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**CCITT**

THE INTERNATIONAL  
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CONSULTATIVE COMMITTEE

**E.710**

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SERIES E: OVERALL NETWORK OPERATION,  
TELEPHONE SERVICE, SERVICE OPERATION AND  
HUMAN FACTORS

Traffic engineering – ISDN traffic engineering

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**ISDN TRAFFIC REQUIREMENTS OVERVIEW**

Reedition of CCITT Recommendation E.710 published in  
the Blue Book, Fascicle II.3 (1988)

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## NOTES

1 CCITT Recommendation E.710 was published in Fascicle II.3 of the *Blue Book*. This file is an extract from the *Blue Book*. While the presentation and layout of the text might be slightly different from the *Blue Book* version, the contents of the file are identical to the *Blue Book* version and copyright conditions remain unchanged (see below).

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

## Recommendation E.710

### ISDN TRAFFIC REQUIREMENTS OVERVIEW

#### 1 Introduction

This Recommendation outlines the general consideration in modelling traffic flows in ISDNs. More detailed descriptions for specific services and significant points<sup>1)</sup> in the network are given in Recommendations of the E.710 Series as follows:

E.711 – User Demand

E.712 – User Plane Traffic Models

E.713 – Control Plane Traffic Models

E.714 – Management Plane Traffic Models.

Additional Recommendations in this Series will be developed in the future to reflect ISDN developments.

*Note* – Recommendations E.712 and E.714 are for further study.

#### 2 Context

ISDN concepts, services and networks are described in the Series I Recommendations. The E.710 Series of Recommendations have been developed consistent with the approach. However, the grouping of material in the E.710 Series concentrates on the important aspects from a traffic point of view of ISDN operations in the immediate future.

An important modelling technique used to represent ISDN capabilities is the layered architecture described in Recommendations I.310 and I.320. The E.710 Series have been developed using this approach. At present the E.710 Series concentrates on lower layer (1-3) traffic flows. Higher layer traffic flows are for further study.

The user plane/control plane perspectives described in Recommendation I.320 have been used to provide two separate traffic models in Recommendations E.712 and E.713. Nevertheless, it should be kept in mind that many traffic engineering procedures described in subsequent E.700 Recommendations require incorporating traffic loads from both planes using the same resources. The influence of the management plane is for further study.

The ISDN reference connections used in the E.710 Series are those given in Recommendation E.701.

#### 3 User demand

ISDN users have various needs for information transfer. The user and his terminal equipment transform these needs into a series of call demands for available ISDN services. These transformations involve many functions including coding, and peer-to-peer and inter-layer protocols. The higher layer functions are not analysed in the E.710 Series.

Recommendation E.711 starts from the expression by the user of a call demand to use the ISDN services defined in Recommendations I.230 and I.240. Corresponding traffic variables including the number of attempts per call demand are derived for the relevant attributes of each service.

#### 4 User plane

In the user plane the attributes of some ISDN services give rise to additional traffic parameters beyond those used in telephony. Based on the user models of Recommendation E.711, Recommendation E.712 will be developed in the future to derive traffic models for each basic ISDN service using a common set of parameters that applies to all services.

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<sup>1)</sup> **significant points** are points in the network where traffic flows and grades of service should be evaluated.

## **5 Control plane**

Each attempt from a terminal will result in signalling messages in the control plane. The number of messages and their length are highly dependent on:

- protocols (S.S. No. 7 and Q.931 digital access);
- call disposition (including user facilities);
- originating and terminating subscriber equipment configurations (e.g. overlap sending).

Control plane traffic models given in Recommendation E.713.

## **6 Further developments**

The preceding sections of this Recommendation and the Recommendations of the E.710 Series concentrate on those services and facilities which will predominate in the first ISDNs to be implemented.

However, the ISDN concepts include the inherent possibility of developing completely new services and functions in response to changing user needs. This will result in new traffic situations that will need to be covered in the E.710 Series. Some of the situations which can be anticipated are:

- the impact of supplementary services, such as call waiting, on control plane traffic;
- new ISDN capabilities such as statistical switching and dynamic allocation;
- connectionless communications;
- the impact of user-to-user signalling;
- the impact of multipresentation type calls, and simultaneous use of different interactive and distribution services, involving multi-slot and multipoint connections, and broadcast mode

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