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COMMUNICATION FROM THE COMMISSION TO THE COUNCIL ON TELECOMMUNICATIONS

Progress Report on the Thinking and Work done
in the field
and initial Proposals for an Action Programme

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P R E A M B L E

The Commission has sent to the Council two communications on telecommunications. At the meeting of Ministers for Industry on November 4, 1983 the Council agreed that the Commission would call together a Senior Officials Group (SOGT), which would work closely with Ministers for Industry with a view to determining - in conjunction with the industrial circles concerned and with the PTT authorities - the basis for proposing an action programme for the balanced development of the telecommunications sector.

This Group met six times between November 24, 1983 and March 13, 1984. Thanks to its cooperation and the highly constructive attitude prevailing throughout its discussions, the Commission was able to assess the degree of consensus on the arrangements for implementing the six action lines proposed, and the following communication sets out its proposals to the Council.

1. In earlier communications, the Commission has demonstrated the increasing importance of telecommunications to the economic development of the Community.
The stakes involved and the challenges with which Europe is confronted in this sector are considerable. The capacity to meet these challenges, and to cope in a timely manner with the opportunities born out of the development of telecommunications, is outside the capability of national operators on their own.

If the European countries are divided, their weaknesses will increase and the gap between them and the United States and Japan will widen irredeemably, as was the case in data processing ten years ago. If Europe takes concerted action on both economic and technological fronts, it is capable of exploiting its assets and potential to the best effect in facing up to this challenge.

I. ECONOMIC IMPORTANCE OF THE SECTOR

A. Telecommunications already plays a major role in the economies of Member States.

2. The direct economic importance of the sector can be gauged both by the contribution it makes to the GDP (some 2% in the Community) and the amount of investment it requires (approximately 0.7% of Community GDP, i.e. over 16 000 million ECU in 1981).

The importance of the telecommunication sector (both equipment and services) is comparable to that of the largest industrial sectors, such as aerospace, electricity generation or the electronics industry.

Furthermore, telecommunications equipment accounts for a substantial proportion of the production of the electronics industry in the majority of the Member states (12% in France, 17% in Italy and nearly 20% in Belgium).

3. The indirect impact of telecommunications is no less significant. The multiplier effect of telecommunications investments is one of the highest, equivalent to that of the building and civil engineering industry : 1 million ECU invested today in telecommunications infrastructures brings about a total increase in activity of 1.5 million ECU. Telecommunications constitutes the essential vector for information flows and new services which help to create industrial and commercial activities. It also represents a large market for electronics and data-processing components.

B. This role will increase

4. 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:

- digitization, 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.

These technological advances, which will sooner or later render current techniques obsolete, will bring about a decisive improvement in the way in which the human voice, writing and images are processed, and will make it possible to make the interactive use of communication networks more widespread.

5. 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.

These technological innovations will initially make it possible to improve and generalize the existing services, which use extent networks : the telephone, telex, teletex and low-speed data transmission. However, they will above all lead to the creation of new telecommunications infrastructure¹, especially in the commercial sector, and the development of entirely new services :

- "second-generation" services, which presuppose the improvement of the existing infrastructures with digital data transmission. Demand for this category of services is already making itself felt. Such demand comes from business users and concerns electronic mail, text processing (including electronic storage and retrieval), high-resolution videotex, teleconferencing, etc. Demand for services of this type, which accounts for some 3% of today's traffic, should grow considerably by the end of the decade in order to reach 10% of traffic around 1993 ;

¹ The term "generation" used here does not imply that there is any break in the sequence of generations : the transition from one generation to another will take place through the gradual emergence of new types of networks and services that will coexist (and sometimes be superimposed on the networks and services of the preceding generation).

- "third generation" or broadband services (person-to-person video communications incorporating text, voice and pictures), the introduction of which will require new telecommunications infrastructures (cables and/or satellites). Some of these services are being offered to business or residential users under experimental programmes designed to test their impact and feasibility (the Biarritz, Bigfon and Milton Keynes Projects). The demand for third-generation services will not really make itself felt until the beginning of the next decade and will initially stem from businesses, before gradually spreading to homes, where such services will fulfil various functions (education and leisure, working from home, household management, the safety of appliances, day-to-day medical supervision, etc.).
6. In the last few years, demand for telecommunications, both equipment and services, has seen especially vigorous growth, as evinced by the 1% growth rate in GNP being matched by a 7% rise in Europe's demand for telecommunications. The annual growth rate of this demand could be further boosted through the development and diffusion of new services. From now on, the strength of demand for second generation services (and ultimately third generation services) relies on a speedy and appropriate response (in terms of the cost of both equipment and services to users, not to mention the availability and quality of the services) by Community carriers and telecommunications equipment manufacturers. Without this response, they will lack the wider perspective necessary to develop the market, as was the case with sectors that emerged a few years ago, such as office automation and computer-aided manufacturing ; these have seen significant growth since then, mainly to the greater profit of suppliers from outside the Community.
- C. The economic and social impact will be considerable
7. The progressive dissemination of new services will make it possible to improve substantially the management of businesses, to increase productivity and to reinforce the competitiveness of the economy as a whole.

The introduction of new communications and management and data-processing systems will exert a considerable impact on the productivity of the information services sector, whose activities account for 55% of added value and occupy 62% of the Community workforce.

The automation of office work, the acceleration of decision-making processes, rapid access to information (making it possible, for example, to improve stock management), and the possibility of offering customers a more sophisticated service, sometimes in return for their cooperation (at electronic cash dispensers, for example) are all examples of applications which generate both increased profits and substantial savings for businesses. The total net benefit for business using these new services could be five times greater than the costs generated by introducing them.

8. The telecommunications market will grow quickly, since demand will relate to all of the following :

- infrastructures, which will be necessary in order to satisfy the needs for extending first-generation services (at a cost of 20-30 billion ECU over 10 years if the Community is to catch up on the level of residential and business penetration attained in the United States or Sweden), and to prepare for the introduction of second- and third-generation services (digital switching, cabling, ground networks, optical fibres and satellite communications);
- terminals (telephone receivers, automated office equipment, VDUs fitted with keyboards, etc);
- services, which will undoubtedly constitute the sector with the highest added value, in view of the amount of investment required in software.

The equipment market, which currently amounts to some USD 50.000 million, should thus represent by 1990 some USD 100.000 million at current prices, whereas the forecast for investment throughout the world in the eighties devoted to the installation of new networks and services is something over USD 150.000 million.

Of these figures, Europe's share should amount to 20-25% of the world total. At the same time, the growth of capital expenditure and of the income generated by network operation will, by 1990, make telecommunications the Community's largest economic sector, overtaking the motor industry. On the whole, the contribution of telecommunications to Community GDP should rise from 2% to 7% between now and the year 2000.

9. The social impact represented by these fundamental changes is initially reflected in terms of new indirect jobs created by the development of services and the design, manufacture and installation of equipment and infrastructures. To these jobs should be added the number of jobs saved or maintained as a result of the increased competitiveness of firms that are threatened today. The net employment balance of these transformations is obviously difficult to assess. It will nevertheless depend on the following factors :

- the ability of Community operators (telecommunications firms and network carriers) to respond to demand ;
- the adjustment of education and training to the new requirements for qualifications ;
- the impact on employment of the increased productivity brought about by the introduction of new services.

10. Telecommunications therefore emerge as a strategic sector for the Community. It constitutes a special tool for reviving the economy and protecting employment in the Community via productive investment thanks to their high multiplier effect and stimulus to demand. At the same time, the development of telecommunications represents a key factor in economic and social change, in view of the increasing impact it will have on :

- the fabric of European culture (organization of information networks, the content and nature of educational or leisure applications, etc);
- the territorial location of activities and the restoration of the balance between regions thanks to greater freedom of location and the prospects held out by working from home with the aid of telematic equipment.

The expansion of telecommunications represents a quantum leap that will wreak a qualitative change on the type of services available to businesses and individuals, and transform the means of production, the pattern of consumption and lifestyles. Europe must stake its all on a Community response to these developments.

II. THE STATUS OF THE COMMUNITY'S TELECOMMUNICATION INDUSTRY AND INFRASTRUCTURE

A. Telecommunications is one information technology sector where the overall situation seems most favourable.

11. The Community still dominates its internal market in the telecommunications field. A total of a dozen European firms satisfy most of the requirements of a market which, taken as a whole, accounts for approximately 20% of the world market.

Whereas imports account for only 15% of production, Community firms succeed in exporting 30% of their production, thus achieving a trade surplus of 1.7 billion ECU in 1982.

All the same, a number of factors render this situation more fragile in the medium and long-term, especially the semi-conductor deficit. This weakness could hamper the EEC's commercial prospects in the "systems" sector. Moreover, as far as products from traditional technologies are concerned, the EEC is vulnerable because of the advent of competition from newly industrialized countries in its traditional markets.

