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ANALYSIS REPORT ON

THE APPLICATION OF ONP TO ISDN

THE APPLICATION OF OPEN NETWORK PROVISION (ONP)

TO THE

INTEGRATED SERVICES DIGITAL NETWORK (ISDN)

Contents

1. <u>Introduction</u>

Council Directive 90/387/EEC of 28 June 1990 [1] provides a framework for drawing up proposals for Open Network Provision (ONP), applied to specific areas.

This report concerns the application of ONP to the Integrated Services Digital Network (ISDN).

The report is based on an analysis study undertaken for the Commission between 1989 and June 1990 by two consultancy organisations, (ETCO working in conjunction with OVUM) together with the public comments which followed the open presentation of the study findings. Forty four organisations participated in the OVUM study, and some eighty five people representing users, telecommunications operators and other interested parties, attended subsequent workshops. In broad content therefore, the Report encompasses the views of users, suppliers and operators across Europe.

Following consultation with the ONP Committee and the period of public consultation on this Report, the Commission will prepare a proposal for a Recommendation for the Application of ONP to ISDN, for adoption by Council by January 1992 (in accordance with the binding date as per Annex III of the ONP Framework Directive).

2. <u>Background</u>

2.1. General

The improvement in telecommunications in the Community is an essential condition for the harmonious development of economic activities and a competitive market in the Community, from the point of view of both service providers and users.

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[1] O.J. L192 vol. 33, 24 July 1990.

The Commission has therefore adopted a programme, set out in the Green Paper[2], for progressively introducing competition into the telecommunications market. The Council has expressed broad support for the objectives of this programme[3], and in particular the progressive creation of an open community market for telecommunications services.

The considerable technological advances in telecommunications over the last decades allow an increasing range of services to be provided, and also make it technically and economically possible for competition to take place between different service providers.

The concept of Open Network Provision (ONP) is designed to encourage the provision of new Value Added Services (VAS), by ensuring a 'level playing field' for all new market entrants. In particular, ONP seeks to ensure that a telecommunications organisation, who may have certain special or exclusive rights in the provision of basic telecommunications infrastructure, will operate under the same conditions as its competitors when it comes to the provision of value added services.

2.2. The ONP Framework Directive

The ONP Framework Directive (90/387) of 28 June 1990 describes ONP and outlines general principles for the open and efficient access to public telecommunications networks and services.

ONP conditions must be based on objective criteria, be transparent and published in a appropriate manner, and must guarantee equality of access and be non-discriminatory. They must not restrict access to public telecommunications networks or services, except for reasons based on 'essential requirements'. These essential requirements cover security of network operations, maintenance of network integrity, interroperability of services in justified cases, and protection of data.

It is envisaged that ONP conditions will normally address harmonisation issues related to the three aspects of :

- technical interfaces

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2   "Towards a Dynamic European Economy : Green Paper on the development of the Common Market for Telecommunications Services and Equipment", reference COM (87) 290, dated 30 June 1987.

3   O.J. n°C257, 4.10.1988, p. 1

- usage conditions (including essential requirements)

- tariff principles.

A firm timetable for the phased implementation of ONP is given in the ONP Framework Directive. Priority areas are ONP for leased lines, voice telephony services, packet-switched data services and ISDN.

3. ONP and ISDN

3.1. General

ISDN will be a major platform for future value added services within the Community. The Public Switched Telephone Network (PSTN) already supports several types of VAS, such as videotex, but ISDN, with its 64 kbit/s capability, its flexibility and its richness of features, will be able to support a much wider range of services.

Telecommunications organisations may continue to enjoy certain exclusive or special rights in the provision of voice telephony provided on ISDN, and so it is important that where they also provide competitive value added services, they compete fairly with other VAS suppliers who rely on the ISDN infrastructure.

This is one reason for defining ONP condition for ISDN. The other main reason is to ensure that harmonised ISDN offerings are available across all Member States.

3.2. Implementation of ONP/ISDN

The measures planned for the Community-wide application of the principles of ONP to the Integrated Services Digital Network (ISDN) will be implemented in 3 steps as laid down in Annex III of Directive 90/387 :

Step 1 Implementation of harmonised technical interfaces and/or service features for ISDN - 1 January 1991

Step 2   Adoption by the Council of a Recommendation on the supply of technical interfaces, conditions for usage and tariff principles applying to ISDN - 1 January 1992

Step 3   Examination of a proposal for a Directive on ISDN based on the initial results of implementation of the recommendation referred to under Step 2 above.

Step 1 is being implemented by publication in the Official Journal of standards deemed suitable for ONP/ISDN. Annex 1 of this report lists the standards to be referenced in the O.J. in January 1991. This list will be revised as the European Telecommunications Standards Institute (ETSI) work on ISDN standards proceeds.

