (ISDN) in the Community.

- The co-operation agreements with CEPT and CEN/CENELEC have set a solid organisational framework for the working out of common specifications, on the basis of the international standardisation process. This framework is further reinforced by the current programme for the promotion of conformity testing centres, and the standards promotion organisations which have been formed at the industrial level.

- The legal and organisational framework is thus for the most part already firmly established. However, standards and specifications development now needs highly specialised competence and substantial manpower on a permanent basis. Current availability of human resources on a permanent basis is insufficient. In order to create a firm physical basis for the acceleration of work, the creation of a European Telecommunications Standards Institute, based on the current co-operation of the Telecommunications Administrations within CEPT and CEN-CENELEC should be envisaged. The institute should also draw substantially on industrial and user expertise.

- Given the importance of full mutual recognition of type approval for the competitive common market in terminal equipment, Directive 86/361/EEC on the initial stage of the mutual recognition of type approval for telecommunications terminal equipment should be rapidly supplemented by a Directive establishing the legal basis for full mutual type approval.

Regarding the promotion of co-operative development of advanced telecommunications in Europe,

- the co-operative development of advanced telecommunications network infrastructures and services is a condition for future Community-wide network inter-operability and network integrity. Future network integrity is the basis on which an open competitive market must build.

- depending on the time-horizon, advanced infrastructure and service development needs a combination of research and development, often of a "pre-normative" character; agreement on standards; and availability of sufficient investment means. The actions undertaken have been carefully designed with regard to these three aspects;

- the RACE programme aims at the pooling of resources for the introduction of Integrated Broadband Communications (IBC) taking into account the evolving ISDN and national introduction strategies progressing to Community-wide services by 1995. This makes the programme a centre-piece of long-term network evolution in the Community.

- The Community's actions on ISDN, mobile communications and Trade Electronic Data Interchange Systems (TEDIS) emphasise standards and the synchronisation of service introduction in order to achieve a Community-wide market effect.

- The STAR programme aims at avoiding growing gaps in modern infrastructure and services between the peripheral and the core regions of the Community - an essential goal for future economic cohesion.

Regarding the application of Community competition policy to the telecommunications sector to date:-

- The cases treated to date and the rulings by the Court of Justice confirm that the Telecommunications Administrations are fully subject to the Treaty Rules, notably the competition rules, in particular to the extent that they engage in commercial activities.

- The Commission has made it clear that it regards the Member States' Telecommunications Administrations as commercial undertakings since they supply goods and services for payment.

  If such an undertaking were to extend its dominant position at its own initiative, this might constitute an abuse of dominant position under Article 86. In the case of such an action resulting from prescriptions by a Member State's government, the latter could be sued under Article 90 (1) read in conjunction with Article 86.

- The competition rules apply to both private and public undertakings. The Commission has shown in past cases that it will scrutinise carefully the activities of existing and new providers in both the telecommunications and the data-processing field.

Regarding the establishment of more transparency in public procurement procedures

- The growing opening of the market to competition will make further progress in the opening of the procurement procedures of Telecommunications Administrations necessary. The Commission has announced that it aims at achieving rapid opening of public procurement in the general framework of the completion of the Internal Market by 1992. In telecommunications, the approach should be progressive and take full account of the specific characteristics of the sector.

  The results achieved by Recommendation 84/550/EEC are currently under review by the Commission. Depending on this review the Commission will decide on the options to be adopted.

## VIII TELECOMMUNICATIONS IN THE CONTEXT OF OTHER COMMUNITY POLICIES

Since 1984, telecommunications has developed into a fully-fledged line of Community policy in its own right. However, in order properly to appreciate the implications of policy choices in this field, telecommunications policy should be considered in the context of other policy goals of the Community closely related to it.

Telecommunications policy is closely related to major new policy goals of the Community as reaffirmed in the European Single Act : completing the Internal Market, achieving a European Research and Technology Community and strengthening European cohesion.

In this chapter, the relationships between telecommunications policy and the following policy goals of the Community are considered:

- the completion of the Internal Market
- Research/Development/Technology policy
- the establishment of a Community-wide information market
- the establishment of a Community-wide audiovisual space

The special potential represented by telecommunications for the less favoured regions of the Community has been discussed in Chapter VII (STAR Programme).

### 1. Telecommunications in the context of the Internal Market

The overall priority accorded by the Community to the achievement by 1992 of the internal market as laid out in the Commission's June 1985 White Paper [Completing the Internal Market, COM(85)310 final, 29.6.85], and decisions taken since its publication, will greatly benefit the Community's telecommunications services providers and equipment manufacturers.

On the other hand, a Community-wide development of the telecommunications network infrastructure and of advanced services will be indispensable for the attainment of the internal market objective.

The Commission's White Paper on Completing the Internal Market was endorsed by the Heads of State at the Milan summit meeting in June 1985. It provides for the achievement of the internal market by 1992 and sets out an action programme to achieve that objective.

In its section on "A Common Market for Services", the White Paper emphasises the importance of the telecommunications network infrastructure and of telecommunications services:

"....a market free of obstacles at Community level necessitates the installation of appropriate telecommunication networks with common standards....

"New cross-border services ... can develop their full potential only when they serve a large, unobstructed market. This applies equally to audiovisual services, information and data-processing services and to computerised marketing and distribution services."

Efficient and advanced telecommunications services will be the backbone of the development of intra-Community trade and services, and a major component of trade in advanced equipment.

The regulatory aims in telecommunications must reinforce these overall policy goals. Re-regulation of the telecommunications sector must strongly promote the development of Community-wide services which support the development of intra-Community trade in services and equipment and which enhance overall market efficiency. The White Paper draws specific attention to the importance of the rapid development on a European scale of certain value-added services, such as electronic banking and videotex. (cf also Chapter V.)

2. Telecommunications in the context of the Community's Research/Development/Technology Policy

The overall context of the Community's R/D/T policy is set out in the Community's Framework Programme for Research and Development for the the period 1987 to 1991. The Commission submitted detailed proposals in September 1986 (COM(86)430, 30.6.1986.)

The total budget proposed was 7.7. billion ECU for the five year period.

Telecommunications now represents a crucial market for wide areas of high technology production and industry. It accounts, for example, for 20% of the market for micro-electronic products. A dynamic and expanding Europe-wide telecommunications sector is thus essential to sustaining Europe's general capability in the whole field of high technology. The convergence of telecommunications and computing technology has made the Telecommunications Administrations the largest civil investors in high technology, with a combined annual investment volume of 16 billion ECUs. (cf Chapter V.)

Telecommunications and information technology are now characterised jointly by large development costs for new products and services and, as a corollary, an especially high need for large markets if they are to be viable.

The proposed Framework Programme fully recognises this central importance of telecommunications and information technology for overall R/D/T development. The proposal foresees the allocation of 40% of total R&D expenditure to R&D in telecommunications and information technology. In particular:-

- Implementation of the main phase of the RACE programme (see Chapter VII) ;

- Second phase of the ESPRIT programme, the European Strategic Programme for Research in Information Technologies. In the current first phase, more than 200 projects in advanced information technology are being carried out on a cost-shared basis, by transnational consortia of industrial enterprises, research laboratories and universities. A number of projects are closely related to "pre-normative" work, such as the ROSE project (see report on the first phase of ESPRIT - progress and results, COM(86)687, 8.12.1986) ;

- Application of telecommunications and information technology. This concerns inter alia the programmes DELTA (Development of European Learning by Technological Advance), DRIVE (Dedicated Road and Intelligent Vehicles in Europe) and EUROAIM (European Advanced Informatics in Medicine).

The Community also participates in a number of EUREKA projects in the information technology and telecommunications field (see EUREKA and the Community Technology Community COM(86)664, 20.11.1986).

In tandem with the development of European research and technology capabilities and intra-European industrial co-operation, the European market must be developed as a necessary complement, in order to make European R/D/T policy in both the Community and the wider European context fully successful.

The potential of the Community's market for advanced telecommunications and information technology products is vast - providing it is possible to achieve the necessary European scale and new growth dynamism. At present, the Community Member States do not consume telecommunications products to anything like the same extent as in the United States and Japan. During the early 1980's telecommunications equipment purchases per capita were $32 in the Community, compared to $80 in the United States and $46 in Japan.

The very fact of this relatively low consumption points to the unrealised potential of the European market which is the largest of the three as measured by its 320 million potential consumers.

The current regulatory transformation must make a major contribution towards changing this state of affairs. The European industry and the European consumer need both a more competitive market, and to see a single Community-wide market replace the current web of segmented national markets.

3. Telecommunications as a basis of a free market for information.

One important economic, political and cultural advantage for Europe of advanced Europe-wide telecommunications derives from the possibilities created for the enhanced exchange and free flow of information. This advantage can only be fully materialised with the development of a common market for information.

The free flow of information is closely related to the fundamental human rights which underlie the basic political and cultural consensus of the Community. Freedom of expression is guaranteed by Article 10 of the European Convention of Human Rights. This Convention is not only binding upon its 21 member states but has also been recognised by the Commission, the Council, the European Parliament (OJC/103/77) and by the European Court of Justice as a basis for the development of civil rights within the European Community (ECJ, 13.12.1979, Case 44/79).

In the Green Paper "Television without Frontiers", the Commission has emphasised the importance of Article 10 of the Convention of Human Rights for the development of a Common Market of information and ideas (Green Paper on the establishment of the Common Market for Broadcasting, especially by Satellite and Cable, COM (84) 300, 14.6.1984, cf. below).

Adequate telecommunications infrastructures and services are a condition sine-qua-non for the free expression and free flow of information in the Community in the future. The provision of telecommunications network infrastructure and telecommunications services will provide the conduit within which information can flow. The provision of information services and a free market for information content are indispensable requirements for putting telecommunications network infrastructures and telecommunications services to best use.

The problems of the free flow of information closely related to the development of trade and the operation and promotion of information services are addressed within the Community's policy for a common information market.

3.1. The Commission's Work Programme for the creation of a Common information market

At present the European information market is fragmented and underdeveloped. In March 1985 the Council approved the realisation of a common information market as a priority goal (European Council, 29-30.03.85, Bull.EC. 3-1985, point 3.4.3). In November of the same year the Commission proposed a work programme to develop the common information market (Communication from the Commission to the Council: Work Programme for Creating a Common Information Market, COM (85) 658 final, Brussels, 29.11.85). This programme was approved by the Council on 18.03.86.

