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Foreword

ETSI Technical Reports (ETRs) are informative documents resulting from ETSI studies which are not appropriate for European Telecommunication Standard (ETS) or Interim-European Telecommunication Standard (I-ETS) status. An ETR may be used to publish material which is either of an informative nature, relating to the use or application of ETSs or I-ETSs, or which is immature and not yet suitable for formal adoption as an ETS or I-ETS.

This ETR gives a general description of the Universal Personal Telecommunication (UPT) service. It gives a definition of the UPT service and describes its features, irrespective of UPT implementation phase. It also outlines the relationship between UPT and telecommunications services.

This ETR constitutes Part 2 of a multi-part ETR, with the following titles:

ETR 055-1: "Universal Personal Telecommunication (UPT); The service concept Part 1: Principles and objectives".

ETR 055-2: "Universal Personal Telecommunication (UPT); The service concept Part 2: General service description".

ETR 055-3: "Universal Personal Telecommication (UPT); The service concept Part 3: Service aspects of charging, billing and accounting".

ETR 055-4: "Universal Personal Telecommication (UPT); The service concept Part 4: Service requirements on security mechanisms".

ETR 055-5: "Universal Personal Telecommication (UPT); The service concept Part 5: UPT terminals and UPT access devices".

ETR 055-6: "Universal Personal Telecommunication (UPT); The service concept Part 6: UPT subscription and service profile".

ETR 055-7: "Universal Personal Telecommunication (UPT); The service concept Part 7: User procedures and user states".

ETR 055-8: "Universal Personal Telecommunication (UPT); The service concept Part 8: Man-machine interface aspects".

ETR 055-9: "Universal Personal Telecommunication (UPT); The service concept Part 9: Service requirements on numbering, addressing and identification".

ETR 055-10: "Universal Personal Telecommunication (UPT); The service concept Part 10: Supplementary services".

An additional part (Part 11) which details the requirements on the protection of third parties, is due for publication in 1993.

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1 Scope

This ETSI Technical Report (ETR) is intended as a general overview of Universal Personal Telecommunication (UPT). Detailed definitions are given in other parts of this ETR.

The principles and objectives of UPT are given in Part 1.

2 References

The following references are used in this document:

[1] ETR 055-3: "Universal Personal Telecommunication (UPT); The service concept Service aspects of charging, billing and accounting".

[2] ETR 055-4: "Universal Personal Telecommunication (UPT); The service concept, Service requirements on security mechanisms".

[3] ETR 055-5: "Universal Personal Telecommunication (UPT); The service concept, Types of UPT terminals and UPT access devices".

[4] ETR 055-6: "Universal Personal Telecommunication (UPT); The service concept, Subscriptions and UPT service profiles".

[5] ETR 055-7: "Universal Personal Telecommunication (UPT); The service concept, User procedures and user states".

[6] ETR 055-8: "Universal Personal Telecommunication (UPT); The service concept, Man-Machine interface aspects".

[7] ETR 055-9: "Universal Personal Telecommunication (UPT); The service concept, Service requirements on numbering, addressing and identification".

[8] ETR 056: "Universal Personal Telecommunication (UPT); UPT supplementary service".

3 Definitions and Abbreviations

3.1 Definition of UPT

UPT is a service which enables access to telecommunications services by allowing personal mobility. It enables each UPT user to participate in a user-defined set of services, and to initiate and receive calls to and from any user (UPT or non-UPT) on the basis of a unique, personal, network transparent UPT number across multiple networks at any terminal; fixed, movable or mobile, irrespective of geographic location and limited only by terminal and network capabilities and restrictions imposed by the network provider.

NOTE: A mobile terminal means any terminal using any type of radio access.

3.2 Abbreviations

For the purposes of this ETR, the following abbreviations are used.

DTMF	Dual Tone Multi Frequency
ISDN	Integrated Services Digital Network
PDN	Public Data Network
PLMN	Public Land Mobile Network
PSTN	Public Switched Telephone Network
UPT	Universal Personal Telecommunication

4 General description

In fixed telecommunication networks, users/subscribers are associated with the network access point of the terminal, the point of attachment (network access identification). In first generation mobile telecommunications networks, users/subscribers are associated with the terminal in use (terminal identification).

For the UPT service, the fixed association between terminal or network access and user identification is removed. In order to offer UPT users the capability of establishing and receiving calls on any terminal and at any location, the identification of UPT users is treated separately from the addressing of terminals and network access points. This is done by the means of a UPT number (user identification). The UPT user is personally associated with his own UPT number, which is used as the basis for making and receiving calls (personal numbering). The UPT subscription is also charged on the basis of the UPT user's UPT number. The principle of such user identification is indicated in figure 1.

