3GPP TSG-T (Terminals) Meeting #21
Frankfurt, Germany
17 - 19 September, 2003

TP-030174

Agenda Item: 5.2.3

Source: T2

Title: Change Requests on MMS

Document for: Approval

Spec	CR	Rev	Rel	Subject	Cat	Vers-Current	Vers-New	T2 doc	Workitem
23.140	130	-	Rel-6	Invalid MM7 references	F	6.2.0	6.3.0	T2-030451	MMS6
23.140	131	-	Rel-6	Enhancements to DRM support in MMS	B	6.2.0	6.3.0	T2-030473	MMS6
23.140	132	-	Rel-6	Clarity on USIM versus Over the air provisioning in MMS	C	6.2.0	6.3.0	T2-030474	MMS6
23.140	133	-	Rel-6	Inaccuracies in Annexes I & K	F	6.2.0	6.3.0	T2-030532	MMS6
23.140	134	-	Rel-6	Size in Retrieval request	C	6.2.0	6.3.0	T2-030490	MMS6
23.140	135	-	Rel-6	Transfer over MM3	C	6.2.0	6.3.0	T2-030533	MMS6
23.140	136	-	Rel-6	Extension of MM4 interface for delivery report	B	6.2.0	6.3.0	T2-030534	MMS6
23.140	137	-	Rel-6	Reply charging in case of forwarding	B	6.2.0	6.3.0	T2-030499	MMS6
23.140	138	-	Rel-6	Addition of Information elements to MM7	B	6.2.0	6.3.0	T2-030504	MMS6
23.140	139	-	Rel-5	Correction of “Date” to “TimeStamp” in MM7 Schema	F	5.7.0	5.8.0	T2-030505	MESS5-MMS

3GPP TSG-T2 #22
Cambridge, UK
25 -29 August 2003

T2-030451

CR-Form-v7

CHANGE REQUEST

⌘ **23.140** **CR** **130** ⌘ **rev** **-** ⌘ Current version: **6.2.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network **X**

Title:	⌘	Invalid MM7 references
Source:	⌘	T2
Work item code:	⌘	MMS6
Date:	⌘	18/08/2003
Category:	⌘	**F**
Release:	⌘	REL-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	Corrections.
Summary of change:	⌘	Error in 8.7.9.4 MM7_deliver.RES example. Reference to section 8.7.8.4 which does not exisit.
Consequences if not approved:	⌘	Text remains invalid.

Clauses affected:	⌘				
Other specs affected:	⌘	**Y**	**N**		
		☐	☐	Other core specifications	
		☐	☐	Test specifications	
		☐	☐	O&M Specifications	
Other comments:	⌘				

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm.
Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can

be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

8.7.9.4 MM7_deliver.RES

Information Element	Location	ElementName	Comments
Transaction ID	SOAP Header	TransactionID	
Message-Type	SOAP Body	MessageType	Defined as Root element of SOAP Body
MM7 Version	SOAP Body	MM7Version	Value is the number of the specification in which the schema has changed most recently, e.g. 5.2.0
Service code	SOAP Body	ServiceCode	
Request status	SOAP Body	StatusCode	See section 8.7.8.34
Request status text	SOAP Body	StatusText & Details	See section 8.7.8.34

Sample Deliver request and response

```
POST /mms/weather.xml HTTP/1.1
Host: www.yahoo.com
Content-Type: multipart/related; boundary="NextPart_000_0125_01C19839.7237929064"; type=text/xml;
    start="</cmvt256/mm7-deliver>"
Content-Length: nnnn
SOAPAction: ""

--NextPart_000_0125_01C19839.7237929064
Content-Type:text/xml; charset="utf-8"
Content-ID: </cmvt256/mm7-submitdeliver>

<?xml version="1.0"?>
<env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/">
      <env:Header>
        <mm7:TransactionID
xmlns:mm7="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-3"
env:mustUnderstand="1">
            vas00324-dlvr
        </mm7:TransactionID>
    </env:Header>
    <env:Body>
        <!-- Example of MM7_deliverReq -->
        <DeliverReq xmlns="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-
MM7-1-3">
            <MM7Version>5.6.0</MM7Version>
            <MMSRelayServerID>240.110.75.34</MMSRelayServerID>
            <LinkedID>wthr8391</LinkedID>
            <Sender>
                <RFC2822Address>97254265781@OMMS.com</RFC2822Address>
            </Sender>
            <TimeStamp>2002-04-15T14:35:21-05:00</TimeStamp>
            <Priority>Normal</Priority>
            <Subject>Weather Forecast</Subject>
            <Content href="cid:forecast-location200102-86453"/>
        </DeliverReq>
    </env:Body>
</env:Envelope>

--NextPart_000_0125_01C19839.7237929064
Content-Type:text/plain;charset="utf-8"
Content-ID:<forecast-location2000102-86453>

Los Angeles, Calif, USA
--NextPart_000_0125_01C19839.7237929064--
```

The deliver response message might look like this (with an application error code):

```
HTTP/1.1  200 OK
Content-Type: text/xml; charset="utf-8"
Content-Length: nnnn
```

```
<?xml version="1.0"?>
<env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/">
      <env:Header>
        <mm7:TransactionID
xmlns:mm7="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-3"
env:mustUnderstand="1">
            vas00324-dlvr
        </mm7:TransactionID>
    </env:Header>
    <env:Body>
       <env:Fault>
            <faultcode>env:Client</faultcode>
            <faultstring>Client error</faultstring>
            <detail>
        <VASPErrorRsp xmlns="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-
MM7-1-3">
                    <MM7Version>5.6.0</MM7Version>
                    <Status>
                        <StatusCode>4006</StatusCode>
                        <StatusText>Service Unavailable</StatusText>
                        <Details>
                            <app:Reason xmlns:app="http://vendor.example.com/MM7Extension">Location
not covered in service</app:Reason>
                        </Details>
                    </Status>
                </ VASPErrorRsp>
            </detail>
        </env:Fault>
    </env:Body>
</env:Envelope>
```

8.7.9.5 MM7_cancel.REQ mapping

Information Element	Location	Element-name	Comments
Transaction ID	SOAP Header	TransactionID	
Message-Type	SOAP Body	MessageType	Defined as Root element of SOAP Body
MM7 Version	SOAP Body	MM7Version	Value is the number of the specification in which the schema has changed most recently, e.g. 5.2.0
VASP ID	SOAP Body	VASPID	
VAS ID	SOAP Body	VASID	
Sender Address	SOAP Body	SenderAddress	
Message ID	SOAP Body	MessageID	

8.7.9.6 MM7_cancel.RES mapping

Information Element	Location	ElementName	Comments
Transaction ID	SOAP Header	TransactionID	
Message-Type	SOAP Body	MessageType	Defined as Root element of SOAP Body
MM7 Version	SOAP Body	MM7Version	Value is the number of the specification in which the schema has changed most recently, e.g. 5.2.0
Request status	SOAP Body	StatusCode	See section 8.7.8.34
Request status text	SOAP Body	StatusText & Details	See section 8.7.8.34

The following shows an interchange of a MM7_cancel.REQ and MM7_cancel.RES to illustrate a SOAP message that does not include a multimedia content part.

```
POST /mms-rs/mm7 HTTP/1.1
Host: mms.omms.com
```

```
Content-Type: text/xml; charset="utf-8"
Content-Length: nnnn
SOAPAction: ""

<?xml version="1.0" ?>
<env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/">
      <env:Header>
        <mm7:TransactionID
xmlns:mm7="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-3"
env:mustUnderstand="1">
                vas0000–can
        </mm7:TransactionID>
    </env:Header>
    <env:Body>
        <CancelReq xmlns="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-
3">
            <MM7Version>5.6.0</MM7Version>
            <SenderIdentification>
                <VASPID>TNN</VASPID>
                <VASID>Reminder</VASID>
            </SenderIdentification>
            <MessageID>mms000222222</MessageID>
        </CancelReq>
    </env:Body>
</env:Envelope>

HTTP/1.1  200 OK
Content-Type: text/xml; charset="utf-8"
Content-Length: nnnn

<?xml version="1.0" ?>
<env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/">
      <env:Header>
        <mm7:TransactionID
xmlns:mm7="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-3"
env:mustUnderstand="1">
                vas0000–can
        </mm7:TransactionID>
    </env:Header>
    <env:Body>
        <CancelRsp xmlns="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-
3">
            <MM7Version>5.6.0</MM7Version>
            <Status>
                <StatusCode>1000</StatusCode>
                <StatusText>Success</StatusText>
            </Status>
        </CancelRsp>
    </env:Body>
</env:Envelope>
```

8.7.9.7 MM7_replace.REQ mapping

Information Element	Location	ElementName	Comments
Transaction ID	SOAP Header	TransactionID	
Message-Type	SOAP Body	MessageType	Defined as Root element of SOAP Body
MM7 Version	SOAP Body	MM7Version	Value is the number of the specification in which the schema has changed most recently, e.g. 5.2.0
VASP ID	SOAP Body	VASPID	
VAS ID	SOAP Body	VASID	
Sender address	SOAP Body	SenderAddress	
Message ID	SOAP Body	MessageID	
Service code	SOAP Body	ServiceCode	Information supplied for billing purposes – exact format is implementation dependent
Date and time	SOAP Body	TimeStamp	
Earliest delivery time	SOAP Body	EarliestDeliveryTime	Date format – absolute or relative
Read reply	SOAP Body	ReadReply	Boolean – true or false
Adaptations	SOAP Body	allowAdaptations	Attribute of *Content* element Boolean – true or false
Content type	MIME part Header	Content-Type	
Content	SOAP Body	Content	href:cid attribute links to attachment
Message Distribution Indicator	SOAP Body	DistributionIndicator	Boolean – true or false

8.7.9.8 MM7_replace.RES mapping

Information Element	Location	ElementName	Comments
Transaction ID	SOAP Header	Transaction-ID	
Message-Type	SOAP Body	Message-Type	Defined as Root element of SOAP Body
MM7 Version	SOAP Body	MM7-Version	Value is the number of the specification in which the schema has changed most recently, e.g. 5.2.0
Request status	SOAP Body	StatusCode	See section 8.7.8.34
Request status text	SOAP Body	StatusText & Details	See section 8.7.8.34

8.7.9.9 MM7_delivery_report.REQ mapping

Information Element	Location	ElementName	Comments
Transaction ID	SOAP Header	TransactionID	
Message-Type	SOAP Body	MessageType	Defined as Root element of SOAP Body
MM7 Version	SOAP Body	MM7Version	Value is the number of the specification in which the schema has changed most recently, e.g. 5.2.0
MMS Relay/Server ID	SOAP Body	MMSRelayServerID	
Message ID	SOAP Body	MessageID	
Recipient address	SOAP Body	Recipient	
Sender address	SOAP Body	Sender	
Date and time	SOAP Body	TimeStamp	
MM Status	SOAP Body	MMStatus	Enumeration – possible values: Expired, Retrieved, Rejected, Indeterminate, Forwarded
Status text	SOAP Body	StatusText	

8.7.9.10 MM7_delivery_report.RES mapping

Information Element	Location	ElementName	Comments
Transaction ID	SOAP Header	TransactionID	
Message-Type	SOAP Body	MessageType	Defined as Root element of SOAP Body
MM7 Version	SOAP Body	MM7Version	Value is the number of the specification in which the schema has changed most recently, e.g. 5.2.0
Request Status	SOAP Body	StatusCode	See section 8.7.8.34
Request Status text	SOAP Body	StatusText & Details	See section 8.7.8.34

8.7.9.11 MM7_read_reply.REQ mapping

Information Element	Location	ElementName	Comments
Transaction ID	SOAP Header	TransactionID	
Message-Type	SOAP Body	MessageType	Defined as Root element of SOAP Body
MM7 Version	SOAP Body	MM7Version	Value is the number of the specification in which the schema has changed most recently, e.g. 5.2.0
MMS Relay/Server ID	SOAP Body	MMSRelayServerID	
Message ID	SOAP Body	MessageID	
Recipient address	SOAP Body	Recipient	
Sender address	SOAP Body	Sender	
Date and time	SOAP Body	TimeStamp	
Read Status	SOAP Body	MMStatus	Enumeration – possible values: Indeterminate, Read, Deleted without Read
Status text	SOAP Body	StatusText	

