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Contents

Foreword	5
1 Scope	7
2 References	7
3 Abbreviations.....	7
4 UPT procedures	7
4.1 Elementary procedures.....	7
4.1.1 Access.....	7
4.1.2 Identification	8
4.1.3 Authentication.....	8
4.1.4 Global follow-on.....	8
4.1.5 OutCall follow-on	8
4.2 Personal mobility procedures.....	8
4.2.1 Essential procedures.....	8
4.2.1.1 InCall Registration (Registration for Incoming Calls).....	8
4.2.1.2 InCall Deregistration (Deregistration for Incoming Calls)	9
4.2.2 Optional procedures	10
4.3 UPT call handling procedures.....	10
4.3.1 Essential procedures.....	10
4.3.1.1 Outgoing UPT call setup.....	10
4.3.2 Optional procedures	11
4.4 UPT service profile management procedures	11
4.4.1 Essential procedures.....	11
4.4.1.1 Profile Interrogation	11
4.4.1.2 Profile Modification	11
4.4.2 Optional procedures	12
5 UPT user states	12
5.1 Introduction	12
5.2 General requirements on personal mobility states	12
5.3 Description of State 0 (DETACHED)	13
5.4 Description of State 1 (READY_TO_CALL).....	13
5.5 Description of State 2 (REACHABLE)	14
5.6 Description of State 3 (READY_TO_ANSWER).....	14
5.7 Description of State 4 (ATTACHED).....	14
5.8 Description of State 5 (READY_FOR_ALL).....	14
5.9 Description of State 6 (LINKED)	15
History.....	16

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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 gives a general description of the various Universal Personal Telecommunication (UPT) procedures and the related states of the UPT user. It describes the UPT procedures as seen from the UPT user or any other user in terms of possible interactions with the UPT service.

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1 Scope

This ETSI Technical Report (ETR) concerns a restricted Universal Personal Telecommunication (UPT) service. The restrictions relative to the long-term objectives are summarised in ETR 214 [1].

The ETR gives a general description of the various UPT procedures and the related states of the UPT user. It describes the UPT procedures as seen from the UPT user or any other user in terms of possible interactions with the UPT service. No restrictions in terms of network implementation or man machine interface are included. Such requirements are given in other specifications.

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 214: "Universal Personal Telecommunication (UPT); Phase 1 (restricted UPT service scenario); Service Aspects: Guidelines".

3 Abbreviations

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

ARA	Access Registration Address
PSTN	Public Switched Telephone Network
UPT	Universal Personal Telecommunication

4 UPT procedures

The following basic categories of UPT procedures exist:

- a) personal mobility procedures;
- b) UPT call handling procedures;
- c) UPT service profile management procedures.

Each of these basic UPT procedures may involve some **elementary procedures**, which therefore are described separately. In addition, a set of **exceptional procedures** may exist for use in exceptional cases, none of which has been identified for Phase 1. All the UPT procedures relevant for Phase 1 are described in the following.

In all UPT procedures, some information will have to be supplied by the UPT user, some of which is mandatory and some is optional. All optional information may be included in the UPT user's service profile as default parameters, or may be supplied on a case-by-case basis.

4.1 Elementary procedures

Elementary procedures are procedures that have no significance on their own. These procedures are always carried out in connection with one of the basic UPT procedures, either before, or as part of, such a procedure, if required.

4.1.1 Access

An access procedure may be required before a UPT procedure can be carried out.

4.1.2 Identification

The identification procedure is used by the UPT user to identify himself to the UPT service provider.

The identification procedure may be required before, or as a part of, other UPT procedures.

For a UPT user to identify himself it is necessary to provide some identification information (e.g. UPT Number).

4.1.3 Authentication

The authentication procedure is used by the UPT service provider to ensure that the calling party or answering party is the UPT user claimed, as the UPT Subscriber associated with the UPT user may have to pay part of the charges for the UPT calls.

The authentication procedure may be required before, or as a part of, other UPT procedures.

The identification procedure may be required before, or as a part of, the authentication procedure.

For the authentication procedure the mandatory information is the required authentication information.

The UPT user may have a choice between various authentication procedures. The authentication procedures are for further study.

4.1.4 Global follow-on

The global follow-on procedure is used by the UPT user when terminating a UPT procedure, before disconnecting completely, in order to follow it by a new UPT procedure, without having to repeat the access, identification and authentication procedures.

For the global follow-on procedure, the mandatory information to be supplied by the UPT user is the UPT procedure type only.