12. During the seventies, the technological performance of the telecommunications sector in Europe was remarkable. It is in the countries of the Community that time-switching systems were developed and then put into service in the networks. This was a crucial step towards digital networks. Moreover, Community operators (both industrialists and carriers) lead the field in the development of broadband networks.

B. The evolution taking place shows weaknesses and disturbing vulnerabilities that give cause for alarm

13. The EEC market is compartmentalized and more limited therefore. The proportion of homes in which the telephone has been installed is considerably lower (25-40%) than that of countries whose cultural standard is comparable (Switzerland, Sweden, Japan and the United States). This situation aggravates the handicap of national telecommunications carriers in the EEC, since the latter collect less revenue in proportion to GDP than their American or Japanese counterparts and a considerable proportion of their resources will have to be devoted during the coming decade to making up for lost ground in the installation of first-generation services to the detriment of the promotion of new ones. The gap between the Community and the world leaders is liable to widen:

- data transmission accounts for only 3% of traffic in Europe, as compared with 5% in the United States;
- above all, the growth of the equipment market appears likely, on the basis of current trends, to be appreciably slower in Europe (+ 5% per year) than in the rest of the world or the United States (+ 8%). Lastly, the Community market, which represents 18-20% of the world market, exists only in embryonic form because of its fragmentation into ten national markets.

14. The Community's position is particularly vulnerable in the field of the basic technologies which determine the development of networks and services, i.e. micro-electronics and data-processing equipment. The EEC imports most (83%) of the micro-electronic components which will be used increasingly in telecommunications equipment (they already account on average for 7% of the cost equipment).

Innovation in services and in supporting systems and networks is increasingly reliant on performance in advanced integrated circuits.

Although the majority of European firms are present in the field of the critical technologies necessary for the development of the second and third-generation telecommunications services, none of them is in the position of having realized world-wide technological leadership in any of those technologies.

15. The Community is confronted with two major investment difficulties:

- recovering R&D expenses will become increasingly difficult to guarantee; this will adversely affect the development of new products, and their price;
- Europe is lagging behind as far as investment in equipment and infrastructure are concerned.

The cost of investment in R&D will be increasingly difficult to recoup as a result of:

- the amount of expenditure to be allocated (the cost of developing a new generation of digital switching systems lies between 500 and 1 000 million ECU);
- the shortening of the innovation cycle;
- increasingly rapid obsolescence of equipment;
- the impossibility at the present time of manufacturing products on a large enough scale, due to the lack of an adequate internal market. The minimum market volume required to recoup the R&D and engineering costs associated with the development and production of new equipment and systems varies, according to the case in point, between 5% and 10% of the world market, which is greater than the size of any national market within the EEC.

Investment in telecommunications equipment is markedly lower in Europe than in the countries which are our main competitors. Admittedly, the effort devoted to the PTT infrastructure is comparable with what is made in the United States or in Japan. But the total expenditure allocated to infrastructure is distributed differently between purchases of equipment and the staff expenditure needed to put the infrastructure into service. The multiplier effect of infrastructure expenditure on the equipment market is higher in the United States and Japan than in Europe, as witness the volume of per capita equipment purchases (USD 32 in the EEC, as compared with USD 46 in Japan and USD 80 in the United States).

- C. Furthermore, European industry is hardly going to be working under favourable conditions.
- 16. The fragmentation of markets is aggravated by national standardization and type-approval policies relating both to specific PTT equipment and apparatus that is liable to be connected at some time to the telecommunication networks.

The lack of consultation and of an overall standards policy taking into account the technological continuum of telecommunications, data processing and audio-visual media emphasizes the internal walling-off of the markets and leads to the independent development of incompatible equipment and to narrow markets that fall below the economic optimum.

The recent adoption in the ten Member States of three different standards for mobile communications, in which the market is limited but will probably expand rapidly, illustrates the difficulties and challenges involved in a harmonized standards policy.

- 17. Lastly, one of the major weaknesses of the Community resides in the multiplier effect of the uncertainty stemming from lack of consultation at European levels between telecommunications carriers and industrialists, on the future development of telecommunications. Even though long-time contacts exist

between national administrations, through the medium of UIT and CEPT, these bodies are primarily concerned with sorting out technical difficulties arising from international transmission of traditional services, such as telephone and telex.

The "objective" uncertainties in each Member State surrounding the choice of technologies (which ones will prove to be the most efficient and the most profitable in terms of operations?) and national demand (which products? in which sectors? when?) are compounded by uncertainties associated with inadequate knowledge of the strategies of agents acting in the other Member States, since the latter can, by the decisions they take, affect the forecasting environment and throw into doubt technological or commercial choices made too early.

The lack of common viewpoints concerning the strategies of the economic operators, market potential and the ways of stimulating demand in a coordinated fashion reduces the scope of forecasts and increases the risk inherent in any national development option that is not followed by other countries or partners, because of the narrowness of the national markets.

18. Europe's main competitors are not standing still and have taken action which bears witness to their resolve to establish their technological and commercial leadership in the telecommunications field, in order to dominate the world market.

Europe is faced firstly, as far as the United States are concerned, with the challenge presented by the deregulation that is taking place on the other side of the Atlantic. The FCC's decision breaking AT&T's virtual monopoly in the operation of networks and the supply of equipment has opened up the American telecommunications market to broad competition and has led American firms to seek to extend their market outside the United States.

Japan's current and medium-term strategy is geared more to technologies (integrated circuits) and equipment (in particular the consumer audio-visual sector). However, the decisions taken by the MITI and NTT, as illustrated in particular by the INS (Information Network System) project, reflect the desire to make an integrated services network available as quickly as possible at national level, NTT devoted 70% of its investments in 1982 to this end.

III. The particular situation of carriers in this context

19. It shows two characteristics :

In the first place, telecommunications have to comply with the obligations applicable to public services, and telecommunications services are provided in nine Member States by a state monopoly. In all the Member States, the carriers (whether public or private) strongly influence the development of the industry (hardware and software manufacturers) and the behaviour of the users of the services (businesses and individuals).

They exert this influence on two levels :

- as customers of the industry, since the market for switching and transmission equipment and certain terminals is dominated by carrier procurements, which account for 70-90% of the total;
- as network carriers, since they stipulate :
 - . network configurations and performance;
 - . the conditions under which access to the network is obtained;
 - . the standards applicable;
 - . costs.

20. Secondly, the telecommunications sector (both services and networks) is undergoing rapid and far-reaching change and will

- require major investments in R&D (some 20% of annual turnover) and in infrastructure;
- these investments involve technologies that are still being developed and that
- generate products whose life and investment payback time is generally much shorter than before.

21. Carriers are therefore faced with a twin challenge :

- their investment requirements are increasing, whereas their traditional management structure and constraints arising from their public service role, or resulting from general economic policy, (tariff structure, equal access to services for users and price supervision by the authorities) are adversely affecting their revenue and limiting their capacity to plough back profits or raise loans;
- they have to take greater commercial and technological risks. Since we are dealing with new products, the state of the market and the receptiveness of demand are largely unknown factors when decisions are taken to launch a product; such decisions have lead times of between two and five years.

The simultaneous growth of the financial needs and of the risks will not have the counterpart of substantial benefits for the carriers.

Furthermore, the benefits deriving from the introduction of new services or of a new system will be shared very unevenly between carriers, users and industrialists. In the case of second-generation services, the thrust will benefit chiefly suppliers of terminals that are not specifically dedicated to telecommunications. Studies conducted in France or in the United Kingdom appear to demonstrate that the introduction of new services will be of considerable benefit to users (see point 7). Taken as a whole, the new services will have a greater overall economic impact on industrial activities and services in general than on the revenue of the telecommunications sector, since 80-85% of the latter will continue to come from the telephone traffic in 1990.

IV. Objectives and strategy of the proposed action programme.

22. The above analysis has set out the key factors affecting the future of telecommunications, namely :

- compartmentalized markets,
- the scale of investment necessary, the difficulty of funding it and of assuring an economic return,
- Europe's enfeebled technological grasp on this area
- strategic uncertainties

This state of affair is contrary to the interests of users, companies and carriers in this sector; they have to confront the following problems :

- The risk of lagging behind in the introduction of networks and services;
- the fact that it is difficult for the European industry to benefit from the advantages deriving from large scale production, which correspondingly hampers its capacity to invest, conduct research and manufacture competitive products;
- the uncertainty surrounding the strategies to be promoted and the chances of technical and commercial success, even though investment choices and decisions to develop products and services cannot be postponed.

23. The Community risks being unable to take full advantage of the opportunities made available by developments in telecommunications and by acceleration in two associated areas

- the telematics markets
- the market for wide band services and networks

Current estimates are that the multiplier of infrastructure expenditure (on advanced second and third generation networks up to 1995) will be of the order of 1 to 10 ; and that this total investment (infrastructure and terminals) will in turn generate a burst of economic activity equal to twice the sum invested in equipment.

Thus, prolonging the present state of technological weakness and political uncertainty means that Europe has a lot to lose as compared with Japan and the U.S.

