



MMS Conformance Document

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1. Scope

The scope of this document is in accordance with the charters of OMA IOP, OMA MMSG and OMA IOP MM Groups. The MMS conformance document defines the minimum set of requirements and guidelines for end-to-end interoperability of MMS handsets and servers. It further serves as a baseline for MMS interoperability testing. The test environment and the test cases that need to be created for MMS interoperability testing will be based on the definition from this document. Thus the scope of this document is is, to serve as the fundament for MMS end-to-end interoperability testing. Another significant intent of this document is also to be used as a base for discussions between vendors, operators and value added service providers to explore any such requirements that might not be clearly defined in the specifications of 3GPP, 3GPP2 or OMA with respect to interoperability.

2. References

2.1. Normative References

CP0045	“MMS Media Formats and Codecs”, 3rd Generation Partnership Project 2, C.P0045, URI: http://www.3gpp2.org/ (DRAFT)
IOPProc	“OMA Interoperability Policy and Process”, Open Mobile Alliance™, OMA-IOP-Process-v1_0. URL: http://www.openmobilealliance.org
ISO8859-1	“8-bit single byte coded graphic character sets, Part 1: Latin Alphabet No. 1.”, ISO/IEC 8859-1:1998(E).
MMSCONF	“MMS Conformance Document, Version 2.0.0”, Open Mobile Alliance™, OMA-IOP-MMSCONF-2_0_0. URI: http://www.openmobilealliance.org/
MMSCTR	“MMS Client Transactions”, OMA-MMS-CTR-v1_2, Open Mobile Alliance™. URL: http://www.openmobilealliance.org .
MMSENC	“OMA MMS Encapsulation Protocol”, Open Mobile Alliance™, OMA-MMS-ENC-v1.2. URI: http://www.openmobilealliance.org/
OMADRM	“Digital Rights Management version 1.0”, Open Mobile Alliance™, OMA-DRM-v1_0. URI: http://www.openmobilealliance.com/documents.asp
PIM	“Personal Data Interchange”, The Internet Mail Consortium, URL: http://www.imc.org/pdi/
RFC2387	“The MIME Multipart/Related Content-type”, IETF, RFC 2387, URL: http://www.ietf.org/rfc/rfc2387.txt
RFC2557	“MIME Encapsulation of Aggregate Documents, such as HTML (MHTML)”, IETF, RFC 2557, URL: http://www.ietf.org/rfc/rfc2557.txt
RFC2821	“Simple Mail Transfer Protocol”, IETF, RFC 2821, URL: http://www.ietf.org/rfc/rfc2821.txt
SMIL	“Synchronized Multimedia Integration Language (SMIL 2.0)”, W3C Recommendation 07 August 2001, URL: http://www.w3.org/TR/smil20/
TS23140	“Multimedia Messaging Service: Functional description; Stage 2”, 3rd Generation Partnership Project, TS 23.140 Release 5. URI: http://www.3gpp.org/ftp/Specs/
TS26140	“Multimedia Messaging Service; Media formats and codecs”, 3rd Generation Partnership Project, TS 26.140 Release 5. URI: http://www.3gpp.org/ftp/Specs/
UAProf	“User Agent Profile version 2.0”, Open Mobile Alliance™, URI: http://www.openmobilealliance.org/ .
Unicode	“The Unicode Standard Version 3.0”, The Unicode Consortium, Addison-Wesley, Reading (MA), January 2000. ISBN 0-201-61633-5.
WAPWSP	“OMA Wireless Session Protocol”, Open Mobile Alliance™, WAP-203-WSP-20000504-a. URI: http://www.openmobilealliance.org/ .
WAPWTP	“OMA Wireless Transport Protocol”, Open Mobile Alliance™, OMA-WAP-224-WTP-20010710-a. URI: http://www.openmobilealliance.org/
XS0016200	“Multimedia Messaging Service Stage 2, Service Description”, 3 rd Generation Partnership Project 2, X.S0016-200, URI: http://www.3gpp2.org/

2.2. Informative References

RFC2046	“MIME Part Two: Media Types”, IETF, RFC 2046, URL: http://www.ietf.org/rfc/rfc2046.txt
RFC2781	“UTF-16, an encoding of ISO 10646”, IETF, RFC 2781, URL: http://www.ietf.org/rfc/rfc2781.txt

RFC2822	“Internet Message Format”, IETF, RFC 2822, URL: http://www.ietf.org/rfc/rfc2046.txt
SR0064	“Multimedia Messaging Service Stage 1, Requirements”, 3 rd Generation Partnership Project 2, S.R0064, URI: http://www.3gpp2.org/Public_html/specs/S.R0064-0_v1.0.pdf
TS22140	“Multimedia Messaging Service; Stage 1, Requirements”, 3rd Generation Partnership Project, TS 22.140 Release 5. URI: http://www.3gpp.org/ftp/Specs/
WAPARCH	“Wireless Application Protocol Architecture”, Open Mobile Alliance™, OMA-WAP-210-WAPArch-20010712-a, URI: http://www.openmobilealliance.org/
XS0016000A	“MMS Specification Overview Multimedia Messaging System Specification”, 3 rd Generation Partnership Project 2, X.S0016.000-A v1.0, URI: http://www.3gpp2.org/Public_html/specs/X.S0016-000-A.pdf
XS0016310	“MMS MM1 Stage 3 Using OMA/WAP”, 3rd Generation Partnership Project 2, X.S0016.310 v1.0, URI: http://www.3gpp2.org/Public_html/specs/X.S0016-310.pdf

3. Terminology and Conventions

3.1. Conventions

The key words “MUST”, “MUST NOT”, “REQUIRED”, “SHALL”, “SHALL NOT”, “SHOULD”, “SHOULD NOT”, “RECOMMENDED”, “MAY”, and “OPTIONAL” in this document are to be interpreted as described in [RFC2119].

All sections and appendixes, except “Scope” and “Introduction”, are normative, unless they are explicitly indicated to be informative.

3.2. Definitions

Creation - The action to create an MM, e.g., via the terminal MMI

Man-Machine Interface - The interface between terminal and user

MMS SMIL – A SMIL subset defined for MMS interoperability purposes in this document.

Multimedia Message Content Class (MM Content Class) - A Multimedia Message Content Class is a set of Multimedia Messages defined in terms of media types, size, media formats, presentation formats and applicable DRM mechanisms

Presentation - The presentation of the MM to the user as defined in [TS23140] or [XS0016200], e.g., via the terminal MMI.

Retrieval - The download of the MM as defined in [MMSCTR]

Submission - The sending of the MM to the MMS Relay/Server as defined in [MMSCTR]. This includes the case where the MM submitted had been earlier retrieved in the terminal

Message Size - The message size of an MM, as defined for the MM Content Class concept (section 7), SHALL be determined as defined in [TS23140] or [XS0016200].

Kilobyte – One kilobyte equals 1024 bytes.

3.3. Abbreviations

AMR	Adaptive Multi Rate
BMP	Bit Map
DRM	Digital Rights Management
GIF	Graphics Interchange Format
GIF 87a/89a	GIF with animations
MIDI	Musical Instrument Digital Interface
MIME	Multipurpose Internet Mail Extension
MM	Multimedia Message
MMI	Man-Machine Interface
MMS	Multimedia Messaging Service
MMSIOP	MMS Interoperability between MMS handsets and MMS Servers

MSISDN	Mobile Station Integrated Services Digital Network
OMA	Open Mobile Alliance
PIM	Personal Information Management
QCIF	Quarter Common Intermediate Format
SMIL	Synchronized Multimedia Integration Language
UI	User Interface
UTF-8	Unicode Transformation Format
WAP	Wireless Application Protocol
WBMP	Wireless Bit Map

4. Introduction

This document is an interoperability document, aiming at identifying the issues that need to be addressed in order to ensure interoperability of MMS functionalities between terminals produced by different manufacturers. In particular, this document focuses on the management of the content of multimedia messages, addressing in particular the coding and the presentation of multimedia messages.

In order to achieve interoperability, a minimum set of requirements needs to be defined at four levels:

- Content of the message
- Allowed elements and attributes of the presentation language.
- Media content format.
- Lower level capabilities

4.1. Usage of SMIL

The MMS messages compliant with this interoperability document will use the Synchronized multimedia Integration Language (SMIL) as the presentation language. [SMIL]

In this first phase the limited displays of mobile terminals may not allow us to take full advantage of the presentation capabilities offered by SMIL 2.0 or even by its simplest profile "SMIL Basic" (see Sec. 8). However, the messages that are produced should be valid and complete SMIL messages, and should be displayed properly on non-mobile terminals (e.g., PCs).

In this document, we identify a very limited subset of SMIL elements ("MMS SMIL") which are needed to achieve the minimal presentation capabilities required by the first phase of the Multimedia Messaging Service MMS (see Sec. 8).

This proposal does not intend to constitute a conformance statement for the "MMS SMIL" subset. The interoperability is ensured by compliance to the guidelines about the overall content and organization of the message. No assumption is made about the capability of MMS clients to handle correctly *any* SMIL presentation that uses "MMS SMIL" elements.

4.2. Organization of the document

Section 5 describes the overall structure of multimedia messages. Sections 6 and 7 defines the concepts of MM Content Domains and MM Content Classes. The means to format an MM is described in section 8. Content adaptation between different MM Content Classes and which requirements that put on MMS are described in 9. Section 10 describes conformance requirements on lower layers and technical requirements in the MM. In section 11 it is defined what an MMS Client has to follow to be compliant to a particular MM Content Class. Section 12 contains user interface guidelines in the form of creation modes.