In the case of a call to a UPT user, the UPT number is the called number used by the originating party of a call to a UPT user.

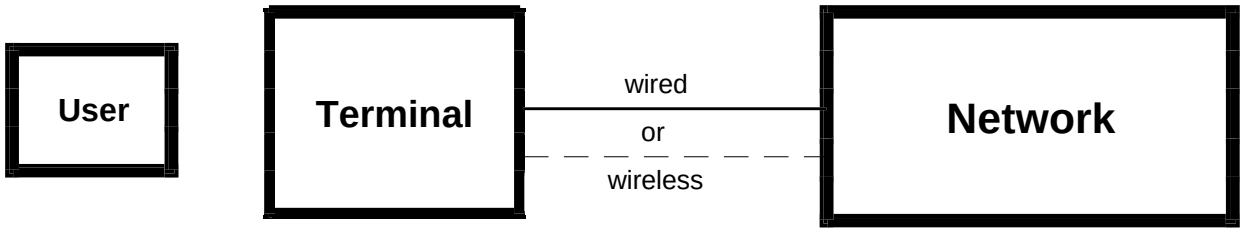


Figure 1: Network and terminal independent user identification

In order to make use of telecommunications services in the flexible ways as foreseen with the UPT service, a UPT user needs a specific subscription to a UPT service provider. The UPT service provider will maintain a UPT service profile for each UPT user (containing a list of services and facilities subscribed to) and a wide range of options. A UPT user should only need a subscription to one UPT service provider to obtain access to all national and international UPT services, and the UPT subscriber associated with the UPT user should receive bills from only one UPT service provider.

By means of the UPT number, a UPT user may use any terminal for receiving incoming calls and making outgoing calls. The UPT number also makes it possible to use the UPT service with access from multiple networks and, in principle, to use any basic telecommunications service offered by the networks.

As in principle, any terminal may be used by a UPT user for making and receiving calls, the UPT user's associated subscription may also be charged for making or receiving calls at any terminal based simply on the UPT user's unique identity. This implies that some form of secure authentication procedure is needed that protects the UPT user from fraudulent use of the UPT user's identity. Protection of the UPT user's general privacy is also provided.

In order to use the UPT service, the UPT user will have to carry out a set of UPT procedures, which are specific to the UPT service. In order to facilitate and automate the execution of these UPT procedures, normally also involving some form of authentication procedure, these procedures may be carried out using a special UPT access device containing UPT user and subscription information. The realisation of this UPT access device may depend on the networks, services and terminals used.

Key factors of the UPT service concept therefore include:

- **use of a UPT service profile**: the UPT user may make use of a personalised UPT service profile containing a list of services and facilities subscribed to by the UPT subscription, and a range of options;

- **personal numbering**: a UPT number uniquely identifies each UPT user and is used by the caller to reach that UPT user. A UPT user may have more than one UPT number for different applications (e.g. a business UPT number for business calls and a private UPT number for private calls), however, there will be only one UPT number per charging account;

- **personal charging**: charging is associated with the UPT number irrespective of the terminal or network used by the UPT user;

- **simple billing**: a UPT subscriber will only receive bills from one UPT service provider even though UPT facilities may have been used in different networks, in different countries and using different network operators;

- **multiple UPT user subscription**: one UPT subscriber may be responsible for more than one UPT user, each having a personal UPT number and an associated UPT servce profile (e.g. a company having a set of employees);

- **dynamic registration of terminal access**: the UPT user may dynamically and independently register to the terminal accesses at which he will make or receive calls. These registered terminal accesses may differ from service to service;

- **terminal independence**: telecommunications services are provided to the UPT user, independent of the terminal used. The serving network will provide access to the services defined in the UPT user's personal UPT service profile if the services are available. The terminal, if capable of supporting the services requested by the UPT user, will make them available to the user;

- **access from multiple networks**: the UPT service may be used across multiple networks (e.g. Public Switched Telephone Network (PSTN), Integrated Services Digital Network (ISDN), Public Data Networks (PDNs), Public Land Mobile Network (PLMN), etc.) using the same UPT number. The serving network, if capable of supporting the services requested by the UPT user, may make them available to the user. UPT may also operate over private networks if the private network agree to UPT interworking with the public network;

- **universal service availability**: in principle, any basic telecommunications service can be used with the UPT service. The services provided to the UPT user are only limited by the networks and terminals used;

- **UPT access device**: the UPT user may make use of some kind of UPT access device containing user identification, in order to facilitate and automate his interactions with the UPT service;

- **security and privacy**: the UPT user may use the UPT service with minimal risk of violated privacy or erroneous charging due to fraudulent use of the UPT user's identity. This may include authentication of the UPT user's identity;

- **privacy for third parties**: third party users (e.g. terminal owners) will not, in principle, suffer in terms of privacy or freedom of actions as a result of UPT activities by UPT users.

