Technical Specification Group Services and System Aspects   ***TSGS#9(00) 0388***
Meeting #9, Hawaii, USA, 25-28 September 2000

Source: **TSG SA1**

Title: **CR to 22.057 on MExE support of multimedia services**

Document for: **Approval**

Agenda Item: **7.1.3**

Spec	CR	Rev	Phase	Cat	Subject	Vers	New Vers	SA1 Doc. No.
22.057	003		R00	B	MExE support of multimedia services	3.0.1	4.0.0	S1-000628
22.057	004		R00	D	MExE Release 2000	3.0.1	4.0.0	S1-000428
22.057	005		R00	B	MExE Classmark updates	3.0.1	4.0.0	S1-000428

TSG-SA WG 1 (Services) meeting #9
TSG-SA WG 1 R00 ad hoc meeting #5
Taastrup, Denmark 17th - 21st July 2000

(00) 628
(00) 148
Agenda Item:

CHANGE REQUEST

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22.057 CR **003**   Current Version: 3.0.1

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

For submission to: SA #9   for approval **X**   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

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

Source: SA1   **Date:** 19/7/2000

Subject: MExE support of multimedia services

Work item: Provisioning of IP-based multimedia services

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

Reason for change: The MExE Stage 1 is updated to identify requirements for the support of IP multimedia services, and the ability to personalise multimedia services consisting of multiple media components.

A Release 2000 version of the document is created.

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

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ETSI

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 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 and individual media components of a multimedia service;

- 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 MS from a MExE service provider, and upgrade existing applications across the network;

- the means to support direct MExE MS to MExE MS interaction of MExE services;

- the need for an inherent security architecture such that both the MExE MS 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 MS 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 MS' for use with location dependent services);

- the means for MExE service providers and their applications and applets to determine MExE MS 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 MS capabilities, and shall be used by applications and applets whilst running to adapt their behaviour to the MS'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 MS';

- the means for the user to manage (i.e. identify version, delete, modify, save etc.) the applications, applets and content on the MExE MS;

- 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 MS. (It shall be possible for the user to finely control a trusted application or applet's access rights on the MExE MS, such as reading/writing/deletion of files stored on the MExE MS);

- 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 occuring or has occurred;

- the means for MExE MS manufacturers to download and upgrade their existing codec in a MExE MS. A generic mechanism to download other proprietary software into the execution environment of the MS 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 MS and the MExE service environment;

- the ability to support IP multimedia services.

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 MS, 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 MS, and the ability of the user to modify the MExE MS to behave in the manner he is accustomed to, or wishes the MExE MS 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 MS interacts with the user.

Users expect MExE MSs to offer an increasing range of capabilities which need not be ubiquitously present on each MExE MS, depending on the technological limitations of the MExE MS. The user shall be able to manage the user interface configuration of the MExE MS. For example, some user's may require a voice-controlled MMI, whilst others may have the need for a specialised presentation on the MExE MS 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 MS to MExE MS and exploit the technological capabilities of each class of MExE MS, 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 MS, 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 MS 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.
MExE shall be able to support the handling of individual media components of an IP multimedia service in a user profile, and not necessarily handle all media components of a multimedia session in the same way.
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 MS to update existing service access on the mobile, or to download new services. The management of these services may be defined by the subscriber directly or under the control of the MExE MS's capabilities organised on the MExE MS (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 MS (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 MS (e.g. when roaming some services may not be available to the user), and delete MExE applications, applets and content on the MExE MS.
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 MSs' and the MExE service provider.
The common transfer mechanism shall permit applications, applets and content (according to the appropriate MExE Sercurity Level) to be transferred to the MExE MS.
It shall be possible for the MExE service provider to:

- transfer applications, applets and content between the MExE MS and the MExE service provider (which may be initiated by either party);

- request the version of applications, applets and content on the MExE MS;

- identify the MExE MS' capabilities;

- support a request from the MExE MS 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 MS 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 MS.