This programme reviews the changes in the European information market, and analyses in particular the impact of the new information technologies; their economic consequences; their regional consequences; their social consequences; and their international implications. The programme emphasises the impact on the information market of public policies regarding telecommunications and data-processing and the need to optimise the use of the telecommunications infrastructure.

In the framework of this programme, the following priorities have been selected for action in consultation with the Senior Official Advisory Group for the information market :

- opening up the internal market for information by removing barriers to information flow,

- encouraging the private sector in the Community to develop new information products,

- promoting the use of Community advanced information services.

These priorities must be seen in the context of the Community initiatives to stimulate the development of the European information market:

- promotion of Europe-wide information services, based on emerging new technical possibilities. The Community's programmes for specialised information services aim particularly at this objective. Major steps have been the establishment of the Euronet/Diane network; promotion of European electronic data bases in the economic, scientific and technological fields; and promotion of new technologies.

- reduction of language barriers, by promotion of successive programmes of automatic translation systems, in particular of the SYSTRAN and EUROTRA systems.

- promotion of standardisation in the field of data base access;

- elimination of legal and regulatory barriers, and the harmonisation of legislation in this field.

Regarding the legal and regulatory framework required for a free flow of information , the Work Programme notes that apart from regulatory issues related to the conditions of provision and use of telecommunications services, convergent solutions should be found in a number of areas of legitimate public interest profoundly affecting the future environment for the free flow of information in the Community.

These include:

- data protection
- copyright
- authentication of transactions
- liability for information services
- electronic fraud
- protection of confidentiality of content of users' communications with information services.

The Commission has established a "Legal Observatory" to study the legal aspects of such issues in more detail.

3.2. Legal issues affecting the free flow of information

3.2.1. Data protection

Data protection is a shorthand formula for the protection of an individual's rights and fundamental freedoms, and in particular his/her rights to privacy, with regard to automatic processing of personal data relating to him/her (cf Article 1 of the Convention for the Protection of Individuals with regard to Automatic Processing of Personal Data, 17th December 1980).

The merger of telecommunications and information processing has created new problems of data protection regarding the free flow of information. At this point in time, all Member States have recognised the need for appropriate legal instruments to solve these problems and have taken regulatory measures or are in the process of preparing such measures (for a concise comparative assessment of the data protection laws and the statutes concerning access to information in the Member States cf "Legal issues affecting the specialised information market", study commissioned by the Commission of the European Community, 1986).

The Council of Europe's Convention for the protection of individuals with regard to the automatic processing of personal data which has been signed by most Community Member States, provides guidelines for the protection of individuals' rights to the privacy and security of personal data relating to themselves.

The free flow of information within the Community and the orderly development of the Community information market require that harmonising Community legislation is introduced, based on existing international conventions and declarations.

Since 1973, the European Parliament has emphasised on several occasions that the right to privacy should not only be protected by national law, but that harmonising legislation should be introduced at the Community level. (OJC 140/34, 5.6. 1979).

The Work Programme for a common information market foresees a Council decision on ratification of the Council of Europe Convention, or a Directive, based on Commission Recommendation 81/679/EEC and the Resolution of the European Parliament of 9.3.1982.

### 3.2.2. Copyright

Electronic information distribution creates new technical possibilities for breach of copyright. It is technically easy for users to appropriate information and integrate it into their own information handling systems, and very difficult to police this. Without adequate guarantees for those with property rights with respect to information subject to copyright and supplied to users through electronic information systems, the economic incentive to supply information commercially will be severely blunted.

This may require the operational elaboration of such legal and commercial distinctions as that between access to information and ownership of information, and technical development to implement these legal distinctions.

In the Commission's Copyright Green Paper to be published in 1987 (Programme of the Commission for 1987, Commission of the European Communities, February 1987) interested parties will be invited to make submissions to the Commission on the issue in order to allow an assessment of the scope of the problem and its possible solutions.

### 3.2.3. Authentication of transactions

Authentication of transactions is among the most difficult problems involved in adapting the legal framework to new information technologies. Contracts have been traditionally established on paper; electronic transactions are by nature paperless. Technical methods put forward to date to overcome the problem have not yet satisfactorily been able fully to substitute for the handwritten signature. However, in addition to examining technical approaches, whereby adequate methods would be found to offer sufficient guarantees against forgery, the Commission is examing the problem from the legal standpoint and intends to issue recommendations with regard to admissible evidence in the courts concerning records of transactions produced by electronic means.

### 3.2.4 Liability

There is a clear need for consumer protection against the risks of incorrect operation of electronic information services. However it is frequently not easy to establish where liability lies because of the complexity of the handling process and the number of entities involved (originator of information, data base administrator, host, operator of telecommunications networks etc.) who may be in different Member States and subject to different laws. The problem is being urgently tackled in order to dispel the current uncertainty and confusion and strengthen users' confidence in the use of electronic information services.

Two alternative ways of determining liability are proposed, where this is not established contractually: either to place liability on one of the entities involved in the provision of the service, or to presume solidarity among all the parties involved in this provision. The latter alternative means that the user would be free to address him/herself to the subject of his/her choice and that the apportionment of the real responsibilities could be effected eventually by the providers themselves or by the court. The Commission intends to present recommendations on this issue in 1988.

### 3.2.5 Electronic Fraud

Fraud using loopholes in electronic information services is now reaching major proportions. To overcome this problem, close co-operation between legal and technical experts is essential. It is also necessary to distinguish between those instances which come within the scope of civil law and those which are the object of criminal law.

In both fields, there are considerable divergences in the different Member States. The Commission is therefore examining the situation, taking in account relevant work already undertaken by the Council of Europe, the OECD and individual countries, in order to establish what would be the suitable Community actions in this area.

### 3.2.6 Protection of confidentiality of the content of users' communications with information services

A strong concern of users of electronic information services is possible monitoring of their use of such services. While certain minimum data are essential for service suppliers for billing and other purposes, users emphasise that the content of their communications (e.g. online searches to a database) must be kept completely confidential.

This issue could be settled via the contracts among the parties concerned and the Commission is therefore preparing recommendations on this basis.

## 4. Telecommunications and the Community's policy for an audio-visual space in Europe

Broadcasting and especially TV technologies are subject to rapid technological change, closely related to the change of technology in telecommunications. As set out in Chapter IV and Chapter VI, the development in neighbouring fields, in particular cable TV networks and satellite-based broadcasting is converging in the long-term, with the main stream technological development of telecommunications network infrastructure.

Since 1984, the Community has started to develop its audio-visual policy on a consistent basis.

The Policy has developed along three main lines:

- harmonisation of technical standards and technological developments. This is closely related to the telecommunications sector.

- creating the common market for broadcasting, especially by satellite and cable.

- promotion of the European audio-visual industry, in particular by the launching of the preparatory phase of the Media programme to encourage the development of the audio-visual industry.

The Commission has emphasised in the White Book on the completion of the Internal Market the high priority which it attributes to the development of a Community-wide audio-visual space and the free flow of broadcasting.

4.1. Creating the technical environment : Council Directive 86/529/EEC

At the beginning of 1986, the Commission put forward a Directive concerning standards for direct satellite TV broadcasting. The aim is to replace the current PAL and SECAM system when satellites for direct television broadcasting are brought into service in the near future and new television sets are subsequently introduced by manufacturers.

The first satellites suitable for direct satellite TV broadcasting (DBS - Direct Broadcasting Satellites) are due to be operational from 1987/1988 onwards (TV Sat, TDF 1, Tele- X, Olympus, see APPENDIX 2) The TV programmes broadcast by these satellites will be received by individual and community (MATV - Master Antenna Television System) antennae and the corresponding satellites could broadcast some ten new channels from 1987/1988 onwards to the whole of Europe. Local cable networks are rapidly developing in various European countries (see Chapters IV and VI). They can distribute a wide range of products including cable originated programmes or programmes transmitted by satellites. Major innovations are also expected in the medium term in the field of TV reception, with the prospect of the development of high-definition television yielding a picture quality which was previously unattainable.

The implementation of common technical specifications simplifies the broadcasting of television programmes in all countries of the Community and opens the way to truly pan-European multilingual television programmes.

In November 1986 the Council issued a Directive on the adoption of common technical specification of standards for direct satellite television broadcasting (Council Directive on the adoption of common technical specification of standards for direct satellite television broadcasting (86/529/EEC), O.J. L311/28, 06.11.86)

The Directive is based on the "MAC/packet family of standards". Standards of the MAC/packet family, produced by the European Broadcasting Union and the industry, have the capacity to evolve in line with market developments, thus allowing gradual progress towards high-definition (HDTV) television in such a way that each stage is compatible with the preceding one.

The Commission played an important role in orchestrating a Community consensus against the Japanese proposal for an initial HDTV standard which would clearly have been unfavourably to the European environment and European industry. This caused the ITU's CCIR meeting of June 1986 in Dubrovnik to postpone the decision on HDTV standards for two years. This time will be used to work out an alternative based on the evolutionary concept set out above. A research project led by four major European companies is currently at work defining such a system; in the longer term, the Community RACE programme will continue to research HDTV.

4.2. The establishment of a European space for broadcasting, especially television

The establishment of a common market for broadcasting is a declared priority goal. The economic objectives of this policy form part of a wider set of goal of which cultural objectives are an important component. In this way, the Commission's policy on cross-frontier broadcasting links up with the other initiatives being pursued in the context of Community action in the cultural sphere. Whereas the spread of commercial broadcasting may lead to shifts in emphasis, these fundamental assumptions are unlikely to change substantially.

The Commission transmitted to Council in 1984 a Green Paper on the establishment of the common market for broadcasting services ["Television without Frontiers", COM (84) 300, 14.6.1984]

The Paper clearly states the right of free provision of services across frontiers according to Article 59 of the Treaty. The Paper then treats in detail those aspects of public interest which could be legitimately maintained by Member States in the broadcasting field, and which therefore need harmonisation at the Community level in order to allow a Community-wide market to operate.

These aspects concern in particular: rules governing broadcast advertising; protection of minors and right of reply; and copyright issues.

