

Source: TSG SA1
Title: CRs to 22.121 on VHE for R00
Document for: Approval
Agenda Item: 7.1.3

Spec	CR	Rev	Phase	Cat	Subject	Vers	New Vers	SA1 Doc. No.
22.121	011		R00	C	VHE in R00 User Profile	3.3.0	4.0.0	S1-000566
22.121	012		R00	C	VHE in R00	3.3.0	4.0.0	S1-000565
22.121	014		R00	D	Realisation of Application interface	3.3.0	4.0.0	S1-000564
22.121	015		R00	B	Synchronisation of distributed user profiles	3.3.0	4.0.0	S1-000569
22.121	016		R00	B	Uniquely addressable user profiles	3.3.0	4.0.0	S1-000570
22.121	017		R00	D	VASP indirect support of VHE	3.3.0	4.0.0	S1-000571

TSG SA WG1 #9 meeting
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22.121 CR 011

Current Version: **3.3.0**

GSM (AA.BB) or 3G (AA.BBB) specification number ↑

↑ CR number as allocated by MCC support team

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Proposed change affects: (U)SIM ME UTRAN / Radio Core Network
(at least one should be marked with an X)

Source: SA1 **Date:** 19/7/00

Subject: VHE in R00 User Profile

Work item: Personal Service Environment (PSE), user profiles and user profile management

Category: F Correction **Release:** Phase 2
 A Corresponds to a correction in an earlier release Release 96
 B Addition of feature Release 97
 C Functional modification of feature Release 98
 D Editorial modification Release 99
 Release 00

(only one category shall be marked with an X)

Reason for change: The following changes were made to reflect requirement for VHE R00

Clauses affected: 6

Other specs affected: Other 3G core specifications → List of CRs:
 Other GSM core specifications → List of CRs:
 MS test specifications → List of CRs:
 BSS test specifications → List of CRs:
 O&M specifications → List of CRs:

Other comments:



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6 User Requirements of VHE

The user shall have the possibility to manage services as well as the appearance of the services. It shall be possible for the user to:

- personalise services;
- Personalised User Interface (within the capabilities of terminals);
- access services from any network or terminal subject to network capabilities, terminal capabilities and any restrictions imposed by the home environment;
- use services in a consistent manner irrespective of serving network and terminal, within the technical limitations;
- access new services in the Home Environment;
- modify a user profile(for example to include new services) from any location;
- activate or deactivate user services;
- discover which local services are available;
- access local services in a secure manner;
- interrogate current user service and user interface settings;
- select a particular User Profile;
- indicate (on a session by session basis if necessary) to which subscription charges are to be applied to;
- recover MS resident User Profile information to protect against loss or damage of user equipment.

Be aware of limitations of services, which may result from different terminals and or serving network capabilities.

6.1 Personal Service Environment

The Personal Service Environment describes how the user wishes to manage and interact with their communications services. The PSE is a combination of a list of subscriptions (detailing provisioned services), preferences associated with those services, terminal interface preferences and other information related to the user's experience of the system. Within the PSE the user can manage multiple subscriptions e.g. both business and personal, multiple terminal types and express location and temporal preferences. The Personal Service Environment is defined in terms of one or more User Profiles.

6.1.1 User Profiles

A combination of different preferences is described by a User Profile. The user can define one or more User Profiles according to their needs.

Each User Profile consists of two kinds of information:

1) User data profile.

The User Profile consists of the following type of information:

- menu settings, e.g. menu items shown, menu structure, the placement of icons;
- terminal settings, e.g. ringing tone and volume, font type and size, screen and text colour, language, content types and sizes accepted;
- Network related preferences e.g. language used for announcements. (editor's note: for clarification)

2) User Service Profile

The User Service Profile consist of the following type of information:

- A list of services subscribed to
- References to Service Preferences for each of the services subscribed to if applicable. Service Preferences could be information such as redirection numbers, redirection conditions, caller screening lists, time-of-day variations etc;
- Service status (active/deactive)

— interface related information (User Interface Profile);

—services related information (**User Services Profile**).

A User Interface Profile consists of the following type of information:

- menu settings, e.g. menu items shown, menu structure, the placement of icons;
- terminal settings, e.g. ringing tone and volume, font type and size, screen and text colour, language, content types and sizes accepted;
- network related preferences e.g. language used for announcements. (*editor's note: for clarification*)

A User Services Profile consists of the following information:

- a list of services subscribed to and references to Service Preferences for each of those services if applicable. Service Preferences could be information such as redirection numbers, redirection conditions, caller screening lists, time-of-day variations etc;
- service status (active/deactive).

The user may define one or more User [data Interface](#) Profiles and many User Services Profiles, but a given User Profile consists of a single combination of these. In this way a user could for example have a different User Profile to suit each of the three different terminals she owns. The User Services Profile is the same in each case but the User [dataInterface](#) Profile is different to suit the display capabilities of each terminal. User Profiles could also exist which use the same User [dataInterface](#) Profile but different User Services Profiles. This might simply imply that business calls are forwarded to an answering service when the user leaves the office because a new User Profile is now active.

Where the user has more than one User Profile the activation of a particular one could be done in the following ways:

- *Statically*: the user explicit selects one of the User Profiles as the active one;
- *Dynamically*: the appropriate User Profile is selected automatically based upon some criteria such as time of day, location, terminal used or many other possibilities.

Each User Profile must have an identity.

For UMTS Release '99 the information in the User Profiles enables the service capabilities SAT, MExE and CAMEL toolkits in R'99 and existing GSM services to support the user's PSE across network boundaries and between different terminals.

It shall be possible for the service capabilities to access the user profile information from the home environment if appropriate.

6.1.2 User Profiles and Multiple Subscriptions

The user may wish to manage more than one subscription in their PSE. This would allow them to have a single USIM but specify different preferences for the services provisioned in each subscription. In this case the User Services Profile will need to detail all of the services provided per subscription and provide references to the service preferences for each service. When initiating a chargeable event the user will need to indicate which subscription the charges should be applied to.

6.1.3 Management of the user profile

Fig xx shows a data model for a user profile, which consist of user service profile and user data profile. stored in the HSS.

Some terminal related data **areis** contained within the data profile such as menu settings and terminal settings. This data profile are stored in the terminal and/or USIM and **may be made available to application in the the terminal and USIM according to their respective security models conforming to the levels of authorisation of these tools.** Detailed definition of terminal related user data profile is within terminal capabilities group such as MExE, WAP or USAT.

Some network-related data is conatined within the data profile such as language used for announcements, encryption, security and authentication. **Some of this information may be stored in the HSS and MS.** Some user data, which are to be used by more than one application need to have standardised format and schemantics. **related to network are user dependent data such as authentication data (password annd pin) which are not subject to standardisation. However some are subject to standardisation such as user id.** Network related data are exchanged over standardised interface outside VHE scope.—

User service profile is made available to the network and the terminal. Service profiles relating to terminals are defined under terminal capabilities **TS xx.xxgroup such as MExE, WAP and USAT.** Service profiles relating to network are defined under network capabilities **TS xx.xxgroup such as OSA, CAMEL.**

Service profile is generally not subject to standardisation as this are changeable, however it is necessary for the user profile to to include a minimum set of standardised data such as user id.to standardised a minimum set of basic services, which are made available to the network. The minimum set of service profile defined shall be identified by a profile identifier.

