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COMMUNICATION FROM THE COMMISSION TO THE COUNCIL  
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**on**

**Preparatory Actions in the field of Trans-European Networks:  
Integrated Broadband Communications (TEN-IBC)**

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## ***Summary***

These actions concern the second domain to be addressed in the framework of Trans-European communication networks. The first concerns Integrated Service Digital Networks (ISDN) which is the subject of a special proposal.

High-speed (broadband) networks will enable a new range of integrated services to be introduced in Europe, with combinations of data and interactive video services. These services will become increasingly important to business competitiveness and allow a number of social objectives to be effectively addressed.

The stimulation of Trans-European broadband network and service development is a necessary next step towards the realisation of the objectives of EC policies. However, Europe's high-speed communication networks are still fragmented, and differ considerably in their level of development. This fragmentation translates into missing links for the functioning of the internal market and the performance of the EC economy in international competition.

Broadband networks must be developed along the same general direction within Europe, and must be broadly aligned with developments in other regions of the world. Commonly accepted development "guidelines" (schéma directeur) are required.

However, the understanding of applications and services to be supported by the network is still incomplete. It will be necessary to undertake a systematic investigation of the essential features and issues in the framework of feasibility studies. For this reason, the development of "guidelines" (schéma directeur) needs itself to be the subject of substantial feasibility work.

This Communication describes the preparatory actions adopted by the Commission on ....

## Preparatory Actions in the field of Trans-European Networks: Integrated Broadband Communications (TEN-IBC)

### 1. Background

The competitiveness of European economies depends on the early availability of trans-European advanced communication. The Commission has adopted Communications on "Industrial policy in an open and competitive environment"<sup>1</sup>, and on "The European telecommunications equipment industry"<sup>2</sup>, as well as the "1992 Review of the situation in the telecommunications services sector"<sup>3</sup> which have identified the need to improve the competitiveness of Europe's telecom vendors, operators and service providers.

Europe can benefit from economies of scale, scope and integration in the transition to broadband communication in its socio-economic development: The free circulation of people, goods, capital and services in the Community now requires the development of trans-European communications. The implementation of trans-European networks will provide a key infrastructure for the proper functioning of the internal market<sup>4</sup>.

The Council Decisions adopting the Programme RACE<sup>5</sup> have as objective the "Introduction of Integrated Broadband Communications, taking into account the evolving ISDN and national introduction strategies, progressing to Community-wide services by 1995". The results have prepared the ground for the introduction of integrated Trans-European broadband communications (IBC), starting in 1995.

However, the commercial introduction requires a better understanding of the non-technological aspects and feasibility studies to explore the optimum way of overcoming missing links. Consultation of the sector actors has resulted in the definition of a phased approach to the introduction of trans-European integrated broadband services (TEN-IBC).

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<sup>1</sup> Bulletin of the European Communities, Supplement 3/91, November 1990

<sup>2</sup> Communication of the Commission, SEC(92)1049 final of 15 July 1992

<sup>3</sup> Communication of the Commission, SEC(92)1048 final of 21 October 1992

<sup>4</sup> Communication of the Commission "Towards Trans-European networks - A programme of community action", COM(90)595 of 10 December 1990

<sup>5</sup> Council Decision of 14 December 1987 on a Community programme in the field of telecommunications technologies - R&D in advanced Communications technologies in Europe (RACE programme); 88/28/EEC: O.J. No L 16/35, 21.1.88

## 2. The Current Situation

Advanced communications are crucial to the well-being of national economies and to that of the Community as a whole. Not only is an increasing proportion of national wealth taken up by investment in telecommunications, but advanced telematics services have an ever-larger impact on economic competitiveness and on quality of life.

The Treaty of European Union calls for the establishment of 'guidelines' in view of the introduction of trans-European broadband networks in the Community. The Treaty foresees actions favouring the interconnection and interoperation of the national networks and the access to these networks, taking into account the necessity to link the peripheral regions with the central regions of the Community.

The technological breakthroughs are changing the price/performance of telecommunications in a fundamental way and pose both a major opportunity and challenge to the Community. This is particularly true in the area of broadband communications. The main reasons for the introduction of broadband networks are

- o improved cost/performance giving industry new competitiveness, and the
- o use of wider bandwidth for new services to the end user.

Applications of advanced communications will become increasingly multi-media, with a changing mix of image, data and voice configurations during a "call". This requires increased bandwidth and greater service integration, both to the office and the factory of the future as well as the home. Many new communications services will include both conversational and distributive services. Typical growth areas reflecting future user demand include:

- o multimedia workstations (voice, text, graphics, still and moving images)
- o data transmission (eg LAN interconnection, CAD/CAM, Host to Host Links)
- o Desk Top Publishing
- o medical Imaging
- o document and video Retrieval (eg for maintenance, trade, home shopping, education and research)
- o colour facsimile
- o table-top video conferencing and video telephone
- o HiFi and digital HDTV/Video.