4.1.5 OutCall follow-on

The OutCall follow-on procedure is used by the UPT user when terminating an outgoing UPT call, before disconnecting completely, in order to follow it by a new outgoing UPT call, without having to repeat the identification and authentication procedures, or using the global follow-on procedure.

For the OutCall follow-on procedure, the mandatory information to be supplied by the UPT user is the UPT procedure type only.

4.2 Personal mobility procedures

Personal mobility procedures are UPT procedures relating to the personal, or discrete, mobility of the UPT user, used in order to ensure that the UPT user is able to receive or make UPT calls. The personal mobility procedures do not involve, however, actual making or receiving of calls.

4.2.1 Essential procedures

4.2.1.1 InCall Registration (Registration for Incoming Calls)

Registration for incoming calls is a means for a UPT user to indicate where incoming calls shall be presented. Such a registration will override any previous registration.

The identification and authentication procedures must have been successfully completed before, or as a part of, this procedure.

During this procedure, the UPT user must supply the following information.

The mandatory information is:

- UPT procedure type.

The optional information includes:

- the duration of the registration, if needed. This may also be specified in terms of number of incoming UPT calls;
- an indication of group registration, if needed. If no indication is given, registration of a single terminal access is assumed;
- one or more Access Registration Addresses (ARAs), if needed (e.g. if the user chooses to specify a terminal access other than the one he is currently using, or for group registration). Each ARA can be either a complete access address or a pointer to one of a number of pre-selected access addresses for registrations for incoming UPT calls, stored in the UPT service profile. Each of the ARAs may be restricted to call answering and/or call alerting.

If no address is specified, the address of the used terminal access is assumed;

- an indication of the telecommunication services to which the registration applies, if needed.

If no service is specified, the default services for registrations for incoming UPT calls, indicated in the UPT service profile, are assumed;

- an indication of any special conditions to be placed on the registration, if needed (e.g. a list of permitted callers).

The network will indicate to the UPT user if the registration is accepted or give an appropriate announcement if not, and the procedure is terminated. Any rejection could depend on the authentication procedure, UPT service profile restrictions etc. Specifically, the registration will be rejected if the ARA specified by the UPT user is a UPT number.

4.2.1.2 InCall Deregistration (Deregistration for Incoming Calls)

A registration for incoming calls can be deregistered (cancelled) in the following ways.

- 1) the UPT user can explicitly deregister;
- 2) the UPT user can register to another terminal access thus causing the previous registration to be overridden;
- 3) the UPT service provider can specifically deregister the UPT user to terminate the registration;
- 4) by timer or counter expiry.

When a UPT registration for incoming calls has been deregistered, except when overridden by a new registration (case 2)), the presentation of incoming calls will go to an appropriate default terminal access defined in the UPT service profile. Examples of default terminal accesses are a kind of mailbox, a paging network and also "no terminal access". Unless "no terminal access" is specified, the UPT user will thus never be completely deregistered for incoming UPT calls.

The deregistration for incoming calls procedure is used in case 1), when the UPT user explicitly deregisters.

The identification and authentication procedures must have been successfully completed before, or as a part of, this procedure.

During this procedure, the UPT user must supply the following information.

The mandatory information is:

- UPT procedure type.

The optional information includes:

- an indication of group deregistration, if needed. If no indication is given, deregistration of a single terminal access is assumed;
- one or more ARAs, if needed (e.g. if the user chooses to specify another terminal access than the one he is currently using, or for group deregistration). Each ARA can be either a complete access address or a pointer to one of a number of pre-selected access addresses for registrations for incoming UPT calls, stored in the UPT service profile. The ARA could also indicate all terminals registered for incoming UPT calls.

If no address is specified, the address of the used terminal is assumed;

- an indication of the telecommunication services to which the deregistration applies, if needed.

If no service is specified, all services for which the registration applied are assumed.

The network will indicate to the UPT user if the deregistration is accepted or give an appropriate announcement if not, and the procedure is terminated. Any rejection could depend on e.g. the authentication procedure, ARA or service specified not in line with the registration, etc..

4.2.2 Optional procedures

None identified.

4.3 UPT call handling procedures

UPT call handling procedures are procedures relating to the actual making or receiving of UPT calls.

4.3.1 Essential procedures

4.3.1.1 Outgoing UPT call setup

This procedure may be used by a UPT user in order to make a single outgoing UPT call independent of any previous registrations by himself or any other UPT user for incoming and/or outgoing calls to the used terminal access. No personal mobility state of any UPT user is affected by this procedure. The outgoing UPT call is charged to the UPT number.