Applications in the MExE service environment may interact with, or execute as agents of, an MExE MS application using industry standard protocols. Such interaction does not fall within the scope of MExE, however any MExE MS 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 ↔ VPLMN);

- roaming between visited networks (VPLMN ↔ 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 MS that are available. Wherever available, MExE MS applications shall be supported by bearers from GSM, UMTS and other technologies (e.g. circuit switched, packet switched, high speed data links provided by digital broadcast infrastructure etc.). 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 MS 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 MS.

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 MS'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 MS 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-MS or service-dependent, features. Scaleability of the MExE protocols applies to both the MExE MS (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 MS to a MExE server, or enquiry from the MExE server to the MExE MS, of the supported MExE capabilities consisting of:

- MExE Classmark (mandatory, MExE server ↔ MExE MS);

    the supported class of MExE MS;

- MExE technology (mandatory, MExE server ↔ MExE MS);

    the supported types of MExE MS technology to support MExE services;

- terminal characteristics (optional, MExE MS → MExE server, following MExE server enquiry);

    further details of the supportable characterstics (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 MS 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 MS, and be able to accommodate future evolution of MExE MS equipment.

8.7 MS request of services information

The MExE protocols shall support a notification from the PLMN or a request from the MExE MS 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 MS 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 be support a a standardised transfer mechanism for that MExE technology.

9   MS application execution environment requirements

9.1 MS 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 MS 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 bandwith bearers shall be defined with the MExE specifications. Both languages may be implemented on any MExE MS. 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 MS (ME an/or SIM/USIM), and the MExE MS shall support a core API to support the execution of MExE applications and applets. The core API is a the minimal set of API that is present on all MExE MS'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 MS.

In addition to the Core MExE API on an MExE MS, standardised MExE API extensions such as Network API (e.g. access to ~~call~~session 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 MS 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 MS may be subject to a charge;

- service upgrading;

    the upgrading of previously transferred services to a subscriber's MExE MS 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 MS may be subject to a charge (possibly use either internal to, or external to, the MExE MS);

- roaming ;

    the usage of MExE services by a subscriber's MExE MS 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 MS 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 MS, and will be seen as the party responsible for any events (whether chargeable or not) involving her MS. Therefore the user shall have full control over all chargeable and non-chargeable events initiated by her MS ("event" includes responses made by the MS to external events, e.g. the acceptance by the MS of an incoming ~~call~~session). 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 MS applications/applets.
The privacy of user data in the MS 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 MS 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, unforgable 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 MS 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 MS itself shall not compromise the security of the functionality and content in the MS 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 MS, 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 MS for ensuring that applications cannot have access to MS functionality and content beyond that allowed by their security domain, as defined in section 11.3.
It shall be possible to 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 MS 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 MS without the explicit permission of the MS user immediately prior to transfer or implicit permission via the user profile.
Applications and applets transferred to a MExE MS shall not be able to initiate events without the explicit permission of the MS 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~~session 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 MS applications/applets.
MExE MS 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 MS manufacturer.

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

    MExE executables 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 MS.

TSG-SA Working Group 1 (Services) meeting #9
Taastrup, Denmark 17th to 21st July 2000
3GPP TSG-T WG2#9
Maarssen, Netherlands, 15-19 May 2000

TSG S1 (00) 428
Agenda Item:
TSGT2#9(2000)203

CHANGE REQUEST

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22.057	**CR**	**004**

Current Version: 3.0.1

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

For submission to:	TSG #9	for approval	X	strategic		*(for SMG*
list expected approval meeting # here ↑		for information		non-strategic		*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 **X**   UTRAN / Radio ☐   Core Network ☐
(at least one should be marked with an X)

Source:	SA1	**Date:**	19/07/00

Subject: Informative annex on example MExE services

Work item: MExE Editorial T2 SWG1 (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   **X**

(only one category shall be marked with an X)

Release:
Phase 2 ☐
Release 96 ☐
Release 97 ☐
Release 98 ☐
Release 99 ☐
Release 00 **X**

Reason for change: An informative annex is appended to the specification to illustrate the type of new 3rd generation services which could be supported on MExE clients.

