

# COMMISSION OF THE EUROPEAN COMMUNITIES

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## COMMUNICATION FROM THE COMMISSION

related to the development of the

**Integrated Services Digital Network (ISDN)**

**as a trans-European Network**

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Proposal for a

**COUNCIL DECISION**

on a series of guidelines for the development of ISDN as trans-European network

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Proposal for a

**COUNCIL DECISION**

adopting a multi-annual Community action  
concerning the development of  
ISDN as a trans-European network

(presented by the Commission)

Contents of the draft Communication

**Summary**

- 1 ISDN as trans-European network : the reasons for a new phase of community action**
- 2 Series of guidelines for ISDN**
  - 2.1 Objectives
  - 2.2 Priorities
  - 2.3 Broad *lines* of measures
  - 2.4 Projects of common interest
    - 2.4.1 Projects related to *Line* 1)
    - 2.4.2 Projects related to *Line* 2)
    - 2.4.3 Projects related to *Line* 3)
    - 2.4.4 Projects related to *Line* 4)
- 3 The contribution of the Community: the Multi-Annual Action TEN-ISDN**
  - 3.1 Introduction
  - 3.2 Support for the projects of common interest
    - 3.2.1 The Feasibility Studies
    - 3.2.2 Financial incentives for the execution of the projects of common interest
    - 3.2.3 Importance of two of the projects of common interest: telematic platform and Eurolabel
  - 3.3 Measures in support of interconnectivity and interoperability
  - 3.4 Financial aspects
- 4 The Coordination of national policies**
  - 4.1 General aspects
  - 4.2 The Committee TEN-ISDN
  - 4.3 The EURO-ISDN coordination platform
- 5 Cooperation with third countries**
- 6 The reasons of the Community intervention in the field of the ISDN**
- 7 Conclusions**



**Table of annexes**

- Annex A: Overview on the ISDN concept**
- Annex B: Scope of EURO-ISDN**
- Annex C: Summary table on EURO-ISDN availability**
- Annex D: % territorial coverage of Euro-ISDN**
- Annex E: Matrix on Euro-ISDN interconnections**

## SUMMARY

The purpose of this communication is to propose a set of measures concerning the development of ISDN as a trans-European network (TEN-ISDN) in order to support the availability of an advanced telecommunications infrastructure, so that all participants of the internal market, and notably the many small and medium sized enterprises have better chances to exploit the benefits of the market without internal frontiers

Such an advanced infrastructure, once in place, will thus contribute to the functioning of the internal market and to the re-inforcement of the competitiveness of Europe.

ISDN, is a general, multi-purpose network integrating a large variety of voice, data and image services via a single network access. Given that ISDN is evolving out of today's telephone network, it has a natural vocation as European-wide network.

Since 1984, ISDN is a key subject of the Community's telecommunications policy, the gist of which is to arrive at harmonised introduction of ISDN in all Member States.

Several Council measures have focussed on the coordinated introduction of ISDN and in June 1992, the Council has underlined the importance to develop ISDN as a trans-European network.

Based on the provisions of the Treaty and on the preceding Council measures referred to above, the Commission is proposing a framework for a Community-action with the following elements:

First, the adoption of a series of guidelines for the development of ISDN as a trans-European network covering the objectives, priorities, broad line of measures and the projects of common interest.

Secondly, the adoption of a multi-annual Community-action concerning the implementation of the projects of common interest and measures in support of interoperability. This Community-action will include mainly feasibility studies and implementation support in the form of interest rate subsidies and loan guarantees. Only measures where the defined objective cannot be attained by an action at the level of the Member States are covered.

Thirdly, the setting up of a high-level coordination group assisting the Commission in the execution of the multi-annual action.

Finally, with a view to the global nature of ISDN, the Commission proposes to begin exploratory discussions with non-EC countries, the EFTA in particular, to assess how far projects of common interest can be extended to those countries.

This communication is accompanied by two proposals for Council Decisions, one on the overall guidelines, the other on the multi-annual Community-action.

**1. ISDN AS TRANS-EUROPEAN NETWORK :**

**THE REASONS FOR A NEW PHASE OF COMMUNITY ACTION**

1. One of the goals of the Community's telecommunications policy is to promote a telecommunications infrastructure based on interconnected networks integrating a number of harmonised services covering the whole of Europe.

A recurring feature of the development of networks in European countries in the past has been the creation of independent infrastructures developed at national level. This has militated against the introduction of harmonised services throughout Europe and has generated a series of technically incompatible systems.

2. It is clear that to continue such a policy would be at odds with the aims of the single market.

The completion of the single market will not only lead to new communications requirements between administrations<sup>1</sup>, the free circulation of goods, services, persons and capital will equally generate new communications requirements between the economic participants in the single market.

It is widely recognised, that a tissue of performant SME's<sup>2</sup> are of particular importance for the development of a competitive market. SME's can often not afford dedicated solutions like corporate networks or specific applications. Thus, they depend on an adequate public service offering. Given the number of approximately 10 million SME's in the Community, it is clearly of advantage, if all these SME's have the option to access the same general switched telecommunications network.

3. Since 1984, ISDN<sup>3</sup> is a key element of the Community's telecommunications policy. ISDN is conceived as the natural evolution of the telephone network, based on its existing structure.

ISDN, due to its advanced technology, developing status and promise of a wide range of voice and data services, was seen as a prime vehicle to satisfy the telecommunications needs of the single market. Subsequently, the Council adopted in December 1986 the Recommendation on the coordinated introduction of ISDN in the European Community<sup>4</sup>, which proposed a timetable for a phased introduction of ISDN services according to harmonised standards for interfaces and equipment.

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<sup>1</sup> COM(93) 69 final; Communication from the Commission to the European Parliament and the Council on trans-European data communications networks between administrations;

<sup>2</sup> Small and medium sized enterprises;

<sup>3</sup> Integrated Services Digital Network;

<sup>4</sup> Council Recommendation of 22 December 1986 on the coordinated introduction of the Integrated Services Digital Network (ISDN) in the European Community (86/659/EEC; O.J. L382/36)

ISDN is the subject of "Annual Progress Reports" in the form of Commission Communications. These reports have led to two Council Resolutions on ISDN. In 1989, the Council adopted a Resolution on the strengthening of the coordination for the introduction of the ISDN in the European Community up to 1992<sup>5</sup> and in June 1992 a further Resolution which underlines the importance to the develop ISDN as a trans-European network<sup>6</sup>.

The introduction of ISDN in the less favoured regions received a contribution of the STAR programme<sup>7</sup>.

ISDN is furthermore one of the priority areas for the application of the ONP<sup>8</sup> principles.

With regard to ONP it is important to note that the initiatives on ISDN in ONP and in TEN are complementary, and in fact constitute a necessary reinforcement of two aspects. The first is the regulatory environment, which is designed as to enable an open and non-discriminatory access to public networks by value-added services providers for the sake of the growth of new services in a competitive market. The second aspect is the promotion of an infrastructural development which supports the functioning of the single market through the instruments foreseen in the TEN framework.

ISDN is a circuit switched network with a basic bitrate of 64kbit/s which integrates a wide variety of services for voice, data, text and images accessible to the user via one single interface. In comparison to the telephone network ISDN will offer better quality and higher throughput. For example, the transmission of one A4 page per facsimile over the telephone network takes roughly one minute whereas with ISDN the same transmission will only take 3-4 seconds and provides much better quality (higher resolution).

Annex A provides more details about the ISDN concept.

4. **The gist of the ISDN policy of the Community since 1984 was the coordinated introduction of ISDN in the Member States. Harmonisation of the user/network interfaces enabling the development of a mass terminal market and the access to standardised connection types which facilitate the provision of (third party provided) value added services (VAS) are crucial aspects of that policy.**
5. **ISDN has a vocation as general switched network throughout Europe and on a world-wide basis. Owing to this nature ISDN is well suited to address many communications requirements from the public and private domain throughout the Community.**

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<sup>5</sup> OJ C196/4 from 1.8.89;

<sup>6</sup> OJ C158/1 from 25.6.92;

<sup>7</sup> Council Regulation of 27.10.86, instituting a Community programme for the development of certain less-favoured regions of the Community by improving access to advanced telecommunications services (STAR programme) (86/3300/EEC; OJ L305, 31.10.86)

<sup>8</sup> Open Network Provision; 92/383/EEC of 5.6.92, OJ L200 of 18.07.1992;

6. **ISDN is a commercial reality in six Member States. However, the current implementations are technically not yet harmonised to the extent required.**

Furthermore, owing to a variety of reasons set out in detail in the Commission Annual Progress Reports on ISDN in the Community, the initial timetable for the introduction of harmonised ISDN offerings could not be met.

In the course of 1993, ISDN, based on harmonised standards elaborated by ETSI<sup>9</sup> will be introduced. This harmonised form of implementation is referred to as: EURO-ISDN.

Therefore the current situation of ISDN in the Community can be described as a situation of transition, from existing national implementations to EURO-ISDN.

All public network operators of the Community have signed a Memorandum of Understanding (MoU on ISDN) in which they commit themselves to implement EURO-ISDN. The full scale deployment of EURO-ISDN will extend over a number of years.

It is the introduction of EURO-ISDN conformant facilities and/or upgrading of existing ISDN offerings to EURO-ISDN capabilities which are the subject of this proposal.

Annex B provides a definition of the scope of EURO-ISDN.

7. **Only a general availability of this modern type of telecommunications infrastructure will allow to cater for the objective of economic cohesion. It is important that the peripheral regions will not lag behind with the implementation of EURO-ISDN in a way which adds further disadvantage.**

On the other hand, for the economic actors in the developed regions, the full potential of this basic infrastructure can only be obtained if they can reach all regions of the Community via the same network.

8. **Many efforts have already been undertaken by the public network operators and the Member States. However, not all aspects required for a successful Community-wide introduction of EURO-ISDN are yet in place. Additional efforts at the level of the Member States and at the Community level to ensure the general availability and the harmonised provision of a number of basic services throughout the Community are necessary.**

9. **The current transition from existing ISDN offerings to the harmonised EURO-ISDN in the context of the requirements and opportunities arising from the completion of the single market provides the opportunity to embark on a new phase of the ISDN policy.**

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<sup>9</sup> European Telecommunications Standards Institute



The present Communication sets out a framework for possible Community-action which could usefully be added to the efforts already undertaken in the Member States. It contains a series of guidelines describing the objectives and priorities and contains proposals for broad lines of measures and projects of common interest which are suitable to contribute to the achievement of the objectives and priorities.

In conjunction with the present Communication, Part II of the present document presents two proposals for Council Decisions.

A first proposal for a Council Decision presents the series of guidelines (Schéma Directeur) for the development of ISDN as trans-European network.

The second proposal for a Council Decision is intended to institute a multi-annual programme for the implementation of TEN-ISDN guidelines.

The proposed Decisions are based on Article 235 of the Treaty of Rome.

The latter decision is accompanied by a financial statement.

The approach for setting up the appropriate framework for the implementation of the proposals is described in Sections 3 and 4. It is foreseen to establish a multi-annual Community TEN-ISDN action. Section 6 explains also in more detail why a Community action in favour of ISDN is appropriate.

The second proposed decision foresees that the Commission will be assisted by an advisory Committee (c/f. Section 4.2 of the present Communication). Furthermore, in order to allow for a direct dialogue with the principal sector actors concerned by the TEN-ISDN measures, a "Coordination Platform" (c/f; Section 4.3 of the present Communication) is proposed.

Given that ISDN is suitable to respond to many private and public needs, particular emphasis is attached to the objective to find out where applications which will be the subject of a parallel proposal for trans-European networks for the telematic networks between administrations<sup>10</sup> (TNA-IDA), may benefit from the availability of ISDN.

Reference is also made to the next generation of switched networks, Integrated Broadband Communications (IBC), which technological development was and continues to be the subject of Community RDT-action in the context of the programme RACE. It is the intention to prepare also for IBC a proposal in the context of the trans-European networks.

Close coordination with these other proposals for trans-European networks in the sector of telecommunications (TNA-IDA, TEN-IBC) will be ensured. It is expected that synergy effects notably in the area of harmonisation of protocol architectures for telematic services can be achieved.

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<sup>10</sup> COM(93) 69 final; Communication from the Commission to the European Parliament and the Council on trans-European data communications networks between administrations;

The implementation of the measures presented in this proposal to develop ISDN as a trans-European network will have to take into account the evolution of the regulatory regime. As foreseen in the first two Community measures adopted in 1990<sup>11</sup> concerning the open access to public networks and the competition in telecommunications services, the Commission undertook in 1992 a review of the situation of telecommunications services in the Community. After thorough discussions of the Commission document and in particular its proposals, the Commission has adopted a Communication to the Council and the European Parliament<sup>12</sup> on 28.04.1993 proposing a series of steps to be taken in a phased approach up to the year 1998 concerning the regulatory evolution in the fields of telecommunications services and the provision of infrastructure.

Regulatory changes in the course of the said evolution which would concern the development of ISDN as presented in this Communication will be fully taken into account. To this end, a revision clause is foreseen in Article 8 of the first of the two proposed Decisions.

10. The present proposals have also to be seen in the context of the perspectives of the Communication COM(92) 2000 and COM(92) 2001<sup>13</sup> and in particular in the context of the Communication of the Commission to the Council on trans-European networks<sup>14</sup>.

The Council in its Resolution from 7 December 1992 regarding the means to ensure the good functioning of the internal market<sup>15</sup> has stressed the urgency to reinforce the telematics and other communications networks. The present proposal to develop ISDN as a trans-European network responds to this requirement.

Owing to its infrastructural nature, ISDN is also considered in the context of the growth initiative decided at the Edinburgh Council. First discussions with the EIB for inclusion of ISDN projects in the temporary lending instruments have been held. Following the decision on the Delors II package, also the possibility for co-financing with other Community instruments, notably with the structural funds are being explored.

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<sup>11</sup> OJ No. L 192 from 24.07.90; Council Directive on the establishment of the internal market for telecommunications services through the implementation of open network provision (90/387/EEC) and Commission Directive on competition in the markets for telecommunications services (90/388/EEC);

<sup>12</sup> COM(93) 159/2 from 28.04.1993

<sup>13</sup> COM(92) 2000 and 2001 from 12 February 1992

<sup>14</sup> COM(90) 585 final, 10.12.1990

<sup>15</sup> OJ C334 from 18.12.92, p. 1-3

## 2 SERIES OF GUIDELINES FOR ISDN

11. Following the adoption of the Council Resolution of 5 June 1992, a series of guidelines covering the objectives, priorities, broad lines of measures and projects of common interest for the definition and implementation of ISDN as a trans-European network were prepared.

The graph on the next page provides an overview on this series of guidelines.

From the outset a close cooperation of the sector actors was established for the elaboration of these guidelines. A Working Group (WG TEN-ISDN) with participation of the Public Network Operators and the authorities of the Member States discussed these guidelines. A framework for the envisaged Community-action was defined.

12. Proposals will be made how best to support the introduction of EURO-ISDN so that it meets the requirements of all the participants in the single market.
13. The main goal is the harmonised and rapid introduction of EURO-ISDN. The points of departure are the current ISDN commercial offerings which differ in various regards and the existing roll-out plans for EURO-ISDN of the public network operators.

**"Bottle-necks" in the plans for the deployment of the EURO-ISDN infrastructure, the range of services and various other aspects will be determined. For the infrastructure, a basic target date against which the plans will be evaluated is proposed (refer to paragraph 28). It is also proposed to include in the framework private ISDN networking, fully conformant to the relevant harmonised standards.**

**A framework of measures to remedy those "bottle-necks" will be identified. The economic viability and the common interest of any project are key requirements. Interoperability and interconnectivity are the guiding technical principles for the proposals.**

14. Considerable emphasis is attached in the proposal to the availability of a number of compatible basic services (a platform of services) throughout the Community. Measures in support of interoperability of services offered over ISDN or accessible via ISDN are included.

Also, a basic target date for the start of the practical availability of such a services platform is proposed here.

### 2.1 OBJECTIVES

15. The exploitation of the full potential of ISDN requires harmonised implementation throughout the Community. Two objectives can thus be defined for the development of ISDN as a truly general switched trans-European network.

# OVERVIEW OF TEN-ISDN

OBJECTIVES

**OBJECTIVE 01**  
Availability of  
EURO-ISDN conformant  
facilities including a  
basic set of harmonised  
services.

**OBJECTIVE 02**  
Full Geographical  
coverage of EURO-ISDN  
offerings in all Member  
States.

PRIORITIES

**PRIORITY P1**  
Rapid availability of  
EURO-ISDN offerings  
for all business users, in  
particular SMEs.

**PRIORITY P2**  
Maximisation of the  
usage of EURO-ISDN  
in the Community.

**PRIORITY P3**  
Facilitation of access  
of the peripheral  
regions by means of  
EURO-ISDN.

BROAD LINES OF  
MEASURES

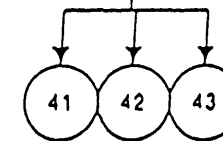
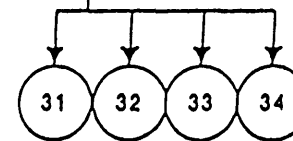
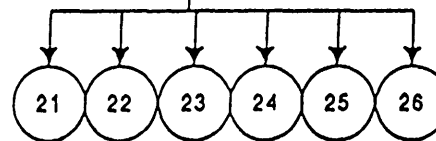
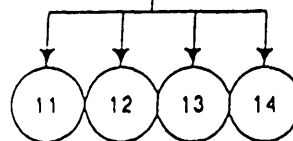
**MEASURES L1**  
Elimination of  
bottle-necks in the  
roll out of  
EURO-ISDN.

**MEASURES L2**  
Ensurance of  
end-to-end  
interoperability of  
telematic services.

**MEASURES L3**  
Migration of public  
and private sector  
applications to  
EURO-ISDN.

**MEASURES L4**  
Promotion of  
EURO-ISDN terminal  
availability.

PROJECTS OF  
COMMON INTEREST



16. The first objective is related to development of a set of EURO-ISDN offerings which correspond specifically to the needs arising from the single market:

<b>O1 Availability of EURO-ISDN conformant facilities, including a basic set of harmonised services.</b>
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17. Facilities conformant to EURO-ISDN means the implementation of harmonised user/ network interfaces on the basis of the relevant ETSI standards, i.e. the two ISDN access types basic rate access (BRA) and primary rate access (PRA).

Harmonised services implies, that a basic set of services is available in accordance with the relevant European standards.

The basic set of services will include, beside the one's which are defined in the MoU on the ISDN in Europe (c/f. Annex B ), those telematic services which correspond to the most urgent user needs: simple file transfer, access to electronic mail, generalised data bank access (including videotex), videophony and facsimile group 4.

Paragraph 32) and 33) contain further explanation of this item.

18. In order to make sure that EURO-ISDN offerings in line with this objective are available to all potential users throughout the Community, a second objective is defined as follows:

<b>O2 Full geographical coverage of EURO-ISDN offerings in all Member States.</b>
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19. This objective includes the aspects of the coverage of EURO-ISDN infrastructure in the Member States (national connectivity) and international connectivity between the Member States.

National connectivity means the full scale deployment of the two harmonised EURO-ISDN user/ network interfaces types, basic rate access (BRA) and primary rate access (PRA). National coverage may be achieved by means of equipping local switches with EURO-ISDN capabilities or by other techniques like remote accesses. National connectivity also implies the upgrade of the national network signalling systems, so that they can support the full range of EURO-ISDN facilities.

International connectivity implies the introduction of the agreed protocol (i.e. ISUP<sup>16</sup> Version 1) in the international switching centres (ISC) of the Member States. While the current ISDN implementations allow international interconnections, different protocols are in use between ISC's which leads to a number of limitations, e.g. for service connections. Annex E provides an overview on the introduction plans for ISUP Version 1.

20. The fulfilment of these objectives has to take account of the already existing national ISDN offerings and the existing plans to introduce EURO-ISDN.

