COMMISSION OF THE EUROPEAN COMMUNITIES

COM(86) 205 final
Brussels, 20 May 1986

Proposal for a

COUNCIL RECOMMENDATION

on the Coordinated Introduction of the Integrated Services Digital Network (ISDN) in the European Community

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(submitted to the Council by the Commission)

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A. SUMMARY

In accordance with one of the objectives approved by the Council of Ministers on 17 December 1984 (1), the Commission is proposing a Recommendation concerning the coordinated introduction of the Integrated Services Digital Network (*ISDN*). This Recommendation will make a substantial contribution to the establishment of advanced telecommunications services and networks, and represents a major step towards the general Integrated Broadband Communications (*IBC*).

The proposed Recommendation has two objectives :

- promoting the rapid introduction of *ISDN* as a basis for a Community-wide telematics market ;

- providing more certainty for European industry and for the European investors in the telematics field about future network support : interface specifications, services offered and their timing, and geographical coverage.

The proposed Recommendation will, through the rapid Community-wide promotion of advanced telecommunications services and networks, substantially benefit the European user, the European Telecommunications Administrations, and European industry. It will allow in particular also small and medium-sized enterprises to have access to the new telecommunications services, which would otherwise only be possible economically for large enterprises. It will prepare Europe for its integration into the emerging world-wide advanced telecommunications networks.

B. EXPLANATORY MEMORANDUM

1. INTRODUCTION :

On 17th December 1984, on the basis of a Communication from the Commission, the Council approved the main objectives of a Community telecommunications policy (1).

These were :

(a) the creation of a Community market for telecommunications terminals and equipment ;

(b) improving the development of advanced telecommunication services and networks ;

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

(d) coordination of negotiating positions within the international organizations dealing with telecommunications, based on discussions held jointly with the Senior Officials Group for Telecommunications.

This draft Recommendation concerns the second objective. It is a major part of the overall concept of the Commission's short, medium, and long-term actions based on the six line Action Programme in the field of Telecommunications (1), aimed at ensuring that the Community, in its transition to the information age, will be equipped with efficient Community-wide telecommunications networks, services, and markets.

The technological efforts in telecommunications are covered by *RACE* (R&D in Advanced Communications technology for Europe). *RACE* has the specific long-term objective of accelerating the evolution towards economic integrated broadband services, aimed at ensuring that by 1995 the Community has truly Integrated Broadband Communications (*IBC*). The definition phase of *RACE* was decided by the Council on July 25th 1985 and will be completed by the end of 1986 (2).

The medium-term activities are focused, with a time horizon of 1990, on creating a network of broadband communications along the major communications arteries of Europe, using both optical fibres and satellites. This concept, commonly called the Transnational Broadband Backbone (*TBB*), will enable the business community, at least, to take advantage of the new services before the *IBC* is available Community-wide.

The short-term actions are directed towards areas where Europe has got itself, or is likely to get itself, into difficulties - for example mobile radio telephone, where currently a number of non-compatible systems co-exist in the Community ; TV broadcasting standards, where there is the need for a single standard ; and in particular the Integrated Services Digital Network, the *ISDN*, the subject of this draft Recommendation. The *ISDN* will play, in the years to come, the central role in telecommunications infrastructure evolution. Based on the on-going digitization of the telephone network, it offers the possibility of extending digital services using current technology through the existing telecommunications infrastructure, including the less favoured regions of the Community.

The Council has confirmed the central role of the *ISDN* in its Recommendation of 12.11.1984 on the introduction of services from 1985 "on the basis of a common harmonized approach" (3)

The European Parliament has emphasized the importance of the rapid development of advanced telecommunications infrastructure for the Community (4).

This draft Recommendation translates the determination expressed by both Council and Parliament into practice, for the field of the Integrated Services Digital Network.

II. TELEMATICS : ISDN, THE NEW MARKET BASE.

The Integrated Services Digital Network and its evolution into an Integrated Broadband Network will play a major role in shaping the new telematics market in the Community. It is therefore one of the major infrastructures needed to complete the establishment of the Internal Market by 1992, according to the general objective agreed by the European Council of Luxembourg of December 1985.