8.7.9.12 MM7_read_reply.RES mapping

Information Element	Location	ElementName	Comments
Transaction ID	SOAP Header	TransactionID	
Message-Type	SOAP Body	MessageType	Defined as Root element of SOAP Body
MM7 Version	SOAP Body	MM7Version	Value is the number of the specification in which the schema has changed most recently, e.g. 5.2.0
Request status	SOAP Body	StatusCode	See section 8.7.8.34
Request status text	SOAP Body	StatusText & Details	See section 8.7.8.34

8.7.9.13 MM7_RS_error.RES mapping

Information Element	Location	ElementName	Comments
Transaction ID	SOAP Header	TransactionID	
Message-Type	SOAP Body	MessageType	Defined as Root element of SOAP Body
MM7 Version	SOAP Body	MM7Version	Value is the number of the specification in which the schema has changed most recently, e.g. 5.2.0
Error status	SOAP Body	StatusCode	See section 8.7.8.34
Error status text	SOAP Body	StatusText & Details	See section 8.7.8.34

8.7.9.14 MM7_VASP_error.RES mapping

Information Element	Location	Element-name	Comments
Transaction ID	SOAP Header	Transaction-ID	
Message-Type	SOAP Body	Message-Type	Defined as Root element of SOAP Body
MM7 Version	SOAP Body	MM7-Version	Value is the number of the specification in which the schema has changed most recently, e.g. 5.2.0
Error status	SOAP Body	StatusCode	See section 8.7.8.34
Error status text	SOAP Body	StatusText & Details	See section 8.7.8.34

3GPP TSG-T2 #22
Cambridge, UK
25 - 29 August 2003

T2-030473

CR-Form-v7

CHANGE REQUEST

⌘ **23.140** **CR** **131** ⌘ **rev** **-** ⌘ Current version: **6.2.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ [ ] ME [X] Radio Access Network [ ] Core Network [X]

Title:	⌘	Enhancements to DRM support in MMS
Source:	⌘	T2
Work item code:	⌘	MMS6
Date:	⌘	19/08/2003
Category:	⌘	**B**
Release:	⌘	REL-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)

Reason for change:	⌘	Protection of copyright content in MMS is seen an essential need for mobile content providers. The current support of DRM in MMS does not specify all the mechanisms standardised in OMA DRM Release 1. In particular, the MMS behaviour related to Forward Lock and Combined Delivery functionalities, which require network side support, is not specified. In addition, the Message Distribution Indicator IE becomes redundant and a potential source of ambiguities if used jointly with the new proposed DRM mechanisms.
Summary of change:	⌘	The specification of the terminal and network side behaviour related to Forward Lock and Combined Delivery functionalities is added. A clarification about the support of Separate Delivery is provided. The Message Distribution Indicator IE is made obsolete, i.e. its usage is discouraged although it is maintained for backward compatibility.
Consequences if not approved:	⌘	Forward Lock and Combined Delivery wouldn't be supported in MMS. Uncomplete and non interoperable support of OMA DRM functionalities would result. Ambiguities could result in the interpretation of OMA DRM functionalities with respect to earlier content protection mechanisms, i.e. Message Distribution Indicator information element.

Clauses affected:	⌘	5.1.2.12; 5.2; 7.1.3.1; 7.1.13.5; 7.1.15; 8.1.4.3.; 8.1.4.4; 8.1.5.3; 8.1.5.4; 8.7.1.3; 8.7.1.4; 8.7.3.3; 8.7.3.4
Other specs	⌘	Y [X] N [ ] Other core specifications ⌘

affected:	X	Test specifications
	X	O&M Specifications
Other comments: ⌘		

How to create CRs using this form:

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3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

<modified clause>

5.1.2 Minimum set of supported formats

In order to guarantee a minimum support and compatibility between multimedia messaging capable terminals, the following media and file formats shall be supported as defined below and in 3GPP TS 26.140 [74].

5.1.2.1 Interoperability with SMS

In order to guarantee SMS interoperability, SMS 3GPP TS 24.011 [11] RP-DATA RPDU encapsulation defined in clause 7.3.1 shall be supported. MIME type "application/vnd.3gpp.sms" shall be used for this purpose. In order to maintain backward compatibility, MIME type "application/x-sms" shall be supported by the MMS UA for mobile-terminated messages only.

5.1.2.2 Plain Text

Plain Text coding used inside MMS shall be according to [74].

5.1.2.3 Speech

Speech coding used inside MMS shall be according to [74].

5.1.2.4 Audio

Audio coding used inside MMS shall be according to [74].

5.1.2.5 Synthetic audio

Synthetic audio coding used inside MMS shall be according to [74].

5.1.2.6 Still Image

Still image coding used inside MMS shall be according to [74].

5.1.2.7 Bitmap graphics

Bitmap graphics coding used inside MMS shall be according to [74].

5.1.2.8 Video

Video coding used inside MMS shall be according to [74].

5.1.2.9 Vector graphics

Vector graphics coding used inside MMS shall be according to [74].

5.1.2.10 File Format for dynamic media

Support for file formats for dynamic media used inside MMS shall be according to [74].

5.1.2.11 Media synchronization and presentation format

Support for media synchronization and presentation format used inside MMS shall be according to [74].

5.1.2.12 DRM format

Support for DRM protected MM elements (i.e. ‘DRM Message’ and ‘DRM Content Format (DCF)’) shall be according to section 7.1.15.

<modified clause>

5.2 MMS Relay/Server

The MMS Relay/Server is responsible for storage and notification, reports, and general handling of messages. The MMS Relay/Server may also provide convergence functionality between External Servers and MMS User Agents and thus enable the integration of different server types across different networks. An Example can be found in Annex A.

It is possible to separate the MMS Relay/Server element into MMS Relay and MMS Server elements, but an allocation of the MMS Relay/Server functionalities to such elements is not defined in this release.

The MMS Relay/Server shall provide the following functionalities:

- receiving and sending MM;
- conversion of messages arriving at the recipient MMS Relay/Server from legacy messaging systems to MM format (e.g. facsimile to MM) if interworking with legacy messaging systems (MM3) is supported;
- conversion of MMs leaving the originator MMS Relay/Server to legacy messaging systems to the appropriate message format (e.g. MM to internet email) if interworking with legacy messaging systems (MM3) is supported;
- message content retrieval;
- MM notification to the MMS User Agent;
- generating delivery reports;
- routing forward MMs and read-reply reports;
- address translation;
- temporary storage of messages;
- ensuring that messages are not lost until successfully delivered to another MMSE element;.
- DRM functionalities according to section 7.1.15.

The MMS Relay/Server should provide additional functionalities such as:

- generating charging data records (CDR);
- negotiation of terminal capabilities.

The MMS Relay/Server may provide additional functionalities such as:

- MM forwarding;
- address hiding;
- persistent storage of messages;
- controlling the reply-charging feature of MMS;.
- relaying Message Distribution Indicator.

The MMS Relay/Server can provide additional functionalities which are not further specified in this release such as:-

- enabling/disabling MMS function;
- personalising MMS based on user profile information;
- MM deletion based on user profile or filtering information;
- media type conversion;
- media format conversion;

- screening of MM;
- checking terminal availability;
- managing the message properties on servers (e.g. voicemail or email server) integrated in the MMSE (consistency) (only applicable if interworking with legacy messaging systems (MM3) is supported).

This list of additional optional functionalities of the MMS Relay/Server is not exhaustive.

<modified clause>

7.1.3.1 Terminal Capability Negotiation

An MMS User Agent shall support Terminal Capability Negotiation. An MMS Relay/Server ~~should~~ shall support Terminal Capability Negotiation.

Within a request for delivery of an MM the recipient MMS User Agent shall be able to indicate its capabilities towards the recipient MMS Relay/Server.

The recipient MMS User Agent may indicate its capabilities towards the recipient MMS Relay/Server by transmitting:

- a set of information describing the terminal's capabilities
- a link (e.g. URI) to a database where the MMS Relay/Server can fetch a set of information describing the terminal's capabilities, and/or
- a differential set of information indicating changes to a previously indicated set of terminal capability information.

The detailed definition of the specific mechanism for terminal capability negotiation shall be defined by the MM1 implementation (WAP etc.). The mechanism for terminal capability negotiation shall ensure that the MMS Relay/Server is provided with the information describing the MMS User Agent's capabilities within every request for delivery of an MM.

E.g. in the WAP implementation of MMS, in case an underlying WSP session is established between the MMS User Agent and an intermediate WAP Gateway, the MMS User Agent indicates its capabilities towards the WAP Gateway only after the initial set-up of the underlying WSP session or spontaneously following a change in terminal capabilities. The WAP Gateway, however, caches the terminal capability information and passes these on to the MMS Relay/Server within every request for delivery of an MM. Intermediate proxies on the MM1 reference point may also be involved in terminal capability negotiation and/or content adaptation.

Upon reception of such a delivery request the recipient MMS Relay/Server should use the information about the capabilities of the recipient MMS User Agent in preparation of MMs to be delivered to the recipient MMS User Agent. The MMS Relay/Server should adjust an MM to be delivered that contains media types and media formats that are not supported by the recipient MMS User Agent. This adjustment might involve the deletion or adaptation of those unsupported media types and media formats.

The MMS User Agent's capability information should include

- the maximum supported size of an MM,
- the maximum supported resolution of an image,
- a list of supported media types and media formats (e.g. MIME types),
- a list of supported character sets,
- a list of preferred languages,
- the maximum supported colour depth,
- an indication whether or not the recipient MMS User Agent supports streaming for the retrieval of MM contents as specified in clause 7.1.7.

The MMS User Agent's capability information shall include:

- an indication of which Digital Rights Management methods are supported by the recipient MMS User Agent for protecting MM elements as specified in clause 7.1.15.

This information may include additional information related to the MMS implementation (WAP etc.).

<modified clause>

7.1.13.5 Message Distribution Indicator

A Message Distribution Indicator may be provided for the whole Multimedia Message coming from a VASP. The indicator is purely informational, e.g. an MMS User Agent is not responsible for any functionality regarding message redistribution. The aim is to indicate that the MM content is not to be redistributed.

NOTE: DRM-protection of an MM, as specified in section 7.1.15, takes precedence over Message Distribution Indicator from REL-6 onwards.

<modified clause>

7.1.15 Support for Digital Rights Management in MMS

The support of DRM in MMS shall conform to the OMA DRM specifications [76], [77] and [78].

DRM-protection of an MM shall take precedence over Message Distribution Indication and over MM7 Content Adaptation Restriction from REL-6 onwards.

The following sections describe the application of DRM protection to MMS.

7.1.15.1 DRM-protected content within an MM

~~An MMS User Agent may support Digital Rights Management, DRM. The following descriptions apply when DRM is supported.~~

An MM may include one or more DRM-protected MM elements. DRM protection of MM elements shall be performed according to [76], [77] and [78], with each MM element being protected separately. Each DRM-protected MM element shall be encapsulated as a DRM object, i.e. 'DRM Message' or 'DCF'.

In particular, DRM protection shall neither be applied to an MM as a whole (MMS PDU), nor to any presentation description (e.g. SMIL) within an MM.

~~NOTE: When "DRM message" according to [76] is used in MMS, i.e. DRM protection without content encryption, the DRM protection might be harmed by forwarding operations triggered by the MMS User Agent and carried out by the MMS Relay/Server (e.g. forwarding without prior retrieval).~~

The headers (i.e. content-location or content-ID) used by the presentation description (e.g. SMIL) to refer to a DRM object shall be placed as MMS body part headers, due to MIME-based structure of the MM.

In case of Separate Delivery, the 'X-Oma-Drm-Separate-Delivery' header, if present, shall be placed as MMS body part header, due to MIME-based structure of the MM.

MMS body part headers shall not be DRM-protected.

7.1.15.2 DRM-related User Agent beaviour

An MMS User Agent may support Digital Rights Management, DRM according to [76], [77], [78]. An MMS User Agent that supports the DRM restrictions shall indicate this support in its terminal capability profile, as defined in the DRM specifications.

NOTE: E.g. after having received an MM containing a 'DRM Message' object, an MMS User Agent does neither use that DRM-protected MM element while composing a new MM nor store it into a user accessible persistent network storage (e.g. MMBox).

7.1.15.3 DRM-related Relay/Server behaviour

An MMS Relay/Server shall support Forward Lock, Combined Delivery and Separate Delivery DRM functionalities according to [76], [77], [78].

7.1.15.3.1 Support for Forward Lock and Combined Delivery

For Forward Lock and Combined Delivery support, the MMS Relay/Server shall ensure that no single DRM-protected MM element is conveyed to any receiving entity, such as an MMS User Agent, an MMS Relay/Server, a user-accessible persistent network-storage (e.g. MMBox), which does not comply with OMA DRM specifications [76], [77].

