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CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

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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:** 19/7/2000

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

Reason for change: The MExE specification incorrectly uses the MS (mobile station) acronym instead of the term UE (user equipment), and this is corrected accordingly.

Further, the name of the specification is changed from *Mobile Station Application Execution Environment* to *Mobile Execution Environment* to reflect the correct terminology.

Clauses affected:

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



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Technical Specification

3rd Generation Partnership Project; Technical Specification Group Services and System Aspects;

**~~Mobile Station Application~~ Mobile Execution Environment
(MExE);**

**Service description, Stage 1
(3G TS 22.057 version 3.0.1)**



The present document has been developed within the 3rd Generation Partnership Project (3GPP™) and may be further elaborated for the purposes of 3GPP.

The present document has not been subject to any approval process by the 3GPP Organisational Partners and shall not be implemented.

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Specifications and reports for implementation of the 3GPP™ system should be obtained via the 3GPP Organisational Partners' Publications Offices.

Reference

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Foreword

This Technical Specification has been produced by the 3GPP.

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

- x the first digit:
 - 1 presented to TSG for information;
 - 2 presented to TSG for approval;
 - 3 Indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the specification;

1 Scope

This TS defines the stage one description of the ~~Mobile Station Application~~ ~~Multimedia Mobile~~ Execution Environment (MExE). Stage one is an overall service description, primarily from the subscriber's and service providers' points of view, and does not deal with the details of the human interface itself.

This TS includes information applicable to network operators, service providers and terminal, switch and database manufacturers.

This TS contains the core requirements for a ~~Multimedia Mobile~~ ~~Mobile Station Application~~ Execution Environment (MExE) which are sufficient to provide a complete service.

It is highly desirable however, that technical solutions for a ~~Multimedia Mobile~~ ~~Mobile Station Application~~ Execution Environment (MExE) should be sufficiently flexible to allow for possible enhancements. Additional functionalities not documented in this TS may implement requirements which are considered outside the scope of this TS. This additional functionality may be on a network-wide basis, nation-wide basis or particular to a group of users. Such additional functionality shall not compromise conformance to the core requirements of the service.

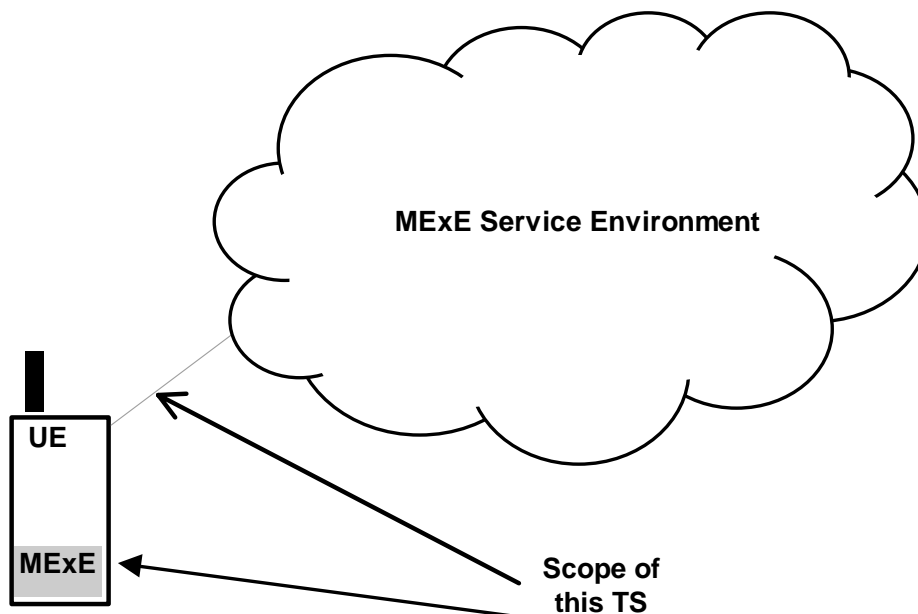


Figure 1: Scope of this TS

CR note: the above figure has been modified (MS changed to UE), however Word has not shown this with revision marking)

As indicated in Figure 1, the scope of this TS encompasses the MExE functionality in the ~~MSUE~~, interaction with the MExE service environment. The MExE service environment is not necessarily restricted to the PLMN, and nodes providing MExE services (i.e. MExE servers) may also exist outside the PLMN. Aspects of the support provided by MExE servers within the MExE service environment (such as charging aspects, security level classification etc.) are covered by this specification, but not the MExE servers themselves.

MExE requirements are considered to be applicable to both GSM and UMTS systems.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- For this Release 1999 document, references to GSM documents are for Release 1999 versions (version 8.x.y).

[1] GSM 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".

[2] TR 21.905: "Vocabulary for 3GPP Specifications".

3.1 Definitions

For the purposes of this TS the following definitions apply:

applet: a small programme that is intended not to be run on its own, but rather to be embedded inside another application

application: MExE information in the form of software, scripts, applications, associated resources (e.g. libraries) and/or data

content: data and/or information associated with, or independent of, a particular application which may be presented to or collected from a user

MExE Classmark: a MExE Classmark identifies a category of MExE **MSUE** supporting MExE functionality with a minimum level of processing, memory, display and interactive capabilities. Several MExE Classmarks may be defined to differentiate between the functionalities offered by different MExE **MSUEs**. A MExE application or applet defined as being of a specific MExE Classmark indicates that it is supportable by a MExE **MSUE** of that Classmark.

MExE server: a node supporting MExE services in the MExE service environment

MExE service: a service enhanced (or made possible) by MExE technology

MExE service environment: Depending on the configuration of the PLMN, the operator may be able to offer support to MExE services in various ways. Examples of possible sources are from traditional GSM nodes, IN nodes, operator-specific nodes, operator-franchised nodes and services provider nodes, together with access to nodes external (i.e. vendor-specific) to the PLMN depending on the nature of the MExE service. These nodes are considered to constitute the MExE service environment. The MExE service environment shall support direct MExE **MSUE** to MExE **MSUE** interaction of MExE services.

MExE service provider: an organisation which delivers MExE services to the subscriber. This is normally the PLMN operator, but could be an organisation with MExE responsibility (which may have been delegated by the PLMN operator).

MExE subscriber: the owner of a subscription who has entered into an agreement with a MExE service provider for MExE services. Access to MExE services through other types of networks is out of scope of this specification.

subscriber: the term subscriber in the context of this TS refers to a MExE subscriber

user: the user of an MExE **MSUE**, who may or may not be the subscriber.