The development of telecommunications in the Community can be seen essentially as the development of three generations. First of all, there are the present telephone services which still account by far for the major part of the network operators' revenues. Secondly, the upgrading of the existing telecommuni

cations networks by integrating the whole range of new data services which have developed as specialised networks - the *ISDN*, with a basic user access of 144 kbit/s, allowing the simultaneous use of two 64 kbit/s (5) voice or data channels, and of an additional 16 kbit/s channel. Thirdly the emerging broadband networks at speeds of 2 Mbit/s and above, including cable TV systems.

ISDN, therefore, will be the main support for the multi-functional terminals for both voice and data, which will ensure both business and private communications. On a world-level, it is estimated that the integrated business information system market alone will account for more than US$ 200 billion per annum by the early 1990s, with a market of at least 20% of this in the Community.

The central role of *ISDN* will therefore be to provide the necessary support of these new terminal systems and the services based on them. This role is essential for :

- supporting the private terminal markets which are developing in this area ;

- the overall productivity of the Community's industrial and service sectors, by offering advanced telecommunications services to the European user.

ISDN will be the real economical means for offering wide support to the new telematics market, because specialised data networks will not be able to develop the economies of scale and scope, necessary under European conditions. *ISDN* must be able, in the longer term, to evolve towards the wider Integrated Broadband Communications (*IBC*), the convergence point of general network evolution for the nineties.

Major requirements for the *ISDN* to provide the basis of the Community's future telematics markets are the following :

- it should rapidly provide the basis for widespread development for the European telematics market. If the Community is not able to build up the basis for these new markets rapidly, European industry will not regain its position in this area with regard to the United States and Japan ;

- it must provide certainty for European industry and for the European private investor in the telematics field about future network support. This means certainty about the interface specifications, the services offered and the timing, and the degree of geographical coverage and therefore market size.

III. CURRENT STATE IN THE COMMUNITY

Given the central role of *ISDN*, and in agreement with the Action Programme in Telecommunications, confirmed by the Council on 17th December, 1984, the Senior Officials Group on Telecommunications (*SOG-T*) requested the Group for Analysis and Forecasting (*GAP*) (which it established for analysis of infrastructure evolution) to analyse *ISDN* as its first priority objective and to establish appropriate recommendations.

As regards the current state of affairs in the Community, the main findings of *GAP*, according to the presentation by each Member State of its plans for the introduction of *ISDN*, were the following (6) :

It is evident from the comparison of these plans that only the general concept of *ISDN* is common. In terms of dates for the introduction of new services, the specifications of the services, and specifications related to the network, there are significant differences from one country to another.

The general concept, the only point of overall commonality of these plans is that :

- the ISDN is considered to be a natural evolution of the existing telephone network, i.e. it should not be independent of the current telephone network but should support its progressive replacement. Throughout this phase, therefore, it should interwork with the current telephone network and with certain specialized networks ;

- although the initial subscribers will be professionals - large and small - the *ISDN* should also be aimed at the residential population. Thus it should not be a network dedicated to a closed subscriber population ;

- the dates of introduction, however, are very different from one country to another. Certain countries are already launching experiments today ; others do not foresee the introduction of *ISDN* before the 1990s and others again not before the mid-1990s.

ISDN will offer a wide range of new services such as high quality telephony, high speed facsimilé, high speed teletex, combined use of voice and data, and a large number of sophisticated supplementary services such as indicating to an engaged subsriber that a new calling subscriber is trying to reach him ; indicating to a called user information from the calling user ; indicating to the user the call charged ; and so on. These new services will establish a new degree of quality of service for the subscriber. They will allow in particular also small and medium-sized enterprises to have access to new telecommunications services, which would otherwise only be possible economically for large enterprises.

However, the definition of new services made possible by *ISDN* is both complex and difficult. This definition should enable a certain degree of uniformity for Europeans in the usage of communications facilities. Today not one of the new services - so-called bearer and teleservices - which exploit the potential of *ISDN* is sufficiently well defined - not even the simplest of teleservices, the telephone.

The set of teleservices is not completely defined, and the associated specifications for these teleservices are by no means complete.

Even for the services offered over existing networks, compatibility is not always achieved. Under these conditions, the terminal markets would remain to a large extent national markets, since, without a sufficiently precise definition of teleservices and their specifications, each country or each manufacturer would complete the specifications in its own way.

ISDN depends on the introduction of certain technical features which must be established rapidly, in particular the "signalling system N° 7" which makes the setting up of calls and communication over the *ISDN* network possible.