In particular, the MMS Relay/Server shall not:

- deliver any DRM-protected MM elements ('DRM Message') to an MMS User Agent which does not support DRM;
- route forward any DRM-protected MM elements ('DRM Message') over MM3, MM4 or MM7 to a receiving entity which does not support DRM;
- store any DRM-protected MM elements ('DRM Message') into a user accessible persistent network storage (e.g. MMBox);
- forward any DRM-protected MM elements ('DRM Message') prior to MM retrieval or from the MMBox.

The MMS Relay/Server shall not alter or strip-off any part of the 'DRM Message' header (e.g. the Boundary parameter declaration).

7.1.15.3.2 Support for Separate Delivery

For DRM Separate Delivery the MMS Relay/Server shall relay any DCF object unaltered. In particular it shall not strip-off any part of the DCF body or headers (e.g. the 'X-Oma-Drm-Separate-Delivery' header).

<modified clauses>

8.1.4.3 Features

Addressing: The MM originator address may be provided to the recipient MMS User Agent in the MM1_notification.REQ. The MM originator address shall not be provided to the recipient MMS User Agent if the MM originator has requested her address to be hidden from the MM recipient. In the case of forwarding, the address of the latest forwarding MMS User Agent shall be provided.

Time constraints: The recipient MMS User Agent shall be provided a time of expiry of the MM. In case of reply-charging the deadline for the latest time of submission of a reply-MM should be conveyed within the MM1_notification.REQ.

Reply-Charging: In case of reply-charging the MMS Relay/Server may indicate in the MM1_notification.REQ that a reply to the notified original MM is free of charge and the reply-charging limitations.

Message class, message size, priority and subject: The MM shall be qualified further by adding a message class and an approximate size to the MM in the MM1_notification.REQ. The MM may be qualified further by adding a priority and/or subject to the MM. Additional qualifiers may be added.

Reporting: If the originator MMS User Agent has requested to have a delivery report, the recipient MMS Relay/Server may convey this information to the recipient MMS User Agent in the MM1_notification.REQ. The recipient MMS User Agent may indicate in the MM1_notification.RES that it would not wish a delivery report to be created.

Identification: In case of reply-charging when a reply-MM is notified within the MM1_notification.REQ the MMS Relay/Server should convey the identification of the original MM replied to within the same MM1_notification.REQ.

Persistent storage: When the MMBox is configured such that incoming MMs are stored automatically, the MM1_notification.REQ shall contain the Stored information element.

Message Reference: The recipient MMS Relay/Server shall always provide a reference, e.g., URI, for the MM in the MM1_notification.REQ. When incoming MMs are stored automatically, the Message Reference will refer to the newly stored MM within the MMBox.

MM Status: The recipient MMS User Agent may indicate in the MM1_notification.RES how it intends the MM to be handled, e.g. the immediate rejection of the MM.

MM element descriptor: The recipient MMS Relay/Server may provide one or more description(s) of message elements in the MM1_notification.REQ. A description shall contain a reference to the message element, e.g. a URI, an index number etc.. A description of a message element may be further qualified by adding one or more of such parameters as:

- name of the message element
- type and format of the message element
- approximate size of the message element

Message Distribution Indication: The VASP may indicate whether the content of the MM is intended for redistribution. NOTE: from REL-6 onwards, in case of misalignment, DRM-protection rules shall prevail over the Message Distribution Indication feature.

Transaction Identification: The originator MMS Relay/Server shall provide an unambiguous transaction identification within a request. The response shall unambiguously refer to the corresponding request using the same transaction identification.

Version: The MMS protocol shall provide unique means to identify the current version of the particular protocol environment.

Message Type: The type of the message used on the reference point MM1 indicating MM1_notification.REQ and MM1_notification.RES as such.

8.1.4.4 Information Elements

Table 1: Information elements in the MM1_notification.REQ.

Information element	Presence	Description
Message Type	Mandatory	Identifies this message as MM1_notification.REQ
Transaction ID	Mandatory	The identification of the MM1_notification.REQ/MM1_notification.RES pair.
MMS Version	Mandatory	Identifies the version of the interface supported by the MMS Relay/Server.
Message class	Mandatory	The class of the MM (e.g., personal, advertisement, information service; default = personal)
Message size	Mandatory	The approximate size of the MM
Time of expiry	Mandatory	The time of expiry for the MM (time stamp).
Message Reference	Mandatory	a reference, e.g., URI, for the MM
Subject	Optional	The title of the whole MM.
Priority	Optional	The priority (importance) of the message.
Sender address	Conditional	The address of the MMS User Agent that most recently handled the MM, i.e. that either submitted or forwarded the MM. If the originator MMS User Agent has requested her address to be hidden from the recipient her address shall not be provided to the recipient.
Stored	Optional	Indicates that the MM was automatically stored into the MMBox.
Delivery report	Optional	Request for delivery report
Reply-Charging	Optional	Information that a reply to this particular original MM is free of charge.
Reply-Deadline	Optional	In case of reply-charging the latest time of submission of a reply granted to the recipient (time stamp).
Reply-Charging-Size	Optional	In case of reply-charging the maximum size of a reply-MM granted to the recipient.
Reply-Charging-ID	Optional	The identification of the original MM replied to if this notification indicates a reply-MM.
Element-Descriptor	Optional	The reference for an element of the MM, which may contain further information about the referenced element of the MM, e.g. the name, the size and/or the type and format of the message element
Message Distribution Indicator	Optional	If set to “false” the VASP has indicated that content of the MM is not intended for redistribution. If set to “true” the VASP has indicated that content of the MM can be redistributed. (NOTE)
NOTE: from REL-6 onwards, in case of misalignment between the value assigned to MDI and DRM-protection rules, the latter shall prevail.		

<modified clauses>

8.1.5.3 Features

Message Reference: The recipient MMS User Agent shall provide a reference, e.g., URI, for the MM in the MM1_retrieve.REQ.

This reference was previously delivered to the MMS User Agent from MM1_notification.REQ, MM1_submit.RES, MM1_forward.RES, MM1_mmbox_view.RES, MM1_mmbox_upload.RES, or MM1_mmbox_store.RES. In the latter cases, the Message Reference will address an MM that resides in the MMBox.

Addressing: The MM originator address may be provided to the recipient MMS User Agent in the addressing-relevant information field of MM1_retrieve.RES. The MM originator address shall not be provided to the recipient MMS User Agent if the MM originator has requested her address to be hidden from the MM recipient. In the case of forwarding, the address of the latest forwarding MMS User agent shall be provided and the address(es) of the previous forwarding MMS User Agent(s) and the address of the originator MMS User Agent may be provided. One or several address(es) of

the MM recipient(s) may be provided to the recipient MMS User Agent in the addressing-relevant information field(s) of the MM1_retrieve.RES.

Time stamping: The MM1_retrieve.RES shall carry the time and date of the most recent handling of the MM by an MMS User Agent (i.e. either submission or the most recent forwarding of the MM). In the case of forwarding, the MM1_retrieve.RES may in addition carry the time and date of the submission of the MM.

Time constraints: In case of reply-charging the deadline for the latest time of submission of a reply-MM shall be conveyed within the MM1_retrieve.RES.

Message class, priority and subject: Information about class, priority, subject of the MM shall be included in the MM1_retrieve.RES according to their presence and value received at the MMS Relay/Server. Information about additional end-to-end qualifiers of the MM should be included in the MM1_retrieve.RES according to their presence and value received at the MMS Relay/Server.

Reporting: If the originator MMS User Agent has requested to have a read-reply report, the recipient MMS Relay/Server shall convey this information in the MM1_retrieve.RES. If the originator MMS User Agent has requested to have a delivery report, the recipient MMS Relay/Server may convey this information to the recipient MMS User Agent in the MM1_retrieve.RES.

If a request for a delivery report is included in the MM1_retrieve.RES the recipient MMS User Agent shall convey the information whether it accepts or denies the sending of a delivery report to the MM originator in MM1_acknowledgement.REQ.

If a delivery report is not requested, it is up to the recipient MMS User Agent to include this information in MM1_acknowledgement.REQ or not.

Reply-Charging: In case of reply-charging the MMS Relay/Server should indicate in the MM1_retrieve.RES that a reply to this particular original MM is free of charge and the reply-charging limitations.

Identification: The MMS Relay/Server shall provide a message identification for a message, which it has accepted for delivery in the MM1_retrieve.RES. In case of reply-charging the MMS Relay/Server shall provide the message ID of the original MM which is replied to in the MM1_retrieve.RES.

Persistent storage: In the MM1_retrieve.RES, the MMS Relay/Server shall convey the MM State and/or MM Flags information elements if they have been previously set for the persistently stored MM.

Content Type: The type of the MM's content shall always be identified in the MM1_retrieve.RES.

Content: The content of the multimedia message if added by the originator MMS User Agent of the MM may be conveyed in the MM1_retrieve.RES.

Request Status: In case of normal operation the recipient MMS Relay/Server may indicate in the MM1_retrieve.RES that the retrieval of the MM was processed correctly. In case of abnormal operation the recipient MMS Relay/Server shall indicate in the MM1_retrieve.RES the reason why the multimedia message could not be retrieved. The corresponding reason codes should cover application level errors (e.g. "the media format could not be converted", "insufficient credit for retrieval"). Lower layer errors may be handled by corresponding protocols.

The reason code given in the status information element of the MM1_retrieve.RES may be supported with an explanatory text further qualifying the status. If this text is available in the Request status text information element the MMS User Agent should bring it to the user's attention. The choice of the language used in the Request status text information element is at the discretion of the MMS service provider.

Previously-sent-by: The address(es) of the MMS User Agent(s) that submitted or forwarded the MM prior to the last forwarding MMS User Agent. In the multiple forwarding case the order of the provided addresses shall be indicated and the address of the originator MMS User Agent shall be indicated, if present.

NOTE: The address of the last forwarding MMS User Agent is carried in other addressing elements.

Message Distribution Indication: The VASP may indicate whether the content of the MM is intended for redistribution. NOTE: from REL-6 onwards, in case of misalignment, DRM-protection rules shall prevail over the Message Distribution Indication feature.

Transaction Identification: The originator MMS User Agent shall provide unambiguous transaction identification within a request. The response shall unambiguously refer to the corresponding request using the same transaction identification.

Version: The MMS protocol shall provide unique means to identify the current version of the particular protocol environment.

Message Type: The type of the message used on the reference point MM1 indicating MM1_retrieve.RES and MM1_acknowledgement.REQ as such.

8.1.5.4 Information Elements

Table 2: Information elements in the MM1_retrieve.REQ

Information element	Presence	Description
Message Reference	Mandatory	Location of the content of the MM to be retrieved.

Table 3: Information elements in the MM1_retrieve.RES

Information element	Presence	Description
Message Type	Mandatory	Identifies this message as MM1_retrieve.RES.
Transaction ID	Conditional	If the MMS Relay/Server requests an acknowledgement from the recipient MMS User Agent then the Transaction ID shall be present. It then identifies the MM1_retrieve.RES/MM1_acknowledgement.REQ messages.
MMS Version	Mandatory	Identifies the version of the interface supported by the MMS Relay/Server.
Message ID	Conditional	The message ID of the MM. Condition: this information element shall be present when the MM1_retrieve.RES contains the requested MM content.
Sender address	Conditional	The address of the MMS User Agent that most recently handled the MM, i.e. that either submitted or forwarded the MM. If the originator MMS User Agent has requested her address to be hidden from the recipient her address shall not be provided to the recipient.
Content type	Mandatory	The content type of the MM's content.
Recipient address	Optional	The address of the MM recipient. Multiple addresses are possible.
Message class	Optional	The class of the message (e.g., personal, advertisement, information service)
Date and time	Mandatory	The time and date of the most recent handling (i.e. either submission or forwarding) of the MM by an MMS User Agent (time stamp).
Delivery report	Conditional	A request for delivery report if a delivery report has been requested by the originator MMS User Agent.
Priority	Conditional	The priority (importance) of the message if specified by the originator MMS User Agent..
Read reply	Conditional	A request for read-reply report if the originator MMS User Agent of the MM has requested a read-reply report.
Subject	Conditional	The title of the whole multimedia message if specified by the originator MMS User Agent of the MM.
MM State	Conditional	The MM State. May be absent for incoming MMs; shall be present for persistently stored MMs
MM Flags	Optional	Present only for persistently stored MMs. One or more keyword flags, which shall be present if they have been previously set for the MM.
Request Status	Optional	The status of the MM retrieve request.
Request Status Text	Optional	Description which qualifies the status of the MM retrieve request.
Reply-Charging	Optional	Information that a reply to this particular original MM is free of charge.
Reply-Charging-ID	Optional	In case of reply-charging this is the identification of the original MM replied to.
Reply-Deadline	Optional	In case of reply-charging the latest time of submission of a reply granted to the recipient (time stamp).
Reply-Charging-Size	Optional	In case of reply-charging the maximum size of a reply-MM granted to the recipient.
Previously-sent-by	Optional	In case of forwarding this information element contains one or more address(es) of MMS User Agent(s) that handled (i.e. forwarded or submitted) the MM prior to the MMS User Agent whose address is contained in the Sender address information element. The order of the addresses provided shall be marked. The address of the originator MMS User Agent shall be marked, if present.
Previously-sent-date-and-time	Optional	The date(s) and time(s) associated with submission and forwarding event(s) prior to the last handling of the MM by an MMS User Agent (time stamp).
Message Distribution Indicator	Optional	If set to "false" the VASP has indicated that content of the MM is not intended for redistribution. If set to "true" the VASP has indicated that content of the MM can be redistributed. (NOTE)
Content	Conditional	The content of the multimedia message if specified by the originator MMS User Agent of the MM.