More details on various service aspects of the UPT, independent of the UPT implementation phase, can be found in the following documents:

- ETR 055-3 [1]
- ETR 055-4 [2]
- ETR 055-5 [3]
- ETR 055-6 [4]
- ETR 055-7 [5]
- ETR 055-8 [6]
- ETR 055-9 [7]
- ETR 056 [8]

5 UPT and telecommunications services

A UPT user may make use of any terminal and any network by the means of the UPT number, and therefore, the UPT user may, in principle, make use of the services provided by these networks and terminals.

The bearer services, teleservices or supplementary services that may be used by a UPT user, while being charged to a UPT subscription, are exclusively given by his UPT service profile, defined specifically or generically. Whether or not he can use these services in specific cases will depend on the capabilities of the serving networks and the terminals used.

The UPT service does not, in principle, limit the application of any basic telecommunications service offered by the serving networks. For supplementary services provided by the serving networks however, UPT will impose some restrictions. A network based supplementary service activated on a specific terminal will be charged (if applicable) to the subscriber connected with the terminal, and will not be known to the UPT user. Therefore, from a service perspective, in principle, there should be no interaction between the network based supplementary services and UPT. Activated network based supplementary services should be suspended for UPT calls and procedures.

A UPT service provider may, however, offer a set of UPT supplementary services related to UPT in the way that they are charged to the UPT subscription. These will belong to the UPT subscription and may be used in a standardised way independent of the serving network.

Of the UPT supplementary services provided by the UPT service provider, some may be purely UPT specific, while others may be similar to those offered by the serving networks, and based on them.

6 Features of UPT

The UPT service concept is described in the following by a set of service features listing the fundamental ideas of UPT. This list of service features gives a general understanding of the UPT service, but is by no means exhaustive. It is not the intention of the features listed to give a complete description of UPT.

Two categories of UPT features have been identified:

a) core UPT features:

the core UPT features are those features which are fundamental for the UPT service concept, and are considered essential for UPT provision;

b) additional UPT features:

the additional UPT features are those features which are additional to the fundamental UPT service concept. Additional UPT features may be considered essential or optional for UPT provision.

NOTE: No attempt has been made at this stage to group additional UPT features into essential and optional.

The core and additional features of the UPT listed in subclause 6.1 and 6.2 are independent of the UPT implementation phase and reflects the long-term objectives for UPT.

6.1 Core features of the UPT service

Core features of the UPT service which may be offered to the UPT users include:

- **InCall registration (registration for incoming calls)**: a UPT user may register for incoming calls from any terminal access for calls to be presented to any specified terminal access. When registered, all incoming calls to the UPT user will be presented to this terminal access for the duration specified by the UPT user. A registration for incoming calls will cancel any previous registration. Several UPT users may be registered for incoming calls to the same terminal access simultaneously. The UPT user may also explicitly deregister for incoming calls;

- **outgoing UPT call setup**: outgoing UPT call setup is a feature by which a UPT user can set up, from any terminal, a single outgoing UPT call which is charged to the UPT subscriber. This setup procedure includes authentication, which is valid for one call attempt only, and the authentication procedure has to be repeated for each outgoing UPT call attempt;

- **OutCall registration (registration for outgoing calls)**: a UPT user may, from any terminal access, register for outgoing calls to be made from any specified terminal access. When registered, all outgoing calls from the terminal access will be charged to the UPT subscriber for the duration specified by the UPT user. Normally, the UPT user will not have to carry out any further authentication procedures in order to make outgoing calls. However, optionally, a simplified authentication procedure may be used. A UPT user may register for outgoing calls from several terminal accesses simultaneously, but at any time only one UPT user may be registered for outgoing calls at the same terminal access. The UPT user may also explicitly deregister for outgoing calls;

- **Allcall registration (combined registration for incoming and outgoing calls - no linkage)**: the AllCall registration feature is a combination of the InCall and OutCall registration features and enables a UPT user to register for incoming and outgoing calls to and from the same terminal access using one single procedure, remotely or using the requested terminal access. The effect of an AllCall registration is as if an InCall and an OutCall registration had been carried out separately. The UPT user may also explicitly deregister;