This analysis Report on ONP/ISDN should be seen in the context of step 2. The ONP Framework Directive establishes (in Article 4.4) a working methodology for drawing up ONP conditions for specific areas; this entails the Commission initiating detailed analysis of an area, and then drawing up a Report on the result of this analysis. This analysis Report sets out proposals for technical conditions, usage conditions, and tariffs principles. These proposals, modified as necessary in the light of public comments and consultation with the ONP Committee, will form the basis of a proposal for a Council Recommendation to be drawn up by the Commission, for adoption by January 1992. Annex 2 gives the anticipated timetable of events.

4.   ONP/ISDN Technical conditions

4.1   Interface standards

ONP conditions apply to the user/network interface. They do not apply to interfaces between public networks, and therefore such issues as interworking between ISDN and other public networks, e.g. packet switched public data networks, are only relevant in so far as they impinge upon the provision of certain services at the user/network interface.

4.1.1.   ONP conditions shall apply at the S/T reference point, (as defined in the I.400 series of CCITT Recommendations).

Other interfaces, in particular those corresponding to reference points for interconnection of specialised service providers, are not covered by this report.

but will be considered at a later stage in the application of ONP principles to Intelligent Networks.

4.1.2 Both basic rate access (2B + D) and primary rate access (30B + D) shall be made available to users.

The service offered shall conform to the relevant standards referenced in the O.J. of January 1991 (the entry in the O.J. is reproduced as Annex 1 of this report).

4.2. Services offered

The ISDN services to be offered at the interfaces defined in 4.1. shall be implemented in 3 phases :

Phase 1

corresponds to a minimum set of ISDN service offerings, and must be offered in all networks. The date for availability of Phase 1 services across all networks is 1 January 1993. Standards relevant to Phase 1 services were referenced in the O.J. (January 1991). See annex 1.

Phase 2

corresponds to an extended set of ISDN service offerings, which requires further standards to be developed, and/or agreements to be reached between service operators. The date for availability of Phase 2 services across all networks is January 1994.

Phase 3

corresponds to additional services which may be included in future ONP/ISDN offerings. Some TOs may nevertheless offer such services in advance of their inclusion in ONP/ISDN. The date for availability of Phase 3 services across all networks is for further study.

The table in annex 4 shows the relationship between the services referred to in this report, the services identified in the CEPT Memorandum of Understanding (MOU) on ISDN, and the services which are in the standards work programme of ETSI-ISM. It also shows which services were covered by the standards referenced in the O.J. of January 1991. Annex 5 gives definitions for the various ISDN terms used below.

Phase 1 - Services

Phase 1 services are all covered by the MOU and are in the current work programme of ETSI-ISM.

Bearer services

circuit mode 64 kbit/s unrestricted bearer service

circuit mode 3.1 kHz audio bearer service.

Supplementary services

calling line identification presentation (CLIP)

calling line identification restriction (CLIR)

direct dialling in (DDI)

multiple subscriber number (MSN)

terminal portability (TP)

Phase 2 - Services

Phase 2 contains services which are additional to the MOU and which have been included in response to user demand. They are indicated by an asterisk. These additional services are not in the work programme of ETSI-ISM. A mandate has been given to ETSI to complete the necessary standards.

Bearer Services

circuit mode 64 kbit/s unrestricted bearer service on

reserved or permanent mode

packet mode bearer service case A and case B

Supplementary services

closed user group

user to user signalling

reverse charging *

Terminal addressing (see 4.3.) *

Network Management service (see 4.4.) *

PSPDN interworking (see 4.5.) *

<u>Phase 3 - Services</u>
Phase 3 contains services listed in the MOU not covered in Phases 1 or 2.

Bearer services
    circuit mode speech
    circuit mode 2x64 kbit/s unrestricted

Supplementary services
    Advice of Charge Services (AOC)
        AOC, Charging Information at Call Setup Time
        AOC, Charging Information during the Call
        AOC, Charging Information at the end of the Call

    Number Identification Services
        Connected Line Identification Presentation (COLP)
        Connected Line Identification Restriction (COLR)

    Call waiting (CW)

    Completion of Calls to Busy Subscriber (CCBS)

    Conference Service
        Conference call, add-on (CONF)
        Meet-me conference (MMC)

    Diversion Service
        Call Forwarding Unconditional (CFU)
        Call Forwarding Busy (CFB)
        Call forwarding No Reply (CFNR)
        Call Deflection (CD)

    Freephone (FPH)

Malicious Call Identification (MCI)

Sub-addressing (SUB)

Three Party Service (3PTY)

4.3. Terminal addressing

Current ISDN implementations in Member States differ in the method of addressing individual terminals connected to the passive bus behind the S interface. A common solution is required for selecting which terminal should answer an incoming call. There are two different aspects to this selection :

a) selecting a specific type of terminal (telephone, facsmile, teletex, etc...)

b) selecting a specific terminal when more than one compatible terminal is attached to the S-Bus.

Methods used at present include :
- multiple subscriber number
- direct dialling in
- sub-addressing
- terminal compatibility checking HLC/LLC
- use of last digit of number

The common solution must take into account PSTN/ISDN interworking, so that a terminal on the PSTN can establish a call to a corresponding terminal on the ISDN.