At this point, Europe's more sluggish growth rate in telecommunications (5% against 8% in the U.S. or Japan) means a potential loss of 500 millions ECUs per annum. This figure does not take into account the costs of the resulting loss of competitive edge to the Community's economy; this is difficult to assess, but will be caused by tardier take-up by European businesses of new telecommunications networks and services.

24. Will Europe, with its industrial and technological resources, be capable of stimulating demand and coping with the social and cultural impact of the proliferation of networks and the dissimination of new products and services ? or will it allow its market to be dominated by non-European firms and products, through failure to identify what is at stake and anticipate European and world demand at a sufficiently early stage ? The Member States, acting alone, are no longer able to take up these challenges and master the crucial problems posed by the development of telecommunications. Europe's potential resides in its ability to use the Community framework and instruments. In view of the transformations that lie ahead, it nevertheless has little time to preserve the favourable positions it currently holds and to endeavour to penetrate new world markets.

Rapid decision are necessary and require aims and proposals for action at Community level, in order to overcome these handicaps and to take full advantage of developments in telecommunications

25. It is in the light of these inherent problems that, in September 1983, the Commission presented a communication describing certain lines of action and approached the Council, which agreed to set up a group of senior officials from the Member States. Discussions within this Group proceeded at a steady pace (six meetings since the end of November) and proved highly constructive. In the light of these discussions, the Commission proposes that the outline set out in its communication of 29 September 1983 and approved by the Senior Officials Group provide the broad lines for an initial Community action programme.

26. This action programme must attain three objectives :

- 1) 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;
- 2) 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;
- 3) allowing carriers to take up the technological and industrial challenges with which they will be faced.

27. These objectives can be achieved by Community initiatives to overcome the handicaps which beset the Community :

- compartmentalized market which stunt supply and demand;
- the uncertainty of carriers and companies over what development strategies to put in hand;
- weakness in the fundamental technologies of telecommunications;
- backwardness of less favoured areas in respect of networks, equipment, and advanced telecommunications services.

Detailed elaboration of the different categories of action that make up this Community programme forms the annex to this document. Principle elements of the plan of action are outlined below.

V. DESCRIPTION OF PROPOSED ACTION IN THE FRAMEWORK OF THE COMMUNITY PROGRAMME

The actions proposed are intended to overcome, through Community intervention and with regard to the rules of the Treaty (especially the competition rules), the 4 major handicaps (see §27 above) which inhibit the development of telecommunications, and hinder the Community in taking full advantage of the opportunities offered by this development.

A. Creation and stimulation of a Community wide market for telecommunications.

a) Terminals market

28. If the Community is to become more competitive, it must have a common terminals market, expanded to cover its entire area. The existence of such a market will promote the development of new services in that it will be easier for user to select the equipment best suited to their requirements, at the most favourable rates.

Furthermore, producers will benefit from a larger internal market since inherent economies of scale will then permit them to distribute their products both within the Community's internal market and abroad.

In turn, the dynamism of this market will stimulate the demand for new services, which in itself is likely to encourage operators to transform their networks more rapidly, thereby creating a snowball effect.

29. Broadening of the terminals market involves two complementary types of action concerning:

- standards,
- approval procedures.

With regard to standards, suitable procedures should be adopted with a view to ensuring the uniform application throughout the Community of either international standards or those most widely acknowledged at world level.

As far as approval is concerned, the eventual aim should be to achieve mutual recognition by network operators of the approval certificates issued in respect of this terminal equipment. This should not, however, rule out the possibility there being in future some form of Community approval for certain types of new equipment. This last objective can only be achieved in stages (see annex §34 and note⁽¹⁾ below).

In addition, it is proposed that operators purchasing terminals, either for their own use or that of users, should open their invitations to tender to all Member States of the Community.

b) Network components

30. Any broadening of the market in this equipment to Community scale can be achieved only very gradually, given certain inflexible technological and institutional factors, as shown for example in the adoption of 9 different switching systems within the Community.

The market must, however, be opened up in order to allow carriers greater choice of equipment at the lowest possible cost. At the same time, if all Community carriers are able to deal with a gradually expanded market, an increasing convergence of technological options will result and risks be reduced.

(1) The Commission intends proposing that the Council adopt an updated version of the Recommendation concerning the implementation of harmonisation in the field of telecommunications (COM(80) 422).

Producers will benefit from the size of the market and be encouraged to seek cooperation on the basis of complementarity, a factor that is likely to produce improved structures (together with a certain degree of specialisation). The user should reap the benefit of this market enlargement policy (i.e. the reduced cost of services and the increasingly uniform conditions of network use).

31. In view of the present state of affairs, characterized by nationally compartmentalized markets, type approval procedures, R&D efforts, standards and network development strategies, the Commission considers that the opening-up of national markets will only be achieved gradually. The first step towards this can be taken immediately, namely asking network carriers to extend initiatives to tender to all Member States of the Community for a minimum percentage to be determined by the value of their annual procurement (for example 10%) of network components. With the assistance of an advisory liaison group, the Commission would supervise implementation of these measures. It will shortly be presenting a suitable proposal, based on the text of the draft Recommendation concerning the first phase of opening-up of public telecommunications markets (COM(80) 422) and on the results of the Council's discussions of the draft (see Council Document ECO 55 ref. 10538 of 29 October 1982).

The existing compartmentalization should break down gradually under the combined effects of demand for services, evolution of networks and increasing realization of the significance of the Community-wide dimension; therefore the Commission considers that the Community's aim should be nothing less than the total opening-up of markets for the new network components, especially third generation types.

However this aim can only be achieved gradually, depending on variables such as equipment types, schedules and geographical locations involved. The Commission proposes to gear the speed of this process to the implementation of the action programme.

- B. Reducing the uncertainties (of carriers and manufacturers) concerning the development strategies to be put in hand.

32. Three types of action can contribute to this aim:
- the broadening of the market and a Community policy on standards, which will reduce commercial risks by causing easier amortization of R&D costs and by lowering unit prices (economies of scale)
This action is described above, in A, (§ 28 to § 31);
 - the creation of a common study and consultation framework;
 - the establishment of joint telecommunications infrastructure projects.

33. The creation of a common (study and consultation) framework for the development of services and networks (action line I of the annex) should enable the Community :

- to establish common long-term objectives for the development of telecommunications,
- to define the intermediate stages and to identify problems that should be solved in order to attain these objectives,
- and to analyse measures likely to help solve these problems at the various decision-making levels (industry, carriers, individual states, Community).

The effort to achieve converging strategies and approaches in this field should benefit industry by giving it greater confidence as regards its forecasts and investments. Users would also be in a better position to plan their investments (especially if the study and consultation also embrace aspects such as price-fixing and price structures). By pooling their best skills to exploit and stimulate the most favourable developments, carriers would be able to minimise their uncertainties and the risk of making mistakes, whilst synergy would be effected by the simultaneous implementing of jointly chosen options.

In order for this type of joint study and consultation on the development of telecommunications in the Community to be successful, the Commission proposes the creation of a multidisciplinary analysis and forward study group, consisting of technologists, economists and decision-makers.

34. Establishment of joint telecommunications infrastructure projects (action line IV of the annex)

Another means of bringing together the interests of users, producers and carriers would be to carry out transnational projects, at pilot level or on a large scale. Their mobilising effect would be beneficial as far as the implementation of new technologies, market expansion and industrial competitiveness are concerned. A group of consultants, closely connected with network operators, is currently considering the general concept of such projects and the full results of their study will be made available in June of this year.

35. Such projects of common interest will provide a suitable opportunity for implementing joint solutions to technical problems and will lead to increased standardisation. They should also permit cooperation between European companies thus contributing to market expansion. Lastly, they will allow choices concerning technology to be made on a joint basis.

Three projects can already be put forward :

- the establishment of broadband pilot network to provide advanced communications services (video-conference, videophony, data transmission) to policy-makers in the Member States and those in the Community institutions. The Commission has initiated a feasibility study, as requested by the Council at its meeting of 28 February 1984. Project design, Community-level consultations and implementation will form part of the extended INSIS programme, with all the benefits of the experience acquired under that heading;

- two other projects, with results in the longer term, should be launched :
 - one involves the setting-up of second-generation transnational cellular radio-telephony services, the other, the establishment of main trans-Community lines for integrated service broadband networks.

The Commission proposes to begin feasibility studies for both projects immediately. The results could be examined by the analysis and forward studies group, whose creation is proposed in §33 above.

36. In order to carry out these common interest projects and mobilize the investments required to set up the infrastructures, the Commission proposes that the EIB make use of both its own funds and those of the NCI.

C. Improving basic technology skills (action line II of the annex)

37. For the reasons stated above (see § 14 and 15) and in order to allow optimum use of limited resources, whilst reducing the time required to master a technology, the Commission considers it necessary to implement Community R&D activities, in addition to those performed under the ESPRIT programme.