Throughout there is a common demand for low cost, mobility, flexibility, service quality and open access, ie unrestrained interworking of services irrespective of the infrastructure, technology, operator, service provider or the user equipment. Functional integration and higher bandwidth are not only a technical prerequisite for responding to evolving user demands, but is also a key factor for achieving low costs.

The evolution in value-added services and user equipment will be fast, driven by rapid innovation and new service demand (comparable to the growth of Facsimile services since the 1980s). Such rapid change is not easy to follow in the underlying infrastructure, in network equipment and network management. The pace of network evolution is constrained by the necessity to preserve network integrity and by the large scale of systems. This favours incremental introduction of advanced systems, inter-working with the installed capacity.

Significant work has already been undertaken. Europe has already a significant fibre optic trunk network. Islands of optical fibre are developing in major commercial centres in several European countries, as well as in the United States. Once these are in place, broadband switches providing an overlay of fast trans-European communications services will be cost-effective as early as 1992-1993. The EC RACE programme has established Common Functional Specifications and the technology base for the Europe wide introduction of Integrated Broadband Communication, IBC<sup>6</sup>.

### 3. The Rationale for Preparatory Actions

The stimulation of Trans-European broadband network and service development is a necessary next step towards the realisation of the objectives of EC policies. However, Europe's high speed communication networks are still fragmented, and differ considerably in their level of development. This fragmentation translates into missing links for the functioning of the internal market and the performance of the EC economy in international competition.

The understanding of applications and services to be supported by the communications networks is today still incomplete. Further investigations and analyses are needed in several areas such as target specifications, network evolution including terrestrial systems, mobile and satellite communications, service infrastructure evolution, engineering concepts, operational principles, quality of services, market demand and traffic forecast, investment needs, sources of funding, and risks. The technical assessment will be also needed with regard to conformance with common integrated broadband communications strategies, and common functional specifications and standards.

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<sup>6</sup> IBC (Integrated Broadband Communications) is an evolutionary concept defined as follows:

*"Integrated"* points to "integrity" of the whole network, and therefore to the proper interworking of all its essential constituent parts, including the existing and emerging ones: voice telephony, packet, ISDN, broadband, satellite and mobile. It also signifies the integration of services (at the user and the appropriate network levels).

*"Broadband"* designates the total mix of services to be considered, starting from ISDN, up to what will be required by a realistic introduction of video (interactive and distributive) services (ie 140 Mbits/s and more at the user interface).

*"Communication"* includes the "conventional" switching/transmission/CPN functions, but also advanced features to make service provision user-friendly, performing and economically sound.

This present situation therefore requires, as a prerequisite to further proposals on the implementation of broadband communications, substantial feasibility studies, validation by trials and consolidation of the results in the context of preparatory actions.

Broadband networks must be developed along the same general direction within Europe, and must be broadly aligned with developments in other regions of the world. Commonly accepted development "guidelines" (schéma directeur) are required.

However, the understanding of applications and services to be supported by the network is still incomplete. It will be necessary to undertake a systematic investigation of the essential features and issues in the framework of feasibility studies. For this reason, the development of "guidelines" (schéma directeur) needs itself to be the subject of substantial feasibility work.

The objective of these preparatory actions is to formulate a set of coherent guidelines for the introduction of transeuropean broadband communications networks in the Community.

#### 4. The Objectives and Scope of Preparatory Actions

The objective of the guidelines will be to facilitate the development of Trans-European integrated broadband communications services (IBC), to strengthen the economic and social cohesion of the Community, the competitiveness of European industry, and to establish the techno-economic feasibility of trans-European IBC applications.

The specific objectives of the preparatory actions are

- 1) the development of a framework of action for the sector actors drawing maximum benefit of the Community dimension and making an appropriate contribution to the socio-economic cohesion of Community and its international competitiveness.
- 2) the development of a consensus on guidelines and establishment of techno-economic feasibility of the applications in view of the introduction of trans-European integrated broadband communications oriented to meet real user requirements, promoting timely usage while taking into account the impact on competitiveness and regional development.

The preparatory actions include investigations relating to trans-European developments of

- o *Bearer Networks*, with switched and managed broadband capabilities, providing a Bearer Platform, and enabling *interconnection*.
- o *Service Networks*, providing compatible telematics services and their management throughout the Community, providing a Service Platform, and thus ensuring *interoperation*

- o *Application* Networks for Pan-European applications, interlinking users sharing the same application type (ie Generic Applications), providing an Application Platform, and thus ensuring *interworking*
- o *Terminal* equipment and the associated Software, based on modular standardisation.

The preparatory actions will address the

- Development of target specifications,
- Analyses of investment and inter-working implications in each Member State, and
- Consolidation and consensus development of guidelines
- Validation in the context of trials.

## **5. Implementation Framework**

Trials and investigations of common interest eligible will be implemented in the form of a set of feasibility studies carried out in the context of trials.

