Technical Specification Group Services and System Aspects *TSGS#14(01)0695*
Meeting #14, Kyoto, Japan, 17-20 December 2001

Source: **TSG-SA WG4**

Title: 3GPP TS 26.140 version 1.0.0 "TSG-SA4 PSM SWG internal working Draft Multimedia Messaging Service (MMS) Media formats and codecs (Release 5)

Agenda Item: **7.4.3**

Presentation of Specification to TSG SA Plenary

Presentation to:	**TSG SA Meeting #14**
Document for presentation:	**TS 26.140, Version 1.0.0**
Presented for:	**Information**

Abstract of document:

The present document specifies the media types, formats and codecs for the MMS within the 3GPP system. The scope of the present document extends to codecs for speech, audio, video, still images, bitmap graphics, and other media in general, as well as scene description, multimedia integration and synchronization schemes.

Changes since last presentation:

None, it is version 1.0.0, presented for the first time to TSG SA Plenary.

Outstanding Issues:

None.

Contentious Issues:

None.

3GPP TS 26.140 V1.0.0 (2001-12)

Technical Specification

3rd Generation Partnership Project;
Technical Specification Group Services and System Aspects;
Multimedia Messaging Service (MMS);
Media formats and codecs
(Release 5)
TSG-SA4 PSM SWG internal working draft

Keywords
Multimedia Messaging Service, MMS, protocol, codec

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Contents

Foreword

Editor's Note: Information for the reader

This document is the first draft of the "MMS codecs and formats" specification.

The issue of codecs ad for MMS services has been addressed initially in specification 23.140, owned by the 3GPP T2 group. During the TSG-T WG2 group meeting in Edinburgh in September 2001, the TSG-T WG2 group sent a Liaison statement (S4-AHP040) to the 3GPP SA WG4 group, requesting that the responsibility for the specification of codecs and formats to be used in MMS services is transferred to SA WG4 group starting with Release 5.

After the SA WG4 group agreed to take over this responsibility, and this document is the result of such commitment.

For the sake of interoperability and alignment it is important there is no contradiction between the recommendations made in this specification and in the 26.234 specification [16] (End-to-end transparent streaming Service (PSS); Protocols and Codecs).

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

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

Version x.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 or greater 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;

The 3GPP Multimedia messaging service (MMS) specification consists of three 3G TSs; 3GPP TS 22.140 , 3GPP TS 23.140 and the present document. The TS 3GPP TS 22.140 [28]provides a 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. The TS 23.140 [29] identifies the functional capabilities and information flows needed to support the MMS. The present document provides the details of media types, formats and codecs used by the MMSservice

Introduction

1 Scope

The present document specifies the media types, formats and codecs for the MMS within the 3GPP system. The scope of the present document extends to codecs for speech, audio, video, still images, bitmap graphics, and other media in general, as well as scene description, multimedia integration and synchronization schemes.

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 TR 21.905: "Vocabulary for 3GPP Specifications".

[2] IETF; Internet draft: "RTP payload format and file storage format for AMR and AMR-WB audio"; URL: http://search.ietf.org/internet-drafts/draft-ietf-avt-rtp-amr-10.txt.

NOTE: Reference [1] is work in progress in IETF/AVT working group and to be replaced by the appropriate RFC number once the Internet draft is approved within the IETF (IESG approval is scheduled to spring/sumer 2001).

[3] The Unicode Consortium: "The Unicode Standard", Version 2.0, Addison-Wesley Developers Press, 1996.URL: http://www.unicode.org/.

[4] ANSI X3.4, 1986: "Information Systems; Coded Character Set 7 Bit; American National Standard Code for Information Interchange".

[5] ISO/IEC 8859-1:1998: "Information Processing; 8-bit Single-Byte Coded Graphic Character Sets; Part 1: Latin Alphabet No. 1".

[6] IETF; RFC 2279: "UTF-8, A Transformation format of ISO 10646", URL: http://www.ietf.org/rfc/rfc2279.txt.

[7] 3GPP TS 24.011: "Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface".

[8] 3GPP TS 26.090: "Mandatory Speech Codec speech processing functions; AMR Speech Codec Transcoding Functions".

[9] ITU-T Recommendation T.81 | ISO/IEC 10918-1:1994: "Information technology; Digital compression and coding of continuous-tone still images: Requirements and guidelines".

[10] "JPEG File Interchange Format", Version 1.02, September 1, 1992

[11] ITU-T Recommendation H.263: "Video coding for low bit rate communication".

[12] ITU-T Recommendation H.263 (annex X): "Annex X, Profiles and levels definition".

[13] ISO/IEC 14496-2 (1999): "Information technology - Coding of audio-visual objects - Part 2: Visual".

[14] ISO/IEC 14496-2:1999/FDAM4, ISO/IEC JTC1/SC 29/WG11 N3904, Pisa, January, 2001

[15] ITU-T Recommendation H.263 (1998): "Video coding for low bit rate communication".