5. Structure of Multimedia Messages

5.1. Introduction

This section defines the limitations on the appearance of multimedia messages that will ensure interoperability among different terminals.

5.2. Structure

The multimedia messages that will be exchanged during the first phase of MMS SHALL consist of a "slide show", i.e. a succession of pages, each one containing at most two regions. One of the regions contains text and the other contains either an image or a video clip.

A simple scheme of the organization of a multimedia message is depicted in Figure 1. The discussion about the coding formats to be used for the images and the text will be presented in section 7

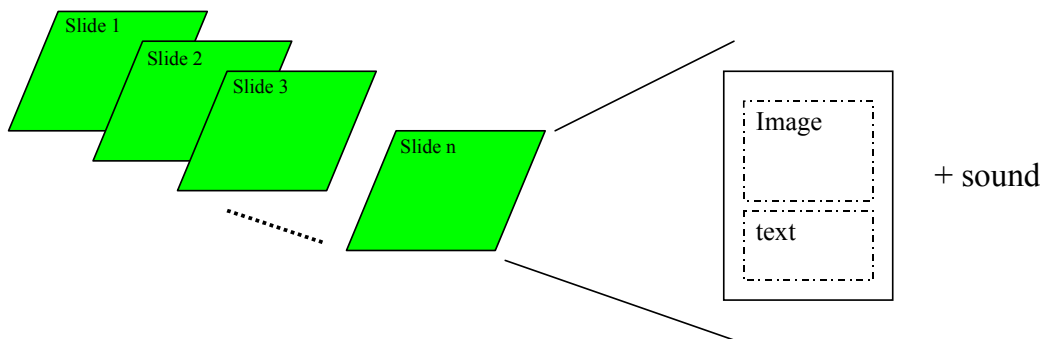


Figure 1: Structure of a multimedia message

Each multimedia message SHALL be represented by one SMIL presentation. All the slides in the presentation SHALL have the same layout.

6. MM Content Domains

The **Core MM Content Domain** SHALL include multimedia messages containing content that is compliant with a subset of the media defined in 3GPP or 3GPP2 standards (specifications [TS26.140] and [CP0045] respectively). This subset SHALL consist of several MM Content Classes defined for the domain. Each multimedia message within the Core MM Content Domain MUST be compliant with one of the MM Content Classes in the domain. By definition, each MM belonging to the Core MM Content Domain SHALL also belong to the Standard MM Content Domain. Within the Core MM Content Domain, the maximum size of the MMs SHALL be restricted to the defined values for the MM Content Classes.

The **Standard MM Content Domain** SHALL include multimedia messages with content that are compliant with the 3GPP standard [TS 26.140] or the 3GPP2 standard [CP0045]. This document does not specify MM Content Classes for the Standard MM Content Domain. Consequently, the maximum size of the MMs SHALL be unlimited in Standard MM Content Domain.

The **Unclassified MM Content Domain** SHALL include multimedia messages with content that is not compliant or is only partially compliant with the 3GPP or 3GPP2 standards. They MAY comply with other specifications, for instance IETF or W3C specifications. Within the Unclassified MM Content Domain, the maximum size of the MMs SHALL be unlimited.

7. MM Content Classes

MM Content Classes are used to define the Core MM Content domain, see Table 1 and section 7.1.

Table 1, section 7.1 and its subsections are normative.

MM Content Class	Size (kB)	Text	Still Image	Bitmap	Video	Speech Audio	Synth. Audio	PIM	DRM	Presentation
Text	≤30	US-ASCII, UTF-8, UTF-16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	MMS SMIL
Image Basic	≤30	US-ASCII, UTF-8, UTF-16	Baseline JPEG	GIF87a, GIF89a, WBMP	N/A	AMR-NB or 13K	N/A	vCard 2.1, vCalendar 1.0	N/A	MMS SMIL
Image Rich	≤100	US-ASCII, UTF-8, UTF-16	Baseline JPEG	GIF87a, GIF89a, WBMP	N/A	AMR-NB or 13K	SP-MIDI	vCard 2.1, vCalendar 1.0	Fwd-Lock	MMS SMIL
Video Basic	≤100	US-ASCII, UTF-8, UTF-16	Baseline JPEG	GIF87a, GIF89a, WBMP	For 3GPP: H.263 & AMR (.3GP) for 3GPP2: [H.263 and MPEG4] & 13k and/or AMR (.3G2)	AMR-NB or 13K	SP-MIDI	vCard 2.1, vCalendar 1.0	Fwd-Lock	MMS SMIL with video support
Video Rich	≤300	US-ASCII, UTF-8, UTF-16	Baseline JPEG	GIF87a, GIF89a, WBMP	For 3GPP: H.263 & AMR (.3GP) for 3GPP2: [H.263 and MPEG4] & 13k and/or AMR (.3G2)	AMR-NB or 13K	SP-MIDI	vCard 2.1, vCalendar 1.0	Fwd-Lock	MMS SMIL with video support

Table 1, MM Content Classes

Note: The purpose of MM Content Class Text is to enhance technical interoperability on text-only multimedia messaging.

For detailed information and references to media formats text, still image, bitmap, video, speech audio and synthetic audio which are mentioned in Table 1, please see [TS26140] or [CP0045]. For PIM standards, please see [PIM]. For DRM, please see [OMADRM]. For presentation, please see Section 8 of this specification.

The MM Content Classes defined in Table 1 are hierarchical, but this does not establish a principle for additional classes.

An MMS Client conforming to this document SHALL support MM Content Class Text and at least one other MM Content Class. For more details about conformance please refer to chapter 11.

An MM specified in [MMSCONF] belongs to either MM Content Class Text or MM Content Class Image Basic. In [MMSCONF], support of the speech codecs described in Table 1, SMIL and PIM objects are conditional (respectively under condition of support of audio, presentation part of the multimedia message and PIM). On the other hand, an MMS Client supporting MM Content Class Image Basic has to support presentation of speech codec attachments described in Table 1, SMIL as well as PIM objects in the limits as defined in this section.

7.1. Refinement of MM Content Classes

This section gives further details of the MM Content Classes that are outlined in Table 1.

7.1.1. Image Resolution

The maximum image resolutions for which interoperability is guaranteed are defined for the MM Content Classes Image Basic, Image Rich, Video Basic and Video Rich below. The receiving MMS Client MUST be able to receive, if necessary, downscale, and render the images with maximum resolution. The values are:

160*120 pixels for MM Content Class Image Basic

640*480 pixels for MM Content Classes Image Rich, Video Basic and Video Rich

7.1.2. PIM

The following PIM (Personal Information Management) [PIM] objects SHALL be supported as attachments to an MM.

vCard version 2.1 (mime-type: text/x-vCard)

vCalendar version 1.0 (mime-type: text/x-vCalendar)

7.1.3. Video

MMS Clients that are compliant to the MMS suite of specifications defined by 3GPP (e.g., [TS23140]) SHALL support H.263 Profile 0 level 10 video with AMR-NB audio as mentioned in Table 1 and referenced in [TS 26140].

MMS Clients that are compliant to the MMS suite of specifications defined by 3GPP2 (e.g., [XS0016200]) SHALL support both MPEG4 visual simple profile level 0 and H.263 profile 3 level 10 in addition to 13k and/or AMR-NB as mentioned in Table 1 and referenced in [CP0045].

If a slide contains a video element, separate audio elements (speech, synthetic audio or audio) SHALL NOT be part of the same slide. This is valid even if the video element does not contain any audio information.

7.1.4. DRM

Clients that support MM Content Classes with forward lock functionality SHALL support the OMA DRM forward lock functionality as defined in [OMADRM].

For more details about MMS and DRM see the informative Appendix A.

7.1.5. Message Size

Each MM Content Class defines a minimum supported message size, for the definition of message size see section 3.2.

From a terminal manufacturer's point of view this means that the terminal SHALL support receiving of multimedia messages of the minimum size to be conformant to a particular MM Content Class.

From a content provider's point of view this means that the maximum message size for which interoperability is guaranteed to a particular MM Content Class is the minimum supported message size of that MM Content Class.

For more details about conformance, see section 11.

7.1.6. Speech Audio

MMS Clients that are compliant to the MMS suite of specifications defined by 3GPP (e.g., [TS23140]) SHALL support AMR-NB as mentioned in Table 1 and referenced in [TS26140].

MMS Clients that are compliant to the MMS suite of specifications defined by 3GPP2 (e.g., [XS0016200]) SHALL support at least one of 13K or AMR-NB as mentioned in Table 1 and referenced in [CP0045].

7.1.7. Presentation

MMS SMIL is OPTIONAL in submission of MM Content Class Text. Support for presentation of MM Content Classes Text and Image Basic multimedia messages with MMS SMIL and without MMS SMIL SHALL both be mandatory.

MMS Clients that are compliant to the MMS suite of specifications defined by 3GPP (e.g., [TS23140]) SHALL support presentation by using MMS SMIL, for submission MMS SMIL SHALL be included in MMs that belong to the MM Core Content Domain but do not conform to MM Content Class Text.

7.1.8. Text

The SMIL part is encoded text and the character set shall be UTF-8 [Unicode] with lower half of ISO 8859-1 character set (us-ascii set).

The text parts (text/plain) of submitted MM SHALL support at least one of the following character encodings:

- us-ascii (IANA MIBenum 3)
- utf-8 (IANA MIBenum 106) [Unicode]

Character encoding utf-16 SHOULD NOT be used in "text/plain" media parts for submitted MM.

Note: Use of utf-16 within a "text/plain" media part may entail interoperability problems when the MM may be transported over the MMS_E (MM3 in 3GPP terminology), MMS_R (MM4 in 3GPP terminology) interfaces, or other transport protocols as detailed in [RFC2781].