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<sup>16</sup> ISDN User Part; an interexchange signalling system defined in the context of ISDN

## 2.2 PRIORITIES

21. The priorities which are derived from the endeavour to develop EURO-ISDN rapidly as a trans-European infrastructure and from the objectives defined above take account of the date of the completion of the single market and the expected development of communication requirements in the Community.

As stated in paragraph 6, all public network operators in the Community have signed the MoU on the introduction of EURO-ISDN.

The current plans of the public network operators (c/f. Annexes C and D) foresee, that the introduction of EURO-ISDN will commence around the middle of 1993. All Member States will have launched EURO-ISDN by the end of 1993.

22. The roll-out of EURO-ISDN will take several years. Some operators have confirmed targets for a country-wide coverage. In others, those plans do not yet exist and the geographical deployment will depend on demand.

A strategy for the marketing of EURO-ISDN and the setting of a target date is required.

23. All market analysis' suggest, that the early years of the ISDN roll-out will focus on professional users. The crucial role of the SME's for the economy was already underlined (c/f. Chapter 1).

Therefore, the first priority is defined as follows:

<b>P1</b>	<b>Rapid availability of EURO-ISDN offerings for all business users, in particular SME's.</b>
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24. A second priority is aimed at the best possible usage of EURO-ISDN in the Community. Nowadays, many users of advanced telecommunications services make use of dedicated networks and services for their communications requirements. With a fully fledged EURO-ISDN it is conceivable, that a good portion of those users could find an economically interesting alternative in ISDN.

<b>P2</b>	<b>Maximisation of the usage of EURO-ISDN in the Community.</b>
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25. A modern universally available harmonised multi-purpose service is a crucial prerequisite for the general Community objective of economic cohesion. Improvement of the access of the peripheral regions is therefore defined as third priority.

<b>P3</b>	<b>Facilitation of access of the peripheral regions by means of EURO-ISDN.</b>
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Currently discussions between the Member States and the Commission are held to revise the provisions governing the structural funds. In view of the infrastructural nature of ISDN and in the light of the requirement identified by the Commission<sup>17</sup> that until the year 2000 up to 40BECU will be required to expand and upgrade the telecommunications infrastructure in the less favoured regions (LFR's), a combined effort involving various financial instruments including the structural funds in favour of ISDN may be justified. The initiative for support from the structural funds lies with the Member States.

## 2.3 BROAD LINES OF MEASURES

26. The present section describes the proposed *broad lines of measures* which are devised in a way to best accomplish the objectives and priorities discussed above. **Given that the objectives and priorities are of general nature, they apply in principle to all *broad lines of measures* discussed below.**

A fuller understanding of these *lines* may be derived from the projects of common interest which are described for each of these lines (c/f. Section 2.4).

A framework for possible Community action is proposed. This framework enables a complementarity between measures in the Member States and an eventual Community-action.

For the implementation of these measures emphasis will be placed on addressing the needs of business users and the peripheral regions.

27. **Four broad *lines* of measures are proposed.**

Given the priority of making EURO-ISDN accesses and basic services available to business users, it is necessary to eliminate "bottle-necks" in the existing deployment plans.

<b>L1    Elimination of bottle-necks in the roll out of EURO-ISDN.</b>
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Elimination of bottle-necks concerns the roll-out at the level of the Member States as well as the interconnection between the countries.

With regard to the roll-out of EURO-ISDN facilities the existing plans of the PNO's show considerable differences for reaching full coverage. While in some countries this will be attained already by the end of 1994 or 1995, other operators, based on their specific situation have planned full coverage for the years 1996/97 or later.

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<sup>17</sup> SEC(92) 1048 final from 21.10 1992, Page 32;

An elimination of bottle-necks would in principle mean an acceleration of existing investment plans. In each case this will have to take account of business related arguments as well as a study of the demand in the geographical areas concerned.

It could also mean an upgrading of existing pre-EURO-ISDN-offerings to conform with harmonised standards.

28. Bearing in mind these considerations and in view of the functioning of the single market, a basic target date for the general availability of EURO-ISDN facilities for business users by the end of 1994 is set. This target date will serve as a reference against which plans are evaluated and will allow to determine measures which are suitable to narrow the gap between countries which plan a rather rapid introduction and others, in most cases more peripheral regions, where the current planning foresees full coverage for a point in time later than the target date.

29. One of the major success factors of ISDN is the integration of a wide variety of services via two harmonised network interfaces. For many users this will do away with the necessity to subscribe to more than one telecommunications network.

Discussions in the European ISDN User Forum (EIUF) have made clear, that in addition to telephony there is an urgent requirement for a number of compatible basic non-voice telematic services and applications available on a Community-wide basis. EURO-ISDN is designed to deliver or enable access to those services.

In a previous Communication from the Commission, on the trans-European telematics networks between administrations (TNA) the crucial role of the availability of well defined telematic services for the proper functioning of the single market is set out in detail.

Similarly, for the professional domain a basic telematic platform available throughout the Community is required in order to enable the economic participants of the single market to exploit the full economies of scale and scope of that market without internal frontiers.

In order to allow all economic actors to have the option to use this telematic platform, this platform is only conceivable in connection to the coming generation of the general switched telecommunications network, the ISDN and later on the IBCN<sup>18</sup>.

Indeed, not only the private domain will benefit from such a basic telematic infrastructure, many of the needs of the interchange of data between administrations (as for example discussed in the TNA-IDA proposal) are of similar nature. Consequently the TNA-IDA proposal makes reference to this fact, and a proper coordination between these two proposals in order to make sure that synergy effects can be realised is implicit to the adopted approach.

In order to comply with user requirements, it is essential that those services and applications are provided in a manner which guarantees interoperability between user end systems and to promote measures with the objective to render the availability of such interoperable services more visible for the end user.

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<sup>18</sup> Integrated Broadband Communications Network



30. **So far, this user requirement is only met in part.**

Therefore, a second broad line of measures caters for the interoperability of such services.

The proposal takes account of the competitive context which is applicable for the provision of services other than voice.

<b>L2 Ensure end-to-end interoperability of telematic services.</b>
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31. Two major subheadings are planned for this action line:

- i) Creation of a common telematic platform and
- ii) Creation of a EURO-Label for interoperable services.

32. A common telematic platform can be described as a set of telematic protocols which are arranged in an orderly manner (protocol stack) following a defined overall architectural concept. The term telematic platform implies a consensus on such a protocol architecture for the concerned services (see list below), where whenever possible certain protocol parts will be used for more than one service (eg. usage of the T.90<sup>19</sup> protocol for a number of services).

Five services for which there is particular demand are proposed to be included in the telematic platform:

- **simple file transfer;**
- **electronic mail;**
- **generalised access to data bases (including videotex);**
- **videophony and**
- **facsimile group 4.**

The final objective related to this proposal is the European-wide available to users of this set of services accessible via ISDN.

33. The accessibility from the ISDN accesses to such services, for example from PC-based ISDN terminals (eg. via PCI<sup>20</sup>) and the consideration of the impact of such a common protocol architecture for terminal end systems are further aspects.

ISDN is specifically devised to support (by the appropriate channel and signalling resources which can depend on the services requested) such telematic services, although it is transparent with regard to the transport it provides for those (and other) services.

In contrast to the direct infrastructure which is in the first place hardware based, services are typically software oriented. Software based solutions can easily be modified and hence this may lead to incompatibility.

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<sup>19</sup> T.90 is a CCITT defined protocol stack for terminals for telematic services in ISDN

<sup>20</sup> Programming Communication Interface; a kind of software interface used in a computer (PC)

34. The gist of the EURO-Label concept is therefore to support end-to-end interoperability on a basis of voluntary conformance to given specifications.

There is a close relationship between the telematic platform and the EURO-Label proposal. The range of services covered by the two measures would be principally the same.

35. Given that a successful marketing of EURO-ISDN depends on the availability of a sufficient set of basic services, the timely availability of such services in relation to the timing of the roll-out of the infrastructure is important.

It is therefore appropriate to set also for the availability of the above mentioned "telematic platform" a basic target date.

The practical availability of the telematic platform should be by the end of the year 1994, starting with some of the services (eg. simple file transfer, electronic mail) quoted earlier (i.e., the same date as set for the infrastructure).

36. Today, a lot of customised applications, in the private and public domain are supported on dedicated networks.

Indeed, much of the synergy which is expected from the merging of telecommunications and information technology, can be achieved from bringing (IT-) applications to the (general switched) telecommunications (network) together.

37. A scrutiny of where it is economically and commercially appropriate to make use of the EURO-ISDN as wide area network for such applications is proposed.

<b>L3 Migration of public and private sector applications to EURO-ISDN.</b>
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38. One particular area proposed for the development of trans-European networks in the field of telecommunications are the telematic networks between administrations (TNA). In this context, a number of applications concerning the interchange of data between administrations requiring a wide area network support across the Community, will be developed. Migration possibilities of TNA-applications to EURO-ISDN will be studied under this broad line of measures.

39. A further critical element for the successful development of EURO-ISDN is the availability of suitable and attractively priced terminal equipment.

Owing to its current differences of the ISDN access characteristics, the ISDN terminal market is rather fragmented, based on national markets.

Only the development of a truly Community-wide ISDN terminal market, which is only feasible with the introduction of the harmonised EURO-ISDN, will allow to exploit new economies of scale and thus contribute to the competitiveness of the Community market.

This promotion of EURO-ISDN terminal availability will take account of the fully competitive nature of this terminal market.

<b>L4 Promotion of EURO-ISDN terminal availability.</b>
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40. ISDN is a prime candidate for the development of a Community-wide terminal market. Only networks, which offer harmonised accesses, like for example EURO-ISDN, will lead to the development of terminal equipment which can benefit from the "1-Stop Type Approval" system as stipulated in the Council Directive 91/263/EEC<sup>21</sup>, and hence can freely circulate in the internal market without a prior need for technical adaptation or the requirement to be re-submitted to the type approval procedure for each national market.

#### 2.4 PROJECTS OF COMMON INTEREST

41. For each of the broad line of measures established above, a number of projects of common interest are identified below.

Typically, a first step of a project would be the conduct of a feasibility study (FS) which will in particular evaluate the economic viability of the projects. In certain cases it may well be feasible, to define directly the terms of reference of a project.

The proposed projects are in line with the objectives and priorities set out earlier.

##### 2.4.1 PROJECTS RELATED TO *LINE 1*): "Elimination of bottle-necks in the roll out of EURO-ISDN"

42. In relation to this line a project of common interest which concerns the identification of bottle-necks and measures which contribute to their elimination is proposed.

<p>11 Identification of "bottle-necks", eg. in the roll-out of EURO-ISDN and measures which improve the availability of EURO-ISDN facilities.</p>
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The identification here includes all kinds of bottle-necks, as for example, infrastructure, services, terminal availability, tariffs etc.

43. A second project relates to the possibility to introduce a European-wide packet mode bearer services (PMBS) which is required for many data applications. At present, the implementation plans across Europe show a number of differences.

<p>12 Analysis of differences in the existing plans for the introduction of the packet-mode bearer services and proposals which aim at the harmonisation of these implementations, in a manner that at least a Community-wide service can be offered.</p>
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<sup>21</sup> c/f OJ L128/1, 23.05.91

A harmonised European-wide PMBS is of crucial importance for many data-applications, as for example POS<sup>22</sup>-transactions or PIN<sup>23</sup> code verifications in the context of credit/ cash card usage.

44. A final project relates to the specific requirements of the SME's in the single market.

**13 Development for transborder applications in particular corresponding to the needs of SME's.**

In the context of this project, it is envisaged to provide incentives for the definition and development of applications, which are at least shared by SME's from two Member States.

Examples for such applications could be in tourism, where actual offers for holidays are communicated "on-line" via ISDN, or applications which support the search of partner firms in other countries and which could be organised by International Chambers of Commerce.

**2.4.2 PROJECTS RELATED TO LINE 2): To ensure end-to-end interoperability of telematic services**

45. Two projects of common interest are put forward in relation to the broad line of measures No. 2.

The first project concerns the development of the envisaged common telematic platform. It is re-called that five services have been identified as being of particular market interest: simple file transfer, electronic mail, generalised access to data bases (including videotex), videophony and facsimile group 4.

More explanation on this issue is found in paragraphs 32) and 33).

**21 Development of a common telematic platform with particular attention to the five services listed.**

46. A second project concerns the promotion and visibility of end-to-end interoperability of EURO-ISDN services and terminals by the usage of a common label. This project will imply the definition of a concept for the EURO-Label, the set up of arrangements between the participants and initial support for the establishment of a EURO-Label organisation.

**22 Development of a voluntary EURO-LABEL.**

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22 Points of Sales

23 Personal Identification Number

**2.4.3 PROJECTS RELATED TO LINE 3): "Migration of public and private sector applications to EURO-ISDN"**

47. Related to the *line 3*) on the migration of other applications to EURO-ISDN three projects of similar nature, but for distinct areas are proposed.

Each of the projects will investigate into the feasibility and economic viability of using EURO-ISDN instead of dedicated networks.

**31 Migration of existing or planned TNA applications to EURO-ISDN.**

**32 Migration of other applications (applications developed in the context of other Community measures, eg. health care networks, network between scientific parks, dedicated networks like IXI etc.) to EURO-ISDN.**

**33 Migration of public and private sector applications operated on other networks to EURO-ISDN.**

**2.4.4 PROJECTS RELATED TO LINE 4): Promotion of EURO-ISDN terminal availability**

48. Two projects related to the promotion of EURO-ISDN terminal availability are proposed. They will focus on cheap voice related terminals and on simple file transfer, electronic mail, generalised access to data banks (incl. videotex), videophony and facsimile group 4. In terms of their technical scope the projects (41), (42) and (21) are related, i.e., again, there is a close link with the EURO-Label and Telematic-platform projects.

Terminals are in many cases the instruments to physically implement a service. The end-to-end compatibility of the terminal (for some basic services) in a multi-vendor environment (terminals are in competition) is a key objective.

**41 Analysis of EURO-ISDN terminal requirements in the context of market needs.**

**42 Promotion of the availability of EURO-ISDN terminals.**

49. Promotion of the availability of EURO-ISDN terminals may for example include concertation with terminal manufactures, analysis' of the methods how to cut down the cost for the circuitry required for the construction of such terminals or definition of common promotion efforts for terminal availability.

**43 Development of 1-Stop shopping and billing principles for EURO-ISDN.**

1-Stop shopping and billing principles are recommended by the Council <sup>24</sup> in the context of Open Network Provision.

In a first step, this latter project may start with 1-Stop ordering. 1-Stop ordering implies that the *request/application* for e.g. a service subscription across various networks can be made from one point.

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<sup>24</sup> ONP-ISDN Recommendation; OJ No. L 200/10 from 18.07.92

### **3. THE CONTRIBUTION OF THE COMMUNITY: THE MULTI-ANNUAL ACTION TEN-ISDN**

#### **3.1 INTRODUCTION**

50. The TEN-ISDN action aims to give a Community support for the execution of the projects of common interest identified in the "Series of guidelines" (Schéma Directeur), the adoption of which is proposed to the Council by means of the first decision submitted in Annex to this communication. These projects of common interest are classified according to the four broad lines of measures defined in the series of guide lines:

- Elimination of the bottle-necks in the deployment of the EURO-ISDN (action at the infrastructure level).
- To ensure end-to-end interoperability of telematic services.
- Migration of public and private applications towards the EURO-ISDN.
- Promotion of the availability of the EURO-ISDN terminals.

51. Community support for the projects of common interest is carried out by means of feasibility studies which can include a validation phase. The execution of the projects is the responsibility of the sector actors, but it can be supported, when it is necessary, by interest subsidies or loan guarantees granted to the entities which carry out these projects.

Moreover, specific actions aiming to ensure the interconnectivity of the networks and the interoperability of services and terminals, in particular in the field of the harmonization of standards, could be led in support for the implementation of all the projects of common interest.

The interested actors by these actions are of three categories:

- Those responsible for the implementation of the infrastructure EURO-ISDN, which are the public network operators.
- Those likely to offer trans-European services on this infrastructure, who comprise the same public network operators and private service providers.
- Those which put on the market telecommunication terminals, i.e. the terminals manufacturers or importers.

Given that differing regulatory regimes apply to these different actors, the methods and procedures applied for the Community projects will depend on the nature of the case.

Envisaged changes in the regulatory regime (c/f. the Commission proposal to issue a Green paper on the infrastructure provision) which occur during the period of the execution of this Community-action, will be fully taken into account.

## **3.2 SUPPORT FOR THE PROJECTS OF COMMON INTEREST.**

### **3.2.1 THE FEASIBILITY STUDIES**

52. While due account will be taken of their infrastructural nature the projects of common interest have first to be the subject of careful definition and evaluation of their financial viability. This work will be carried out within the framework of feasibility studies, which can if necessary include a validation phase. They will be concentrated in the first years of the implementation of the programme.

These feasibility studies will generally be financed at 100% by the Community, and will be carried out by contractors chosen within the framework of calls for tenders.

### **3.2.2 FINANCIAL INCENTIVES FOR THE EXECUTION OF THE PROJECTS OF COMMON INTEREST**

53. The means specifically under consideration in the Community budget to support the execution of the projects of common interest are loan guarantees and interest subsidies. They can be supplemented by recourse to the temporary lending instrument and to the European investment funds decided by the European Council at Edinburgh. It is also possible to finance these needs by means of the ordinary loans of the BEI and, for the Objective 1 regions, by a contribution from the structural funds. Each one of these sources of finance has to be implemented within its own framework.

54. With regard to the infrastructure as such, the implementation of the EURO-ISDN involves considerable investments, in the order of several tens of billion ECU. These investments in general are already programmed by the public networks operators, but the Annexes C and D show that in a number of fields, the calendars planned for the deployment of the EURO-ISDN are not in line with the target date end of 1994. The means of incentive available will mainly be used in this case to expedite the planned deployment.

The entities eligible for this category of operations will be mainly the public network operators who are in charge of the implementation of the ISDN infrastructure. Given the high amount of investments to be supported, and the limited means available, the intervention of the Community will have to be carried out by judiciously proportioned recourse to the various sources, taking into account priorities and the specific situations of the public network operators.

55. With regard to the aspects connected with the services (end-to-end interoperability and migration of the services towards the EURO-ISDN), the actions are led in a liberalized field, the interested entities being the public network operators and the private service providers. The projects identified in the feasibility studies will have to be carried out within a framework of calls for tender in order to determine the attribution of support in compliance with the Community rules. With regard to the implementation of migration possibilities of the services concerning the interchange of data between administrations, close coordination will have to be carried out with the TNA-IDA action.



56. Lastly, concerning the terminals, mainly feasibility studies regarding needs of the market and promotion of the types of terminals corresponding to the criteria defined in the context of the trans-European networks are envisaged: recourse to interest subsidies and loan guarantees should not be frequent here. In this field where free competition has to be exerted, the measures taken will have to comply with the Community competition rules.

### 3.2.3 IMPORTANCE OF TWO OF THE PROJECTS OF COMMON INTEREST: TELEMATIC PLATFORM AND EUROLABEL

57. The projects on "telematic platform" and "EUROLABEL", which are the subject of the second broad line of measures and the objective of which is to ensure and maintain an essential character of a trans-European network, namely the full interoperability of the basic services, have a horizontal aspect which confers them a special importance. They will indeed ensure the coherence of the basic services and the underlying network.

The common telematic platform will consist of a coherent architecture and common protocols as much as possible harmonized and re-used for a number of applications. The platform will be based on the existing results of standardization, supplemented by later work if necessary. This project will have to be coordinated with the architecture defined in the TNA-IDA action, as well as with those made at a later date for the broad-band ISDN. The construction of the telematic platform will require several feasibility studies, going from the definition phase to that of validation.