The CCITT signalling system number 7 is the key operational aspect of *ISDN*. Here again the specification of the ISUP (*ISDN* User Part) protocols is not very advanced and indeed there are outstanding questions on its current structure. The present definition of the *TUP* (Telephone User Part) does not support *ISDN* applications (see Glossary for explanation of the technical terms).

For an intra-European terminal market, precise interfaces are indispensable, both between PABXs and terminals and between terminals and the public exchanges.

The lack of compatibility of terminals and networks presents specific problems to multi-national corporations who are expected to be among the first major users of national *ISDN* services.

Europe thus divided is faced by two other countries, the USA and Japan, whose interior markets are considerably larger than any national market in Europe. Under these conditions, Japan and the USA are able to reach a rapid consensus on definitions and on precise specifications with a relatively short delay. Europe could therefore find itself dominated through competitive market pressures by one of these countries with the inevitable import of products. A delayed reaction by Europe to such a scenario would do little to redress the commercial balance of this sector.

IV. THE AIM OF THE PROPOSED RECOMMENDATION AND THE APPROACH CHOSEN

This proposed Council Recommendation aims at changing this state of affairs.

The Recommendation is the result of in-depth discussion by the experts of the Telecommunications Administrations within the framework of *GAP*, and of thorough consultation with *SOG-T*. *GAP* has developed the detailed recommendations which form the substance of this Recommendation. The recommendations have been submitted to the Telecommunications Administrations, the CEPT and industry, and have achieved wide consensus.

The Recommendation aims at a common pro-active policy across the Community, by means of :

- precise interfaces, in particular between public networks and private local networks. This would entail total compatibility of terminals at a European level and enable, by cooperation between manufacturers, consolidation of terminal production, leading to much stronger economies of scale across a market comparable with, or indeed superior to, those of the United States and Japan ;

- a coordinated approach towards introduction, in particular as regards the timing of *ISDN*, using the opportunity to transform the current uncoordinated development of national *ISDN*s into a Community-wide approach.
  Moreover, if the tight development timescales are adhered to and the standards defined, then the associated European equipment could be successful in export markets.

- European-wide coverage and sufficient penetration of the new services, as a basis for a Community-wide market. Within this coordinated approach, it is necessary to reach a critical mass of subscribers before a totally demand-driven policy can be followed. This critical mass is proposed to be about 5% of the 1983 telephone subscriber population in each country. The earliest practical starting date for this implementation is 1988 and the minimum period to achieve the critical mass in all countries is estimated to be five years; Thus it is essential that a full and complete specification by CEPT of the first standards and the first services to be introduced is achieved at the latest by the end of 1986.

These choices at a European level are very important to the establishment of significant European cohesion. Consideration must be given, on the one hand, to the development of service networks and terminals, which meet the expectations and demands of users and, on the other, to the possibility of providing implementations at reasonable costs and prices across the whole of the European networks.

It should be noted that the level of investment required for this approach is compatible with, and in some cases below that which is in any case announced by certain Member States for *ISDN* introduction . Nevertheless, given the total necessary amount of investment by the Telecommunications Administrations

for implementation of *ISDN*, estimated overall at 6 to 7 billion ECUs in the Community up to 1993 (additional to the investment for digitising the telephone networks), it will be important that the Community's financial instruments will play their full role for the establishment of this major Community infrastructure.

As regards certain less favoured regions of the Community, a special contribution to this effort will be made by the Programme *STAR*, proposed by the Commission to Council (7), in accordance with the agreed objective of improved access for the less favoured regions of the Community to advanced services and networks (1).

As an accompanying measure, the Commission intends to raise Community-wide awareness for the new potential, in particular in the business and private sector, by sponsoring continuing programmes of information dissemination relating to the development of *ISDN* services and standards. Given the very tight time schedule for the full specification of services and standards, the Commission proposes to provide for support of the work of the Telecommunications Administrations within the CEPT, within the framework of its agreement on the carrying out of work by this organisation signed in July 1984. As regards the timely development of *ISDN* compatible terminals, the Commission will study the situation and propose measures as appropriate.