It is proposed to give ETSI a mandate to develop a common method of terminal addressing. Telecommunications Organisations will then be expected to implement this common method of terminal addressing as a Phase 2 service, by January 1994.

4.4. Network Management Service

The importance of Network Management is well recognised by users and telecommunications organisations, but as yet user requirements require further definition and appropriate standards need to be drawn up.

One approach is the Telecommunications Network Management (TNM) approach whereby users could have remote access to a user network management service. The facilities available to users from such a user network management service would include :

- performance monitoring (fault alerts, status information etc)
- configuration management (network design and planning)
- security management (control and monitoring of network access and usage)
- accounting management (billing and asset auditing)

The Commission is planning to contract for an independent study on Network management, and as a result a mandate may be issued to ETSI. In anticipation of this, network management service has been included in the list of services in Phase 2 for implementation by January 1994.

4.5. PSPDN interworking

For ISDN interworking with PSPDN, there is a requirement for call set up to be possible from both directions, since ISDN will be able to support data services to the same level of functionality as a dedicated data network.

At the present time, interworking between networks which use different numbering plans, for example the PSTN and PSPDN, is achieved by two-stage call set up. (A packet assembler/disassembler (PAD) is the interworking unit that provides the interface between networks. The PAD is accessed from the PSTN using a PSTN number. The caller then inserts the PSPDN network user address of the required terminal to enable the call to be routed to its destination over the PSPDN). In this arrangement, call set up can only be made in one direction, PSTN to PSPDN.

A single stage selection process is preferred, and the development of an internationally agreed method is an important aspect of the current studies on numbering in CCITT Study Groups II and VII. On the assumption that the CCITT studies will result in suitable Recommendation by 1992, it is proposed to give ETSI a mandate to draw up European standards in this area.

The inclusion of PSPDN interworking in the list of Phase 2 services given in section 4.2. means that Telecommunications Organisations should by January 1994, formulate and put into practice common methods of ISDN-PSPDN interworking based on these standards.

5. ONP/ISDN Supply Conditions

5.1. Publication of Information

5.1.1. The following information related to the conditions of supply of ISDN service by a telecommunications organisations shall be made publically available so as to provide easy access for users of that information.

a) Technical characteristics of ISDN services offered, including references to the standards implemented

b) Tariffs (covering access, usage, maintenance)

c) Refund policy

d) Information on licensing requirements, if applicable

e) Conditions for the attachment of terminal equipment

f) Level(s) of maintenance service offered

g) Ordering procedure, including designated contact points within the TO (see also section 5.2)

h) Minimum contractual period; if relevant

i) Usage restrictions (see section 6)

j) Implementation timescale (in cases when ISDN is being introduced progressively throughout a Member State)

Any change in the conditions of supply of ISDN service shall also be made publically available at least two months before the change is to take place.

Where this change involves withdrawal of a service that has been available to users, the notice period shall be one year, unless a shorter period is agreed by the parties concerned.

5.1.2 The following information related to the performance of each telecommunications organisation in the supply of ISDN services shall be made publically available so as to provide easy access for users of that information.

Both 'target' and 'achieved' figures shall be given.

Separate statistics shall be provided for the two categories of basic rate access and primary rate access,

i)   Availability of access

ii) Meantime between service outages

iii) Typical repair time for service outages

iv) Typical delivery period

v)   Bit error rates

vi) Call set up time

vii) Network transit delay

(Terms are defined in Annex 3).

The above information shall be published annually. The published data shall be published within 3 months of the end of the measurement period.

5.1.3. In application of the principle of non-discrimination, ISDN services shall be offered and provided on request without discrimination to all users. The terms and conditions which apply to telecommunications organisations when using ISDN services for the provision of competitive services shall be equivalent to the terms and conditions which apply to other users.

5.2. Common ordering and billing procedures

Telecommunications organisations shall formulate in consultation with users and put into practice :

-    a common ordering procedure for ISDN service, throughout the community.

-    a one-stop ordering procedure for ISDN service, to be applied where requested by the user.

-    a one-stop billing procedure for ISDN service, to applied where requested by the user.

Definition of these terms is given in Annex 3.

5.3. Specific Supply Conditions

Within the framework of the general supply conditions referred to in para 5.1 above, specific supply conditions shall be included in contracts for the supply of ISDN services. Specific supply conditions shall remain unchanged until the end of the contract period, unless otherwise agreed by the user and the telecommunications organisation.

Specific supply conditions shall include :

- agreed variations from the general supply conditions

- procedures to be followed by the user and the Telecommunications Organisation in the event of :

    - faults or failures of the ISDN service provided

    - complaints about other aspects of the service provided

    - problems with accounting or billing

    - premature termination of service

- designated contact points within the Telecommunications Organisation with responsibility for handling the items listed above.