3.2 Abbreviations

For the purposes of this TS the following abbreviations apply:

API	Application Programming Interface
CS	Circuit Switched
FFS	For Further Study
IN	Intelligent Network
ME	Mobile Equipment
MExE	Multimedia Mobile Station (Application) Execution Environment
MMI	Man Machine Interface
MS	Mobile Station
NO	Network Operator
PLMN	Public Land Mobile Network
SIM	Subscriber Identity Module
UE	User Equipment
USIM	Universal Subscriber Identity Module
SP	Service Provider

Further related abbreviations are given in GSM 01.04 [1] and TR 21.905 [2].

4 Description

MExE provides a standardised execution environment in an **MSUE**, and an ability to negotiate its supported capabilities with a MExE service provider, allowing applications to be developed independently of any **MSUE** platform. The **MSUE** (consisting of the ME and SIM/USIM) can then be targetted at a range of implementations for MExE from small devices with low bandwidth, limited displays, low processor speeds, limited memory, MMI etc., to sophisticated with a complete MExE execution environment.

The introduction of MExE execution environment into **MSUEs** is a significant step forward in their evolution. The ability of **MSUEs** to support MExE applications represents an extension of **MSUEs'** capabilities. In order to allow current and future technologies to exploit and benefit from this, a standardised means of negotiating the **MSUEs'** and network's capabilities is supported. This negotiation will permit the mutual exchange of capabilities between the **MSUE** and the MExE server, and possibly include the service profile of the user and capabilities of the network. The

negotiation may take place at service initiation, or on a dynamic basis.

A network can be a transport bearer for the negotiation, interaction and transferring of applications, applets and content with the **MSUE**, however it need not necessarily be the provider of the MExE services with which the **MSUE**'s execution environment is interacting with. The network may also be the intermediary between two **MSUEs** which are engaged in a MExE service with each other, with the network effectively supplying the "pipe" and not playing a MExE rôle in the connection.

Network nodes, nodes external to the network, or even **MSUEs** may be the entities which interacts with the **MSUE**'s execution environment.

5 Compatibility of MExE **MSUE**'s and applications

5.1 MExE classmarks

Given the wide ranging hardware capabilities of MExE **MSUEs**, together with the development of MExE applications and applets, a MExE classification shall be supported to determine their respective capability and compatibility. The MExE classification shall apply both to **MSUEs** and applications and applets.

The objective is to:

- classify the capabilities of a MExE **MSUE** to support MExE applications and applets; and
- identify the class of MExE **MSUE** on which a MExE application and applet may be supported.

The concept of a MExE Classmark is introduced to manage the MExE **MSUE** and MExE application and applet classification and compatibility. The MExE Classmark is distinct and unrelated to the existing **MSUE** Classmark. The use of MExE Classmarks shall be supported during the capability negotiation between the MExE service provider and the MExE **MSUE**.

5.2 **MSUE** MExE classmarks

A given MExE Classmark shall identify a category of MExE **MSUE** supporting MExE functionality with a minimum level of processing, memory, display and interactive capabilities.

Small devices may be considered to be MExE Classmark 1 devices, and contemporary sophisticated devices may be considered to be MExE Classmark 2 devices. The minimum level of capabilities for each MExE Classmark is beyond the scope of this Stage 1 service description. As **MSUE** development evolves and more sophisticated devices (or indeed simpler devices) become available, further **MSUE** MExE Classmarks shall be definable to identify **MSUE**'s capable of supporting improved (or additional) MExE functionality.

A given MExE **MSUE** Classmark identifies support by a MExE **MSUE** for a defined level of MExE functionality, but does not necessarily imply support of other levels of MExE Classmark. A MExE **MSUE** may also support multiple MExE Classmarks.

5.3 Application and applet MExE classmarks

MExE applications and applets will be developed to execute in one or more classes of MExE **MSUE**'s. In order for MExE applications and applets to be properly supported by a MExE **MSUE**, the application and applet shall identify the minimum functional capabilities required of a MExE **MSUE**, as defined by the **MSUE**'s MExE Classmark.

MExE applications and applets shall be designated by the same classes of MExE **MSUE**'s on which they may be executed. Examples of the classification of MExE applications and applets are as follows:-

- MExE Application "A" is defined as a MExE Classmark 1 application;

the application is identified as suitable for execution on MExE Classmark 1 **MSUE**'s only.

- MExE Application "B" is defined as a MExE Classmark 1 and Classmark 2 application;

the application is identified as suitable for execution on MExE Classmark 1 and Classmark 2 **MSUE**'s only.

- MExE Application "C" is defined as a MExE Classmark 2 and Classmark 3 application;

the application is identified as suitable for execution on MExE Classmark 2 and Classmark 3 **MSUE**'s only.

- MExE Application "D" is defined as a MExE Classmark 1, Classmark 2 and Classmark 3 application;

the application is identified as suitable for execution on MExE Classmark 1, Classmark 2 and Classmark 3 **MSUE**'s.

If a MExE application or applet is capable of being supported by other classes of MExE **MSUE**'s (with reduced or enhanced capabilities), it is the responsibility of the MExE service provider to re-classify the MExE application or

applet accordingly.

MExE applications and applets defined by a MExE service provider to a given class of MExE MSUE, shall be supportable by all MExE MSUE's of that class regardless of MExE MSUE manufacturer. MExE applications and applets shall operate on differing MExE MSUE of the same MExE MSUE class without modification.

It shall be possible for MExE service providers to make the same MExE applications and applets available in the network for different classes of MExE MSUE. It is desirable that applications and applets are backward compatible within a given technology and for a given MSUE Classmark; however such backward compatibility is out of scope of this specification.

6 General MExE requirements

6.1 High level MExE requirements

The high level requirements of MExE are as follows:

- the means for MExE service provider specific services to be supported by all mobiles-UEs of a particular class (i.e. the need for a common set of APIs and development tools), and accessible across a range of networks;
- provide the user with a more sophisticated user interfaces (e.g. browser-like) with a rich variety of MMI concepts to control and invoke services (i.e. softkeys, icons, voice recognition etc.);
- the user's and MExE service providers capability to control the "look and feel" of applications and applets;
- the ability of the user to personalise the user interface;
- the ability of the user to personalise services;
- provide support of a wide variety of applications and applets;
- provide the means for MExE service providers to authenticate MExE subscribers;
- provide the user access to Internet and Intranet based applications and applets (via both standard Internet and Wireless optimised protocols);
- the means to transfer applications, applets and content automatically or on demand to a MExE MSUE from a MExE service provider, and upgrade existing applications across the network;
- the means to support direct MExE MSUE to MExE MSUE interaction of MExE services;
- the need for an inherent security architecture such that both the MExE MSUE and MExE server sides of a connection are authenticated (possibly by a brokerage server), and have access to a range of encryption and security functions in order to maintain the security and integrity of the network. The MExE service provider shall maintain security of subscribers personal data and network data, with all aspects relating to network security being centred on the SIM/USIM;
- the ability for the MExE service provider to charge subscribers for MExE service provider provided MExE services, at connect time, when downloading, or on usage;
- the means for MExE service provider specific applications and applets on the MExE MSUE to communicate with applications in the MExE service environment using industry standard protocols (e.g. a MExE server etc);
- the ability to provide information to MExE service providers (e.g. location information of MSUE' for use with location dependent services);
- the means for MExE service providers and their applications and applets to determine MExE MSUE capabilities (i.e. MExE Classmark, technology, supported bearers according to network capabilities and network subscription etc.). (This shall be used by MExE servers to adapt application and applet transfer to MExE MSUE capabilities, and shall be used by applications and applets whilst running to adapt their behaviour to the MSUE's capabilities.);
- the opportunity for MExE service providers to apply expertise and software developed for other platforms;
- provision of APIs and tools to develop MExE services which are applicable for MExE MSUE';
- the means for the user to manage (i.e. identify version, delete, modify, save etc.) the applications, applets and content on the MExE MSUE;