The Telecommunications Administrations and the telecommunications industry have positively responded to the analysis and recommendations. The way seems now open for a smooth European-wide introduction of *ISDN* offering rapidly advanced telecommunications services and networks to the European user. For its part, the Commission will, besides the application of the Community measures relevant to the sector, take all usefull steps, in order that the present Recommendation be applied in all respects and will be followed, as required, by additional appropriate proposals.

V. CONCLUSIONS

The attached Proposal aims at the Coordinated Introduction of the Integrated Services Digital Network (*ISDN*) in the Community. It aims at substantially improving the development of advanced telecommunications services and networks, as requested by the Council of Ministers on 17th December, 1984. The recommendations are based on the careful analysis and work of the Senior Officials Group on Telecommunications (*SOG-T*), and its sub-group *GAP*. The Council is therefore requested to adopt the attached Proposal for a Recommendation.

FOOTNOTES

(1) See conclusions of the Council of 17th December 1984 (ref/ 11477/84) and Communication by the Commission to the Council on telecommunications of 18.5.1984 [COM(84)277].

(2) See COM(85)145, 25.3.1985 and COM(85)113, 25.3.1985.
For a review of the status of Community action on telecommunications, see COM(85)276, 30.5.1985.

(3) O.J. N° L 298/49, 16.11.1984

(4) Report of the European Parliament on Telecommunications in the Community (Leonardi Report), Doc 1-1477/3, 3.3.1984.

(5) 64 kbit/s is the transmission speed of a digitized voice channel, the digital equivalent of the current telephone line.

(6) Proposals by the Analysis and Forecasting Group (*GAP*) for the Coordinated Introduction of Integrated Services Digital Network in the Community, 5.6.1985

(7) Proposal for a Council Regulation (EEC) instituting a Community programme for the development of certain less-favoured regions of the Community by improving access to advanced telecommunications services (*STAR* programme), COM(85)836, 20.1.1986.

APPENDIX

Glossary of technical terms

The following list of technical terms is included for better understanding of the Recommendation.

Addressing	The process by which a calling user indicates the identity of the called user on a particular call. It includes a network addressing (numbering) component to identify the called user-network interface, and may include further information (sub-address) to identify a particular terminal beyond the public network
Advice of charge	Indicates to the user the call charge
Bearer Service	A type of telecommunications service that provides the capability for the transmission of signals between user network interfaces
Call-Waiting	Indicates to an engaged subscriber that a new calling subscriber tries to reach him
Called User Identification	Indicates the identification of the selected called user.
Calling line Identification	Indicates the identification of the calling user line
Closed User Group	Part of the users of a network who form a special group for taxation, numbering, facilities, etc...
Completion of call Meeting busy	When the called subscriber is busy, the call is re-established as soon as this subscriber becomes free
Conference call	Call involving more than two subscribers
Direct dialling in	Possibility to integrate the numbering plan of a PABX in the national plan, allowing to reach from the public network directly a terminal connected to this PABX

Diversion	Possibility for a subscriber to be called on another line than his own line
Freephone	Subscribers for which, when called, the calling subscriber is not charged
ISUP	*ISDN* User Part = part of the N° 7 signalling systems allowing *ISDN* facilities
Malicious Call Identification	Possibility to register the calling line of a call
Numbering	see "Addressing"
PSTN	Public Switched Telephone Network
SCCP	Signalling Connection Control Part (Part of the N° 7 signalling system allowing transmission of signalling or other information independently of the establishment of a telephone call)
Signalling system N°7	The new CCITT system allowing two switching centers to exchange information, e.g. information needed for establishing a telephone call
S/T reference point	Possible location of access for Bearer Services supported by an *ISDN*. If physical, the corresponding interface may have mainly the following structures : - basic interface structure at 144 kbit/s (basic access, available at S or T reference point) : 2x 64 kbit/s "B" channels and 1 x 16 kbit/s "D" channel. In some configurations, S and T reference points are joined. - primary interface structure at 2048 kbit/s (primary access, only available at T reference point) : 30 x 64 kbit/s "B" channels and 1 x 64 kbit/s "D" channel
Teleservice	A type of telecommunication service that provides the complete capability, including terminal equipment functions, for communication between users according to protocols established by agreement between Telecommunications Administrations
TCAP	Transaction capability = Part of the N° 7 signalling system allowing the remote control of a network node from an appropriate control center
Three party call	State of a call involving 3 lines
TUP	Telephone User Part = Part of the N° 7 signalling system allowing the current telephone services

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THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community,

Having regard to the proposal from the Commission,

Having regard to the Opinion of the European Parliament[1],

Having regard to the Opinion of the Economic and Social Committee[2],

Whereas the Council Recommendation 84/549/EEC(3) calls for the introduction of services on the basis of a common harmonized approach in the field of telecommunications[3],

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1/ .....,

2/ .....