Clauses affected: Annex A

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: Note: this CR is equally applicable to R99, but for formal reasons is only being applied to R00.

Annex A: Example MExE services (Informative)

1 Overview

In addition to the use of standardised network services (e.g. call forwarding, call barring, CCBS, call diversion etc.), MExE provides additional capabilities to control telephony events and manipulate standardised network services in a user-friendly manner.

A MExE handset provides the generic capability to negotiate and interact with services (in the form of applications and content) in servers, other handsets and internet/intranet WebPages etc. Further, MExE provides standardised execution environments to which 3rd party software developers may write services to execute directly in the MExE handsets.

MExE provides the user with a more sophisticated user interfaces (e.g. browsers) with a rich variety of MMI concepts to personalise, control and invoke services (e.g.. softkeys, icons, voice recognition etc.). Additionally downloaded services provide users with the capability to control the "look and feel" of services.

MExE also brings security to the support of 3rd party services in the wireless handset. With security domains reserved for network operators, handset manufacturers, and third parties (each controlled by a PKI root public key), the source and content of downloaded services may be authenticated by the MExE client. The provision of such a security model enables the user to control whether services are installed, configure which functions may be performed by services, and to identify the extent of permissions granted to services. The protection of user data and resources help prevent attacks from potentially fraudulent services.

This annex gives an overview of how new 3rd generation services may be supported by MExE handsets, and gives some examples of possible services that may be supported on them. The ability to support some services may depend on the physical handset resources available to the MExE services, the classmark of the MExE client, and handset manufacturers may provide a range of handsets aimed at supporting different types of services.