The Commission has already begun consultations with a view to determining the R&D sectors likely to benefit most from this Community level activities and from exploitation of results. During the second half of 1984, the Commission will present a proposal concerning an R&D programme in the field of telecommunications². Moreover, the creation of transnational infrastructure projects described in §34 and 35 above will enable

- easier identification of what upstream research is needed
- to have a fixed applications area for these Community-scale R&D efforts whose effectiveness will thus be improved.

D. Aid for modernisation and strengthening of networks in the least favoured Community regions (action line V of the annex)

38. The density of telecommunications network and its performance, in terms of cost availability and access to more or less "sophisticated" services, differ very much from one region to another within the Community. Network modernization and reinforcement in the least favoured EEC regions will contribute to :
 - a stimulation of their economic development,
 - correcting their disadvantaged status,
 - allow them to take advantage more quickly of the benefits from 2nd and 3rd generation services (see §5 above).

²The estimate of a Community contribution to such a programme could amount roughly +/- 25 MECUs per year during 5 years.

39. Implementation of this objective implies at the outset, overcoming the investment problem. This problem is one that will loom large in the next decades as the infrastructure and networks required to launch the new services are installed.

In some cases, it will be necessary, for economic reasons, to anticipate the demand for new services at the risk of increasing the serious financial difficulties already experienced by operators. A judicious use of the Community financial instruments (EIB), NCI, ERDF) should make it possible to bridge the gap between the investments required immediately and the longer-term returns anticipated as demand gradually increases.

This general problem is growing increasingly acute in the Community's least well-developed regions.

40. The Commission proposes that the level of financing provided by the Community's financial instruments with respect to the development of telecommunications infrastructure in such regions remains the same as over the past three years, i.e. 720 million ECU. Furthermore, it proposes that the supported projects be designed to exploit as far as possible the potential of the new telecommunications technologies and combined with projects of common interest, the objectives and content of which are described in §34 to 36 above.

VI CONCLUSIONS

The Commission requests the Council:

1. To approve the implementation of a Community programme, aimed at creating a consolidated European telecommunications territory, which would give both carriers and industry the benefits and added dimension of working on the Community-wide scale, and would put at users' disposal the services essential to promote competitiveness, through :

- creation and stimulation of a Community-wide telecommunications market,
- reducing the strategic uncertainties,
- mastery of technologies necessary to the development of telecommunications,
- helping to modernize and strengthen networks in the least favoured regions of the Community.

2. To approve immediately the following measures relating to :

2.1. the creation and stimulation of a Community-wide market for telecommunications

2.1.1. Broadening the terminals market

A. as regards standards

to instruct the Commission, assisted by an advisory liaison group :

- (a) to identify the requirements specific to the Community as regards standardization in telecommunications;
- (b) to adopt a Community standardization programme in the field of telecommunications. This programme would cover both the preparation of "refined" international standards and the formulation of interim or provisional standards.

It would define :

- the common priorities;
- a timetable and a schedule to be complied with;
- the procedures for cooperation with the CEPT;
- a procedure for monitoring, evaluating and updating the work.
An initial Community programme should be established before the end of 1984.

B. as regards type approvals

- a) to request the operators of networks under the conditions referred to in this communication (see §21-23 of the Annex to this Communication) to take whatever measures are necessary with a view to progressively achieving mutual recognition of type approvals of terminal equipment connected to the networks (in certain cases such approvals may be delivered at Community

level), the first stage to consist of mutual recognition of test results to ensure conformity of this equipment with standards, such tests to be carried out by approved national laboratories; the first results should be achieved before July 1985.

- b) to instruct the Commission to request the CEPT to perform whatever technical work is needed to attain this objective and to negotiate with that body in respect of the procedures for carrying out such work.

2.1.2. Progressive broadening of those parts of the equipment markets which are dominated by carrier procurement

- (a) as regards the terminals used by the carriers or placed by them at the disposal of users, in particular the new terminals for computerized telecommunications, to request the operators to extend their invitations to tender to all member states of the Community;

This opening up of markets should be effective from 1984 and proceed in parallel with the setting up of common standards and type approval procedures

- (b) as regards the other categories of equipment, to initiate an experimental phase during which the carriers would be called upon to extend their invitations to tender to all member states of the Community in respect of a minimum percentage to be determined (for example 10%) of the value of their annual procurement of these types of equipments. In parallel with progressive application of the overall programme outlined in the present proposal, carriers would increasingly open up their markets. For equipment of new networks (especially wideband networks), the Commission considers that the goal should be nothing less than a complete opening up of markets.

- (c) to instruct the Commission, assisted by an advisory liaison group, to ensure that these measures are implemented and to supervise the application thereof.

4. to reduce the strategic uncertainties by setting up a multidisciplinary group for analysis and forward study, under the conditions set out in detail in action line I of the Annex to this communication, which will conduct analyses and discussions and coordinate work on the setting up of new services and new telecommunications networks in the Community over the next 20 years.

The work of that group would initially cover three topics :

- the development of new services through the rapid setting-up of integrated-service digital networks (narrow-band ISDNs);
- the introduction of cellular radiotelephony services;
- the development of video communications and the introduction of transnational broad-band networks.

A report on the results of work on the first topic should be available before 31 December 1984 to be followed by a second report on the two other topics before 30 June 1985.

3. to stress the importance it attaches to the least favoured regions of the Community being able, through appropriate use of the Community instruments, to improve their telecommunications infrastructure and to participate in adequate measure in Community projects.
4. to renew the mandate of the Senior Officials Group, instructing it to assist the Commission in the implementation of the decisions referred to in points 2 and 3 above and in performing the work referred to in point 5.
5. to take note that :
 - (a) the Commission will shortly put forward new proposals relating to harmonization in the field of telecommunications and to an initial phase of calling for tenders in the telecommunications sector on the basis of draft recommendations I and III set out in document COM(80) 422 final, forwarded to the Council in September 1980, and of the results of the Council discussions on those recommendations;¹
 - (b) the Commission, in consultation with the parties concerned, will conduct studies for the purpose of defining the research sectors which are suitable for cooperation at Community level and of recommending the procedures for such cooperation, with the aim of placing a proposal before the Council during the second half of 1984.
 - (c) The Commission will pursue the idea of setting up a Community programme to further telecommunications development in the least favoured regions of the Community, within a revived ERDF framework.
 - (d) the Commission will follow up the feasibility study of the videocommunications broadband network between political authorities. Its first results are already available.

¹Cf. Council Document ECO 55 Ref. 10538/82, 29th October 1982.

A N N E X

A C T I O N P R O G R A M M E

I N T H E F I E L D

O F

T E L E C O M M U N I C A T I O N S

1. INTRODUCTION

The programme contained in this annex details the 6 action lines prepared by the Commission in its communication of September 1983, namely :

- 1) establishment of medium and long term objectives at Community level ;
- 2) definition and implementation of an R&D programme ;
- 3) broadening of the terminals market and development of Community solidarity towards the outside world ;
- 4) joint development of transnational parts of the future telecommunications infrastructure within the Community ;
- 5) intensive use of modern telecommunication techniques for the advancement and development of infrastructure in the least favoured regions of the Community;
- 6) progressive broadening of those parts of telecommunications equipment markets which are dominated by carrier procurement.

Some categories of action have already been developed into precise proposals, while others (action line II and V for instance) must still be subject to additional study.

ACTION LINE I :

SETTING MEDIUM- AND LONG-TERM OBJECTIVES AT COMMUNITY LEVEL

2. The emergence of new communication services and the expansion of networks over the next 20 years are bound to give rise to many problems (technological choices, standards to be used, equipment to be developed, financing of investment, etc.) but will also create vast opportunities for technological and industrial development.

A Community approach to these problems must help find optimum solutions. Similarly, it will be easier to take advantage of the economic prospects opening up if industry can be informed as rapidly as possible of coordinated decisions taken in a joint planning framework.

Consequently, the Commission proposes the setting-up of a pluridisciplinary group to analyse, study jointly and reach coordinated conclusions on the development of telecommunications in the Community.

This group, made up of technical people, economists and decision-makers, would analyse the interplay between technical options, the services offered and the networks, the resultant economic, industrial and institutional issues and prospects and finally the way in which the various developments are likely to interact in the short, medium and long term.

This concerted forward analysis should make it possible :

- to identify and define the problems of various kinds to be solved in order to ensure that the new services and networks can develop under optimum conditions, especially from the viewpoint of the market, the technologies involved, industrial competitiveness and investment ;
- to define measures likely to overcome these problems at different decision-making levels (companies, administrations, national governments, the Community).

As far as the Community is concerned, the work of this group should help to define activities in which the Community dimension and the resources offered by the EEC Treaty would be useful or even essential factors.¹

3. Analyses performed by the Commission and confirmed by the SOGT² demonstrate that, in view of the increasingly well-established convergence of telecommunications, computing and audiovisual techniques and the fast development of new services resulting from the combined action of this convergence and the emergence of new technologies, each Member State is at present assessing - against the background of its own economic and social framework - the potential evolution of telecommunications at national, European and worldwide level.