- the means for the user to control acceptance (i.e. by Security Level, level of trust etc.) of applications, applets and content transferred to the MExE MSUE. (It shall be possible for the user to finely control a trusted application or applet's access rights on the MExE MSUE, such as reading/writing/deletion of files stored on the MExE MSUE);
- the means for MExE applications to perform some AT command functionality without compromise to security of MExE as defined in clause 8;
- the means for authentication certificates associated with applications to be managed and stored in the SIM/USIM;
- the ability for a MExE application to negotiate the QoS, and the ability to indicate to a MExE application changes in the QoS;
- the ability of MExE applications to be notified that handover is about to occur, is occurring or has occurred;
- the means for MExE MSUE manufacturers to download and upgrade their existing codec in a MExE MSUE. A generic mechanism to download other proprietary software into the execution environment of the MSUE shall be available to the manufacturer. The downloading of platform independent MExE applications, such as streaming audio, that support multimedia capabilities shall also be possible;
- the means for data to be synchronised between the MExE MSUE and the MExE service environment.

Some of the above requirements are subsequently elaborated.

6.2 Requirements description from the user's standpoint

MExE provides an improvement in the capabilities of an MSUE, as well as an extended range of services available to the user from, or via, the network. The user shall have

- user interface configuration management; and
- service management;

of the services offered to him by MExE.

6.2.1 User interface configuration management

User interface configuration management refers to the behaviour of the MExE MSUE, and the ability of the user to modify the MExE MSUE to behave in the manner he is accustomed to, or wishes the MExE MSUE to, present itself to the user. It does not refer to the services which interact with the network, but the way in which the MExE MSUE interacts with the user.

Users expect MExE MSUEs to offer an increasing range of capabilities which need not be ubiquitously present on each MExE MSUE, depending on the technological limitations of the MExE MSUE. The user shall be able to manage the user interface configuration of the MExE MSUE. For example, some user's may require a voice-controlled MMI, whilst others may have the need for a specialised presentation on the MExE MSUE display or preset function keys regardless of the application or applet which is running. Management of the user interface configuration will permit a user to move from MExE MSUE to MExE MSUE and exploit the technological capabilities of each class of MExE MSUE, with the use of varying services downloaded from the network, as required.

The user shall be able to identify (either directly or indirectly) the user interface configuration he wishes to add, modify or delete on his MExE MSUE, and shall be offered the means of doing this. This management may be performed, for example, by a configuration capability profile.

In taking this action, it shall be possible to determine whether the user interface configuration is already resident on the ME, or whether it requires to be obtained from the SIM/USIM or the network. The modifications which may be requested by the user could result in, for example, differing display characteristics being employed, redefinition of keys, modification of the "look and feel" of the user interface, touch screen facility, extensions to existing functions or the capability to automate some functions.

The control of the "look and feel" of MExE applications and applets to customise their level of functionality and appearance may be possible by the MExE service provider, network operator (where the MExE service provider is not the network operator) and the user. The aspects of the application or applet which may be customisable are determined by the MExE service provider as an integral part of the MExE application or applet.

The user interface configuration management which is specific to the ME shall be stored on the ME, and user interface configuration management which is generic to ME's may be stored in the network or on the SIM/USIM.

The definition of the user interface configuration management which may be offered to the user is outside the scope of this service description.

6.2.2 Service management

MExE shall provide the ability to customise the range of services offered to the subscriber. The subscriber's ability to configure the services available on the MExE MSUE shall be dynamic, as the range of services required may differ depending on the network, time and location that the user finds himself in. For example, a subscriber may require access to services offering financial support when attending a business meeting, however later in the day he may need access to travel information and booking facilities when re-arranging his travel home.

A common address across all PLMN supporting MExE shall be available, from which the user shall be able to request the range of MExE services available he is registered in, if the PLMN supports MExE. The downloading of services may be autonomously controlled by the MExE MSUE to update existing service access on the mobileMExE UE, or to download new services. The management of these services may be defined by the subscriber directly or under the control of the MExE MSUE's capabilities organised on the MExE MSUE (i.e. a user may be particularly interested in unified messaging services, and require the availability of such services to be made available to him).

The user shall be able to determine and manage which MExE applications, applets and content may be transferred to the MExE MSUE (i.e. in terms of their security level, source of the applications etc.), determine and manage which MExE applications, applets and content are currently resident and usable on the MExE MSUE (e.g. when roaming some services may not be available to the user), and delete MExE applications, applets and content on the MExE MSUE. The definition of the applications, applets and content which may be offered to the user is outside the scope of this specification.

6.3 Requirements description from the MExE service provider's standpoint

6.3.1 Transfer of applications, applets and content

A common mechanism shall be available to perform the transfer of applications, applets and content between MExE MSUEs' and the MExE service provider.

The common transfer mechanism shall permit applications, applets and content (according to the appropriate MExE Security Level) to be transferred to the MExE MSUE.

It shall be possible for the MExE service provider to:

- transfer applications, applets and content between the MExE MSUE and the MExE service provider (which may be initiated by either party);
- request the version of applications, applets and content on the MExE MSUE;
- identify the MExE MSUE' capabilities;
- support a request from the MExE MSUE for information on the (local) services which may be transferred from the network.

Some of these functions may be used by the MExE service provider either individually, or together to automatically update previously transferred services.

6.3.2 Node types

The introduction of MExE shall enable an expansion of services available to the user from various network node types. The MExE MSUE shall be able to communicate with the various network node types in the MExE service environment, allowing access to intelligent nodes to process service requests from the MExE MSUE.

Applications in the MExE service environment may interact with, or execute as agents of, an MExE MSUE application using industry standard protocols. Such interaction does not fall within the scope of MExE, however any MExE MSUE application that does interact with applications in the MExE service environment must respect the privacy of user data.

