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**INTEGRATED SERVICES DIGITAL
NETWORK (ISDN)**

OVERALL NETWORK ASPECTS AND FUNCTIONS

**NETWORK CAPABILITIES TO SUPPORT
UNIVERSAL PERSONAL
TELECOMMUNICATION (UPT)**

ITU-T Recommendation I.373

(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.373 was prepared 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 Similarly, in this reform process, the CCIR and the IFRB have been replaced by the Radiocommunication Sector.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.373**NETWORK CAPABILITIES TO SUPPORT UNIVERSAL
PERSONAL TELECOMMUNICATION (UPT)***(Helsinki, 1993)***0 Scope**

This Recommendation identifies the functional requirements and network architectures, and specifies the network capabilities to support universal personal telecommunication (UPT), specifically for the provision of a wide range of services to the UPT users in a multi-network communication environment.

This Recommendation should be read in conjunction with the following draft Recommendations:

- a) I.114 (Vocabulary for UPT);
- b) I.312 (Principles of intelligent network architecture);
- c) I.328 (Service plane architecture / IN);
- d) I.329 (Global functional plane architecture / IN);
- e) F.850 (Principles of universal personal telecommunication / UPT);
- f) E.168 (Application of E.164 numbering plan for UPT).

1 Introduction

Leading edge technology and network developments are providing new dimensions to users' telecommunication capabilities as ISDN, intelligent networks (IN) and digital mobile networks are introduced. This is expected to provide increased service flexibility together with a complementary level of customer control capability to support network services. Despite these advances each of these developments independently still use the line or the terminal identification as a means of identifying the customer.

By pursuing the inherent synergy among ISDN, digital mobile and intelligent network developments, the historical link between the line or terminal and user identification can be broken. Universal personal telecommunication is anticipated to bring personal identification to reality by transparently replacing the static relationship between terminal identity and user identity in existing networks with a dynamic association and thus provide complete personal mobility within networks and across multiple networks.

2 Terms and definitions (provisional)

A complete set of definitions for UPT terms is contained in Recommendation I.114; a subset is provided for ready reference in Appendix I together with a list of abbreviations and acronyms.

3 Objectives of UPT service

UPT enables access to telecommunication services by providing personal mobility. It enables each UPT user to participate in a user-defined set of subscribed services and to initiate and receive calls on the basis of a personal network transparent¹⁾ UPT number across multiple networks, at any terminal, fixed or mobile, irrespective of the geographical location, limited only by terminal and network capabilities and restrictions imposed by the network operator.

¹⁾ A user identification is said to be network transparent when the user does not actually need to know where the UPT data base is located. Transparency includes the case where network independent user identification is used.

The aim of UPT is to provide user-to-user telecommunication services with:

- a) user identification which is terminal- and network-transparent and is based on a UPT number where a UPT number is assigned to every user. Ideally, a UPT user will have one UPT number with multiple codes (e.g. passwords, priority codes) for different applications. (For further study);
- b) personal call management which enables UPT users to control the destination address for all incoming calls based on the identity of the caller, the basic telecommunication service type, the call urgency, time of day; etc.
- c) charging on the basis of the UPT number instead of the terminal identity;
- d) service availability/accessibility across multiple networks (e.g. ISDN/PSTN, PSPDN, PLMN) and at different terminal types (fixed or mobile);
- e) user and customer control of the user's service profile and personalization of terminal configuration;
- f) network and access security, confidentiality of user information through UPT user authentication.

4 Functional requirements

The following network functionalities required for UPT were identified using Recommendation F.850 ("Principles of universal personal telecommunication - UPT") as a general guideline:

- a) UPT number recognition and translation;
- b) user registration/deregistration;
- c) user authentication;
- d) charging;
- e) personalization of terminal access configuration;
- f) service profile management;
- g) recognition of user request to access to UPT service;
- h) functionalities for operation and maintenance (OAM).

5 Functional architecture

5.1 UPT functional grouping

Whereas the concept of terminal mobility is currently evolving through miniaturization of personal communicators and advances in wireless technologies, the UPT represents a more fundamental and wider concept of personal mobility. However, the wireless component of the access and transport arrangements will be an important and integral part of the evolving networks, so that a reference architecture model for UPT that can provide an integrated view is required. The UPT functional grouping, shown in Figure 1, provides a logical partitioning of the major functionalities to support UPT while ensuring that the different access and transport arrangements implicit within the UPT concept can be properly reflected.

5.1.1 General

Generic access functions

Access functions include both wireline as well as wireless access types (e.g. mobile and personal stations and associated terminal functions in FPLMTS and PLMN). Thus, the continuous mobility available through the evolving wireless systems is fully reflected in this functional grouping.

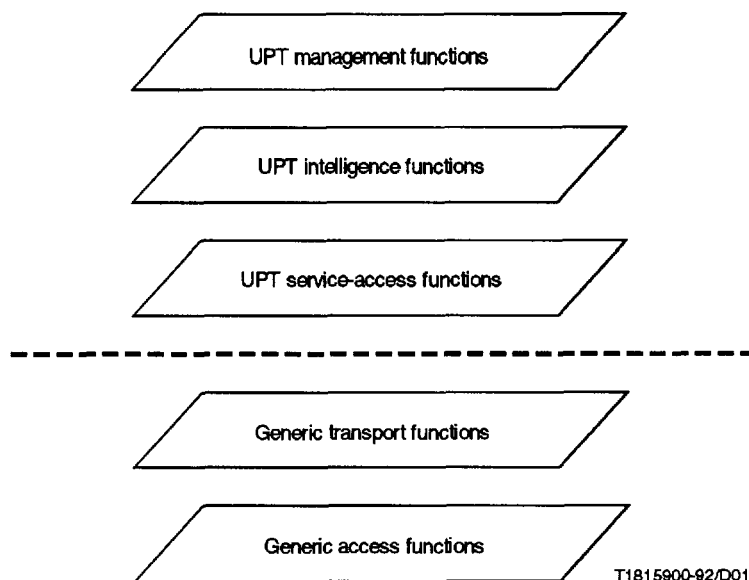


FIGURE 1/I.373
UPT functional grouping

Generic transport²⁾ functions

Transport functions include transmission and local and transit switching functionalities (including wireless network components).

UPT service-access functions

UPT service-access functions provide the service recognition and the connectivity into the UPT service through the existing (and evolving) PSTN/ISDN infrastructure including the infrastructure associated with a specific type of access (e.g. the base stations and mobile services switching centres in FPLMTS and PLMN).

UPT intelligence functions

UPT intelligence functions contain the information (data bases) and functionalities to manage the mobility and call management requirements of UPT and to support the registration, authentication, security, call routing and establishment functions.

UPT management functions

UPT management functions maintain the network and service related data (maintenance, operations, charging) and provide full operations support system (OSS) functionalities for UPT.

5.1.2 UPT specific functionalities

5.1.2.1 UPT service-access functions

a) Service access recognition

Service access recognition is initiated by a UPT specific procedure or a UPT number (depending on a dialling plan), a UPT procedure request (including registration procedure) or an outgoing call request recognition.

²⁾ Transport is defined as the functional process of transferring information between points at different locations.