58. The proposal for a EURO-LABEL aims at the promotion of the compatible end systems and at improving their visibility for the users. Technically, the EURO-LABEL will encourage the verification of interoperability in a multi-vendor environment, thus contributing to the enhancement of competition. The development of the EURO-LABEL involves the collaboration of the public network operators, of the private service providers, of the terminal manufacturers, the test and user organisations (for example the "European ISDN User Forum"). Within the framework of a number of feasibility studies, these sector actors will have to define the concept of such a label jointly. It is envisaged that after a support effort limited to the launching of the system, it will be maintained of itself.

### 3.3 MEASURES IN SUPPORT OF INTERCONNECTIVITY AND INTEROPERABILITY

59. The objective to achieve and maintain full interconnectivity of the networks implemented in the Member States and end-to-end compatibility of certain basic services will be supported by the Community action.
60. While the advantages of interoperability are principally clear, it is still difficult to explain this concept to users and to market products which are interoperable (in a multi-vendor environment). Measures to raise the awareness are required. Moreover, in certain areas further standardisation work may be needed. This work will be mandated to the recognised standardisation organisations in Europe.

61. **Interoperability testing is an efficient way to verify whether products from different sources can interoperate. Further support in this respect for the basic telematic services is envisaged.**

**It is noted, that some of the projects of common interest have a double nature, i.e., they concern also this second level of Community action in support of interoperability.**

#### **3.4 FINANCIAL ASPECTS**

62. **The methods of the Community financial contribution, financing of the feasibility studies and incentives for the execution of the projects of common interest, are clarified as in points 3.2.1 and 3.2.2.**

**The financial statement accompanying the draft decision gives an overall picture of the budgetary implications of this proposal for the 1993-1997 period.**

#### **4. THE COORDINATION OF THE NATIONAL POLICIES**

##### **4.1 GENERAL ASPECTS**

63. It is inherent to the approach of a policy which aims at coordination and harmonisation, to establish a close collaboration with the players involved.

With the changes which have been introduced to the telecommunications sector in the Community, two main types of actors will be involved in the case of ISDN.

64. Firstly, the Member States, which are responsible for the ISDN policy in their own territory and have in particular to ensure the required stability of regulatory environment for making available a public service offering on the entire territory, in correspondence with market needs.

However, in view of the objective of European-wide harmonised introduction, a coordination of national policies has to be done at a European level.

The Community has already strongly promoted the coordination of plans, promotion of awareness and support notably of standardisation efforts in its ISDN policy since 1984. This coordination has now to be strengthened.

65. Secondly, the public network operators, which in all but one case are granted exclusive rights for the provision of the network infrastructure and today for the voice service, are responsible for the planning, financing and implementation of the infrastructure in such a framework. Account will be taken of any modification of the present regulatory regime.

The Member States together with the public network operators will in particular have to make available all input data required to conduct the feasibility study related to infrastructure projects.

Other sector actors, for example the manufacturing industry will be associated for projects related to the availability of EURO-ISDN terminals.

As discussed in the present document, the specific Community action under the TEN framework would intensify and adapt this coordination role to the specific needs of the operation of the single market.

Close cooperation between these actors is required. It is proposed to organize it in the framework of two groups: the TEN-ISDN Committee and the EURO-ISDN coordination platform.

#### 4.2. THE COMMITTEE TEN-ISDN

66. A committee which will assist the Commission in the implementation of the Community action TEN-ISDN will be established. It will have a number of tasks:

- It will examine the work programme of Feasibility Studies;
- It will be consulted on the definition of the projects and the allocation of support;
- It will assist in the establishment of evaluation criteria;
- It will examine the annual reports on the implementation of the series of guidelines and to discuss and propose possible amendments.

The Committee will be composed of representatives from the Member States and the Commission. A representative of the Commission will chair committee meetings.

If an updating of the guidelines appears necessary, the Commission plans to discuss this issue with the Member States in the framework of this Committee. The Committee may also be involved in the discussion of related matters, e.g. the question of the eligibility of actual proposals for projects of common interests.

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#### 4.3. THE EURO-ISDN COORDINATION PLATFORM

67. The TEN-ISDN coordination platform will allow to bring together the relevant sector actors, network operators, service providers, manufacturers, test houses, etc.

Representatives of the Member States authorities and from the Commission will assist.

Based on the experience of the WG TEN-ISDN, it is proposed that this coordination platform assumes the form of an informal series of meetings. The Commission will organise these meetings when necessary and will provide secretarial support.

Principal task of this coordination platform is to discuss sector specific aspects of horizontal nature relevant to the implementation of the series of guidelines. It will form a suitable mechanism for the discussion of projects of common interest which may be forwarded on the basis of joint proposals of interested sector actors. The meetings will be open to all concerned sector actors.

68. In order to ensure clear conditions and where required, a commercial framework for example for the submission of joint proposals or the definition of common architecture, sector actors may develop instruments like for example memoranda of understanding or European Economic Interest Groupings (EEIG) in the context of this action.

The coordination platform will take particular account of user positions. Liaison with the European ISDN User Forum (EIUF)<sup>25</sup> and other relevant user groups will be organized.

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<sup>25</sup> EIUF is a user forum which was initiated by DG XIII of the CEC and which has the objective to identify user requirements related to the further shaping of EURO-ISDN.

69. In addition, a relationship will be strengthened or established with other specialised organizations:

- ETSI, which is the recognised standards organization responsible for ISDN standardization in Europe, and with which the Community has well established links;
- the group IMIMG<sup>26</sup>, which involves 26 operators from 20 European countries;
- ETNO<sup>27</sup>, with which the mutual interest of establishing a cooperation link will be explored.

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<sup>26</sup> ISDN MoU Implementation and Management Group

<sup>27</sup> European Telecommunications network Operators

**5. COOPERATION WITH THIRD COUNTRIES.**

70. The nature of telecommunications in general and certainly the nature of ISDN is global.

International and regional standardization is a major prerequisite for the development of ISDN.

Thanks to ETSI, Europe has a leading position in ISDN standardization. EURO-ISDN will be implemented on ETSI standards (which are as far as possible in line with world wide standards).

71. Some coordination for the introduction of EURO-ISDN exists in the form of the MoU group discussed in Chapter 1, which involves operators from all Member States of the Community, all EFTA countries (except Liechtenstein) and some other Western European countries.

72. A closer cooperation of the Community with the EFTA countries and the other Western European countries for all coordination efforts for ISDN in Europe is required.

A separate proposal will be prepared on the method and extension of such a coordination effort with third countries.

**6. THE REASONS OF THE COMMUNITY INTERVENTION IN THE FIELD OF THE ISDN**

73. The availability of a general switched network , allowing the offer of advanced services in telephony, image and data communication on a trans-European level, is an essential prerequisite, so that all economic operators, public or private, and in particular the SME's, can benefit to the maximum from the establishment of the single market, and the implementation of the four freedoms of movement. As shown in Chapter 1, the ISDN has the characteristics making it possible to give the type of advanced services necessary now for the actors carrying out an economic activity.
74. The Community has implemented since 1984 a policy in support of the coordinated introduction of ISDN. On the basis of a Recommendation adopted by the Council in 1986, the Commission has regularly informed the Council and the European Parliament on the progress of the introduction of ISDN in the Community by annual reports. The communication of these reports gave rise to two Council Resolutions on ISDN, one in 1989 which aimed at the further strengthening of the coordinated introduction of ISDN in the Community, the other in June 1992 which stressed the importance of developing the ISDN as a trans-European network. Moreover, the Council adopted also in June 1992 a Recommendation on the application of the ONP to ISDN.

Parallel to the continuation of these political developments, the Community supported, in particular financially, the work of the ETSI for the production of the standards defining a harmonized version of the ISDN (EURO-ISDN), the essential base to ensure the interoperability and the interconnectivity of the national ISDN implementations with the aim of making ISDN a genuine trans-European network.

75. Since several years, the network operators of several Member States have started to provide ISDN services at a national level. The implementations present considerable differences from the point of view of the range of services offered, and also regarding the technical characteristics of accesses of those networks. This situation does not ensure the required degree of interoperability of the national network offerings. Aware of this situation, the public network operators concluded a "MoU" within the framework of which they commit themselves to implementing the EURO-ISDN: compatibility between the various networks and national services can indeed be obtained only if, in their implementation, harmonized standards are rigorously applied.

One can therefore note that the elements for the deployment of a trans-European ISDN exist, and that the interest of such a type of development was recognized by the Council in 1992. Taking into account the progress of regulation in the Community, which prompts the actors of the sector to give new value added services, it is nevertheless not very likely that other actors than the public network operators, which have already begun large investment programmes, would introduce a generalized ISDN in the Community. If the commercial service of ISDN in the countries where a substantial offering already exists is not yet confirmed, demand develops nevertheless, and should increase when a homogeneous offer covering the entire Community, and more largely Europe, is available.

76. The implementation of a voluntary approach based on the commitment of the sector actors as regards trans-European networks, such as it is envisaged in particular in the Title XII of the Treaty of the European Union, is necessary so that this general deployment is carried out quickly, in order to strengthen the competitiveness of the European companies and to provide the internal market with the means of effective communication which it needs already today. It arises indeed from the observation of the situation and from the discussions with the network operators that a number of reasons slow down the introduction of the EURO-ISDN:

- the experience showed in the past that it was insufficient to rely only on the efforts carried out at the level of the Member States when wanting to arrive at the implementation of a general infrastructure according to a given timetable with the stimulant alone of the existence of a harmonized standard;
- the MoU concluded between the public network operators excludes explicitly certain aspects, like the coordination of the introduction of basic services and the questions touching the terminals. But the field of the services and that of the terminals are particularly susceptible for incompatible developments: coordination at European level is necessary to obtain harmonized developments;
- the field of responsibility of the public network operators covers in general the national level. No mechanism ensures currently this responsibility across the Community, in particular with regard to the offer of basic telematic services. To allow the coordination of these lacking aspects - inter alia with the 1-Stop Shopping recommended by the Council in the ONP measure on ISDN -, the creation of a telematic platform at a Community level is necessary;
- all the measures have to be based on harmonized standards prepared by recognized standardization organizations. But collaboration can not be limited to the application of these standards only: practical questions connected with the introduction of the services: choices of the options, test conditions, measures aiming to ensure the interoperability, have also to be coordinated if one wants to introduce successfully a harmonized ISDN;
- under the current conditions of regulation and vis-à-vis a demand which is not yet self-sustaining, the existence of incentives for investments can help to create a more rapid take-off of harmonized network and service supply;
- finally, for the ISDN being a switched network for general use, which should allow two users wherever located in the Community to communicate, it is essential that this modern infrastructure is available in due time also in the less favoured peripheral areas. In the contrary case, this infrastructure would lose of the interest, even for the users of the central regions of the Community. The STAR programme has already contributed to the digitalization of the infrastructures of these regions. It would be appropriate that the measures taken in future with the aid of the structural funds take into account the implementation of the EURO-ISDN.
- If the Community would remain inactive, it is believed that the LFR's will encounter a further widening of the gap in comparison to the status of advanced communications in the central regions.



77. The actions aiming to remedy the difficulties evoked above are of nature such as they have to be taken at the Community level or, still better, at European level. They will have to aim at the following three effects:

- to accelerate the deployment of the EURO-ISDN and/or the adaption of existing offers to become EURO-ISDN conformant;
- to encourage the coordinated introduction of harmonized basic services;
- to adapt the offer of the EURO-ISDN to the specific needs resulting from operation of the internal market.

78. The deployment of the ISDN as a trans-European network is justified by the contribution that it brings to the economic operators and to the administrations allowing to draw a maximum benefit from the establishment of the internal market and enabling the implementation of the four freedoms of movement.

The above section details the reasons of technical nature for which a Community intervention is essential in this field. But this intervention is limited on the one hand to coordination tasks, on the other hand, when that appears suitable, to a certain stimulation of investments by the actors of the sector.

79. The size of investments necessary for the deployment of a trans-European ISDN by implementing the EURO-ISDN is several tens of billion ECU: it is clear that these investments fall within the competence of the sector actors, mainly of the public network operators which have to finance this infrastructure. The appropriations to the Community budget to support this action account for less than 1% of these investments, which shows that they can only achieve an effect of coordination and of catalytic stimulation.

It is therefore envisaged to target the use of the Community contribution to arrive at the achievement of objectives, the interest of which is recognized, and which would otherwise not be realised only by the actors of the sector in the Member States. This contribution will take all its effect insofar as it will make it possible to accelerate infrastructure investments envisaged in the field of the ISDN, and to guarantee the interconnectivity of the networks set up in the Member States. These investments, which can in addition enjoy the support of the various financial instruments of the Community, will take part in the growth initiative decided in Edinburgh, and contribute to Community cohesion.

7. CONCLUSIONS

80. In the past, telecommunications networks and services had often been developed at a national level, which had led to many incompatibilities and which has an aftermath until today. **This endangers the competitiveness of European industry. Independent reports suggest that ISDN may be the opportunity for the Community to catch up this delay.**

Ideally, a fully fledged ISDN offering should be available with the completion of the single market. The current plans of the PNO's foresee, that the EURO-ISDN deployment will begin at the middle of the year 1993 and will extend over several years.

81. On the basis of the Community's ISDN policy since 1984, the present Communication explains the interest to develop in the Community the ISDN as a trans-European network, and proposes a series of guidelines aiming at this objective as well as the Community contribution associated with this action. The proposal takes full account of the growth initiative decided by the Edinburgh Council.

A first decision is submitted for the adoption of these guidelines. It covers the objectives, priorities, the broad line of measures and the projects of common interest for the implementation of ISDN as a trans-European network.

The second proposed decision concerns the Community contribution to the implementation of this trans-European network. It aims mainly to support this implementation by coordination work and, for a limited amount, by stimulation of the investments of the sector actors by means of interest subsidies and of loan guarantees.

Moreover, it is requested from the Council to authorise the Commission to undertake exploratory discussions with the countries of EFTA and with other interested European countries, with a view to establishing if there is a mutual interest to cooperation in this field of the introduction of the EURO-ISDN.

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Proposal for a  
COUNCIL DECISION  
on a series of guidelines for  
the development of ISDN as a  
trans-European network

**THE COUNCIL OF THE EUROPEAN COMMUNITIES,**

Having regard to the Treaty establishing the European Economic Community, and in particular Article 235 thereof;

Having regard to the proposal from the Commission<sup>1</sup>;

Having regard to the opinion of the European Parliament;

Having regard to the opinion of the Economic and Social Committee;

Whereas the internal market establishes an area without internal frontiers within which the free movement of goods, persons, services and capital must be guaranteed; whereas in order to ensure each of these freedoms the Community acts adopted or being adopted provide for measures involving substantial interchange of data between individuals, economic operators and the competent administrations; whereas such interchange can be ensured using trans-European networks;

Whereas the aim of establishing trans-European networks is to allow of the circulation of information, with a view to enable the proper functioning of the internal market for all participants, in particular the small and medium sized enterprises in the Community;

Whereas a trans-European ISDN will form a basic element of trans-European telecommunications networks;

Whereas it is important, for the purpose of the internal market, to facilitate the movement of goods, services, persons and capital between the Community and non-Community countries, and more specifically the member countries of the European Free Trade Association; whereas this will lead to intensified trade relations between the economic operators of the countries concerned; whereas in turn this requires cooperation with those countries in order to promote European-wide connectivity and interoperability of ISDN;

Whereas appropriate Community action is needed to establish adequate coordination between the Member States and those responsible for laying the basic infrastructure, in order to ensure a harmonised introduction of ISDN services; whereas failure to adopt a Council Decision on the development of ISDN as a trans-European network would be liable to result in a lack of interconnection and interoperability between national networks and in a limited availability of compatible basic services;

Whereas the only legal basis provided by the Treaty for adoption of this decision lies in Article 235;

**HAS DECIDED AS FOLLOWS:**

#### Article 1

This Decision lays down the guidelines identifying the objectives, priorities, broad lines of measures and a number of projects of common interest concerning the development of ISDN as trans-European network.

#### Article 2

The objectives for the development of ISDN as trans-European network are:

- the availability of ISDN facilities including a basic set of services fully conformant to harmonised European standards referred to hereafter as EURO-ISDN;
- the full geographical coverage of EURO-ISDN facilities in all Member States.

#### Article 3

The priorities for attainment of the objectives referred to in Article 2 are as follows:

- to contribute to the rapid availability of EURO-ISDN facilities for all business users, in particular small and medium sized enterprises;
- to maximise the usage of EURO-ISDN in the Community;
- to facilitate the access of the peripheral regions by means of EURO-ISDN.

#### Article 4

The broad lines of action designed to attain the objectives referred to in Article 2 shall be as follows:

- elimination of bottle-necks in the roll-out of EURO-ISDN;
- to ensure the end-to-end interoperability of telematic services;
- migration of public and private sector applications to EURO-ISDN;
- promotion of EURO-ISDN terminal availability.

#### Article 5

The development of ISDN as trans-European network to be implemented under this Decision shall be covered by projects of common interest. The projects are set out in Annex 1.

#### Article 6

1. The Member States shall introduce the regulatory and organisational measures to allow the implementation of ISDN as a trans-European network.
2. The Member States shall encourage the public network operators to introduce the infrastructure required for the development of ISDN as a trans-European network.

#### Article 7

The Commission is hereby authorised to open negotiations with non-Community countries likely to conclude agreement with the Community designed to allow them to participate in the projects of common interest referred to in Annex 1 and to improve interconnectivity and interoperability of the ISDN implementation between those countries and the Community Member States.

#### Article 8

In 1997, the Commission will carry out an overall evaluation of the guidelines defined in this Decision in the light of any change in the regulatory conditions applicable to ISDN.

Article 9

This Decision is addressed to the Member States.

Article 10

It shall take effect 21 days after its publication in the Official Journal of the European Communities.

Done at .....

## Annex 1

Projects of common interest concerning the development of ISDN as a trans-European network:

### **Elimination of bottle-necks in the roll out of EURO-ISDN:**

- Identification of "bottle-necks", eg. in the roll-out of EURO-ISDN and measures which improve the availability of EURO-ISDN facilities.
- Analysis of differences in the existing plans for the introduction of the packet-mode bearer services and proposals which aim at the harmonisation of these implementations in a manner that at least a Community-wide service can be offered.
- Development for transborder applications in particular corresponding to the needs of SMEs.

### **Ensure end-to-end interoperability of telematic services:**

- Development of a common telematic platform with particular attention to the six services listed.
- Development of a voluntary EURO-LABEL.

### **Migration of public and private sector applications to EURO-ISDN:**

- Migration of existing or planned TNA applications to EURO-ISDN.
- Migration of other applications (applications developed in the context of other Community measures, eg. health care networks, network between scientific parks, dedicated networks like IXI etc.) to EURO-ISDN.
- Migration of public and private sector applications operated on other networks to EURO-ISDN.

### **Promotion of EURO-ISDN terminal availability:**

- Analysis of EURO-ISDN terminal requirements in the context of market needs.
- Promotion of the availability of EURO-ISDN terminals.
- Development of 1-Stop shopping and billing principles for EURO-ISDN.





Proposal for a  
COUNCIL DECISION

adopting a multi-annual Community action concerning the development of ISDN as a trans-European network (TEN-ISDN)

**THE COUNCIL OF THE EUROPEAN COMMUNITIES,**

Having regard to the Treaty establishing the European Economic Community, and in particular Article 235 thereof;

Having regard to the proposal from the Commission<sup>1</sup>;

Having regard to the opinion of the European Parliament<sup>2</sup>;

Having regard to the opinion of the Economic and Social Committee<sup>3</sup>;

Whereas the Council adopted a Decision [...] <sup>4</sup> on a series of guidelines for the development of ISDN as a trans-European network;

Whereas the Council Recommendation 86/659/EEC<sup>5</sup> calls for the availability of a set of European-wide compatible ISDN offerings which is also the subject of a Memorandum of Understanding (MoU) between the public telecommunications networks operators;

Whereas the Council Resolution of 18.07.89<sup>6</sup> calls for the strengthening of the coordination of the ISDN in the European Community up to 1992;

Whereas the Council Recommendation of 05.06.1992<sup>7</sup> calls for the application of the open network access principles to ISDN;

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1 OJ ...

