



**ETSI
TECHNICAL
REPORT**

ETR 216

November 1995

Source: ETSI TC-NA

Reference: DTR/NA-007004

ICS: 33.040

Key words: Model, service, UPT

**Universal Personal Telecommunication (UPT);
Phase 1 (restricted UPT service scenario);
Subscriptions, service profiles and information model**

ETSI

European Telecommunications Standards Institute

ETSI Secretariat

Postal address: F-06921 Sophia Antipolis CEDEX - FRANCE

Office address: 650 Route des Lucioles - Sophia Antipolis - Valbonne - FRANCE

X.400: c=fr, a=atlas, p=etsi, s=secretariat - **Internet:** secretariat@etsi.fr

Tel.: +33 92 94 42 00 - Fax: +33 93 65 47 16

Copyright Notification: No part may be reproduced except as authorized by written permission. The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 1995. All rights reserved.

Blank page

Foreword

This ETSI Technical Report (ETR) has been produced by the Network Aspects (NA) Technical Committee of the European Telecommunications Standards Institute (ETSI).

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 the application of ETSs or I-ETSs, or which is immature and not yet suitable for formal adoption as an ETS or an I-ETS.

This ETR describes the Universal Personal Telecommunication (UPT) phase 1 service subscription and service profile, its structure, the information contained, the operations allowed on it and the possible restrictions for the involved parties in the access.

Blank page

1 Scope

This ETSI Technical Report (ETR) is related to Universal Personal Telecommunication (UPT) phase 1 service; it describes the UPT subscription and the service profile, its structure, the information contained, the operations allowed on it and the possible restrictions for the involved parties in the access. Furthermore, the UPT information model is presented informally. This information model is split into entities, each entity modelling one of the aspects of the UPT service; also the attributes attached to each of the entities are described.

NOTE: Although this ETR discusses the service profile interrogation UPT phase 1 feature, the technical feasibility of this feature in the UPT phase 1 time frame is still uncertain.

2 References

This ETR incorporates by dated and undated reference, provisions from other publications. These references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this ETR only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

[1] ETR 217: "Universal Personal Telecommunication (UPT); Phase 1 (restricted UPT service scenario); User procedures and user states".

3 Abbreviations

For the purposes of this ETR, the following abbreviations apply:

ARA	Access Registration Address
CFB	Call Forwarding on Busy
CFNA	Call Forwarding on No Answer
CFU	Call Forwarding Unconditional
ISDN	Integrated Services Digital Network
PSTN	Public Switched Telephone Network
PUI	Personal User Identity
PIN	Personal Identity Number
SPIN	Special Personal Identity Number
UPT	Universal Personal Telecommunication

4 UPT subscriptions and services profiles

4.1 Definitions

4.1.1 UPT subscription

In order to have available the UPT service, the UPT subscriber has to subscribe to it with the service provider; the UPT subscription is independent from any other bearer or supplementary service subscription.

Furthermore, in order to make any modification to the service profile associated to the subscription, the UPT subscriber has to subscribe with the service provider the possibility of access to his own data¹⁾; the kind of access restrictions for the UPT users is decided at the subscription time between the service provider and the UPT subscriber.

1) A subscriber profile can be used for administrative purposes, this is not described in this ETR.

4.1.2 UPT service profile

The UPT service profile is a record containing all the information related to the UPT user and the personal rules for handling his mobility, in order to make available to him the UPT service.

In fact, the key object of the UPT is to increase the user mobility across any networks; focusing on this purpose, the service profile becomes an efficient way to support the user mobility: it contains a lot of information related to the user's location and to the dynamic management of the calls; it is then important to allow both a user-friendly access and operation on the service profile.

The possibility to access the service profile has great implications on the security aspects, because the access procedure should be protected from disallowed accesses or user's mistakes.

The following assumptions are required:

- the possibility of access to the service profile information has to be subscribed with the service provider;
- each user can have access only to his data, and can modify only the data allowed.

Furthermore, each UPT service provider can decide which parameters the UPT user/subscribers are allowed to modify: so the categorisation provided in this recommendation can be changed by the service provider, which should have the flexibility to decide the exact way to include a given parameter into the service profile.

4.2 Access to the service profile

The information contained in the service profile may need to be modified following the user needs and his requests.

In order to modify the service profile or to make any other operation on it, it is necessary to have an access procedure, that can be different for the various parties invoking it.

4.2.1 Involved parties

The possibility to access to the service profile is available for the following categories of UPT users:

The service provider has a guaranteed access to all the information without any restrictions; the UPT subscriber has to agree with him, at the subscription time, which kind of access is permitted to himself and to the eventual UPT users associated. For any modification to the access modality agreed at the subscription, the subscriber has to contact the service provider.