¹ These facilities are numerous and varied :
- implementation of cooperative research programmes (see line II);
- legislative measures concerning the market ;
- launching of promotional projects (see line IV);
- use of the Community financial instruments (see line V), in particular where the least favoured regions in the Community are faced with specific difficulties ;
- definition and harmonized implementation of international standards (see line III);

²Senior Officials Group in Telecommunications.

4. Current market fragmentation, scattered development efforts (notably R&D) and the lack of coordination in this field not only have adverse effects on Community's technological and industrial development, but are also likely to hamper the emergence and deployment of new services that can greatly improve the competitiveness of companies and generate new markets and fresh employment opportunities.
5. Although during the past decades, telecommunications services featured little diversity and progressed comparatively slowly, disparities between countries could be tolerated easily, the same is not true today. With the establishment of worldwide markets and economic relationships and the explosion of new services, homogeneous and modern telecommunications systems throughout the world have become a key prerequisite for the development of the economy.
6. The Commission therefore considers it necessary that a forward analysis should be conducted at Community level to investigate possible development scenarios for services and networks. The analysis should concentrate on :
 - a) interplays between technical options, the services offered, types of networks and users and, at a higher level, the related economic, industrial and institutional issues ;
 - b) the way in which the various development scenarios interact in the short-, medium- and long-term time scales ;
 - c) ways and means of ensuring that economic activity in the Community will obtain the largest possible return from those developments.
7. Synergy between demand for new services and the dynamics of infrastructure changes create three main lines of developments :

- narrow-band ISDN ;³

³ISDN = Integrated Services Digital Network.

- business communications ;⁴
- consumer videocommunications.

8. The first line (ISDN) corresponds to the evolution of public networks to meet the growing demand for narrow-band IT services (text and data at low bit rates) from professional users and small business.
9. The business communication line is of immediate concern. There is, indeed, in this sector made up of medium to large companies, public bodies and administrations, a convergence in the nature of demand for new telecommunications and IT services stemming from internal needs.

By its very nature, this line is characterized by a strong interplay between computing and office automation : it therefore generates a strong pull on the IT industry at large.

In addition, although only 2 to 3 % of main telephone lines are involved, business communications are potentially the leading edge in several areas, e.g. for multi-service technologies evolving from private communication infrastructure, or for interpersonal videocommunications and for videoconferences. (It should be pointed out here that business communications already have a sufficient impact on transmission capabilities to be a major incentive to the development of long-haul optical links and dedicated satellites for data communications).

⁴This includes :

- voice and data services of narrow band ISDN type,
- wide-band services for large businesses and administrations using in a judicious manner satellite and terrestrial systems and also mobile communications systems.

10. It is, however, the third line of development that is the most likely to trigger a radical move by public networks towards broadband throughout consumer interactive videocommunication. In actual fact, the emergence of the person-to-person video phone, which implies two key changes, the use of broadband switching and a large traffic demand, is unlikely to come about for another ten years. This period is necessary both to bring the new generation of exchanges up to the industrial stage and to allow the development of a significant and viable demand.

Meanwhile, from 1985-1990 on, a first phase of this development is expected to lead to networks able to support interactive television and designed so as to form, in the long term, the local infrastructure for broadband networks.

Compared to the first two lines, consumer videocommunications will obviously require a high level of investment resulting from the very nature of the services and the laying down of new infrastructures which can make little or no use of equipment now in service.

11. The issues at stake, commercial opportunities and operational arrangements for these three lines have yet to be studied in detail. The impact on markets of the concerted and fairly rapid development of all or some of these lines, the optimisation of these measures by implementing them from the outset in a Community context and the drive that could result from the launching of European projects have yet to be assessed.
12. The Commission has initiated a forward study on advanced telecommunication structures and services in the Community. This study is intended to provide material for the study on the development of Community telecommunications, and its results will be available by June 1984.
13. The Group for Analysis and Forward Study, which the Commission proposes, should (its general terms of reference are outlined at the start of this chapter) initially tackle three main themes :

- theme 1 : the development of new services through the rapid launching of narrowband ISDN at European level so as to ensure transnational compatible working for users. The problems caused by the earliest possible establishment of digital connectability on a Community scale should be examined immediately ;
- theme 2 : the establishment of transnational cellular radiotelephony services of the first and second generations ;
- theme 3 : a study of the development of videocommunications (business videocommunications, interactive television, picture phones, consumer video communications) and the establishment of transnational broadband networks.

14. In its work, the Group for Analysis and Foreward Study should take into consideration the result of the work and studies carried out by the Commission and the CEPT on these various subjects.

The results of its work will be given in reports which should also set out proposals for action and be available as follows :

-for theme 1 : by 31 December 1984

-for themes 2 and 3 : as soon as possible, but at all events by 30 June 1985.

ACTION LINE II :

DEFINITION AND IMPLEMENTATION OF

COMMON ACTION ON RESEARCH AND DEVELOPMENT

15. The Commission is now holding consultations to determine the research and development fields where work made in the Community and utilization of results could be done more efficiently and at lower cost through Community cooperation.

Once these fields have been identified and analysed, the most suitable cooperation arrangements will have to be determined, bearing in mind the ESPRIT programme which, although it is not specifically geared to the development of telecommunications, supports basic projects that could be useful in that field.

The Commission will present a proposal on a R&D programme for telecommunications during the second half of 1984.

16. Although R&D expenditure on telecommunications in the Community is difficult to evaluate¹, it can nevertheless be estimated that 1500 to 2000 million ECU are spent yearly on R&D in telecommunications, averaging about 17% of the total sales of telecommunications

¹ The main reasons for this difficulty are as follows :

- differences in methods of assistance from one country to another;
- the strategic importance which the companies accord to them;
- differing definitions of what should be included under the heading telecommunications R&D in view of the interrelations existing between telecommunications and basic technologies developed in other sectors (computing, electronics).

equipment by manufacturers. This matches the Japanese figure but is lower than that of the United States.

17. This high level of expenditure seems unlikely to fall in the years ahead.

On the contrary, increasing investment will be necessary to remain or become competitive in leading-edge technologies. One of the main problems for the Community is therefore to obtain maximum benefit from financial resources that will remain modest in comparison with requirements in fields (new technologies) where work in common would allow to save money, to master technologies in a shorter time, and to have a beneficial effect on competitiveness and market.

18. Implementation of this line of action will require the gradual definition of :

- a) a Community view of the main features of future broadband multi-service networks (see line I) ;
- b) common understanding of the relationship between R&D on the one hand and standards and industrial capability on the other ;
- c) the guidelines for a Community R&D programme specific to telecommunications, the launching of which would be justified on economic grounds and for reasons of lead times and optimum exploitation of results.

19. The Commission is now organizing a number of talks with the various parties concerned - PTT research centres and industry - in order to identify fields in which a Community cooperative research effort for telecommunications would be justified alongside the research conducted at national level and within the Community framework (i.e. ESPRIT). The Community effort required could take different forms depending on the type of R&D activity involved.

20. Four types of possible action in this field have been identified and are now being investigated :

- a) exchange of information and coordination, as in the case of the projects undertaken in the COST¹ framework (concerted actions) ;
- b) support for precompetitive research of the ESPRIT type (cost sharing actions) ;
- c) technological feasibility demonstration projects, addressing the field between development and production ;
- d) Demonstration prospects, showing full scale tests and covering R&D and engineering requirements involved in the realisation of infrastructure prospects in leading edge technologies (see Action Line IV).

21. In the definition of a telecommunication R&D programme, there is a need to establish clearly the relationship with the ESPRIT programme, which, although not specifically geared to telecommunications, nevertheless has four research areas of great interest for the development of that industry :

¹ The COST programme covers a limited number of projects in the telecommunications field, the most significant being :

- COST Project 202 bis : research on broadband local networks (switching, network architecture, transmission);
- COST Project 208 : optical fibre communication systems ;
- COST Project 211 bis : coding of video signals.

Some half dozen other COST Projects are also in progress on topics such as phased antennae and signal propagation through the atmosphere.

- in the field of microelectronics, priority is given to silicon technologies (bipolar MOS) which are of great importance for telecommunications. Although some activities relate to III-V materials and opto-electronics, the planned effort in this field is small. It will have to be determined whether the opto-electronics resources assigned to the development of telecommunications should be increased within the ESPRIT programme or outside it ;

- the chapter on office automation in the ESPRIT programme specifically refers to ISDN concepts and local area networks and covers office communication systems and workstations. Here, coordination with the telecommunications R&D projects on broadband systems (networks and terminals) is essential, but the scope of the ESPRIT programme on office systems would have to be excessively widened if it were to include all network and terminal developments. It would be better to give consideration to a new programme specifically concerned with broadband telecommunication networks and to coordinate the developments under Esprit's office systems section with the work in the new programme.