2 OJ ...

3 OJ ...

4 OJ ...

5 OJ L 382, 31.12.89, p. 36

6 OJ (89/C 196/04)

7 OJ No. L 200/10 from 18.07.92;

Whereas the Council in its Resolution from 05.06.1992<sup>8</sup> has recognized the importance of developing ISDN in the context of trans-European networks;

Whereas the Council in its Resolution from 7 December 1992<sup>9</sup> regarding the means to ensure the good functioning of the internal market has stressed the urgency to reinforce the telematics and other communications networks;

Whereas ISDN is conceived as the general switched telecommunications network evolved out of the telephone network;

Whereas the availability of a modern, general telecommunications infrastructure is an important factor to enable the economic actors to take full benefit from the market without internal frontiers;

Whereas current implementations of ISDN have an insufficient degree of harmonisation, which hinders, for example, the free movement of ISDN terminal equipment;

Whereas the availability of end-to-end compatible basic service (other than voice) is insufficiently developed;

Whereas there is a need for coordinated action for the deployment of compatible pan-European services, so as to reinforce the competitiveness of European industry;

Whereas cooperation is also appropriate with non-Community countries in order to promote projects of common interest and to ensure interconnectivity and interoperability of ISDN implementations;

Whereas the Community consequently needs to establish a framework for the contribution of the Community to the implementation of ISDN as a trans-European network; whereas the objectives of the proposed measures cannot be adequately attained by the Member States and therefore, by virtue of the scale and scope of the measures in question, are best carried out at Community level;

Whereas the only legal basis provided by the Treaty for adoption of this Decision lies in Article 235;

**HAS DECIDED AS FOLLOWS:**

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<sup>8</sup> OJ (92/C 158/1) from 25.06.92;

<sup>9</sup> OJ C 334 from 18.12.92, p. 1-3;

#### Article 1

A multi-annual Community action TEN-ISDN as defined in Annex 1, hereinafter referred to as the "action", is hereby adopted. It shall run five years from the date of this Decision.

#### Article 2

The objective of the action is to support projects of common interest concerning the development of ISDN as a trans-European network, identified in Decision [...] <sup>10</sup>; Such support shall relate to the implementation of ISDN facilities in conformity with the relevant harmonised standards produced by ETSI <sup>11</sup>, with a view to ensuring the full interconnectivity and interoperability of ISDN implementations.

#### Article 3

The contents of the action is set out in the Annex.

#### Article 4

1. The implementation of the action shall be closely coordinated with Community policies and requirements of users, notably small and medium sized enterprises, arising from the endeavour to exploit the freedoms of the internal market without frontiers.
2. This coordination shall apply notably to the following areas: trans-European networks and services, standardisation, identification of user requirements, legal and data protection aspects raised by the introduction of ISDN.

#### Article 5

The Commission is hereby authorized to negotiate agreements with non-Community countries with a view to their full or partial involvement in the action.

#### Article 6

1. The Commission shall be responsible for the implementation of the action.
2. The procedure laid down in Article 7 shall apply to :
  - the drawing up of the work programme for feasibility studies;
  - the adoption of the recommendations of the feasibility studies;
  - the establishment of criteria for the assessment of the action;

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<sup>10</sup> OJ ...

<sup>11</sup> European Telecommunications Standards Institute; a recognised standardisation organisation;

## Article 7

1. The Commission shall be assisted by a committee of an advisory nature composed of the representatives of the Member States and chaired by a representative of the Commission.
2. The Commission representative shall submit to the committee a draft of measures to be taken. The committee shall deliver its opinion on the draft, voting if necessary, within a time limit which the chairman may set depending on the urgency of the matter concerned.

The opinion of the committee shall be recorded in the minutes; each Member State shall be entitled to ask for its opinion to be recorded in the minutes.

The Commission shall give serious consideration to the committee's opinion. It shall inform the committee of how it has taken account of the opinion.

3. The committee may examine any question in relation to the development of ISDN as TEN.

## Article 8

1. Every year the Commission shall report on the activities to the Council and the European Parliament.
2. At the end of the action, the Commission shall present a final report to the Council and the European Parliament, including an assessment of the extent to which each of the objectives laid down for the action has been attained, on the basis of criteria established in accordance with the procedure laid down in Article 7 and propose any further action which may be needed.

## Article 9

This Decision is addressed to the Member States.

## Article 10

It shall take effect 21 days after its publication in the Official Journal of the European Communities.

Done at Brussels...

AnnexDefinition of the TEN-ISDN Action

1. The TEN-ISDN Action consists of the implementation of projects of common interest eligible under the series of guidelines defined in Council Decision [...] and measures ensuring interoperability.

Three categories of action can be distinguished:

- projects of infrastructural nature;
  - projects concerning telematic services and applications of trans-frontier nature; projects promoting the ISDN usage including promotion of ISDN terminal availability;
  - measures concerning the end-to-end compatibility of a limited range of basic telematic services and corresponding terminal equipment;
2. Projects of common interest can be supported by feasibility studies and by support for implementation.

Feasibility studies for projects of common interest normally comprise the following phases:

- analysing the requirements (eg. bottle-necks);
- definition of the action;
- specification of technical requirements (in some cases);
- preparation of an action plan including the methods suited for implementation of the project;
- validation, on a small scale, of the essential functions of the solutions adopted (in some cases);
- assessment of the results obtained.

In addition to the feasibility studies there will be regular monitoring of the projects and measures undertaken in the context of this action.

Community support for the implementation of projects of common interest may take in particular the form of interest rate subsidies and loan guarantees.

3. The measures to ensure interoperability consist in:

- contribution to the development of prototypes and software functions;
- promotion of interoperable solutions specifically by the set up of a EURO-Label;
- interoperability testing;
- standardisation work;
- incorporating relevant R&D results notably from Community programmes;

and the flanking measures:

- support for awareness for the notion interoperability;
- organisational support for the implementation of the above measures.

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## FINANCIAL STATEMENT

## Item B5-720:

## Trans-European networks in the field of telecommunications: ISDN

## 1. TITLE OF OPERATION:

Trans-European networks in the field of telecommunications.

Community contribution to the implementation of the master plan adopted for certain priority trans-European telecommunications networks.

## 2. BUDGET HEADING INVOLVED:

B5-720

N.B.: Although this budget heading also covers types of networks other than ISDN, the particulars given in this financial statement refer only to ISDN.

## 3. LEGAL BASIS:

- *Council recommendation 86/659/EEC of 22 December 1986 on the coordinated introduction of the Integrated Services Digital Network (ISDN) in the European Community (OJ L 382, 31.12.1986, p. 36).*
- *Council Decision 87/95/EEC of 22 December 1986 on standardization in the field of information technology and telecommunications (OJ L 36, 7.2.1987, p. 31).*
- *Council resolution of 18 July 1989 on the strengthening of the coordination for the introduction of the Integrated Services Digital Network (ISDN) in the European Community up to 1992 (OJ C 196, 1.8.1989, p. 4).*
- *Council resolution of 22 January 1990 concerning trans-European networks (OJ C 27, 6.2.1990, p. 8).*
- *Council Directive 90/387/EEC of 28 June 1990 on the establishment of the internal market for telecommunications services through the implementation of open network provision (OJ L 192, 24.7.1990, p. 1).*
- *Commission Directive 90/388/EEC of 28 June 1990 on competition in the markets for telecommunications services (OJ L 192, 24.7.1990, p. 10).*
- *Communication of 10 December 1990 from the Commission to the Council and the European Parliament entitled "Towards trans-European networks - For a Community action programme" [COM(90)585 final].*
- *Proposal for a Council Regulation (EEC) presented by the Commission on 24 February 1992 introducing a declaration of European interest to facilitate the establishment of trans-European networks in the telecommunications domain (OJ C 71, 20.3.1992, p. 12.).*
- *Conclusions of the Council of 31 March 1992 on trans-European networks.*



- *Council resolution of 5 June 1992 on the development of ISDN in the Community as a European-wide telecommunications infrastructure for 1993 and beyond (OJ C 158, 25.6.1992, p. 1).*
- *Council resolution of 7 December 1992 on making the Single Market work (OJ C 334, 18.12.1992, pp. 1-3).*
- *Proposal for a Council Decision of (.../.../...) on a set of guidelines for the development of ISDN in the Community as a trans-European network.*
- *Proposal for a Council Decision of (.../.../...) introducing a multiannual Community action for the development of ISDN as a trans-European network (TEN-ISDN).*

#### 4. DESCRIPTION OF OPERATION

##### 4.1 Specific objectives of operation:

- To carry out an operation representing the Community's contribution to the establishment and development of trans-European networks in the field of telecommunications, particularly with regard to the Integrated Services Digital Network (ISDN).

The purpose of the operation is to contribute to the harmonized development of the abovementioned networks and to the availability of certain basic services throughout the Community in order to enable operators to participate fully in an internal market without frontiers.

A second part of the Community activity is intended to assist the interconnection of such networks and interoperability of these basic services which are accessible via such networks. It consists in defining, for each area, a master plan of the trans-European network (such a plan already exists for ISDN) and then to implement the Community's contribution to the establishment of this network, while coordinating the activities contributing to this operation in the Member States, which will be called upon to provide the bulk of the necessary investment to those involved in this operation, consistent with the principle of subsidiarity.

- The Community contribution will chiefly be in the form of feasibility studies leading to a precise definition of projects of joint interest, and subsequently in the form of interest rebates and loan guarantees granted to those involved to carry out such projects. The Community contribution covers projects of joint interest and activities to promote interconnection of networks and interoperability of basic services.
- Given the scale of the investment required for the setting up of a general infrastructure and in view of the forms of support being considered, the Community contribution can only have a stimulating effect which will supplement the efforts being made at national level.
- Although a relatively small percentage, the Community contribution is necessary, since without it there is an obvious danger of insufficient harmonization and delay in deployment.

4.2 Duration: 1993-1997

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4.3 Target population: public network operators, providers of telecommunications services, systems and software manufacturers, users.

-

## 5. CLASSIFICATION OF EXPENDITURE OR REVENUE

5.1 *Non-compulsory expenditure*

5.2 *Differentiated appropriations*

5.3 *Type of revenue involved:* not applicable

## 6. TYPE OF EXPENDITURE OR REVENUE

6.1 Normally, the feasibility studies and provision of the necessary services for implementing the work programme will be wholly financed; the studies will be approved according to the standard Commission procedures (invitation to tender, CCPC).

6.2 Subsidy for joint financing with other sources in the public and/or private sector:

- Generally none

6.3 Interest subsidy:

- Interest subsidies may be granted to those involved in the sector taking part in the implementation of projects of common interest.

6.4 Other:

- Provision has also been made for loan guarantees.

- Assistance will be sought from other Community financial instruments (i.e. the Structural Funds, temporary loan instrument, etc.).

6.5 Should the operation prove an economic success, is there provision for all or part of the Community contribution to be reimbursed?: No.

6.6 Will the proposed operation cause any change in the level of revenue? No.

## 7. FINANCIAL IMPACT

7.1 Method of calculating the total cost of the operation for the 1994 financial year:

In 1994 ECU 5 million will be earmarked for feasibility studies, with an average of ECU 500 000 per study in the field of ISDN (ECU 5 million). In addition, for ISDN, ECU 5 million has to be set aside to finance interest subsidies.

## 7.2 Breakdown of the individual components of the operation

BREAKDOWN	1993 BUDGET	PDB 1994	CHANGE IN %
Studies	ECU 5 million	ECU 5 million	+40%
Interest subsidies		ECU 5 million	
<b>TOTAL</b>	<b>ECU 5 million</b>	<b>ECU 10 million</b>	

## 7.3 Operational expenditure on studies, meetings of experts, etc. included in part B

BREAKDOWN	1993 BUDGET	PDB 1994	CHANGE IN %
Studies			
Meetings of experts			
Conferences/congresses	0	ECU 100 000	
Information/publications	0	ECU 100 000	
<b>TOTAL</b>	<b>0</b>	<b>ECU 200 000</b>	

## 7.4 Indicative schedule of commitment appropriations

Item B5-720

Trans-European networks in the field of telecommunications: ISDN

			INDICATIVE SCHEDULE				
Consolidated situation end 1992 (1)	Budget 1993	PDB 1994	1995	1996	1997	TOTAL	
			0	5	10		

(1) Including implementation of mini-budgets for 1991 and 1992 charged to subheading B8.

## 8. WHAT ANTI-FRAUD MEASURES ARE PLANNED IN THE PROPOSAL FOR THE OPERATION?

The relevant Commission departments will verify the proper implementation of the feasibility studies prior to payment, taking into account contractual obligations and principles of good management.

In conjunction with the relevant Commission departments suitable audit methods will be devised to deal with interest subsidies and loan guarantees.

## 9. ELEMENTS OF COST-EFFECTIVENESS ANALYSIS

### 9.1 Objectives

The aim of this operation is to encourage those involved in this sector in their efforts to achieve interoperability and interconnection of national ISDN networks. The aim of the Community contribution is to stimulate investment in these sectors of the order of billions of ecus in the medium term. However, in 1993 and 1994 the operation will concentrate mainly on carrying out feasibility studies for projects of common interest which, when implemented in subsequent years, should generate the necessary investment.

The operation is divided into two parts. The first concerns support activities for projects of common interest and its aim is the rapid and harmonized establishment of the infrastructure and basic services. The second part relates to horizontal activities, including support for interconnection of networks and interoperability of basic services.

### 9.2 Grounds for the operation

The purpose of this operation is to endow the Community with the modern means of communication which are essential to its economic development. Availability of advanced telecommunications networks in this particular field, involving multipurpose networks, is essential if operators are to take advantage of the opportunities to expand their activities, the economies of scale provided by the large Community market and the free movement of goods, persons, services and capital. Small businesses in particular (of which there are some ten million in the Community), whose key role in economic growth is acknowledged, are dependent on the availability of a universal infrastructure.

Given that the services market is competitive (except for telephone services at the present time), a non-regulatory approach is indicated.

Experience of recent years has shown that in the absence of any mechanism in this area at European level to ensure harmonized development, particularly of certain basic services, Community action is necessary. In order to promote such coordination at European level, Community financing must also be made available. This Community support will be for a limited period and will be provided at the early stages to get the mechanism off to a good start. Furthermore, a financial contribution for the development of less-favoured regions is consistent with the aims of this operation.

Should these measures not be taken in good time, the development of ISDN in the Member States might be less effective because it would not be in general use and the basic services would not be compatible. In every case, experience has shown that taking action after the event to rectify the lack of harmonization in such a development would prove more costly.

Proper coordination between the Member States, which is intrinsic to Community action, is necessary in order to ensure consistency between what is being done at national level and Community action. The principle of subsidiarity applies fully in this case.

### 9.3 Monitoring and evaluation of the operation.

Each feasibility study must state its exact objectives and define specific projects. The effectiveness of the operation will ultimately be judged by the amount of investment forthcoming from those involved in the sector.

All operations will be evaluated on an annual basis (report). The assessment will be based on objective criteria which will be drawn up by a committee monitoring the implementation of the operation.

Moreover, the introduction of RNIS in the Member States of the Community is the subject of an annual report established by the Commission, based on the Council Recommendation of 22 December 1986.

### 9.4 Consistency with financial planning

Provision for this operation has been made in the multiannual financial programme under the heading Trans-European Networks.

## 10. ADMINISTRATIVE EXPENDITURE (PART A OF THE BUDGET)

### 10.1 Will the proposed operation call for additional Commission staff? If so, how many?

Yes. The first stage will be to launch feasibility studies, at a preparatory level, in 1993, and then on a full scale in 1994. Assuming that ten or so studies will be carried out for ISDN, approximately eight staff (four A, one B and three C) will be necessary for management as of 1994. In addition, coordination between Member States and financial engineering (setting up of interest subsidy and loan guarantee operations) will call for a further three staff (one A, one B and one C). Overall, five staff (two A, one B, two C) should be Commission officials, with the remainder being employed on a non statutory basis.

Total: Four A, two B and four C.

### 10.2 Indicate the amount of staff and administrative expenditure involved in the proposed operation.

In the light of what has been said under 10.1, six category A staff will have to be provided in the form of seconded national officials or experts and three category C staff as temporary secretaries.

Committee meetings: Some five meetings a year of the Consultative Committee, plus 40 or so meetings of groups specific to the projects, at a cost of ECU 12 000 per meeting, will require a meetings budget of ECU 500 000 (A 250/251).

Missions: ECU 75 000 (A 1300)

NOTE TO THE COMMISSION FROM V.-P. M. BANGEMANN;  
IN ASSOCIATION WITH COMMISSIONER VANNI D'ARCHIRAFI)

Trans-European Telecommunications networks (TEN)

1. The introduction of the concept of trans-European networks in Title XII of the Treaty on the European Union has led to the identification of three priorities for the application of this concept in the sector of telecommunications:
  - TEN-TNA: Telematic Networks between Administrations; the necessity of which is directly derived from the needs of the single market;
  - TEN-ISDN: Integrated Services Digital Network; evolving out of the current telephone network. Since 1986, the year of the first Council Recommendation concerning this type of network, the harmonised introduction of ISDN based on European standards was promoted at the level of the Community;
  - TEN-IBC: Integrated Broadband Communications; for which the Community's RACE programme has established the functional specifications and has laid the technology base for a European wide introduction.

In these three priority areas, the methodology of the said Title XII is used, which foresees to define:

- a series of guide-lines (schéma directeur) and
  - a possible Community contribution for the implementation of the fixed objectives.
2. The proposals concerning TEN-TNA<sup>1</sup> have already been adopted by the Commission.  
Now, proposals for the two other priority areas are submitted.

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<sup>1</sup> TEN-Interchange of Data between Administrations; adopted on 15.03.1993; COM(93) 69 final;

3. Concerning TEN-ISDN the following documents are introduced:

- a draft Communication to the Council and the EP;
- a proposal for a Council Decision concerning the *Schéma Directeur* and
- a second proposal for a Council Decision defining the envisaged Community contribution to the implementation of the *Schéma Directeur*

This latter proposal is accompanied by a Financial Statement.

Both proposals for Council Decisions are for the time being based on Article 235.

4. ISDN is a general, multi-purpose network integrating a large variety of voice, data and images services via a single network access.

While in six Member States commercial ISDN offerings exist, in the other half of the Member States only pilot implementations are available at current. Moreover, the existing commercial ISDN implementations are not yet harmonised to the required extent which leads to problems notably with regard to the European-wide provision of basic services (apart from telephony, those services are by and large missing or have technical problems) and with regard to terminals, which cannot be interchanged freely owing to technical differences and hence, the free circulation of ISDN terminals is considerably hindered.

5. The transition and migration towards the EURO-ISDN which is fully based on harmonised European standards, is the main thrust of the proposed Community action. Taking account of a Memorandum of Understanding (MoU) in which 26 (western) European public network operators have committed themselves to introduce EURO-ISDN, the proposed Community action foresees complementary measures aiming:

- to accelerate the roll out of EURO-ISDN;
- to remedy the bottle-necks (eg. the one's mentioned above) and thus, contribute to improved interconnectivity of the infrastructure and interoperability of the basic services.

6. The investments required for a general deployment of EURO-ISDN are estimated at some tens of BECU and are to be financed by the public network operators. Over the period 1993-97 the budget for the proposed Community contribution foresees 90 MECU. The eventual financial support of the Community can thus only be of the nature of incentives and will use the means indicated in Title XII.

7. Integrated Broadband Communications can be described as the next major step of technological innovation of the general switched telecommunications infrastructure, after ISDN. IBC includes the capabilities for very high speed data transmission, for the transmission of high definition images and advanced multimedia applications.

While commercial ISDN offerings have started already in the late 80's and the target date for a general availability of EURO-ISDN is agreed for end 1994, a general commercial introduction of IBC will start after 1995. Notwithstanding this, increasingly elements of IBC technology are being introduced (eg. optical fibre, notably in the backbone of the switched network) already now. Other elements (eg. ATM<sup>2</sup> technology) are the subject of major trials in the course of the coming years. As for ISDN, also for IBC, the development of some basic service is crucial.