The UPT subscriber can access only the information allowed by the service provider on subscription contract basis; furthermore, some information can only be displayed to him and not modified (e.g. the UPT number). Anyway, he can ask to modify some parameters via administration procedure with the service provider.

The UPT user can access the service profile if this possibility has been given to him by the subscriber at the subscription time; however, the UPT user may have some restrictions in the access, fixed by the service subscriber (e.g. he could not modify the restrictions on permitted callers).

4.2.2 Access procedure

The access procedure to the subscriber/user data has to be user-friendly and in the same time has to guarantee the security of communication.

The UPT service profile is accessed using the service profile management procedures described in ETR 217 [1], or by off-line administrative procedures.

4.2.3 Operations on the service profile

The following operations can be performed by the subscriber/user on his service data:

- service profile modification: this operation is made using the Profile Modification procedure and allows to change the variable information;
- service profile display: this operation is made using the Profile Interrogation procedure and allows the subscriber/user to obtain information on the current status of the service profile.

Furthermore, the system has to validate the service profile after any modification made by the subscriber/user.

4.3 Structure of the service profile

4.3.1 Fixed information

This subclause describes the fixed information from the user's point of view: these can be divided into information managed only by the service provider, and information changeable by the subscriber. Information classification can depend on the service provider.

4.3.1.1 Information fixed at subscription time

These information are fixed at subscription time and can be modified only by the service provider; they could however be displayed to the UPT users and subscriber, if agreed at the subscription time.

If changes are wanted by the UPT subscriber, administrative procedures must be used with the UPT service provider for agreement on a modification to the UPT subscription.

Examples of fixed information are:

- UPT number;
- Personal User Identity (PUI);
- subscriber identity;
- Special Personal Identity Number (SPIN) for unblocking;
- default charging reference;
- basic services subscribed (Public Switched Telephone Network (PSTN) and Integrated Services Digital Network (ISDN));
- UPT supplementary services subscribed;
- profile services subscribed;
- types of authentication mechanisms subscribed to (weak and/or strong);
- authentication information (keys²⁾);
- subscribed charging services (credit limit checking);
- subscriber location restrictions (e.g. forbidden Access Registration Addresses (ARAs) for incoming calls);
- set of terminal accesses allowed for remote incoming call registrations.

2) Keys will never be displayed to the user or the subscriber.

In addition, a set of restrictions to be enforced when weak authentication is used is agreed between the service provider and the subscriber at subscription time. Optionally, these restrictions may also be enforced when strong authentication is used. The following information is used to describe these restrictions:

- set of terminal accesses allowed for incoming call registrations;
- set of terminal accesses allowed from which modification of the service profile is allowed. These restrictions are also applied to supplementary service activation/deactivation, Personal Identity Number (PIN) code change and PUI deblocking procedures;
- maximum number of outgoing follow-on calls allowed;
- maximum number of failed authentication attempts, before blocking the PUI. This is ignored when strong authentication is used.

4.3.1.2 Information changeable by the subscriber

This information can be modified only by the subscriber; it can however be displayed to the UPT users if agreed by the subscriber; all this information may be on a per basic telecommunication service basis:

- maximum credit allowed to the user (cost-related or number of local/long distance calls, within the limits specified for the subscription);
- allowed procedures for the UPT user;
- allowed basic services;
- allowed supplementary services;
- type of authentication mechanism allowed.

4.3.2 Variable information

The information described in the following are defined "variable" from the user's point of view; they can be changed using the service profile modification procedure or the personal mobility procedures only.

The variable information are divided in service related and mobility related information and may be on a per basic telecommunication service basis.

4.3.2.1 Service related information

The following parameters are changeable by the user or the subscriber.

4.3.2.1.1 Information modified by the change PIN procedure only

- PIN

4.3.2.1.2 Information modified by the profile modification procedure

- type of authentication mechanisms activated. Note that in the case where both weak and strong authentication mechanisms are allowed to a user, the service provider may elect to ignore this information and to impose the procedure used. This prevents the use of weak authentication when a safer method is available.
- activation status for each UPT supplementary service.