6.3.3 Subscriber data

Subscription to MExE services shall be logically separate to subscription of network services. A subscriber may have a MExE subscription to multiple MExE service providers. It may also be possible for the subscriber to interrogate such subscription registration (with a suitable means of authorisation), depending on PLMN support.

6.3.4 Roaming subscribers

Roaming MExE subscribers shall be able, as far as possible, to access their normal MExE services in their HPLMN. As usual when roaming, it cannot be ensured that the VPLMN can provide the subscriber access to the same MExE services (e.g. applications, applets and content) as he is accustomed to. However, in the VPLMN additional MExE services may be available, depending on network capabilities. Service continuity when roaming is dependent on the availability of the services in the VPLMN, and is outside the scope of this specification.

The operation of the transferred applications, applets and content may be location dependent, and their behaviour when in an different location is outside the scope of this specification.

The following forms of MExE subscriber roaming are identified:-

- roaming between networks (HPLMN ↔to VPLMN);
- roaming between visited networks (VPLMN ↔to VPLMN);
- regional roaming within a network (within the HPLMN or VPLMN).

There may be a need to distinguish between the above types of roaming from a MExE services management perspective, as the operation of location dependent MExE services may be affected when the MExE subscriber roams beyond the boundaries of a PLMN or region.

7 MExE bearer requirements

Bearers available to MExE applications depend on those supported by the MExE MSUE that are available.

Wherever available, MExE MSUE applications shall be supported by bearers from GSM, UMTS and other technologies (e.g. high speed data links provided by digital broadcast infrastructure). MExE applications shall be able to use these bearers in an asymmetric fashion.

8 MExE protocols requirements

In order for MExE to be supported over the network, a set of standardised protocols is required to support interaction between the MExE MSUE and the MExE service environment.

As this specification is not required to propose a specific technology, it identifies the MExE protocols requirements from the service subscriber's and user's standpoint. The MExE protocols refers to any protocol layer above the GSM/UMTS bearers, which interfaces between the MExE service environment and the MExE MSUE.

The functional capabilities, information flows, signalling system protocols and switching functions needed to implement the service described in this Stage 1 specification will be identified by subsequent specifications at the Stage 2 and Stage 3 levels.

The high level MExE protocols requirements are identified in the subsequent subclauses.

8.1 Optimised Wireless Access

A primary goal of MExE is to provide access to Internet and Intranet services, the standard Internet applications, security and transport protocols shall be one possible set of MExE protocols which is supported. It is noted that these protocols may not cover all the requirements identified in this specification for all classes of ME's.

A set of application, security and transport protocols optimised for wireless access, and compliant to MExE requirements, shall be specified and form part of the MExE standards.

MExE MSUE's shall be able to support either or both of these sets of protocols.

8.2 Wireless network independence

The upper layers of the MExE protocols shall be independent of the type of underlying wireless network so that applications and applets do not need to take into account the specific nature of networks. In particular, lower layers shall provide a generic access API to network bearers so that application and applet developers do not have to cater for the supported underlying bearers. It shall be possible for applications and applets to request specific bearer services and be notified accordingly if they are not available.

The transport layer of the MExE protocols may however be adapted to support the specific features of the underlying bearers. The MExE protocols shall have the ability to use all the underlying bearer services which the MExE MSUE is capable of supporting.

8.3 Scaleable and extendible protocols

The MExE protocols shall support a scaleable and extendible environment for application and applet development in mobile communication devices. It shall provide a set of generic, non-MSUE or service-dependent, features. Scaleability of the MExE protocols applies to both the MExE MSUE (e.g. where simple devices do not require the extensive protocols support possibly required by more sophisticated devices) and the network.

The MExE protocols shall support both low bandwidth bearers (e.g. SMS, USSD etc.) as well as medium bandwidth

bearers (e.g. anything up to 64kb/s, HSCSD, UMTS). The introduction of new bearers shall be supported, allowing applications and applets to automatically benefit from their capabilities.

The MExE protocols shall support existing servers and applications and applets, and provide a stable platform for future application development.

8.4 Service independence

The MExE protocols shall be independent of the services communicated over the protocols. The modification in the range of services, or addition of new services, offered over the network shall not be restricted by the MExE protocols.

8.5 Network node type independence

The MExE protocols shall be independent of the network node type(s) being communicated with over the protocols. The MExE protocols shall support the evolution of network node types in a PLMN.

8.6 Enquiry and notification of MExE capabilities

The MExE protocols shall support a generic technology-independent means for the notification by the MExE **MSUE** to a MExE server, or enquiry from the MExE server to the MExE **MSUE**, of the supported MExE capabilities consisting of:

- MExE Classmark (mandatory, MExE server ↔to MExE **MSUE**);
the supported class of MExE **MSUE**;
- MExE technology (mandatory, MExE server ↔to MExE **MSUE**);
the supported types of MExE **MSUE** technology to support MExE services;
- terminal characteristics (optional, MExE **MSUE** ⇒from MExE server, following MExE server enquiry);
further details of the supportable characteristics (i.e. screen size, MMI capabilities, supportable bearer services, toolkits etc. as constrained by the network, terminal, subscription and user preferences).

In existing networks it may not be possible to determine the network capabilities (i.e. supported bearers) and subscription options of the subscriber.

The above notification by the MExE **MSUE** or the MExE server are supported at service initiation, dynamically during the provision of such a service, and following a change in the quality of service (i.e. following a handover, change of network, degradation of service, change in quality of service).

The notification mechanism shall flexibly support notification of the MExE **MSUE**, and be able to accommodate future evolution of MExE **MSUE** equipment.

8.7 **MSUE** request of services information

The MExE protocols shall support a notification from the PLMN or a request from the MExE **MSUE** to the PLMN, for information on the (local) services which may be transferred from the PLMN. The information from the PLMN may take the form of listing the services, or references to a PLMN entity (either internal or external to the PLMN) where the available services may be determined.

8.8 Support of transfer protocols

The MExE protocols shall support the capability to transfer new applications and applets to the MExE **MSUE** as required. The protocols shall support both user initiated and MExE server initiated transfer of several types of data (content description pages, procedural logic, images, libraries etc.), and be able to indicate the type of data being transferred.

Each specific MExE technology shall support a standardised transfer mechanism for that MExE technology.

9 **MSUE** application execution environment requirements

9.1 **MSUE** platform independence

In order to support the objectives of MExE, the ME and SIM/USIM is required to have an architecture capable of supporting applications, applets and content in a standardised execution environment, independently of the MExE **MSUE** manufacturer.

As this specification is not required to propose a specific technology, it identifies the common platform requirements

from the service subscriber's and user's standpoint.