Regarding IBC services, the definition, technical development and practical experimentation with such services is required in the next years.

8. The overall time frame for the proposed Community action TEN-IBC is identical to the one for ISDN (93 - 97). Given the different status of ISDN on one hand and IBC on the other hand (in terms of the technology and the timing of the introduction) the approach and the nature of the proposed Community action TEN-IBC will (partially) differ from TEN-ISDN. A full scale introduction of the IBC network may well extend into the next millenium .

Regarding the approach for TEN-IBC, it is proposed to start with a *preparatory* action, which will be carried out during the following 24 months.

To this end two documents have been elaborated:

- a proposal for a Commission Decision regarding the envisaged preparatory action TEN-IBC and
  - a draft Communication informing the Council and the EP on this approach.
9. For the action TEN-IBC, the budget planning for the period 1993-97 foresees an amount of 95 MECU. The investment for the network deployment will be in the order of 20 - 40 BECU over the next ten years. Again as for ISDN, this will come onto the charge of the public network operators. The proposed Community financial support will only be a minor stimulation.
10. Both types of networks have the nature of a general infrastructure, which implies that a full geographical penetration (this is the defined policy objective) will extend over more than a decade. Also in view of the current regulatory regime and the planned further liberalisation, the basic problem is the creation of a "critical mass" so that a stage of self-contained demand is reached. The proposed Community actions aim precisely at the support of this initial phase.
11. The general availability of a modern telecommunications infrastructure will notably be for the benefit of many SME's. While large cooperate users can afford dedicated solutions, SME's typically depend on the general infrastructure.

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<sup>2</sup> Asynchronous Transfer Mode, a switching technology used for IBC



Moreover, a modern telecommunications infrastructure will also contribute to an improved functioning of the single market, given the increasing trans-frontier communications needs which will arise for the participants of that market.

12. Owing to the infrastructural nature of both networks, measures in support of them will furthermore have a possible impact in the context of the growth initiative.

Firstly, it can be expected that the enormous investments will have a direct impact on the employment.

Beyond this direct effect, the availability of a modern communications infrastructure is a crucial factor for the competitiveness of the European countries as a location for entrepreneurial activities, since the cost of communications presents an increasingly important cost factor for enterprises in general.

13. With respect to social and economic cohesion, the trans-European telecommunications networks have a two-pronged role to play:

- the geographical coverage of the peripheral regions of the Community will allow to the users and in particular to the SME's to benefit from advanced services which is crucial for an efficient operation of their activities;
- they can become an essential factor concerning the cooperation of the central and peripheral regions of the Community, thus favouring the development of a truly harmonised single market.

14. Finally, reference to similar efforts in the U.S. (Al Gore initiative) and the law on the enhancement of the telecommunications infrastructure in Japan is made. Europe has to watch not to fall behind those two regions in yet another key high technology domain.

## CONCLUSIONS

15. In the field of telecommunications the Commission has worked out clear proposals regarding TEN-ISDN and TEN-IBC. Those proposals are based on a close collaboration with the main sector actors concerned and are supported by them.

In view of the importance of these proposals in the context of the growth initiative, for the social and economic cohesion and for the competitiveness of Europe, a rapid adoption of the proposals would help considerably to achieve the objectives and to realise that the full potential benefits can be developed.

The agreement of the Collège to the proposed documents TEN-ISDN and TEN-IBC is requested.

## SECTION 1 <sup>A</sup> INTRODUCTION

ANNEX A

---

ISDN (Integrated Services Digital Network) is an acronym describing the provision of a wide range of existing and new telecommunications services over digital networks, making them available to customers through a standardised single access point.

ISDN removes the barriers between speech, data, text and video services, integrating them into a single digital telecommunications network. The provision of end-to-end digital connectivity guarantees high-quality network performance to customers.

ISDN provides significant benefits to the customer in terms of availability of services and usage flexibility. Cost effectiveness due to more efficient utilisation of telecommunications facilities are an added benefit from a customer's point of view.

ISDN offers a range of services particularly suitable for emerging new (customer) applications. In particular the business world can benefit from the increased speed of ISDN connectivity and conformity to international standards.

Conformity to international standards will guarantee the use of compatible equipment and terminals and make international interconnection possible in an easy and economical matter.

The introduction of ISDN is carried out in such a way as to ensure that it coexists and interworks with existing dedicated networks, and that ISDN terminals will communicate with non-ISDN terminals.

ISDN can therefore be seen as a most attractive and powerful tool available to the business community worldwide.

## SECTION 2 TERMS AND DEFINITIONS

This section provides definitions for a number of terms used in section 3.

ISDN = Integrated Services Digital Network  
PSTN = Public Switched Telephone Network  
PSPDN = Packet Switched Public Data Network

### CHANNELS

Two types of channel are defined in the ISDN:

- The B-channel is a communication channel used to support the transmission of voice data or image with a capacity of 64 kbit/s.
- The D-channel is a signalling channel used for the establishment of B-channel links. The D-channel can also be used for the transmission of user data.

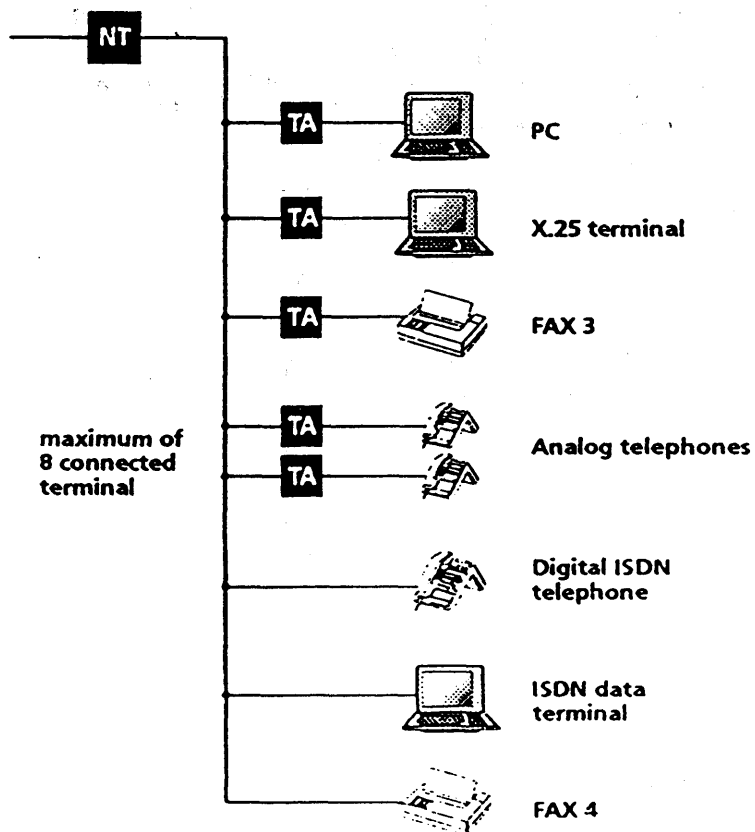
### ACCESS TO THE NETWORK

There are two types of access to the ISDN network:

- Basic access with two B-channels and one D-channel of 16 kbit/s. It can support up to eight terminal devices. Therefore it is suitable for small business units and the residential market (see Figure 1).

Figure 1:

### EXAMPLE OF A BASIC ACCESS CONFIGURATION

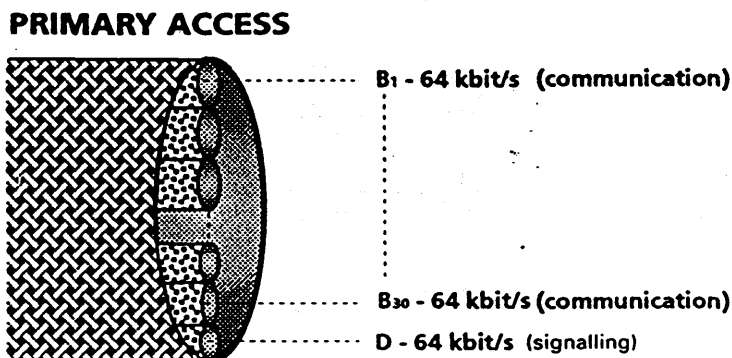
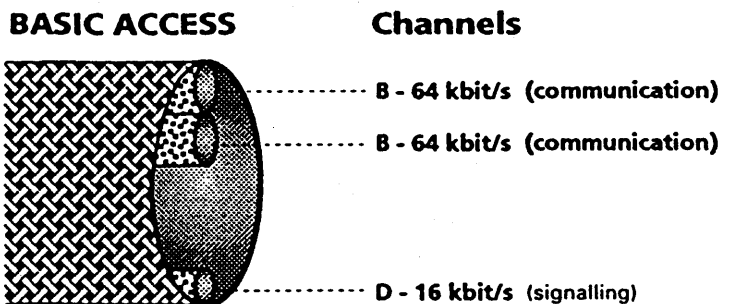


NT = Network Termination  
TA = Terminal Adapter (to connect non-ISDN terminal)

- b) Primary access with thirty B-channels and one D-channel at 64 kbit/s. Suitable for larger business units with complex equipment such as large PABX's, host computers and LAN's (Figure 2).

Figure 2:

### TYPES OF ACCESS



Note: the wiring is not considered in this figure.

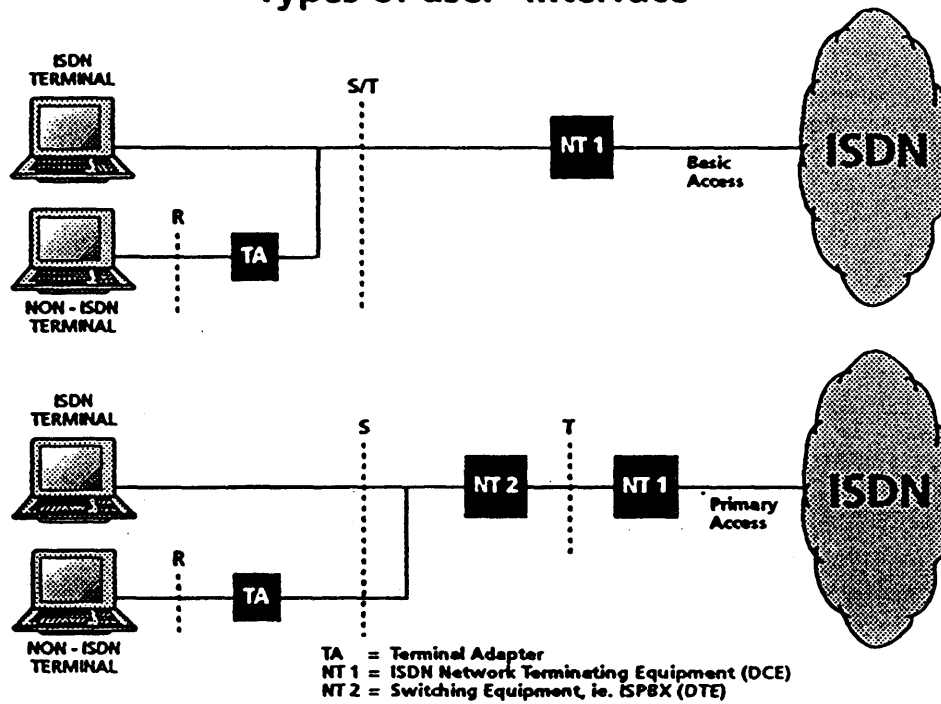
### TYPES OF INTERFACE (or REFERENCE POINTS)

Interfaces are defined as the points at which dissimilar (or similar) equipment or functions are interconnected. In ISDN different reference points are defined. For the user, these reference points are the S and T interfaces in the case where ISDN terminal equipment is used. This eliminates the need for equipment such as modems and key set controllers.

It is possible to connect non-ISDN terminals to the ISDN network using terminal adapters. In this case the interface for the user is the R interface (see Figure 3).

Figure 3:

## Types of user interface



- R = Interface between a non-ISDN terminal and the terminal adapter.
- S = Interface between an ISDN device and the network termination.
- T = Interface between an ISDN network termination and the network.  
In the case of an ISDN non-switching device the S and T interfaces are the same.
- NT = Represents the physical point at which the ISDN configuration on the user's premises connects to the network.

**ISDN SERVICES**

ISDN services are divided into two main categories (see Figure 4).

a) Bearer services

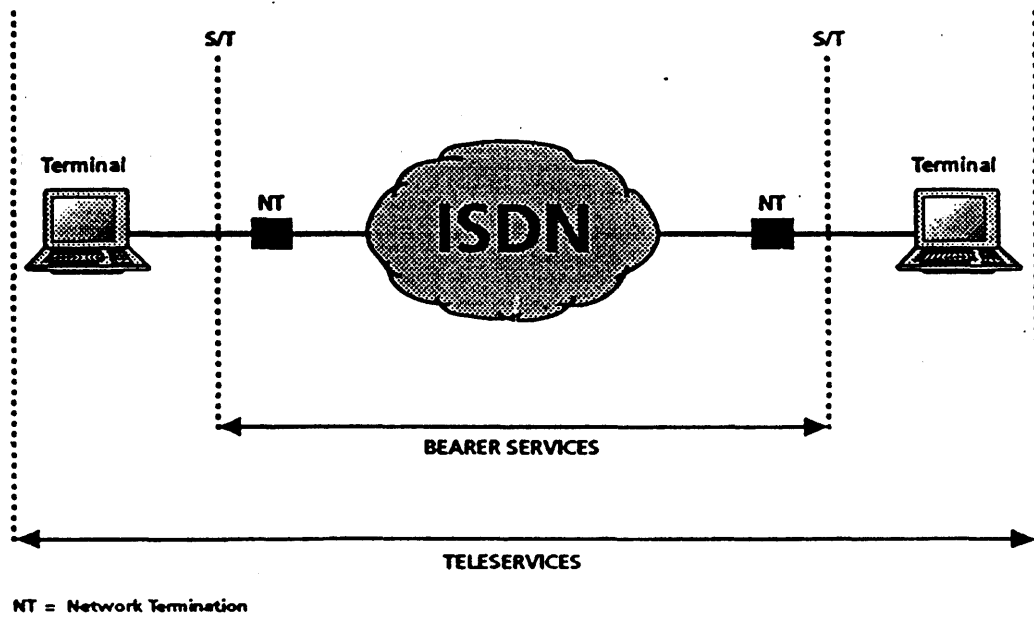
These are transport services where the information delivered by the network is transferred without alteration or addition. Issues related to format or presentation of information are not predefined. In other words, the information is transported between network terminations (NT) in a transparent mode.

b) Teleservices

A teleservice is a service as defined by the terminal equipment functionality. A teleservice always uses a bearer service. When a user selects a teleservice the network will provide the appropriate bearer service.

Figure 4:

**Types of services**

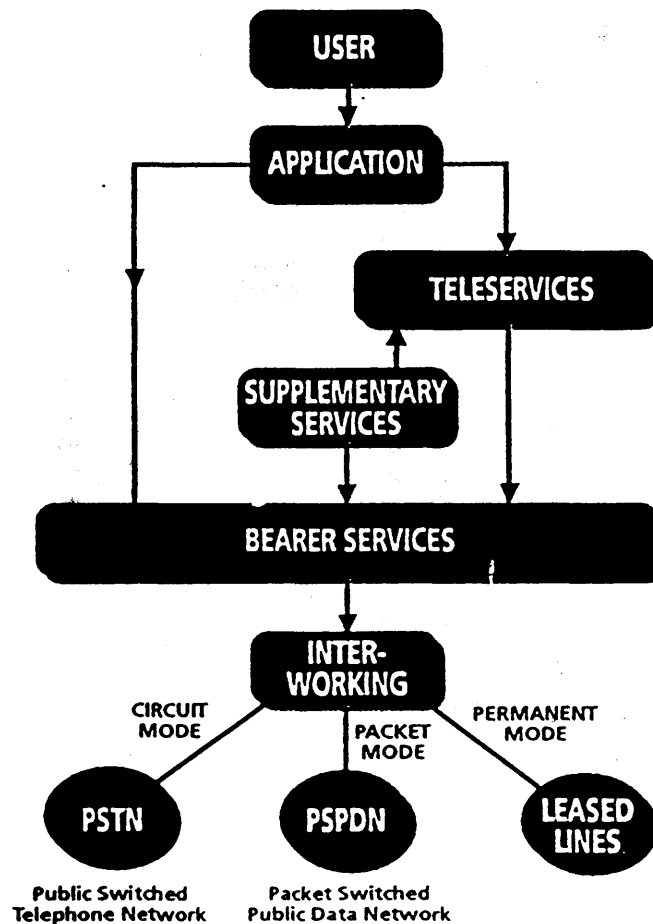


### Supplementary services

Supplementary services are additional facilities offered by the ISDN network in conjunction with either bearer or teleservices. Consequently they cannot be offered to a user as stand-alone services. Some supplementary services in the ISDN are suitable for non-voice communication and some only suitable for voice communication. It is up to the user to choose the appropriate set of supplementary services to suit the application in question (see Figure 5).

Figure 5:

### ISDN Reference Model



In Übereinstimmung mit der Richtlinie 90/388/EWG können ISDN-Dienste auch durch andere Betreiber, als die öffentlichen Netzbetreiber, angeboten werden. Die Mitgliedstaaten können jedoch, bis zu einem Datum das derzeit diskutiert wird, diesen anderen Betreibern das kommerzielle Anbieten des öffentlichen Telefondienstes untersagen.

**Interworking**

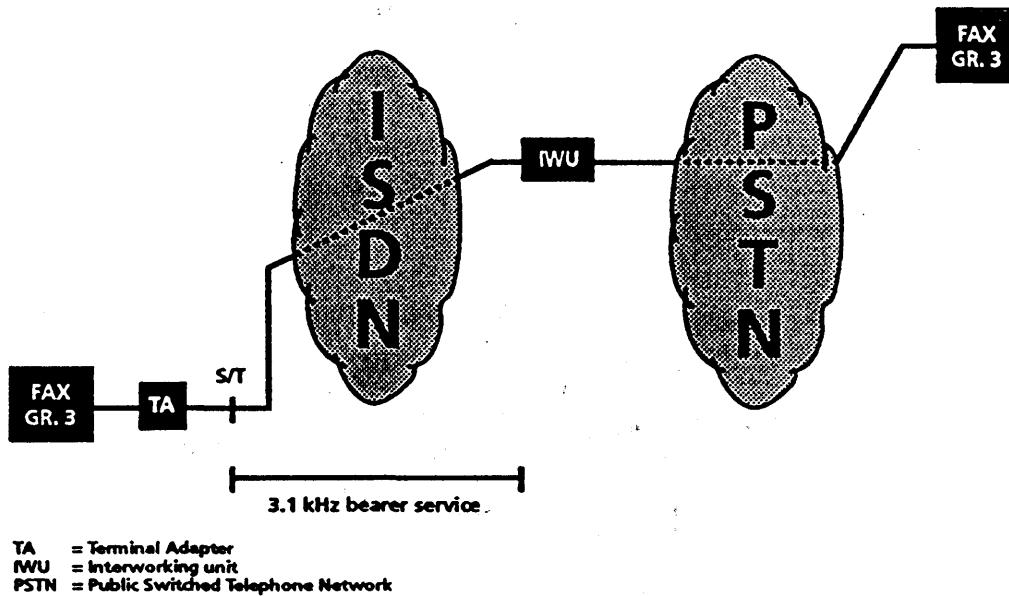
ISDN users can communicate with users of other existing networks, e.g. the Public Switched Telephone Network, the Packet Switched Public Data Network, etc. through interworking functions provided by the network.

**Intercommunication**

Non-ISDN terminal equipment can be connected to the ISDN by means of a terminal adapter and may intercommunicate with compatible terminals connected to existing networks. In this case, the user has to select the appropriate bearer service, e.g. Telefax Group 3. On the terminal adapter he then selects the 64 kbit/s bearer service usable for 3.1 kHz audio information transfer (see Figure 6).