[16] 3GPP TS 26.234: "End-to-end transparent streaming Service (PSS); Protocols and Codecs".

[17] ISO/IEC 11172-3:1993: "Information technology; Coding of moving pictures and associated audio for digital storage media at up to about 1,5 Mbit/s; Part 3: Audio" (MP3, MPEG1-Audio, MPEG2-Audio)

[18] MIDI Manufacturers Association Incorporated, Los Angeles, California: “MIDI Sample Dump Standard (SDS)”; URL: http://www.midi.org.

[19] ISO/IEC 14496-2:1999/FDAM4, ISO/IEC JTC1/SC 29/WG11 N3904, Pisa, January, 2001

[20] CompuServe Incorporated: "GIF Graphics Interchange Format: A Standard defining a mechanism for the storage and transmission of raster-based graphics information", Columbus, OH, USA, 1987

[21] Compuserve Incorporated, Columbus, Ohio (1990): "Graphics Interchange Format (Version 89a)".

[22] IETF RFC 2083: "PNG (Portable Networks Graphics) Specification version 1.0 ", T. Boutell, et. al., March 1997

[23] ISO/IEC 14496-2:1999: "Information technology; Coding of audio-visual objects; Part 2: Visual".

[24] ITU-T Recommendation H.263 (1998): "Video coding for low bit rate communication - Annex X, Profiles and Levels Definition"

[25] ISO/IEC TR 13818-5:1997/Amd 1:1999 "Advanced Audio Coding (AAC)"

[26] W3C Working Draft Recommendation: "Scalable Vector Graphics (SVG)", http://www.w3.org/TR/SVG.

[27] W3C Working Draft Recommendation: “Mobile SVG Profiles: SVG Tiny and SVG Basic”, http://www.w3.org/TR/SVGMobile

[28] 3GPP 22.140: Multimedia Messaging Service, Stage 1: Service Aspects

[29] 3GPP 23.140: Multimedia Messaging Service, Stage 2: Functional Description

[30] W3C Recommendation: "Synchronized Multimedia Integration Language (SMIL 2.0)", http://www.w3.org/TR/2001/REC-smil20-20010807/, August 2001

[31] RFC 2046 Multipurpose Internet Mail extension (MIME) Part Two: Media Types, IETF.

[32] 3GPP TS 26.071: "Mandatory Speech Codec speech processing functions; AMR Speech Codec; General description".

[33] 3GPP TS 26.171: "AMR speech codec, wideband; General description".

[34] ISO/IEC 14496-3 (1999): "Information technology - Coding of audio-visual objects - Part 3: Audio".

[35] Scalable Polyphony MIDI Specification, MIDI Manufacturers Association (2001)

[36] Scalable Polyphony MIDI Device 5-to-24 Note Profile for 3GPP, MIDI Manufacturers Association (2001).

3 Definitions and abbreviations

3.1 Definitions

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

continuous media: media with an inherent notion of time, in the present document speech, audio and video

discrete media: media that itself does not contain an element of time, in the present document all media not defined as continuous media

scene description: description of the spatial layout and temporal behaviour of a presentation, it can also contain hyperlinks

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905[1]and the following apply.

AAC	Advanced Audio Coding
CC/PP	Composite Capability / Preference Profiles
GIF	Graphics Interchange Format
H.263	ITU-T video codec
ITU-T	International Telecommunications Union – Telecommunications
JFIF	JPEG File Interchange Format
JPEG	Joint Picture Expert Group
MIME	Multipurpose Internet Mail Extensions
MM	Multimedia Message
MMS	Multimedia Messaging Service
MPEG	Motion Picture Expert Group
MP4	MPEG-4 file format
PSS	Packet-switched Streaming Service
UTF-8	Unicode Transformation Format (the 8-bit form)

4 Media formats

Multiple media elements shall be combined into a composite single MM using MIME multipart format as defined in RFC 2046 [31]The media type of a single MM element shall be identified by its appropriate MIME type whereas the media format shall be indicated by its appropriate MIME subtype.

In order to guarantee a minimum support and compatibility between multimedia messaging capable terminals, MMS User Agent supporting specific media types shall comply with the following selection of media formats:

4.1 Text

[Editor's note: the Liaison statement S4-AHP040 excluded text from the transfer of reasponsibilities. If this is confirmed, this section will need to be removed]

Plain text. Any character encoding (charset) that contains a subset of the logical characters in Unicode [3]shall be used (e.g. US-ASCII [4], ISO-8859-1[5], UTF-8[6], Shift_JIS, etc.).

Unrecognised subtypes of "text" shall be treated as subtype "plain" as long as the MIME implementation knows how to handle the charset. Any other unrecognised subtype and unrecognised charset shall be treated as "application/octet - stream".

In order to guarantee SMS interoperability, SMS 3GPP TS 24.011 [7]RP-DATA RPDU encapsulation defined in clause 7.3.1 shall be supported. MIME type "application/x-sms" shall be used for this purpose.