The identification and authentication procedures must have been successfully completed before, or as a part of, this procedure.

During this procedure, the UPT user must supply the following information.

The mandatory information is:

- UPT procedure type;
- B-party address.

No optional information is needed.

The network will indicate to the UPT user if the outgoing UPT call setup procedure is not accepted, and the procedure is terminated. Any rejection could depend on the authentication procedure, UPT service profile restrictions etc.

4.3.2 Optional procedures

None identified.

4.4 UPT service profile management procedures

UPT service profile management procedures are procedures used by the UPT user in order to manage his own accessible UPT service profile data.

UPT service profile management procedures are procedures which in many cases may be rather complicated, and which most successfully may be implemented in an interactive way on advanced terminals. This should not preclude, however, the use of such procedures with a single command and response on simple terminals.

4.4.1 Essential procedures

4.4.1.1 Profile Interrogation

A UPT user uses the Profile Interrogation procedure to obtain information on the current status of the UPT user's own service profile.

The identification and authentication procedures must have been successfully completed before, or as a part of, this procedure.

During this procedure, the UPT user must supply the following information.

The mandatory information is:

- UPT procedure type.

The optional information includes:

- Information concerning the type of UPT service profile information that is requested. Such information could include information like telecommunications services subscribed to, default parameters, activated supplementary services, current registrations for incoming or outgoing calls, etc.

The network will respond with the wanted information to the UPT user if the information can be disclosed, and the procedure is terminated. Any rejection could depend on the authentication procedure, UPT service profile restrictions etc.

4.4.1.2 Profile Modification

The Profile Modification procedure is a procedure by which the UPT user can change appropriate UPT service profile parameters.

The identification and authentication procedures must have been successfully completed before, or as a part of, this procedure.

During this procedure, the UPT user must supply the following information.

The mandatory information is:

- UPT procedure type.

The optional information includes:

- Information concerning the type of UPT service profile information that is wanted modified. Such information could concern activation or deactivation of supplementary services, change of various default parameters, etc.

NOTE: It is assumed that more fundamental modifications, like e.g. of services subscribed to etc., are treated outside the scope of UPT, by administrative procedures, as a part of the IN specifications or otherwise.

The network will indicate to the UPT user if the modification is accepted or give an appropriate announcement if not, and the procedure is terminated. Any rejection could depend on the authentication procedure, UPT service profile restrictions etc.

4.4.2 Optional procedures

None identified.

5 UPT user states

5.1 Introduction

This subclause identifies the possible UPT user states in terms of **personal mobility** only, and its consequences on charging and possible actions.

NOTE: The states concern UPT users, not terminals.

5.2 General requirements on personal mobility states

The UPT user may carry out a set of actions. These may relate to any of the types of UPT procedures listed above, and may be carried out by the reference UPT user (i.e. the UPT user concerned) or by another UPT user, and may concern the current terminal access or another terminal access. In principle, these actions may all influence the personal mobility state of the reference UPT user.

The following personal mobility states have been identified for the long-term scenario. Out of these, only State 0 (DETACHED) and State 3 (READY_TO_ANSWER) are applicable to the essential part of Phase 1.

State 0: DETACHED	(Deregistered for incoming calls, deregistered for outgoing calls).
State 1: READY_TO_CALL	(Deregistered for incoming calls, registered for outgoing calls).
State 2: REACHABLE	(Registered for incoming calls - further authentication required, deregistered for outgoing calls).
State 3: READY_TO_ANSWER	(Registered for incoming calls - no further authentication required, deregistered for outgoing calls).
State 4: ATTACHED	(Registered for incoming calls - further authentication required, registered for outgoing calls).
State 5: READY_FOR_ALL	(Registered for incoming calls - no further authentication required, registered for outgoing calls).
State 6: LINKED	(READY_FOR_ALL with linked registrations for incoming and outgoing calls).

The following general requirements apply to the personal mobility states for a specific basic service:

- procedures other than personal mobility procedures will not influence the personal mobility state. Specifically, a UPT user may in each personal mobility state use a UPT specific procedure like outgoing UPT call setup to make an outgoing UPT call. A UPT user may also in each personal mobility state interrogate or modify his UPT service profile;

- a UPT user may not have more than one registration for incoming UPT calls at the same time. A new registration for incoming UPT calls will cancel the previous registration. This does not prevent, however, that a UPT user within one registration procedure may define a set of incoming call addresses where he may be searched either simultaneously or in sequence;
- several UPT users may be registered for incoming UPT calls to the same terminal access simultaneously;
- the UPT service provider may explicitly deregister the UPT user in any personal mobility state;
- in general, only the reference UPT user can override his/her own registrations.