MMS Clients SHALL support received MM with text parts (text/plain) encoded in us-ascii and utf-8.

MMS Clients that are compliant to the MMS suite of specifications defined by 3GPP (e.g., [TS23140]) SHALL support received MM with text parts (text/plain) encoded in utf-16 (IANA MIBenum 1015) with explicit Byte Order Mark (BOM) [Unicode].

A MMS Proxy-Relay that identifies a text/plain part encoded in utf-16 that is intended for transfer over MMS_E or MMS_R SHALL adapt the content to comply with the appropriate transport protocol.

In the text parts, the supported characters (glyphs) shall be at least those in [ISO8859-1].

8. Presentation Methods

SMIL is a presentation language, i.e. a SMIL page contains information about the appearance of different multimedia elements on a display. When SMIL is used to represent content on a PC screen, normally a window is opened whose size is defined by the layout element of the SMIL page to be displayed. In this way, the appearance of the SMIL page on the screen will reflect exactly the organization of the content as the author had created it.

When SMIL is used for the presentation of multimedia messages on mobile terminals, the size of the window is severely limited by the resolution and appearance of the terminal display. The layout of a multimedia message represents the content as created by the originator, but it is well possible that the original layout simply does not fit into the display of the receiving terminal. Therefore, SMIL exchange must be simple enough to ensure that -if the displays of the originator and receiver terminal are different- the content can still be displayed, possibly by changing the relative position of the different elements.

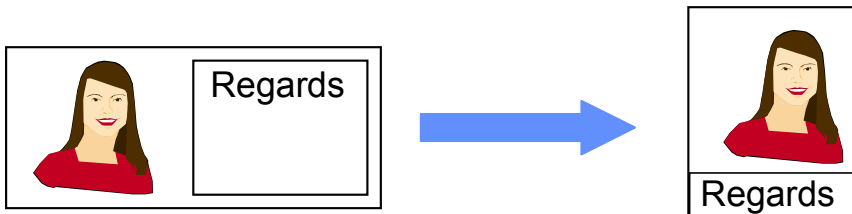


Figure 2: The same message needs to be reorganized for display on different displays.

Due to the limited processing power of the first generation of MMS-enabled devices, this adaptation process must be achieved without the need of complex content analysis and interpretation.

In order to achieve this goal, the layout of the outgoing message SHOULD reflect (in terms of size and orientation) the display characteristics of the originating terminal, and MUST always contain at most two regions one labeled as "**Text**", the other as "**Image**".

Region labeled as "**Text**" MUST contain only text media, whereas region labeled as "**Image**" MUST contain only Image or Video media.

If the receiving terminal can fit the SMIL layout in its screen as is, no change will be necessary. Otherwise, if the display of the receiving terminal does not allow the fitting of the layout as specified in the incoming message, the receiving MMS client MAY replace the layout section with a terminal-specific one in which the size and the position of the "**Text**" and "**Image**" regions are appropriately redefined.

The following example (Example 1) shows a simple multimedia message composed by three slides, described in the `<body>` part of the message. There are two different `<layout>` parts, one corresponding to the "**landscape**" orientation of the display, one to the "**portrait**" orientation.

```

<smil>
    <head>
        <meta name="title" content="mms" />
        <meta name="author" content="John Smith" />

        <layout> <! --This an "landscape" screen (2*qcif)-->
            <root-layout width="352" height="144"/>
            <region id="Image" width="176" height="144"
left="0" top="0" />
            <region id="Text" width="176" height="144" left="176" top
="0"/>
        </layout>

<!-- <layout> // This is a "portrait" screen -->
<!-- <root-layout width="176" height="216"/> -->
<!-- <region id="Image" width="176" height="144" left="0" top="0" /> -->
<!-- <region id="Text" width="176" height="72" left="0" top ="144"/> -->
<!-- </layout> -->

    </head>
    <body>
        <par dur = "8000ms">
            <img src = "FirstImage.jpg" region="Image" />
            <text src = "FirstText.txt" region="Text" />
            <audio src = "FirstSound.amr"/>
        </par>
        <par dur = "7000ms" >
            <img src = "SecondImage.jpg" region="Image" />
            <text src = "SecondText.txt" region="Text" />
            <audio src = "SecondSound.amr"/>
        </par>
        <par dur = "4000ms" >
            <img src = "ThirdImage.jpg" region="Image"/>
            <text src = "ThirdText.txt" region="Text"/>
            <audio src = "ThirdSound.amr"/>
        </par>
    </body>
</smil>

```

Example 1: A multimedia message containing three slides

Even if low end terminals might disregard completely the incoming **<layout>** section and replace it with a terminal specific one, it is important that all outgoing messages are constructed in such way that they will be displayed properly on non-mobile terminals (such as PCs), and on more capable mobile terminals when they are available in the future.

A slide that contains video SHALL contain only video and text components.

An example of slide containing video is given below in Example 2:

```
<smil>
  <head>
    <layout>
      <root-layout height="200" width="176" />
      <region id="Image" height="144" width="176" />
      <region id="Text" height="56" width="176" fit="scroll" />
    </layout>
  </head>
  <body>
    <par dur="2000ms">
      <video src="videoclipname.3gp" region="Image" />
      <text src="Text1.txt" region="Text" />
    </par>
    <par dur="2000ms">
      
      <text src="cid:Text2" region="Text" />
    </par>
  </body>
</smil>
```

Example 2, A multimedia message slide containing a slide with a video clip

8.1. MMS SMIL

This section presents a minimum selection of SMIL elements that allow the presentation of multimedia messages, as described in section 5. The elements of "MMS SMIL" are grouped by functionality, in analogy to the approach followed in the SMIL specification of W3C [SMIL].

8.1.1. Collections used in the tables

For simplicity, some of the elements and attributes that appear more commonly in the definitions are here grouped in "collections" that are referred to in the following tables. The grouping of MMS SMIL elements in this specification SHALL be according to Table 2.

Collection Name	Elements in Collection
MMSSchedule	par,
MMSMediaContent	text, img, audio, video, ref

Table 2, MMS SMIL grouping of elements

8.1.2. Elements used in MMS SMIL

8.1.2.1. Layout Modules

The Layout Modules provides a framework for spatial layout of visual components. MMS SMIL SHALL adopt parts of the SMIL 2.0 BasicLayout module as shown in Table 3.

Elements	Attributes	Content Model
Layout		region, root-layout
Region	left, top, height, width, fit, id	EMPTY
root-layout	width, height	EMPTY

Table 3, The MMS SMIL layout module

Default dimensions of the root-layout are the dimensions of terminal display area. Sizes of regions are calculated as is SMIL BasicLayout.

The dimensions of the regions inside the **root-layout** can be expressed in absolute terms (i.e. in pixels) or in percentages relative to the dimensions of the **root-layout**. For the sake of clarity, mixed absolute/relative notations SHOULD be avoided.

8.1.2.2. Media Object Modules

The Media Object Modules provide a framework for declaring media, which constitute the contents of a SMIL presentation. MMS SMIL includes parts of the SMIL BasicMedia module. The **begin** and **end** attributes belong to the BasicInlineTiming module. The media object modules of MMS SMIL SHALL be defined according to Table 4.

Elements	Attributes	Content Model
Text	src, region, alt, begin, end, dur	EMPTY
Img	src, region, alt, begin, end, dur	EMPTY
Audio	src, alt, begin, end, dur	EMPTY
Video	src, region, alt, begin, end, dur	EMPTY
ref,	src, region, alt, begin, end, dur	EMPTY

Table 4, The MMS SMIL media object modules

The media type referred to by **src** MUST match that of the element to which it refers. In other words expressions like ****, although permitted by SMIL, are not allowed in SMIL MMS. **img** elements can only refer to images, **txt** to text, and **video** to video media.

According to the rendering capabilities of the receiving terminals, the timing attributes **begin** and **end** associated to single media elements MAY be neglected or overridden by user control.

The Video tag SHALL be present only in multimedia messages conforming to MM Content Classes Video Basic and/or Video Rich.

8.1.2.3. Structure Modules

The Structure Modules describe the structure of the SMIL document. The structure modules of MMS SMIL SHALL be defined according to the parts of the SMIL Structure module listed in Table 5.

Elements	Attributes	Content Model
Smil		head, body
Head		layout
Body		MMSSchedule

Table 5, The MMS SMIL structure modules

8.1.2.4. Timing and Synchronization Modules

The Timing and Synchronization Module provides a framework for describing timing structure, timing control properties, and temporal relationships between elements.

The MMS SMIL includes the `par` element from the BasicTimeContainer module and the **begin**, **end**, **dur** attributes from the BasicInlineTiming module. The **begin**, **end** and **dur** attributes can be used in conjunction with the media object elements (see section 8.1.2.2). Some constraints are added in order to achieve a simple scheduled timeline. MMS SMIL SHALL NOT adopt nesting of time containers, as mentioned in the section of Timing and Synchronization Module, and only allows a single level of explicit time container elements.

An MMS message using MMS SMIL SHOULD have one or more (non nested) `<par>...</par>` time container(s) child(ren) of the `body` element, each one corresponding to one "slide" (see section 5.2). The structure element **body** is implicitly defined to be a `seq` time container in SMIL1.0 and SMIL Boston language profile, and MMS SMIL follows this definition. The succession of `<par> ... </par>` clauses will therefore achieve the "slide show" presentation effect.

The MMS SMIL timing and synchronization module SHALL be defined according to Table 6.