5.4. Supply Conditions - Exceptional Circumstances

5.4.1. Emergency situations

In an emergency, the following measures may be taken by a telecommunications organisation to safeguard the security of network operations :

- interruption of service

- limitation of service features

- denial of access to the service

Full service shall be restored to users as soon as the emergency situation is over. Member States shall ensure that the Commission and the general public are

notified of the beginning and end of the emergency, as well as of the nature and extent of exceptional service restrictions.

5.4.2. Malfunction of Terminal Equipment

In the case of terminal equipment which fails to comply with the relevant approval requirements and adversely affects operation of the public telecommunications network, service may be interrupted by the Telecommunications Organisation until the terminal is disconnected from the network termination point.

The Telecommunications Organisation shall immediately inform the user about the interruption, giving the reasons for the interruption. As soon as the user has informed the Telecommunications Organisation that the terminal equipment is disconnected from the Network Termination point, the provision of the service shall be resumed.

5.5. Numbering Plans

In recognition of the fact that the availability of numbering capacity is a key enabling mechanism for the growth of existing services and the introduction of new services, Member States shall ensure that the management of Numbering Plans is carried out in a way that provides a fair, equitable and timely allocation of numbers for all telecommunications service operators.

6. ONP/ISDN Usage conditions

In normal circumstances, there shall be no restrictions placed on the use of ISDN service, except where such restrictions involve :

6.1. Data Protection

Member States may restrict the use of ISDN only to the extent necessary to ensure compliance with regulations on the protection of data including protection of personal data, the confidentiality of information transmitted or stored, as well as the protection of privacy compatible with Community law and in particular with the Directive concerning the protection of personal data and privacy in the context of public digital telecommunications networks.

6.2.   Voice Telephony

Where the provision of a voice telephony service to the public is a reserved right of telecommunications organisations, Member States shall ensure that telecommunications organisations may not interrupt the provision of ISDN service or reduce the availability of ISDN features for reasons of alleged infringements of their exclusive or special rights before the national regulatory authority has approved the measures envisaged by the telecommunications organisation and transmitted to the user reasons for the decision.

7.   Tariff Principles

7.1.   Guidelines

The tariff structure shall be based on the following guidelines (the guidelines are not intended to harmonise the absolute level of tariffs).

Tariffs should be :

- cost oriented
- simple and readily understandable
- non-discriminatory
- independent of the type of application used
- unbundled (as far as possible).

Within the general guidelines, tariffs for ISDN shall include the following tariff elements :

-    a single connection charge, for initial provision of ISDN Service

-    a periodic subscription charge, varying according to the type of access and range of services to which the user has subscribed

-    usage charges, which may include a call set-up charge, a call duration charge, and facilities usage charges, and may vary depending on the time or day.

Subject to the general guidelines, volume discounts may be applied to any of the above tariff elements.

The services defined in section 4.2 as Phase 1 services shall be regarded as the basic ISDN service and this basic service may be tariffed as a bundle. All other services shall be tariffed separately.

8. Implementation timescales for supply, usage and tariff conditions

The provisions of sections 5, 6 and 7 shall be implemented as soon as possible and at the latest by January 1993.

ANNEX 1   ONP/ISDN

List of Standards Reference

In accordance with Art. 5.1 of Directive 90/387/EEC[4] the Commission publishes a list of standards which constitutes a basis for harmonized access and/or service features in the context of open network provision.

Given the fact that many of these standards are not yet finally adopted,[5] changes may occur. As a consequence these standards are now being published as an indicative list. Therefore this list may be amended by further publication in the Official Journal in accordance with Art. 5.4 of directive 90/387/EEC.

User Network Interface	Basic rate Access	ETS 300 012 ** ETS [CA] (300 102-1) ** ETS [CB] (300 102-2) ** ETS [CC] (300 125) ** ETR T/S 46-39 ****
User Network Interface	Primary rate Access	ETS 300 011 ** ⁀ ETS [CA] (300 102-1) ** ETS [CB] (300 102-2) ** ETS [CC] (300 125) ** ETR T/S 46-39 ****
User Network Interface	Attach. requirement for Basic rate Access	ETS T/E 04-08 ** ETS T/E 04-22 **
User Network Interface	Attach. requirement for Primary rate Access	ETS T/SE 04-24 **
User Network Interface	Attach. requirement for Terminal adaptor	ETS 300 077 **
ISDN Services	Circuit Mode 64 kbps Unrestricted bearer service	ETS 300 108 ** ETS T/S 23-01 ** ETS T/S 46-39 ** ETS [CA] (300 102-1) ** ETS [CB] (300 102-2) **

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[4] Council Directive of 28 June 1990 on the establishment of the internal market for telecommunications services through the implementation of open network provision, OJ No L 192, 24-7-1990, pags.1-10

[5] In order to refer to the precise status of each standard,the relevant standards body should be contacted. Where the three stage description process for ISDN services is used (ETSI ISM report ETR 10, August 1990), stages 1, 2 and 3a are included.