NOTE: from REL-6 onwards, in case of misalignment between the value assigned to MDI and DRM-protection rules, the latter shall prevail.

<modified clauses>

8.7.1.3 Features

Authorisation: The VASP must supply its own identifier or the VAS identifier as part of the request.

Addressing: The VASP may direct the MM to a one or more subscribers or to a distribution list. In the addressing information, it may be indicated whether a recipient address is meant for informational purposes only or to be used for routing. In the addressing information, it may be indicated whether a recipient address has been encrypted or obfuscated. The originator of a submitted MM may be indicated in addressing-relevant information field(s) of the MM7_submit.REQ

Version: The MM7 protocol shall provide unique means to identify the version supported by both the MMS Relay/Server and VASP.

Message Type: The type of message used on reference point MM7 indicating MM7_submit.REQ and MM7_submit.RES as such.

Transaction Identification: The VASP shall provide an unambiguous transaction identification within an MM7_submit.REQ. The MM7_submit.RES shall unambiguously refer to the corresponding MM7_submit.REQ using the same transaction identification.

Linked message identification: The VASP will supply a message identifier when submitting a message, that defines a correspondence to a previous message that was delivered by the MMS Relay/Server to the VASP

Message class, priority, and subject: The VASP may qualify the MM further by adding a message class, a priority and/or subject to the MM7_submit.REQ.

Service code: The VASP may mark the content of the message with a service code that may be transferred by the MMS Relay/Server in the form of charging information for use by the billing system to properly bill the user for the service being supplied.

Time stamping: The VASP may time stamp the MM.

Time constraints: The VASP may request an earliest desired time of delivery of the MM. The VASP may request a time of expiry for the MM

Reply-Charging: The originator VASP may indicate that it wants to pay for a reply-MM and convey the reply-charging limitations (e.g. the latest time of submission and/or the maximum size of a reply-MM) in the MM7_submit.REQ.

Delivery reporting: The VASP may request a delivery report for the MM

Read reporting: The VASP may request a read-reply report when the user has viewed the MM.

Content adaptation restriction: The VASP may request that the content of the MM will not be subjected to content adaptation. NOTE: from REL-6 onwards, in case of misalignment, DRM-protection rules shall prevail on the Content Adaptation Restriction feature.

Content type: The MIME type of the multimedia content shall always be identified in the MM7_submit.REQ.

Content: The VASP may add content in the MM7_submit.REQ.

Message identification: The MMS Relay/Server shall always provide a message identification for an MM, which it has accepted for submission in the MM7_submit.RES.

Request status: The MMS Relay/Server shall indicate the status of the MM7_submit.REQ in the associated MM7_submit.RES. The reason code given in the status information element of the MM7_submit.RES may be supported with an explanatory text further qualifying the status.

Charged-Party: The VASP may indicate in the MM7_submit.REQ which party is expected to be charged for an MM submitted by the VASP, e.g. the sending, receiving, both parties or neither.

Charged party ID: The address of the third party which is expected to pay for the MM.

Message Distribution Indication: The VASP may indicate whether the content of the MM is intended for redistribution. NOTE: from REL-6 onwards, in case of misalignment, DRM-protection rules shall prevail on the Message Distribution Indication feature.

8.7.1.4 Information Elements

Table 4: Information elements in the MM7_submit.REQ .

Information element	Presence	Description
Transaction ID	Mandatory	The identification of the MM7_submit.REQ/ MM7_submit.RES pair.
Message type	Mandatory	Identifies this message as a MM7_submit request.
MM7 version	Mandatory	Identifies the version of the interface supported by the VASP
VASP ID	Optional	Identifier of the VASP for this MMS Relay/Server.
VAS ID	Optional	Identifier of the originating application.
Sender address	Optional	The address of the MM originator.
Recipient address	Mandatory	The address of the recipient MM. Multiple addresses are possible or the use of the alias that indicates the use of a distribution list. It is possible to mark an address to be used only for informational purposes. It is possible to mark that a recipient address is provided in encrypted or obfuscated format. E.g. the address was originally provided in encrypted or obfuscated form in an associated MM7_deliver.REQ.
Service code	Optional	Information supplied by the VASP which may be included in charging information. The syntax and semantics of the content of this information are out of the scope of this specification.
Linked ID	Optional	This identifies a correspondence to a previous valid message delivered to the VASP.
Message class	Optional	Class of the MM (e.g. advertisement, information service, accounting)
Date and time	Optional	The time and date of the submission of the MM (time stamp).
Time of Expiry	Optional	The desired time of expiry for the MM (time stamp).
Earliest delivery time	Optional	The earliest desired time of delivery of the MM to the recipient (time stamp).
Delivery report	Optional	A request for delivery report.
Read reply	Optional	A request for confirmation via a read report to be delivered as described in section 8.1
Reply-Charging	Optional	A request for reply-charging.
Reply-Deadline	Optional	In case of reply-charging the latest time of submission of replies granted to the recipient(s) (time stamp).
Reply-Charging-Size	Optional	In case of reply-charging the maximum size for reply-MM(s) granted to the recipient(s).
Priority	Optional	The priority (importance) of the message.
Subject	Optional	The title of the whole multimedia message.
Adaptations	Optional	Indicates if VASP allows adaptation of the content (default True) (NOTE 1)
Charged Party	Optional	An indication which party is expected to be charged for an MM submitted by the VASP, e.g. the sending, receiving, both parties third party or neither.
Content type	Mandatory	The content type of the MM's content.
Content	Optional	The content of the multimedia message
Message Distribution Indicator	Optional	If set to "false" the VASP has indicated that content of the MM is not intended for redistribution. If set to "true" the VASP has indicated that content of the MM can be redistributed. (NOTE 2)
Charged Party ID	Optional	The address of the third party which is expected to pay for the MM
- NOTE 1: from REL-6 onwards, in case of misalignment between the value assigned to Adaptations and DRM-protection rules, the latter shall prevail. - NOTE 2: from REL-6 onwards, in case of misalignment between the value assigned to MDI and DRM-protection rules, the latter shall prevail.		

<modified clauses>

8.7.3.3 Features

Authorisation: The VASP must supply its own identifier or the VAS identifier as part of the request.

Addressing: When replacing a previously sent message the replacement shall be addressed to the same recipients as the original being replaced.

Version: The MM7 protocol shall provide unique means to identify the version supported by both the MMS Relay/Server and VASP.

Message type: The type of message used on reference point MM7 indicating MM7_cancel.REQ, MM7_cancel.RES, MM7_replace.REQ, and MM7_replace.RES as such.

Transaction identification: The VASP shall provide an unambiguous transaction identification within a request. The response shall unambiguously refer to the corresponding request using the same transaction identification.

Service code: The VASP may mark the content of the message with a service code that may be transferred by the MMS Relay/Server in the form of charging information for use by the billing system to properly bill the user for the service being supplied.

Time stamping: The VASP may time stamp the MM.

Time constraints: The VASP may also request the earliest desired time of delivery of the MM to be changed.

Read reporting: The VASP may request a read-reply report when the user has viewed the MM.

Content adaptation restriction: The VASP may request that the content of the MM will not be subjected to content adaptation. NOTE: from REL-6 onwards, in case of misalignment, DRM-protection rules shall prevail on the Content Adaptation Restriction feature.

Content type: The MIME type of the multimedia content shall always be identified in the MM7_replace.REQ if content is replaced.

Content: The content of the multimedia message if provided by the VASP may be conveyed in the MM7_replace.REQ.

Message identification: The MMS Relay/Server shall always provide a message identification for an MM, which it has accepted for submission in either the MM7_replace.REQ or in the MM7_cancel.REQ. The VASP shall supply this message identification when requesting to cancel or replace a previously submitted message. When replacing a MM the updated message retains the identification of the original (replaced) message.

Request status: The MMS Relay/Server shall indicate the status of the request in the associated response. The reason code given in the status information element of the response may be supported with an explanatory text further qualifying the status.

8.7.3.4 Information Elements

Table 5: Information elements in the MM7_cancel.REQ .

Information element	Presence	Description
Transaction ID	Mandatory	The identification of the MM7_cancel.REQ/ MM7_cancel.RES pair.
Message type	Mandatory	Identifies this message as a MM7_cancel request.
MM7 version	Mandatory	Identifies the version of the interface supported by the VASP
VASP ID	Optional	Identifier of the VASP for this MMS Relay/Server.
VAS ID	Optional	Identifier of the originating application.
Sender address	Optional	The address of the MM originator.
Message ID	Mandatory	Identifier of the message to cancel.

Table 6: Information elements in the MM7_cancel.RES .

Information element	Presence	Description
Transaction ID	Mandatory	The identification of the MM7_cancel.REQ/ MM7_cancel.RES pair.
Message type	Mandatory	Identifies this message as a MM7_cancel response.
MM7 version	Mandatory	Identifies the version of the interface supported by the MMS Relay/Server
Request Status	Mandatory	Status of the completion of the request.
Request Status text	Optional	Text description of the status for display purposes, should qualify the Request Status

Table 7: Information elements in the MM7_replace.REQ .

Information element	Presence	Description
Transaction ID	Mandatory	The identification of the MM7_replace.REQ/ MM7_replace.RES pair.
Message type	Mandatory	Identifies this message as a MM7_replace request.
MM7 version	Mandatory	Identifies the version of the interface supported by the VASP
VASP ID	Optional	Identifier of the VASP for this MMS Relay/Server.
VAS ID	Optional	Identifier of the originating application.
Message ID	Mandatory	Identifier of the message that current message replaces.
Service code	Optional	Information supplied by the VASP which may be included in charging information. The syntax and semantics of the content of this information are out of the scope of this specification.
Date and time	Optional	The time and date of the submission of the MM (time stamp).
Earliest delivery time	Optional	The earliest desired time of delivery of the MM to the recipient (time stamp).
Read reply	Optional	A request for confirmation via a read report to be delivered as described in section 8.1
Adaptations	Optional	Indicates if VASP allows adaptation of the content (default True). (NOTE 1)
Content type	Conditional	The content type of the MM's content. If the Content IE appears, then the Content type IE must appear.
Content	Optional	The content of the multimedia message
Message Distribution Indicator	Optional	If set to "false" the VASP has indicated that content of the MM is not intended for redistribution. If set to "true" the VASP has indicated that content of the MM can be redistributed. (NOTE 2)
- NOTE 1: from REL-6 onwards, in case of misalignment between the value assigned to Adaptations and DRM-protection rules, the latter shall prevail. - NOTE 2: from REL-6 onwards, in case of misalignment between the value assigned to MDI and DRM-protection rules, the latter shall prevail.		

3GPP TSG-T2 #22
Cambridge, UK
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T2-030474

CR-Form-v7

CHANGE REQUEST

⌘ **23.140** **CR** **132** ⌘ **rev** **-** ⌘ Current version: **6.2.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ [ ] ME [X] Radio Access Network [ ] Core Network [X]

Title:	⌘	Clarity on USIM versus Over the air provisioning in MMS
Source:	⌘	T2
Work item code:	⌘	MMS6
Date:	⌘	26/08/2003
Category:	⌘	**C**
Release:	⌘	REL-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	At T#20 additional clarity to the provisioning section was requested w.r.t the co-existence of USIM and OTA provisioning.
Summary of change:	⌘	clarification to the provisioning section is given w.r.t the co-existence of USIM and OTA provisioning.
Consequences if not approved:	⌘	Missing clarity might lead to confusion in the market

Clauses affected:	⌘	Annex F			
Other specs affected:	⌘	**Y**	**N**		
			X	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm.
Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

Annex F (normative): Configuration of MMS-capable UEs

An MMS-capable UE may be configured with information about MMS connectivity and user preferences. A configured MMS-capable UE requires minimum user interaction for different MMS-specific purposes, e.g. accessing network infrastructure, composing mobile-originated MMs. MMS connectivity information and user preferences are described below.