Figure 6:

**Intercommunication: e.g. telefax gr. 3**





The possibilities of intercommunication between ISDN teleservices and PSTN services are shown in Figure 7.

Figure 7:

### INTERCOMMUNICATION BETWEEN ISDN AND PSTN TELESERVICES

FROM \ TO		Net-work	Tele-service	ISDN								PSTN						
				Tel. 3.1 KHz	Tel. 7 KHz	Telefax 4	Teletex	Videotex	MHS	Audio-graphic	Telection	Video-telephony	Telephone	FAX 3	Videotex			
ISDN	Net-work	Tele-service																
		Tel. 3.1 KHz	●	●									●	●	●			
		Tel. 7 KHz	●	●						●			●					
		Telefax 4			●	●			●							●		
		Teletex				●	●		●									
		Videotex						●	●									●
		MHS				●	●	●	●							●	●	
		Audio-graphic		●	●					●						●		
		Telection									●							
		Video-telephony										●						
PSTN	Net-work	Tele-service																
		Telephone	●	●									●					
		FAX 3			●				●	●					●			
	Videotex						●	●									●	

MHS = Message Handling Service  
 ISDN = Integrated Services Digital Network  
 PSTN = Public Switched Telephone Network  
 Audiographic = Audiographic teleconferencing

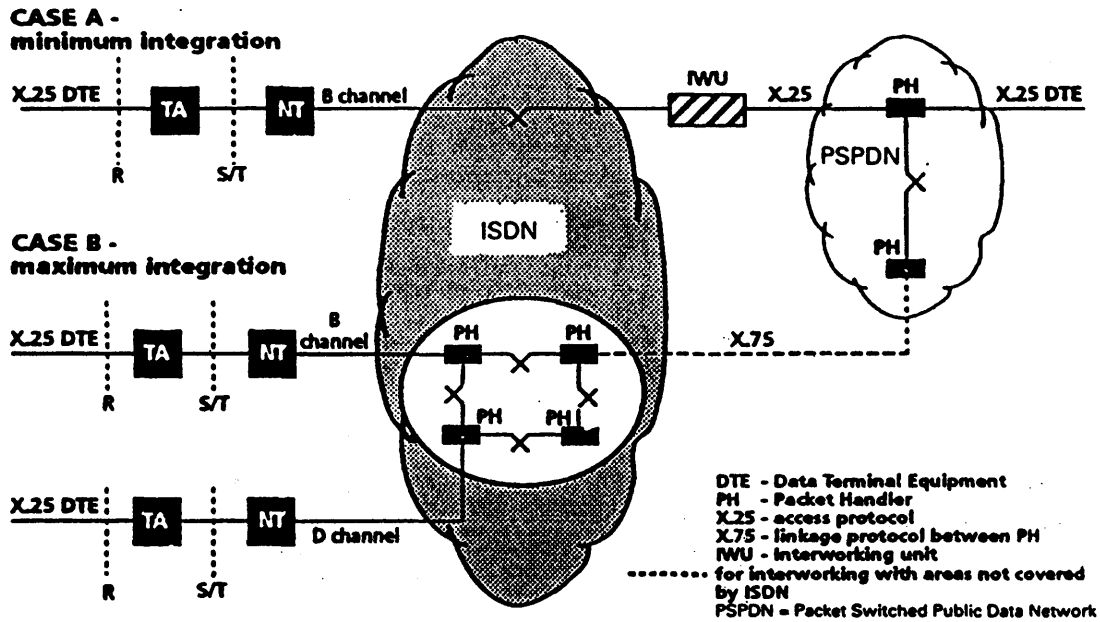


**Communication modes**

ISDN offers two communication modes, circuit mode and packet mode. The services offered on the B-channel are in circuit mode (one channel allocated for each communication). Packet services are offered on the D-channel (several communications on the same physical circuit). They can also be offered over a B-channel using packet handling interfaces (see Figure 8).

Figure 8:

**PACKET COMMUNICATION MODE**



CASE A - ISDN acts as a transparent connection to a PSPDN port, using B channel and 64 kbit/s unrestricted bearer.  
 CASE B - ISDN provides a number of Packet Handlers, accessible via the B or D channels, enabling switching between X.25 DTE's connected to ISDN accesses. Interworking with PSPDN is ensured.

User/network interfaces:	Basic Rate Access (BRA) Primary Rate Access (PRA)
International Interface:	ISDN User Part, Version 1
Bearer Services (BS):	Circuit mode 64kbit/s unrestricted BS Circuit mode 3.1kHz audio BS
Supplementary Services:	Calling Line Identification Presentation Calling Line Identification Restriction Direct Dialling In Multiple Subscriber Number Terminal Portability
Tele-Services:	the ISDN includes capabilities to support a number of teleservices

Table 1: Scope of EURO-ISDN

Remarks:

The notion EURO-ISDN refers to the implementation of ISDN as it is described in a memorandum of understanding from April 1989, signed by 26 public network operators from 20 European countries.

The implementation of EURO-ISDN will be based on harmonised standards prepared by ETSI which are summarised in the ETSI Technical Report No. 10 (ETR 10); ETR 10 can be obtained from the ETSI Secretariat.

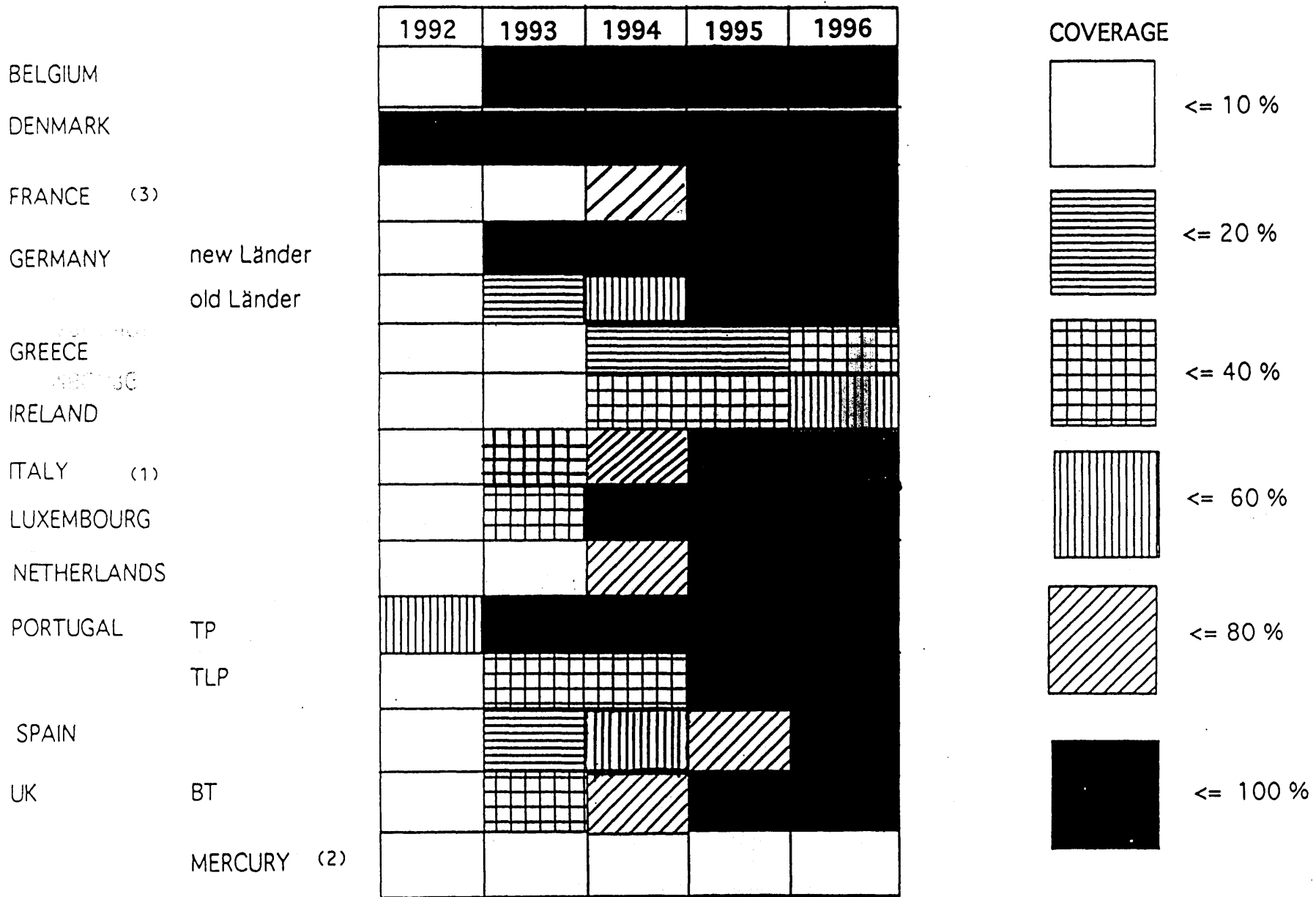
**ANNEX C Summary of Euro ISDN availability**

10511140112 3  
10511140112 3

**NOTES ON MAPS AND TABLES:**

- 1) The % of territorial coverage of EURO-ISDN is defined in this context as: areas ( of an administrative region) where BRI. fully conformant with ETS 300.153, and PRI fully conformant with ETS 300.156, are available. This means that existing national ISDN offerings, where the user network interfaces are not fully in line with these ETSS, are not considered here.
- 2) The definition of "coverage is: The % of an administrative region where EURO-ISDN is available, at year end, either by direct connection to a local switch which is equipped with EURO-ISDN BRI or PRI, or where a local network area has access to EURO-ISDN BRI and PRI by means of remote access (if offered on a regular basis).
- 3) As each country is organised somewhat differently, and information was not always presented in the same manner, for the determination of an appropriate scale or granularity the editors have had to scale the percentages rather broadly.
- 4) As each country provided information in a slightly different manner, the shadings are map specific.

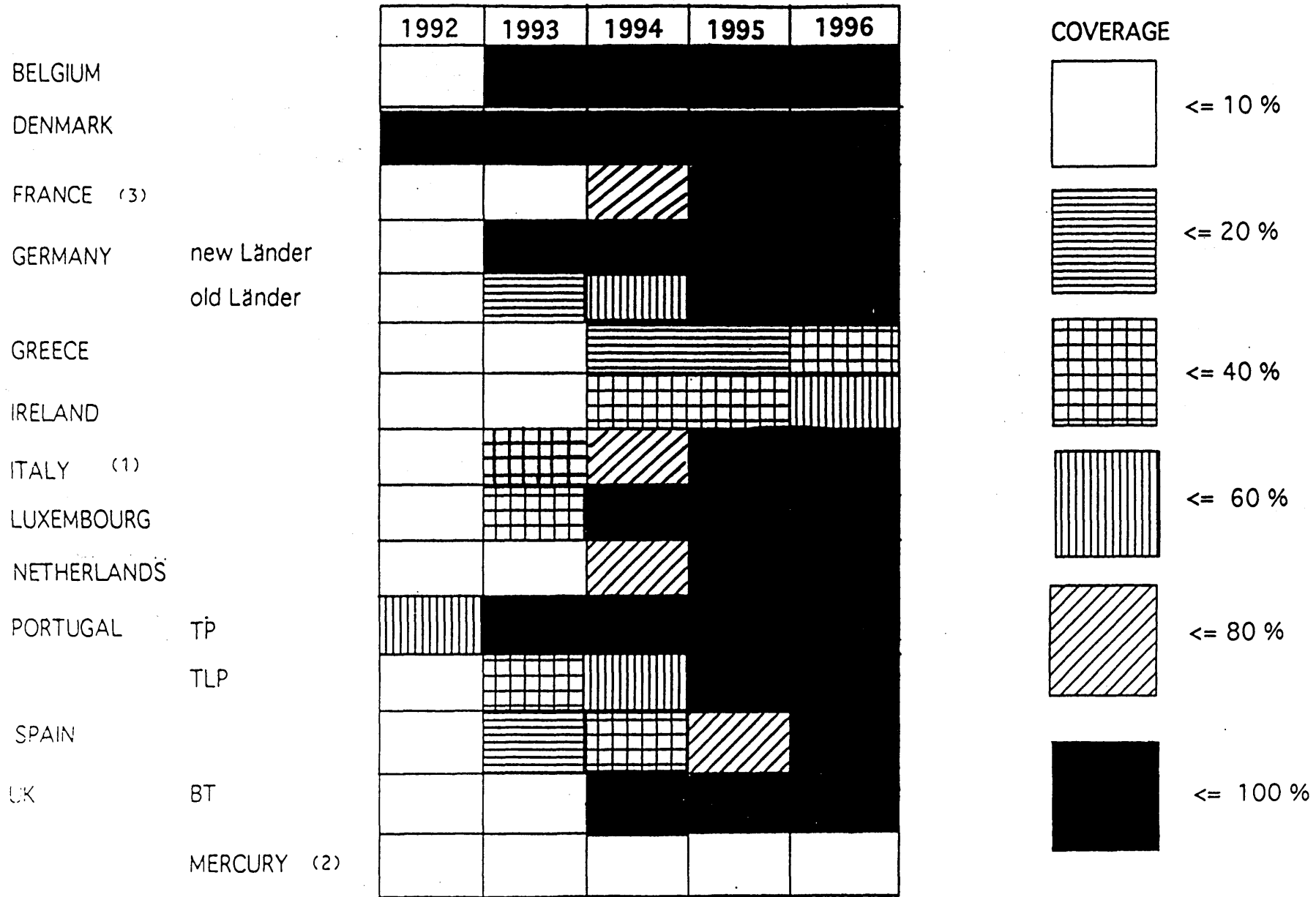
% COVERAGE EURO-ISDN BRI PER YEAR



13

(1) NO DISTINCTION IS PROVIDED BETWEEN B-ISDN AND P-ISDN  
 (2) NO INFORMATION PROVIDED  
 (3) THIS INFORMATION IS VALID ONLY IF CURRENT REGULATION IS UNCHANGED

% COVERAGE EURO-ISDN PRI PER YEAR



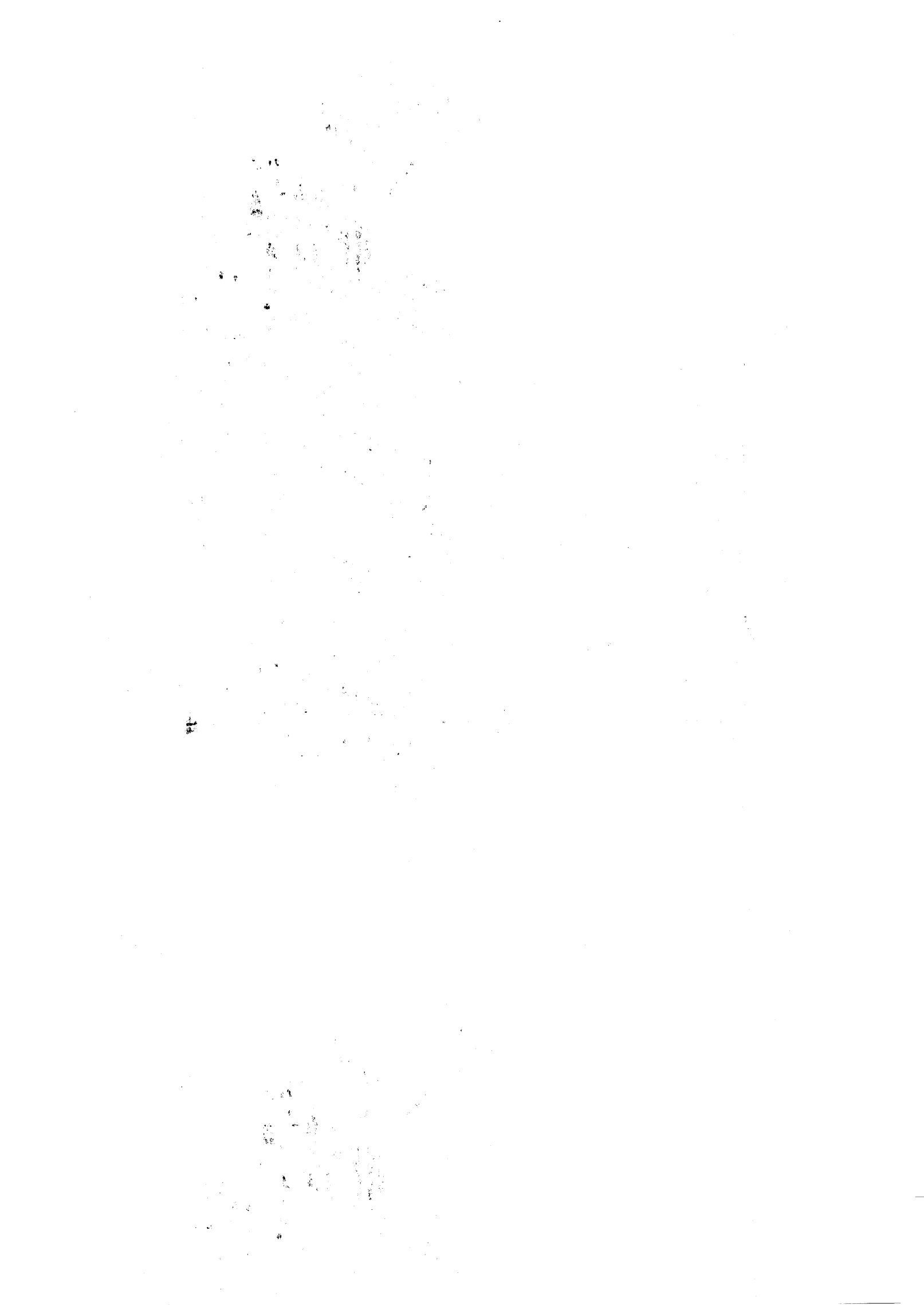
(1) NO DISTINCTION IS PROVIDED BETWEEN B-ISDN AND P-ISDN  
 (2) NO INFORMATION PROVIDED  
 (3) THIS INFORMATION IS VALID ONLY IF CURRENT REGULATION IS UNCHANGED

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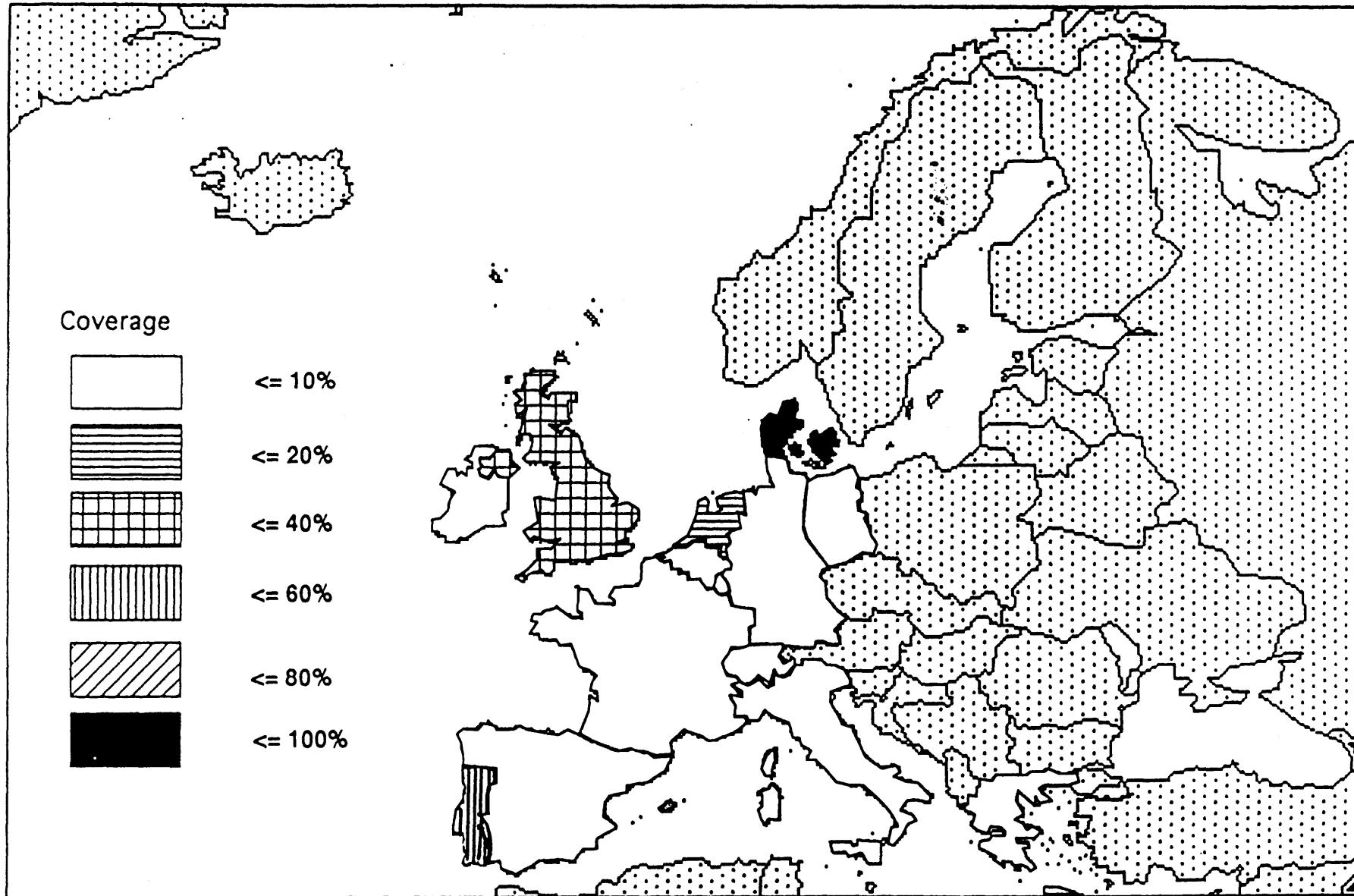
**ANNEX D %territorial coverage of Euro ISDN  
per country / Operator**