4.3.2.2 Mobility related information

4.3.2.2.1 Information modified by UPT service profile management procedures only

- default terminal access for incoming calls;
- list of terminal accesses for registration³⁾ [0 to 9];
- default duration for registration for incoming calls (by days, hours, minutes);
- information related to UPT supplementary services:
 - information related to Variable Routeing supplementary service (not both routeings in the same time):
 - routeing on calling line identity [0 to 20];
 - routeing on time dependency (a maximum of 5 time inputs per day and 28 in total);
 - destination reached by UPT Call Forwarding on Busy (CFB);
 - destination reached by UPT Call Forwarding Unconditional (CFU);
 - destination reached by UPT Call Forwarding on No Answer (CFNA).

4.3.2.2.2 Information modified by UPT personal mobility procedures only

- current terminal access for incoming calls and duration of the registration.

4.4 Sample access rights table

This subclause provides a global view of the parameters included in the service profile and accessible by the various entities; in each table all the parameters are reported, with the indication about an access being "write-only" (W), "read-only" (R) or "read and write" (R/W) (regardless of the means of access: on-line or through off-line interaction with the service provider). Only subscriber and user rights appear in the table, since the service provider has technically all rights on the subscriber and user profiles. However, it is bound by its contractual agreement with the subscriber and is submitted to the European laws on the protection of privacy.

Table 1 is intended only as an example of possible access rights. It is therefore indicative and not normative.

³⁾ This contains the translation between short numbers defined by the UPT user and Access Registration Addresses (ARAs).

Table 1

Attribute	Access rights	
	Subscriber	User
UPT number	R	R
PUI	R	R
SPIN	R	R
Basic services subscribed	R	R
Profile services subscribed	R	R
Supplementary services subscribed	R	R
Charging services subscribed	R	R
Maximum number of failed authentication attempts	R	R
PIN	R/W	R/W
Types of authentication mechanisms subscribed	R	R
Subscriber location restrictions	R	R
Maximum credit allowed	R/W	R
Default charging reference	R	R
Types of authentication mechanisms allowed	R/W	R
Basic services allowed	R/W	R
Supplementary services allowed	R/W	R
Type of authentication mechanism activated	R	R/W
Activation status for each UPT supplementary service	R	R/W
Default terminal access for incoming calls	R	R/W
List of terminal accesses for registration	R	R/W
Default duration of registrations	R	R/W
Information related to supplementary services	R	R/W
Current terminal access for incoming calls	R	R/W

5 UPT information model

5.1 General description

The UPT information model is presented informally, using a method loosely based on the Entity-Relationship methodology. The relationships between the entities of the model are represented by lines in figure 1.

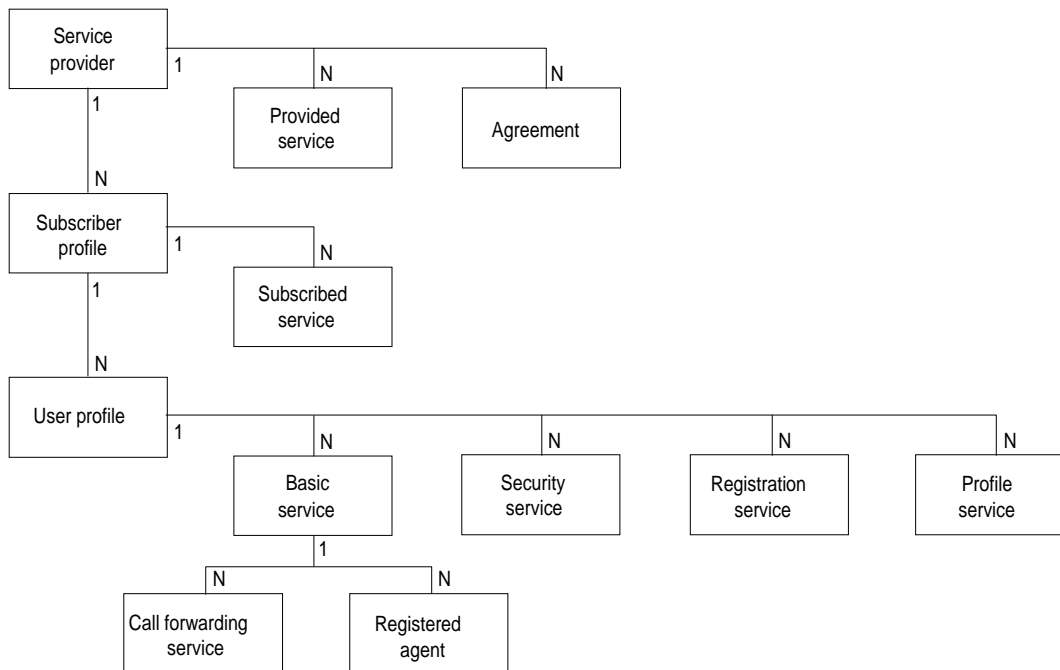


Figure 1

Information is attached to each entity of the model, in the form of attributes. These attributes are described in the following subclauses for each entity in the model. Entities have been grouped logically into three classes: service provider-related entities, subscriber-related entities and user-related entities.