2 Access to MExE services

There are several ways in which these new 3rd generation MExE services may be supported, and the following scenarios give an overview of the possible scenarios.
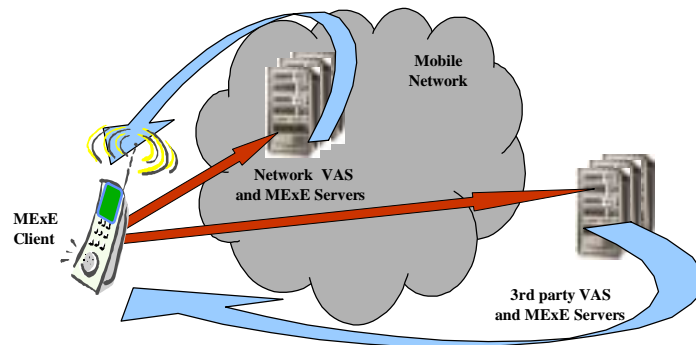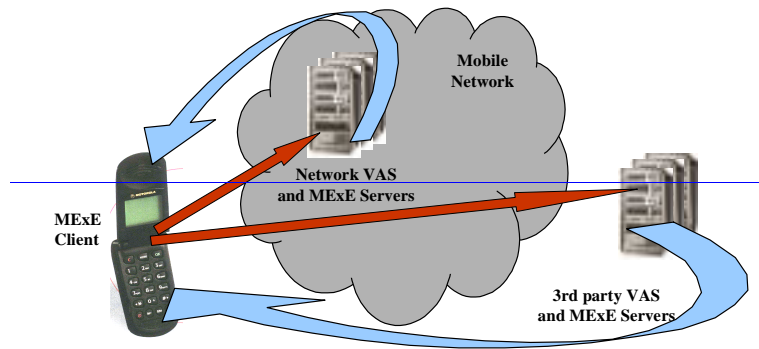
- **services execute on remote servers**
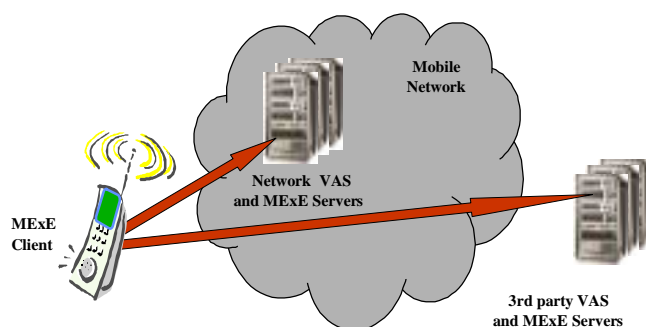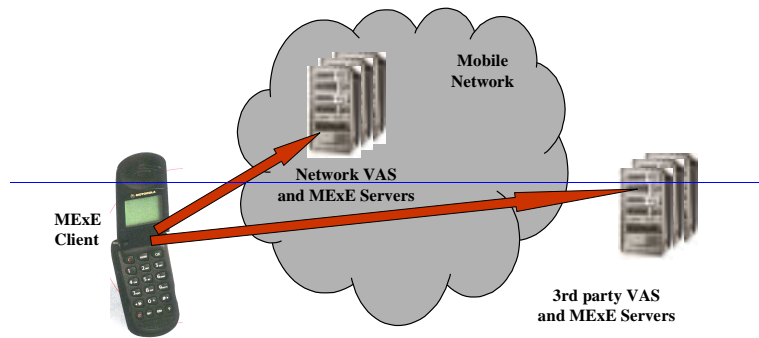
The services are provisioned and execute on remote servers, WebPages etc., to which the MExE client establishes a connection. The MExE client uses the services as provided by those remote servers. The MExE client effectively receives content (i.e. secured personal financial information) from the remote application which is presented to the user in the MExE client.
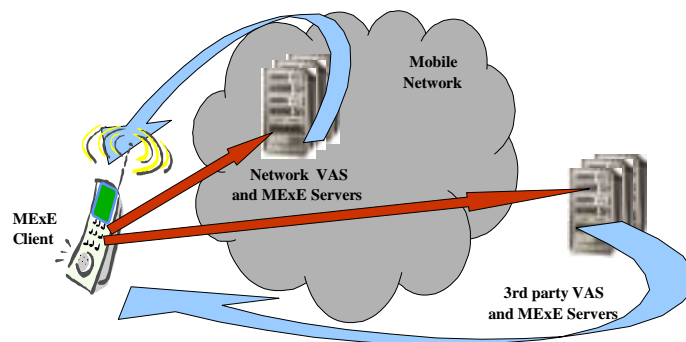
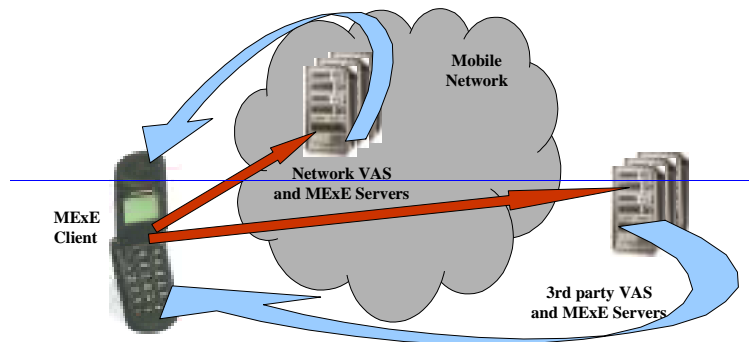- ~~user agent~~application downloaded into the MExE client

The services are provisioned and execute on remote servers, to which the MExE client establishes a connection. The MExE client downloads an application which acts as a local ~~agent (e.g. an intelligent agent or~~ browser~~)~~ to interact with the remotely provided service. The user interacts with and uses the remote servers via the downloaded application. An example of such a service would be access to an internet/intranet page.