% GEOGRAPHIC COVERAGE EURO-SDN BRI		1992	1993	1994	1995	1996
BELGIUM			90	100	100	100
DENMARK		100	100	100	100	100
FRANCE			10	90	100	100
GERMANY	old Länder		100	100	100	100
	new Länder		20	60	100	100
GREECE				'2 Provinces	'7 Provinces	
IRELAND			8	40	45	50
ITALY			20	70	100	100
LUXEMBOURG			CITY	100	100	100
NETHERLANDS			'30 cities	70	100	100
PORTUGAL	TP	50	100	100	100	100
	TLP	10	40	50	100	100
SPAIN			20	40	80	100
U.K.	BT	40	100	100	100	100
	MERCURY					

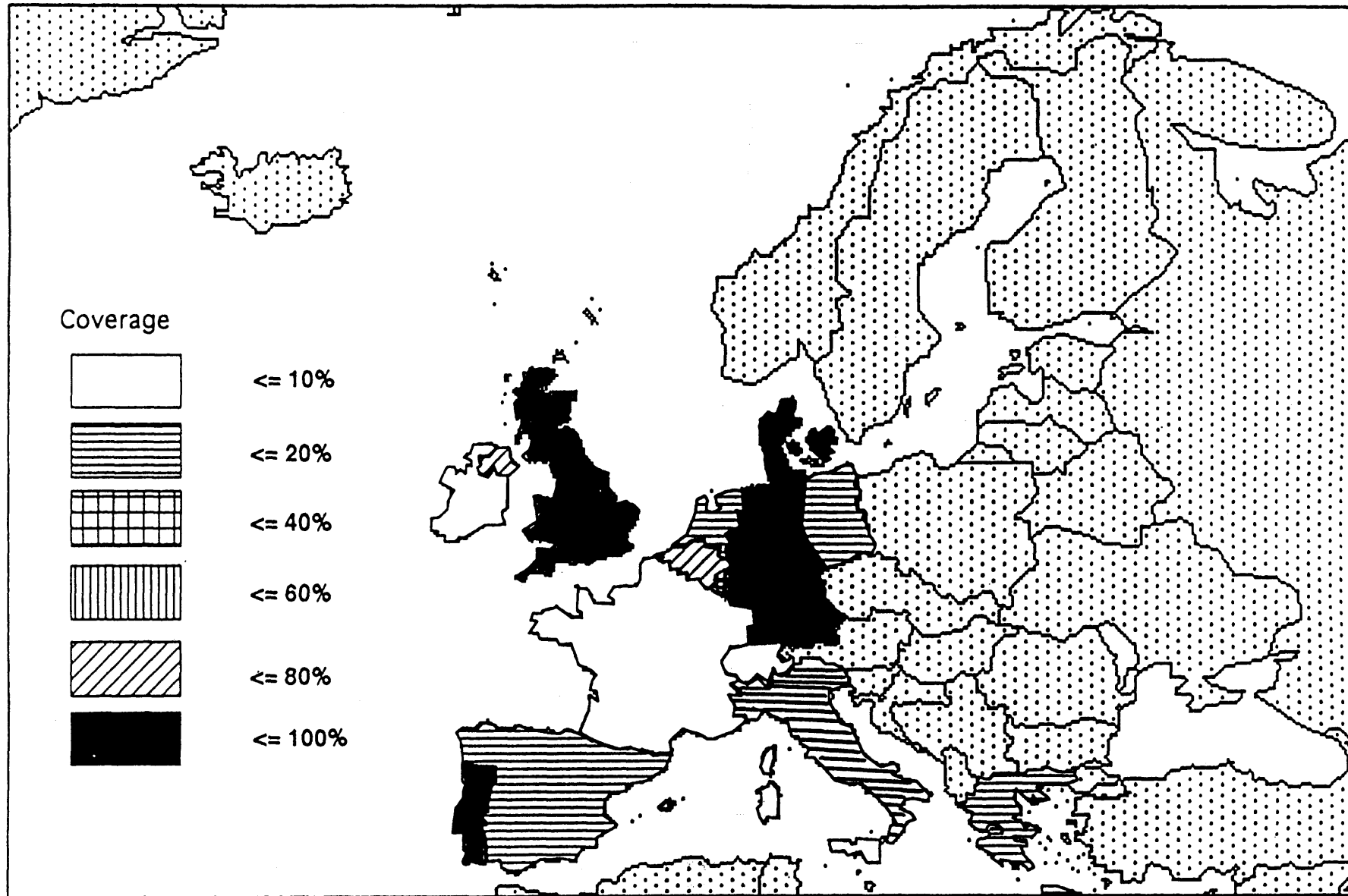
96

# GEOGRAPHICAL COVERAGE EURO-ISDN BRI 1992

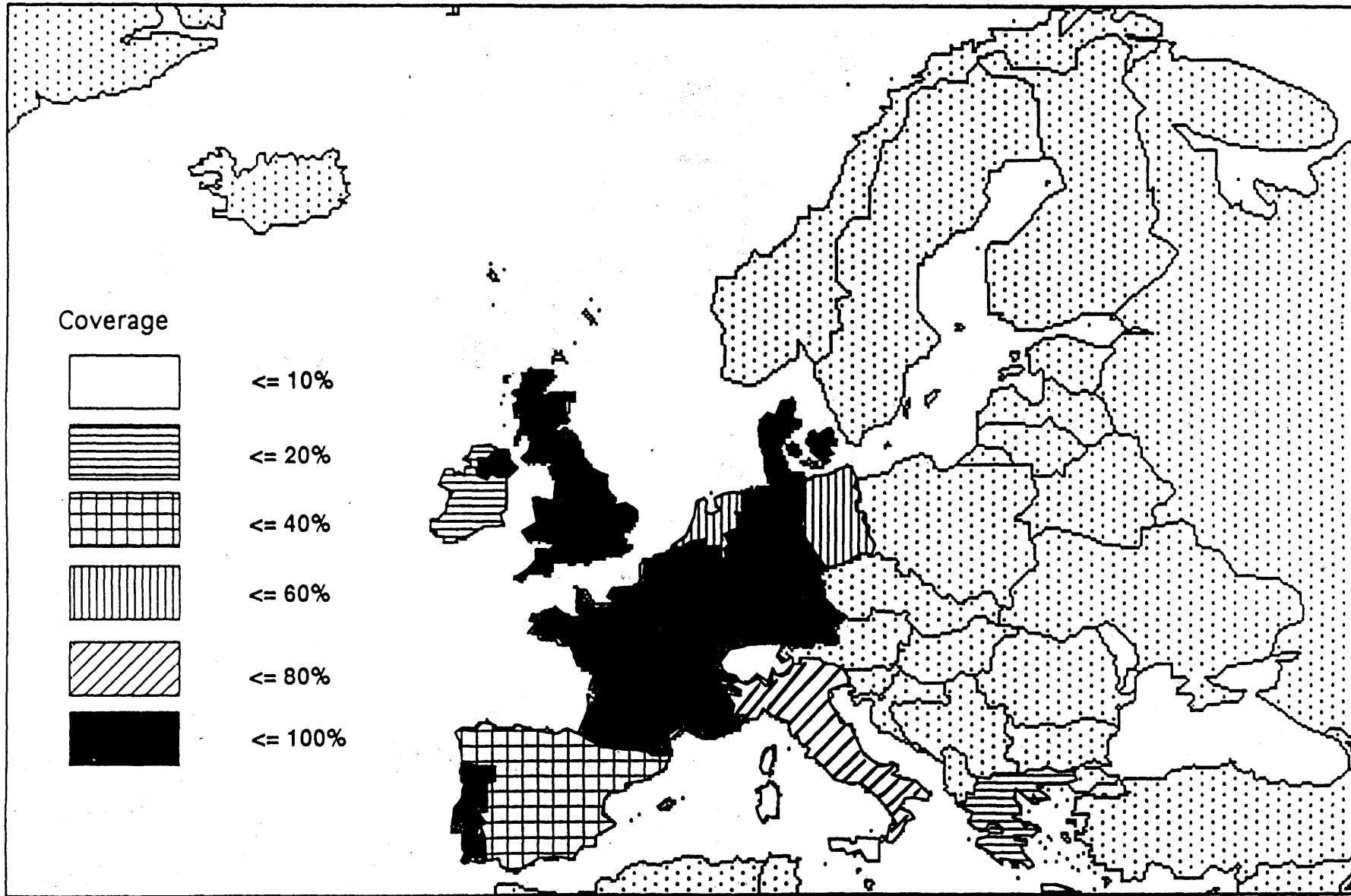


17

# GEOGRAPHICAL COVERAGE EURO-ISDN BRI 1993

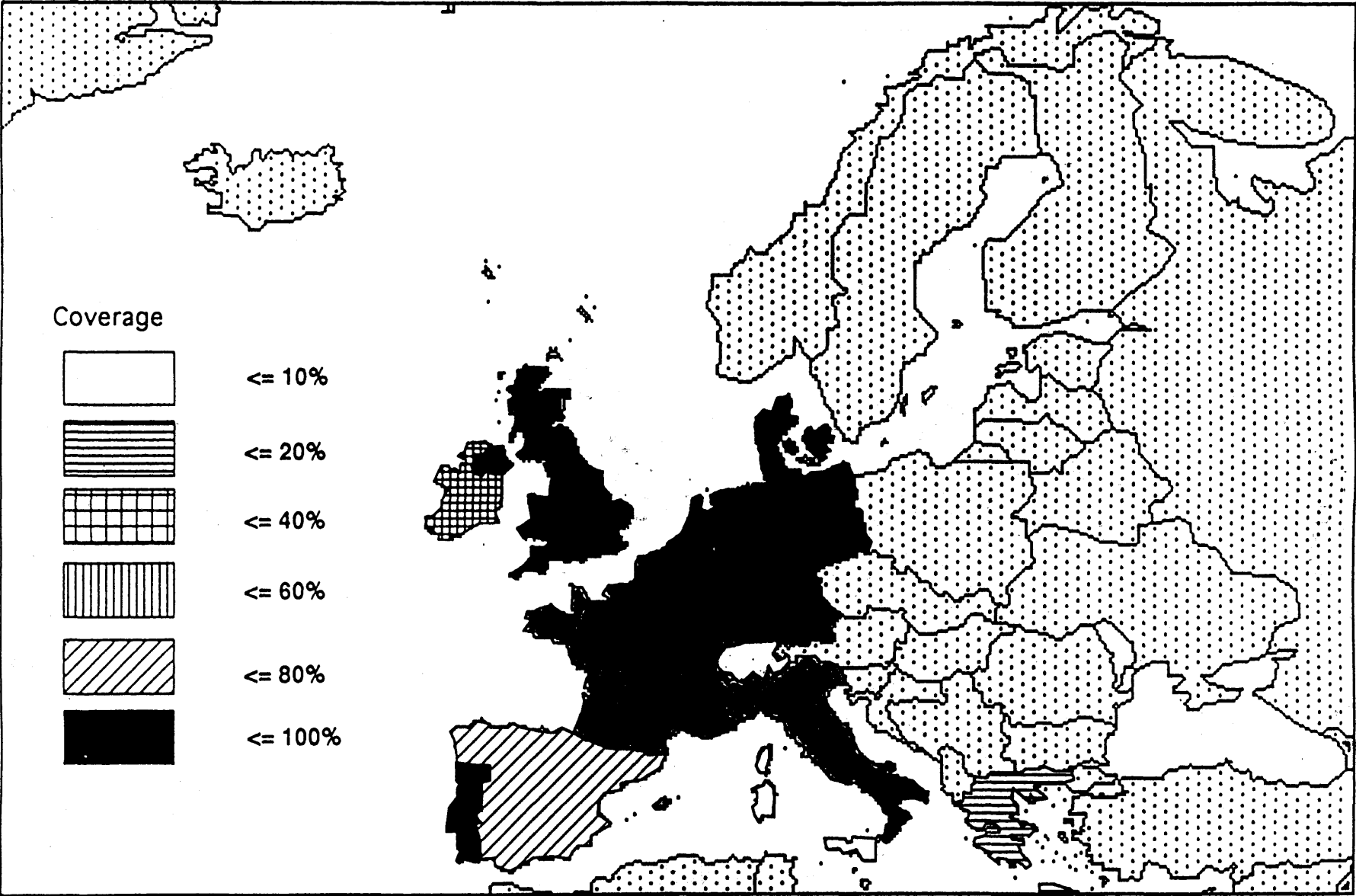


# GEOGRAPHICAL COVERAGE EURO-ISDN BRI 1994



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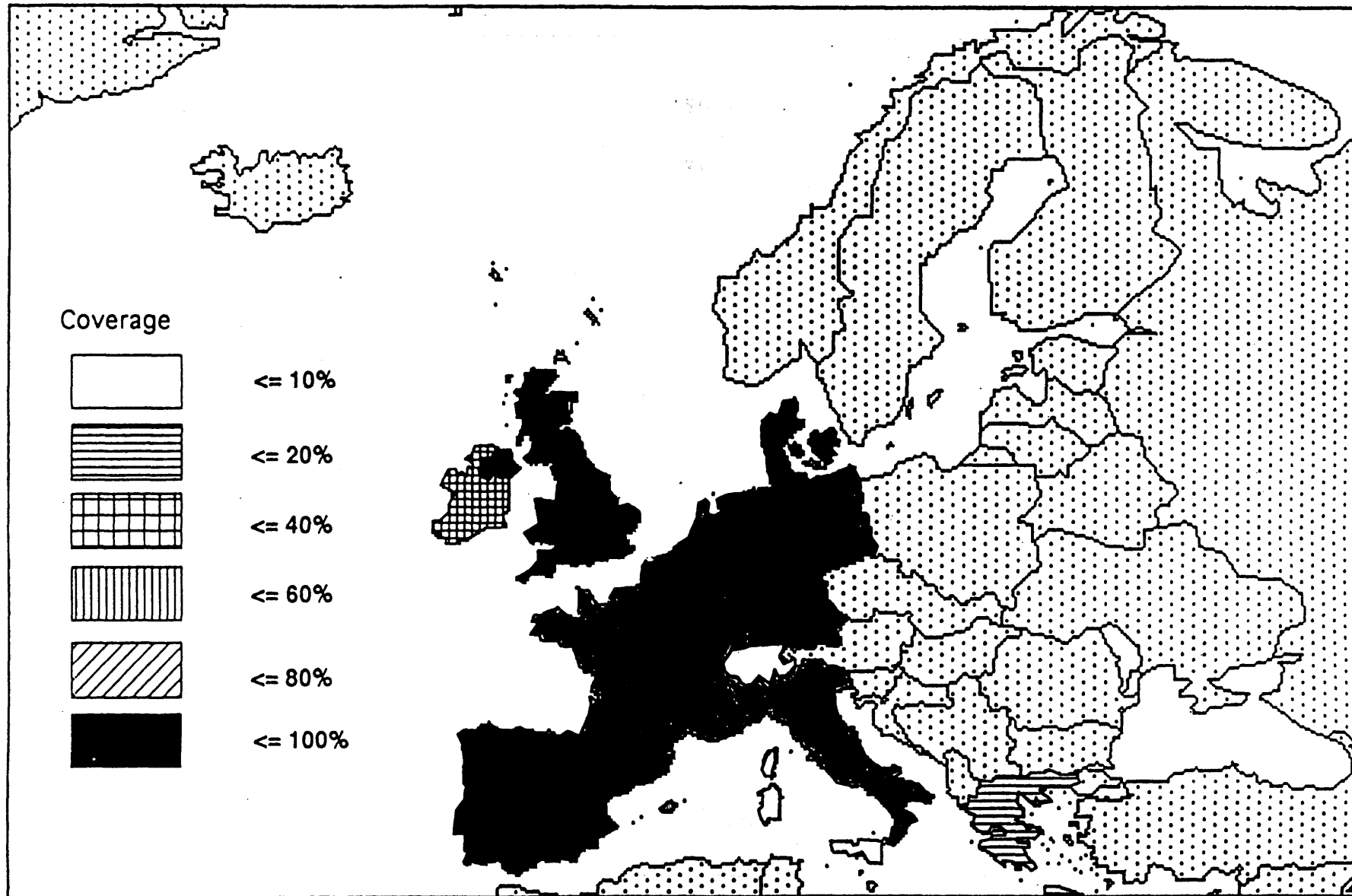
# GEOGRAPHICAL COVERAGE EURO-ISDN BRI 1995