Three actors require access to the subscriber and user-related entities of the model: the service provider, the subscriber and the user. Access rights to each entity and to each attribute within an entity are therefore defined. By definition, the service provider has all rights on all the information. The subscriber's and the user's rights to read and/or modify an attribute, however, depend on its nature and purpose and have to be specified for each attribute. In order to do this, an annotation of the following form is added to each attribute description: sub: R/W; user: R, meaning that the subscriber may see the contents of the attribute and modify it, while the user may only see the contents of the attribute. If no annotation appears in the attribute definition, sub: R; user: R is implied.

5.2 Service provider-related entities

Only the service provider has access to these entities.

5.2.1 Service provider

The **service provider** entity is simply used as an anchor point for instances of the **provided service** and **agreement** entities. It has only one attribute attached to it:

- **service provider identity:** identifier for the service provider. It will be extracted from the PUI and may include, for example, a country code and a network code.

5.2.2 Provided service

The **provided service** entities describe the services offered by the service provider to its subscribers. One instance of this entity per provided service is attached to the **service provider** entity. The attributes attached to it are:

- **service identity** Identifier for the service. Services are grouped into classes, for the convenience of the implementation. Valid identifiers for each class are:
 - basic services:
 - ISDN telephony;
 - PSTN telephony.
 - registration services:
 - InCall registration.
 - profile services:
 - profile modification;
 - profile interrogation.
 - security services:
 - weak authentication;
 - strong authentication.
 - charging services:
 - credit limit checking.

- call forwarding services:
 - CFU;
 - CFNA;
 - CFB;
 - call forwarding on not reachable;
 - variable routeing.
- **locations:** list of locations where the service may be used. A location is expressed as either:
 - a country code;
 - a country code + an operator code;
 - a country code + an operator code + a local area code.

For most service types, those two attributes are enough to describe the service provided. For call forwarding services, however, an extra attribute is required to describe the provision parameters supported:

- **call forwarding parameters:** may allow either of the following three provision parameters:
 - **notify activation:** indicates that the UPT user should be notified when the service is activated;
 - **notify forwarding:** indicates that the forwarded to party should be notified that the incoming call has been forwarded;
 - **notify calling party:** indicates that the calling party should be informed that a call forwarding takes place.

5.2.3 Agreement

The **agreement** entities describe the services offered by the service provider to visiting users. One instance of this entity per provided service and per foreign service provider is attached to the **service provider** entity. It has the same structure as the **provided service** entity, with the addition of one attribute:

- **service provider identity:** identifier for the home service provider of the visiting users.

5.3 Subscriber-related entities

The UPT subscription defines the nature of the contract binding the service provider to one of its customers. One UPT subscription may cover one or several UPT users. A service profile is attached to each of the users in the subscription (see the description of the user-related entities in subclause 5.4) and contains information specific to each user.

The information held in the subscriber-related entities is common to all users in the subscription and is fixed at subscription time. It may subsequently only be modified by a request to the service provider, using administrative procedures.

5.3.1 Subscriber profile

The **subscriber profile** entity is simply used as an anchor point for instances of the **subscribed service** entities. It has only one attribute attached to it:

- **subscriber identity:** unique identifier for the UPT subscriber.

5.3.2 Subscribed service

The **subscribed service** entities describe the services subscribed. One instance of this entity per subscribed service is attached to the **subscriber profile** entity. It has the same structure as the **provided service** entity, with the following restrictions:

- **service identity:** only services for which a corresponding **provided service** entity exists in the subscriber's home service provider definition are allowed.
- **locations:** only locations defined in the corresponding **provided service** entity are allowed.

In addition, the following restrictions apply to call forwarding services:

- **call forwarding parameters:** each of the three provision parameters (**notify activation**, **notify forwarding** and **notify calling party**) may be specified only if it also specified in the corresponding **provided service** entity.

5.4 User-related entities

The user-related entities defines the service information attached to one of the users in a subscription. This information may differ from one user to another, in the same subscription.

5.4.1 User profile

The **user profile** entity is mainly used as an anchor point for instances of the service entities described in the remainder of this subclause.

- **PUI:** unique identifier for the UPT user.
- **UPT number:** diallable number through which the user may be reached.
- **charging information** contains:
 - default charging reference default reference point for charging;
 - maximum credit (sub: R/W; user: R) allowed to the user, expressed either as a cost-related credit limit or as maximum numbers of local and long-distance calls.
- **maximum number of terminal accesses:** allowed for registration services.