- **~~S~~service downloaded into the MExE handset**

The services are available from remote servers, to which the MExE client establishes a connection. The MExE user downloads whichever services he desires from the remote servers, and installs, provisions and configures them on the MExE client. These services execute directly on the handset, without necessarily relying on servers to support the service. An example of such a service would be a game.

- **MExE handset to MExE handset services**
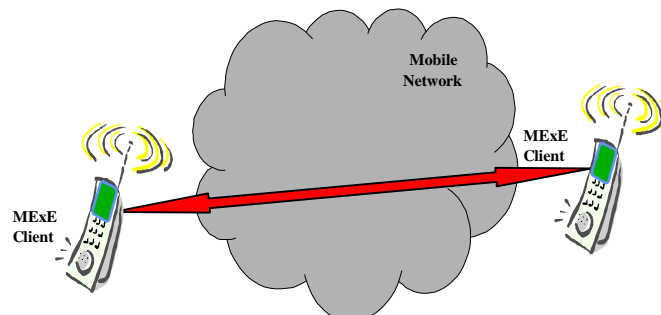
MExE handsets may wish to establish connections with each other to provide, receive and use interactive services. This direct MExE client to MExE client interaction of MExE services and any combination of the preceding scenarios may have been used to download services to the MExE client. These services may execute directly on the handset, without necessarily relying on servers to support the service. An example of such a service would be interactive games, sharing of calendar information, etc..

3 Example MExE services

Once they have been downloaded, these MExE services may then be configured, personalised and executed on the MExE handset by the user. A MExE handset may support a diverse range of services, providing a dynamic and evolutionary set of facilities to users. The support of this unlimited range of new services, will convert a mobile handset from being a device which simply makes and receives calls and messages, into a multifunctional leisure and business device.

An analogy may be made with a personal computer, where the user can install and configure any type of application that he so chooses, establish multimedia call sessions, and convert the laptop into a multi-faceted device (e.g. slideshow presenter, videobox, music jukebox, arcade games machine, protocol analyser, e-mail, messaging and information server etc.). In fact, MExE may simply be considered to be similar to a small

computer supporting wireless telecommunications capabilities.

Manufacturers are expected to produce MExE devices with different levels of resources, memory and processing power to exploit the growing number of applications and market niches.

The list of possible services that may be supported by a MExE client is virtually unlimited, and the following are example services that could be supported by a MExE client.

1.1● Applications

Applications may be downloaded and installed on the MExE client to provide a wide range of standalone services.

The user downloads and installs the software into the MExE client, configuring and installing it as required. Examples of such applications are phonebooks, diaries, planners providing similar functionality to current popular handheld PDA devices. Likewise, games may also be downloaded and installed providing similar functionality to current popular handheld games devices and other entertainment and leisure services.

Additionally, interactive working with other devices and servers (i.e. on-line gaming, gambling, messaging etc.) could also be generically supported.

1.2● Browsers

Applications may be downloaded and installed on the MExE client to support browser functionality already experienced by many users today with personal computers. Examples of this are internet and e-mail browsers.

1.1.1● Web browsing

A MExE client can be used by the user as an internet/intranet web browser by downloading and installing a web browser.

Just like the internet browser on a personal computer at home or in the office, the user is able to access the internet/intranet. Similar to accessing the internet via a personal computer, the user is able to surf the web viewing pages, images, animation and download content using standard internet HTTP and HTML protocols. By interaction with the installed web browser, the user is also able to customise his web browser to present the internet/intranet to the user in his accustomed way.

1.1.2● E-mail

A user can convert his MExE client into an e-mail handler by downloading and installing an e-mail browser.

Working the same way as an e-mail browser on his desk bound personal computer, the user is able to send and receive messages on the move. As with existing personal computer implementations e-mails with audio, visual and textual attachments may be exchanged with an e-mail server, using the standard e-mail SMTP, POP3 and IMAP4 protocols. Directly supported by the e-mail browser on the MExE client, the user may personalise his e-mail service and manage e-mails on remote e-mail servers.

