MMS Conformance Document

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OMA-IOP-MMSCONF-2_0_0-20020206C - MMS Conformance Document

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1. Scope

The scope of this document is in accordance with the charters of OMA IOP 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 or WAP Forum with respect to interoperability.

2. References

2.1. Normative References

AMR	3GPP TS 23.140 V4.5.0 (2001-12): "Multimedia Messaging Service; Functional Description; Stage 2"
AMRFileFormat	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>..
AMRSpeechCodec	3GPP TS 26.090: "Mandatory Speech Codec speech processing functions; AMR Speech Codec Transcoding Functions".
ISO8859-1	8-bit single byte coded graphic character sets, Part 1: Latin Alphabet No. 1., ISO/IEC 8859-1:1998(E).
PIM	The Internet Mail Consortium vCard/vCalendar http://www.imc.org/
RFC2387	The MIME Multipart/related content type", Levinson E., August 1998.
RFC2557	MIME Encapsulation of Aggregate Documents, such as HTML (MHTML), Palme J., Hopmann A., Shelness N., March 1999.
SMIL	Synchronized Multimedia Integration Language (SMIL 2.0) W3C Recommendation 07 August 2001 http://www.w3.org/TR/smil20/
Unicode	The Unicode Standard Version 3.0, The Unicode Consortium, Addison-Wesley, Reading (MA), January 2000. ISBN 0-201-61633-5.
WAPMMSEnc	OMA MMS Encapsulation Protocol, OMA-WAP-MMS-ENC-v1.1
WAPWSP	OMA Wireless Session Protocol, OMA-WAP-230-WSP-20010705-a
WAPWTP	OMA Wireless Transport Protocol, OMA-WAP-224-WTP-20010710-a

2.2. Informative References

WAPARCH	OMA Wireless Application Protocol Architecture, OMA-WAP-210-WAPArch-20010712-a

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

MMS – Multimedia messaging service
MMS SMIL – A SMIL subset defined for MMS purposes

3.3. Abbreviations

AMR	Adaptive Multi Rate
BMP	Bit Map
GIF	Graphics Interchange Format
GIF 87a/89a	GIF with animations
MIDI	Musical Instrument Digital Interface
MIME	Multipurpose Internet Mail Extension
MM	Multimedia Message
MMS	Multimedia Messaging Service
MMSIOP	MMS Interoperability between MMS handsets and MMS Servers
MSISDN	Mobile Station Integrated Services Digital Network
SMIL	Synchronized Multimedia Integration Language
OMA	Open Mobile Alliance
PIM	Personal Information Management
UI	User Interface
UTF-8	Unicode Transformation Format
WAP	Wireless Access 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. 5.3). 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. 5.3).

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

This document is structured as follows: In Sec. 5 the structure of multimedia messages is defined so as to ensure interoperability. The subset ("MMS SMIL") of elements of the SMIL language that are needed to compose interoperable messages is listed in Sec.5.4.3. Issues related to the choice of media formats are addressed in Sec. 5.5. Section 6 contains a set of technical conformance specifications more closely related to the messaging aspects of MMS.

5. Content and structure of multimedia messages

5.1. Introduction

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

5.2. Content

The messages that will be exchanged during the first phase of MMS will 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 an image.

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 Sec. 5.5.