In April 1986, the Commission submitted, on the basis of a broad consultation on the Green Paper "Television without Frontiers", the proposal for a Directive, which is currently before Council [Proposal for a Council Directive on the co-ordination of certain provisions laid down by law, regulation or administrative action in Member States concerning the pursuit of broadcasting activities, COM (86) 146, 28.4.1986]. The Directive aims to permit broadcasts which comply with its requirements to be received and retransmitted freely in all Member States.

The main requirements concern Community programme promotion, advertising, youth protection and copyright. While the Directive would allow Member States to apply more detailed and stricter rules to broadcasting organisations established on their territory, they would not be allowed to invoke these stricter national rules to prevent the reception and redistribution of television broadcast from other Member States, once these comply with the provision of the Directive.

## 5. Conclusions

Telecommunications policy is closely inter-related with a number of other key Community policy goals. While the development of a common dynamic market for telecommunications services and equipment must fully contribute to the the achievement of these other policy goals, the telecommunications sector itself will benefit greatly from progress on these other policies.

This concerns in particular: the completion of the Internal Market; the Community's Research, Development and Technology policy; the establishment of a Community-wide information market; and the establishment of a Community-wide audio-visual space.

- Regarding the achievement of a Community-wide Internal Market by 1992, the development of Community-wide sophisticated telecommunication services in an open competitive environment is indispensable for intra-Community trade in services and for reducing trade barriers and transaction costs. This will concern in particular the Community-wide development of specialised value-added services.

- Regarding the Community's Research & Development and Technology Policy, telecommunications now represents a crucial market for wide areas of high technology and industry. A growth oriented policy for telecommunications - exploiting fully the convergence of information technology and telecommunications and lifting existing restrictions as far as possible - will be an essential complement to the Community's research and technology effort.

- Regarding the establishment of a Community-wide information market, promoting the free flow of information is closely linked to the fundamental Community objective of preserving the Community's economic, social, cultural and political identity. Telecommunications network infrastructure and services provide the conduit, via which information content is carried. Fundamental issues regarding the free flow of information, including data protection and protection of privacy, copyright, authentication of transactions and liability for information services, will need urgent attention in the general information context.

- Regarding the establishment of a Community-wide audio-visual space, the Commission has made clear in the past that it will insist on the citizen's right to obtain and impart information wherever in the Community he/she may be located. Given the long term convergence of the technological base of both telecommunications and the audio-visual sector, especially in the satellite and cable TV field, the positions taken in both fields must evolve towards an open environment regarding the flow of information.

## IX THE EXTERNAL DIMENSION OF A COMMUNITY TELECOMMUNICATIONS POLICY : CHALLENGE AND OPPORTUNITY

The creation of a common market for telecommunications services and equipment within the Community will help overcome its structural problems and contribute to the creation of continent-scale advantages which have, so far, eluded Europe in this sector. It would, however, be a mistake to undertake this task in a manner which would insulate the Community market from the outside world.

The Community is and should remain a major exporter of telecommunications equipment. There is no reason why it should not also attain a significant position as an exporter of telecommunications services. The creation of a common market will, as in other sectors, greatly contribute towards the improvement of the Community's competitive position in telecommunications. Market access for telecommunications equipment remains subject to significant tariff and non-tariff barriers in many if not most developed countries; developing countries also constitute significant markets. For these reasons, the Community should actively pursue the goal of further market opening abroad bilaterally and during the Uruguay Round.

In 1983, the sum of exports from OECD countries of telecommunications equipment (including intra-OECD trade) amounted to only 18.5% of OECD investment in telecommunications equipment. The small scale of intra-OECD trade in telecommunications equipment can be seen from the fact that only 33.7% of exports of telecommunications equipment from OECD countries had other OECD countries as their destinations, whereas OECD countries jointly constitute the overwhelming bulk of the world telecommunications market.

There is little if any doubt that some of the Community's principal trading partners will also wish to obtain a further opening of the Community market for telecommunications equipment and services. Far from only constituting a risk for Community suppliers, this

should be viewed as a challenge and as an opportunity, to be considered in parallel with the Community's efforts to open extra-EC markets. This would appear the more necessary as economies of scale are liable to lead to a further concentration of important market segments for both telecommunications equipment and certain enhanced services.

## 1. Telecommunications in the Uruguay Round

The negotiations, which include trade in services, were formally launched at Punta del Este in Uruguay on 20 September 1986. They are likely to last for at least four years.

### 1.1. Scope

#### 1.1.1. Services

The general negotiating objectives are as follows :

"Negotiations in this area shall aim to establish a multilateral framework of principles and rules for trade in services, including elaboration of possible disciplines for individual sectors, with a view to expansion of such trade under conditions of transparency and progressive liberalisation and as a means of promoting economic growth of all trading partners and the development of developing countries. Such framework shall respect the policy objectives of national laws and regulations applying to services and shall take into account the work of relevant international organizations." (Emphasis added).

The current assumption is that all services which can be traded will be covered by the new agreement. An agreement on what constitutes tradeability will therefore be an essential element in the negotiations.

With this in mind, it should be noted that the different types of telecommunications services differ with respect to their tradeability :

- The provision of basic infrastructure in general requires the physical presence of the provider in the geographical area in question. International telecommunications infrastructure has traditionally been provided jointly by the providers of the national facilities which they link,i.e., the Telecommunications Administrations (including RPOAs, Recognised Private Operating Agencies). This joint provision, based on bilateral interconnection agreements, follows ITU guidelines, e.g. with respect to accounting rates (see APPENDIX IV);

- The provision of certain "value-added" telecommunications services is taking place internationally across borders, being produced in one country and consumed in another. These services are often regulated differently from basic infrastructural telecommunications services ;

- Satellite communications are a special case. At present international organisations, in particular INTELSAT (see APPENDIX II), provide international satellite communications services, which they produce jointly with the Telecommunications Administrations.

1.1.2. Telecommunications equipment

Issues of trade in telecommunications equipment will, in particular, be dealt with in the context of the GATT negotiations on government procurement, technical barriers to trade, and tariffs.

1.2. Issues

1.2.1. Services

The discussions on the negotiating approach in the future Round are still at an early stage. However, within OECD a conceptual framework and principles for discussing trade in services have emerged as an important input to the Uruguay Round. It is likely that all sectors, including telecommunications, will be considered against a framework derived, at least in part, from these concepts.

Major concepts identified are the following :

- Market access
- Transparency
- National treatment
- Non-discrimination
- Service monopolies
- Positions of economic dominance on the international level
- Trade distorting measures or practices
- Exceptions and safeguards
- "Appropriate" or "acceptable" regulation

Positions on the other points will be largely determined by the position on the last point : "appropriate" or "acceptable" regulation.

1.2.2. Telecommunications equipment

As to negotiations on trade in telecommunications equipment during the Uruguay Round, the main issues appear as follows:

- the question of the inclusion of telecommunications equipment in the Government Procurement Code ;
- customs duties (especially relevant where certain countries maintain high tariffs) ;
- issues related to the Code on Technical Barriers to Trade.

1.3. Approach

In the preparation for the GATT negotiations, a clear distinction should be made between trade in services and trade in equipment, not that one is necessarily more important than the other, but because of the substantial difference in the nature of the trade involved and, of course, in terms of the significant differences in existing international obligations.

The general approach of the Community should be based on the following overall considerations :

1) An evaluation of the Community's interests with regard to market opening by non-Community countries (services and equipment).

2) On services, taking into account the progress towards the establishment of a common European approach towards regulatory issues, prepare the Community's approach towards the definition of "appropriate regulation".

3) In the light of the above, and taking into account the progress made towards the realisation of the internal market,

   a) examine the implications of further opening of the Community market for telecommunications equipment and services ;

   b) compare this with the prospects of market opening in non-Community countries.

## 2. Requests by outside providers for interconnection and service provision

Interconnection requests by non-Community operators have traditionally been handled bilaterally between the external service supplier and the Telecommunications Administration in the Community to whose network it is seeking access. Traditional services such as international telephone and telex are paid for on a bilateral basis : a customer pays his or her national administration which then re-imburses the overseas administrations on the basis of a sharing formula (based on accounting rates, according to relevant CCITT recommendations, see APPENDIX 4).

The flow of payment is between service providers, rather than between customer and provider. In addition, the national network operator holds the exclusive means for the "distribution" of incoming traffic and the "importing" of telecommunications services.

So long as network access is regulated in the same way by different Member States and/or their licensed carriers there should be no distortion of trade flows or of competition. However, differences arising from the way European Telecommunications Administrations compete with each other to capture foreign business could distort trade and competition within the Community.

### 2.1. Growing international competition

The situation has become substantially more complex with the growing competition on North Atlantic traffic routes and the weakening of the North Atlantic Consultative Process (NACP) which had been established between the CEPT and the US Federal Communications Commission (FCC).

Growing international competition has emerged basically as a consequence of the extension of US - and now also Japanese - deregulation to the international arena (see APPENDIX 1).

For many years, AT&T was the sole US provider of international telephone services, with international data services provided by ITT World Communications, RCA Global Communications and Western Union International. In the course of the US deregulatory process, other US service providers, such as MCI, US Sprint and Graphnet have expanded into the international voice or data markets.

In 1985 and 1986, the FCC granted permission for the establishment of eight international satellite services, separate from INTELSAT, subject to certain conditions. Currently, the United States is in the process of consulting with INTELSAT on one proposed system (PanAmSat), as foreseen according to Article XIV of the INTELSAT Convention. Article XIV of the convention calls for there to be "no significant economic harm" to INTELSAT (see APPENDIX 2). There has been no consultation initiated yet for any other system.

At the same time, the FCC granted applications for licences to two US companies to land and operate private cable facilities in which bulk transmission capacity is to be sold on a non-common carrier basis.

The situation has become still more complex owing to the FCC's decision in 1986, to extend Recognised Private Operating Agency (RPOA) status to enhanced service providers through a simple and voluntary application procedure designed to assist these providers in obtaining operating agreements with foreign administrations and to purchase Indefeasible Rights of Users (IRUs) in overseas cables.

## 2.2. Issues

International services require that networks in individual countries be interconnected in an orderly manner.

A common position by the Community's Member States will have to be worked out on a number of issues :

- interconnection of additional common carriers from third countries with RPOA status.