Elements	Attributes	Content Model
Par	dur	MMSMediaContent

Table 6, The MMS SMIL timing and synchronization module

The receiving terminal MAY override the duration of the single slides specified in the SMIL page, e.g., by controlling the passage to the next slide with phone key.

Time SHALL be expressed in integer milliseconds.

8.1.2.5. Meta information modules

This module contains elements and attributes allowing to describe SMIL documents. The MMS messages MAY contain meta-information, included in the message by means of the **meta** element.

The MMS terminal MUST be able to parse the **meta** element, but the processing of the **meta** element is OPTIONAL. The MMS SMIL meta information module SHALL be defined according to Table 7.

Elements	Attributes	Content Model
Meta	Name, content	EMPTY

Table 7, The MMS SMIL meta information module

9. Content Adaptation

9.1. Overview

The MM Content Classes defined for the Core MM Content Domain lay out basis for interoperable messaging with simple but mandatory requirements for multimedia support. However, the MM Content Classes provide seamless interoperability only within each content class, in other words, if the sender and recipient both support the same content class.

Although there are carefully considered multimedia support in each MM Content Class and relation of the supported multimedia formats between the classes, seamless interoperability cannot be guaranteed between the classes. There is no end-to-end capability negotiation with MMS that would let the sender to know the exact MMS support of the recipient.

The term content adaptation consists of a series of functions and definitions, which alter the content not supported by the recipient MMS Client to a content which is supported by the recipient yet preserving the original information content to the extent possible. These functions, called transcoding functions, may resize multimedia objects, perform conversion between media formats, perform conversion between media types and, ultimately, even drop off some unsupported media objects.

The purpose of content adaptation is to bridge the gaps between MM Content Classes in core MM Content Domain to minimise the requirement for sending MMS Client to know the capabilities of the recipient MMS Client. The content adaptation is divided into two categories, minor adaptation and major adaptation.

“**Minor adaptation**” refers to transcoding functions, which mainly adapt the message size, image resolution, sound and video quality to match the capabilities of the receiving MMS Client while preserving the information content of the multimedia message. Minor adaptation does not in general contain removal of media content or media type conversions. Adaptations between media formats are considered minor if end-user perceives no drastic loss of quality or loss of content.

“**Major adaptation**” refers to transcoding functions, which perform more drastic message size, image resolution, sound and video quality adaptations which generally result to loss of information content. Major adaptation may include removal of media content and media type conversions. Adaptations between media formats are considered major if end-user perceives drastic loss of quality or content.

In this document, the media aspects of content adaptation are discussed. The related message flows are discussed in [MMSCTR].

9.2. Transcoding Policy between MM Content Classes

The MM Content Classes in core MM content domain do not provide seamless interoperability, since different classes have different requirements for media type support. Thus, it is necessary to introduce content adaptation policy between the MM Content Classes. Messaging between the classes are described in Table 8 and below that, a transcoding policy is introduced in each case.

In practice, the content adaptation rules listed here result in the minimum conformant multimedia message. Additional knowledge of the terminal capabilities (e.g., learned through UAProf [UAProf]) SHALL be used when making the content adaptation decision. For example: if a terminal will support a download larger than the minimum allowed by its supported content class, this is encouraged.

If more detailed information than the supported MMS Content Class(es) is not available through UAProf, the rules in bullets 1-7 below SHALL be used.

Supported class → Received class	Image basic	Image rich	Video basic	Video rich
-------------------------------------	----------------	---------------	----------------	---------------

↓				
Text	N/A	N/A	N/A	N/A
Image basic	N/A	N/A	N/A	N/A
Image rich	1, 2,3,5	N/A	N/A	N/A
Video basic	1, 2,3,5,6	7	N/A	N/A
Video rich	1, 2,3,5,6	4,7	4	N/A

Table 8. Content adaptation within core MM content domain

1. **Major:** for the purpose of size reduction, GIF89a (animated) is converted to object(s) of any mandatory image format(s) with related presentation and GIF89a part is removed.
2. **Minor:** The image resolutions is reduced to 160*120 pixels.
3. **Minor:** The message size is reduced to 30 kB using resolution and quality reduction techniques for image and speech.
4. **Minor:** The message size is reduced to 100 kB using resolution, frame-rate and other quality reduction techniques for image, speech and video objects.
5. **Major:** The SP-MIDI media type is removed.
6. **Major:** One or more video frame(s) are converted to object(s) of any mandatory image format with related presentation and video part is removed. QCIF resolution is scaled to 160*120 pixels.
7. **Major:** One or more video frame(s) are converted to object(s) of any mandatory image format with related presentation and video part is removed.

The rules in bullets 1-7 above do not imply any priority order.

9.3. Transcoding Matrices

In the following tables, content adaptation between media formats and types are classified as minor or major. Guidelines and reasoning are given as notes below the tables. The content adaptation is marked non-applicable when the original format is already supported as part of the target format or when original format is mandatory in all MM Content Classes.

9.3.1. Still Image and Graphics Transcoding

Still image and graphics transcoding SHALL be classified according to Table 9.

From:	To:	JPEG baseline
JPEG Baseline		Minor

Table 9, Classification of still image and graphics transcoding

9.3.2. Bitmap Graphics Transcoding

Bitmap graphics transcoding SHALL be classified according to Table 10.

From:	To:	GIF87a	GIF89a	WBMP	JPEG
GIF87a		Minor	N/A	N/A	Minor
GIF89a (animated)		Major (1)	Minor	N/A	Major (1)
WBMP		N/A	N/A	Minor	Minor

Table 10, Classification of bitmap graphics transcoding

GIF89a contains GIF87 + animations + transparent mode (allowing one part of the image to be on top of transparent background).

- (1) Driven by file size reduction only. If animated, one or more frame(s) of animation converted to any mandatory image format.

9.3.3. Speech Audio Transcoding

Speech audio transcoding SHALL be classified according to Table 11.

From:	To:	AMR
AMR		Minor (1)

Table 11, Classification of speech audio transcoding

- (1) The size reduction with bearable quality loss is modest considering the required processing.

9.3.4. Synthetic Audio Transcoding

Synthetic audio transcoding SHALL be classified according to Table 12.

From:	To:	SP-MIDI	AMR
SP-MIDI		Major (1)	Major (2)

Table 12, Classification of synthetic audio transcoding

- (1) Reduction of size requires dropping of instruments which may result in major loss of quality. SP-MIDI itself is compact format. Thus, increase of file size may result.
- (2) Considering the SP-MIDI approach of synthesised instruments, this transcoding may result in significant loss of information.

9.3.5. Video Transcoding

Video transcoding SHALL be classified according to Table 13.

From:	To:	H.263 baseline profile 0 level 10	JPEG	GIF87	GIF89a
H.263 baseline profile 0 level 10		Minor	Major (1)	Major (1)	Major (1)

Table 13, Classification of video transcoding

- (1) Video to image transcoding involved conversion of one or more video frame(s) to one or more objects of the mandatory image formats (one JPEG, GIF89a (animated), SMIL incl. several JPEG attachments), depending on the size constraint). ..

9.4. Requirements for Content Adaptation

9.4.1. MMS Client Requirements

The requirements for MMS Client to support content adaptation are:

- The recipient MMS client SHALL NOT reject the multimedia message based on the message size indicated in the MMS notification
- MMS client SHALL support UAProf [UAProf] for MMS client capability negotiation.

9.4.2. MMS Proxy-Relay Requirements

The MMS Proxy-Relay requirements for the content adaptation are:

- MMS Proxy-Relay SHALL support UAProf [UAProf] for MMS client capability negotiation
- MMS Proxy-Relay SHALL be able to perform minor content adaptation as specified in this document.
- MMS Proxy-Relay MAY be able to perform major content adaptation
- If the MMS Proxy-Relay is able to perform major content adaptation it SHALL provide means to the MMS service provider to enable or disable the major content adaptationfunction.
- When major content adaptation is or needs to be applied to an MM, the original content of the MM SHOULD be available to the end-user through subsequent MMS transactions or by other means (e.g., web or IMAP interface store or forwarding to e-mail). No additional constraints on multimedia message retention time are implied.

When a media format/type adaptation is accomplished, the extension of the files and the MIME types MUST be modified accordingly in the corresponding header fields. These changes MUST be reflected in the presentation element.

When a media type adaptation is accomplished, the labels in the presentation element MUST be modified if appropriate (e.g., <video> to in the adaptation from video to image)

If major content adaptation was performed or a media element is dropped during the content adaptation the MMS Proxy-Relay SHALL insert information in the MM (e.g., by modification of the text element contained in the same slide) to inform the user of this fact.

10. Technical Interoperability

The OMA MMS_M interface SHALL adhere to the technical definitions in the following subsections of section 10.

10.1. WAP Flow Control

WTP SAR, using relevant TPis (at least "PSN" and "Option Maximum Group"), SHALL be supported as described in [WAPWTP] sections 8.10 and 8.14.

10.2. MMS Encoding

10.2.1. Encoding and Values in MMS Headers

The Content-Type in M-Send.req and M-Retrieve.conf SHALL be application/vnd.wap.multipart.mixed when there is no presentation, and application/vnd.wap.multipart.related SHALL be used when there is SMIL presentation available. Use of other content types is outside the scope of this specification.

Some of the MMS headers have been defined as "Encoded-string-value". The character set IANA MIBenum value in these headers SHALL be encoded as Integer-value ([WAPWSP] section 8.4.2.3). The character set us-ascii (IANA MIBenum 3) SHALL always be accepted. If the character set is not specified (simple Text-string encoding) the character set SHALL be identified as us-ascii (lower half of ISO 8859-1 [ISO8859-1]). When the text string cannot be represented as us-ascii, the character set SHALL be encoded as utf-8 (IANA MIBenum 106) which has unique byte ordering.