3/ OJ N° L 298, 16.11.1984, p. 49

Whereas the resources offered by the telecommunications networks should be utilized to the full for the economic development of the Community ;

Whereas the technical resources afforded by the Integrated Services Digital Network (ISDN) make it possible to provide a range of harmonized and compatible services for all Community users and to create new means of communication using sound, the written word and images ;

Whereas current investment in digital switching and digital transmission equipment in the Member States makes it possible to envisage the development of the Integrated Services Digital Network ;

Whereas a coordinated policy for the introduction of the ISDN will make possible the establishment of a European market in telephone and data-processing terminals capable of creating, by virtue of its size, the indispensable development conditions which will enable the European telecommunications industries to maintain and increase their share of world markets ;

Whereas it is appropriate to implement Council Directive 83/189/EEC[4] laying down a procedure for the provision of information in the field of technical standards and regulations ;

Whereas consideration should be given to the proposals for directives made by the Commission on standardization in the field of information technology and telecommunications and on the first phase of the establishment of mutual recognition of type approval for telecommunications terminal equipment, and to any later proposal for directives that it may take ;

Whereas it is appropriate to make full use of the potential of the Community's financial instruments in order to promote the development of the Member States' infrastructure ;

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[4] OJ No L 109, 26.4.1983, p. 8

Whereas the implementation of such a policy will lead to closer cooperation, at Community level, between the telecommunications industry and the Administrations and the Recognized Private Operating Agencies offering telecommunications services, hereinafter referred to as "Telecommunications Administrations";

Whereas a favourable opinion has been delivered by the Senior Officials Group on Telecommunications (SOGT) according to which the detailed recommendations drawn up by the Analysis and Forecasting Group (GAP) provide a strategic basis for the development of an ISDN that will truly enable European users to communicate efficiently and economically ;

Whereas favourable opinions on these recommendations have been delivered by the Telecommunications Administrations, by the European Conference of Postal and Telecommunications Administrations (CEPT) and by the telecommunications equipment manufacturers in the Member States ;

HEREBY RECOMMENDS

1. That the Telecommunications Administrations implement the detailed recommendations concerning the coordinated introduction of the Integrated Services Digital Network (ISDN) in the Community, as described in the Annex.

2. That implementation of these recommendations focuses particularly on :

   a) standardization and implementation of the S/T interface,

   b) the time table set out,

   c) the network penetration objectives, as compatible with commercial strategies,

3. That the Telecommunications Administrations continue the harmonization work within the European Conference of Postal and Telecommunications Administrations (CEPT), particularly concerning the objectives and time table drawn up in the Annex for those specifications on ISDN which have still to be completed.

4. That the Telecommunications Administrations undertake all those measures which will facilitate the coordinated introduction of the ISDN, particularly those relating to implementation of CEPT specifications in equipments concerned by ISDN.

5. That the Community financial instruments take this Recommendation into account within the framework of their interventions, particularly as regards the investment required for ISDN implementation .

6. That Member State Governments encourage Telecommunications Administrations to implement this Recommendation.

7. That Member State Governments inform the Commission at the end of each year, from the end of 1986, of the measures taken and problems which may be encountered in the course of implementing this Recommendation. The progress of work will be examined by the Commission and the Senior Officials Group on Telecommunications set up by the Council on 4 November 1983.

Done at Brussels,

for the Council,

The President

ANNEX TO THE RECOMMENDATION

DETAILED RECOMMENDATIONS CONCERNING THE COORDINATED INTRODUCTION

OF THE INTEGRATED SERVICES DIGITAL NETWORK (ISDN) IN THE COMMUNITY

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1. RECOMMENDATIONS ESTABLISHED FOR THE RAPID CONVERGENCE OF EUROPEAN ACTIVITY ON THE INTRODUCTION OF ISDN.

All the following recommendations are related and should not be dissociated.