The limitations of small devices may result in the provision of the full application execution environment only being available in sophisticated devices.

The high level execution environment requirements are identified in the subsequent subclauses.

9.2 Document mark-up language and other coding formats

In order to cater for a wide variety of ME's with different display and input capabilities, support for both the standard Internet mark-up language and a content description language optimised for small display devices of low bandwidth bearers shall be defined with the MExE specifications. Both languages may be implemented on any MExE [MSUE](#). Standardised ways of coding content (i.e. images, phonebook, calendar etc.) shall be defined, however the support of such standardised content coding is optional.

In order to facilitate global use of MExE services, a standardised range of character sets for MExE services requires to be defined, and the capabilities of the user and applications to use them.

9.3 MExE APIs

MExE APIs may be defined covering aspects (e.g. Network APIs, Non-network API's, Terminal APIs etc.) within a given MExE Classmark of MExE [MSUE](#) (ME an/or SIM/USIM), and the MExE [MSUE](#) shall support a core API to support the execution of MExE applications and applets. The core API is the minimal set of API that is present on all MExE [MSUE](#)'s, providing the MExE execution environment in which applications and applets can execute, and is known as the Core MExE API. The Core MExE API consists of generic and GSM/UMTS specific aspects.

Applications and applets which have been designed to execute in this Core MExE API environment (and the optional MExE APIs subsequently identified), will provide additional functions to the MExE [MSUE](#).

In addition to the Core MExE API on an MExE [MSUE](#), standardised MExE API extensions such as Network API (e.g. access to call control services, SMS etc.), Non-network GSM/UMTS-defined services API (e.g. security aspects, SIM/USIM phonebook etc.), Terminal API (e.g. power management, access to alerting function, phonebook, MMI, smartcard access etc.), shall be subsequently defined and may be supported by the MExE [MSUE](#) in order to further exploit the system capabilities.

The standardised MExE API extensions shall include access to mobility information.

10 Charging requirements

The use of MExE services shall, at MExE service provider determination, be subject to charging.

There are several forms of charging which shall be available to the MExE service provider. It shall be possible for the MExE service provider to charge in the following instances:

- subscription;

the subscriber's registration to use MExE services may be subject to a charge;

- service transfer;

the transfer of services and/or information to a subscriber's MExE [MSUE](#) may be subject to a charge;

- service upgrading;

the upgrading of previously transferred services to a subscriber's MExE [MSUE](#) may be subject to a charge (automated upgrading of services may be subject to a different charge);

- service usage;

the usage of transferred services by a subscriber's MExE [MSUE](#) may be subject to a charge (possibly use either internal to, or external to, the MExE [MSUE](#));

- roaming ;

the usage of MExE services by a subscriber's MExE [MSUE](#) when roaming may be subject to additional charges;

A standardised means of transferring (indicative and/or final) charging information (for the use of MExE services) from the MExE service provider to the MExE [MSUE](#) shall be defined.

The usage of the bearer service may be subject to a charge (i.e. possibly time-based, volume-based, event-based etc.) by the network operator.

Normal service charges may additionally apply when using MExE services and incurring the above charges.

Other charging requirements may be identified in due course.

11 Security requirements

This clause consists of:

- a sub-clause giving the principles behind security for MExE. These are not requirements as such but the principles behind the requirements;
- a sub-clause specifying specific requirements that MExE implementations must adhere to;
- a sub-clause specifying the security domain classifications for MExE executables.

11.1 Security Principles

The ME and the data therein are the property of the user. The user is also responsible for the payment of chargeable events involving her **MSUE**, and will be seen as the party responsible for any events (whether chargeable or not) involving her **MSUE**. Therefore the user shall have full control over all chargeable and non-chargeable events initiated by her **MSUE** (“event” includes responses made by the **MSUE** to external events, e.g. the acceptance by the **MSUE** of an incoming call). This control can be exercised either by the giving of explicit permission at the time of the event or by the giving of implicit permission to the events by the agreement to an event schedule listed clearly in a user profile. The user shall be able to request the logging of specific network events initiated by MExE **MSUE** applications/applets. The privacy of user data in the **MSUE** is of paramount importance.

The SIM/USIM and operator controlled areas within the terminal are the property of the network operator. The network operator shall therefore have full control over access to the SIM/USIM and operator controlled area. The operator shall also have full control over data, excluding personal user data, transmitted to or from the SIM/USIM and the operator controlled terminal area and all events initiated by the SIM/USIM or operator controlled area (“event” includes responses made to external events, e.g. the response to a command sent from the ME).

As the user cannot know the capabilities of any MExE executables transferred from a MExE service environment before transfer, the **MSUE** MExE environment shall ensure that transferred MExE executables cannot compromise the above principles.

11.2 Security Requirements

For MExE executables of security operator, manufacturer and user trusted domains, as defined in clause 11.3, it shall be possible to authenticate the identity of the body that authorised the application, applet or content.

There shall be a secure, unforgeable means for assigning the security domains defined in section 11.3 to the MExE executables transferable from the MExE service environment.

The certification of authorisation associated with MExE executables transferable from the MExE service environment shall be transferred with the certified material.

The MExE **MSUE** shall be able to verify the security domain, as defined in section 11.3, of MExE executables transferred from the MExE service environment.

The verification process in the **MSUE** itself shall not compromise the security of the functionality and content in the **MSUE**.

Transferred material that fails verification shall not be installed and shall be deleted by the terminal as soon as possible. MExE executables that cannot be verified due to the absence of required verification information in the **MSUE**, shall be considered as untrusted material, as defined in section 11.3.

The events that MExE executables are given permission by the user to initiate shall be securely recorded in the user profile.

There shall be mechanisms within the MExE **MSUE** for ensuring that applications cannot have access to **MSUE** functionality and content beyond that allowed by their security domain, as defined in section 11.3.

It shall be possible for the user to downgrade MExE executables of operator, manufacturer or user trusted domain status to untrusted status, at installation or at any other time.

The MExE **MSUE** shall be able to detect if MExE executables transferred from the MExE service environment have been modified since they were assigned a security level.

MExE executables shall not be transferred to a MExE **MSUE** without the explicit permission of the **MSUE** user immediately prior to transfer or implicit permission via the user profile.

Applications and applets transferred to a MExE **MSUE** shall not be able to initiate events without the explicit permission of the **MSUE** user immediately prior to event initiation or implicit permission via the user profile.

The user profile data for transfer and event initiation cannot be changed without the explicit agreement of the user.

The user shall be able to abort or suspend any on-going call that has been set up automatically by an application.

The integrity of the SIM or USIM and other security mechanisms shall not be compromised by the introduction of MExE services.

The user shall be able to request the logging of specific network events initiated by MExE **MSUE** applications/applets. MExE **MSUE** applications/applets shall not be able to send command RUN GSM ALGORITHM to the SIM.