The user and the home environment may modify the user's characterisation of the Personal Service Environment as described in the User Profiles at any time, and changes become effective at the earliest possible opportunity. The home environment shall be able to update distributed User Profiles to reflect any user or home environment modification of the user's Personal Service Environment.

~~The User Profiles may be stored in the Mobile Station (the SIM or the ME), and/or the home environment. The information in User Services Profiles is distributed between the home environment and the MS. In the event of loss/damage of mobile station (SIM or ME), the User Profiles must be fully recoverable and be used to reconfigure a new mobile station.~~

~~Some aspects of the User Profiles such as aspects related to terminal configuration, must be stored in a standardised format to support VHE.~~

~~NOTE: To ensure that User Profiles are applicable to as wide a community of terminal and network types as possible, existing work on this topic in other standards fora should be considered. One possibility is the work of the World-Wide Web Consortium on the Composite Capability/Preference Profile [2].~~

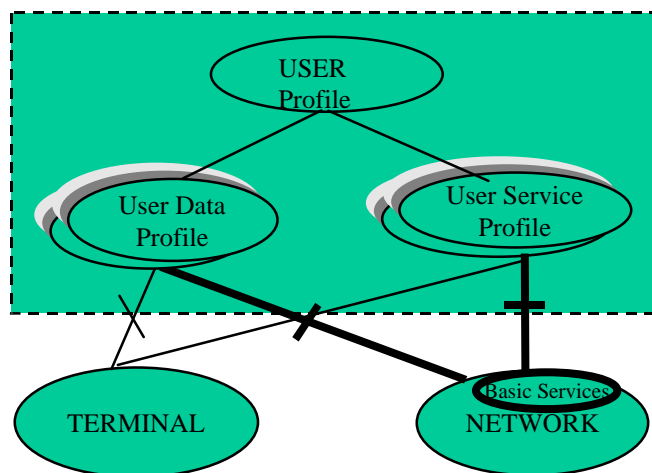


Figure xx Data Model for a User Profile

6.1.4 Location of User Profiles

The User Profiles may be partly stored in the Mobile Station (the SIM or the ME), and/or the home environment or elsewhere (which is outside the scope of standardisation). The information in User Services Profiles is distributed between the home environment and the MS. In the event of loss/damage of mobile station (SIM or ME), the User Profiles must be fully recoverable and be used to reconfigure a new mobile station.

The user profile information in the Home Enviroment should be kept constant with any changes in Mobile Station. User profile assocaited with external VASP is not stored within the Mobile Station or HE, this may be stored with the external VASP, details of this is outside 3GPP scope. There is no requirement for backup and recovery of this data. Some aspects of the User Profiles such as aspects related to terminal configuration, must be stored in a standardised format to support VHE.

NOTE: To ensure that User Profiles are applicable to as wide a community of terminal and network types as possible, existing work on this topic in other standards fora should be considered. One possibility is the work of the World Wide Web Consortium on the Composite Capability/Preference Profile [2].

The Home Environment owns the user profile information. User profile assocaited with external VASP are owened by external VASP and are outside the scope of 3GPP.

Editors note: There will be levels of authorisation

6.1.54 Requirements for Standardisation

To facilitate the provision of PSE and User Profiles the standard shall allow a minimum set of requirements that can be used to identify a user. This will consist of:

- User ID
- HE ID
- Equipment ID (IMEI)
- Basic set of services profile ID which contains basic set of services e.g emergency call, voice call and text call.
 - uniquely identify User Profiles;
 - provide a standardised format for describing terminal configuration preferences;

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22.121 CR 012

Current Version: **3.3.0**

GSM (AA.BB) or 3G (AA.BBB) specification number ↑

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Form: CR cover sheet, version 2 for 3GPP and SMG The latest version of this form is available from: <ftp://ftp.3gpp.org/Information/CR-Form-v2.doc>

Proposed change affects: (U)SIM ME UTRAN / Radio Core Network
(at least one should be marked with an X)

Source: SA1 **Date:** 19/7/00

Subject: VHE in R00

Work item: Introduction of VHE within the IP Multi Media Domain

Category: F Correction **Release:** Phase 2
 A Corresponds to a correction in an earlier release Release 96
 (only one category shall be marked with an X) B Addition of feature Release 97
 C Functional modification of feature Release 98
 D Editorial modification Release 99
 Release 00

Reason for change: The following changes were made to reflect requirement for VHE R00

- Addition of section 4.1 on services in R00. (Text taken from R00 report 22.976, section 8.0)
- Deletion of section 10 on service capability features. Since for R00 VHE TS has been separated from OSA, section 10 is more OSA hence has been moved to OSA TS. Section 10 is replaced with text from TS22.976 (section 8.0) on applicability of existing service capabilities. This section references the main toolkits referred to in R99. This section is not meant to describe the toolkits in details but to summarise them and how they are used in VHE specification. Rereferences are made to the respective TS.

Clauses affected: 4 and 5

Other specs affected: Other 3G core specifications → List of CRs:
 Other GSM core specifications → List of CRs:
 MS test specifications → List of CRs:
 BSS test specifications → List of CRs:
 O&M specifications → List of CRs:

Other comments: This CR contains changes related to Provisioning of IP-based multimedia services and could be part of R5.



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4 General Description of the VHE

Virtual Home Environment (VHE) is defined as a concept for personal service environment portability across network boundaries and between terminals. The concept of the VHE is such that users are consistently presented with the same personalised features, User Interface customisation and services in whatever network and whatever terminal (within the capabilities of the terminal and network), where ever the user may be located.

The key requirements of the VHE are to provide a user with a personal service environment which consist of:

- personalised services;
- personalised User Interface (within the capabilities of terminals);
- consistent set of services from the user's perspective irrespective of access e.g. (fixed, mobile, wireless etc. Global service availability when roaming.

The standards supporting VHE requirements should be flexible enough such that VHE can be applicable to all types of future networks as well as providing a framework for the evolution of existing networks. Additionally the standards should have global significance so that user's can avail of their services irrespective of their geographical location. This implies that VHE standards should:

- provide a common access for services in future networks;
- enable the support of VHE by future networks;
- enable the creation of services;
- enable personal service environment to be recoverable (e.g in the case of loss/damage of user equipment).

Roles and components involved in realisation of VHE consist of the following also see figure 1:

- home environment;
- user identifiers;
- users;
- terminals (simultaneous activation of terminals providing the same service per single subscription is not allowed);
- serving networks;
- subscriptions;
- possibly value added service providers;
- personal service environment;
- user profiles.