F.1 MMS Connectivity Information

MMS connectivity information consists of a set of information elements needed to access network infrastructure for the MMS purpose. This includes bearer, protocols, and addresses of related access points. Two possible ways to provision an MMS-capable UE with MMS connectivity information, which are not mutually exclusive, are:

- via the (U)SIM, cf. clause 7.1.14, and
- via over the air provisioning according to [55].

A list of information elements concerning MMS connectivity information is outlined below. Some of the connectivity information elements can also be used for purposes other than MMS. An MMS-capable UE can be configured with all or a subset of the listed elements depending on the provided service in terms of e.g. bearer, security, implementation protocol. Moreover, an MMS-capable UE can be configured with more than one sets of connectivity information for multiple access mechanisms, e.g. bearer, access type. Further information about the listed information elements for WAP MMS implementation can be found in [55] and [56].

…

3GPP TSG-T2 #22
Cambridge, UK
25 -29 August 2003

T2-030532

CR-Form-v7

CHANGE REQUEST

⌘ **23.140** **CR** **133** ⌘ **rev** **-** ⌘ Current version: **6.2.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Inaccuracies in Annexes I & K
Source:	⌘	T2
Work item code:	⌘	MMS6
Date:	⌘	27/08/2003
Category:	⌘	**F**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	Some entries in tables of Annexes are inaccurate.
Summary of change:	⌘	Correct inaccurate entries.
Consequences if not approved:	⌘	Specification inconsistent.

Clauses affected:	⌘	Annex I, Annex K

		Y	N		
Other specs affected:	⌘		X	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

Annex I (normative): MM1 <-> MM4 header mapping

This annex maps the information elements found on MM1 onto the STD 11 header fields of MM4.

The tables below are provided to give a normative end-to-end description of MMS. It provides mapping of MM1 with respect to MM4/STD11. ~~There is a table for each MM1 abstract message with all its information elements in the left column, the right column shows how the MM1 information elements are mapped onto the STD 11 headers of MM4.~~

In many cases there is no mapping between MM1 information elements and MM4 STD 11 header fields, this is according to specifications. These information elements are included in the tables below in order to give a complete picture of how the MM1 information elements are handled.

Table I.1: Mapping MM1_submit.REQ -> MM4_forward.REQ

Information elements in MM1_submit.REQ	STD11 Header fields in Egress MM4_forward.REQ
Message Type	-
MMS Version	-
Transaction ID	-
Recipient address	To:, Cc:, Bcc: (NOTE 1, NOTE 2)
Content type	Content-Type:
Sender address	From:
Message class	X-Mms-Message-Class:
Date and time	Date:
Time of Expiry	X-Mms-Expiry:
Earliest Delivery Time	-
Delivery report	X-Mms-Delivery-Report:
Reply-Charging	-
Reply-Deadline	-
Reply-Charging-Size	-
Priority	X-Mms-Priority:
Sender visibility	X-Mms-Sender-Visibility:
Store	-
MM State	-
MM Flags	-
Read reply	X-Mms-Read-Reply:
Subject	Subject:
Reply-Charging-ID	-
Content	*<message body>*
-	X-Mms-3GPP-MMS-Version
-	X-Mms-Message-Type
-	X-Mms-Transaction-Id
-	X-Mms-Message-Id
-	X-Mms-Acq-Request
-	X-Mms-Forward-Counter
-	X-Mms-Previously-sent-by
-	X-Mms-Previously-sent-date-and-time
NOTE 1: A "Bcc:" field is created on MM4 only when the original MM on MM1 contains only blind-carbon-copy recipient(s). In this case the "Bcc:" field is left blank, see clause 8.4.4.2. NOTE 2: Recipient addresses for blind-carbon-copy recipient(s) on MM1 are mapped onto <RCPT TO:> commands on SMTP level on MM4.	

Table I.2: Mapping MM1_submit.RES -> MM4_forward.REQ

Information elements in MM1_submit.RES	STD11 Header fields in Egress MM4_forward.REQ
Message Type	-
MMS Version	-
Transaction ID	-
Request Status	-
Request Status Text	-
Message ID	X-Mms-Message-ID:
Store Status	-
Store Status Text	-
Stored Message Reference	-
-	To:, Cc:, Bcc: (NOTE 1, NOTE 2)
-	Content-Type:
-	From:
-	X-Mms-Message-Class:
-	Date:
-	X-Mms-Expiry:
-	X-Mms-Delivery-Report:
-	X-Mms-Priority:
-	X-Mms-Sender-Visibility:
-	X-Mms-Read-Reply:
-	Subject:
-	X-Mms-3GPP-MMS-Version
-	X-Mms-Message-Type
-	X-Mms-Transaction-Id
-	X-Mms-Acq-Request
-	X-Mms-Forward-Counter
-	X-Mms-Previously-sent-by
-	X-Mms-Previously-sent-date-and-time
NOTE 1: A "Bcc:" field is created on MM4 only when the original MM on MM1 contains only blind-carbon-copy recipient(s). In this case the "Bcc:" field is left blank, see clause 8.4.4.2. NOTE 2: Recipient addresses for blind-carbon-copy recipient(s) on MM1 are mapped onto <RCPT TO:> commands on SMTP level on MM4.	

Table I.3: Mapping MM1_notification.REQ <- MM4_forward.REQ

Information elements in MM1_notification.REQ	STD11 Header fields in Ingress MM4_forward.REQ
Message Type	-
MMS Version	-
Transaction ID	-
Message class	X-Mms-Message-Class:
Message size	-
Time of expiry	X-Mms-Expiry:
Message Reference	-
Subject	Subject:
Priority	X-Mms-Priority:
Sender address	From:
Stored	-
Delivery report	X-Mms-Delivery-Report:
Reply-Charging	-
Reply-Deadline	-
Reply-Charging-Size	-
Reply-Charging-ID	-
Element-Descriptor	-
Message Distribution	-

Indicator	
-	To:, Cc:, Bcc: (NOTE 1, NOTE 2)
-	Content-Type:
-	Date:
-	X-Mms-Sender-Visibility:
-	X-Mms-Read-Reply:
-	X-Mms-3GPP-MMS-Version
-	X-Mms-Message-Type
-	X-Mms-Transaction-Id
-	X-Mms-Acg-Request
-	X-Mms-Forward-Counter
-	X-Mms-Previously-sent-by
-	X-Mms-Previously-sent-date-and-time
NOTE 1: A "Bcc:" field is created on MM4 only when the original MM on MM1 contains only blind-carbon-copy recipient(s). In this case the "Bcc:" field is left blank, see clause 8.4.4.2. NOTE 2: Recipient addresses for blind-carbon-copy recipient(s) on MM1 are mapped onto <RCPT TO:> commands on SMTP level on MM4.	

Table I.4: Information elements in the MM1_notification.RES.

Information elements in MM1_notification.RES	MM4 STD 11 Header fields
Message Type	-
MMS Version	-
Transaction ID	-
MM Status	-
Report allowed	-

Table I.5: Information elements in the MM1_retrieve.REQ

Information elements in MM1_retrieve.REQ	MM4 STD 11 Header fields
Message Reference	-

Table I.6: Mapping MM1_retrieve.RES <- MM4_forward.REQ

Information elements in MM1_retrieve.RES	STD11 Header fields in Ingress MM4_Forward.REQ
Message Type	-
MMS Version	-
Transaction ID	-
Message ID	X-Mms-Message-ID:
Sender address	From:
Content type	Content-type:
Recipient address	To:
Message class	X-Mms-Message-Class:
Date and time	Date:
Delivery report	X-Mms-Delivery-Report:
Priority	X-Mms-Priority:
Read reply	X-Mms-Read-Reply:
Subject	Subject:
Request Status	-
MM State	-
MM Flags	-
Request Status Text	-
Reply-Charging	-
Reply-Charging-ID	-
Reply-Deadline	-
Reply-Charging-Size	-
Previously-Sent-By	X-Mms-Previously-Sent-By
Previously-Sent-Date	X-Mms-Previously-Sent-Date
Content	*<message body>*
Message Distribution Indicator	-
-	X-Mms-3GPP-MMS-Version
-	X-Mms-Message-Type
-	X-Mms-Transaction-Id
-	X-Mms-Expiry
-	X-Mms-Sender-Visibility:
-	X-Mms-Read-Reply:
-	X-Mms-Acq-Request
-	X-Mms-Forward-Counter

Table I.7: Information elements in the MM1_acknowledgement.REQ

Information elements in MM1_acknowledgement.REQ	MM4 STD 11 Header fields
Message Type	-
MMS Version	-
Transaction ID	-
Report allowed	-

Table I.8: Mapping MM1_forward.REQ -> MM4_forward.REQ

Information elements in MM1_forward.REQ	STD11 Header fields in Egress MM4_Forward.REQ
Message Type	-
MMS Version	-
Transaction ID	-
Recipient address	To:, Cc:, Bcc: (NOTE 1, NOTE 2)
Forwarding address	From:
Date and time	Date:
Time of Expiry	X-Mms-Expiry:
Earliest delivery time	-
Store	-
MM State	-
MM Flags	-
Delivery report	X-Mms-Delivery-Report:
Read reply	X-Mms-Read-Reply:
Message Reference	-
-	X-Mms-3GPP-MMS-Version
-	X-Mms-Message-Type
-	X-Mms-Transaction-Id
-	X-Mms-Message-ID:
-	Content-Type:
-	X-Mms-Message-Class:
-	X-Mms-Priority:
-	X-Mms-Sender-Visibility:
-	Subject:
-	X-Mms-Acq-Request
-	X-Mms-Forward-Counter
-	X-Mms-Previously-Sent-By
-	X-Mms-Previously-Sent-Date
-	Content
NOTE 1: A "Bcc:" field is created on MM4 only when the original MM on MM1 contains only blind-carbon-copy recipient(s). In this case the "Bcc:" field is left blank, see clause 8.4.4.2. NOTE 2: Recipient addresses for blind-carbon-copy recipient(s) on MM1 are mapped onto <RCPT TO:> commands on SMTP level on MM4.	

Table I.9: Information elements in the MM1_forward.RES.

Information elements in MM1_forward.RES	MM4 STD 11 Header fields
Message Type	-
MMS Version	-
Transaction ID	-
Request Status	-
Request Status Text	-
Message ID	-
Store Status	-
Store Status Text	-
Stored Message Reference	-

Table I.10: Mapping MM1_delivery_report.REQ <- MM4_delivery_report.REQ

Information elements in MM1_delivery_report.REQ	STD11 Header fields in Ingress MM4_delivery_report.REQ
Message Type	-
MMS Version	-
Message ID	X-Mms-Message-ID
Recipient address	From:
Date and Time	Date:
MM Status	X-Mms-MM-Status-Code
-	X-Mms-MM-Status-Extension

Table I.11: Mapping MM1_read_reply_recipient.REQ -> MM4_read_reply_report.REQ

Information elements in MM1_read_reply_recipient.REQ	STD11 Header fields in Egress MM4_read_reply_report.REQ
Message Type	-
MMS Version	-
Recipient address	From:
Originator address	To:
Message ID	X-Mms-Message-ID:
Date and Time	Date:
Read Status	X-Mms-Read-Status:
-	X-Mms-3GPP-MMS-Version
-	X-Mms-Message-Type
-	X-Mms-Transaction-Id
-	X-Mms-Acq-Request
-	X-Mms-Read-Status

Table I.12: Mapping MM1_ read_reply_originator.REQ <- MM4_ read_reply_report.REQ

Information elements in MM1_read_reply_originator.REQ	Ingress STD11 Header fields in MM4_read_reply_report.REQ
Message Type	-
MMS Version	-
Recipient address	From:
Originator address	To:
Message ID	X-Mms-Message-ID:
Date and Time	Date:
Read Status	X-Mms-Read-Status:
-	X-Mms-3GPP-MMS-Version
-	X-Mms-Message-Type
-	X-Mms-Transaction-Id
-	X-Mms-Acq-Request
-	X-Mms-Read-Status

Annex K (informative): MM1, MM4 <-> MM7 header mapping

This annex maps the abstract messages from MM1 and MM4 to MM7 ~~and the corresponding information elements found on MM1 and MM4 onto the information elements of MM7~~.