11.3 Security domain classifications

The security domain of MExE executables shall be graded according to the measure of authorisation which they have been designated. The following 3 (the “sandbox” in which untrusted MExE executables runs is not considered to be a domain) domains shall be supported for MExE executables:

- MExE Security Operator Domain (used by the HPLMN operator);

MExE executables designated at this security domain have been authorised by the network operator (i.e. HPLMN),

- MExE Security Manufacturer Domain (system MExE executables);

MExE executables designated at this security domain have been authorised by the MExE [MSUE](#) manufacturer.

- MExE Security User Trusted Domain (trusted applications, applets and content);

MExE executables designated at this security domain have been written by user trusted software developers and verified as user trusted domain material (but not with regard to their content) via organisations such as certification authorities.

- MExE Security Untrusted (untrusted applications, applets and content);

Untrusted MExE executables have not been supplied with an associated authorisation, or the authorisation cannot be verified due to the absence of required verification information in the MExE [MSUE](#).

12 Interworking with other network features

All services available in the network shall continue to be offered in addition to MExE. This includes the basic services, supplementary services and network features.

It shall be network-determined whether specific MExE services supplement, co-operate with, or supersede the network available services, when a user is subscribed to MExE and has transferred the specific MExE service.

The interworking characteristics of individual MExE services with other network features is outside the scope of this specification.

13 Network interworking

All services offered in co-operation with other networks shall continue to be offered in combination with MExE. This includes the basic services, supplementary services and network features.

The interworking characteristics of individual MExE services with other networks is outside the scope of this specification.

CHANGE REQUEST No : 003		<i>Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.</i>
Technical Specification / Report UMTS	21.905	Version: 3.1.1
Submitted to SA #9	for approval <input checked="" type="checkbox"/>	without presentation ("non-strategic") <input type="checkbox"/>
TSG_SA		with presentation ("strategic") <input type="checkbox"/>
<small>list TSG plenary meeting no. here ↑</small>	For information <input type="checkbox"/>	

PT SMG CR cover form is available from: http://docbox.etsi.org/tech-org/smg/Document/smg/tools/CR_form/cr28_1.zip

Proposed change affects:

(at least one should be marked with an X)

USIM TE Network

Work item: 3GPP Vocabulary (TR 21.905)

Source: SA1 **Date:** 21/07/2000

Subject: Correction to the definition of MExE = Mobile Execution Environment and updates of the references to MS -> UE

Category:

(one category
And one release
Only 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:

Alignment with 22.057

Clauses affected: Definitions: M, Abbreviations: M

Other specs

Affected:

Other releases of same spec → List of CRs:
 Other core specifications → List of CRs:
 MS test specifications / TBRs → List of CRs:
 BSS test specifications → List of CRs:
 O&M specifications → List of CRs:

Other comments:



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

Terms and definitions

...

*** Modified section ****

M

MExE Classmark A MExE classmark identifies a category of MExE [UEMS](#) supporting MExE functionality with a minimum level of processing, memory, display, and interactive capabilities. Several MExE classmarks may be defined to differentiate between the functionalities offered by different MExE [MSUEs](#). A MExE application or applet defined as being of a specific MExE Classmark indicates that it is supportable by a MExE [MS-UE](#) of that Classmark.

MExE executable An executable is an applet, application, or executable content, which conforms to the MExE specification and may execute on the ME.

MExE server A node supporting MExE services in the MExE service environment.

MExE service a service enhanced (or made possible) by MExE technology.

MExE service environment Depending on the configuration of the PLMN, the operator may be able to offer support to MExE services in various ways. Examples of possible sources are from traditional GSM nodes, IN nodes, operator-specific nodes, operator franchised nodes and services provider nodes, together with access to nodes external (i.e. vendor-specific) to the PLMN depending on the nature of the MExE service. These nodes are considered to constitute the MExE service environment. The MExE service environment shall support direct MExE [MS-UE](#) to MExE [MS-UE](#) interaction of MExE services.

...

Abbreviations

*** Modified section ****

...

M

MExE Mobile ~~station (application)~~ Execution Environment

CHANGE REQUEST		Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.
22.038	CR	005
		Current Version: 3.2.0
GSM (AA.BB) or 3G (AA.BBB) specification number ↑		↑ CR number as allocated by MCC support team
For submission to: SA #9 <i>list expected approval meeting # here</i> ↑	for approval <input type="checkbox"/> for information <input type="checkbox"/>	strategic <input type="checkbox"/> non-strategic <input type="checkbox"/> <i>(for SMG use only)</i>

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:** 20/7/2000

Subject: MExE

Work item: Editorial

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: MExE has been renamed from *Mobile Station Application Execution Environment* to *Mobile Execution Environment*.

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:



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

content: data and/or information associated with, or independent of, a particular application which may be presented to or collected from a user

data channel: allow the SIM and the network to exchange data using a selected bearer

link: radio resource

SAT/USAT service: a service enhanced (or made possible) by SAT/USAT technology

SAT/USAT execution environment: the SAT/USAT execution environment provides the mechanisms to operate single or multiple SAT/USAT-applications

SAT/USAT serving environment: an entity which delivers SAT/USAT services to the subscriber. This is normally the PLMN operator, but could be an entity with SAT/USAT responsibility (which may have been delegated by the PLMN operator)

SAT/USAT subscriber: the owner of a PLMN subscription who has entered into an agreement with a SAT/USAT serving environment for SAT/USAT services. Access to SAT/USAT services through other types of networks is out of scope of this specification

SAT/USAT server: a node supporting SAT/USAT services in the SAT/USAT service environment

user: the user of a SAT/USAT UE/MS, who may or may not be the subscriber

3.2 Abbreviations

For the purposes of this TS the following abbreviations apply:

API	Application Programming Interface
CAMEL	Customized Applications for Mobile network Enhanced Logic
CS	Circuit Switched
CSE	CAMEL Service Environment
IN	Intelligent Network
ME	Mobile Equipment
MExE	Mobile Station (Application) Execution Environment
MMI	Man Machine Interface
MS	Mobile Station
NO	Network Operator
PLMN	Public Land Mobile Network
SAT	SIM Application Toolkit
SCI	Subscriber Controlled Input
SIM	Subscriber Identity Module
UE	User Equipment
USAT	USIM Application Toolkit
USIM	Universal Subscriber Identity Module

Further abbreviations are given in GSM 01.04 [1] and TS 21.905 [7].

4 Description

SAT/USAT provides a standardised execution environment for applications stored on the USIM/SIM card and the ability to utilize certain functions of the supporting mobile equipment. SAT/USAT provides mechanisms which allow applications, existing in the USIM/SIM, to interact and operate with any ME which supports the specified mechanism(s) thus ensuring interoperability between a USIM/SIM and an ME, independent of the respective manufacturers and operators. A transport mechanism is provided enabling applications to be down-loaded and/or updated.