In the MMS headers the supported characters SHALL be at least those in ISO 8859-1.

The headers whose definition is Text-string (Content-Location, Message-ID, etc.) SHALL contain only us-ascii characters (lower half of ISO 8859-1 [ISO8859-1]).

10.2.2. Message Content Encoding

WSP multipart encoding SHALL be used [WAPWSP].

The shortest encoding of integer-values SHALL be used.

Content types in WSP multipart headers SHALL be encoded using WSP binary values whenever available. If they are not available in [WAPWSP], text encoding SHALL be used. When no parameters are present, the content type values SHALL be encoded according to Constrained-media = Constrained-encoding = Extension-Media | Short-integer, see [WAPWSP] 8.4.2.24.

Content type for SMIL SHALL be application/smil.

Techniques from [RFC2557] SHALL be used when referencing to multimedia objects from SMIL presentation (Content-Id and Content-Location). The maximum size of Content-Id or Content-Location SHALL be 100 characters.

Character encoding with WSP multipart headers (Content-Id, Content-Location, etc.) SHALL be us-ascii (lower half of ISO 8859-1), as there is no WSP specific definition for the character set encoding in part headers.

The use of WSP multipart headers to other than referencing purposes (Content-Id, etc.) and character set definition SHALL be outside of the scope of this specification

10.2.3. Start Parameter Referring to Presentation

The presentation part in an application/vnd.wap.multipart.related structure SHALL be identified by a Content-ID header in the multipart structure. ([WAPWSP] 8.5.3).

According to [RFC2387] Content-ID in start parameter contains < and > characters:

```
Content-Type: Multipart/Related;
             start="<950120.aaCC@XIson.com>";
             type="application/smil"
```

These < and > SHALL be retained in the header, but quotes SHALL be omitted. Also, quotes SHALL NOT be used in the content type specification of SMIL. The corresponding Content-ID header of the SMIL body part SHOULD contain the same string with < and > included.

10.2.4. SMIL Part Referring to Multimedia Objects

Within SMIL part the reference to the media object parts SHALL use either Content-ID or Content-Location mechanism [RFC2557] and the corresponding WSP part headers in media object parts contain the corresponding definitions.

In case of Content-ID, the URI:s SHALL be without < and > (compare to [RFC2557],). To resolve a CID reference, "cid:" part SHALL be removed from the string, and the remaining string enclosed within < > marks. After this it can be compared to the value obtained from Content-ID header.

As the CID reference is only used within a single message, there is no need to create globally unique values for the content-ids, and there SHALL be no requirement for a legal address definition for the CID.

The Content-Location reference in the SMIL part SHALL be represented as relative URI, e.g.,). The corresponding definition in media object parts shall be:

```
Content-Location: myimage.jpg
```

The content-location header MAY be used by the MMS Client as a hint when generating a filename for the media object. However, as different operating systems have different rules for valid filenames, there is no guarantee that a filename generated by one operating system is valid in another operating system.

10.2.5. Maximum values of MMS parameters

As id:s and references may vary a lot in different implementations this specification will also cover some of these as well as some other length dependent values, in order to achieve interoperability. The maximum values of MMS parameters SHALL be specified according to Table 14. Constraints SHALL NOT be put on the actual values, only on their lengths counted in us-ascii characters.

Message ID	40 characters
Transaction ID	40 characters
X-MMS-Content-Location	100 characters
MMSC URL length	50 characters
Subject	40 characters (Max subject length in M_Notification.ind)
X-Mms-Response-text	30 characters
To, Cc and Bcc	312 characters total, including phrase and mailbox. Note that the mailbox portion, including punctuation ("<>@"), is limited to 256 characters per [RFC2821].

Table 14, Maximum values of MMS parameters

A minimum of 20 addresses SHALL be supported within the “To”, “Cc” and “Bcc” header fields. These MAY be split up in the three field categories in any desired way but SHALL result in a total number less or equal to 20 addresses but no less than one address. The support of the “Bcc” field upon submission of an MM is OPTIONAL for the originating MMS Client. In addition the maximum number of characters per address SHALL be less or equal to 312 characters total, including phrase and mailbox; the mailbox portion, including punctuation (“<>@”), SHALL follow the limitations described in [RFC 2821].

11. MMS Client Conformance

11.1. Conformance Requirements

It is recognised that an MMS Client declares MMS creation conformance, MMS submission conformance, MMS retrieval conformance and MMS presentation conformance (see section 11.3) to enable an interoperable MMS mass market. Declaration of partial conformance may be needed for devices where not all MMS functionalities are necessary, for instance, accessories.

The MMS Client can reach two levels of conformance to this document (for the definition of MM Content Class, see section 7):

(1) Full Conformance to an MM Content Class

A fully conformant MMS Client to an MM Content Class SHALL satisfy the following requirements:

- the MMS Client is MMS creation conformant (as specified in section 11.3.1) to that MM Content Class
- the MMS Client is MMS submission conformant (as specified in section 11.3.2) to that MM Content Class
- the MMS Client is MMS retrieval conformant (as specified in section 11.3.3) to that MM Content Class
- the MMS Client is MMS presentation conformant (as specified in section 11.3.4) to that MM Content Class.

An MMS Client SHALL NOT be able to declare full conformance to MM Content Class Text alone.

(2) Partial Conformance to an MM Content Class

The MMS Client is partially conformant to an MM Content Class, if the following requirements (A) and (B) are both fulfilled:

- A. At least one of the following requirements SHALL be fulfilled:
1. The MMS Client is MMS creation conformant (as specified in section 11.3.1) to that MM Content Class
 2. The MMS Client is MMS submission conformant (as specified in section 11.3.2) to that MM Content Class
 3. The MMS Client is MMS retrieval conformant (as specified in section 11.3.3) to that MM Content Class
 4. The MMS Client is MMS presentation conformant (as specified in section 11.3.4) to that MM Content Class
- B. Each of the following requirements SHALL be fulfilled:
1. If the MMS Client supports the Stage 2 functions defined in [TS23140] or [XS0016200] for creation of MM, the MMS Client is MMS creation conformant to that MM Content Class.
 2. If the MMS Client supports the functions defined in [MMSCTR] for submission of MM, the MMS Client is MMS submission conformant to that MM Content Class.
 3. If the MMS Client supports the functions defined in [MMSCTR] for retrieval of MM, the MMS Client is MMS retrieval conformant to that MM Content Class.
 4. If the MMS Client supports the Stage 2 functions defined in [TS23140] or [XS0016200] for presentation of MM, the MMS Client is MMS presentation conformant to that MM Content Class.

Note: [TS23140] and [XS0016200] specify that support of retrieval of MM is mandatory in the MMS Client, whereas creation, submission and presentation are optional.

11.2. Content Conformance

11.2.1. Media Object Conformance

For a multimedia element to be media object conformant to a given MM Content Class the media type and format of that multimedia element SHALL belong to the MM Content Class in question and the size, resolution, encoding and other requirements of that MM Content Class SHALL be followed.

11.2.2. Content Class Conformance

For a multimedia composite object to be content class conformant to a given MM Content Class all media objects comprising that multimedia composite object SHALL be media object conformant to the given MM Content Class. Additionally, the presentation element SHALL follow the rules and definitions of the MM Content Class in question.

11.2.3. Message Conformance

For an MM to be message conformant to given MM Content Class the following requirements SHALL be fulfilled:

1. The multimedia message is content class conformant to the given MM Content Class,
2. The multimedia message is encoded according to relevant OMA specifications (see [MMSENC] and section 10.2),
3. The size of the MM (as defined in [TS23140] or [XS0016200]) is less than or equal to the maximum size defined for the given MM Content Class.

11.3. Functional Conformance

11.3.1. MMS Creation Conformance

For an MMS Client to be MMS creation conformant to a given MM Content Class, the following conditions SHALL all fulfilled:

1. The MMS Client SHALL support the insertion, of all media formats for all media types defined in the given MM Content Class, to an MM.
2. If the MMS Client supports also creation of MM that do not belong to that given MM Content Class, the MMS Client SHALL follow the rules defined in section 12 for the current creation mode.

11.3.2. MMS Submission Conformance

For an MMS Client to be MMS submission conformant to a given MM Content Class the following conditions SHALL all fulfilled:

1. The MMS Client SHALL support the submission of any MM being message conformant to the given MM Content Class from the MMS Client to the MMS Proxy-Relay according to [MMSCTR].
2. The MMS Client SHALL follow the rules defined in section 12 for the current creation mode.

11.3.3. MMS Retrieval Conformance

For an MMS Client to be MMS retrieval conformant to a given MM Content Class it SHALL support the retrieval of any MM being message conformant to the given MM Content Class from the MMS Proxy-Relay to the MMS Client, according to [MMSCTR].

11.3.4. MMS Presentation Conformance

For an MMS Client to be MMS presentaion conformant to a given MM Content Class it SHALL be able to present all the media objects of any MM being message conformant to the MM Content Class, according to the presentation object and additional rules and definitions given in this document.

12. Creation Modes

MMS Clients that are compliant to the MMS suite of specifications defined by 3GPP (e.g., [TS23140]) SHALL support the requirements in this section.

To facilitate creation and submission of interoperable MMs, three creation modes are defined as follows. The terms 'creation' and 'submission' are defined in section 3.2 of this document.

Creation mode RESTRICTED. In this mode, a terminal SHALL only create and submit MMs belonging to the Core MM Content Domain.