The abstract messages mapped between MM1 and MM7 are:

- MM1_Submit.REQ to the MM7_Deliver.REQ
- MM7_Submit.REQ to the MM1_Notification.REQ and the MM1_Retrieve.RES
- MM1_Read_Reply_Recipient.REQ to the MM7_Read_Reply_Report.REQ
- MM1_Forward.REQ to the MM7_Deliver.REQ

The abstract messages mapped between MM4 and MM7 are:

- MM4_Forward.REQ to the MM7_Deliver.REQ
- MM7_Submit.REQ to the MM4_Forward.REQ
- MM4_Delivery_Report.REQ to the MM7_Delivery_Report.REQ
- MM4_Read_Reply_Report.REQ to the MM7_Read_Reply.REQ

The tables below shows the mapping and are provided to give an end-to-end description of MMS. There is a table for each MM1, MM4 abstract message that maps to a MM7 abstract message. In many cases there is no mapping between MM1, MM4 and MM7 information elements, this is according to specifications. These information elements are included in the tables below in order to give a complete picture of how the information elements are handled.

There are also several abstract messages over MM1, MM4 that have no relevant mapping to MM7 and vice versa. These abstract messages are omitted from this annex.

Table K.1: Mapping MM1_submit.REQ -> MM7_deliver.REQ

Information elements in MM1_submit.REQ	Information elements in MM7_deliver.REQ
Message Type	-
Transaction ID	-
MMSVersion	-
Recipient address, -	Recipient address, - (NOTE 1)
Content type	Content type
Sender address	Sender address, - (NOTE 2)
Message class	-
Date and time	Date and time
Time of Expiry	-
Earliest delivery time	-
Delivery report	-
Reply-Charging	-
Reply-Deadline	-
Reply-Charging-Size	-
Priority	Priority
Sender visibility	-
Store	-
MM State	-
MM Flags	-
Read reply	-
Subject	Subject
Reply-Charging-ID	Reply-Charging-ID
Content	Content
-	Transaction ID
-	Message type
-	MM7 version
-	MMS Relay/Server ID
-	Linked ID
-	Sender SPI
-	Recipient SPI
NOTE 1:The recipient address over MM1 may or may not be mapped to recipient address over MM7. The recipient address over MM7 may also be independent of the recipient address over MM1. NOTE 2: If the Sender Visibility flag is set over MM1, the Sender address from MM1 is not mapped onto MM7.	

Table K.2: Mapping MM7_submit.REQ -> MM1_notification.REQ, MM1_Retrieve.RES

Information elements in MM7_submit.REQ	Information elements in MM1_notification.REQ	Information elements in MM1_retrieve.RES
-	Message Type	-
-	Transaction ID	-
-	MMS Version	-
Message class	Message class	Message class
Time of Expiry	Time of expiry	-
Subject	Subject	Subject
Priority	Priority	Priority
Sender address	Sender address	Sender address
Reply-Charging	Reply-Charging	Reply-Charging
-	-	Reply-Charging-ID
Reply-Deadline	Reply-Deadline	Reply-Deadline
Reply-Charging-Size	Reply-Charging-Size	Reply-Charging-Size
Transaction ID	-	-
Message type	-	-
MM7 version	-	-
VASP ID	-	-
VAS ID	-	-
Recipient address	-	Recipient address
Service code	-	-
Linked ID	-	-
Date and time	-	Date and time
Earliest delivery time	-	-
Delivery report	-	-
Read reply	-	Read reply
Adaptations	-	-
Content type	-	Content type
Content	-	Content
Message Distribution Indicator	Message Distribution Indicator	Message Distribution Indicator
Charged Party	-	-
Charged Party ID	-	-
-	Message size	-
-	Message Reference	-
-	Stored	-
-	Delivery report	Delivery report
-	Reply-Charging-ID	-
-	Element-Descriptor	-
-	-	Message ID
-	-	MM State
-	-	MM Flags
-	-	Request Status
-	-	Request Status Text
-	-	Previously-sent-by
-	-	Previously-sent-date-and-time
-	-	Message Type
-	-	Transaction ID
-	-	MMS Version

Table K.3: Mapping MM1_read_reply_recipient.REQ -> MM7_read_reply_report.REQ

Information elements in MM1_read_reply_recipient.REQ	Information elements in MM7_read_reply_report.REQ
Message Type	-
MMS Version	-
Recipient address	Recipient address
Originator address	~~Originator~~ Sender address
Message-ID	Message-ID
Date and Time	Date and Time
Read Status	Read Status
-	Transaction ID
-	Message Type
-	MM7 Version
-	MMS Relay/Server ID
-	Status text

Table K.4: Mapping MM1_Forward.REQ -> MM7_Deliver.REQ

Information elements in MM1_Forward.REQ	Information elements in MM7_Deliver.REQ
Message Type	-
Transaction ID	-
MMS Version	-
Recipient address	Recipient address
Forwarding address	Sender address
Date and time	Date and time
Time of Expiry	-
Earliest delivery time	-
Store	-
MM State	-
MM Flags	-
Delivery report	-
Read reply	-
Message Reference	<Content>, Content Type, Subject, Priority (NOTE)
-	Transaction ID
-	Message type
-	MM7 version
-	MMS Relay/Server ID
-	Linked ID
	Reply Charging ID
-	Sender SPI
-	Recipient SPI
NOTE: The message reference is used to map fields and content from the original MM. The mapping of these fields is identical to the MM1_Submit.REQ/MM7_Deliver.REQ mapping in table K.1.	

Table K.5: Mapping MM4_Forward.REQ -> MM7_Deliver.REQ

Information elements in MM4_Forward.REQ	Information elements in MM7_Deliver.REQ
3GPP MMS Version	-
Message Type	-
Transaction ID	-
Message ID, -	Linked ID, - (NOTE 1)
Recipient(s) address	Recipient address
Sender address	Sender address (NOTE 2)
Content type	Content type
Message class	-
Date and time	Date and time
Time of Expiry	-
Delivery report	-
Priority	Priority
Sender visibility	-
Read reply	-
Subject	Subject
Acknowledgement Request	-
Forward counter	-
Previously-sent-by	Previously-sent-by
Previously-sent-date and-time	Previously-sent-date-and-time
Content	Content
-	Transaction ID
-	Message type
-	MM7 version
-	MMS Relay/Server ID
-	Recipient address
-	Reply-Charging-ID
-	Sender SPI
-	Recipient SPI
NOTE 1: The Message ID over MM1 may or may not be mapped to the Linked ID over MM7. The Linked ID over MM7 may also be independent of the Message ID over MM1. NOTE 2: If the Sender Visibility flag is set over MM4, the Sender address from MM4 is not mapped onto MM7.	

Table K.6: Mapping MM7_Submit.REQ -> MM4_Forward.REQ

Information elements in MM4_Forward.REQ	Information elements in MM7_Submit.REQ
3GPP MMS Version	-
Message Type	-
Transaction ID	-
Message ID	-
Recipient(s) address	Recipient address
Sender address	Sender address
Content type	Content type
Message class	Message class
Date and time	Date and time
Time of Expiry	Time of Expiry
Delivery report	Delivery report
Priority	Priority
Sender visibility	-
Read reply	Read reply
Subject	Subject
Acknowledgement Request	-
Forward counter	-
Previously-sent-by	-
Previously-sent-date and-time	-
Content	Content
-	Transaction ID
-	Message type
-	MM7 version
-	VASP ID
-	VAS ID
-	Service code
-	Linked ID
-	Earliest delivery time
-	Reply-Charging
-	Reply-Deadline
-	Reply-Charging-Size
-	Adaptations
-	Message Distribution-Indicator
-	Charged Party ID

Table K.7: MM4_delivery_report.REQ -> MM7_delivery_report.REQ

Information elements in MM4_delivery_report.REQ	Information elements in MM7_delivery_report.REQ
3GPP MMS Version	-
Message Type	-
Transaction ID	-
~~MM~~ Message ID	Message ID
Recipient address	Sender address
Sender address	Recipient address
~~MM~~ Date and time	Date and time
Acknowledgement Request	-
MM Status ~~Code~~	MM Status
MM Status Extension	MM Status Extension
MM Status Text	Status text
-	Transaction ID
-	Message Type
-	MM7 Version
-	MMS Relay/Server ID

Table K.8: MM4_Read_reply_report.REQ -> MM7_read_reply_report.REQ

Information elements in MM4_Read_reply_report.REQ	Information elements in MM7_read_reply.REQ
3GPP MMS Version	-
Message Type	-
Transaction ID	-
Recipient address	Recipient address
Sender address	Sender address
Message-ID	Message-ID
Date and time	Date and time
Acknowledgement Request	-
Read Status	Read Status
Status text	Status text
-	Transaction ID
-	Message Type
-	MM7 Version
-	MMS Relay/Server ID

3GPP TSG-T2 #22
Cambridge, UK
25 – 29 August 2003

T2-030490

CR-Form-v7

CHANGE REQUEST

⌘ **23.140** **CR** **134** ⌘ **rev** **-** ⌘ Current version: **6.2.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Size in Retrieval request
Source:	⌘	T2
Work item code:	⌘	MMS6
Date:	⌘	28/08/2003
Category:	⌘	**C**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	The retrieval request for an MM includes a single information element; a reference to the MM. Additional information should be included in the request allowing the MMS Relay/Server to perform improved processing and response.
Summary of change:	⌘	Added to the description of retrieving an MM, it will be indicated that a size restriction applied to the MM can be within the retrieval request made by an MMS UA.
Consequences if not approved:	⌘	Existing error conditions will persist and improved processing of requests will not occur.

Clauses affected:	⌘	7.1.3 Retrieval of Multimedia Message in the recipient MMSE

		Y	N			
Other specs Affected:	⌘		N	Other core specifications	⌘	
			N	Test specifications		
			N	O&M Specifications		
Other comments:	⌘					

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm.
Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

7.1.3 Retrieval of a Multimedia Message in the recipient MMSE

The recipient MMS User Agent shall be able to request retrieval of an MM from the recipient MMS Relay/Server based on the Message Reference received in a notification. If MMBoxes are supported, the MMS User Agent shall be able to request retrieval of an MM from the user's MMBox, based on a Message Reference received from a previous MMBox operation.

Within a retrieval request the recipient MMS User Agent may indicate a size restriction of the returned MM (i.e., maximum size) that the MMS Relay/Server is to use in processing the retrieval request.

Upon retrieval request the recipient MMS Relay/Server

- shall deliver the MM to the recipient MMS User Agent
- may perform data adaptation based on user profile and/or MMS User Agent capabilities
- shall not provide the MM originator address to the MM recipient if the originator MMS User Agent requested its address to be hidden from the MM recipient
- shall provide the MM originator address to the MM recipient if the originator MMS User Agent did not request its address to be hidden from the MM recipient and if the MM originator address is available at the recipient MMS Relay/Server
- may provide an alias or clarifying text (e.g. "anonymous address" or "unknown address") in the originator address field instead of providing the originator address to the recipient MMS User Agent, if the originator has requested address hiding or the original message does not contain the originator address
- shall give an indication to the recipient MMS User Agent that a delivery report is requested if such a delivery report has been requested by the originator MMS User Agent
- shall give an indication to the recipient MMS User Agent that a read-reply report is requested if such a read reply report has been requested by the originator MMS User Agent
- shall indicate the MIME content type of the MM to the recipient MMS User Agent
- shall provide other available message qualifications unaltered to the recipient MMS User Agent
- shall provide the time stamp of the MM unaltered to the recipient MMS User Agent
- shall store messages in the network until the recipient MMS User Agent becomes reachable (e.g. user moves back into coverage, switches MMS User Agent on) or until the MM expires
- should provide the recipient MMS User Agent with a list of addresses of forwarding MMS User Agents for the MM if the MM was forwarded and the address information is available to the recipient MMS Relay/Server.
- should not deliver the MM (or any adaptation of the MM) to the recipient MMS User Agent unless the size restriction set by the MMS User Agent is met.

In a response to an MM's delivery the recipient MMS User Agent may be able to

- request a delivery report not to be generated by the MMS Relay/Server.