A case in point is the policy followed by Member States with regard to operators such as the US common carriers MCI and GTE Sprint where differing positions are currently taken by Community Telecommunications Administrations.

- defining a joint position, in the framework of INTELSAT, with regard to new satellite systems and applications for allowing operation of such systems according to Article XIV of the INTELSAT Convention (see APPENDIX 2).

- future treatment of enhanced service providers from third countries which may obtain RPOA status according to the new FCC procedure.

- future treatment of enhanced service providers from third countries without RPOA status.

- drawing up a joint position on interconnection conditions. This concerns in particular :

- technical interface standards and access facilities ;

- accounting rates and interpretation of the relevant ITU recommendations ;

- limitations or restrictions imposed.

2.3. Approach

Interconnection between outside service providers and Community networks is an area where a joint Community position is urgently needed if distortion of trade and competition within the Community is to be avoided.

The working out of common positions will be also needed for the GATT Round.

A first step towards building a Community position on these issues should be collection of more detailed information on interconnection between Community networks and outside providers.

3. Relations with the Community's major trading partners : EFTA, United States, Japan and Third World

An assessment of the Community's external trading position in telecommunications equipment, including switching and transmission as well as terminal equipment, gives the following position:

1. The Community continues to have an overall positive balance in telecommunications equipment trade.

2. The Community's external telecommunications equipment trade surplus fell in 1985 for the third year running to 1247 million ECU from 1533 million ECU in 1984 ;

3. The Community's deficit with the United States widened by 25% in 1985 to 657 million ECU from 525 million ECU in 1984.

4. The EC deficit with Japan increased by 61% to 582 million ECU in 1985 from 360 million ECU the previous year. The deficit of all ten Member States increased.

Details are shown in **Fig. 12**.

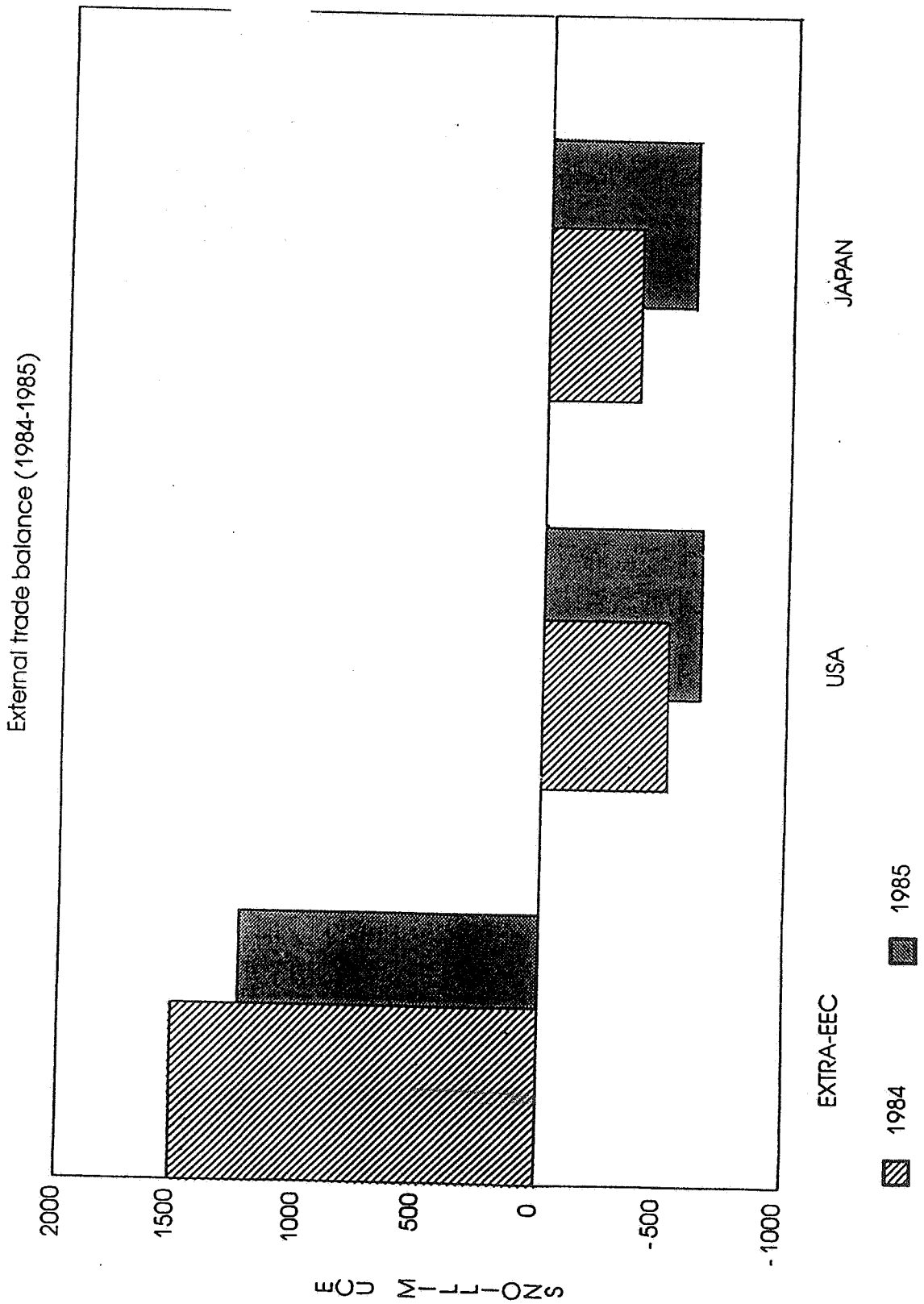
The position in the telecommunications-related services market is more difficult to estimate.

Basic international telecommunications services are dominated by joint provision between Community and external telecommunications operators, with revenues shared according to negotiated accounting rates. The high revenue international value-added services market is dominated internationally by US providers, with a strong European presence in certain market niches.

Major development trends for international value-added services focus on the financial sector, on Electronic Data Interchange (EDI) and on videotex-based services.

Fig. 12

# COMMUNITY TRADE BALANCE IN TELECOMMUNICATIONS EQUIPMENT 1984/1985



With some prominent exceptions (e.g., French Teletel, Reuters financial service) the European market for value-added services is still in its infancy.

3.1. Co-operation with the European Free Trade Association

The Community has traditionally had strong ties in telecommunications with the member states of EFTA, both at the industrial level and at the Administration level.

The framework of co-operation is two-fold :

- Within CEPT close relations have developed between the Community's Telecommunications Administrations and the EFTA Administrations. The EC and EFTA together represent 19 out of the 26 CEPT member countries.

  Relations with the Community have intensified following the signing of the Memorandum of Understanding between the CEPT and the Community in 1984 concerning standards and type approval for telecommunications equipment and following the general guidelines agreed with the Joint European Standards Institution CEN-CENELEC, of which the EFTA countries are members (see Chapter VII).

- Since the Luxembourg Declaration of April 1984 on co-operation between the European Community and the EFTA countries and the follow-up Declaration of the Council in Autumn 1986, the Community has further intensified its co-operation with EFTA, with the intention of advancing in all areas relevant to the creation of a wider European economic space, such as state aids, public contracts, intellectual and industrial property rights and services (to mention but a few).

Within the framework of CEPT, those EFTA countries which are signatories of the agreement on a formal adoption procedure and an undertaking to implement certain CEPT recommendations as NETs (see Chapter VII and APPENDIX 3) will give NETs a similar role as will Member States under Council Directive 86/361/EEC on the initial stage of the mutual recognition of type approval for telecommunications terminal equipment. This will raise the question of extending the mechanism of mutual recognition of test results for type approval foreseen in this Directive to those countries.

Such extension to non-Community countries of the advantages of the Directive presupposes a clear understanding at the technical level of the method of application of standards and test methods by all parties concerned, as well as assurances concerning full reciprocity. Work is now going on in order to build up the necessary contacts and confidence at a technical level in order to make further progress on this issue possible.

Following the Luxembourg Declaration, the Commission has concluded with a number of EFTA countries framework agreements on co-ordination in Research and Development. At the same time, EFTA Administrations have, via the CEPT mechanism, participated intensively in the work of the definition phase of the RACE programme (see Chapter VII). Co-operation on technology has substantially strengthened at the industrial level through the creation of ECTEL (see Chapter VII). Further, a number of EUREKA projects are being carried out jointly.

Recognising this trend towards stronger co-operation at the R/D/T level, the Commission has proposed in COM (86) 547 (see Chapter VII) to open participation in the RACE main programme to public or private organisations established in COST (European co-operation in the field of scientific and technological research) countries when a framework agreement on R & D co-operation has been signed with the corresponding country. For this, implementation agreements will be concluded. The COST comprises all EC and EFTA member countries plus Yugoslavia and Turkey.

The general objective of the Community in telecommunications with regard to its EFTA neighbours is the creation of a wider European economic space and the maintenance and development of the coherence developed in the CEPT framework.

Specific progress has already been made in the EC/EFTA context concerning :

- co-operation on standards and mutual recognition of type approval; and

- co-operation on R&D (RACE programme).

In the medium term, discussions will notably be needed with EFTA countries on regulatory issues such as those outlined in Chapter X, as soon as a consensus in the Community has been achieved.

3.2. Dialogue with the United States

US deregulation of the telecommunications sector and the aftermath of the AT&T divestiture (for details see APPENDIX 1) have contributed to a highly complex policy environment which continues to evolve. The basic reference text is the "Modified Final Judgement" of 1982 which specified the conditions of divestiture of AT&T; this has, however, been evolving as a result of a series of public enquiries - especially Computer III. Few, if any, observers of the US scene would regard the Computer III enquiry as anything but one further stage in the developing regulatory environment. There is a variety of Federal agencies involved in telecommunications - Federal Communications Commission, Departments of Justice, Commerce, State, USTR, etc. - as well as state and local authorities.

One consequence is, however, already very clear: the United States has become the major force for change in the world telecommunications market and in international trading relations in the sector. The Community is directly affected in several ways:

- Economic and industrial forces set free by US deregulation are turning to international markets. Europe is a major target;

The rising number of requests for interconnection from outside suppliers and the increasing activity of AT&T and the BOCs in the Community are a case in point. The rapidly changing US regulatory scene - Computer III inquiry, recent proposals by the Department of Justice for lifting the main restrictions of the Modified Final Judgement on AT&T and the BOCs, Open Network Architecture (see APPENDIX 1) - will increase the international activity of US companies.