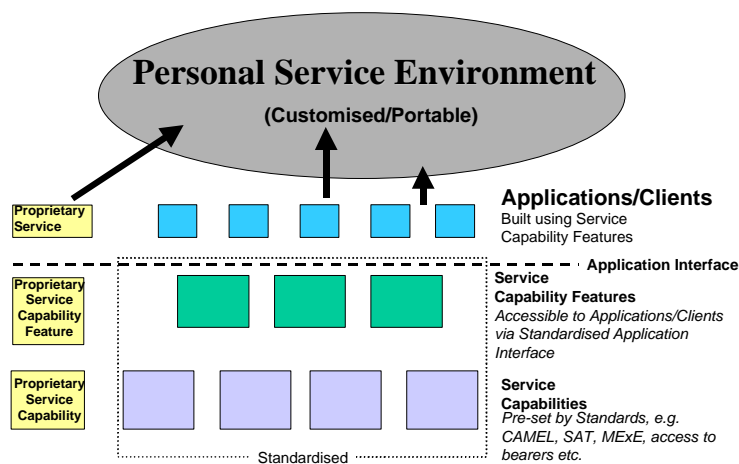


Figure 2: Framework for Services

The goal of standardisation in UMTS with respect to services is to provide a framework within which services can be created based on standardised service capability features see figures 2 and 3. UMTS services will generally not rely on the traditional detailed service engineering (evident for supplementary services in second-generation systems), but instead provides services using generic toolkits.

Services can be built using service capability features ([1], [2], [3], [4], [9], [10]), which are accessed via a standardised interface. An example of how a service can be built on service capability features could be "call to nearest restaurant", this will make use of call set-up, authorisation, location and database lookup.

The available service capability features are visible to applications through the standardised application interface. The application interface can be realised in a non-generic way (implying applications must have knowledge of the underlying mechanisms used) and/or a generic way (implying applications need not have knowledge of underlying mechanisms used). The functionality provided in both cases is the same and both solutions are independent of vendor specific solution.

For example, in the non-generic way, the User Location service capability features can be provided by a location server (e.g HLR, LCS). In the generic way the application will only see a single User Location service capability feature and does not know which location server provides it.

- the standardised application interface shall be: Independent of vendor specific solutions;
- independent of programming languages, operating systems etc used in the service capabilities;
- secure scalable and extensible.

In the case of realising the standardised application interface in the generic way, the following additional requirements apply:

- independent of the location where service capabilities are implemented;
- independent of supported server capabilities in the network; and
- Access to Service Capability Features shall be realised using modern state of the art access technologies, e.g. distributed object oriented technique might be considered.

5.1 Ways to realise services

The information contained in this clause is only to aid understanding and is not an extensive list.

Figure 3 illustrates how the concept of VHE makes use of the standardised application interface and how that fits to the service capability features and service capabilities for release 99. Note that the Service Capabilities (SCx) shown below are representatives of the different possible capabilities. It is not to be implied as the agreed architecture as this is a stage 2 issue.

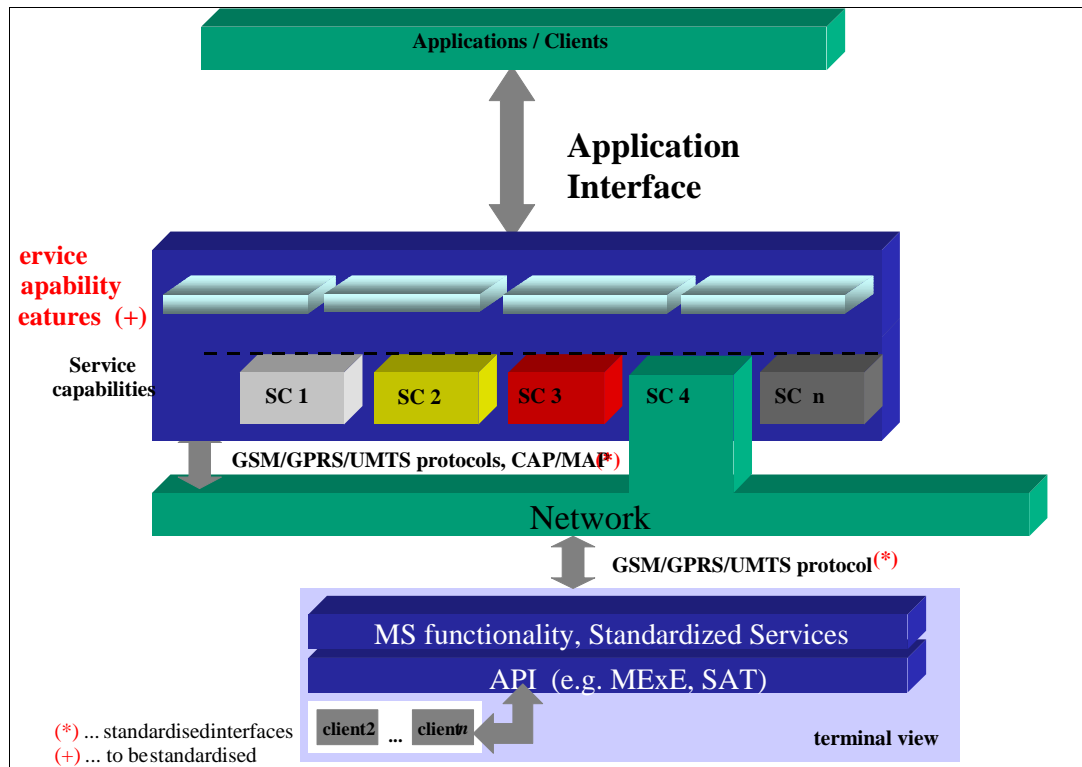


Figure 3: Possible realisation of Framework for Services

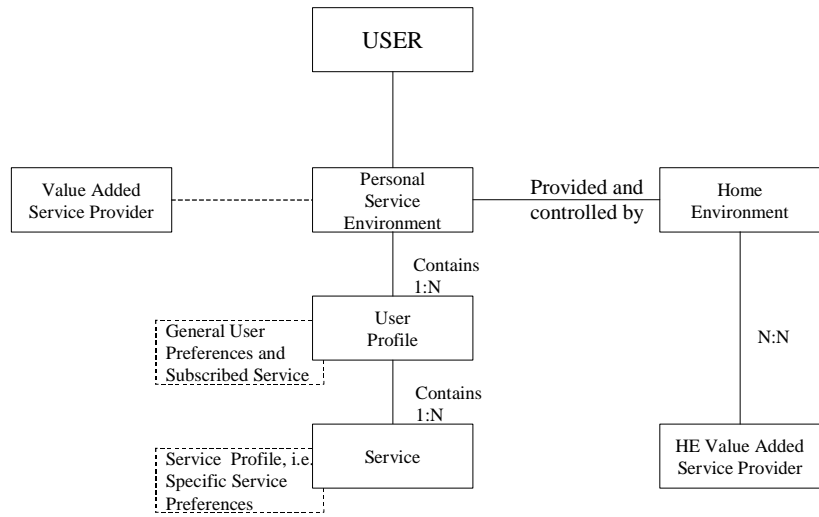
STANDARDISED SERVICES (Supplementary Services, Tele-Services, etc.) are implemented on existing GSM/UMTS entities (e.g. HLR, MSC/VLR and terminal) on a vendor specific basis, using standardised interfaces (MAP, etc.) for service communication (e.g. downloading of service data). Availability and maintenance of these Services is also vendor dependent.