5.4.2 Security service

The **security service** entities describe the security services allowed by the subscriber to a given user. They also indicate the activation status of each security service.

- **service identity:** (sub: R/W; user: R) only services for which a corresponding **subscribed service** entity exists in the subscriber's definition are allowed.
- **activation status:** (sub: R; user: R/W) indicates whether the service is active or not.

NOTE: In the case where both weak and strong authentication procedures are allowed to a user, the service provider may elect to ignore this attribute and to impose the authentication method used. This prevents the use of weak authentication when a safer method is available.

- **locations:** (sub: R/W; user: R) only locations defined in the corresponding **subscribed service** entity are allowed.

When the **service identity** attribute indicates Weak Authentication, the following attributes are also used:

- **PIN codes:** (sub: R/W; user: R/W) the secret code used by the user to prove his identity to the network and the longer secret code used for deblocking the user if too many failed attempts are made. Unlike other attributes, these ones may be queried only by the service provider, for security reasons. They may be changed by using the specific PIN change procedures.
- **Maximum number of authentication failures** before the PUI is blocked.

When the **service identity** attribute indicates strong authentication, the following attribute is also used:

- **strong authentication key(s)** (sub: ; user:) [for further study].

5.4.3 Registration service

The **registration service** entities describe the registration services allowed by the subscriber to a given user. These services do not use an **activation status** attribute to record their activation status; another entity, **registered agent**, is used instead.

- **service identity:** (sub: R/W; user: R) only services for which a corresponding **subscribed service** entity exists in the subscriber's definition are allowed.
- **locations:** (sub: R/W; user: R) only locations defined in the corresponding **subscribed service** entity are allowed.

5.4.4 Profile service

The **profile service** entities describe the profile interrogation and modification services allowed by the subscriber to a given user.

- **service identity:** (sub: R/W; user: R) only services for which a corresponding **subscribed service** entity exists in the subscriber's definition are allowed.
- **locations:** (sub: R/W; user: R) only locations defined in the corresponding **subscribed service** entity are allowed.

5.4.5 Basic service

The **basic service** entities describe the basic services allowed by the subscriber to a given user.

- **service identity:** (sub: R/W; user: R) only services for which a corresponding **subscribed service** entity exists in the subscriber's definition are allowed.
- **locations:** (sub: R/W; user: R) only locations defined in the corresponding **subscribed service** entity are allowed.

5.4.6 Call forwarding service

The **call forwarding service** entities describe the call forwarding services allowed by the subscriber to a given user.

- **service identity:** (sub: R/W; user: R) only services for which a corresponding **subscribed service** entity exists in the subscriber's definition are allowed.
- **locations:** (sub: R/W; user: R) only locations defined in the corresponding **subscribed service** entity are allowed.
- **allowed parameters:** (sub: R/W; user: R) specifies which provision parameters (**notify activation**, **notify forwarding** and **notify calling party**) are allowed to the user. A given parameter may be allowed only if it is also specified in the corresponding **subscribed service** entity.
- **provision parameters:** (sub: R; user: R/W) specifies the actual provision parameters chosen by the user. Each of the three provision parameters (**notify activation**, **notify forwarding** and **notify calling party**) may be specified by the user only if it also specified in the **allowed parameters** attribute.
- **activation status:** (sub: R; user: R/W) indicates whether the service is active or not.

When the **service identity** attribute indicates CFU, CFNA, CFB or Call Forwarding On Not Reachable, the following attribute is also used:

- **call forwarding registration parameters** (sub: R; user: R/W) contains:
 - forwarded-to number;
 - no reply condition timer.

When the **service identity** attribute indicates variable routeing, the following attribute is also used:

- **variable routeing registration parameters:** (sub: R; user: R/W) list of calling-party dependent or time-dependent variable routeing elements:
 - calling-party dependent elements specify a calling party address, and the number to forward the call to when an incoming call is received from this calling party;
 - time-dependent elements specify a day of week, a time period and the number to forward the call to when an incoming call is received on this day and during this period.

5.4.7 Registered agent

These entities model the registration of a UPT user on a terminal access (contrary to what is shown on figure 1, only one registration for incoming calls per basic service is possible in UPT phase 1):

- **access point identifier:** (sub: R; user: R/W) address of the terminal access;
- **type of registration:** permitted value: InCall.

History

Document history	
November 1995	First Edition
February 1996	Converted into Adobe Acrobat Portable Document Format (PDF)