- While the US continues to register a substantial trade surplus in telecommunications with the Community (657 million ECUs in 1985 - see **Fig. 12** ), the US has registered heavy deficits in its trade with the Pacific countries, in particular Japan, leading to a global US deficit in telecommunications of $US 1.3 billion in 1985 and of nearly $US 2 billion in 1986.

Against the general background of the US trade deficit, there is heavy pressure on the United States Administration to respond to perceived obstacles in telecommunications trade with foreign countries. Draft legislation is currently under consideration in the US Congress which, inter alia, would result in closing the US market to these countries, regardless of the actual trading situation.

Many in the US fail to distinguish between the different effects of US deregulation on the openness of the US market. For example, the situation as regards terminal equipment, where the effects of deregulation have been perhaps the most significant, differs greatly from that applying to network switching and transmission equipment.

While the introduction of simplified registration procedures for terminal equipment since 1976 has led to a substantial rise of imports from Pacific countries, it has not led to substantial opportunities for EC companies.

According to the FCC, in 1984, 80% of registration applications submitted were for equipment manufactured in the Pacific Basin and Asia. Canada plus EC countries were below 5%. However, in one area where Community industry does have strength (network and transmission equipment), substantial barriers to entry continue to exist (see Report by the EC Fact Finding Mission, Commission of the European Communities, July 1986).

One consequence has been the increase in the US trade surplus with the Community in telecommunications equipment. With regard to service operations, the FCC continues to maintain a number of restrictions on foreign-owned service operators.

- The US Federal Communications Commission, responsible for regulation of both interstate and (in some instances in conjunction with the Department of State) international communications, is showing a growing tendency to measure foreign situations against its own understanding of "appropriate" regulation, classifying any deviation as "trade barriers". This tendency is shown most clearly by the recent FCC Notice of Inquiry and Proposed Rule-making on Regulatory Policies and International Telecommunications (January 1987).

The FCC proposes an "International Model". At the time of publication it was not known whether the FCC proposal would be adopted. Serious objections have been raised by the Community and other trading partners as well as the US Administration itself. However the FCC proposal, if implemented, would effectively establish the US regulatory situation as a benchmark for determining the degree of "openness" of foreign markets, in accordance with a unilaterally defined concept of narrow sectoral reciprocity.

Key issues in the "International Model" as at present envisaged include the following:

1. Entry conditions for common carriers and enhanced service providers to and within foreign countries, including recognising RPOA status.

   It also considers entry conditions to the terminal market including the first telephone set in foreign countries.

2. Licensing procedures for US providers for service to and in foreign countries ; future application of accounting rates under ITU recommendations.

   It also considers network access for service providers, as matched against the future Open Network Architecture (ONA) access (see APPENDIX 1) foreseen by the FCC in the United States.

3. "Least restrictive standards". The problem of ensuring international interoperability of telecommunications services is not addressed in depth. Openness includes the request for US participation in the "standards-setting bodies of foreign countries", a principle which is not yet contained in the GATT Standards Code but which may well be the subject of negotiation in the Uruguay Round.

4. Narrow sectoral reciprocity, to be unilaterally assessed by reference to the US system regarding (1) terminal equipment ; (2) core (network switching and transmission) equipment ; (3) authorisation of facilities, such as private cable or satellite facilities ; and (4) network related services, such as enhanced services. Reference is made to expanding the GATT Public Procurement Code to Telecommunications.

In the rule-making part of the FCC notice it is proposed that comprehensive requirements are established for gathering information on the activities of foreign-owned common carrier services and enhanced services as well as core network equipment and terminal equipment from foreign sources.

US/EC relations are currently evolving in the following way :

- contacts have intensified at the EC/US level, in order to develop better mutual understanding. A Fact Finding Mission to the United States was carried out by an EC delegation in June 1986, and a similar visit was made by a delegation from the US in February 1987.

  At the meeting of February 4-6, 1987, in Brussels, the following areas for intensifying co-operation between the EC and US were agreed :

- closer co-operation on standards, including a regular exchange of information between the CEPT and the US ECSA-ANSI about draft telecommunications specifications ;

- closer exchange of information on the implementation of standards for new network generations, in particular ISDN ;

- close exchange of information regarding US/EC trade.

In conclusion, telecommunications can be expected to remain a major issue in EC/US trading relations particularly as the pressure to find and develop new market opportunities increases and as the Uruguay Round of trade negotiations progresses. It would be unfortunate if the opportunities for trade expansion and mutual benefit which this situation undoubtedly presents were put at risk by narrowly conceived trade legislation in the US and the implementation of unilateral and unjustified measures against trading partners.

The Community should continue to adopt a positive profile in developing its dialogue with the United States. As part of its input into this process, the Community should :

- seek to define its own concept of "appropriate regulation" in the area of telecommunications;

- discuss bilateral issues in a flexible way, while defending its legitimate interests;

- seek to improve the collection at the Community level of information required in connection with these discussions;

- continue the current dialogue as a contribution towards resolving the major issues in this sector in the common framework of the Uruguay Round ;

- continue to co-operate with the United States in those areas which contribute to developing an open trading environment, in particular on international standards.

## 3.3. Relations with Japan

### 3.3.1 Access to market

Japan substantially reshaped the regulatory environment of its telecommunications sector in 1985 by privatising NTT and introducing competition into the sector (see APPENDIX 1).

In parallel, a series of discussions has taken place between the United States and Japan on the opening of the Japanese telecommunications market to US suppliers, based on an agreement concluded between the United States and Japan in 1980. Subsequent to the liberalisation of the Japanese telecommunications sector in 1985, a growing number of joint ventures with participation of US suppliers and service providers have developed.

Regarding trade relations between the Community and Japan, there is still no noticeable sign of an opening of the Japanese telecommunications market for EC suppliers. The EC/Japanese balance in telecommunications equipment is characterised by negligeable exports to Japan and steadily growing EC imports from Japan. In 1985, EC imports from Japan in

telecommunications equipment totalled 616 million ECUs, while exports totalled only 34 million ECUs. According to preliminary statistics for the first half of 1986, the Community's deficit with Japan rose further. Japan has replaced the US as the country with which the Community has the largest deficit.

### 3.3.2. Standards

In general the Commission is pressing the Japanese authorities to adopt standards closer to international ones and also to permit place of origin control of standard.

The Member States took a position at the CCIR meeting at Dubrovnik in June 1986 against a Japanese-based standard on high definition television which would have substantially favoured Japanese industry and which would have been incompatible with the European environment, based on the evolution of the MAC/packet standards, according to Directive 86/529/EEC on the adoption of common technical specifications of the MAC/packet family of standards for direct satellite television broadcasting.

The Commission further undertook a series of bilateral contacts with Japan throughout 1986 to emphasise the Community's support for open standards, in particular in the ISDN/OSI context.

At this stage, a Community approach could be envisaged along the following lines :

- Important problems remain because of the unsatisfactory balance of benefits in trade in telecommunications equipment between Japan and the Community. The Community should pursue its effort towards further market opening in Japan, including telecommunications services.

- The Community should insist on being fully consulted about arrangements between the United States and Japan that affect its interests. It should make every effort to ensure that such arrangements are consistent with international obligations.

- The Community should continue to exchange information on standards with Japan and to press Japan to adopt standards closer to international ones and participate fully in the international process of developing standards. This would help open the Japanese market and, more generally, avoid Community firms being at a disadvantage on the world market.

3.4. Developing relations in telecommunications with other industrial countries

A long-standing relationship exists at the industrial and Telecommunications Administrations level with Canada, Australia and New Zealand. Canada, Australia and New Zealand have highly developed telecommunications systems.

The three countries have an interest in strengthening the international standards organisations and open international standards, as has the Community.

The framework for more intense direct co-operation on these issues exists. The Commission currently expects the joint review of the implementation of the framework agreement with Canada, which will also deal with opportunities for increased co-operation. The Commission, furthermore, signed an arrangement with Australia in Autumn 1986 for co-operation in the field of science and technology.

As regards the neighbouring countries of Eastern Europe, the development of more intense relations in the telecommunications field will depend on the general process of normalising relations with these countries, which has made some progress in the past two years but is by no means complete. The multiple applications of some types of advanced telecommunications equipment may give rise to some reservations as to the wisdom of greatly expanding our trade or co-operation with the East in this area, due to the undertakings given by the majority of Member States in the COCOM framework to control exports to Eastern Europe of certain products in

this field. At the same time the Community has a basic interest in promoting the flow of information and an open information environment with these countries. Further analysis is needed on how future relations with these countries in telecommunications should evolve.

### 3.5. Relations with Africa, Latin America, Asia and the Mediterranean

Telecommunications will be the basis of the new information technologies. It will be an essential component of the future world service economy. The Community therefore must develop a coherent strategy with regard to telecommunications in its relations with the Third World.

An intense network of relations already exists with many of these countries at the industrial level. The Community's Administrations have developed close ties in the framework of the ITU. Further contacts will be made in the context of the Uruguay Round.

These relations should be further developed. Relations in telecommunications must evolve - and must reinforce - the general economic relations which have been developed with these countries.

A special framework of co-operation is offered by the third Lomé convention with the 66 ACP states, the implementation of which has begun. Telecommunications offers substantial potential, particularly for increased regional co-operation. The ITU Maitland report ["The Missing Link", International Telecommunications Union, 1985] has emphasised the important role which telecommunications projects can play in the development of rural areas in developing countries and for resolving problems in distribution, e.g., of food and other types of aid.

In the general framework of consolidating the Community's relations with Latin America and of strengthening the Community's relations with South and South East Asia, the Commission has, in consultation with the Senior Officials Group on Telecommunications, undertaken initial contacts to investigate closer ties with some of these countries on telecommunications.

There seems to be an interest in closer co-operation on standards and on future network technology. The Community will have to develop a position on the type of co-operation which could be envisaged.

In recent years, the Community has been developing closer contacts with China on information technologies and telecommunications. At the same time, the European telecommunications industry has been very active in the developing Chinese market. At this stage, intensive co-operation on standards has developed and a number of pilot projects have been initiated.

