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**INTEGRATED SERVICES DIGITAL
NETWORK (ISDN)**

INTERNETWORK INTERFACES

**DEFINITIONS AND GENERAL PRINCIPLES
FOR ISDN INTERWORKING**

ITU-T Recommendation I.510

(Previously "CCITT Recommendation")

FOREWORD

The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the International Telecommunication Union. The ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Conference (WTSC), which meets every four years, established the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

ITU-T Recommendation I.510 was revised by the ITU-T Study Group XVIII (1988-1993) and was approved by the WTSC (Helsinki, March 1-12, 1993).

NOTES

1 As a consequence of a reform process within the International Telecommunication Union (ITU), the CCITT ceased to exist as of 28 February 1993. In its place, the ITU Telecommunication Standardization Sector (ITU-T) was created as of 1 March 1993. Similarly, in this reform process, the CCIR and the IFRB have been replaced by the Radiocommunication Sector.

In order not to delay publication of this Recommendation, no change has been made in the text to references containing the acronyms "CCITT, CCIR or IFRB" or their associated entities such as Plenary Assembly, Secretariat, etc. Future editions of this Recommendation will contain the proper terminology related to the new ITU structure.

2 In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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Recommendation I.510

DEFINITIONS AND GENERAL PRINCIPLES FOR ISDN INTERWORKING

(Melbourne, 1988; amended at Helsinki, 1993)

1 Introduction

This Recommendation sets forth the general principles for interworking between ISDNs, between ISDNs and other networks, and internal to an ISDN. The need for interworking stems from the coexistence of existing dedicated networks with ISDNs and from the use of different, yet compatible, bearer services or teleservices for the provision of an end-to-end telecommunication service. When ISDNs are introduced, it is to be expected that most users will need to interwork with the users of other networks, especially public switched telephone networks (PSTNs), public land mobile networks (PLMNs) and dedicated data networks.

Normally, each instance of communication within an ISDN will take place between the users of services with identical attribute values. However, communication may also take place between users of services with *non-identical* attribute values. In these cases interworking functions (IWFs) will be required. In general, when an ISDN user communicates with the user of another network, if the service perceived by the user of that other network were to be defined by the attribute method, the values would not be identical to those of the ISDN user.

The purpose of interworking is to enable the users of "different" services on an ISDN to establish a useful communication or for an ISDN user to establish a useful communication with a user of another network and vice-versa. The term "service" in this Recommendation implies a telecommunication service as defined in Recommendation I.210.

To permit interworking, interworking capabilities, making use of IWFs, may be required in one or more of the following:

- the ISDN;
- any other network involved;
- customer equipment.

2 Scope

This Recommendation contains the definitions and general principles to be applied in instances of ISDN interworking, which include interworking between ISDNs, between ISDNs and other networks, and internal to an ISDN.

The ISDN interworking configurations to be considered within the scope of this Recommendation include the interconnection of two networks where at least one network is an ISDN, the concatenation of more than two networks where an ISDN interconnects other networks (as a transit network), or the interconnection of two ISDNs by one or more other networks.

ISDN interworking, as defined in this Recommendation, is considered to take place whenever end-to-end communication has to be provided

- a) between different networks where at least one network is an ISDN; or
- b) between telecommunication services with different lower or higher layer attributes or both, where at least one of the interworking telecommunication service is supported by the ISDN; or
- c) between different networks and between telecommunication services with different lower or higher layer service attributes, or both.

ISDN interworking, as defined in this Recommendation, is intended to cover both voice and non-voice applications.

NOTE – Interworking at layers above layer 3 of the OSI model is not generally specified within this Recommendation and is for further study.

3 Abbreviations

CCSN	Common channel signalling network (SS No. 7)
CE	Connection element
CS	Circuit switched
CSPDN	Circuit switched public data network
DTE	Data terminal equipment
ISDN	Integrated services digital network
IWF	Interworking function
OSI	Open Systems Interconnection
PDN	Public data network
PH	Packet handler
PLMN	Public land mobile network
PS	Packet switched
PSPDN	Packet switched public data network
PSTN	Public switched telephone network
SS No.7	Signalling System No. 7
TA	Terminal adaptor
TE	Terminal equipment

4 Definitions

4.1 Definitions related to services and network capabilities

The definitions which follow are related to services and to network capabilities. In those instances where terms already are defined in other Recommendations, appropriate references are made to such Recommendations.

The following definitions apply to ISDN interworking:

- *Telecommunication service*, as defined in Recommendation I.210.
- *Bearer service in the ISDN*, as defined in Recommendation I.210 and in the I.230-Series Recommendations.
- *Teleservice*, as defined in Recommendation I.210 and in the I.240-Series Recommendations, provides the full capacity for communication through terminal and network lower and higher layer functions.
- **bearer service in dedicated networks** – The term *bearer service* in dedicated networks is characterized by a set of lower layer attributes (e.g. data transmission services, as defined in Recommendation X.1, for use in public data networks) and corresponds to the term *bearer service* in an ISDN. Examples of *bearer services* in dedicated networks are data transmission over a data network and data transmission over the telephone network.
- *Supplementary service*, as defined in Recommendation I.210 and in the I.250 Series Recommendations.
- *Bearer capability*, as defined in Recommendation I.210, specifies the technical features of a *bearer service* in an ISDN as these appear to a user at the access point (S- or T- reference point). The term *bearer capability* also may be used with respect to dedicated networks. A *bearer capability* does not include any terminal functions.