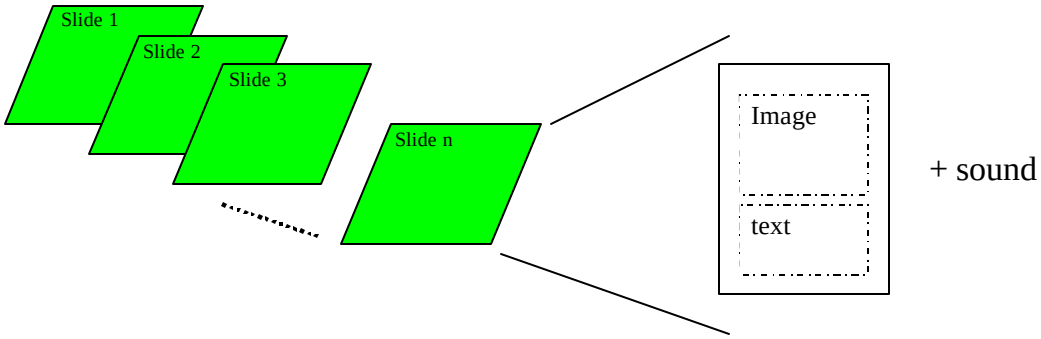

Figure 1: **Structure of a multimedia message**

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

5.3. Presentation.

SMIL is a *presentation* format, 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.

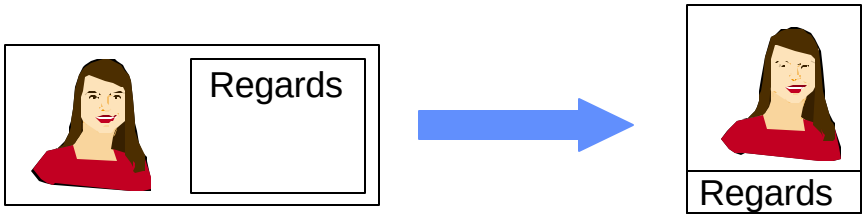

Figure 2: The same message needs to be reorganized for display on different displays.

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".