The Community will also have to define its future relations in telecommunications with the neighbouring Mediterranean countries, some of which, such as Turkey, are members of the CEPT.

## 4. The future development of the international telecommunications system

The world's international telecommunications system is currently experiencing a period of extreme tension and uncertainty, as each region and country tries to adjust its regulatory environment to the new situation created by the changes of technology. The Community will have to formulate a joint position with regard to major issues posed at the international level.

### 4.1. Standards and international connectivity

Clear international standards established by the appropriate organisations must be seen both in the Community and at the world level as the basic element for ensuring :

- markets open for all participants ;
- maintenance of international connectivity of telecommunications networks and services.

The Community's own standards policy (see chapter VII) has as one of its major objectives the support of this international process.

The Community should therefore continue fully to support the ITU and its CCITT committee in its role as the main body for developing recommendations on international standards in telecommunications ( see APPENDIX 4). It should do whatever it can to increase the efficiency of this international process. One of the major ways should be substantially to increase the Community's own resources in standardisation work, and to increase European input to CCITT committees, in the framework of its co-operation with the CEPT (see Chapter VII ).

## 4.2. The ITU and its impact on the Community's regulatory environment

The recommendations and regulations of the International Telecommunications Union influence the regulatory environment of the Community far beyond CCITT activities for international standardisation.

CCITT/CCIR recommendations and regulations influence in particular international tariffs and accounting rates and international operation of enhanced service providers and use of leased lines. The present CCITT D recommendations spell out certain restrictions on the international use of these lines (see APPENDIX 4).

For the Community, the impact of ITU recommendations must be analysed along two lines :

- implications inside the Community for intra-Community traffic.

- implications for the Community's outside relations in telecommunications, in particular regarding the definition of a common position on "appropriate regulation" for the future GATT negotiations.

Article 234 of the Treaty expressly recognises the international law doctrine of "pacta sunt servanda". However, Article 234 also states that "to the extent that such agreements are not compatible with the Treaty, the Member State or States concerned should take all appropriate steps to eliminate the incompatibilities established. Member States shall, where necessary, assist each other to this end and shall, where appropriate, adopt a common attitude".

The Community should continue fully to support and strengthen the International Telecommunications Union as the major stabilising factor in international telecommunications.

The ITU World Administrative Telegraph and Telephone Conference (WATTC) scheduled for late 1988 (see APPENDIX 4) will discuss, inter alia, whether and how to regulate specialised networks and enhanced services. Currently, the preparatory WATTC committee is discussing a new set of rules.

The WATTC 88 conference will have a major influence on the Community's future external relations in telecommunications. The Community will therefore have to define a common position with regard to the conference and its preparation.

4.3. International satellite organisations : INTELSAT and INMARSAT

Since their creation in 1964 and 1975 respectively, the INTELSAT and INMARSAT systems have developed into a major component of the international telecommunications system, both for the developed and developing world (see APPENDIX 2).

The INTELSAT system now carries approximately two thirds of international telephone traffic. For many Third World countries, it is the main telecommunications link to the outside world.

INTELSAT has come under pressure for two reasons :

- the extension of US regulatory concepts to the international scene and acceptance by the FCC of a large number of applications to provide international satellite communications threatens INTELSAT's profitability on the high-density routes (principally North Atlantic) and its basic concept of subsidising low-density revenues from high-density routes ;

- the emergence of a number of sub-marine optical cable projects will fundamentally change the comparative advantages of satellites and cable and erode INTELSAT's revenues on traditional fixed point telephony.

While competition by alternative satellites is subject to the "economic harm" procedure under Article 14 of the INTELSAT convention, this is not the case with cable projects.

The current international telecommunications system thus faces two basic challenges :

- INTELSAT will have to adapt its organisation and its strategy to a more competitive environment ;

- the international telecommunications community will have to develop new mechanisms for global co-ordination, including satellite and cable connections.

Further development is largely linked to the evolution of transatlantic traffic and the interconnection issue regarding the newly emerging competitive US service providers (see above).

At the same time, INMARSAT is considering expanding its activities into new business areas, in particular land and air mobile radio communications. This may have major consequences for the Community.

The Community Member States have a major interest in INTELSAT. The Community will have to develop a common position with regard to the future evolution of international satellite communications.

5. Conclusions

Telecommunications network infrastructure and telecommunications related services are an essential infrastructure for the international economy.

Trade in services and in equipment will be major issues for the Community's external trading relations in the years to come. More specifically :

- the Community has a major interest in promoting foreign market opening in services and in equipment.

- The major forum for determing the future framework for trade and telecommunications related services will therefore be the new GATT Round. The Community will need to determine a common position on telecommunications with a view to these negotiations. The starting point must be internal consensus on a concept of "appropriate" or "acceptable" regulation. Given the close integration of telecommunications with other services, the Community's position on telecommunications must be influenced by its intention to work, in the framework of the GATT negotiations, towards a more open trading environment for services in general.

- The Community should fully support the International Telecommunications Union as a major stabilising factor in international telecommunications.

- Where incompatibilities of ITU recommendations and regulations may exist regarding the future evolution of intra-Community telecommunications services and agreements negotiated in the GATT framework, Member States should work jointly towards eliminating such incompatibilities. This concerns in particular the ITU World Administrative Telegraph and Telephone Conference (WATTC-88) which may have a major influence on the Community's future external relations in telecommunications.

- The Community has a long term interest in preserving major stabilising factors of international telecommunications provision, such as international satellite organisations. The Community and the Member States should define a common position with regard to these organisations, in particular with regard to INTELSAT and INMARSAT.

- The Community, within its overall interest in developing its external relationships, should develop closer relations on telecommunications with Third Countries.

- Co-operation on telecommunications could become an important component of the Community's relationship with the Third World.

- Within its general trade policy, the Community has a basic interest in developing its trading relations in telecommunications with the United States. Such relations must be based on the principle of mutual benefit, and cannot be based on concepts of narrow sectoral reciprocity which only favour one party.

- Relations with the EFTA countries are of special importance.

- The Japanese market remains virtually closed to European suppliers, while the Community's deficit in telecommunications with this country is steadily increasing. This situation is most unsatisfactory.

- The Member States and the Telecommunications Administrations face a number of immediate issues, on which common positions must be sought:

  - interconnection with US other common carriers, such as MCI and GTE-Sprint

  - the handling of applications for interconnection and access by US providers of enhanced services which may obtain RPOA status

  - US requests for facilities for enhanced services providers comparable with those which may be offered under future US arrangements for Open Network Architecture (ONA)

  - future interpretation of ITU recommendations regarding international accounting rates and regulation of enhanced service providers

Member States must avoid deflection of trade and distortions of competition within the Community by taking diverging positions on these issues.

- An important requirement for building a Community position, relative to relations with Third Countries, should be the collection of more detailed information on interconnection between Community networks and outside providers and on the development of the overall trading relations of the Community in telecommunications services and equipment.

## X THE INGREDIENTS OF A SOLUTION

### 1. Major points to be considered for a solution

On the basis of the foregoing analysis, the following seem to be major points to be considered for any attempt to find agreement for broad regulatory aims for the telecommunications sector in the Community.

- Given their importance and wide ramifications, regulatory changes in telecommunications can only be introduced progressively. Time must be allowed for present structures, which have grown up historically over a long period, to adjust to the new environment. The major objective must be the completion of the Internal Market by 1992.

- Regulatory changes in telecommunications must take account of the views of all parties concerned, in particular private and business users, Telecommunications Administrations, the Administrations' work force, new providers of services and the telecommunications and data-processing equipment industry ;

- There is consensus in the Community that competition in the telecommunications services and terminal equipment sectors must be substantially expanded, in order to react to technological, economic and world market trends ;

- There is also consensus that the role of the Telecommunications Administrations in the provision of network infrastructure must be essentially safeguarded, in order to allow them to fulfil their public service mandate ;

- A stable "natural" boundary line between a "reserved services" sector and a "competitive services" sector (including in particular "value-added services") is not possible. Due to technological development - the trend towards integration - any definition (and reservation) of a service can only be temporary and must be subject to review if it is not to impede the overall development of telecommunications services. There is however in practice consensus between the Member States that voice telephone service is a basic service. Currently, this service is reserved in all Member States for provision by the Telecommunications Administrations. At present, this service corresponds to 85% - 90% of telecommunications revenues.

- As one counterpart of a more open market environment, the time it takes to establish and apply international standards must be substantially reduced, in order to maintain future network integrity and to promote the availability and interoperability of efficient Europe-wide and worldwide services.

- Telecommunications Administrations generally are - and should be - allowed to participate in the newly emerging competitive services and terminal equipment market. This requires that in the future regulatory responsibility must be separated from operational responsibility. Regulation concerns in particular licensing, control of conformity testing and mandatory interface specifications, frequency administration, and general surveillance including tariff principles ;

- Entry of the Telecommunications Administrations but also of the computer and data-processing multi-national companies into a competitive telecommunications sector implies the danger of abuse of a dominant position. Control with regard to both types of dominant market participants will have to be strengthened ;

- Action at Community level must be taken towards narrowing the differences between Member States regarding the provision of network facilities to the newly emerging competitive services and terminal equipment sector. Otherwise a Community market for services will not develop rapidly. This has implications both for technical regulations and network termination points and for usage conditions and tariff principles ;

- The long-term convergence of telecommunications with audio-visual technologies must be taken into account, in addition to the current convergence between the telecommunications and data-processing sectors. This affects in particular policies concerned with satellite communications and cable-TV networks.

  Where cable-TV network infrastructure and satellite communications are also used for two-way communications, close surveillance with regard to their relationship and interfacing with the overall telecommunications network will be needed, in order to ensure the long-term overall integrity of the telecommunications infrastructure.

- Two-way satellite communications and the regulation of up-links will need case-by-case consideration. Closely monitored competition should be a possibility in those cases where unacceptable interference with other satellite or radio communications systems is not to be expected and where the revenue base and financial viability of the general network infrastructure provider are not put into question. In the case of very small satellite antennae (VSAT or "microterminals") suitable for data exchange only, this situation should normally be assumed automatically.