- The sections in Esprit concerned with software technology and advanced information processing are directed at general objectives (software production methods and expert systems). Consequently the results of the Esprit programme could be useful in the development of software for specific telecommunications applications. As these developments would be linked either to the micro- and opto-electronics aspects of the telecommunications programme or to the broadband aspects, they should be tackled under those two headings, every effort being made to put the Esprit results to optimum use. In addition, however, it might prove useful to include in Esprit the study of software or dataprocessing concepts needed in particular for telecommunications applications.

22. On the basis of its talks, the Commission will submit specific proposals in the second half of 1984.

23. As regards the financial assistance, the activities discussed above could involve :

- a modest use of budget resources which would be devoted mainly to precompetitive cooperative research projects and demonstration projects on equipment ;

- more extensive use of the Community's financial instruments to finance pilot and infrastructure projects.

ACTION LINE III :

COMMUNITY ACTION AIMED AT OPENING UP

THE TERMINALS MARKET AND DEVELOPING COMMUNITY

SOLIDARITY TOWARDS THE WORLD AT LARGE

24. The Commission proposes expanding the market for terminal equipment connected to networks by progressively bringing into effect a procedure for the mutual recognition of type approval granted by carriers in respect of this equipment.¹ The first stage would be the mutual recognition by carriers of the results of tests carried out in approved laboratories to verify the conformity of terminal equipment with standards.

The Community would define the equipment to be given priority for this procedure and would monitor its application, while the necessary technical work would be entrusted to the CEPT. Discussions between the Commission and the CEPT should continue with a view to establishing the precise details of this arrangement.

The Commission also intends to propose that the Council adopt an updated version of recommendation COM(80) 422 on harmonization in the field of telecommunications.

An advisory liaison committee consisting of experts from the Member States should be set up to ensure that the procedures established for attaining the desired goals are properly applied.

¹ Such type of approval could in some cases be granted at Community level.

25. The expansion of European markets for terminals² and private installations, which are mainly geared to business communications, merits priority because of :

- the strategic importance of these markets ;
- the future impact on Community industry that this liberalization measure would have.

26. The proposed action covers apparatus which, in some Member States, is allowed to be supplied to the end user by private suppliers but which, in others, must be supplied exclusively by the carriers. However, it is not intended under this action line to cover apparatus - such as network terminating equipment - which, throughout the Community, is regarded as part of public carriers networks. That is the province of action line IV.

The Commission's proposals under this action line do not call into question the different supply responsibilities prevailing in the Member States. However, if the Community market for terminal apparatus is to be effectively opened up, measures must be taken which apply both to apparatus supplied under PTT monopolies and privately supplied apparatus.

This establishes an important link between action lines III and VI.

² The word "terminal" is understood here to include all apparatus which sends or receives communications over a telecommunication system (including simple and complex telephones, PABXs, data terminals, telex terminals and facsimile apparatus). It also covers apparatus, such as certain modems, used to convert or process communications into a form suitable for transmission or reception via a telecommunication system.

27. In all Member States, before it can be connected to communications network, terminal equipment (the number and diversity of which are steadily increasing with the introduction of computing techniques) is subject to compulsory type-approval procedures (sometimes combined with requirements in the form of mere recommendations) which are imposed by carriers, mainly on grounds of security and the proper functioning of the networks.

Where the equipment is to be supplied in quantity, these procedures include examination of the results of tests to verify conformity with national interface standard imposed by carriers.³

These tests are carried out in national laboratories approved by the carriers.

Obviously, then, the enlargement of terminal markets at Community level will be greatly eased by the mutual recognition of type approval granted by carriers and, at all events, the mutual recognition of the results of tests to verify conformity with standards (which in turn implies the harmonized use of identical standards).

28. The terminal apparatus referred to here may be subdivided into two categories on the basis of its inherent characteristics and its situation with regard to standards and type-approval procedures :

³ National type-approval procedures may include verification of quality control during manufacture and may also necessitate preconnection testing or the inspection of individual installations.

- a) New apparatus, mainly equipment which links to a public carrier network via a digital interface or equipment for connection to new broadband services. This category includes types of apparatus (sophisticated IT terminals) which will support and determine the future development of telecommunications in the Community.

For apparatus in this category, the aim is to harmonize standards and to arrive at mutual recognition of the results of tests to verify conformity with these standards and mutual recognition of type approval granted by carriers, where appropriate at Community level.

- b) Existing apparatus, mainly apparatus which links to a public carrier network through an analogue interface. This type makes up a major part of the terminal apparatus market today and therefore should not be neglected in the effort to open up the market.

For apparatus in this category, and especially for those which are already linked to a digital network, every effort should be made to achieve all the aims for category (a) apparatus, but full harmonization of standards could prove impracticable because of built-in differences between national carriers' networks.

Instead the Commission proposes that test methods should at least be aligned, so as to permit national authorities to grant type approval on the basis of tests conducted in accredited test laboratories, the results of which would be recognized on a reciprocal basis by carriers anywhere in the Community.

29. The proposed action programme has a section specific to each type of apparatus and another section common to both types.

30. Category (a) apparatus.

- a) Where an international standard already exists, action under the programme should be aimed at narrowing down the options and alternatives offered by the international standard so as to produce a common version for use in all Member States. Where this is different from the version already implemented in one or more Member States, transitional arrangements will be needed, based on the mutual acceptance of test results along the lines proposed for category (b) apparatus.
- b) Where an international standard has not yet been agreed the Community should adopt an intercept strategy. It should monitor relevant international work that has already been carried out and, when the content of the international standard can reliably be foreseen, implement a common European version of the draft international standard throughout the Community in agreement with the national carriers' operational and commercial plans. This strategy would minimize the risk of market fragmentation resulting from the implementation of different versions of the international standard within the Community and would exert pressure on other countries to adopt the same version of the standard, thus increasing the opportunities for Community exports.

31. Category (b) Apparatus

- a) An essential pre-condition for the target proposed by the Commission is the publication throughout the Community of the national standards for the apparatus included in the programme.⁴

⁴ The Commission will generally apply the prescriptions of directive 83/189, which sets up an information procedure between member states, in the field of standards and technical regulations.

- b) Should harmonization of standards prove possible, the target and procedures will be the same as for category (a) apparatus. Otherwise, once the standards are all available, an attempt must be made to convert these standards into clear testing routines so that any competent laboratory can undertake the necessary test work. Some minor amendments to the national standards may be possible at this stage, to simplify the work. However, the task is a difficult one, and may not prove possible for all kinds of category (b) apparatus.
- c) Transparent procedures must be developed for making type-approval applications, submitting test reports, carrying out quality-control verification (if required) and other similar matters.

32. Action common to both categories of apparatus

- a) Generally speaking, it is important to draw a clear distinction between mandatory requirements, which must be met before type approval can be granted, and recommendations. The technical problems of opening up markets will be simplified if mandatory requirements can be kept to a minimum. This in turn will be made easier if suppliers can easily obtain, on a voluntary basis, certification of compliance with the advisory parts of harmonized (or even unharmonized) standards. The Commission proposes that this question be examined by the advisory liaison group described in Point 11.
- b) The establishment of procedures for the accreditation of test laboratories will be an important part of the work under action line III. Careful account must be taken of the obligations of national approval authorities under their national law, and bureaucratic procedures must be kept to the minimum necessary.

33. The proposed procedure and arrangements for implementation are described below :

34. Definition of priorities

The proposed targets can only be achieved through a series of steps, and will be achieved more easily for some kinds of terminal apparatus than for others. A programme of priorities must be worked out, including a target timetable, according to the type of apparatus concerned and the sequence of steps to be taken. These priorities and the timetable must take account of the priorities of users, the Community telecommunications industry and national carriers, as well as the intrinsic difficulty in each case. An advisory liaison group⁵ consisting of national experts should assist the Commission in defining priorities.

The Commission considers that the initial priorities selected should include some technically straightforward cases so that action line III can achieve its first practical results at an early stage. This will not only make it possible to maintain the momentum of the programme and increase confidence in Community action, but also enable early experience to be gained and used later in the programme. Certain apparatus for connection to circuits leased from carriers for private use might be chosen as an early priority.

⁵ This group could also be given the task of assisting the Commission in monitoring the implementation of action line VI.

35. The work referred to in Points 7, 8 and 9 is highly technical and must therefore be carried out in a suitable framework. It is closely related to work being undertaken by technical organizations specializing in telecommunications, in particular the CEPT and the CCITT.

To avoid any duplication in a field which already requires a great deal of work by experts whose number is limited, the Commission proposes that the Community should invite the CEPT to undertake the technical work identified above on its behalf. The Commission notes that, since the meeting of Directors-General of Telecommunications Administrations on January 19, 1984, the CEPT has taken steps to speed up the work of the CCH on mutual recognition of test results and type approvals. This coincidence and the initial discussions that have taken place hold out promise that an arrangement can be found between the Community and the CEPT whereby the latter would carry out the technical work referred to above, possibly with some Community aid, in accordance with priorities and conditions in particular deadlines set by the Commission after consulting the advisory liaison group.