NOTE: SMS MIME type shall be used as soon as the MIME registration has been completed.

4.2 Speech

The AMR codec shall be supported for narrow-band speech[32]The AMR wideband speech codec [33]shall be supported when wideband speech working at 16 kHz sampling frequency is supported. When using AMR speech media types alone, the file format specified in clauses 6.2 and 6.3 of [2] shall be used.

4.3 Audio

MPEG-4 AAC Low Complexity object type [34]should be supported. The maximum sampling rate to be supported by the decoder is 48 kHz. The channel configurations to be supported are mono (1/0) and stereo (2/0). In addition, the MPEG-4 AAC Long Term Prediction object type may be supported.

4.4 Synthetic audio

The Scalable Polyphony MIDI (SP-MIDI) content format defined in Scalable Polyphony MIDI Specification [ ] and the device requirements defined in Scalable Polyphony MIDI Device 5-to-24 Note Profile for 3GPP [ ] should be supported.

Editor's Note: The working assumption for the new media type synthetic audio in Release 5 is as stated above. Further clarifications are needed for SP-MIDI MIME type, transport of synthetic audio (e.g. file format details), possible capability exchange attribute and the additional technical requirements introduced in contribution S4-010625 about the profile. The question whether SP-MIDI should be mandatory ("should" replaced by "shall") is under discussion in the PSM SWG. The proposals in contributions S4-010612 and S4-010625 have conflicting details but should both be considered as the starting point for further discussion. The references [41] and [42] can be found in S4-010612.

4.5 Still Image

ISO/IEC JPEG [9]together with JFIF [10]shall be supported. The support for ISO/IEC JPEG only apply to the following two modes:

- Mandatory: baseline DCT, non-differential, Huffman coding, as defined in table B.1, symbol 'SOF0' in [9];
- Optional: progressive DCT, non-differential, Huffman coding, as defined in table B.1, symbol 'SOF2' [9].

4.6 Bitmap graphics

The following bitmap graphics formats should be supported:

- GIF87a [20];
- GIF89a, [21];
- PNG, [22].

4.7 Video

For terminals supporting media type video, ITU-T Recommendation H.263 [11] profile 0 level 10 shall be supported. This is the mandatory video codec for the MMS. In addition, MMS should support:

- H.263 [12]Profile 3 Level 10;
- MPEG-4 Visual Simple Profile Level 0, [13]and [14].

These two video codecs are optional to implement.

An optional video buffer model is given in Annex G document [16].

NOTE: ITU-T Recommendation H.263 [11]baseline has been mandated to ensure that video-enabled MMS support a minimum baseline video capability and interoperability can be guaranteed (an H.263 baseline bitstream can be decoded by both H.263 and MPEG-4 decoders). It also provides a simple upgrade path for mandating more advanced codecs in the future (from both the ITU-T and ISO MPEG).

4.8 Vector graphics

For terminals supporting media type “2D vector graphics” the Scalable Vector Graphics (SVG) [26]should be supported.

[Editor’s Note: The selection of SVG is the current working assumption of the SA WG4 group. The question whether SVG should be mandatory ("should" replaced by "shall") is under discussion in the 3GPP SA4 group. The particular profile of SVG to support is also under discussion, e.g. SVG-Basic or SVG-Tiny [27] .]

4.9 File Format for dynamic media

To ensure interoperability for the transport of video and associated speech/audio in an MM, the MP4 file format shall be supported. The usage of the MP4 file format shall follow the technical specifications and the implementation guidelines specified in 26.234 [16].

NOTE 1: When using AMR speech media types alone, the file format specified in clauses 6.2 and 6.3 of [2]shall be used.

NOTE 2: 3GPP TS 26.234 [16]specifies a mechanism for the registration of AMR and H.263 codestreams to be included in MP4 files.

4.10 Media synchronization and presentation format

The mandatory format for media synchronization and scene description of multimedia messaging is SMIL.

The 3GPP MMS uses a subset of SMIL 2.0 [31] as format of the scene description. MMS clients and servers with support for scene descriptions shall support the 3GPP PSS4 SMIL Language Profile defined in clause 8.2 of document 26.234 [16]This profile is a subset of the SMIL 2.0 Language Profile[30]but a superset of the SMIL 2.0 Basic Language Profile. Document 26.234 also includes an informative Annex B that provides guidelines for SMIL content authors.

Annex H (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
2001-12	14	SP-010695			Version 1.0.0 presented for information		1.0.0

Change history for TSG-SA4 PSM SWG internal working draft

Change history								
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New	Resp
2001-11-22				0.0.1	First draft for Release 5 after PSM AhG Helsinki.	---	---	RC
2001-11-29				0.0.2	Updated with comments from BGW *et al.*			RC/BGW
2001-12-06				0.0.3	Major revision and alignment with PSS			SA4
2001-12-07				0.0.4	Approved in SA4 plenary			SA4 grp.
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