- **linked registration (combined registration for incoming and outgoing calls - linked)**: as for the AllCall registration feature, the use of this feature combines the registrations for incoming and outgoing calls for one specified terminal access in a single procedure. However, unlike for the AllCall registration, when having carried out a linked registration, the UPT user cannot override this linked registration by an InCall registration. The procedure may be carried out remotely or using the requested terminal access. The UPT user must explicitly deregister a linked registration, or override it by another linked registration;

- **UPT service profile interrogation**: the UPT user may interrogate the current status of the UPT user's own UPT service profile (e.g. for location information, and availability of services);

- **UPT service profile modification**: the UPT user may modify the UPT user's own UPT service profile (e.g. for change of password, change of default UPT service profile parameters, etc.);

- **secure answering of incoming UPT calls**: as a user option, it may be specified that incoming UPT calls cannot be answered unless the answering party first successfully authenticates as the called UPT user;

- **intended recipient identity presentation**: presentation of the identity of the intended recipient (UPT number or name, etc., specified by the called UPT user) on the alerting terminal;

- **follow-on facility for UPT procedures**: a UPT user may, when terminating a UPT procedure for which he has carried out a successful authentication procedure, indicate a follow-on activity, thus allowing further UPT procedures without further authentication;

- **UPT-specific announcements**: a set of UPT-specific, user-friendly, standard announcements (e.g. for support of specific charging arrangements) are provided.

6.2 Additional features of the UPT service

Additional features of the UPT service which may be offered to the UPT users include:

- **multiple terminal registration**: the UPT user may simultaneously register multiple terminal accesses for incoming and/or outgoing calls;

- **call pick-up**: the UPT user may answer an incoming UPT call at another terminal access than the one(s) given by the InCall registration (e.g. when the UPT user is alerted on a paging network). Call pick-up always requires authentication when answering the call;

- **remote answering**: the UPT user may specify one terminal access for the alerting of incoming UPT calls and to specify a second, different terminal access for the answering of incoming UPT calls (e.g. the user could be alerted on an office telephone that a call is waiting to be answered at the organisation's videophone);

- **service personalisation**: the UPT user may set up the UPT service environment in a manner which is personalised to the UPT user (e.g. to specify the preferred language for his service dialogues, to set up specific terminal configurations for use on any terminal, etc.);

- **variable default InCall registration**: the UPT user may set up a default registration matrix of terminal accesses for incoming UPT calls, so that incoming UPT calls by default could be routed and handled differently according to time of day, day of week, calling party's identity, service type, the number dialled, and for "on no answer" and "on busy" conditions, etc. This matrix can be modified by the UPT user. This feature would enable a UPT user with a regular travel routine or schedule to set up a "timetable" matrix;

- **UPT subscriber access to UPT service profiles**: a UPT subscriber responsible for a group of UPT users may access, create, interrogate and modify their UPT service profiles using UPT service profile management procedures;

- **operator-assisted services**: a UPT user may have a standardised way of contacting a UPT service centre in order to invoke UPT procedures in cases where automatic UPT procedures are unavailable or in cases of difficulty (e.g. by dialling a standardised access code in order to talk to a representative of the UPT service provider).

7 Evolution and service implementation phases of UPT

The core and additional features of UPT may be provided to the UPT user with a varying degree of ease from a network point of view in several areas:

- **access from multiple networks**: from a network point of view, it is not possible to support UPT in every network (PSTN, ISDN, etc.) from the same point in time;

- **universal service availability**: from a network point of view, it is not possible to support UPT in every network, and hence not with every basic telecommunications service, from the same point in time;

- **UPT access devices**: in principle, several types of UPT access devices may be considered, which contain varying degrees of information. In the most simple implementation of the service, the UPT device could be non-existant, with its functions carried out manually by the UPT user. In more complex implementations, the device could be a Dual Tone Multi Frequency (DTMF) tone generator or a smart-card with built-in security mechanisms. It may be considered to limit the first provisions of the UPT service to the use of simple UPT access devices;

- **security**: various degrees of security of authentication may be considered, which depend on the realisation of the UPT device. In the most simple implementation of the service, the authentication procedure could consist of a PIN code only. In more complex implementations, depending on the UPT device, complex security algorithms could be carried out. It may be considered to limit the first provisions of the UPT service to the use of simple authentication procedures.

It is also likely that, in the future, several technological and market developments may give rise to evolutionary phases of the UPT service, which cannot be foreseen today. In these circumstances, the work on specification of standards should be arranged to correspond with the implementation phases of UPT, which may be split into the following general phases:

phase 1: restricted UPT service scenario.