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Cambridge, UK
25 -29 August 2003

T2-030533

CR-Form-v7

CHANGE REQUEST

h **23.140** **CR** **135** ⌘ **rev** **-** ⌘ Current version: **6.2.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network **X**

Title:	⌘	Transfer over MM3
Source:	⌘	T2
Work item code:	⌘	MMS6
Date:	⌘	26/08/2003
Category:	⌘	**C**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	To propose a more formalistic definition of how MM are to be transferred to external messaging services and how messages that originate from an external messaging service, e.g. email or voicemail, should be transformed into a compliant MM for access from the user's UA.
Summary of change:	⌘	A new Annex is proposed that suggests the transformation of external messaging header information to the relevant MM1 Information Elements. Minor changes to other text that point to this new annex.
Consequences if not approved:	⌘	

Clauses affected:	⌘	8, 8.3, 8.3.1, Annex A, Annex D, new Annex X			
Other specs affected:	⌘	**Y**	**N**		
			X	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm.
Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

8 MMS Application Protocol Framework and Technical Realisation of MMS Service Features

This clause defines the application protocol framework and describes the technical realisation of MMS service features in terms of abstract messages. The abstract messages can be categorised into *transactions* consisting of *requests* and *responses*. The labelling of the MMS abstract messages follows these conventions:

- the transactions between the MMS UA and MMS Relay/Server are prefixed with "MM1";
- the transactions between the MMS Relay/Servers are prefixed with "MM4";
- the transactions between Value-Added Service Providers and the MMS Relay/Server are prefixed with "MM7";
- requests are identified with ".REQ" as a suffix;
- responses are identified with the "".RES" suffix.

Each abstract message carries with it certain information elements, which may vary according to the specific message. All messages shall carry, as information elements, a protocol version and message type, in order that the MMSE components may be able to properly identify and manage the message contents.

Specific information regarding the message encapsulation, including order, possible values, and encoding are beyond the scope of this clause. These details will be defined within each MMSE protocol environment.

The mapping of abstract messages to specific protocols is not necessarily a one-to-one relationship. Depending on the MMS Implementation (WAP etc.), one or more abstract messages may be mapped to a single lower layer PDU, and a single abstract message may be mapped to multiple lower layer PDUs, if the information carried in the PDU(s) serve the purpose of required information in the subjected abstract message(s).

In MM1 responses that provide a status information, the status information returned has no correspondence to the Status information returned in MM4 responses; they are independent of each other.

The MM1 response status, which are limited by design to as small a set of values as possible, may correlate to status and errors occurring within the communications protocols underlying the implementation of the MM4 abstract messages. Similarly, the MM4 status may correlate to those occurring within the communications protocols underlying the implementation of the MM1 abstract messages. The definition of these correlations is out of scope of the present document, and should be provided by the MMS implementations.

The MMS application protocol shall provide means to uniquely identify the version number and message type in each abstract message defined here. The order, possible values and encoding of the information elements for each abstract message are beyond the scope of this clause, and shall be dictated by the protocol environment.

The following figure shows an example abstract message flow when a multimedia message is sent from an originator MMS User Agent to a recipient MMS User Agent. The scope of this figure is limited to abstract messages on reference points MM1 and MM4 only.

Delivery reports are sent by the recipient MMS Relay/Server. Read-reply reports are sent by the recipient MMS User Agent.

Below are Figures 6 and 7. Figure 6 shows a typical transaction for an MMS User Agent submitting an MM addressed to an MMS User Agent serviced by another MMS Relay/Server. Figure 7 shows the abstract messages that may involve the MMBox. These figures are only examples, and do not show all possible transactions between a MMS User Agent and the MMS Relay/Server.

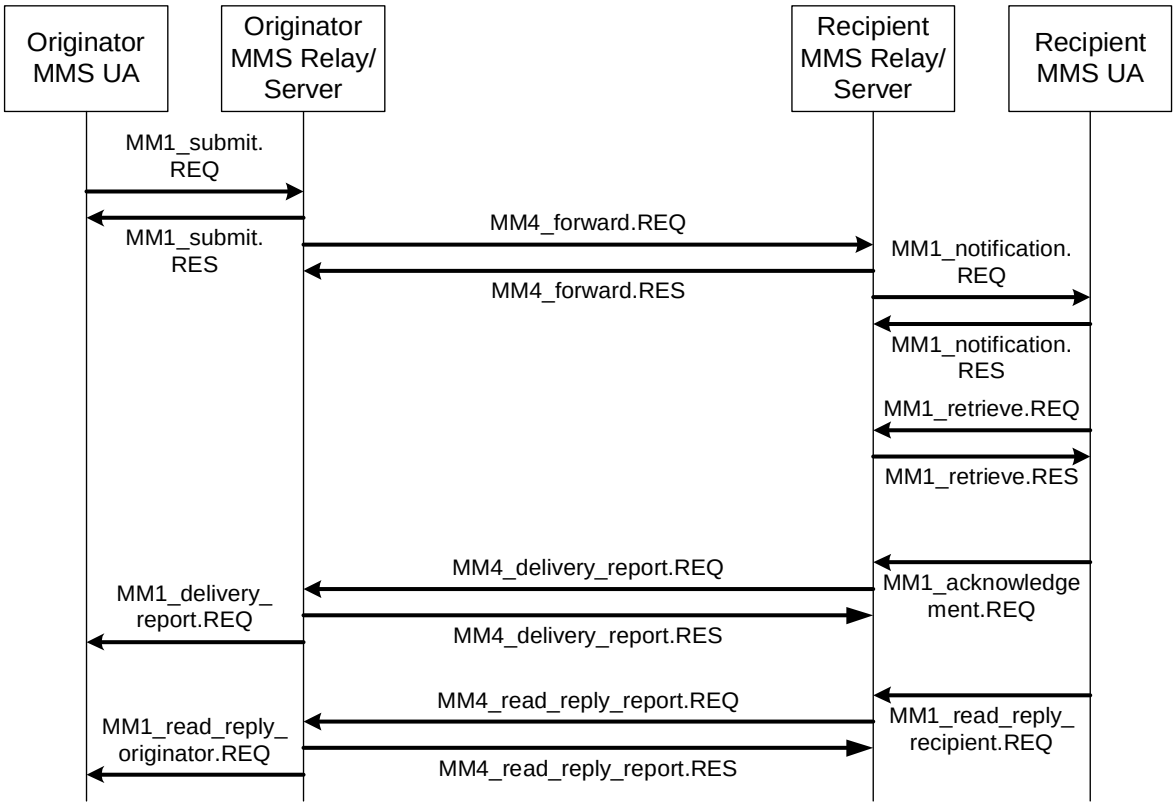

Figure 6: Example Abstract Message Flow

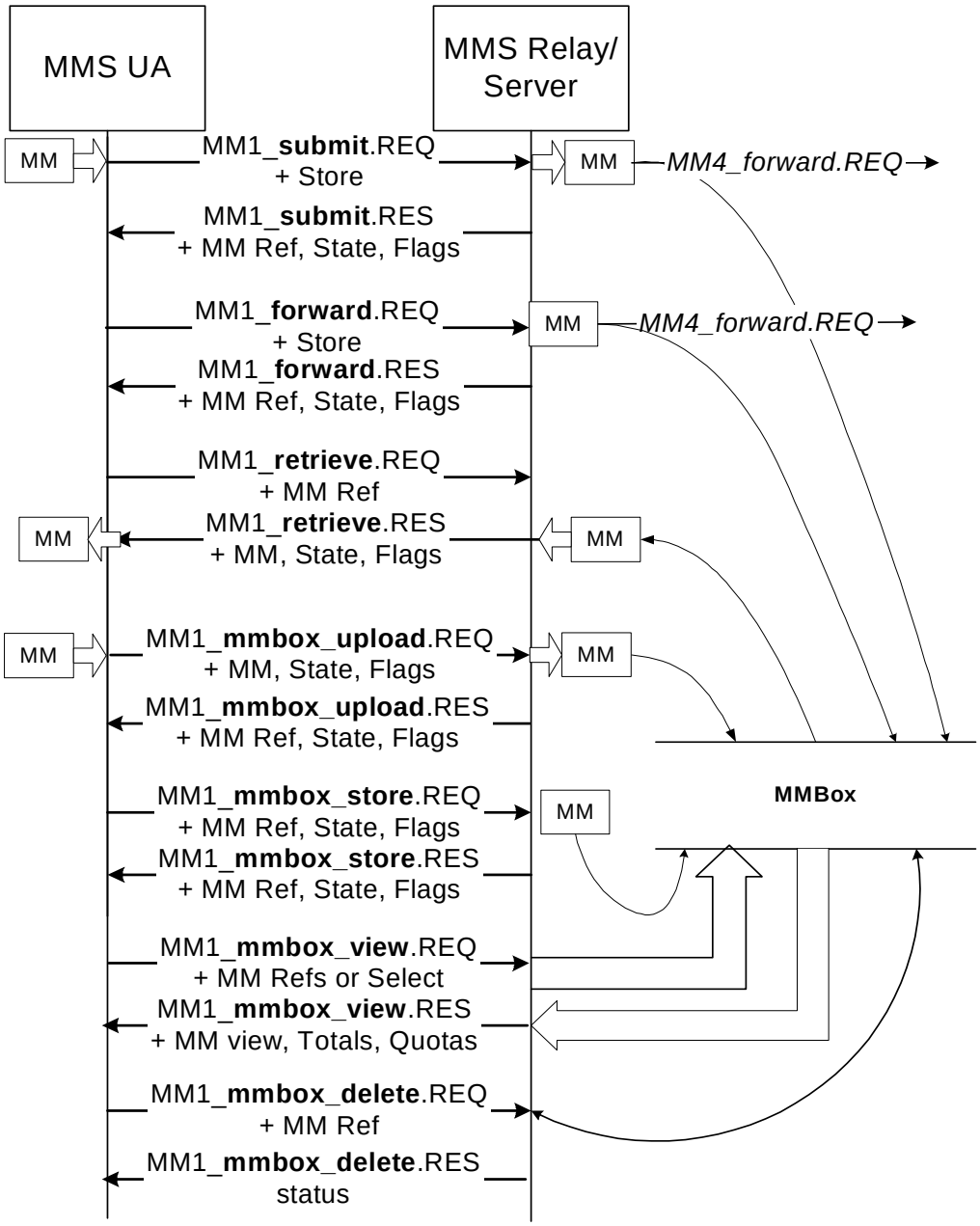

Figure 7: Example Abstract Message Flows with Persistent Storage

8.3 Technical realisation of MMS on reference point MM3

This clause defines the interworking between MMS Relay/Servers and External Messaging Servers. The interworking with these External Servers may be based on the Internet Protocol, IP.

Reference point MM3 should be based upon existing standards e.g. HTTP, SMTP. Several examples of realisations can be found in Annex A. In addition, MMS service providers or network operators may develop solutions for their particular needs.

8.3.1 Sending of MMs

For the purpose of sending an MM to an external messaging system the originator MMS Relay/Server should convert the MM into a format appropriate for the external messaging system. This is further elaborated in Annex X

~~The originator MMS Relay/Server should use the information elements associated with the MM to define the control information needed for the transfer protocol in use. The originator MMS Relay/Server may use the information elements associated with the MM to convey these as part of the converted message~~. When converting the MM to the format used by the external messaging system, the MMS Relay/Server should use the information elements associated with the MM and differentiating between those information elements that are needed for the transfer protocol and those elements that should be conveyed as part of the converted message.

E.g., the originator MMS Relay/Server should use the recipient's address(es) as indicated in the corresponding MM to route the converted message towards its recipient(s). In addition to this, it may ~~e.g.~~ convey message class, priority and subject of the associated MM as part of the converted message.

8.3.2 Receiving of messages

For the purpose of receiving a message from an external messaging system the recipient MMS Relay/Server should convert incoming messages to the MM format in use by the recipient(s) that form part of the recipient MMS Service Provider's domain.

The recipient MMS Relay/Server may convert control information received from the External Server into appropriate information elements of an MM.

E.g., the recipient MMS Relay/Server should use the MSISDNs associated with an SMS-Short Message to define the sender's and recipient's addresses of the MM. In addition to this, it may e.g. map a priority assigned to an incoming SMS-Short Message to the MM's priority.

8.3.3 Discovery of new messages on External Servers

For discovery of incoming messages from external messaging systems different mechanisms may be utilised, e.g.:

- forwarding of messages from External Server to MMS Relay/Server, based on criteria defined by the user or application;
- notification of messages from an External Server, followed by retrieval by the MMS User Agent via the MMS Relay/Server;
- periodic polling for messages on External Server, followed by retrieval by the MMS User Agent via the MMS Relay/Server.

More detailed specification of these mechanisms should be further elaborated in future versions of the present document.