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 can replace the *layout* section with a terminal-specific onein which the size and the position of the "Text" and "Image" regions are appropriately redefined. The following example 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>
```

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.

5.4. MMS SMIL

5.4.1. Introduction

This section presents a minimum selection of SMIL elements that allow the presentation of multimedia messages, as described in Sec. 8. The elements of "MMS SMIL" are grouped by functionality, in analogy to the approach followed in the SMIL specification of W3C. [SMIL]

5.4.2. 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 listings.

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

5.4.3. Elements used in MMS SMIL

5.4.3.1. Layout Modules

The Layout Modules provides a framework for spatial layout of visual components. MMS SMIL adopts parts of the SMIL 2.0 BasicLayout module.

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

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.

5.4.3.2. 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.

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

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

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.

5.4.3.3. Structure Modules

The Structure Modules describe the structure of the SMIL document. MMS SMIL adopts the following parts of the SMIL Structure module.

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

5.4.3.4. 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 form the BasicInlineTiming module. The *begin, end* and *dur* attributes can be used in conjunction with the media object elements (see Sec. 5.4.3.2).

Some constraints are added in order to achieve a simple scheduled timeline. MMS SMIL adopts no 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" (Sec. 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.

Elements	Attributes	Content Model
Par	dur	MMSMediaContent

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

Time will be expressed in integer milliseconds.

5.4.3.5. 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.

Elements	Attributes	Content Model
Meta	Name, content	EMPTY

5.5. Coding formats

5.5.1. Images

The still image coding formats to be used in MMS messages are:

- base line JPEG with JFIF as the exchange format
- GIF87a
- GIF89a
- WBMP

The maximum image resolution for which interoperability is guaranteed is 160x120 pixels.

5.5.2. Text

The text encoding formats to be used in MMS messages are defined in the technical interoperability section.

5.5.3. Audio

For MMS clients supporting media type speech or audio, the coding format to be used in MMS messages is:

- AMR.

The AMR support is as defined by 3GPP. [AMR] [AMR FileFormat] [AMR Speech Codec]

5.5.4. PIM

The following PIM (Personal Information Management) [PIM] objects will be supported as attachments to an MMS with one condition. The condition is: If handset has a calendar then vCalendar attachment is supported.

- vCalendar version 1.0 (mime-type: text/x-vCalendar)
- vCard version 2.1 (mime-type: text/x-vCard)

6. TECHNICAL INTEROPERABILITY

6.1. Specifications

The MMS shall be implemented on top of WAP 1.2.

The specifications referred here normatively are [WAPMMS], [WAPWSP] and [WAPWTP], including their normative references, respectively.

6.2. General definitions

Minimum supported message size shall be 30 kBytes.

From a terminal manufacturer's point of view this means, that the terminal has to support receiving of messages of at least 30 kBytes.

From a content provider's point of view this means, that the maximum message size for which interoperability is guaranteed is 30 kBytes.

6.3. WAP Flow Control

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

6.4. MMS Encoding

6.4.1. Encoding and Values in MMS Headers

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

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 (Short-integer or Long-integer) (WSP 8.4.2.3). The character set us-ascii (IANA MIBenum 3) shall be always accepted. If the character set is not specified (simple Text-string encoding) the character set is 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).

6.4.2. Message Content Encoding

WSP multipart encoding shall be used [WAPWSP].

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.

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 this conformance.

6.4.3. Body Part Aspects

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) shall support three character encodings:

- us-ascii (IANA MIBEnum 3)
- utf-8 (IANA MIBenum 106) [Unicode]
- utf-16 (IANA MIBenum 1000) with explicit Byte Order Mark (BOM) [Unicode].

In the text parts, the supported characters (glyphs) shall be at least those in ISO 8859-1.

6.4.4. 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, no quotes are shall 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.

6.4.5. 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], <IMG SRC="cid:950120.aaCC@XIson.com">). 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 shall be 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., <img src="myimage.jpg">). The corresponding definition in media object parts shall be:

Content-Location: myimage.jpg

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

6.4.6. Maximum values for MMS parameters

As id:s and references may vary a lot in different implementations the conformance agreement will also cover some of these as well as some other length dependent values, in order to achieve interoperability. No constraints are 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

Appendix A. Static Conformance Requirements (Normative)

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

Item	Function	Reference	Status	Requirement
MMSCONF-C-001	Support for presentation part of the message	6.4.1	O	
MMSCONF-C-002	Support for SMIL in presentation part	4.1	M	
MMSCONF-C-003	Support for defined SMIL tags in presentation part	5.4	M	
MMSCONF-C-004	Support for WAP flowcontrol	6.3	M	
MMSCONF-S-005	Support for WAP flowcontrol	6.3	M	
MMSCONF-C-006	Messages are encoded as specified	6.4	M	
MMSCONF-S-007	Messages are encoded as specified	6.4	M	

Table 1. General requirement for MMS message

Item	Function	Reference	Status	Requirement
MMSCONF-C-008	Support for media type text	5.5.2	M	
MMSCONF-C-009	Support for us-ascii as media type text	6.4.3	M	
MMSCONF-C-010	Support for utf-8 as media type text	6.4.3	M	
MMSCONF-C-011	Support for utf-16 as media type text	6.4.3	M	
MMSCONF-C-012	Support for at least characters from ISO-8859-1 with media type text	6.4.3	M	
MMSCONF-C-013	Support for media type image	5.5.1	M	
MMSCONF-C-014	Support for baseline JPEG as image	5.5.1	M	
MMSCONF-C-015	Support for GIF87a as media type image	5.5.1	M	
MMSCONF-C-016	Support for GIF89a as media type image	5.5.1	M	
MMSCONF-C-017	Support for WBMP as media type image	5.5.1	M	
MMSCONF-C-018	Support for media type audio	5.5.2	O	
MMSCONF-C-019	Support for AMR as media type audio	5.5.3	M	
MMSCONF-C-020	Support for PIM objects	5.5.4	O	

Item	Function	Reference	Status	Requirement
MMSCONF-C-021	Support for vCalendar 1.0 as PIM object	5.5.4	M	
MMSCONF-C-022	Support for vCard 2.1 as PIM object	5.5.4	M	

Table 2. Media type and format requirement

Item	Function	Reference	Status	Requirement
MMSCONF-C-023	Support for receiving of at least 30kbyte messages	6.2	M	

Table 3. Receive requirement

Appendix B. Change History (Informative)

Type of Change	Date	Section	Description
Conversion from MMS IOP Group format to OMA document format	October 24th, 2002		The initial version of this document.