** Draft ETSI Standard

**** ETSI Report..These reports do not form part of a standard, however they contain relevant information.
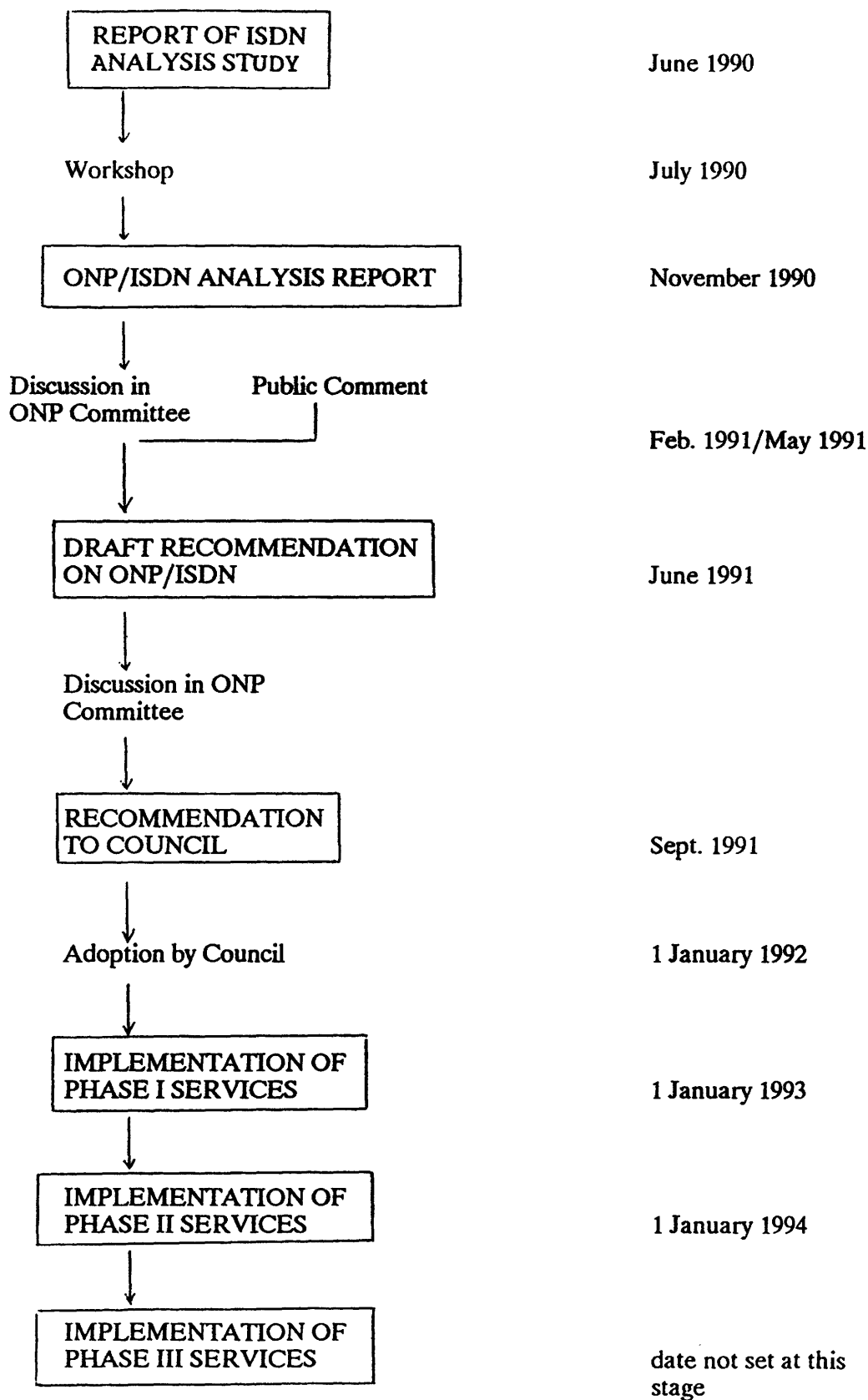
ISDN Services	Circuit Mode Speech bearer service	ETS 300 109 ** ETS T/S 23-01 ** ETS T/S 46-39 ** ETS [CA] (300 102-1) ** ETS [CB] (300 102-2) ** ETS 300 083 **
ISDN Services	Circuit Mode 3.1 kHz Audio bearer service	ETS 300 110 ** ETS T/S 23-01 ** ETS [CA] (300 102-1) ** ETS [CB] (300 102-2) ** ETS T/S 46-39 ** ETS 300 084 **
ISDN Services	Calling Line Identification Presentation	ETS 300 089 ** ETS 300 091 ** ETS 300 092 **
ISDN Services	Calling Line Identification Restriction	ETS 300 090 ** ETS 300 091 ** ETS 300 093 **
ISDN Services	Direct Dialling In	ETS 300 062 ** ETS 300 063 ** ETS 300 064 **
ISDN Services	Multiple Subscriber Number	ETS 300 050 ** ETS 300 051 ** ETS 300 052 **
ISDN Services	Terminal Portability	ETS 300 053 ** ETS 300 054 ** ETS 300 055 **
ISDN Services	Freephone	T/NA1(89)12 ** T/S 22-13 ** T/S 46-33P **
ISDN Services	Association of supple. services to bearer services	ETR T/NA1(89)33 ****
ISDN Services	Interaction between supplem. services	ETS T/S 46-33Z **
ISDN Services	End-to-end protocol for 3.1 khz Telephony	ETS 300 082 **
ISDN Services	Terminal and network interworking	DTR/NA-2007 **** DTR/NA-2006 ****
ISDN Services	Packet mode bearer service D channel	ETS 300 049 ** ETS T/S 23-03 ** ETS 300 007 **