OPERATOR SPECIFIC SERVICES (OSS) are not standardised and could be implemented at the GSM/UMTS entities (e.g. HLR) on a vendor specific basis or using GSM ph 2+ mechanisms (CAMEL, SAT, MExE). These tool-kits use standardised interfaces to the underlying network (e.g. CAP, MAP) or use GSM Bearers to transport applications and data, for example, from the MExE service environment of SAT server to the MS/SIM. The implementation of these operator specific services on the different platforms (CSE, MExE service environment /SAT Server, MSs) is done in a completely vendor specific way and uses only proprietary interfaces.

Other **APPLICATIONS** are like OSS not standardised. These applications will be implemented using standardised interfaces to the Service Capabilities (Bearers, Mechanisms). The functionality offered by the different Service Capabilities are defined by Service Capability Features. These Service Capability Features will be standardised and can be used by the application designers to build their applications.

Within the terminals Service Capabilities are accessible via APIs, for example, MExE and SAT APIs, i.e. there will be no service capability features within the terminal.

The terminal can communicate, using GSM/UMTS bearers, with applications in the network via the service capability features which may be optionally realised for MExE service environment and SAT-servers.



The set of services from the Users point of view

Figure 4

10 — Service Capability Features

Services Capability Features are open, technology independent building blocks accessible via a standardised application interface. This interface shall be applicable for a number of different business and applications domains (including besides the telecommunication network operators also service provider, third party service providers acting as HE-VASPs, etc.).

All of these businesses have different requirements, ranging from simple telephony and call routing, virtual private networks, fully interactive multimedia to using MS-based applications.

The service capability features shall enable applications to make use of the service capabilities (e.g. CAMEL, MExE, etc.) of the underlying UMTS network in an open and secure way.

Application/Clients access the service capability features via the standardised application interface. This means that a single service capability feature is accessible and visible to application/clients via the method/operation invocations in the interface.

Two different types of service capability features can be distinguished:

- **Framework service capability features:** these shall provide commonly used utilities, necessary for the non-framework service capability features to be accessible, secure, resilient and manageable;
- **Non-Framework service capability features:** these shall enable the applications to make use of the functionality of the underlying network capabilities (e.g. User Location service capability features).

10.1 — Framework service capability features

Framework service capability features will be used e.g. for authentication, registration, notification, etc. and provide functionality that is independent of any particular type of service. Other commonly used service capability features may be added later.

10.1.1 — Authentication service capability feature

Authentication is used to verify the identity of an entity (user, network, and application).

Three types of authentication are distinguished:

- **User-Network Authentication:** before a user can access her subscribed applications, the user has to be authenticated by the network that provides access to the application. This allows the network to check to what applications the user has subscribed to. User-network authentication *is handled within the network and therefore outside the scope of the present document.*
- **Application-Network Authentication:** before an application can use the capabilities from the network, a service agreement has to be established between the application and the network. Establishment of such a service agreement starts with the mutual authentication between application and network. If a service agreement already exists, modification might be needed or a new agreement might supersede the existing.
- **User-Application Authentication:** before a user can use an application or perform other activities (e.g. modifying profile data) the application provider must authenticate the user. When the network already authenticates the user, authentication is not needed anymore. When the network is transparent and the user accesses an application directly, authentication is needed between user and application but *this is outside the scope of the present document.*

10.1.2 — Authorisation service capability feature

Authorisation is the activity of determining what an authenticated entity (user, network, and application) is allowed to do:

NOTE:— Authentication must therefore precede authorisation.

Two types of authorisation are distinguished:

- **Application-Network Authorisation:** the network verifies what non-framework service capability features s- (or even some framework service capability features) the application is allowed to use. Once an application has been authorised to use one, more or all (non-framework) service capability features no further authorisation is required as long as the "allowed" (non-framework) service capability features are used.
- **User-Application Authorisation:** the application verifies what actions the user is allowed to perform (e.g. deactivation of functionality, modification of application data). This is transparent to the network and therefore *outside the scope of the present document.*

10.1.3—Registration service capability feature

The Registration service capability feature enables the non-framework service capability features (e.g. User Location) to register at the Framework. Registration must take place before authorised applications can find out from the Framework which non-framework service capability features are available. This means that the non-framework service capability features must be registered before they can be discovered and used by authorised applications.

Note that only the non-framework service capability features have to be registered. The Framework service capability features (defined in subclause 10.1) are available by default since they provide basic mechanisms.

10.1.4—Discovery service capability feature

The Discovery service capability feature enables the application to identify the total collection of service capability features that it can use. Upon request of the application, the Discovery service capability feature will indicate the non-framework service capability features that are available for the application. The list of available service capability features is created through the Registration process described in subclause 10.1.3. This means that a service capability feature must be registered at the Framework before it can be discovered by the application.

10.1.5—Notification service capability feature

The Notification service capability feature allows applications to enable, disable and receive notifications of application-related events that have occurred in the underlying GSM/UMTS network, e.g. indication that a new call is set-up or a message is received.

NOTE: It should be further studied if Notification is only a Framework service capability feature or also specialised as non-framework service capability features (e.g. for notifications on location update, disconnected party etc.).

10.2—Non-Framework service capability features

The Non-Framework service capability features represent the total collection of service capability features that are not included in the Framework. These non-framework service capability features enable the application to make use of the functionality provided by the network and service capabilities.

Service capability features shall be defined as much as possible in a generic way to hide the network specific implementation. To achieve this, it is necessary to identify the functionality that is provided by more than one service capabilities. For example, User Location can be produced in several underlying ways. This functionality can be captured once when defined the service capability features in a generic way. It is important that the generic part becomes as large as possible.

When applications use the generic service capability features, these applications become independent of (portable over) underlying service capabilities. Applications shall however still be able to request service capability features specific to a service capability (e.g. Call Setup from CAMEL). This will increase dependency of the used service capability. The following subclauses define generic service capability features e.g. for Session Control and Message Transfer.

10.2.1—Session Control service capability features

This subclause details the Session Control-related service capability features. Session Control service capability features shall offer the functionality to establish, maintain, modify and release bearers to/from other parties or entities. Herein, the term "session" can mean anything from a simple voice call to a complex multimedia "call" (including exchange of non delay-sensitive data). To define the necessary service capability features it is proposed to use a generic model (including the "session party handling").