Creation mode WARNING. In this mode, a terminal SHALL guide the user to create and submit only MMs belonging to the Core MM Content Domain. This guidance may, for instance, be implemented as warnings to the user. If the user chooses to create and submit an MM that is conformant with the Core MM Content Domain, the MM shall be conformant with the Core MM Content Domain. The form of the guidance and choice is not specified.

Creation mode FREE. In this mode, a terminal MAY allow the user to add any content to the MM.

The terminal SHALL support the Creation mode RESTRICTED. The terminal MAY support the other creation modes, WARNING and FREE. The requirements for all supported creation modes SHALL be mandatory.

The creation mode SHOULD be configurable. Examples of methods of configuration are:

- Preconfiguration at manufacturing phase
- Configuration via user menu
- Configuration via device management
- Configuration via (U)SIM

In the future, the number of MM Content Classes may increase. Thus, in the configuration for creation modes it is important to attach information to which version of this specification the RESTRICTED and WARNING modes apply to.

Appendix A. OMA DRM

(Informative)

A.1 Introduction

The scope of OMA Digital Rights Management [OMADRM] is to enable the controlled consumption of digital media objects by allowing content providers to express usage rights, e.g., the ability to preview DRM content, to prevent downloaded DRM content from being illegally forwarded (copied) to other users, and to enable superdistribution of DRM content.

By encapsulating the media object inside a forward-lock message, which is part of OMA DRM, the content owners can prevent users from copying objects outside the target device. The forward-locked object is wrapped in a forward-lock envelope to invoke a DRM agent in the target device. When the device receives an object inside a forward-lock message, the device disables the ability to copy the protected object outside the device. This means that the user cannot redistribute the object to other devices and other users. The object is locked inside the device, until deleted by the user.

OMA DRM shall be used to protect individual parts of content in a multimedia message. Multipart objects shall not be included in this forward-lock envelope. The multimedia message as a whole shall not be protected using OMA DRM. The SMIL presentation shall not be OMA DRM protected.

A.2 OMA DRM Message Format

The OMA DRM media type supports one parameter, the boundary parameter, which is part of the boundary delimiter. Using the boundary is mandatory with a MIME compliant transfer mechanism, as defined in [OMADRM]. The OMA DRM format follows the MIME multipart specification closely, and the message body must be formatted according to [RFC2046]. Multimedia message format or protocol layers should not be aware of this internal structure, only the MMS presentation playback requires knowledge on how to interpret OMA DRM content.

A.2.1 Supported transfer encodings

Mandatory transfer encodings according to [OMADRM] are the default 7-bit, 8-bit and binary. Those encodings should be used to achieve best possible interoperability.

A.2.2 Referencing OMA DRM content in MMS

The presentation part of the MM shall reference OMA DRM protected content through Content-Location or Content-ID applied to the DRM body part in the MMS (please note that this is a header field different from the Content-ID inside the OMA DRM format – but may contain the same value). Content-Location may therefore contain an OMA DRM file extension, such as .dm (forward-lock).

A.2.2.1 One forward-locked media object

Example 3 below shows the textual representation of a multimedia message with a forward-locked media object (a jpg image).

```
From:user@example.com
To:+40123456789/TYPE=PLMN
Subject:Hi!
X-MMS-Version:1.0
Content-Type:multipart/related;boundary=ID_1234567
```

```
--ID_1234567
```

```
Content-Type:application/smil
```

```
<smil>
:
</smil>
```

```

--ID_1234567
Content-Type:application/vnd.oma.drm.message;boundary=PUTJTBYRBYTYBV
Content-Location:drmimage.dm

--PUTJTBYRBYTYBV
Content-Type:image/jpeg
Content-Transfer-Encoding:binary

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
--PUTJTBYRBYTYBV--
--ID_1234567--

```

Example 3, Multimedia message with DRM protected content

The textual representation follows [RFC2822] very closely. When the message is sent to the client the MMS protocol specifies a binary format [MMSENC] where the MMS format uses WSP rules to encode headers and multipart objects. In this encoding process, OMA DRM content and headers shall not be altered in any way.

Appendix B. Static Conformance Requirements (Normative)

The notation used in this appendix is specified in [IOPProc].

B.1 MMS client

B.1.1 General client requirements

All the requirements in Table 15 SHALL NOT be valid for MMS Clients that are compliant to the MMS suite of specifications defined by 3GPP2 (e.g., [XS0016200]).

Item	Function	Reference	Status	Requirement
MMSCONF- GEN-C-001	Support for WAP flow control	10.1	M	
MMSCONF- GEN-C-002	Messages are encoded as specified	10.2	M	
MMSCONF- GEN-C-003	Support for maximum values for MMS parameters	10.2.5	M	

Table 15, General client requirements

B.1.2 General content class conformance requirements

Item	Function	Reference	Status	Requirement
MMSCONF-CCC-C-001	Conformance to at least one MM content class in addition from the text class	7	M	MMSCONF-CCC-C-003 OR MMSCONF-CCC-C-004
MMSCONF-CCC-C-002	Conformance to the text class	7	M	MMSCONF-CCC-C-013 OR MMSCONF-CCC-C-014
MMSCONF-CCC-C-003	Full conformance to at least one MM content class	11.1	O	MMSCONF-CCC-C-005 OR MMSCONF-CCC-C-006 OR MMSCONF-CCC-C-007 OR MMSCONF-CCC-C-011
MMSCONF-CCC-C-004	Partial conformance to at least one MM content class	11.1	O	MMSCONF-CCC-C-008 OR MMSCONF-CCC-C-009 OR MMSCONF-CCC-C-010 OR MMSCONF-CCC-C-012
MMSCONF- CCC-C-005	Full conformance to image basic class	11.1	O	MMSCONF-IBC-C-001 AND MMSCONF-IBC-C-002 AND MMSCONF-IBC-C-003 AND MMSCONF-IBC-C-004
MMSCONF-CCC-C-006	Full conformance to image rich class	11.1	O	MMSCONF-IRC-C-001 AND MMSCONF-IRC-C-002 AND MMSCONF-IRC-C-003 AND MMSCONF-IRC-C-004 AND MMSCONF-CCC-C-005

Item	Function	Reference	Status	Requirement
MMSCONF-CCC-C-007	Full conformance to video basic class	11.1	O	MMSCONF-VBC-C-001 AND MMSCONF-VBC-C-002 AND MMSCONF-VBC-C-003 AND MMSCONF-VBC-C-004 AND MMSCONF-CCC-C-006
MMSCONF-CCC-C-008	Partial conformance to image basic class	11.1	O	MMSCONF-IBC-C-001 OR MMSCONF-IBC-C-002 OR MMSCONF-IBC-C-003 OR MMSCONF-IBC-C-005
MMSCONF-CCC-C-009	Partial conformance to image rich class	11.1	O	MMSCONF-IRC-C-001 OR MMSCONF-IRC-C-002 OR MMSCONF-IRC-C-003 OR MMSCONF-IRC-C-004
MMSCONF-CCC-C-010	Partial conformance to video basic class	11.1	O	MMSCONF-VBC-C-001 OR MMSCONF-VBC-C-002 OR MMSCONF-VBC-C-003 OR MMSCONF-VBC-C-004
MMSCONF-CCC-C-011	Full conformance to video rich class	11.1	O	MMSCONF-VRC-C-001 AND MMSCONF-VRC-C-002 AND MMSCONF-VRC-C-003 AND MMSCONF-VRC-C-004 AND MMSCONF-CCC-C-005
MMSCONF-CCC-C-012	Partial conformance to video rich class	11.1	O	MMSCONF-VRC-C-001 OR MMSCONF-VRC-C-002 OR MMSCONF-VRC-C-003 OR MMSCONF-VRC-C-004
MMSCONF-CCC-C-013	Full conformance to text class	11.1	O	MMSCONF-TXC-C-001 AND MMSCONF-TXC-C-002 AND MMSCONF-TXC-C-003 AND MMSCONF-TXC-C-004
MMSCONF-CCC-C-014	Partial conformance to text class	11.1	O	MMSCONF-TXC-C-001 OR MMSCONF-TXC-C-002 OR MMSCONF-TXC-C-003 OR MMSCONF-TXC-C-004

Table 16, General content class conformance requirements

B.1.3 Functional conformance to the image basic class

Item	Function	Reference	Status	Requirement
MMSCONF-IBC-C-001	Creation conformance to image basic class	11.3.1	O	MMSCONF-IBC-C-005 AND MMSCONF-CMO-C-001
MMSCONF-IBC-C-002	Submission conformance to image basic class	11.3.2	O	MMSCONF-IBC-C-006 AND MMSCONF-CMO-C-001 AND MMSCONF-SND-C-001

Item	Function	Reference	Status	Requirement
MMSCONF-IBC-C-003	Retrieval conformance to image basic class	11.3.3	O	MMSCONF-IBC-C-007 AND MMSCONF-FTC-C-001
MMSCONF-IBC-C-004	Presentation conformance to image basic class	11.3.4	O	MMSCONF-IBC-C-008
MMSCONF-IBC-C-005	Support for the insertion in a created message of all media formats for all media types defined in the image basic class	11.3.1	O	MMSCONF-MED-C-001 AND MMSCONF-MED-C-006 AND MMSCONF-MED-C-008 AND MMSCONF-MED-C-012 AND MMSCONF-MED-C-015 AND MMSCONF-MED-C-023
MMSCONF-IBC-C-006	Support for the submission of any MM being message conformant to the image basic class	11.3.2	O	
MMSCONF-IBC-C-007	Support for the retrieval of any MM being message conformant to the image basic class	11.3.3	O	
MMSCONF-IBC-C-008	Ability to present all the media objects of any MM being conformant to the image basic class	11.3.4	O	MMSCONF-MED-C-001 AND MMSCONF-MED-C-006 AND MMSCONF-MED-C-008 AND MMSCONF-MED-C-012 AND MMSCONF-MED-C-015 AND MMSCONF-MED-C-023 AND MMSCONF-MED-C-004

