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Foreword

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Introduction

SMS has been very successful in the GSM second generation system, as all mobiles have supported the application level and it is possible to send to any GSM handset without the need to check for individual support. This easy to use service for non realtime text transmission between GSM users shall be succeeded to in third generation mobile systems by a non real-time Multimedia Message Service, MMS. The MMS will allow users to send and receive messages exploiting the whole array of media types available today e.g. text, images, audio, video while also making it possible to support new content types as they become popular.

3GPP shall not standardise new services themselves, but instead uses the standardised set of service capabilities features on which the new services will be built.

Multimedia technology is rapidly developing new capabilities, such as multimedia messages, games, presentations and services that are now considered to be a part of everyday life. Multimedia consists of one or more media elements (such as text, voice, image and video), and it is the combination of these media elements in an ordered synchronised manner that creates a multimedia presentation.

A non-realtime multimedia message as observed by the user is a combination of one or more different media elements in a multimedia presentation, that can be transferred between users without the requirement for the need to be transferred in realtime. The non-real-time multimedia messaging service shall be capable of supporting current and future multimedia messaging services, and exploit the advances being made in the world multimedia community, with additional mobile requirements.

1 Scope

This Technical Specification defines the stage one description of the non real-time Multimedia Messaging Service, MMS. Stage one is the set of requirements which shall be supported for the provision of non real-time multimedia messaging service, seen primarily from the subscriber's and service providers' points of view.

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

This TS contains the core requirements for the Multimedia Messaging Service, which are sufficient to provide a complete service.

This TS defines the requirements for MMS to be understood as a framework to enable non real-time transmissions for different types of media including such functionality as:

- multiple media elements per single message
- individual handling of message elements
- different delivery methods for each message element
- negotiate different terminal and network MM capabilities
- notification and acknowledgement of MM related events (e.g. delivery, deletion, ...)
- handling of undeliverable MM
- personalised MMS configuration
- flexible charging

The above list is not exhaustive.

Thus the MMS enables a unified application which integrates the composition, storage, access, and delivery of different kinds of media, e.g. text, voice, image or video in combination with additional mobile requirements.

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. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

- [1] 3GPP TS 22.101: "Service Principles".
- [2] Void
- [3] 3GPP TS 21.133: "3G Security; Security Threats and Requirements".
- [4] ITU-T E.164 (1997): "The International Public Telecommunications Numbering Plan".
- [5] IETF; STD 0011 (RFC 2822): "Internet Message Format", URL: <http://www.ietf.org/rfc/rfc2822.txt>.
- [6] 3GPP TS 21.905: "Vocabulary".
- [7] 3GPP TS 31.102 "Characteristics of the USIM Application".

- [8] 3GPP TS 51.011 (Rel-4): "Specification of the Subscriber Identity Module – Mobile Equipment (SIM-ME) interface".
- [9] 3GPP TS 22.242 "Digital Rights Management (DRM); Stage 1".
- [10] 3GPP TS 22.240 "Stage 1 Service Requirement for the 3GPP Generic User Profile (GUP)" .

3 Definitions and abbreviations

3.1 Definitions

Recipient : the recipient is the entity to which a MM has been sent.

Sender: the sender is the entity that sent a MM.

User: the user is the MM sender or the MM recipient.

message element: a message element is a part of a MM consisting of only one media type.

multimedia message: a multimedia message is a message composed of one or more message elements.

multimedia message service: A multimedia message service allows transfer of multimedia messages between users without the requirement for the multimedia messages to be transferred in real-time.

media types: a media type refers to one form of presenting information to a user, e.g. voice or fax.

media formats: within one media type different media formats are applicable for the media presentation, e.g. a picture can be GIF or JPEG format.

network: for the purposes of supporting multimedia messaging, the term network shall be considered to include the mobile operator's network and any functionality which may exist outside the mobile operator's network (i.e. fixed, internet and multimedia technologies etc.), and the support provided by that functionality for multimedia messaging.

Operator Specific Service: network-based and operator administered function being able to perform additional, operator defined, MMS services based on MMS capabilities for address translation and charging.