The restricted UPT service scenario has restrictions arising from the scope of the UPT specifications in relation to networks, services, security and user friendliness. For this scenario, only a subset of the core UPT feature specifications described in this document are categorised as essential for implementation, and the remaining long-term core UPT features are not specified. There are no core UPT features optional for implementation. For additional phase 1 UPT features, some are optional for implementation and need to be specified, and the remaining long-term additional UPT features are not specified;

phase 2: basic UPT service scenario.

For the basic UPT service scenario, all core UPT feature specifications described in this ETR are categorised as essential for implementation. All long-term additional UPT features described in this ETR are categorised as optional for implementation, and therefore need to be specified;

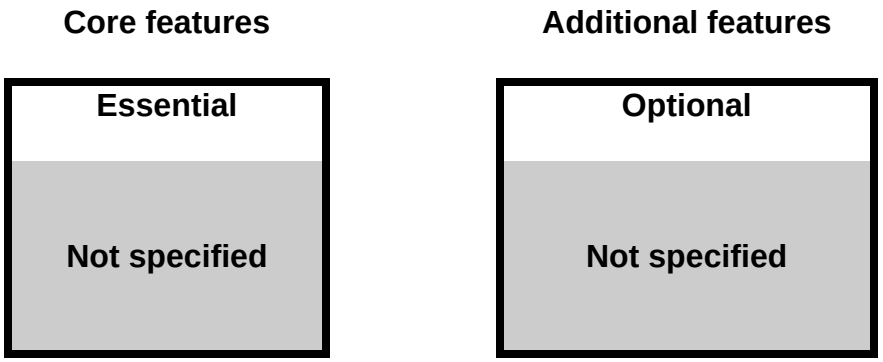
phase 3: enhanced UPT service scenario.

The enhanced UPT service scenario is generally the long-term scenario described in this ETR. All core UPT features are essential, and additional UPT features may be divided into essential and optional for implementation, but specifications will be needed for all core and additional UPT features;

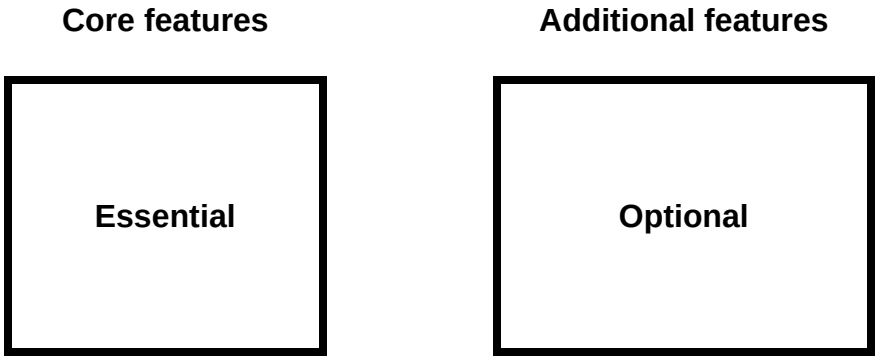
phase 4: evolutionary UPT service scenario.

The evolutionary UPT service scenario provides future enhancements that depend on the technological and market developments. It also depends on the availability of corresponding specifications of UPT features.

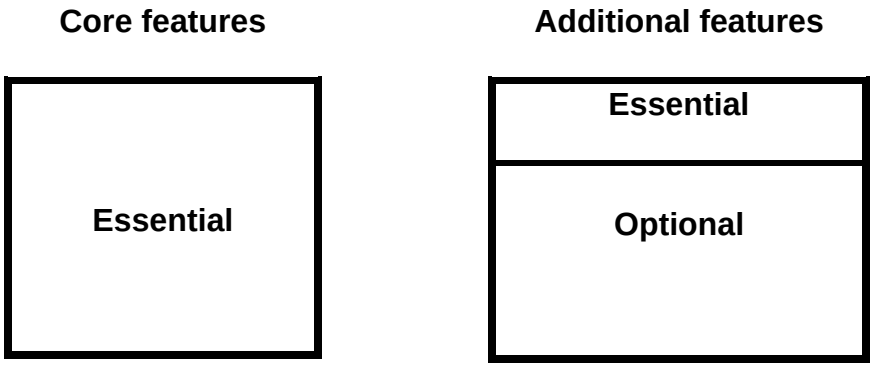
The phased approach to the UPT implementation phases described above is illustrated in figure 2.



A: Short term restricted UPT service scenario (phase 1)



B: Basic UPT service scenario (phase 2)



NOTE: The enhanced UPT service scenario corresponds to the general long-term scenario.

C: Enhanced UPT service scenario (phase 3)

Figure 2: Phased approach to the UPT implementation

History

Document history	
December 1992	First Edition
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