A significant aspect of SAT/USAT is the highly secure environment provided by the USIM/SIM card. This is further enhanced by the fact that the subscriber and the issuer of the USIM/SIM and also the SAT/USAT applications have a "trusted relationship" (e.g. the subscriber trusts the issuer of the card to charge correctly for the resources used). This

CHANGE REQUEST Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

22.078 **CR** **050**
Current Version: 3.4.1

GSM (AA.BB) or 3G (AA.BBB) specification number ↑
↑ CR number as allocated by MCC support team

For submission to: SA #9 for approval strategic (for SMG use only)
list expected approval meeting # here for information non-strategic

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:** 20/7/2000

Subject: MExE

Work item: TEI

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: MExE has been renamed from *Mobile Station Application Execution Environment* to *Mobile Execution Environment*.

Clauses affected:

Other specs affected:

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

Other comments:



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

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- For this Release 1999 document, references to 3GPP documents are for Release 1999 versions (version 8.x.y).

- [1] TS 22.093: ""Completion of Calls to Busy Subscriber (CCBS); Service description, Stage 1".
- [2] TS 22.079: ""Support of Optimal Routeing (SOR); Service definition (Stage 1)".
- [3] TS 22.030: ""Man-machine Interface (MMI) of the Mobile Station (MS) (Stage 1)".
- [4] TS 22.090: ""Stage 1 Decision of Unstructured Supplementary Service Data (USSD)".
- [5] TS 22.097: ""Multiple Subscriber Profile (MSP); Service definition (Stage 1)".
- [6] TS 22.060: ""General Packed Radio Service (GPRS); Service definition (Stage 1)".
- [7] TS 22.057: ""Mobile ~~Station~~-Execution Environment (MExE); Service definition (Stage 1)".
- [8] TS 22.071: ""Location Services; Service Definition (Stage1) ""

3 Definitions and abbreviations

Operator Specific Service (OSS): Any service offered to a mobile user that is not standardised.

Interrogating PLMN (IPLMN): This is the PLMN that performs the interrogation of the HPLMN for information on the treatment of a terminating call.

CAMEL Service Environment (CSE): A CSE is a logical entity which processes activities related to Operator Specific Services (OSS).

Route select failure: A condition when routeing to the called party fails. Route Select Failure can be reported in an existing relationship \$(CAMEL2\$) or a new relationship can be initiated.- \$(CAMEL3\$)

Service event: A specific event of a process that may be used as part of an operator specific service.

Initial service event: a service event which triggers the establishment of a relationship between the CSE and the controlled entity.

Subsequent service event: a service event which is reported in the context of an existing relationship between the CSE and the reporting entity.

Service procedure: A part of the CAMEL feature to be used to detect a specific CAMEL service event.

Network CAMEL Service Information (N-CSI): The N-CSI identifies services offered on a per-network basis by the serving PLMN operator for all subscribers. - \$(CAMEL3\$)

NOTE: These services may also be provided using a technology other than CAMEL.

CAMEL Subscription Information (CSI): The CSI identifies that CAMEL support is required for the subscriber and the identities of the CSEs to be used for that support. The CSI also contains information related to the OSS of the subscriber, e.g. Service Key.

CHANGE REQUEST

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22.105 CR 026

Current Version: **3.9.0**

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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for approval
for information

strategic
non-strategic (for SMG use only)

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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:** 20/7/2000

Subject: MExE change of acronym

Work item: TEI (Editorial) MExE

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

(only one category shall be marked with an X)

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

Reason for change: MExE has been renamed from *Mobile Station Application Execution Environment* to *Mobile Execution Environment*.

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:



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1 Scope

Existing systems have largely standardised the complete sets of bearer services, teleservices and supplementary services which they provide. 3GPP specifications specify service capabilities rather than services, allowing service differentiation and system continuity. This Technical Specification (TS) describes how and what kind of services the user has access to.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

2.1 Normative references

- [1] TS 22.001: "Principles of circuit telecommunication services supported by a Public Land Mobile Network (PLMN)".
- [2] TS 02.002: "Circuit Bearer services supported by a Public Land Mobile Network (PLMN)".
- [3] TS 22.003: "Circuit Teleservices supported by a GSM Public Land Mobile Network (PLMN)".
- [4] TS 22.004: "General on supplementary services".[5] TS 22.038: "SIM toolkit Stage 1".
- [6] TS 22.057: "Mobile ~~Station Application~~ Execution Environment (MExE); Service description; Stage 1".
- [7] TS 22.060: "General Packet Radio Service (GPRS) stage 1".
- [8] TS 22.078: "Customised Applications for Mobile network Enhanced Logic (CAMEL); Service definition - Stage 1".
- [9] TS 22.101: "Service principles".
- [10] TS 22.121: "Virtual Home Environment (VHE), Stage 1".
- [11] TS 22.135: "Multicall, stage 1".

2.2 Informative references

- [12] ITU-T recommendation F.700: "Framework recommendation for audio-visual/multimedia services".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of this TS, the following definitions apply:

Basic telecommunication service : this term is used as a common reference to both bearer services and teleservices.

Bearer service : is a type of telecommunication service that provides the capability of transmission of signals between access points.

Call : a logical association between several users (this could be connection oriented or connection less).

Connection : is a communication channel between two or more end-points (e.g. terminal, server etc.).

Mobile termination : the mobile termination is the component of the user equipment which supports functions specific to management of the radio interface (Um).

Multimedia service : Multimedia services are services that handle several types of media. For some services, synchronisation between the media is necessary (e.g. synchronised audio and video). A multimedia service may involve multiple parties, multiple connections, and the addition or deletion of resources and users within a single call.

Nomadic Operating Mode : Mode of operation where the terminal is transportable but being operated while stationary and may in addition require user co-operation (e.g. close to open spaces, antenna setup...).

Quality of Service : the collective effect of service performances which determine the degree of satisfaction of a user of a service. It is characterised by the combined aspects of performance factors applicable to all services, such as;
service operability performance;

- service accessibility performance;
- service retention performance;
- service integrity performance; and
- other factors specific to each service.

Service Capabilities: Bearers defined by parameters, and/or mechanisms needed to realise services. These are within networks and under network control.

Service Capability Feature: Functionality offered by service capabilities that are accessible via the standardised application interface

Services: Services are made up of different service capability features.

Supplementary service : is a service which modifies or supplements a basic telecommunication service. Consequently, it cannot be offered to a user as a standalone service. It shall be offered together with or in association with a basic telecommunication service. The same supplementary service may be common to a number of basic telecommunication services.