For completeness, the different UPT user states as defined for the long-term scenario are described shortly in the following subclauses. For those user states, which are essential for Phase 1, additional information is given.

In addition, a summary of the network responses to the personal mobility procedures in the different UPT user states, including the long-term user procedures and user states, is given in Table 1. The table describes the effects of a UPT user's personal mobility procedures with respect to the UPT user's own registration states. The interactions with other UPT users are not shown.

5.3 Description of State 0 (DETACHED)

In this state, the reference UPT user is completely detached from the UPT service and cannot receive incoming calls, nor can he make outgoing UPT calls without first using a specific UPT procedure requiring authentication. Consequently, his associated UPT subscription will not be charged for anything without involving further UPT-specific actions.

In this state, the UPT service entity cannot locate the UPT user, and any calling subscriber may receive an announcement to this effect.

- if, in this state, the reference UPT user attempts to register for incoming UPT calls to any terminal, this may be allowed;
- if, in this state, the reference UPT user attempts to deregister for incoming UPT calls to any terminal, this should be rejected, and an announcement should be given to him indicating that he is already deregistered.

Any actions of other UPT users do not affect the reference UPT user in this state.

5.4 Description of State 1 (READY_TO_CALL)

In this state, the reference UPT user has registered for outgoing UPT calls to a terminal so that he can make outgoing UPT calls **without** first using a specific UPT procedure requiring authentication, or optionally, to use a simplified authentication in the form of PIN code. In this state, all outgoing UPT calls from the terminal will be charged to the UPT subscription associated with the reference UPT user according to the charging principles.

This state is not included as essential for Phase 1. Outgoing UPT calls are made by using the outgoing UPT call setup procedure. For a series of outgoing UPT calls, the OutCall follow-on procedure can be used between the calls.

5.5 Description of State 2 (REACHABLE)

In this state, the reference UPT user has registered for incoming UPT calls to one or several terminal accesses so that he can receive incoming calls, but the reference UPT user will have to use the answering of incoming UPT calls procedure **requiring authentication**. The UPT subscription associated with the reference UPT user will be charged for incoming UPT calls according to the charging principles.

For Phase 1, this state is not included as essential. The registration for incoming calls is covered by State 3 (READY_TO_ANSWER), which does not require any specific answering procedure with authentication.

5.6 Description of State 3 (READY_TO_ANSWER)

In this state, the reference UPT user has registered for incoming UPT calls to one or several terminal accesses so that he can receive incoming calls. This state is identical to state 2 (REACHABLE), but the reference UPT user will **not** have to carry out any UPT specific procedures requiring authentication before he can receive incoming UPT calls. The UPT subscription associated with the reference UPT user will be charged for incoming UPT calls according to the charging principles.

- if, in this state, the reference UPT user attempts to register for incoming UPT calls to the same terminal access, this should be allowed, and the previous registration should be cancelled;
- if, in this state, another UPT user attempts to register for incoming UPT calls to the same terminal access, this should be allowed and should not influence the reference UPT user;
- if, in this state, the reference UPT user attempts to register for incoming UPT calls to another terminal access, this should be allowed, and the previous registration should be cancelled;
- in this state, the reference UPT user may explicitly deregister for incoming calls.

Any actions concerning registration/deregistration for outgoing UPT calls to the same terminal are of no influence to the reference UPT user. Neither do any actions carried out by another UPT user concerning other terminals.

5.7 Description of State 4 (ATTACHED)

In this state, the reference UPT user has registered for outgoing UPT calls to a terminal so that he can make outgoing UPT calls **without** any authentication procedure (or optionally by using a simplified authentication in the form of PIN code). In this state, all outgoing UPT calls will be charged to the UPT subscription associated to the reference UPT user according to the charging principles.

In this state, the reference UPT user has also registered for incoming UPT calls to a terminal so that he can receive incoming calls, but the reference UPT user will have to use the answering of incoming UPT calls procedure **requiring authentication**. The UPT subscription associated with the reference UPT user will be charged for incoming UPT calls according to the charging principles.

This state is not essential for Phase 1 (no registration for outgoing UPT calls).