80

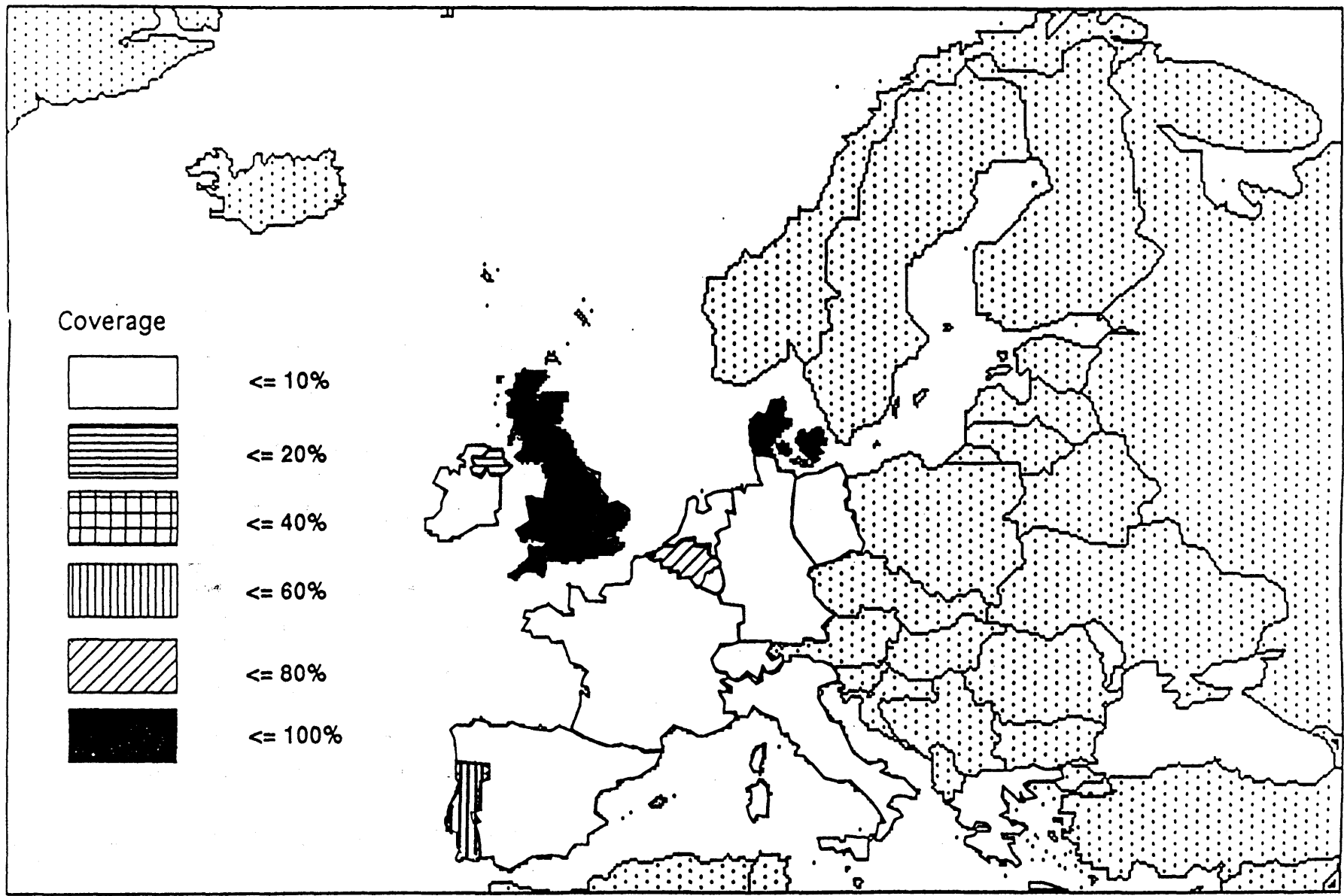


# GEOGRAPHICAL COVERAGE EURO-ISDN BRI 1996



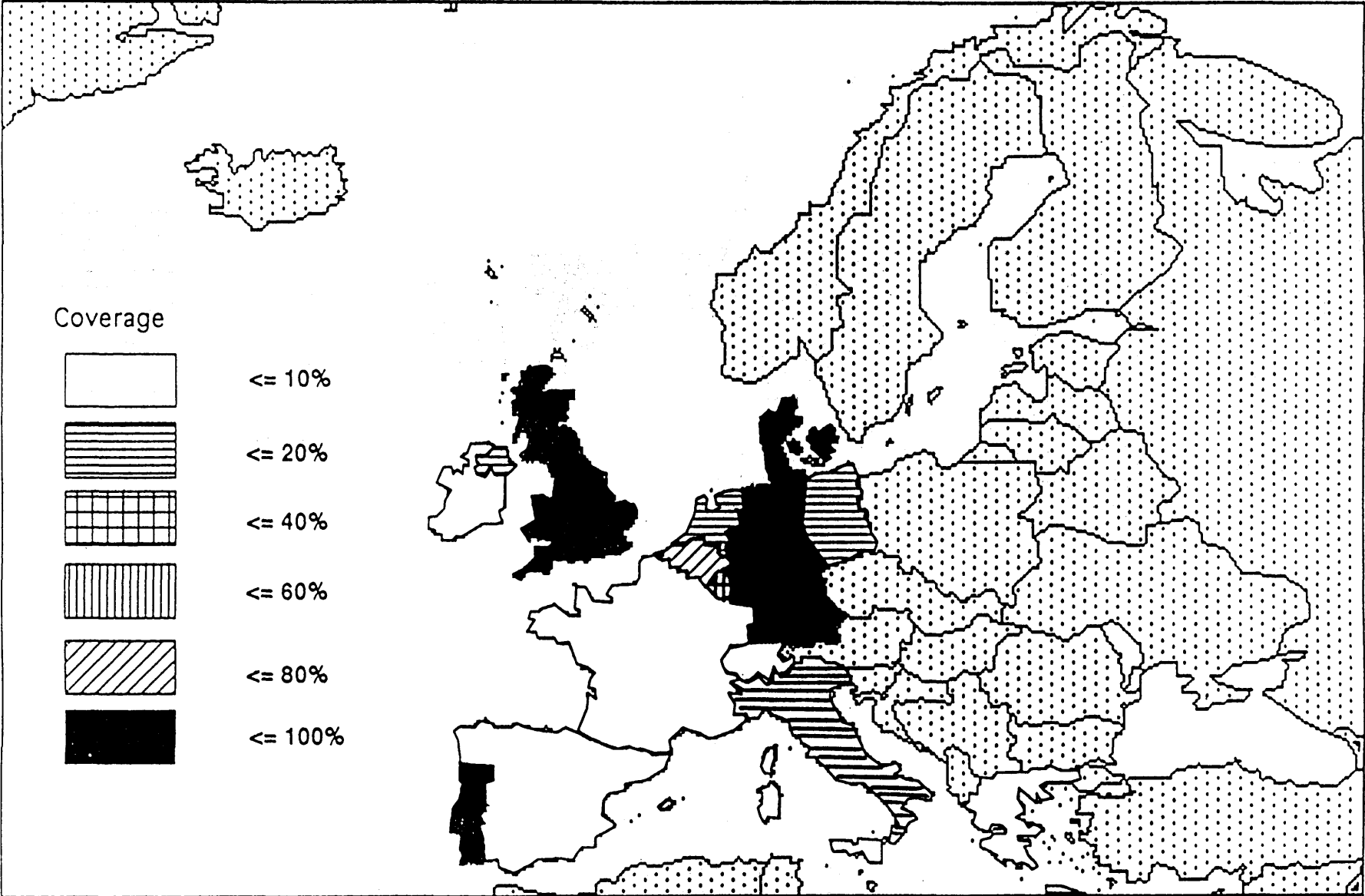
% GEOGRAPHIC COVERAGE EURO-ISDN PRI						
	1992	1993	1994	1995	1996	
BELGIUM		90	100	100	100	
DENMARK	100	100	100	100	100	
FRANCE		10	90	100	100	
GERMANY		100	100	100	100	
old Länder		20	50	100	100	
new Länder						
GREECE						'2 Provinces    '7 Provinces
IRELAND		34	45	50	60	
ITALY		20	70	100	100	
LUXEMBOURG		City	100	100	100	
NETHERLANDS		'30 cities	70	100	100	
PORTUGAL	50	100	100	100	100	
TP	10	40	50	100	100	
TLP						
SPAIN		20	40	80	100	
U.K.						
BT	10	100	100	100	100	
MERCURY						

# GEOGRAPHICAL COVERAGE EURO-ISDN PRI 1992

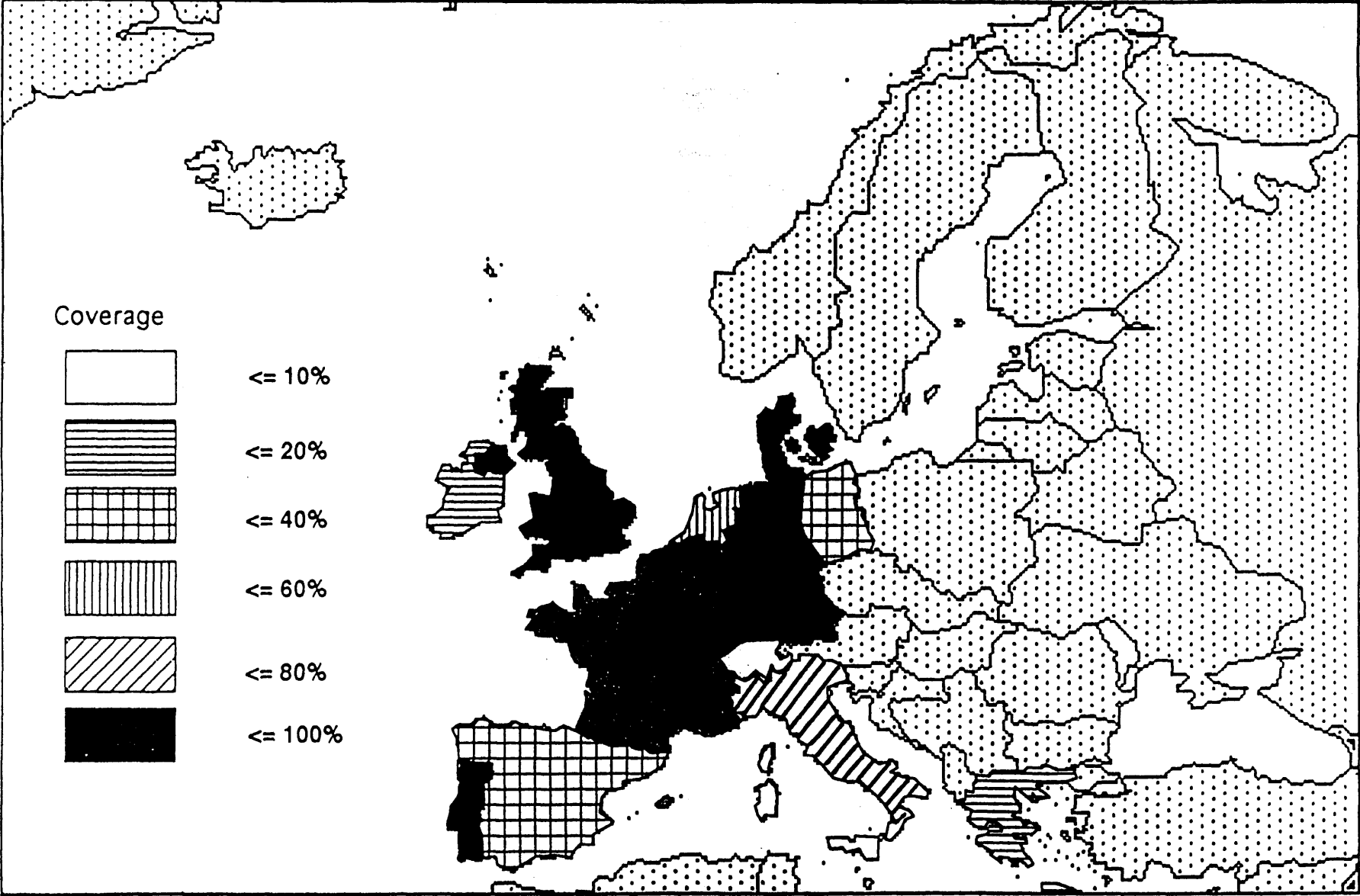


23

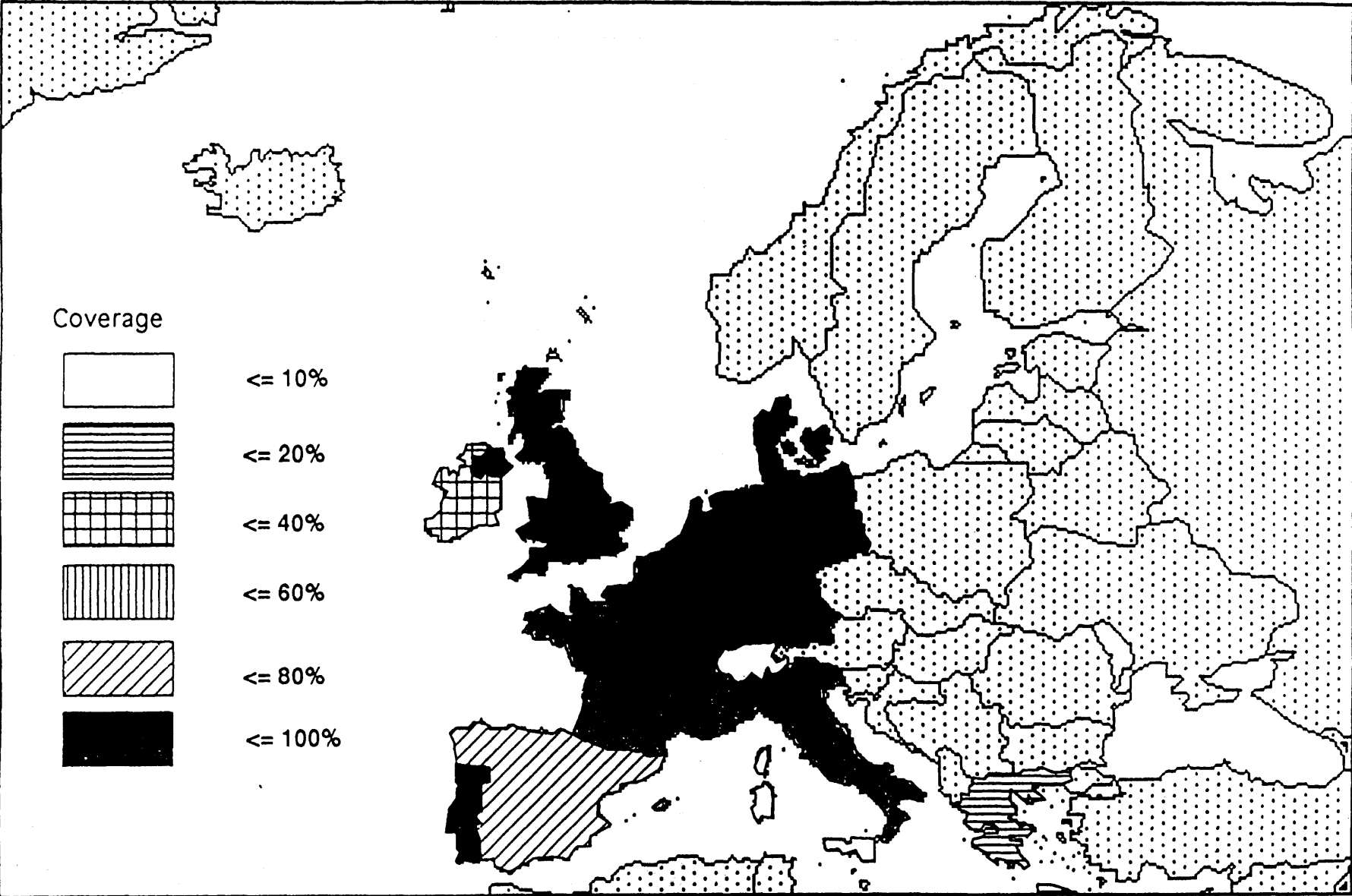
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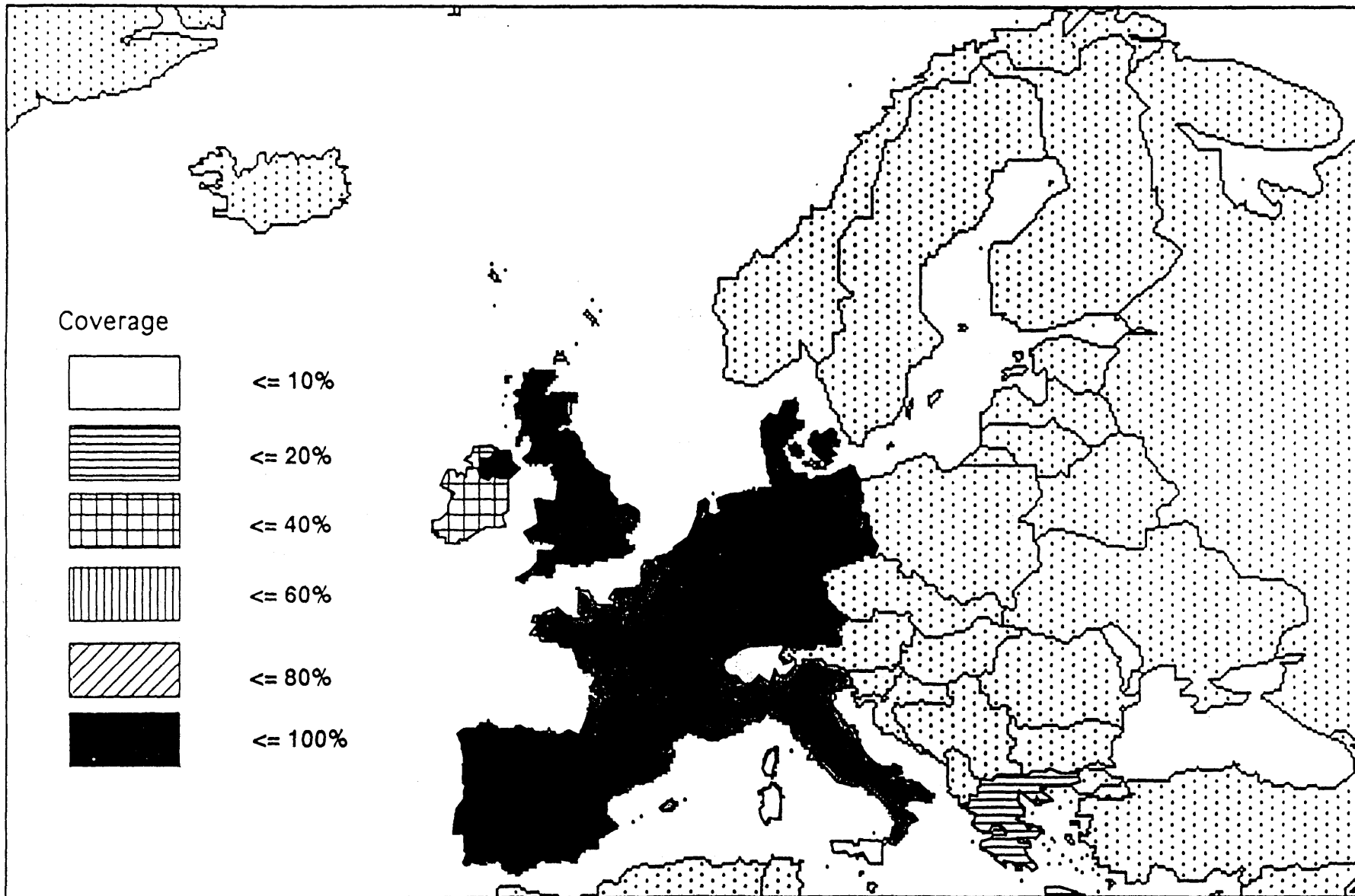
# GEOGRAPHICAL COVERAGE EURO-ISDN PRI 1994



# GEOGRAPHICAL COVERAGE EURO-ISDN PRI 1995



# GEOGRAPHICAL COVERAGE EURO-ISDN PRI 1996



YEAR OF EURO-ISDN INTERNATIONAL INTERCONNECTION PLANNED WITH MEMBER STATES (ISUP V1).

to:	BELGIUM	DENMARK	FRANCE	GERMANY	GREECE	IRELAND	ITALY	LUXEMBOURG	NETHERLANDS	PORTUGAL	SPAIN	BT	MERCURY
from:													
BELGIUM		1993		1993						1993	1993		
DENMARK	1993		1993	1994	1993	1993	1993	1994	1993	1993	1994	1993	1993
FRANCE	1993/94	1993/94		1993/94		1993/94	1994	1993/94	1994	1993/94	1994	1994	
GERMANY	1993	1993	1993		1993	1993	1993	1994	1993	1993	1994	1993	1993
GREECE		1994								1993	1994		
IRELAND	1993	1993	1993	1993	1993	1993	1993		1993	1993	1994	1994	1993
ITALY		1993		1993						1993	1994		
LUXEMBOURG	1994	1994	1994	1994	1994	1994	1994		1994	1994	1994	1994	1994
NETHERLANDS	1993			1993						1993	1994		
PORTUGAL	1993	1993	1993	1994	1993	1993	1993	1994	1993		1994	1993	1993
SPAIN	1994	1994	1994	1994	1994	1994	1994	1994	1994	1994	1994	1994	1994
U.K.						1994				1993	1993	1994	
BT		1993	1994										
MERCURY													

28







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15

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