Teleservice; is a type of telecommunication service that provides the complete capability, including terminal equipment functions, for communication between users according to standardised protocols and transmission capabilities established by agreement between operators.

3.2 Abbreviations

For the purposes of this TS, the following abbreviations apply;

BER	Bit Error Rate
CAMEL	Customised Application for Mobile network Enhanced Logic
DTMF	Dual Tone Multiple Frequency
TR	Technical Report
TS	Technical Specification
ETSI	European Telecommunications Standards Institute
FAX	Facsimile
FER	Frame Erasure Rate
GSM	Global System for Mobile Communications
GERAN	GSM / EDGE Radio Access Network.
HE	Home Environment
IN	Intelligent Network
ISDN	Integrated Services Digital Network
ITU	International Telecommunication Union
LCS	Location Services
MExE	Mobile station -Execution Environment
MMI	Man Machine Interface
MO	Mobile Origination
MT	Mobile Termination
PC	Personal Computer
PIN	Personal Identity Number
PNP	Private Numbering Plan
POTS	Plain Old Telephony Service
QoS	Quality of Service
USIM	User Service Identity Module
SMS	Short Message Service

SAT	SIM Application Toolkit
SN	Serving Network
SoLSA	Support of Localised Service Area
UE	User Equipment

4 Framework for the description of telecommunication services and applications

4.1 General

Telecommunication services defined by 3GPP specifications are the communication capabilities made available to users by home environment and serving network. A PLMN provides, in co-operation with other networks, a set of network capabilities which are defined by standardised protocols and functions and enable telecommunication services to be offered to users.

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

22.121 CR 013

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**
list expected approval meeting # here
↑

for approval
for information

strategic
non-strategic (for SMG use only)

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:** 20/7/2000

Subject: MExE change of Acronym

Work item: TEI (Editorial)

Category: F Correction
A Corresponds to a correction in an earlier release
B Addition of feature
C Functional modification of feature
D Editorial modification
(only one category shall be marked with an X)

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

Reason for change: MExE has been renamed from *Mobile Station Application Execution Environment* to *Mobile Execution Environment*.

Clauses affected:

Other specs affected:

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

Other comments:



help.doc

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

1 Scope

The present document specifies the content of the stage one requirement for realisation of VHE.

Virtual Home Environment (VHE) is defined as a concept for personal service environment (PSE) 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 the network), wherever the user may be located.

A key feature to support VHE is the ability to build services using a standardised application interface.

Requirements not applicable for R99 will be explicitly indicated.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

2.1 Normative references

- | | |
|------|--|
| [1] | GSM 01.04 (ETR 350): "Digital cellular telecommunication system (Phase 2+); Abbreviations and acronyms". |
| [2] | GSM 292.057: "Digital cellular telecommunication system (Phase 2+); Mobile Station Application Execution Environment (MExE); Service description". |
| [3] | GSM 02.78: "Digital cellular telecommunication system (Phase 2+); Customised Applications for Mobile network Enhanced Logic (CAMEL); Service definition - Stage 1". |
| [4] | GSM 11.14: "Digital cellular telecommunication system (Phase 2+); Specification of the SIM Application Toolkit for the Subscriber Identity Module - Mobile Equipment; (SIM - ME) interface". |
| [5] | UMTS TS 22.01: "Universal Mobile Telecommunications System (UMTS): Service Aspects; Service Principles". |
| [6] | UMTS TS 22.05: "Universal Mobile Telecommunications System (UMTS); Services and Service Capabilities". |
| [7] | ITU-T Recommendation Q.1701: "Framework for IMT-2000 networks". |
| [8] | ITU-T Recommendation Q.1711: "Network Functional Model for IMT-2000". |
| [9] | UMTS TS 22.00 UMTS phase 1. |
| [10] | UMTS TS 23.127 "Virtual Home Environment/Open Service Architecture" |

2.2 Informative references

- | | |
|-----|---|
| [1] | UMTS TR 22.70: "Universal Mobile Telecommunications System (UMTS); Virtual Home Environment". |
| [2] | World Wide Web Consortium Composite Capability/Preference Profiles (CC/PP): A user side framework for content negotiation (www.w3.org). |

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

HE-VASP: Home Environment Value Added Service Provider. This is a VASP that has an agreement with the Home Environment to provide services.

Local Service: service, which can be exclusively provided in the current serving network by a Value added Service

Provider.

Service Capabilities: bearers defined by parameters, and/or mechanisms needed to realise services. These are within networks and under network control.

Service Capability Feature: functionality offered by service capabilities that are accessible via the standardised application interface.

Services: services are made up of different service capability features.

Service Execution Environment: service execution environment is a platform on which an application or programme is authorised to perform a number of functionalities; examples of service execution environments are the user equipment, integrated circuit card and a network platform or any other server.

Applications / Clients: these are services, which are designed using service capability features.

Application Interface: standardised Interface used by application/clients to access service capability features.

Personal Service Environment: contains personalised information defining how subscribed services are provided and presented towards the user. The Personal Service Environment is defined in terms of one or more User Profiles.

Home Environment: responsible for overall provision of services to users.

User: is a logical entity, which uses UMTS services.

User Interface Profile: contains information to present the personalised user interface within the capabilities of the terminal and serving network.

User Services Profile: contains identification of subscriber services, their status and reference to service preferences.

User Profile: this is a label identifying a combination of one user interface profile, and one user services profile.

Value Added Service Provider: provides services other than basic telecommunications service for which additional charges may be incurred.

Virtual Home Environment: concept for personal service environment portability across network boundaries and between terminals.

Further UMTS related definitions are given in 3G TS 22.101.

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

API	Application Programming Interface
CAMEL	Customised Application For Mobile Network Enhanced Logic
CAP	Camel Application Part
CORBA	Common Object Request Broker Architecture
CSE	Camel Service Environment
FFS	For Further Study
GSN	GPRS Support Nodes
HE	Home Environment
HE-VASP	Home Environment Value Added Service Provider
HLR	Home Location Register
LCS	LoCation Services
MAP	Mobile Application Part
ME	Mobile Equipment
MExE	Mobile Station -(Application)-Execution Environment
MMI	Man Machine Interface
MS	Mobile Station
MSC	Mobile Switching Centre
OSA	Open Service Architecture
PLMN	Public Land Mobile Network
PSE	Personal Service Environment
SAT	SIM Application Tool-Kit
SIM	Subscriber Identity Module
SMS	Short Message Service
SSF	Service Switching Function
USIM	User Service Identity Module
USSD	Unstructured Supplementary Service Data
VASP	Value Added Service Provider
VHE	Virtual Home Environment

Further GSM related abbreviations are given in GSM 01.04. Further UMTS related abbreviations are given in UMTS TS 22.01.

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);