ISDN Services	Packet mode bearer service B channel	ETS 300 048 ** ETS T/S 23-03 ** ETS 300 007 **
ISDN Services	End-to-end protocol for packet mode bearer service	ETS 300 007 **
ISDN Services	Closed User Group	ETS T/NA1(89)21 ** ETS T/S 22-03 ** ETS T/S 46-33H **
ISDN Services	User to user signalling	ETS T/NA1(89)06 ** ETS T/S 22-17 ** ETS [CA] (section 7.1) **
Recommendations on "Safety and protection"		ETS 300 047-1 to 5 ** ETS 300 046-1 to 5. **
Mechanical interface		ENV 41001 *** EN 28877 *****

3. NOTE

In accordance with Article 5.2 of Directive 90/387/EEC compliance with these standards will carry the presumption of conformance with the requirements of open network provision as far as covered by these standards and notwithstanding other requirements resulting from directives 90/387/EEC and 90/388/EEC.

In accordance with directive 90/387/EEC this list may be supplemented by further standards in order to comply with new access requirements resulting from user demand and technological development.

***** CEN/CENELEC European Standard

ANNEX 2   TIMESCALE FOR APPLICATION OF ONP TO ISDN

REPORT OF ISDN ANALYSIS STUDY	June 1990
↓	
Workshop	July 1990
↓	
ONP/ISDN ANALYSIS REPORT	November 1990
↓	
Discussion in Public Comment ONP Committee	Feb. 1991/May 1991
↓	
DRAFT RECOMMENDATION ON ONP/ISDN	June 1991
↓	
Discussion in ONP Committee	
↓	
RECOMMENDATION TO COUNCIL	Sept. 1991
↓	
Adoption by Council	1 January 1992
↓	
IMPLEMENTATION OF PHASE I SERVICES	1 January 1993
↓	
IMPLEMENTATION OF PHASE II SERVICES	1 January 1994
↓	
IMPLEMENTATION OF PHASE III SERVICES	date not set at this stage

ANNEX 3   DEFINITIONS

"Telecommunications organizations" means public or private bodies, to which a Member State grant special or exclusive rights for the provision of a public telecommunications network and, where applicable, public telecommunications services.

"Special or exclusive rights" means the rights granted by a Member State or a public authority to one or more public or private bodies through any legal, regulatory or administrative instrument reserving them the right to provide a service or undertake an activity.

"Public telecommunications network" means the public telecommunications infrastructure which permits the conveyance of signals between defined network termination points by wire, by microwave, by optical means or by other electromagnetic means.

"Network termination point" means all physical connections and their technical access specifications which form part of the public telecommunications network and are necessary for access to and efficient communication through that public network.

"Voice telephony" means the commercial provision for the public or direct transport of real-time speech via the public switched network or networks such that any user can use equipment connected to a network termination point to communicate with another user of equipment connected to another termination point.

"Open network provision conditions" means the conditions, harmonized according to the provisions of Directive 90/387/EEC, which concern the open and efficient access to public telecommunications networks and, where applicable, public telecommunications services and the efficient use of those networks and services. Without prejudice to their application on a case-by-case basis, the open network provision conditions may include harmonized conditions with regard to :

- technical interfaces, including the definition and implementation of network termination points, where required,

- usage conditions, including access to frequencies where required,

- tariff principles.

"Technical specifications", "standards" and "terminal equipment" are given the same meaning for those terms as in Article 2 of Directive 86/361/EEC.

Availability of access

defined as the average, for all connections of a given type, of the number of hours in a reasonable period for which service was available to a user according to specification, divided by the total number of hours in the period.

Meantime between service outages

The mean time between service outages is defined as the average time between consecutive service outages for all connections of a given type.

"Typical repair time" for service outages

The repair time is defined as the period starting when a failure message is given to the designed contact point within the telecommunications organisation and finishing when the customer accepts that service has been fully restored. "Typical Repair Time" is defined as the time within which 80 % of service outages are successfully repaired.

"Typical delivery period"

The delivery period is defined as the period starting when a customer's order is given to the designated contact point within the telecommunications organisation and finishing when the service requested is made available to the customer. The "typical delivery period" is the period in which 80 % of all relevant orders are successfully executed.