36. The Commission will closely monitor the execution of the programme entrusted to the CEPT and will take suitable steps to ensure that it is completed by the agreed deadlines, with the assistance of the advisory liaison group. Should difficulties hold up the technical work carried out by the CEPT under the programme entrusted to it, the Commission would seek a solution in consultation with the other interested parties and refer to the Council any differences arising between the Member States.

More generally, it will consult the advisory liaison group on the implementation of this action line and, where necessary, will consult through appropriate channels other interested parties such as Community manufacturers of telecommunications equipment and certain users (for example the members of the INSIS Users Committee).

37. Member States' administrations account for less than half of the membership of the CEPT, most of the other members being the administrations of EFTA countries. These countries constitute a significant market in their own right. The Commission considers that it would be advantageous to the Community if the targets of action line III were also pursued by the other CEPT countries. Moreover, the necessary unity of the Community internal market should be watchfully preserved.

The Commission also underlines that the Community will have to define a common point of view (based on art.113 of the Treaty), as to the impact on its relations, particularly towards GATT and OECD, under the condition that this approach meets the obligations which the Community and the Member States have subscribed to, by approving the Code on technical obstacles to trade.

38. Following the consensus in the Senior Officials's Group on Telecommunications, the Commission will also consider resubmitting an appropriately amended version of the recommendation concerning the "implementation of harmonization in the field of telecommunications" (ref.COM (80) 422)⁶.

⁶ This recommendation stipulates that the telecommunications administrations of the Member States should:

- a) consult each other before they introduce any new service, with a view to establishing common guidelines;
- b) ensure that new services are introduced on the basis of a common harmonized approach, so that the services offered are compatible;
- c) from onwards, order digital transmission and switching systems for ISDNs consisting of harmonized equipment.

ACTION LINE IV :

COMMON DEVELOPMENT OF THE TRANSNATIONAL PART OF

THE FUTURE TELECOMMUNICATIONS INFRASTRUCTURE

IN THE COMMUNITY

39. Cooperation between European companies, the broadening of certain markets, joint solutions to technical problems (especially standards) and common technological choices will be much more likely to succeed if they are given practical effect as part of major catalytic projects launched on a Community-wide scale.

At the occasion of the Council meeting of 28 February 1984, the Ministers for Research asked the Commission to conduct, in consultation with the circles concerned, a feasibility study on the establishment of a broadband network providing communications services for decision-making centres in the Member States and the European institutions. This project is to be considered in conjunction with some of the projects launched or planned under the INSIS (Inter-institutional Information System) programme.

In the longer term, the Commission feels that two other projects should be envisaged :

- the setting-up of transnational cellular radiotelephony services of the second generation ;
- the establishment of large transcommunity axes for broadband integrated services networks.

The Commission will undertake, in coordination with the Group for Analysis and Forward Study, the preliminary feasibility studies related to the two projects.

40. The action recommended in the area of transnational infrastructure at European level is to tackle four fronts, with the following objectives :

- a) to speed up the availability of voice and data services of the narrow-band ISDN type at European level so as to ensure transnational compatible working for users. This requires digital connectability to be established as quickly as possible on a Community-wide scale ;
- b) to promote the coordinated development of broadband business services for large enterprises and administrations through judicious use of satellite and land systems, based in particular on optical fibres ;
- c) to set up mobile communications systems that can provide the most advanced services throughout the Community ;
- d) to prepare for the creation of a European optical fibre-based broadband integrated communications network for providing multi-purpose videocommunications services.

41. The Commission has underlined in this context the potential value of launching joint projects of Community interest geared to the development of new services with a high technological content. The multiplying effect of such projects should have beneficial repercussions on the exploitation of new technologies, the broadening of markets and industrial competitiveness. The approach to be adopted by these projects is still being examined by a group of consultants close to network operators : the full results of this analysis will be available by June 1984.
42. Meanwhile, at the request of the Ministers of Research, the Commission has undertaken a feasibility study on a project concerning a European advanced communications network including videocommunications services intended in particular, to improve communication between government decision-making centres and the EEC institutions.
43. In addition, it is the Commission's opinion that it could be useful to initiate two other projects in the medium term, one aimed at setting up transnational cellular radiotelephony services and the other oriented towards the establishment in the Community, in the longer term, of large transnational axes for broadband ISDNs.
44. The Commission considers it useful to start studying the procedures for launching a project whereby second-generation transnational cellular radiotelephony services could be set up in the medium term. The harmonious development of industrial society increasingly depends on the mobility of individuals, whose movements are closely associated with the efficiency of economic and social life. This greater mobility makes it all the more necessary to ensure that the communication function - all too often interrupted by travel - is maintained.

Mobile communications systems, by their very nature, call for compatible designs which enable users to communicate irrespective of their location. The current situation in Europe is unsatisfactory since three incompatible standards are or will be used in the EEC. Community action therefore appears necessary to avoid a repetition of this situation when the next generation of mobile communications comes into existence.

Recent technological progress now makes it possible to consider much more attractive solutions for meeting new needs in this field. Cellular radiotelephony systems, in particular, hold out new prospects for providing communications services which allow a high degree of mobility.

The project envisaged should take account of the fact that if these new services are introduced in a sufficiently coordinated manner and in specific harmonization conditions, they should be able to offer mobility inside the Community both within and outside the frontiers of individual Member States.

The project envisaged should therefore be aimed at the following objectives :

- a) providing mobile radiotelephony links with the various fixed and mobile services throughout the Community. This will require end-to-end compatibility and a degree of synchronization in starting up such services ;
- b) guaranteeing a cross-border service integrity, when the mobile moves outside national frontiers.
- c) ensuring that these links are digitized so as to allow data to be transmitted and enable the system to be developed to incorporate new services in the future.

During an initial phase, the technical and economic feasibility of such a project should be examined in the light of studies conducted by the Commission and work carried out by the CEPT, on the one hand, and by the Group for Analysis and Forward Study, the setting-up of which is proposed in the context of action line I, on the other hand.

45. In the field of the general development towards the integrated broadband networks of the end of this century, a choice will quickly have to be made between :

- relying exclusively on national developments and concepts which, although useful at the R&D and pilot project stage, may well lack from the outset the advantage of market scale, thus slowing down the introduction of the networks and leading to international link-ups between national networks which are suboptimal ; or
- setting up in common, from the skeleton broadband structure between Member States, anticipating national developments. Such a transnational network would work in the Community as an integrating concept, promoting common standards and providing the necessary market scale, while leaving the necessary degree of flexibility for national developments specific to different national situations and regulatory concepts.

The latter choice would involve :

- agreeing on a framework for the international development of advanced high-speed business communication services in the Community, with initial use of satellite services to allow market development, in cooperation with leading-edge users ;

- creating a future-oriented optical fibre broadband structure for international communications in the Community which would have to bear the bulk of international traffic, as soon as the new broadband services take off on a large scale ;
 - subsequently considering the most appropriate forms of Community participation in such a project, both with regard to existing organisations in this field, such as Eutelsat, and with regard to the "development groupings" which may spring up between Member States or network operators.
46. The Community's financial instruments could, each within their specific field, play an important role in creating synergies between national sub-programmes and supporting projects of common European interest.

ACTION LINE V :

MAKING FULL USE OF MODERN TELECOMMUNICATIONS TECHNOLOGIES FOR

PROMOTING THE COMMUNITY'S LEAST-FAVoured REGIONS AND

DEVELOPING THEIR INFRASTRUCTURE

47. The Commission emphasizes the importance of telecommunications for the development of the Community's least-favoured regions and points out that in the past three years the Community's financial instruments (ERDF, EIB and NIC) have contributed an average of some 720 million ECU to telecommunications infrastructure projects in these regions. The Commission proposes that :

-the Community policies, with full respect to their own aims, undertake all efforts to ensure that the resources provided by the Community financial instruments for telecommunications infrastructure in the Community's least favoured regions be increased in the years ahead ;

- the projects supported be aimed at exploiting to the greatest extent the potential of the new telecommunications technologies ;

- such projects be appropriately combined with the projects of common interest envisaged under action line IV ;

- the Group for Analysis and Forward Study proposed in action line I devote special attention to the regional development aspects.

48. The vital importance of telecommunications for the development of the Community's least favoured regions is widely recognized : this field therefore emerges as an essential area of involvement for the Community's financial instruments, for which maximum effectiveness must be sought.

49. The resources devoted in recent years by these instruments to supporting telecommunications investments in such regions are already substantial :
during the 1981-83 period, their involvement amounted to an average of some 720 million ECU a year, of which approximately 70% was provided by the lending instruments (mainly the EIB and the NIC) and 30% by the budgetary instruments (the ERDF). This amount corresponds to approximately 5% of total investments by telecommunications carriers in the Community.