For example, the following Session Control service capability features shall be provided (the list is not exhaustive):

- initiate and create session (e.g. used to set up a Telephony session "out of the blue");
- allow the session to continue with modified information (e.g. changed destination number);
- release the session (i.e. removing all parties from the session);
- add bearer to the session;
- remove bearer from the session;
- resume bearer to the session (i.e. move party from "on-hold" into Telephony Session);
- suspend bearer from the session (i.e. move party from Telephony Session to "on hold");
- request session information (i.e. information like session duration, session end time);

- supervise session (e.g. monitor for session duration or data volume, tariff switching moments and changes in QoS);
- presentation of, or restriction of, information associated with a party involved in a session (e.g. calling line ID, calling name);
- collect information from user (i.e the application shall be able to request data from the user. For example, the user might enter some code number).

For each session it shall be possible to specify:

- the desired media type (e.g. video, voice, non-real time data etc.);
- the events on which monitoring is required ([3]).

NOTE:—The mapping to service capabilities is for further study (it shall be investigated to which extend the requirements above fit to CAMEL, MEXE and other service capabilities).

10.2.2 Security/Privacy service capability features

For the Security/Privacy the following service capability features shall be supported:

- encryption of user data and signalling.

10.2.3 Address Translation service capability features

The Address Translation enables the application to find out from the underlying network what the user's addresses are. Based on a known user address, the application may request another address (e.g. based on the E.164 number, the user's e-mail is retrieved). The range of addressing options includes:

- E.164 Numbering (e.g. GSM MS-ISDN);
- ASEA Numbering (ATM);
- IP v4 numbering;
- IP v6 numbering;
- X.25 Numbering;
- Internet symbolic naming.

10.2.4 User Location service capability features

The User Location service capability features provide an application with information concerning the user's location. The user location information contains the following attributes:

- location** (e.g. in terms of universal latitude and longitude co-ordinates);
- accuracy** (value depending on local regulatory requirements and level of support in serving/home networks; note that the accuracy of the serving network might differ from that in the home environment);
- age** of location information (last known date/time made available in GMT).

The following service capability features shall be provided:

- report of location information:**
 - the application shall be able to request user location information;
 - by default the location information is provided once; the application may also request periodic location reporting (i.e. multiple reports spread over a period of time).
- notification of location update:**
 - the application shall be able to request to be notified when the user's location changes, i.e. when:
 - the user enters or leaves a specified geographic area;

- the user's location changes more than a specified lower boundary. The lower boundary can be selected from the options provided by the network.

The application shall be able for each user to start/stop receipt of notifications and to modify the required accuracy by selecting another option from the network provided options.

- Access control to location information:**

- the user shall be able to restrict/allow access to the location information. The restriction can be overridden by the network operator when appropriate (e.g. emergency calls).

10.2.5 User Status service capability features

The User Status service capability features enable an application to retrieve the user's status, i.e. to find out on which terminals the user is available.

The following service capability features shall be provided:

- retrieval of User Status:**

- the application shall be able to retrieve the status of the user.

- notification of User Status Change:**

- the application shall receive notifications when the user's terminal attaches or detaches:
 - detach: the user's terminal is switched on or the network initiates detach upon location update failure;
 - attach: the user's terminal is switched on or there has been a successful location update after network-initiated detach.

The application shall be able for each terminal to start/stop receipt of notifications.

10.2.6 Terminal Capabilities service capability features

(* Editor's note: this subclause needs to be checked against the MExE specifications *)

The Terminal Capabilities service capability features enable the application to find out what capabilities the user's terminal supports (note: "terminal" covers both (mobile) equipment and USIM).

The following service capability features shall be provided:

- retrieval of Terminal Capabilities:**

- the application shall be able to retrieve the capabilities of the terminal. This includes:
 - the media that the terminal is capable to deal with (e.g. audio, video, PC data, WAP data; this information is needed by the application e.g. when the user wants to download messages from the mailbox);
 - the number of calls that the terminal can deal with simultaneously.

10.2.7 Information Transfer service capability features

The Information Transfer service capability feature shall enable an application to indicate to a user respectively an application in the UE or USIM about the presence of existing information for her. Physically, this indication may be sent by the underlying network e.g. as a SMS or USSD message to the terminal. The Information Transfer service capability feature provides the means to inform the underlying network that an indication shall be sent to the user.

NOTE:—For UMTS release 99 mechanisms like USSD or SMS may be employed to transfer the indication to the users terminal. Appropriate mechanisms in future releases are FFS.

The following service capability feature shall be supported:

- send information notification:**

- the Send information notification service capability feature provides the means to inform the underlying network that an indication shall be sent to a user respectively an application in the UE or USIM about the presence of existing information for her;
- this indication shall contain sufficient information for the receiving entity to react in an appropriate manner, e.g. an announcement ID, URL, a string, etc. In addition the application or execution environment in the terminal (e.g. MExE-SAT), that is to display this information, needs to be referenced.

—request message receipt notification:

- the application can request to receive a notification every time a message is received in the mailbox for the user. This allows the application to take the appropriate action, e.g. informing the user.

10.2.8 Reserved section

10.2.9 User Profile Management service capability features

The User Profile Management service capability features allow the application to retrieve the user profile (see subclause 7.1 for more information on user profiles).

10.2.10 Charging service capability features

The Charging service capability features enable the application to instruct the network and inform the user with charging information and to add some additional charging information to the network generated Call Detail Records. The following service capability features shall be provided:

- define and manage the threshold (e.g. session duration, data volume) for the required service;
- send charging data (this data is included in a "free format" field in the network generated Call Detail Records. It may contain information like a application generated Call Id, used by the application provider to relate application generated charging information to the network generated charging information);
- transfer of Advice of Charge data (as defined in GSM02.24) to the terminal.

10 Applicability of R99 toolkits

This clause reviews the applicability of the existing toolkits from Release 99.

Release 2000 shall incorporate improvements for VHE to support IP multimedia services, e.g. improvements to service capability features, service capability servers, user profile etc. This will give operators and 3rd party service developers the opportunity to create IP multimedia applications and services for Release 2000 networks.

Reuse of already implemented applications and services are also important. CAMEL, MExE, USATat and OSA, are service capabilities in the VHE for Release 99 and will also be supported in Release 2000.

VHE/OSA Release 2000 shall include new (if required) and enhanced service capabilities to support IP multimedia services.

10.1 CAMEL

Release 2000 will be able to use ~~shall incorporate~~ CAMEL improvements following Release 99 (e.g. Phase 4), plus previous versions cf. TS22.078

The requirements on CAMEL:

- Users shall be able to use their existing CAMEL services in a consistent manner with both CS services and IP multimedia services. This shall occur in a transparent fashion and the user need not be aware of whether the service is either circuit switched or packet switched. The same look and feel of the service shall be maintained.
- Operators shall be able to reuse their existing CAMEL services for IP multimedia.

Users shall be able to indicate their service preferences (e.g. ring tone for specific callers) only once and the service shall again be provided irrespective of network domain.

Operators shall be able to re-use their existing CAMEL services for IP multimedia services (cf. 21.978).

The development of new CAMEL services shall be supported independently of the network domain. Thus applications developed on CAMEL platforms shall be provisioned to users and be supported in both packet switched and circuit switched domains in a seamless fashion.