(In this context, an order placed by a customer for delivery of service at a fixed future date shall not be regarded as a 'relevant order'.)

"Common ordering procedure"

means an ordering procedure for the procurement of intra-community services which ensures that there is commonality across the telecommunications organisations in the information that has to be supplied by the users and the telecommunications organisations, and in the format in which the information is presented.

"One stop ordering procedure"

is the organisational arrangment between telecommunications organisations in the Member States whereby all transactions involving a user, required for the procurement of intra-community services, can be completed between the user and a single telecommunications organisation.

"One stop billing procedure"

is an organisational arrangement between telecommunications organisations whereby the billing and payment transaction for intra-community services supplied by more than one telecommunications organisation to a single user can be completed at one location between the user and a single telecommunications organisation.

"Bit error rate"

For an ISDN connection between two terminal equipments, the ratio of the number of bit errors received in a specified period to the total number of bits received in the same period.

"Call set-up time"

The overall lenght of time required to establish a circuit-switched call over an ISDN network, measured from the initiation of a calling signal until the reception of the call-connected signal at the originating terminal.
Average figures for national calls and for intra-Community international calls to be shown separately.

"Network transit delay"

The time that elapses between the initial offering of a unit of user data to an ISDN network by a transmitting terminal equipment and the complete delivery of that unit to the receiving terminal equipment. (A unit of user data may be a bit, byte, packet, message etc).

Average figures for circuit-switched and packet-switched ISDN services, and for national calls and intra-Community international calls to be shown separately.

ANNEX 4

SERVICE	MOU	ETSI-ISM	THIS REPORT Phase 1	Phase 2	Phase 3	REFERENCED O.J. JAN 91 also see Annex 1
BEARER SERVICE						
Circuit mode speech bearer service	✓	P2			✓	✓
Circuit mode 64 Kbit/s unrestricted bearer service	*✓	P1*	✓			✓
Circuit mode 3.1 Khz audio bearer service	*✓	P1*	✓			✓
Circuit mode 2 x 64 Kbit/s unrestricted bearer service	✓				✓	＼
Packet mode bearer service:						
X.31 case A (B-channel)	✓			✓		
X.31 case B (D-channel)	✓	P2		✓		✓
X.31 case B (B-channel)	✓	P2		✓		✓
Circuit mode 64 Kbit/s unrestricted bearer service in reserved or permanent mode				✓ (see note)		
Basic rate access		P1	✓			✓
Primary rate access		P1	✓			✓
SUPPLEMENTARY SERVICE						
Advice of charge Services (AOC)						
AOC, charging info at call setup time	✓	P2			✓	
AOC, charging info during the call	✓	P2			✓	
AOC, charging info at end of call	✓	P2			✓	
Number identification service						
cal.line identif.pres.(CLIP)	*✓	P1*	✓			✓
cal. line ident.restr. (CLIR)	*✓	P1*	✓			✓
con.line ident.pres.(COLP)	✓	P2			✓	
con.line ident.rest.(COLR)	✓	P2			✓	

SERVICE	MOU	ETSI-ISM	THIS REPORT			REFERENCED IN O.J. JAN 1991 also see Annex 1
			Phase 1	Phase 2	Phase 3	
Closed user groups (CUG)	✓	P2		✓		✓
Call waiting (CW)	✓	P2			✓	
Compl. of calls to busy subscribers (CCBS)	✓	P2			✓	
Conference services :						
Conf. call, add-on (CONF)	✓	P2			✓	
Meet-me conf. (MMC)	✓	P2			✓	
Direct Dialling in (DDI)	*/	P1*	✓			✓
Diversion services (or forwarding) :	✓	P2			✓	
Call Forw. Uncond. (CFU)	✓	P2			✓	
Call Forw. busy (CFB)	✓	P2			✓	↖
Call Forw. no reply (CFNR)	✓	P2			✓	
Call Deflection (CD)	✓	P2			✓	
Freephone (FPH)	✓	P2			✓	
Malicious call ident.(MCI)	✓	P2			✓	
Multiple Subscriber Nbr (MSN)	*/	P1*	✓			✓
Sub addressing (SUB)	✓	P2			✓	
Terminal addressing				✓		
Terminal Portability (TP)	*/	P1*	✓			✓
Three party service (3PTY)	✓	P2			✓	
User user signalling	✓	P2		✓		✓
Reverse charging				✓ (see note)		✓
PSPDN interworking				✓		
Network Management				✓		

Key : P1 - ETSI-ISM Priority 1

P2 - ETSI-ISM Priority 2

An asterisk (*) indicates MOU commitment to implement.

Note : This service, though not included in the CEPT MOU, has been given a high priority by users

ANNEX 5 - ISDN TERMS - GLOSSARY

Bearer of services/access

a) Type of services/access

-   Circuit mode 64kbit/s bearer service

-   Fixed mode 64kbit/s bearer service

-   Circuit mode speech bearer service

b) Description of service

-   Circuit mode 64 kbit/s unrestricted bearer service is a bearer service which provides unrestricted information to transfer between S/T reference points. It may therefore be used to support various user applications. Examples include :

    *   speech
    *   3.1 kHz audio
    *   multiple subrate information streas multiplexed into 64kbit/s by the user
    *   transparent access to an X.25 public network

    User information is transferred over the B-channel, signalling is provided over a D-channel.