1.3● Players

Players are a specialised type of application which the user may install on the MExE client. These players enable content to presented to the user in a specific manner, depending on the content format. Audio and video players are examples of such specialised applications.

1.1.1 Music players

A MExE client may also be used by the user as a portable music player by downloading and installing a music player application.

Once the music player application is installed, the user is then able to download music content using popular music formats available from the internet or third party servers.

Similar to the player applications already available on the internet and personal computers today, the user may be able to play popular music formats like MP3. Further, specialised music content (i.e. SDMI foundation) may also be played by downloading and installing the appropriate SDMI-compliant player.

By downloading and installing a music player, the user is able to obtain functionality from the MExE client similar to current popular handheld music devices.

1.1.2 Video players

Similar to the music player, a MExE client may also be used by the user as a portable video player by downloading and installing an appropriate video player application.

Once the video player application is installed, the user is then able to download video content using popular music formats like MPEG4 available from the internet or third party servers.

CHANGE REQUEST

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

22.057 CR **005**   Current Version: **3.0.1**

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

For submission to: **TSG SA #9**   for approval **X**   strategic   *(for SMG*
list expected approval meeting # here   for information   non-strategic   *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

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

Source: SA1   **Date:**   19/07/2000

Subject: MExE Classmark updates

Work item: 3rd MExE Classmark (MExE Release 2000)

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

Reason for change: The MExE Classmark clause is clarified, and support of a new MExE Classmark 3 is identified.

Clauses affected: 5.2, 5.3

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.

ETSI

5   Compatibility of MExE MS's and applications

5.1   MExE classmarks

Given the wide ranging hardware capabilities of MExE MSs, 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 MSs and applications and applets.
The objective is to:

-        classify the capabilities of a MExE MS to support MExE applications and applets; and

-        identify the class of MExE MS on which a MExE application and applet may be supported.

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

5.2   MS MExE classmarks

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

The following MExE classmarks are defined:-
- MExE Classmark 1
  This classmark supports Ssmall devices-, typically with limited display, processor and memory resources may be considered to be MExE Classmark 1 devices, and
- MExE Classmark 2
  This classmark supports contemporary sophisticated devices-, typically with enhanced display, processor and memory resources may be considered to be MExE Classmark 2 devices.
- MExE Classmark 3
  This classmark supports platforms for resource constrained, connected devices

The minimum level of capabilities for each MExE Classmark is beyond the scope of this Stage 1 service description. As MS development evolves and more sophisticated devices (or indeed simpler devices) become available, further MS MExE Classmarks shall be definable to identify MS's capable of supporting improved (or additional) MExE functionality.
A given MExE MS Classmark identifies support by a MExE MS for a defined level of MExE functionality, but does not necessairily imply support of other levels of MExE Classmark. A MExE MS 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 MS's. In order for MExE applications and applets to be properly supported by a MExE MS, the application and applet shall identify the minimum functional capabilities required of a MExE MS, as defined by the MS's MExE Classmark.
MExE applications and applets shall be designated by the same classes of MExE MS's on which they may be executed.
Examples of the classification of MExE applications and applets are as follows:-

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

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

-        a MExE Application can be defined as a MExE Classmark 2 application;

         the application is identified as suitable for execution on MExE Classmark 2 MS's only.

-        a MExE Application "B" iscan be 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 MS'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 MS'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 MS's.The above example list is neither complete nor exhaustive.

If a MExE application or applet is capable of being supported by other classes of MExE MS'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 MS, shall be supportable by all MExE MS's of that class regardless of MExE MS manufacturer. MExE applications and applets shall operate on differing MExE MS of the same MExE MS 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 MS. It is desirable that applications and applets are backward compatible within a given technology and for a given MS Classmark; however such backward compatibility is out of scope of this specification.