- Given the trend in satellite communications towards point to multi-point 'broadcasting' applications for closed user groups, the regulatory regime for receive only earth stations (ROES) for satellite communications should be assimilated to the regime for telecommunications terminals and TV satellite antennae and fully opened to competition.

- With the growing importance of services, the Community will face in its external relations a growing number of telecommunications-related issues. Consensus must be achieved in time for the preparation of the new GATT round which will include telecommunications services.

Consensus must be further developed at Community level regarding telecommunications issues and the Community's overall framework of external relations, in particular with the EFTA countries and CEPT, with the United States and Japan and with the international organisations in this field, such as the International Telecommunications Union (ITU).

## 2. The application of the Treaty to the telecommunications sector

The current convergence of regulatory positions in the Member States provide a unique opportunity to synchronise current national moves and give them a European scale and dimension. The Treaty sets a clear framework for the achievement of a Community-wide market for telecommumnications services and equipment.

Article 2 of the Treaty provides that :

> "The Community shall have as its task, by establishing a common market and progressively approximating the economic policies of Member States, to promote throughout the Community a harmonious development of economic activities, a continuous and balanced expansion, an increase in stability, an accelerated raising of the standard of living and closer relations between the states belonging to it".

All the substantive provisions of the Treaty must be construed in the light of Article 2. As a corollary to this, the substantive provisions of the Treaty are often defined as specific manifestations of the Treaty's objectives. Member States are obliged by Article 5 of the Treaty to "facilitate the achievement of the Community's tasks" and to "abstain from any measure which could jeopardise the attainment of the objectives of (the) Treaty". Member States are therefore likewise required to fulfil the goals laid down in Article 2 and to respect the Treaty as a whole.

Regarding the framework provided by the Treaty, it is important to recall that the provision of telecommunications network infrastructure, services and equipment is characterised by certain basic facts :

While provision of network infrastructure generally requires the physical presence of the provider in the geographical area in question, provision of services and equipment in most cases does not, with the result that the latter are largely tradeable. Satellites occupy a hybrid position between infrastructure and services. (See section VI.4.2.1).

It is against this background that the provisions of the Treaty of most relevance to the telecommunications sector must be considered. These provisions are in particular:-

- the provisions governing competition, in particular Articles 85, 86, and 90 ;

- the provisions concerning the freedom to provide services and the freedom of establishment, in particular Articles 52 to 66 ;

- the provisions concerning the free circulation of goods, in particular Articles 30 to 37 ;

- the provisions concerning the common commercial policy, in particular Articles 110 to 116.

- the general provision for the approximation of provisions laid down by law, regulation or as administrative actions in Member States as directly affecting the establishment or functioning of the common market, in particular Article 100, and after the coming into force of the Single Act, Article 100 (a).

Beyond these Articles analysis needs to take into account other provisions of the Treaty, as well as case law developed by the Court of Justice with regard to telecommunications and to other sectors, in so far as they are of relevance to the discussion. Details of specific cases treated by the Court and the Commission in the past have been presented in Chapter VII.

The Commission has stated previously that "it regards the Member States' postal and telecommunications authorities as commercial undertakings since they supply goods and services for payment" which are subject to the application of Community competition law, an opinion confirmed by the Court of Justice [cf. Case 41/83, Commission v. Italy of 20th March 1985, not yet reported (British Telecom)].

For easy reference, central provisions of the Treaty in the context of telecommunications are cited hereunder :

Article 90 (1) provides that

> "In the case of public undertakings and undertakings to which Member States grant special or exclusive rights, Member States shall neither enact nor maintain in force any measure contrary to the rules contained in this Treaty, in particular to those rules provided for in Article 7 and Articles 85 to 94."

Article 90 (2) provides that

> "Undertakings entrusted with the operation of services of general economic interest or having the character of a revenue-producing monopoly shall be subject to the rules contained in this Treaty, in particular to the rules on competition, in so far as the application of such rules does not obstruct the performance, in law or in fact, of the particular tasks assigned to them. The development of trade must not be affected to such an extent as would be contrary to the interests of the Community."

Article 90 (3) provides that

> "the Commission shall ensure the application of the provisions of this Article and shall, where necessary, address appropriate Directives or Decisions to Member States"

Article 86 provides that

> "Any abuse by one or more undertakings of a dominant position within the Common Market or in a substantial part of it shall be prohibited as incompatible with the Common Market in so far as it may affect trade between member States.
>
> "Such abuse may, in particular, consist in :
>
> "(a) directly or indirectly imposing unfair purchase or selling prices or other unfair trading conditions ;

"(b) limiting production, markets or technical development to the prejudice of consumers ;

"(c) applying dissimilar conditions to equivalent transactions with other trading parties, thereby placing them at a competitive disadvantage ;

"(d) making the conclusion of contracts subject to acceptance by the other parties of supplementary obligations which, by their nature or according to commercial usage, have no connection with the subject of such contracts."

Article 37 provides that

"Member States shall progressively adjust any state monopolies of a commercial character so as to ensure that when the transitional period has ended no discrimination regarding the conditions under which goods are procured and marketed exists between nationals of Member States.

"The provisions of this Article shall apply to any body through which a Member State, in law or in fact, either directly or indirectly supervises, determines or appreciably influences imports or exports between Member States. These provisions shall likewise apply to monopolies delegated by the State to others".

Article 59 provides that

"Within the framework of the provisions set out below, restrictions on freedom to provide services within the Community shall be progressively abolished during the transitional period in respect of nationals of Member States who are established in a state of the Community other than that of the person for whom the services are intended.

"The Council may, acting unanimously on a proposal from the Commission, extend the provisions of this Chapter to nationals of a third country who provide services and who are established within the Community."

3. Proposed Community positions

On the basis of the general points to be taken into consideration and the analysis of the Treaty, proposals for positions have been developed which are set out in **Fig. 13**.

The proposals concentrate on those issues which must be resolved at Community level for all Member States. They leave out questions which are important but fall to the national level, such as which status for Telecommunications Administrations is best suited to facing the developing competitive market environment, and related questions of finance, organisation, and employment relations.

The proposals rest on accepting the continuation of those aspects of the current regimes where there is justification and compatibility with the Treaty. Within the framework of the current adjustment and according to their economic appreciation and perception, Member States may, of course, choose their own position with regard to these aspects, such as a more liberal regime regarding the whole or parts of the network infrastructure. As regards required change at the Community level, the proposals in **Fig. 13** insist on three essential modifications :

- PHASED COMPLETE OPENING OF THE TERMINAL EQUIPMENT MARKET TO COMPETITION

  In the long run this must include all terminals including the subscriber's first telephone set, given the trend towards integration of functions and the Integrated Services Digital Network.

  In the short term, transitional solutions will have to be found, taking into account that at the present stage the large majority of Member States firmly maintain their monopoly covering the first (conventional) telephone set.

## PROPOSED POSITIONS

The general objective of the positions set out is the development in the Community of a strong telecommunications infrastructure and of efficient services : providing the European user with a broad variety of telecommunications services on the most favourable terms, ensuring coherence of development between Member States, and creating an open competitive environment, taking full account of the dynamic technological developments underway.

A) Acceptance of continued exclusive provision or special rights for the Telecommunications Administrations regarding provision and operation of the network infrastructure. Where a Member State chooses a more liberal regime, either for the whole or parts of the network, the short and long term integrity of the general network infrastructure should be safeguarded.

Closely monitored competitive offering of two-way satellite communications systems will need further analysis. It should be allowed on a case-by-case basis, where this is necessary to develop Europe-wide services and where impact on the financial viability of the main provider(s) is not substantial .

Common understanding and definition regarding infrastructure provision should be worked out under E) below.

B) Acceptance of continued exclusive provision or special rights for the Telecommunications Administrations regarding provision of a limited number of basic services, where exclusive provision is considered essential at this stage for safeguarding public service goals.

Exclusive provision must be narrowly construed and be subject to review within given time intervals, taking account of technological development and particularly the evolution towards a digital infrastructure. "Reserved services" may not be defined so as to extend a Telecommunications Administration service monopoly in a way inconsistent with the Treaty. Currently, given general understanding in the Community, voice telephone service seems to be the only obvious candidate.

C) Free (unrestricted) provision of all other services ("competitive services", including in particular "value-added services") within Member States and between Member States (in competition with the Telecommunications Administrations) for own use, shared use, or provision to third parties, subject to the conditions for use of the network infrastructure to be defined under E).

"Competitive services" would comprise all services except basic services explicitly reserved for the Telecommunications Administrations (see B).

D) Strict requirements regarding standards for the network infrastructure and services provided by the Telecommunications Administrations or service providers of comparable importance, in order to maintain or create Community-wide interoperability. These requirements must build in particular on Directives 83/189/EEC and 86/361/EEC, Decision 87/95/EEC and Recommendation 86/659/EEC.

Member States and the Community should ensure and promote provision by the Telecommunications Administrations of efficient Europe-wide and worldwide communications, in particular regarding those services (be they reserved or competitive) recommended for Community-wide provision, such as according to Recommendation 86/659/EEC.

E) Clear definition by Community Directive of general requirements imposed by Telecommunications Administrations on providers of competitive services for use of the network, including definitions regarding network infrastructure provision.

This must include clear interconnect and access obligations by Telecommunications Administrations for trans-frontier service providers in order to prevent Treaty infringements.

Consensus must be achieved on standards, frequencies, and tariff principles, in order to agree on the general conditions imposed for service provision on the competitive sector. Details of this Directive on Open Network Provision (O N P) should be prepared in consultation with the Member States, the Telecommunications Administrations and the other parties concerned, in the framework of the Senior Officials Group on Telecommunications (SOG-T).

F) Free (unrestricted) provision of terminal equipment within Member States and between Member States (in competition with Telecommunications Administrations), subject to type approval as compatible with Treaty obligations and existing Directives. Provision of the first (conventional) telephone set could be excluded from unrestricted provision on a temporary basis.