50. The Commission stresses the major contribution such investments can make to attaining the objectives of the Community telecommunications policy (offering modern telecommunications services to users with a view to stimulating economic development and maintaining the competitiveness of the sector). They also constitute a powerful tool for helping the economic development of the Member States to converge in the long run. The Commission accordingly proposes that these interventions be increased in this field.

51. In order to ensure that these investments, carried out using the Community financial instruments, bring maximum benefit for the economy of the regions concerned, the Commission proposes that :
 - they be geared to the future, i.e. seek to exploit to the greatest possible extent the potential of the new telecommunications technologies ;

- they be appropriately combined with projects of common European interest, as envisaged under action line IV.

52. In view of the foregoing, the Commission proposes that the Group for Analysis and Forward Study mentioned in action line I devote special attention to the needs of regional development during its proceedings. It will carry on the further studies which are necessary to define this action line in detail.

ACTION LINE VI :

THE PROGRESSIVE BROADENING OF THOSE SECTORS OF

THE COMMUNITY COMMUNICATIONS EQUIPMENT MARKETS

THAT ARE DOMINATED BY CARRIER PROCUREMENT

53. For the reason set out earlier, particularly in those parts of action line III which are devoted to measures aimed at broadening the market in terminals, the Commission proposes that contracts concluded by carriers for the purchase of equipment which is intended either to form and integral part of public networks or to be connected to the latter be gradually opened up to all Member States of the entire Community.

This broadening of the market would be achieved :

- a) in the case of terminals used by carriers or placed by them at the disposal of users (particularly the new telematics terminals) by extending invitations to tender for such equipment to all member states of the Community ;

b) as regards the other categories of equipment, by requiring carriers during an experimental phase, to extend their invitations to tender to all the Community Member States in respect of a minimum proportion to be determined (e.g. 10%) of the value of their annual orders of such types of equipment. In parallel with progressive application of the overall programme outlined in the present proposal, carriers would increasingly open up their markets. For equipment of new networks (especially wideband networks), the Commission considers that the goal should be nothing less than a complete opening of markets. Carriers would be invited to report regularly to the Commission on the steps they have taken to implement this policy.

The Commission, assisted by an advisory liaison group,¹ would monitor the effective implementation of these measures, report to the Council on the subject at the end of a two-year period at the latest and, propose at that stage additional measures aimed at gradually broadening the market.

With a view to introducing these measures in detail, the Commission will submit soon :

- an appropriate proposal based on the text of the project of recommendation concerning " a first phase of the opening-up of public telecommunications markets"(COM(80)422);

¹ This group could be the same as the one described in action line III.

- and on the results of the Council decisions on this project (cf. doc Council ECO 55 ref. 10538 of 29-10-1982).

54. Total investment by network carriers was estimated at 18 000 million ECU in 1983, of which 9 000-10 000 million ECU were devoted to the purchase of equipment intended either to be incorporated in public networks or to be connected thereto.

This market, which account for 75-90% of telecommunications equipment purchases in the Community, is fragmented into national markets that are effectively closed-off in the majority of the Member States.

55. The telecommunications revolution which is taking place may make it impossible for industrialists to recoup their expenditure (in particular their development costs) if this market situation continues. If they are to do so, they will very quickly need a broader base, in order to take advantage of economies of scale, sustain the rapid tempo that is essential for innovation, while shortening investment payback times, and cope with increasing competition on export markets.
56. The public telecommunications markets cover a range of products whose incorporation in networks subjects the carriers to constraints of a different type, which have repercussions on the methods of procurement.

These products can be classified into four main categories :

- a) consumer terminals (in particular basic telephone receivers);
- b) business terminals (modems, terminals, telex equipment, etc);
- c) transmission systems (using cables, optical fibres and microwave links);
- d) switching systems (electromechanical, space or time switching).

57. The procurement policy pursued by carriers 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.

58. Irrespective of the industrial policy standpoint, the dialectic of the diversification of public telecommunications procurements must therefore give due regard to objective arguments springing from technical, economic and organizational considerations.
59. It will be possible to open up the markets for consumer and business terminals to Community competition when the technical specifications concerning connection to networks have been harmonized sufficiently to ensure compatibility between receivers and public automatic switching units in a "standardized" area covering a major proportion of public procurements made by the carriers in the Community. The procedures proposed in action line III, whereby the results of tests to verify conformity with standards and type approval would be recognized on a reciprocal basis, should make it possible to satisfy this requirement.
60. Transmission systems

With the transmission function, we leave the realm of "single-cell" products and enter that of systems, which are by definition composed of a number of sub-systems.

If we look at complete long-haul transmission systems, including the transmission medium in the case of cable systems, it can be concluded that the technical obstacles standing in the way of diversified procurement for a given telecommunications network are relatively small.

It is technically possible in the short term to open up the markets at this product level.

Nevertheless, setting up a complete system - even if only partly equipped - is a major project, which places a limit on the number of such systems and may therefore make it difficult to open up the markets completely.

It would therefore be desirable to extend the opening-up of the markets to the procurement of sub-systems, which are by nature much more numerous than the complete transmissions systems of which they form part. At technical and functional level, thanks in particular to work carried out by international standardization organizations such as the CEPT and the CCITT, this appears in theory to be practicable : especially in modular sub-systems multiplex. For the sub-systems which make up on line equipment, the interdependence between sub-systems themselves and between sub-systems and support systems does not appear to be sufficient on existing systems to permit them to be separated.

In the medium term, by contrast, the effective interchangeability between modular sub-systems which make up the transmission systems must be an objective to be obtained within the Community, especially for fibre optics systems.

This objective could be attained provided that a body of common standards based on the CCITT standards can succeed in making functional sub-systems, including line equipment, effectively interchangeable.

61. Switching systems

The situation in this area is complex, not only because the amount of turnover at stake, but also and especially as a result of the industrial standing of European manufacturers, their strategy, Europe's position with respect to the United States and Japan and the difficulties involved in developing future systems. The Member States realized at a very early stage the importance of electronics and computer technologies in the future generations of switching systems. After the era of space switching in the sixties, R&D has been directed towards time-switching systems. Firms became involved without fully realizing the difficulties to be overcome in order to master the electronics, produce the necessary complex software and train the staff. There are nine switching systems in the Community ; when it is borne in mind that the development of a switching system for between 5 000 and 30 000 lines, for a given network, costs some 150-300 million ECU, it comes as no surprise that firms are not sure of being able to recoup their development costs. It has become all the more difficult to do so, because, in the countries in which one or more systems have been developed, the market has been reserved for industrialists whose development effort had been supported at national level.

If these circumstances continue, it appears hardly likely that the situation could quickly be changed so that a smaller number of switching systems would be available on a unified Community market and development costs could be recouped.

The solution must therefore be sought as part of a gradual process, which would rely on the development of switching for broadband networks and would involve deliberate re-shaping of the industrial structure, in particular through cooperation between manufacturers for the development of the future generation of switching systems.

62. The considerations set out in the foregoing lead to the conclusion that only a gradual process is likely to enable the market for telecommunications equipment procured by network carriers to be broadened.

The Commission proposes that this gradual expansion of the market be attained :

- a) in the case of consumer and business terminals purchased by carriers (particularly new telematics terminals), by asking the carriers to extend their invitations to tender for such equipment to all member states of the Community ;

- b) for any other category of equipment and in view of the present state of the affairs, characterized by nationally compartmentalized markets, R&D efforts, procedures of type approval, standards and network development strategies, the Commission considers that the opening-up of national markets will only be achieved gradually.

The first step towards this can be taken immediately, namely asking network carriers to extend their invitations to tender to all the Community Member States in respect of a minimum proportion to be determined (for example 10%) of the value of their annual orders of network components.

The existing compartmentalization should break down gradually under the combined effects of demand for services, evolution of networks and increasing realization of the significance of the Community-wide dimension; therefore the Commission considers that the Community's aim should be nothing less than the total opening up of markets for the new network components, especially third generation types.

However this aim can only be achieved gradually, depending on variables such as equipment types, schedules and geographical locations involved. The Commission proposes to gear the speed of this process to the implementation of the action programme.

63. Carriers would be invited to report regularly to the Commission on the measures they have taken to implement this policy. The Commission, assisted by an advisory liaison group, which could be the same as the one mentioned in action line III, would monitor the effective application of these measures, report to the Council on the subject at the end of a two-year period and, at the latest, propose at that stage additional measures aimed at gradually broadening the market.

With a view to introducing these measures, the Commission intends to submit to the Council a new version, amended along the lines set out in the foregoing, of its proposal for a recommendation concerning the first phase of the opening-up of public telecommunications markets (COM(80)422¹)

¹ this recommendation broadly provides that :

- for at least 10% of the total value of their annual equipment purchases, national carriers should call for tenders from firms established in other Member States ;
- for their purchases of "new telematic terminals", network carriers should call for tenders in other Member States ;
- a liaison group should be established to oversee and guarantee implementation of these plans.