~~CAMEL phase 4 shall include enhanced capabilities to support multimedia services. The enhancements may have an additional impact on the underlying network.~~

10.2 MExE

~~Release 2000 will be able to use MExE improvements following Release 99 plus previous versions of TS22.057~~

~~The requirement on MExE:~~

- ~~• There needs to be harmonisation between the MExE user profile and VHE user profile. This could also require a mechanism to interrogate the terminal about its user terminal profile.~~

~~Release 2000 shall incorporate improvements made in MExE Release 2000 to support a new classmark and user profiles (see 22.057), building on the (U)SIM certificate support, security and QoS management advances made in MExE Release 99. MExE supports both WAP and Java classmark devices.~~

~~MExE Release 99 provides the ability for operators, handset manufacturers and third parties to download applications, service logic and content into MExE terminals from servers. These entities shall require that applications, service logic and content downloaded in Release 99, may also be downloadable and executable in a consistent manner in a Release 2000 environment. Further, it shall be possible to do so, without the need to redevelop the MExE services in order for them to be supported in the packet domain.~~

~~MExE terminals interact with the servers using capability negotiation, and it shall be possible to continue usage of the capability negotiation in the packet domain.~~

~~MExE Release 2000 shall include enhanced capabilities to support IP multimedia services.~~

10.3 USAT

~~Release 2000 will be able to use USAT improvements following Release 99 plus previous versions of TS22.0XX~~

~~The requirement on USAT:~~

- ~~• There needs to be harmonisation between the USAT user profile and VHE user profile.~~
- ~~• USAT terminals interact with the USIM using capability negotiation, and it shall be possible to continue usage of the capability negotiation for IP multimedia services.~~

~~Release 2000 USIM Application Toolkit (USAT) shall incorporate improvements made in USAT Release 99 [XX].~~

~~USAT Release 99 provides the ability for operators to download applications to USIMs from servers, and remotely control the content of USAT USIMs. SAT Release 99 also allows the Toolkit Applications to display additional menus to the user, for Toolkit related services, and allow call control of user dialled digits.~~

~~USAT terminals interact with the USIM using capability negotiation, and it shall be possible to continue usage of the capability negotiation for IP multimedia services.~~

~~Release 2000 shall include enhanced USAT capabilities to support IP multimedia services.~~

10.4 Open Service Architecture (OSA)

~~Release 2000 will be able to use OSA.~~

~~The requirement on OSA:~~

The Open Service Architecture is defined to enable applications and services to use service features of networks through an open interface. The applications and services may be implemented in standard programming languages (e.g. JAVA, C++) and on standard platforms.

TSG SA WG1 #9 meeting
Taastrup, Denmark 17th to 21st July Copenhagen
 VHE Adhoc Group meeting
 3rd to 4th July Goodwood

TSG S1 (00) 564

#2Vhe ad (00) 030

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22.121 CR 014

Current Version: **3.3.0**

GSM (AA.BB) or 3G (AA.BBB) specification number ↑

↑ CR number as allocated by MCC support team

For submission to: **TSG#9**
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Form: CR cover sheet, version 2 for 3GPP and SMG The latest version of this form is available from: <http://ftp.3gpp.org/Information/CR-Form-v2.doc>

Proposed change affects: (U)SIM ME UTRAN / Radio Core Network
(at least one should be marked with an X)

Source: SA 1 **Date:** 19/7/00

Subject: Realisation of Application Interface

Work item: VHE

Category: F Correction **Release:** Phase 2
 A Corresponds to a correction in an earlier release Release 96
 B Addition of feature Release 97
 C Functional modification of feature Release 98
 D Editorial modification Release 99
 Release 00
(only one category shall be marked with an X)

Reason for change: In R99 specification, the application interface was stated as been realised in two ways:

- A non-generic way implying applications must have knowledge of the underlying mechanisms used.
- A generic way implying applications need not have knowledge of underlying mechanisms used.

The specification states that the functionality provided in both cases is the same (e.g. both solutions are independent of vendor specific solution). ~~with some additional requirements for realisation of the application interface in the generic way.~~

This text implies that the generic way of realising the AI covers the non-generic way hence it is propose to remove references to the non-generic way and only indicate one method of realisation of AI. ~~The generic way.~~

-

Clarification of text to remove refences to non-generic and generic, the introduction of "may and maynot" more clearly defines the situation.

Clauses affected: 5

Other specs affected: Other 3G core specifications → List of CRs:
 Other GSM core specifications → List of CRs:
 MS test specifications → List of CRs:
 BSS test specifications → List of CRs:
 O&M specifications → List of CRs:

**Other
comments:**



help.doc



<----- double-click here for help and instructions on how to create a CR.

5 Framework for Services

The implementation of VHE in UMTS release 99 shall support both GSM phase 2+ release 99 teleservices, bearer services and supplementary services as applied in 3G TS 22.100 and new services built by service capability features. Later UMTS developments will provide support for a wider range of services in later releases.

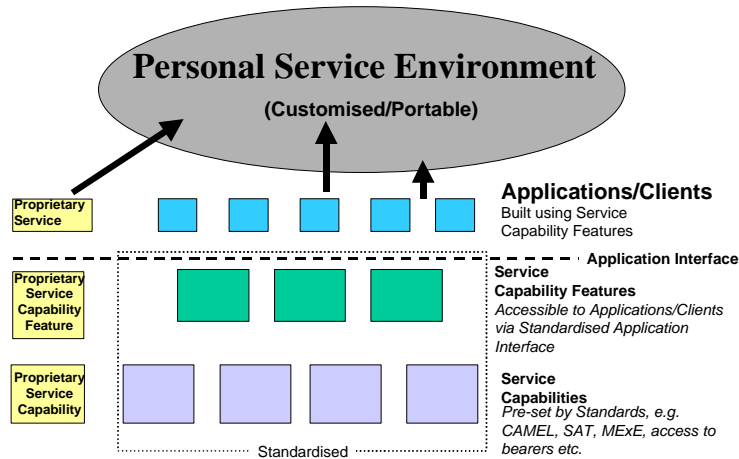


Figure 2: Framework for Services

The goal of standardisation in UMTS with respect to services is to provide a framework within which services can be created based on standardised service capability features see figures 2 and 3. UMTS services will generally not rely on the traditional detailed service engineering (evident for supplementary services in second-generation systems), but instead provides services using generic toolkits.

Services can be built using service capability features ([1], [2], [3], [4], [9], [10]), which are accessed via a standardised interface. An example of how a service can be built on service capability features could be "call to nearest restaurant", this will make use of call set-up, authorisation, location and database lookup.

The available service capability features are visible to applications through the standardised application interface. The application interface can be realised in a ~~non-generic way~~ way such that (implying applications may or maynot ust have knowledge of the underlying mechanisms used.) and/or a generic way (implying applications need not have knowledge of underlying mechanisms used). The functionality provided in both cases is the same and both solutions are independent of vendor specific solution.