Interest exists in the following areas:

- o Citizen Networks (Health Care, Social Services, Transport, Education/Training, Telecommuting...)
- o Networks of Expertise and Science (including High Performance Computing)
- o Industry Networks (providing for the needs of manufacturing industry and their relations with supplier and customers)
- o Business Networks (addressing the needs of service industries with particular reference to the needs for equal access to services throughout Europe)
- o Administrative Networks (providing for the provision of cost-effective administrative services to the citizens and business throughout Europe)
- o Media Networks (providing for the development of general purpose dial-up video services and interactive multimedia services based on digital video).

The choice between the areas of interest will be made in the evaluation of proposals for trials.



The trials will use the evolving service infrastructures and public bearer networks as available, eg:

- o ATM Trial network
- o IBC islands
- o Satellite networks
- o Cable Networks
- o Mobile Networks

The preparatory actions will be implemented on the basis of a close co-ordination with policies at a national level, notably with the objective of ensuring and maintaining interconnectivity and interoperability.

With the understanding that a selection of areas will be made in the evaluation of proposals, a Call for Proposals will be published for the following tasks:

**T0.1 Operational Europe-wide Applications - IBC Trials - for “Citizen Networks”**

The establishment of operational Europe-wide IBC applications that are feasible in a short time frame, have a high degree of potential European content, benefit European social and political cohesion and economic competitiveness, and have direct applicability and added value to Health Care, Social Services, Transport, Education/Training, Telecommuting.

**T0.2 Operational Europe-wide Applications - IBC Trials - for “Networks of Expertise and Science”**

The establishment of an operational Europe-wide IBC applications that have direct applicability to the scientific community, including High Performance Computing.

**T0.3 Operational Europe-wide Applications - IBC Trials - for “Industry Networks”**

The establishment of an operational Europe-wide IBC applications that have direct applicability to the needs of manufacturing industry and their relations with supplier and customers.

**T0.4 Operational Europe-wide Applications - IBC Trials - for “Business Networks”**

The establishment of an operational Europe-wide IBC applications that have direct applicability to the needs of service industries with particular reference of the needs of equal access to services throughout Europe.

### **T0.5 Operational Europe-wide Applications - IBC Trials - for “Administrative Networks”**

The establishment of operational Europe-wide IBC applications that are feasible in a short time frame, have a high degree of potential European content, benefit European social and political cohesion and economic competitiveness, and have direct applicability and added value to the provision of cost-effective administrative services to citizens and businesses throughout Europe.

### **T0.6 Operational Europe-wide Applications - IBC Trials - for “Media Networks”**

The establishment of an operational Europe-wide IBC applications that have direct applicability to the development of general purpose dial-up video services and interactive multimedia services based on digital video.

### **T1.1 Target Specifications - Trans-European Applications**

The establishment of a target specification for trans-European Applications, and the assessment of the size of the European market for commercially viable IBC applications.

### **T1.2 Target Specifications - Service Evolution**

The identification and specification the services to be implemented in Guideline 1

### **T1.3 Target Specifications - Network Evolution**

The establishment of a target network evolutionary scenario to support the trans-European applications and services

### **T2.1 Analyses of investment and interworking implications nationally**

At the national level, the definition of an evolutionary scenario to reach the target specifications for trans-European applications, services and networks.

### **T2.2 Analyses of investment and interworking implications in Europe**

At a European level, the definition of an evolutionary scenario to reach the target specifications for trans-European intercommunication and interworking of applications, services and networks.

### **T2.3 Analyses of investment and interworking implications internationally**

At a global level, the definition of an evolutionary scenario to reach the target specifications for trans-European intercommunication and interworking of applications, services and networks.

### **T3.1 Consolidation - Trans-European Applications**

Based on the national, European and international analyses, the establishment of an agreed plan for the introduction of trans-European Applications

### **T3.2 Consolidation - Service Evolution**

Based on the national, European and international analyses, the establishment of an agreed plan for the introduction of trans-European services

### **T3.3 Consolidation - Network Evolution**

Based on the national, European and international analyses, the establishment of an agreed network evolutionary scenario to support the trans-European applications and services

### **T3.4 Consolidation - Guideline 1**

The integration of the results into a "Guideline 1 for Trans-European Networks - Integrated Broadband Communications" to serve as a basis for IBC realisation, based on the consolidated plans.

The community contribution to feasibility studies may be up to 100 % of the total costs of studies and up to 50% for the participation in trials.

The Commission shall keep informed the RACE Management Committee relating to technology matters and the Senior Officials Group Telecommunications for matters relating to the Telecom Policy. It shall also keep informed other appropriate Committees.

At the end of the action, the Commission will submit a final report to the Council and Parliament.

The report will form one of elements for further proposals concerning the Trans-European Telecom Broadband Networks.

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# DOCUMENTS

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