5.8 Description of State 5 (READY_FOR_ALL)

This state is identical to state 4 (ATTACHED), but the reference UPT user will **not** have to carry out any UPT specific procedures requiring authentication before he can receive incoming UPT calls. The UPT subscription associated with the reference UPT user will be charged for incoming and outgoing UPT calls according to the charging principles.

This state is not essential for Phase 1 (no registration for outgoing UPT calls).

5.9 Description of State 6 (LINKED)

This state is identical to state 5 (READY_FOR_ALL), but with the restriction that the registrations for incoming and outgoing calls are linked together and to the same terminal access (Linked Registration), and is used in order to provide a user-friendly combined registration for incoming and outgoing calls (e.g. leaving the situation of a standard Public Switched Telephone Network (PSTN) terminal).

This state is not essential for Phase 1 (no registration for outgoing UPT calls).

Table 1: Network responses to UPT user procedures in different user states (long-term case)

State:	Procedure: (for terminal a)							
	Reg.inc	Reg.out	Reg.all	Reg.Ink	Der.inc	Der.out	Der.all	Der.Ink
1: D.inc/D.out (any terminal) (state 0)	AIR(a)	AOR(a)	AIR(a) AOR(a)	ALR(a)	RID(a)	ROD(a)	RID(a) ROD(a)	RLD(a)
2: D.inc/R.out (to terminal /a) (state 1)	AIR(a)	AOR(a)	AIR(a) AOR(a)	ALR(a) OOR(a)	RID(a)	AOD(a)	RID(a) AOD(a)	RLD(a)
3: D.inc/R.out (to terminal /b) (state 1)	AIR(a)	AOR(a)	AIR(a) AOR(a)	ALR(a)	RID(a)	ROD(a)	RID(a) ROD(a)	RLD(a)
4: R.inc/D.out (to terminal a /) (state 2/3)	AIR(a)	AOR(a)	ALR(a) AOR(a)	ALR(a) OIR(a)	AID(a)	ROD(a)	AID(a) ROD(a)	RLD(a)
5: R.inc/D.out (to terminal b /) (state 2/3)	AIR(a) OIR(b)	AOR(a)	AIR(a) OIR(b) AOR(a)	ALR(a) OIR(b)	RID(a)	ROD(a)	RID(a) ROD(a)	RLD(a)
6: R.inc/R.out (to terminal a/a) (state 4/5)	AIR(a)	AOR(a)	AIR(a) AOR(a)	ALR(a) OOR(a) OIR(a)	AID(a)	AOD(a)	AID(a) AOD(a)	RLD(a)
7: R.inc/R.out (to terminal a/b) (state 4/5)	AIR(a)	AOR(a)	AIR(a) AOR(a)	ALR(a) OIR(a)	AID(a)	ROD(a)	AID(a) ROD(a)	RLD(a)
8: R.inc/R.out (to terminal b/a) (state 4/5)	AIR(a) OIR(b)	AOR(a)	AIR(a) OIR(b) AOR(a)	ALR(a) OIR(b) OOR(a)	RID(a)	AOD(a)	RID(a) AOD(a)	RLD(a)
9: R.inc/R.out (to terminal b/b) (state 4/5)	AIR(a) OIR(b)	AOR(a)	AIR(a) OIR(b) AOR(a)	ALR(a) OIR(b)	RID(a)	ROD(a)	RID(a) ROD(a)	RLD(a)
10: Linked (to terminal a) (state 6)	RIR(a)	ROR(a)	RIR(a) ROR(a)	ALR(a)	RID(a)	ROD(a)	RID(a) ROD(a)	ALD(a)
11: Linked (to terminal b) (state 6)	RIR(a)	AOR(a)	RIR(a) AOR(a)	ALR(a) OLR(b)	RID(a)	ROD(a)	RID(a) ROD(a)	RLD(a)

Syntax: Accept/Reject/Override (A/R/O)
Incoming/Outgoing/Linked (I/O/L)
Registration/Deregistration (R/D)
(terminal a/terminal b) (a/b)

Procedures: Reg.inc = InCall Registration Der.inc = InCall Deregistration
Reg.out = OutCall Registration Der.out = OutCall Deregistration
Reg.all = AllCall Registration Der.all = AllCall Deregistration
Reg.Ink = Linked Registration Der.Ink = Linked Deregistration

States: D.inc = Deregistered for incoming calls R.inc = Registered for incoming calls
D.out = Deregistered for outgoing calls R.out = Registered for outgoing calls

Phase 1 essential cases are shown in bold type with double cell borders:

Essential case

History

Document history	
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