Table 17, Functional conformance to the image basic class

B.1.4 Functional conformance to the image rich class

Item	Function	Reference	Status	Requirement
MMSCONF-IRC-C-001	Creation conformance to image rich class	11.3.1	O	MMSCONF-IRC-C-005 AND MMSCONF-CMO-C-001
MMSCONF-IRC-C-002	Submission conformance to image rich class	11.3.2	O	MMSCONF-IRC-C-006 AND MMSCONF-CMO-C-001 AND MMSCONF-SND-C-001
MMSCONF-IRC-C-003	Retrieval conformance to image rich class	11.3.3	O	MMSCONF-IRC-C-007 AND MMSCONF-FTC-C-001
MMSCONF-IRC-C-004	Presentation conformance to image rich class	11.3.4	O	MMSCONF-IRC-C-008
MMSCONF-IRC-C-005	Support for the insertion in a created message of all media formats for all media types defined in	11.3.1	O	MMSCONF-MED-C-001 AND MMSCONF-MED-C-006 AND MMSCONF-MED-C-008 AND MMSCONF-MED-C-012 AND

Item	Function	Reference	Status	Requirement
	the image rich class			MMSCONF-MED-C-015 AND MMSCONF-MED-C-017AND MMSCONF-MED-C-022 AND MMSCONF-MED-C-023
MMSCONF-IRC-C-006	Support for the submission of any MM being message conformant to the image rich class	11.3.2	O	
MMSCONF-IRC-C-007	Support for the retrieval of any MM being message conformant to the image rich class	11.3.3	O	
MMSCONF-IRC-C-008	Ability to present all the media object of any MM being conformant to the image rich class	11.3.4	O	MMSCONF-MED-C-001 AND MMSCONF-MED-C-006 AND MMSCONF-MED-C-008 AND MMSCONF-MED-C-012 AND MMSCONF-MED-C-015 AND MMSCONF-MED-C-017AND MMSCONF-MED-C-022 AND MMSCONF-MED-C-023 AND MMSCONF-MED-C-004

Table 18, Functional conformance to the image rich class

B.1.5 Functional conformance to the video basic class

Item	Function	Reference	Status	Requirement
MMSCONF-VBC-C-001	Creation conformance to video basic class	11.3.1	O	MMSCONF-VBC-C-005 AND MMSCONF-CMO-C-001
MMSCONF-VBC-C-002	Submission conformance to video basic class	11.3.2	O	MMSCONF-VBC-C-006 AND MMSCONF-CMO-C-001 AND MMSCONF-SND-C-001
MMSCONF-VBC-C-003	Retrieval conformance to video basic class	11.3.3	O	MMSCONF-VBC-C-007 AND MMSCONF-FTC-C-001
MMSCONF-VBC-C-004	Presentation conformance to video basic class	11.3.4	O	MMSCONF-VBC-C-008
MMSCONF-VBC-C-005	Support for the insertion in a created message of all media formats for all media types defined in the video basic class	11.3.1	O	MMSCONF-MED-C-001 AND MMSCONF-MED-C-006 AND MMSCONF-MED-C-008 AND MMSCONF-MED-C-012 AND MMSCONF-MED-C-015 AND MMSCONF-MED-C-017 AND MMSCONF-MED-C-019 AND MMSCONF-MED-C-022 AND MMSCONF-MED-C-023 AND MMSCONF-MED-C-026

Item	Function	Reference	Status	Requirement
MMSCONF-VBC-C-006	Support for the submission of any MM being message conformant to the video basic class	11.3.2	O	
MMSCONF-VBC-C-007	Support for the retrieval of any MM being message conformant to the video basic class	11.3.3	O	
MMSCONF-VBC-C-008	Ability to present all the media object of any MM being conformant to the video basic class	11.3.4	O	MMSCONF-MED-C-001 AND MMSCONF-MED-C-006 AND MMSCONF-MED-C-008 AND MMSCONF-MED-C-012 AND MMSCONF-MED-C-015 AND MMSCONF-MED-C-017 AND MMSCONF-MED-C-019 AND MMSCONF-MED-C-022 AND MMSCONF-MED-C-023 AND MMSCONF-MED-C-026 AND MMSCONF-MED-C-004

Table 19, Functional conformance to the video basic class

B.1.6 Functional conformance to the video rich class

Item	Function	Reference	Status	Requirement
MMSCONF-VRC-C-001	Creation conformance to video rich class	11.3.1	O	MMSCONF-VRC-C-005 AND MMSCONF-CMO-C-001
MMSCONF-VRC-C-002	Submission conformance to video rich class	11.3.2	O	MMSCONF-VRC-C-006 AND MMSCONF-CMO-C-001 AND MMSCTR-SND-C-001
MMSCONF-VRC-C-003	Retrieval conformance to video rich class	11.3.3	O	MMSCONF-VRC-C-007 AND MMSCTR-FTC-C-001
MMSCONF-VRC-C-004	Presentation conformance to video rich class	11.3.4	O	MMSCONF-VRC-C-008
MMSCONF-VRC-C-005	Support for the insertion in a created message of all media formats for all media types defined in the video rich class	11.3.1	O	MMSCONF-MED-C-001 AND MMSCONF-MED-C-006 AND MMSCONF-MED-C-008 AND MMSCONF-MED-C-012 AND MMSCONF-MED-C-015 AND MMSCONF-MED-C-017 AND MMSCONF-MED-C-019 AND MMSCONF-MED-C-022 AND MMSCONF-MED-C-023 AND MMSCONF-MED-C-026

Item	Function	Reference	Status	Requirement
MMSCONF-VRC-C-006	Support for the submission of any MM being message conformant to the video rich class	11.3.2	O	
MMSCONF-VRC-C-007	Support for the retrieval of any MM being message conformant to the video rich class	11.3.3	O	
MMSCONF-VRC-C-008	Ability to present all the media object of any MM being conformant to the video rich class	11.3.4	O	MMSCONF-MED-C-001 AND MMSCONF-MED-C-006 AND MMSCONF-MED-C-008 AND MMSCONF-MED-C-012 AND MMSCONF-MED-C-015 AND MMSCONF-MED-C-017 AND MMSCONF-MED-C-019 AND MMSCONF-MED-C-022 AND MMSCONF-MED-C-023 AND MMSCONF-MED-C-026 AND MMSCONF-MED-C-004

Table 20, Functional conformance to the video rich class

B.1.7 Functional conformance to the text class

Item	Function	Reference	Status	Requirement
MMSCONF-TXC-C-001	Creation conformance to text class	11.3.1	O	MMSCONF-TXC-C-005 AND MMSCONF-CMO-C-001
MMSCONF-TXC-C-002	Submission conformance to text class	11.3.2	O	MMSCONF-TXC-C-006 AND MMSCONF-CMO-C-001 AND MMSCTR-SND-C-001
MMSCONF-TXC-C-003	Retrieval conformance to text class	11.3.3	O	MMSCONF-TXC-C-007 AND MMSCTR-FTC-C-001
MMSCONF-TXC-C-004	Presentation conformance to text class	11.3.4	O	MMSCONF-TXC-C-008
MMSCONF-TXC-C-005	Support for the insertion in a created message of all media formats for all media types defined in the text class	11.3.1	O	MMSCONF-MED-C-001
MMSCONF-TXC-C-006	Support for the submission of any MM being message conformant to the text class	11.3.2	O	
MMSCONF-TXC-C-007	Support for the retrieval of any MM being message conformant to the text class	11.3.3	O	

Item	Function	Reference	Status	Requirement
MMSCONF-TXC-C-008	Ability to present all the media objects of any MM being conformant to the text class	11.3.4	O	MMSCONF-MED-C-001 AND MMSCONF-MED-C-004 AND MMSCONF-MED-C-023

Table 21, Functional conformance to the text class

B.1.8 Creation mode requirements

All the requirements in Table 22 SHALL NOT be valid for MMS Clients that are compliant to the MMS suite of specifications defined by 3GPP2 (e.g., [XS0016200]).

Item	Function	Reference	Status	Requirement
MMSCONF-CMO-C-001	Support for requirements defined by the current creation mode	12	M	
MMSCONF-CMO-C-002	Support for creation mode RESTRICTED as current creation mode	12	M	
MMSCONF-CMO-C-003	Support for creation mode WARNING as current creation mode	12	O	
MMSCONF-CMO-C-004	Support for creation mode FREE as current creation mode	12	O	
MMSCONF-CMO-C-005	Support for configuration methods for selecting the creation mode	12	O	

Table 22, Creation mode requirements

B.1.9 Media type and format requirements

Requirement MMSCONF-MED-C-004 in Table 23 SHALL NOT be valid for MMS Clients that are compliant to the MMS suite of specifications defined by 3GPP2 (e.g., [XS0016200]).