Receive Only Earth Stations (ROES) for satellite down-links should be assimilated with terminal equipment and be subject to type approval only ;

G) Separation of regulatory and operational activities of Telecommunications Administrations. Regulatory activities concern in particular licensing, control of type approval and interface specifications, allocation of frequencies, and general surveillance of network usage conditions ;

H) Strict continuous review of operational (commercial) activities of Telecommunications Administrations according to Articles 85, 86 and 90, EEC Treaty. This applies in particular to practices of cross-subsidisation of activities in the competitive services sector and of activities in manufacturing ;

I) Strict continuous review of all private providers in the newly opened sectors according to Articles 85 and 86, in order to avoid the abuse of dominant positions ;

J) Full application of the Community's common commercial policy to telecommunications. Notification by Telecommunications Administrations under Regulation 17/62 of all arrangements between them or with Third Countries which may affect competition within the Community. Provision of information to the extent required for the Community, in order to build up a consistent Community position for GATT negotiations and relations with Third Countries.

- ACCEPTANCE BY THE TELECOMMUNICATIONS ADMINISTRATIONS OF CLEAR OBLIGATIONS TO INTERCONNECT WITH AND PROVIDE ACCESS TO TRANS-FRONTIER SERVICE PROVIDERS

Generally, the network must be opened, under fair competitive conditions, for service providers from other Member States. This is a pre-condition for implementation of the Internal Market for the Community's future service economy.

Insofar as Member States continue, for the time being, to reserve certain basic services for exclusive provision by their Telecommunications Administrations, reserved services must be construed narrowly and not interfere unduly with service provision from other Member States, in accordance with Treaty rules.

- CLEAR SEPARATION OF REGULATORY AND OPERATIONAL FUNCTIONS OF TELECOMMUNICATIONS ADMINISTRATIONS,

In those Member States where this still has not been carried out. In a more competitive environment, the Telecommunications Administrations cannot continue to be both regulator and market participant, i.e. referee and player. Regulatory functions concern in particular licensing, control of type approval and binding specifications, frequency allocation, and surveillance of usage conditions.

The need for this separation is confirmed by the trends and debates in all Member States which are envisaging more competition for the sector.

The Telecommunications Administrations should be market participants in the competitive sectors, in an improved competitive environment in order to ensure full service to the whole spectrum of users and industry.

Substantial differences would continue to exist between Member States, but must be accommodated. This concerns the different status of the network operators (public/private), and also the policy regarding provision of leased lines and resale of capacity. All Member States agree currently on the necessity of securing the financial viability of their Administrations, either by excluding pure resale of voice (telephone) on leased lines or by tariff schemes which make resale of voice to third parties unattractive, such as usage-based tariffs. Both methods will have to be accommodated in the Community.

However, both methods must be limited to a legitimate level of protection of financial viability and must not represent the abuse of a dominant position. Current charges for leased lines both at the national and Community level show in some cases wide and unexplained divergences.

The proposals aim at progressively introducing full Community-wide competition to the terminal equipment market, and as far as possible and justified at this stage to telecommunications services.

In pursuing the implementation of these proposals, and the lifting of existing restrictions, the Commission will take full account of the fact that the competition rules of the Treaty apply to Telecommunications Administrations, in particular to the extent that they engage in commercial activities. It may use, as appropriate, its mandate under Article 90 (3) of the Treaty to promote, synchronise and accelerate the on-going transformation.

4. Proposed Community Action Lines to create a favourable environment for the on-going transformation

In order to create the environment for reaching the objectives set out, the Commission proposes a number of actions :

- to smooth the transition towards a more competitive Community-wide market ;

- to promote a strong European presence in both the services and industrial field ;

- to prepare the Community for its discussions of future trading relations in this field with its outside partners, in particular in the framework of GATT.

It is envisaged :

- to accelerate the implementation of existing action lines ;

- to initiate a number of new action lines needed to complement and facilitate the transition.

## 4.1 ACCELERATION OF EXISTING ACTION LINES

As regards the acceleration of implementation of the action lines defined by Council in December 1984 for the Community's telecommunications policy, the Commission foresees :

- ACCELERATED ADOPTION OF THE PROPOSALS FOR ENSURING THE LONG TERM CONVERGENCE AND INTEGRITY OF THE NETWORK INFRASTRUCTURE IN THE COMMUNITY

  A pan-European telecommunications infrastructure with full inter-operability is the only basis on which an open and competitive Community-wide terminal equipment and services market can thrive. Intensified industrial co-operation within the Community must ensure that European industry will fully benefit from the opening of this market.

  This concerns in particular :

  . rapid adoption of the RACE MAIN programme which is fundamental to longer term network development in the Community and to Community-wide standards for the future Integrated Broadband Communications, and promotion of related projects for the progressive Community-wide introduction of broadband communications ;

  . rapid adoption of the proposals for the introduction of digital mobile communications ;

  . full application of Recommendation 86/659/EEC on the co-ordinated introduction of the Integrated Services Digital Network (ISDN) ;

  . rapid application of the STAR programme for advancing infrastructure in the regions, with the aim of increasing economic cohesion during the current transition.

- RAPID EXTENSION OF THE CURRENT DIRECTIVE 86/361/EEC TO INCLUDE FULL MUTUAL RECOGNITION OF TYPE APPROVAL FOR TERMINAL EQUIPMENT

According to the current Council Directive 86/361/EEC on the mutual recognition of testing required for type approval, proposals for full mutual recognition of type approval must be submitted by July 1989 at the latest. The Commission proposes to accelerate this measure which is vital for the development of a competitive, Community-wide terminal market.

- PHASED REPLACEMENT OF THE CURRENT RECOMMENDATION 84/550/EEC ON THE FIRST PHASE OF OPENING UP ACCESS TO PUBLIC TELECOMMUNICATIONS CONTRACTS BY A COUNCIL DIRECTIVE

on the opening of procurement contracts applying to public and private Telecommunications Administrations to which the Member States confer exclusive or special rights.

The future participation of Telecommunications Administrations in the competitive markets requires more transparency in their purchasing behaviour, in order to allow these markets to operate efficiently.

## 4.2 INITIATION OF NEW ACTION LINES

As regards new action lines needed to facilitate the transition towards a more competitive, Community-wide environment, the Commission proposes :

### I SUBSTANTIAL REINFORCEMENT OF THE DEVELOPMENT OF STANDARDS AND SPECIFICATIONS IN THE COMMUNITY / CREATION OF A EUROPEAN TELECOMMUNICATIONS STANDARDS INSTITUTE

based on the current co-operation of the Telecommunications Administrations within CEPT and with CEN-CENELEC. A substantial reinforcement of resources applied to standardisation is a necessary requirement for a truly open competitive market.

Jointly financed, the institute, based on a small core team of permanent staff and independently managed according to best business practice, should draw flexibly on experts from both the Telecommunications Administrations and industry, in order substantially to accelerate the elaboration of standards and technical specifications, indispensable for an open and competitive market environment, and the development of Europe-wide services.

This action would build on and complement the Community's current policy on telecommunications and information technology standards.

### II COMMON DEFINITION OF AN AGREED SET OF CONDITIONS FOR OPEN NETWORK PROVISION ("O N P") TO SERVICE PROVIDERS AND USERS

Working out in common the principles of the provision of the network to competitive service providers is a necessary requirement for a Community-wide competitive market for terminal equipment and for competitive services, including in particular value-added services, if a long period of case-to-case decisions is to be avoided.

This concerns in particular the definition of clear Europe-wide network termination points, usage conditions and tariff principles and availability of frequencies where relevant.

The work should be carried by the Senior Officials Group on Telecommunications (SOG-T), based on hearings with all parties concerned. Subsequently, the Commission would submit a corresponding Directive on ONP to Council.

## III COMMON DEVELOPMENT OF EUROPE-WIDE SERVICES

Future intra-Community communications will depend on achieving three objectives :

- Europe-wide compatibility and inter-operability of those services provided by the Telecommunications Administrations. In addition to efficient telephony and telex, new services such as teletex, videotex, packet-switched and circuit-switched data services, mobile communications and the services ,as defined in Recommendation 86/659/EEC on the future ISDN should be available universally at the European level. This could involve joint Community-wide service provision, network planning, and tariff principles ;

- Rapid development of intra-Community provision of value-added services. It is proposed to set into motion at the Community level a number of measures aimed at promoting the emergence of European value-added services, building on current efforts such as the TEDIS initiative.

- Rapid development of the Community's policy on the information market, to promote Europe-wide information services, in particular fully mobilising the potential of private initiatives.

## IV COMMON DEFINITION OF A COHERENT EUROPEAN POSITION REGARDING THE FUTURE DEVELOPMENT OF SATELLITE COMMUNICATIONS IN THE COMMUNITY

The international satellite communications sector is currently going through rapid changes. In the light of the positions proposed in Fig. 3, based on prevailing technological trends, common positions will in particular be required regarding :

- development of the earth station market in Europe, in particular with regard to common standards ;

- the future development of space segments, in particular the relationships between EUTELSAT, national, and private systems, and the full use of the technological potential of the European Space Agency ;

- the development of international satellite communications, in particular with regard to INTELSAT and INMARSAT.

## V COMMON DEFINITION OF A COHERENT CONCEPT ON TELECOMMUNICATIONS SERVICES AND EQUIPMENT WITH REGARD TO THE COMMUNITY'S RELATIONS WITH THIRD COUNTRIES

An intensification of co-ordination with regard to Third Countries and the position on the international regulatory environment is urgently needed.

This concerns in particular the preparation of the new GATT ROUND and future relations with international organisations such as the International Telecommunications Union.

It concerns further the evolving relationship in this field with the EFTA countries, with the United States and Japan and with the Third World.

## VI COMMON ANALYSIS OF SOCIAL IMPACT AND CONDITIONS FOR A SMOOTH TRANSITION

In the long term, the most important factor for the future evolution of the telecommunications and information technology sector and its regulatory environment, both at the national and the Community level, will be the degree of social consensus which can be achieved regarding the new technologies.

Common discussions and positions will be needed regarding the best ways to master the shift in job qualifications required by the change in technology and to expand employment in new service provision.

A vital condition for achieving a true Common Market in this area will therefore be the development of a Europe-wide consensus on the analysis of the social consequences of the new technologies and the associated regulatory evolution and policies. Analysis of the conditions for acceptability of new services and activities, and the impact on work life and employment will be a permanent task.

A vital contribution which should be made at Community level towards evolving this consensus would be the launching of joint analysis and study, in order to lay a better factual basis of knowledge, increase the perception of developments in the other Member States, prepare informed debate and facilitate discussions and negotiations between the social partners.