For example, in ~~the-the case where the applications have knowledge of the underlying mechanisms non-generic way, as an example-the, the~~ User Location service capability features can be provided by a location server (e.g HLR, LCS) and in the case where application may not have knowledge of underlying mechanisms. In the generic way the application will only see a single User Location service capability feature and does not know which location server provides it.

—Tthe standardised application interface shall be:

- iIndependent of vendor specific solutions;

- independent of programming languages, operating systems etc used in the service capabilities;
- secure scalable and extensible.

In the case of realising the standardised application interface in the generic way, the following additional requirements apply:

- independent of the location where service capabilities are implemented;
- independent of supported service capabilities in the network; and
- Access to Service Capability Features shall be realised using modern state of the art access technologies, e.g. distributed object oriented technique might be considered.

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22.121 CR 015

Current Version: **3.3.0**

GSM (AA.BB) or 3G (AA.BBB) specification number ↑

↑ CR number as allocated by MCC support team

For submission to: **SA #9**

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Proposed change affects:

(at least one should be marked with an X)

(U)SIM ME UTRAN / Radio Core Network

Source:

SA 1

Date:

18/7/00

Subject:

Synchronisation of distributed User Profiles

Work item:

Personal Service Environment (PSE), user profiles and user profile management

Category:

(only one category shall be marked with an X)

F Correction
 A Corresponds to a correction in an earlier release
 B Addition of feature
 C Functional modification of feature
 D Editorial modification

Release:

Phase 2
 Release 96
 Release 97
 Release 98
 Release 99
 Release 00

Reason for change:

This change proposes the following changes:-

1. the synchronisation of distributed user profiles shall be supported.

Clauses affected:

Other specs affected:

Other 3G core specifications → List of CRs:
 Other GSM core specifications → List of CRs:
 MS test specifications → List of CRs:
 BSS test specifications → List of CRs:
 O&M specifications → List of CRs:

Other comments:

6.1.3 Management of the user profile

The user and the home environment may modify the user's characterisation of the Personal Service Environment as described in the User Profiles at any time, and changes become effective at the earliest possible opportunity. The home environment shall be able to update distributed User Profiles to reflect any user or home environment modification of the user's Personal Service Environment. A synchronisation mechanism to update the user profile when it is distributed shall be supported, to ensure that components of the user profile are consistent, wherever they are located.

The User Profiles may be stored in the Mobile Station (the SIM or the ME), and/or the home environment. The information in User Services Profiles is distributed between the home environment and the MS. In the event of loss/damage of mobile station (SIM or ME), the User Profiles must be fully recoverable and be used to reconfigure a new mobile station.

Some aspects of the User Profiles such as aspects related to terminal configuration, must be stored in a standardised format to support VHE.

NOTE: To ensure that User Profiles are applicable to as wide a community of terminal and network types as possible, existing work on this topic in other standards fora should be considered. One possibility is the work of the World Wide Web Consortium on the Composite Capability/Preference Profile [2].

6.1.4 Requirements for Standardisation

To facilitate the provision of PSE and User Profiles the standard shall:

- uniquely identify User Profiles;
- provide a standardised format for describing terminal configuration preferences;

7 Home Environment Requirements for VHE Provision

It shall be possible for the home environment to:

- control access to services depending on the location of the user, and serving network;
- control access to services on a per user basis e.g subject to subscription;
- control access to services depending on available service capabilities in the serving network, and terminals;
- manage service delivery based on for example end to end capabilities and/or user preferences;
- request version of specific services supported in serving network and terminal;
- request details (e.g. protocol versions and API versions) of available service capabilities supported in the serving network, and terminals;
- define the scope for management of services by the user, for services provided by the HE;
- handle charging for services (as defined in clause 11);
- inform the serving network of the type of charging (i.e. prepaid or/and postpaid) for any required service;

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22.121 CR 016

Current Version: **3.3.0**

GSM (AA.BB) or 3G (AA.BBB) specification number ↑

↑ CR number as allocated by MCC support team

For submission to: **SA #9**
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Form: CR cover sheet, version 2 for 3GPP and SMG The latest version of this form is available from: <ftp://ftp.3gpp.org/Information/CR-Form-v2.doc>

Proposed change affects: (U)SIM ME UTRAN / Radio Core Network
(at least one should be marked with an X)

Source: SA1 **Date:** 18/7/00

Subject: Uniquely addressable User Profiles

Work item: VHE Personal Service Environment (PSE), user profiles and user profile management

Category:	F Correction <input type="checkbox"/> A Corresponds to a correction in an earlier release <input type="checkbox"/> B Addition of feature <input checked="" type="checkbox"/> C Functional modification of feature <input type="checkbox"/> D Editorial modification <input type="checkbox"/>	Release:	Phase 2 <input type="checkbox"/> Release 96 <input type="checkbox"/> Release 97 <input type="checkbox"/> Release 98 <input type="checkbox"/> Release 99 <input type="checkbox"/> Release 00 <input checked="" type="checkbox"/>
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(only one category shall be marked with an X)

Reason for change: This change proposes the following changes:-

2. Requires that it must be possible to uniquely identify a User Profile to enable unambiguous support of VHE in the Home Environment and the Serving Network.

Clauses affected: _____

Other specs affected:	Other 3G core specifications <input type="checkbox"/> Other GSM core specifications <input type="checkbox"/> MS test specifications <input type="checkbox"/> BSS test specifications <input type="checkbox"/> O&M specifications <input type="checkbox"/>	→ List of CRs: → List of CRs: → List of CRs: → List of CRs: → List of CRs:	_____ _____ _____ _____ _____
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Other comments: _____

6.1.1 User Profiles

A combination of different preferences is described by a User Profile. The user can define one or more User Profiles according to their needs.

Each User Profile consists of two kinds of information:

- interface related information (**User Interface Profile**);
- services related information (**User Services Profile**).

A User Interface Profile consists of the following type of information:

- menu settings, e.g. menu items shown, menu structure, the placement of icons;
- terminal settings, e.g. ringing tone and volume, font type and size, screen and text colour, language, content types and sizes accepted;
- network related preferences e.g. language used for announcements. (*editor's note: for clarification*)

A User Services Profile consists of the following information:

- a list of services subscribed to and references to Service Preferences for each of those services if applicable. Service Preferences could be information such as redirection numbers, redirection conditions, caller screening lists, time-of-day variations etc;
- service status (active/deactive).

The user may define one or more User Interface Profiles and many User Services Profiles, but a given User Profile consists of a single combination of these. In this way a user could for example have a different User Profile to suit each of the three different terminals she owns. The User Services Profile is the same in each case but the User Interface Profile is different to suit the display capabilities of each terminal. User Profiles could also exist which use the same User Interface Profile but different User Services Profiles. Similarly, User Profiles may also exist which use the different User Interface Profiles but the same User Services Profile. Similarly, User Profiles may also exist which use the different User Interface Profiles but the same User Services Profile. This might simply imply that business calls are forwarded to an answering service when the user leaves the office because a new User Profile is now active.