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

Short code: A string of alphanumeric characters which addresses a specific service of a Value Added Service Provider.

3.2 Abbreviations

For the purposes of this document the following abbreviations apply:

MM	Multimedia Message
MMS	Multimedia Message Service
SMS	Short Message Service
VASP	Value Added Services Provider

4 High level Requirements

The following list gives the high level requirements of the MMS. These are requirements which are independent of the user's perception of the service:

- **Forward compatible multimedia messaging**

Multimedia messaging mechanisms shall provide the capability to support current and evolving multimedia messaging by re-using existing standards as far as possible and proposing extensions (as necessary) to existing standards (i.e. the multimedia messaging service shall support the evolution of multimedia messaging technologies).

- **Consistent messaging**

Regardless of the message type / format, MMS shall be capable of supporting integration of all types of messaging (e.g. fax, SMS, Multimedia, voicemail, e-mail etc.) in a consistent manner.

- **Universal messaging access**

Within the capabilities of networks and terminals, the user shall be able to experience consistent access to the MMS regardless of the access point.

For example the user should be capable of accessing her multimedia messages through a number of different access points, which should include 3GPP systems, fixed networks, the Internet, etc.

- **Interoperability**

The MMS shall support a minimum set of functionality and message formats to ensure interoperability (e.g. deletion of MM, identified standardised message notification, message media types and message content formats).

The MMS shall provide a minimum set of supported formats to ensure full interoperability between different terminals and networks from the very beginning of service provisioning (e.g. JPEG for pictures, MP3 for audio, MPEG for motion pictures, etc.).

The MMS shall support version management by indicating a version number in the MM for interoperability purpose.

5 General Requirements

Network operators have many differing requirements, and MMS shall be supported in the network in a manner which allows network operators to consider different configurations depending on their network and commercial requirements. Thus, an identified set of functionalities and formats shall be standardised to ensure interoperability across networks and terminals to support MMS.

However, some network operators may wish to design and configure networks in different ways, and the subsequent requirements are identified to allow flexibility in how the MMS functionality is supported. For example in some networks the network operators may wish to implement the MMS functionality within the core network, whereas other may wish to place the MMS functionality on the periphery of the core network (e.g. a centralised network model instead of a distributed architecture). Further, some network operators may wish to support a limited set of MMS functionality, while others may require extensive and elaborate MMS support according to their business models (e.g. basic MMS instead of advanced MMS). Interoperability shall always be maintained within this flexible architecture.

The following sub-clauses use the term "*The MMS shall be able to support a request for ...*" and similar phrases to allow network operators to consider these different network models and business requirements, to permit flexible architectures and ensure MMS interoperability.

The following sub-clauses use the term "*This requirement shall be supported at the application layer in the terminal (and/or the network), and will not be further elaborated.*" and similar phrases to identify those service requirements that shall be supported by MMS but do not require standardisation.

The criterion for identifying these types of requirements is as follows:

If the requirement corresponds to an interaction and/or command between the terminal and the network applications from the same Service Provider (e.g. between the recipient's terminal resident messaging application and the recipient's network resident application. The same applies for the sender), then this requirement shall be supported by MMS but does not require standardisation.

The following general requirements shall be supported.

5.1 Multimedia message management

- **Terminal-sensitive MM management**

The MMS shall be able to support the capability for the terminal and network to take account of the capability of the user's terminal (e.g. deliver a MM / notification in a manner compatible with the terminals capability).

- **Terminal status-sensitive MM Management**

The MMS shall be able to support the capability of the network to take account of the availability, changes of the state of availability of the terminal (e.g. store messages if the recipient is not available).

- **MMS Control by the operator**

The MMS shall be able to support a request from the operator to enable/disable MM delivery and submission.

- **MMS Control by the user**

The MMS shall be able to support a request from the user to enable/disable MM delivery and submission.

This requirement shall be supported at the application layer in the terminal, and will not be further elaborated.

- **Storage of MMS parameters**

The USIM shall be able to store the following types of MMS related data:

- i) a number of sets of issuer configuration information to allow access to MMS services.

At least one of these sets of configuration information should be stored on the USIM by the issuer of the USIM.