Item	Function	Reference	Status	Requirement
MMSCONF-MED-C-001	Support for media type text	7.1.8	M	
MMSCONF-MED-C-002	Support for us-ascii as media type text	7.1.8	M	
MMSCONF-MED-C-003	Support for utf-8 as media type text	7.1.8	M	
MMSCONF-MED-C-004	Support for presentation of utf-16 as media type text	7.1.8	O	

Item	Function	Reference	Status	Requirement
MMSCONF-MED-C-005	Support for at least characters from ISO-8859-1 with media type text	7.1.8	M	
MMSCONF-MED-C-006	Support for media type still image	7	M	
MMSCONF-MED-C-007	Support for baseline JPEG as media type still image	7	M	
MMSCONF-MED-C-008	Support for media type bitmap	7	M	
MMSCONF-MED-C-009	Support for GIF87a as media type bitmap	7	M	
MMSCONF-MED-C-010	Support for GIF89a as media type bitmap	7	M	
MMSCONF-MED-C-011	Support for WBMP as media type bitmap	7	M	
MMSCONF-MED-C-012	Support for media type speech	7	M	MMSCONF-MED-C-013 OR MMSCONF-MED-C-014
MMSCONF-MED-C-013	Support for AMR-NB as media type speech	7	O	
MMSCONF-MED-C-014	Support for 13K as media type speech	7	O	
MMSCONF-MED-C-015	Support for PIM objects	7	M	MMSCONF-MED-C-016 AND MMSCONF-MED-C-027
MMSCONF-MED-C-016	Support for vCard 2.1 as PIM object	7	O	
MMSCONF-MED-C-017	Support for media type synthetic audio	7	O	MMSCONF-MED-C-018
MMSCONF-MED-C-018	Support for SP-MIDI as media type synthetic audio	7	O	
MMSCONF-MED-C-019	Support for media type video	7	O	MMSCONF-MED-C-020 OR MMSCONF-MED-C-021 OR MMSCONF-MED-C-028
MMSCONF-MED-C-020	Support for mandatory video codecs as media type video defined in [TS26140]	7	O	

Item	Function	Reference	Status	Requirement
MMSCONF-MED-C-021	Support for video codecs as media type video defined in [CP0045] in creation and submission	7	O	MMSCONF-MED-C-029 OR MMSCONF-MED-C-030
MMSCONF-MED-C-022	Support of OMA DRM forward-lock functionality	7.1.4	O	DRM-GEN-C-001
MMSCONF-MED-C-023	Support for presentation part of the message	7.1.7	O	MMSCONF-MED-C-024 AND MMSCONF- MED-C-025
MMSCONF-MED-C-024	Support for SMIL in presentation part	7.1.7	O	
MMSCONF- MED-C-025	Support for defined SMIL tags (without video tag) in presentation part	8	O	
MMSCONF- MED-C-026	Support for the SMIL video tag in presentation part	8	O	
MMSCONF-MED-C-027	Support for vCalendar 1.0 as PIM object	7	O	
MMSCONF-MED-C-028	Support for video codecs as media type video defined in [CP0045] in retrieval and presentation	7	O	MMSCONF-MED-C-029 AND MMSCONF-MED-C-030
MMSCONF-MED-C-029	Support for H.263 video codec as defined in [CP0045]	7	O	MMSCONF-MED-C-031 OR MMSCONF-MED-C-032
MMSCONF-MED-C-030	Support for MPEG-4 video codec as defined in [CP0045]	7	O	MMSCONF-MED-C-031 OR MMSCONF-MED-C-032
MMSCONF-MED-C-031	Support for AMR audio associated with video codec as defined in [CP0045]	7	O	
MMSCONF-MED-C-032-	Support for 13K audio associated with video codec as defined in [CP0045]	7	O	

Table 23, Media type and format requirements

B.1.10 Content adaptation requirements

Requirement MMSCONF-CAD-C-002 in Table 24 SHALL NOT be valid for MMS Clients that are compliant to the MMS suite of specifications defined by 3GPP2 (e.g., [XS0016200]).

Item	Function	Reference	Status	Requirement
MMSCONF-CAD-C-001	Non-rejection of MMs based on the message size indicated in the	9.4.1	M	

Item	Function	Reference	Status	Requirement
	MMS notification			
MMSCONF-CAD-C-002	Support of UAPProf for MMS client capability negotiation	9.4.1	M	UAPProf: MCF

Table 24, Content adaptation requirements

B.2 MMS Proxy-Relay

B.2.1 General server requirements

All the requirements in Table 25 SHALL NOT be valid for MMS Proxy-Relays that are compliant to the MMS suite of specifications defined by 3GPP2 (e.g., [XS0016200]).

Item	Function	Reference	Status	Requirement
MMSCONF-GEN-S-001	Support of UAPProf for MMS client capability negotiation	9.4.2	M	UAPProf: MSF
MMSCONF-GEN-S-002	Use of additional knowledge of terminal capabilities when making the content adaptation decision.	9.2	M	
MMSCONF-GEN-S-003	Support for WAP flow control	10.1	M	
MMSCONF-GEN-S-004	Messages are encoded as specified	10.2	M	

Table 25, General server requirements

B.2.2 Content Adaptation - General

Item	Function	Reference	Status	Requirement
MMSCONF-CAG-S-001	Support of minor content adaptation	9.4.2	M	MMSCONF-MIN-S-001 AND MMSCONF-MIN-S-002 AND MMSCONF-MIN-S-003 AND MMSCONF-MIN-S-004 AND MMSCONF-MIN-S-005
MMSCONF-CAG-S-002	Ability to perform major content adaptation	9.4.2	O	MMSCONF-CAG-S003 AND MMSCONF-CAG-S-004
MMSCONF-CAG-S-003	Function to enable or disable major content adaptation	9.4.2	O	

MMSCONF-CAG-S-004	Support of major content adaptation when enabled	9.4.2	O	MMSCONF-MAJ-S-001 AND MMSCONF-MAJ-S-002 AND MMSCONF-MAJ-S-003 AND MMSCONF-MAJ-S-004 AND MMSCONF-MAJ-S-005
MMSCONF-CAG-S-005	Availability of the original content of the MM to the end-user when major content adaptation is or needs to be applied	9.4.2	O	
MMSCONF-CAG-S-006	Function to insert information in the MM that major content adaptation was performed or a media element was dropped during content adaptation if major content adaptation is applied	9.4.2	M	
MMSCONF-CAG-S-007	Function to update labels in the presentation if media type adaptation is applied	9.4.2	M	
MMSCONF-CAG-S-008	Function to update file extensions and MIME types if media format/type adaptation is applied	9.4.2	M	

Table 26, General content adaptation requirements

B.2.3 Functions for Minor Content Adaptation

Item	Function	Reference	Status	Requirement
MMSCONF-MIN-S-001	Adapting Image Rich to Image Basic	9.2	O	MMSCONF-AMN-S-001 AND MMSCONF-AMN-S-002
MMSCONF-MIN-S-002	Adapting Video Basic to Image Basic	9.2	O	MMSCONF-AMN-S-001 AND MMSCONF-AMN-S-002
MMSCONF-MIN-S-003	Adapting Video Rich to Image Basic	9.2	O	MMSCONF-AMN-S-001 AND MMSCONF-AMN-S-002
MMSCONF-MIN-S-004	Adapting Video Rich to Image Rich	9.2	O	MMSCONF-AMN-S-003
MMSCONF-MIN-S-005	Adapting Video Rich to Video Basic	9.2	O	MMSCONF-AMN-S-003

Table 27, Minor content adaptation function requirements

B.2.4 Functions for Major Content Adaptation

Item	Function	Reference	Status	Requirement
MMSCONF-MAJ-S-001	Adapting Image Rich to Image Basic	9.2	O	MMSCONF-AMJ-S-001 AND MMSCONF-AMJ-S-004
MMSCONF-MAJ-S-002	Adapting Video Basic to Image Basic	9.2	O	MMSCONF-AMJ-S-001 AND MMSCONF-AMJ-S-003 AND MMSCONF-AMJ-S-004
MMSCONF-MAJ-S-003	Adapting Video Rich to Image Basic	9.2	O	MMSCONF-AMJ-S-001 AND MMSCONF-AMJ-S-003 AND MMSCONF-AMJ-S-004
MMSCONF-MAJ-S-004	Adapting Video Basic to Image Rich	9.2	O	MMSCONF-AMJ-S-002
MMSCONF-MAJ-S-005	Adapting Video Rich to Image Rich	9.2	O	MMSCONF-AMJ-S-002

Table 28, Major content adaptation function requirements

B.2.5 Actions for Minor Content Adaptation

Item	Function	Reference	Status	Requirement
MMSCONF-AMN-S-001	For any Image attachment in the MM: Reduction of image resolutions to 160*120 pixels	9.2	M	
MMSCONF-AMN-S-002	If MM size exceeds 30 kB: Reduction of message size to 30 kB using resolution and quality reduction techniques for image and speech, if possible	9.2	M	
MMSCONF-AMN-S-003	If MM size exceeds 100 kB: Reduction of message size to 100 kB using resolution, frame-rate and other quality reduction techniques for image, speech and video objects, if possible	9.2	M	

Table 29, Minor content adaptation action requirements

B.2.6 Actions for Major Content Adaptation

Item	Function	Reference	Status	Requirement
MMSCONF-AMJ-S-001	For any SP-MIDI attachment in the MM: Removal of SP-MIDI attachment	9.2	O	
MMSCONF-AMJ-S-002	For any video attachment in the MM: Converting one or more video frame(s) to any mandatory image format with related presentation, removing video part	9.2	O	
MMSCONF-AMJ-S-003	For any video attachment in the MM: Converting one or more video frame(s) to any mandatory image format, removing video part, scaling QCIF resolution to 160*120 pixels	9.2	O	
MMSCONF-AMJ-S-004	For the purpose of size reduction, converting GIF89a (animated) to object(s) of any mandatory image format(s) with related presentation and GIF89a part is removed.	9.2	O	

Table 30, Major content adaptations requirements

Appendix C. Change History

(Informative)

C.1 Approved Version History

Reference	Date	Description
OMA-MMS-CONF-V1_2-20050301-A	01 Mar 2005	