-   Circuit mode 64 kbit/s 3.1 Khz audio bearer service is a bearer service which provides the transfer of speech and 3.1 khz audio information,such as voice-band data via modems and facsimile group 1, 2 and 3 information.

-   Circuit mode 64 kbit/s speech bearer service is a bearer service which is designed for support of speech. This bearer service allows two users in a point-to-point configuration to communicate via the ISDN using speech encoding into 64 kbit/s digital signals over the B-channel, in both directions continuously for the duration of a call.

Bearer services/packet

a) Type of service/access

-   Packet mode bearer services via B-channel/D-channel

b)   Description of service

The packet mode bearer service via B-channel/D-channel is a bearer service which provides the unrestricted transfer of user information in a packetized manner over a virtual circuit within a B- or D-channel at the S/T reference point.

This packet mode bearer service allows users in a point-to-point communication configuration to communicate via the ISDN using X.25 encoding, by means of X.31 procedures over either B- or D-channels in both directions.

Two main services are available to packet mode terminals connected to the ISDN :

1.   Access to the data transmission services provided by PSPDN's, via an ISDN transparent circuit connection either permanent or on demand. This is referred to as "Case A".

2.   Use of ISDN virtual circuit bearer service. Both B- and D-channels can be used for accessing the ISDN virtual circuit service. This is referred to as "Case B".

Thus packet mode bearer services via B-channel/D-channel include three variants :

i   X.31 case A (B-channel)

ii   X.31 case B (B-channel)

iii   X.31 case B (D-channel)

In i) Packet-switched calls are handled transparently through the Access Unit (AU) of the ISDN node, whose only function is to provide a physical connection between X.25 packet-mode terminals and the PSPDN.

In ii) and iii) Packet handling is provided within the ISDN. Once a physical connection is established between an X.25 terminal and a Packet Handler (PH) within the ISDN, virtual calls may be set up using X.25 packet level procedures.

Both B- and D-channels can be used for providing access.

Supplementary services/number identification

a)   Type of service/access (user request)

        - calling line identification (CLI)

b)   Description of service (MOU service)

-       Calling Line Identification Presentation (CLIP) is a supplementary service offered to the called party which provides the calling party's ISDN number complemented by other elements if any, such as DDI/MSN number and/or sub-address information to the called party.

-       Calling Line Identification Restriction (CLIR) is a supplementary service offered to the calling party to restrict presentation of the calling party's ISDN-number and sub-address if any to the called party.

<u>Supplementary services/direct dialling in</u>

a) Type of service/access (user request)

-   Direct dialling in (DDI)

b) Description of service (MOU service)

The DDI supplementary service enables users to call directly via a public ISDN users on a private ISDN. The DDI supplmentary service is based on the use of the ISDN-number.

<u>Supplementary service/subaddressing</u>

a) Type of service/access (user request)

-   Subaddressing (SUB)

b) Description of service (MOU service)

The SUB supplementary service allows the called user to expand his addressing capacity beyond the capacity given by the ISDN-number. The functions offered by the SUB supplementary service can be used to identify a particular endpoint of a call beyond the ISDN access.

<u>Supplementary service/closed user group</u>

a) Type of service/access (user request)

-   Closed user group (CUG)

b) Description of service (MOU service)

Closer user group enables users to form groups, to and from which access is restricted. A specific user may be a member of one or more CUG's. Members of a specific CUG can communicate among themselves but not, in general, with users outside the group.

A CUG is a list of users which may be a member(s) of one or several public networks.

Supplementary services/user to user signalling

a) Type of service/access (user request)

- User to User signalling (UUS)

b) Description of service (MOU service)

User to User Signalling allows the user to send/receive a limited amount of user generated information to/from another user-network interface.

The following variants of User to User Signalling are identified :

i   User to User Service 1

ii   User to User Service 2

iii   User to User Service 3

iiii   User to User Signalling not associated with circuit-switched calls

> i) User to User Signalling, Service 1
> The User to User Information (UUI) is transferred during the sep up and clearing phases of a call with UUI embedded within the call control messages

> ii) User to User Signalling 2
> The UUI is transferred during the set up phase of a call independently of call control messages.

> iii) User to User Signalling, Service 3
> The UUI is transferred while a call in the active state independently of call control messages.

This feature allows the users to communicate by means of User to User signalling without setting up a circuit-switched connection. A temporary signalling connection is established and cleared in a manner similar to the control of a circuit-switched connection.

Supplementary services/reverse charging

a) Type of service/access (user request)

- Reverse charging

b) Description of service (MOU service)

Reverse charging has not been recognized in the set of commercially valid services being part of the MOU.