Where the user has more than one User Profile the activation of a particular one could be done in the following ways:

- *Statically*: the user explicit selects one of the User Profiles as the active one;
- *Dynamically*: the appropriate User Profile is selected automatically based upon some criteria such as time of day, location, terminal used or many other possibilities.

Each User Profile must have an [uniquely addressable](#) identity.

For UMTS Release '99 the information in the User Profiles enables the service capabilities SAT, MExE and CAMEL toolkits in R'99 and existing GSM services to support the user's PSE across network boundaries and between different terminals.

It shall be possible for the service capabilities to access the user profile information from the home environment if appropriate.

6.1.2 User Profiles and Multiple Subscriptions

The user may wish to manage more than one subscription in their PSE. This would allow them to have a single USIM but specify different preferences for the services provisioned in each subscription. In this case the User Services Profile will need to detail all of the services provided per subscription and provide references to the service preferences for each service. When initiating a chargeable event the user will need to indicate which subscription the charges should be applied to.

6.1.3 Management of the user profile

The user and the home environment may modify the user's characterisation of the Personal Service Environment as described in the User Profiles at any time, and changes become effective at the earliest possible opportunity. The home environment shall be able to update distributed User Profiles to reflect any user or home environment modification of the user's Personal Service Environment.

The User Profiles may be stored in the Mobile Station (the SIM or the ME), and/or the home environment. The information in User Services Profiles is distributed between the home environment and the MS. In the event of loss/damage of mobile station (SIM or ME), the User Profiles must be fully recoverable and be used to reconfigure a new mobile station.

Some aspects of the User Profiles such as aspects related to terminal configuration, must be stored in a standardised format to support VHE.

NOTE: To ensure that User Profiles are applicable to as wide a community of terminal and network types as possible, existing work on this topic in other standards fora should be considered. One possibility is the work of the World Wide Web Consortium on the Composite Capability/Preference Profile [2].

6.1.4 Requirements for Standardisation

To facilitate the provision of PSE and User Profiles the standard shall:

- uniquely identify User Profiles;
- provide a standardised format for describing terminal configuration preferences;

7 Home Environment Requirements for VHE Provision

It shall be possible for the home environment to:

- control access to services depending on the location of the user, and serving network;
- control access to services on a per user basis e.g subject to subscription;
- control access to services depending on available service capabilities in the serving network, and terminals;
- manage service delivery based on for example end to end capabilities and/or user preferences;
- request version of specific services supported in serving network and terminal;
- request details (e.g. protocol versions and API versions) of available service capabilities supported in the serving network, and terminals;
- define the scope for management of services by the user, for services provided by the HE, supported by a standardised method for accessing uniquely addressable user profiles;
- handle charging for services (as defined in clause 11);
- inform the serving network of the type of charging (i.e. prepaid or/and postpaid) for any required service;
- inform the serving network of the threshold set for a given service required by the user and charged on a prepaid account;
- inform the serving network how to manage a service for which the threshold has been reached;
- manage the prepaid accounts (e.g. increase, decrease the credit, or pass the information to any application which manages the credit);
- deploy services to users or groups of users;
- manage provision of services to users or groups of users.

8 Serving Network Requirements for VHE Provision

The serving network should not need to be aware of the services offered via the home environment.

The user/home environment may request capabilities, which are necessary to support, home environment services.

It shall be possible for the serving network to perform the following:

- the serving network shall support user access to services in the home environment, supported by a standardised method for accessing uniquely addressable user profiles;
- the serving network shall provide the necessary service capabilities to support the services from the home environment as far as possible;
- dynamically provide information on the available service capabilities in the serving network;
- provide transparent communication between clients and servers in terminals and networks;
- request the charging information (type of charging, threshold for prepaid services and behaviour if the threshold is reached) for any service possibly required by the user;
- handle the call according to the instructions received by the home environment regarding charging activities;
- inform the home environment of the chargeable events (e.g. send CDRs, ...).

9 VASP Relationship to VHE

The user may access services directly from Value Added Service Providers. Services obtained directly from VASPs are not managed by the Home Environment and therefore are not part of the VHE offered by the Home Environment. A mechanism should be provided which allows the user to automate access to those services obtained directly from VASPs and personalise those services. However such a mechanism is outside of the scope of the present document. There may be some information, which is shared between the Home Environment and the HE-VASP (for example current capabilities).

The Home Environment may grant the HE-VASP access to standardised service capabilities in order to allow the development and deployment of services on behalf of the Home Environment.

There are no VASP requirements to support VHE.

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22.121 CR 017

Current Version: **3.3.0**

GSM (AA.BB) or 3G (AA.BBB) specification number ↑

↑ CR number as allocated by MCC support team

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Form: CR cover sheet, version 2 for 3GPP and SMG The latest version of this form is available from: <ftp://ftp.3gpp.org/Information/CR-Form-v2.doc>

Proposed change affects: (U)SIM ME UTRAN / Radio Core Network
(at least one should be marked with an X)

Source: SA 1 **Date:** 18/7/00

Subject: VASP indirect support of VHE

Work item: VHE

Category:	F Correction <input type="checkbox"/> A Corresponds to a correction in an earlier release <input type="checkbox"/> B Addition of feature <input type="checkbox"/> C Functional modification of feature <input type="checkbox"/> D Editorial modification <input checked="" type="checkbox"/>	Release:	Phase 2 <input type="checkbox"/> Release 96 <input type="checkbox"/> Release 97 <input type="checkbox"/> Release 98 <input type="checkbox"/> Release 99 <input type="checkbox"/> Release 00 <input checked="" type="checkbox"/>
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(only one category shall be marked with an X)

Reason for change: This change proposes the following changes:-

3. Identification that VASP's may indirectly implement VHE using stored user profiles during Capability Negotiation.

Clauses affected:

Other specs affected:	Other 3G core specifications <input type="checkbox"/> Other GSM core specifications <input type="checkbox"/> MS test specifications <input type="checkbox"/> BSS test specifications <input type="checkbox"/> O&M specifications <input type="checkbox"/>	→ List of CRs: → List of CRs: → List of CRs: → List of CRs: → List of CRs:	
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Other comments:

9 VASP Relationship to VHE

The user may access services directly from Value Added Service Providers. Services obtained directly from VASPs are not managed by the Home Environment and therefore are not part of the VHE offered by the Home Environment. A mechanism should be provided which allows the user to automate access to those services obtained directly from VASPs and personalise those services. However such a mechanism is outside of the scope of the present document. There may be some information, which is shared between the Home Environment and the HE-VASP (for example current capabilities).

The Home Environment may grant the HE-VASP access to standardised service capabilities in order to allow the development and deployment of services on behalf of the Home Environment.

There are no VASP requirements to support VHE. It is noted that with mechanisms such as CC/PP, VASP's may indirectly implement VHE stored user profiles during Capability Negotiation (e.g. using HTTP next generation), however this is outside the scope of standardisation.