1.1. General Philosophy -

All Member States are in agreement that ISDN (subscriber access at 144Kbit/s and 2 Mbit/s) should be considered as a natural evolution of the telephone network, i.e. it should be used by both professional and residential subscribers, and the existing structure of the current telephone network should not be fundamentally changed by this evolution. The first decisions must take this into account.

Nevertheless, the speed of market penetration will depend on numerous economic, social and cultural factors and of course, on the impact of the network itself, i.e. the dissemination or actual penetration of the new services at any point in time.

It is clear that in all Member States, the professional sector has significantly greater expectations and requirements for the services than the residential sector.

The professional sector will be penetrated through the supply of multiservice PABXs and of ISDN accesses. In this sector, a major submission is that the terminals connected to ISDN basic access and behind the PABXs should also be compatible, which necessitates the use of a common standard for both public and private networks.

A significant demand from the residential sector will only develop following a sustained policy of anticipated supply launched over such a period as to attain a critical mass of new service penetration and thus creating in effect a "snowball" reaction.

This policy should be supported by marketing and tariffing activities to help stimulate demand.

1.2. Definition of the interface between the public and private network

A standard physical interface between ISDN terminals and the public network is recommended.
This should be at the CCITT S or T reference point and should be in accordance with CCITT and CEPT recommendations.
In the case of basic access (i.e. 144Kbit/s) the physical interfaces at the S and T reference points must be identical.
This terminal interface should also be offered by PABX manufacturers so that common design of terminals can be achieved.

The above statements imply that for basic access at least the NT1 function is provided by the public network operator.

Agreement is urgently needed between Telecommunications Administrations, within the framework of CEPT, on a standard physical interface at the T reference point for primary rate access (i.e. 2048Kbit/s).

Clearly, during a transitional phase of several years PABX multiservices will use different standards but as soon as possible these PABXs ought to be able to offer, in addition to these standards, the S Interface. The manufacturers's representatives consulted were in agreement on this point.

2. SERVICES TO BE DEFINED AND SPECIFIED IN DETAIL BY THE END OF 1986 IN ORDER TO BE PROVIDED IN ALL MEMBER STATES STARTING FROM 1988.

The following items will have to be specified in detail at the latest by the end of 1986.

a) Bearer services -

Circuit switched transparent at 64kbit/s ;

b) Teleservices

- Telephony 3.1. KHz at 64Kbit/s ;
- Facsimile at 64Kbit/s (Group IV) ;
- Teletex at 64Kbit/s ;
- Mixed-mode teletex/facsimile at 64Kbit/s.

c) Supplementary services -

In order to enhance the services, a common set of supplementary services among the Member States should be implemented.
These supplementary services are intended to be added to those already available in the telephone network and to those inherent in the definition of ISDN protocols. (Procedures for sub-addressing, terminal portability, user to user signalling in call control messages have to be specified, although their implementation is foreseen at a later stage).
The Telecommunications Administrations are invited to establish within the framework of CEPT the following set :

- call-waiting
- calling-line identification
- closed-user-group (this service might be implemented later by some countries)
- direct-dialling-in

d) Adaptors - (for connection of existing terminals to the ISDN via the S interface)
   - adaptor X21
   - adaptor X25 on the B channel (for access to packet switched services)
   - A/D adaptor specified according to national needs

Note 1 - Special attention should be given to the definition of personal computer use on the bearer service at 64Kbit/s.

Note 2 - Special attention should be given to compatibility between circuit switched and packet switched services, where compatibility may be realised in the terminal or in the network.

3. SERVICES TO BE SPECIFIED BY THE END OF 1987 AND WHICH MIGHT BE IMPLEMENTED DURING THE PERIOD 1988-1993.

(THE PRECISE DATE OF INTRODUCTION OF SUCH SERVICES WILL BE DECIDED AS SOON AS POSSIBLE).

a) Bearer Service -

Packet bearer service on D channel

The Telecommunications Administrations are invited to study within the framework of CEPT the usefulness of teleservices in particular videotex, teletex, message handling and teleaction on packet bearer service.

b) Teleservices at 64Kbit/s -

In order to augment demand, the following list of teleservices should be considered with priority :

- Telephony (7KHz) at 64Kbit/s
- Audioconference at 64Kbit/s
- Videotex alphageometric at 64Kit/s
- Image transmission and computer communication at 64Kbit/s. For these two teleservices, the Telecommunications Administrations are asked to identify within the framework of CEPT possible services and produce detailed specifications of first services.

c) Adaptors -

- X21 bis
- for asynchronous terminals (V24)

d) Supplementary services -

The Telecommunications Administrations are invited to study within the framework of CEPT, by the end of 1987, the following list of supplementary services based on CEPT's own list.