The first issuer configuration information set is denoted as the default configuration set.

This configuration information shall only be configurable by the issuer of the USIM.

- ii) a number of sets of user configuration information to allow access to MMS services.

If more than one set of configuration information is present, it shall be possible for the user to select which set is used. If the user has not selected any of the configuration information sets, then the default set in the active USIM is used.

- iii) MMS notifications

- iv) MMS user preferences

A terminal using a USIM [7] or a SIM [8] with these MMS parameters, shall by default use them and the related preferred bearer, to access to the MMS services.

NOTE 1: Terminal support of SIM and USIM in general is specified in 3GPP TS 22.101[1].

- **Personalise multimedia messaging**

The MMS shall be able to support a request by the user to manage the Service Preferences of his User Service Profile related to this MMS [6](e.g. customise his MM environment within the capabilities of the terminal, network and MM application. This could be unconditional or conditional e.g. depending on roaming conditions or operator restrictions).

- **MM creation**

The MMS shall be able to support the request to create a MM by the user or an application.

This requirement shall be supported at the application layer in the terminal, and will not be further elaborated.

- **MM Time Stamping**

The MMS shall be able to support the request to include a reliable time value in an MM, a notification and an acknowledgement as appropriate.

- **Multiple Media**

Multimedia messages may be composed of either a single medium (e.g. voice) or multi-media (e.g. Voice and video). The MMS shall be able to support a request for media synchronisation / sequencing.

- **Media Type Conversion**

The MMS shall be able to support a request to convert between media types (e.g. Fax to image). The MMS shall be able to support an indication from a VASP that VASP originated content of an MM should not be converted or changed by the MMS service provider before it is delivered to the recipient.

This requirement shall be supported at the application layer in the network, and will not be further elaborated.

- **Media Format Conversion**

The MMS shall be able to support a request by the user or the application to convert between MM media formats (e.g. JPEG to GIF).

This requirement shall be supported at the application layer in the terminal and/or in the network, and will not be further elaborated.

- **Message forwarding**

The MMS shall be able to support a request to forward multimedia messages or multimedia message elements without having to first download the MM to the terminal. The MMS shall provide a mechanism to prevent an MM forwarding loop (e.g. MMs are setup to be automatically forwarded from User A to B, then from B to C and from C back to A. Users A, B, and C are unaware that they have setup this undesirable situation).

- **Storage of Multi-Media Messages**

The MMS shall be able to support a request for multimedia messages or message elements to be stored until delivered to the recipient's terminal, until they expire, or until they are deleted by the user (unless configured differently). The MMS shall be able to support a request to store and manage all MMs in a network based repository rather than on the mobile terminal.

When the USIM supports MMs storage, it shall be possible for the MMS client to store and retrieve MMs or elements of MMs in the USIM.

NOTE 2: There is no requirement for the MMS to be responsible for the processing/presentation of the MM message, after it has been delivered to the terminal.

- **Prioritisation of Messages**

The MMS shall be able to support a request for MM prioritisation. The prioritisation is passed to the recipient(s) of the message as an indication of the importance the sender places on the message. MM prioritisation is not acted upon by the network.

- **Message qualification**

The MMS shall be able to support a request for MM qualification (e.g. subject) for the purpose of advanced user experience and awareness.

- **Screening of Messages**

The MMS shall be able to support a request for MM screening subject to the capabilities of the network (e.g. automatically delete "junk mail", anonymous messages without delivery to the recipient's terminal).

This requirement shall be supported at the application layer in the terminal and/or in the network, and will not be further elaborated.

- **Validity Period**

The MMS shall be able to support a request by the originator of a message to define validity periods (earliest and latest desired time) for message delivery (e.g. if a message can not be delivered within a certain time it will be automatically deleted). The MMS service provider shall be able to set the MAXIMUM allowable validity period for any message.

- **Multimedia Message Processing by a VASP**

The MMS shall be able to support a request for messages to be processed by a VASP. An example of such processing may be where an MM is sent to a VASP before delivery to the recipient so that the VASP can add multimedia element(s) to the original message.