Advice of charge
Completion of call meeting busy
Conference call
Diversion
Freephone
Malicious call identification
Three party call
Called user identification

Note - The provision of these supplementary services assumes the availability of an ISUP. Should the ISUP not be available, their provision via the TUP+ may be restricted.

4. SERVICES TO BE SPECIFIED BY THE END OF 1990

a) Teleservices based on packet service -

(If the Telecommunications Administrations agree on the need to specify such packet-services, ref. to par. 3.a)

- Teletex
- Videotex
- Message handling (see CCITT rec. X400)
- Teleaction, set of services providing to the users a reliable transfer of small volumes of packet-sized information.
  This service may be adapted to several teleservices : telealarm, telesupervision, telealert, telecommand, telemetry, teleshopping, ...

b) Teleservices based on 64Kbit/s -

- Audiography at 64Kbit/s
- Alphaphotographic videotex at 64Kbit/s
- If possible, viewphone at 64Kbit/s

c) Supplementary services -

work to be continued

5. NUMBERING, ADDRESSING AND SIGNALLING -

The achievement of the full CEPT specifications on ISDN user part (ISUP), Signalling Connection Control Part (SCCP) and Transaction Capabilities (TCAP) is recommended to the Telecommunications Administrations in order to reach a common standard within Europe at the earliest opportunity.

As an interim solution, it is recommended to all Telecommunications Administrations that, starting from 1988 and when CCITT nO 7 is introduced, international digital exchanges (linked by digital circuits or possibly also by analogue circuits) should be interconnected by means of the enhanced Telephone User Part (TUP+) for both PSTN and ISDN services.

The Telecommunications Administrations should provide within the framework of CEPT detailed technical specifications on TUP+ by the end of 1986.

It is required that interworking with the existing public telephone network is also achieved, including some means for identifying different teleservices and terminals.

Note - The TUP+ is based on the Red Book TUP of CCITT enhanced to meet ISDN requirements, including the supplementary services hereabove.

6. TARIFF CONSIDERATIONS -

The issue of tariff levels and structures for the ISDN is fundamental for its rapid take-up

In the longer term, following an inevitable period of high investment costs, the level of investment per basic access should be comparable with that of the current telephone network, with an investment structure related to the type of transmission and digital switching which may be different from that of today.

Several studies on ISDN tariffs have still to be completed. The Telecommunications Administrations are invited to study within the framework of CEPT the following proposals.

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

- In the transitional phase from the analogue network to the ISDN corresponding to the period 1988-1993, the Telecommunications Administrations are requested to study within CEPT the relationship between, on the one hand, the tariff threshold applicable to ISDN services and to ISDN basic access and, on the other, tariffs applicable to telephony.

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

- An agreement should be obtained on the ratio between the monthly rental for the primary rate access (2048Kbit/s) and that for the basic access (144Kbit/s).
  A ratio of the order of 10 might be discussed.

7. INTERWORKING BETWEEN NATIONAL ISDN TRIALS -

Those Administrations implementing national trials of ISDN before the full implementation of the present recommendations should endeavour, where provided, to interconnect these services in order to increase early experience of ISDN in Europe.

8. LEVEL OF PENETRATION -

Forecasts of demand in new fields, such as the services supported by ISDN, do not provide a particularly relevant basis for market planning.

Nevertheless, it is realistic to set objectives attainable over the next 8 years, i.e. up to the end of 1993, for a level of penetration of ISDN which permits the market for services and terminals to reach a mature phase.

The objective should be for an adequate geographic coverage and rate of penetration at national level for each country.

The Administrations should plan to provide by 1993 ISDN accesses for a number equivalent to 5 % of 1983 subscriber main lines. This figure depends, among other things, on the capability of the industry to offer cost effective ISDN solutions for the infrastructure and the terminal equipments.

The territorial coverage should be sufficient to permit 80 % of customers to have the option of the ISDN access.