Annex A (informative): Examples of MMS architectural implementations

A.5 Example of MMS interaction with 2G/3G Voice Mailboxes

MMS interaction with voice mailbox systems should be performed on a non-realtime basis. Figure A.4 illustrates an example architecture for the incorporation of voice mailboxes.

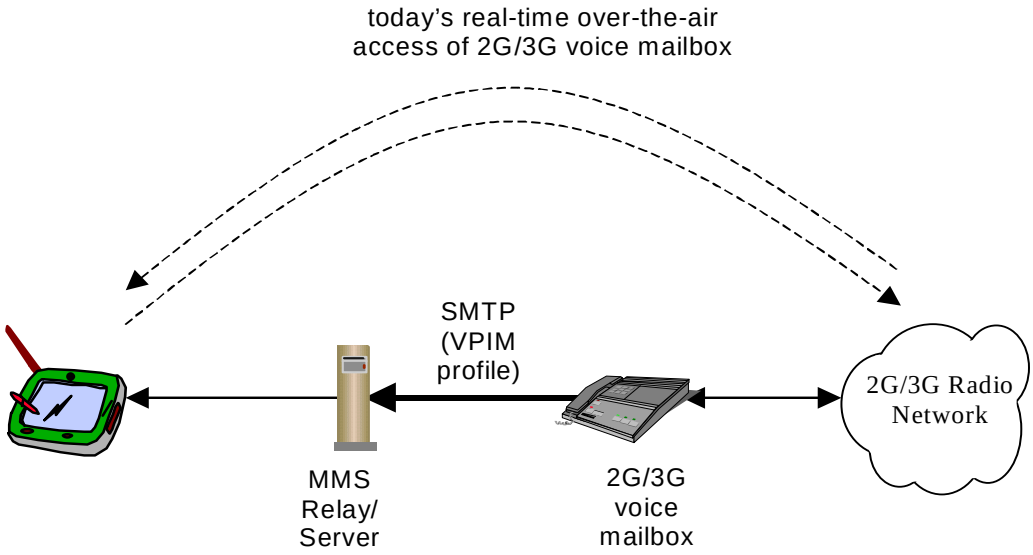

Figure A.4: First Example of MMS interaction with 2G/3G Voice Mailbox based on VPIM

The Voice Profile for Internet Mail Version 2, VPIMv2, provides format extensions for MIME supporting the transmission of voice messages over standard Internet E-Mail systems. The VPIM concept was developed by the Electronic Messaging Association (EMA). After VPIMv2 had been reviewed by the IETF it became RFC 2421 [33].

The VPIM specification allows voice records to be MIME encapsulated and sent as Internet mail attachments via ESMTP or retrieved as Internet mail attachments via POP3 [34] or IMAP4[35]. The MIME type used for voice messages is ~~"audio/*"~~"multipart/voice-message" that includes an "audio/*" part and possibly additional parts for a voice signature or Vcard .

For the interaction of MMS with voice mailboxes, the voice mailbox may forward received voice records as VPIM messages via SMTP to the MMS Relay/Server. This implies that voice messages' download is always done via the MMS service. In this case the protocol to be used on the interface between MMS-Relay/Server and the voice mailbox is ESMTP and thus identical to the one used between different MMS Relay/Servers as specified in clause 6.6. The message conversion that is necessary for this transfer is specified in Annex X.

Alternatively, the MMS Relay/Server may poll the voice mailbox via POP3 or IMAP4 for new messages received. Messages the user wants to retrieve via the MMS service can then be downloaded via POP3/IMAP4 from the voice mailbox to the MMS Relay/Server from where they are delivered to the MMS User Agent. This enables the user to do both, retrieve voice messages via today's realtime voice mail services or as an MM. In any case it is expected that the voice mailbox is still the owner of the message and as a consequence responsible for the storage.

As an alternative the MMS interworking with a 2G/3G Voice Mailbox System could be envisaged via an HTTP interface as depicted in figure A.5.

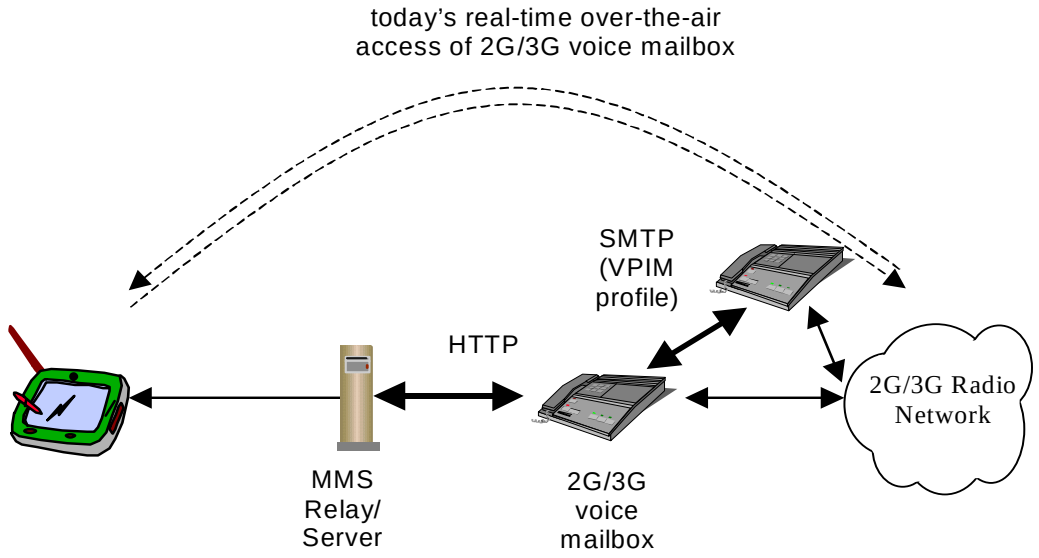

Figure A.5: Second example of MMS interaction with 2G/3G Voice Mailbox based on HTTP

A.6 Example of interaction with Internet E-Mail Messaging

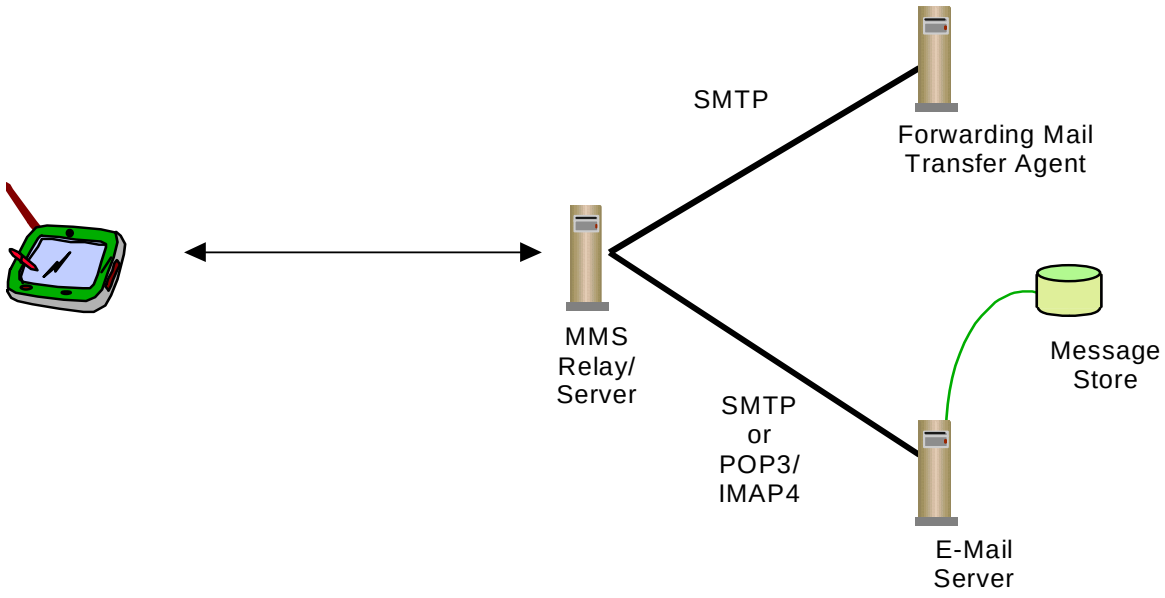

Figure A.6 Example of interaction with Internet E-Mail messaging

In this architecture the server will be an E-Mail server providing post office services which are accessible e.g. via POP3 [34] or IMAP[35] for Internet E-Mail retrieval in the MMSE or are accessible to the MMS Relay/Server using SMTP. The MMS Relay/Server will send messages that are to be transmitted as Internet E-Mail via SMTP.

In the case of retrieval and sending of MMs from and to the Internet Email service is done via SMTP, the protocol to be used on the interface between MMS Relay/Server and the Mail Transfer Agent, MTA/Email Server is identical to the one used between different MMS-Relays as specified in clause 6.6.

Annex D (informative): MM3 principles

D.1 Sending of MMs

On sending an MM to an external server the MMS Relay/Server:

- should map as many fields as possible to corresponding fields of the message format or protocol of the external server while suppressing MMS-only relevant fields (e.g. MMS-version) or sensitive fields (e.g. originator Address when address hiding is requested) and fields that cannot be mapped (e.g. Content-type in case fax gateway).
- In the case the external server uses RFC 822 formatted messages the mapping should be according to the mapping on MM4 under consideration of the above mentioned constraints.
- May add relevant fields that cannot be mapped to fields of the message format or protocol of the external server to the content body of the message if suitable (e.g. Print Content-Type, Priority, etc. on fax).
- should convert the content itself into the appropriate format used by the external server (e.g. WAV(G.723) attachment to AMR attachment for voice mail system).

D.2 Receiving of messages

On receiving a message from an external server the MMS Relay/Server should be able to handle the following on MM3:

- The external server may send a message with RFC 2822 formatted header and a body with encapsulated message type of the external server (e.g. e-mail with attachment application/sms). In that case the MMS Relay/Server should map as many fields of the RFC 2822 header to the corresponding header fields of an MM. Additionally the MMS Relay/Server may be able to copy MMS relevant information from the MIME encapsulated body and map them to the corresponding header fields and body of an MM. The attachment itself should be forwarded unaltered as attachment of the generated MM to the recipient.
- The MMS Relay/Server should be able to interpret MMS specific fields in the RFC 2822 header of a message from an external server (e.g. voice mail can specify expiry date).
- The external server may send a message with regular RFC 2822 formatted header and MIME encapsulated attachments which may comprise content and/or profile information (e.g. VPIM multipart/voice-message). The MMS Relay/Server should be able to map as many fields of the RFC 2822 header to the corresponding header fields of an MM. Additionally in the case the attachments contain some message profile information the MMS Relay/Server should be able to map those to the corresponding header fields of an MM. The attachments/parts of the attachments with message content may be converted to another media type or format subject to the capabilities of the MMS User Agent. In most cases the attachments might be forwarded unaltered to the recipient.
- The external server may send a message with a format different from RFC 2822. In this case the MMS Relay/Server should be able to extract as many information from the external message format and protocol and map them to corresponding fields of the MM header. The content of the message from the external server should be mapped to an appropriate MIME type/subtype and attached to the MM. (e.g. SMS via 3GPP TR 23.039 -> MM with text/plain)

Annex X (informative): Mapping of IE to MM3 protocols

This annex maps the information elements found on MM1 and MM4 to the relevant fields to transfer over MM3 to Internet Email (based on ESMTP and MIME) or voicemail systems (based on VPIMv2).

X.1 Transforming MM

The tables below are provided to give an end-to-end description of the interface between MMS and external messaging services. The first table indicates how to transform a MM, that originates from either MM1_submit.REQ or from MM4_forward.REQ, to a corresponding Internet Email message to be transferred to an email address. The second table indicates how to transform a MM, that originates from either MM1_submit.REQ or from MM4_forward.REQ, to a corresponding VPIM message to be transferred to a voicemail server. In each table the MMS information elements appear in the left column, the middle column indicates the corresponding standard header field, the right column gives special explanations for the transformation.

As indicated in Annex D – many of the MMS Information Elements should not be transferred to external messaging systems and should be suppressed. This will be indicated in the tables by the word "suppressed"

Table X.1 Mapping of Submitted MM to Internet Email

MMS Information Element	Internet Email Header	Notes
Message Type	*suppressed*	
MMS Version	*suppressed*	
Transaction ID	*suppressed*	
Recipient address	**SMTP -** RCPT TO **MIME -** To:, Cc:	Bcc recipients should only appear in the SMTP RCPT TO part of the transfer and not part of the MIME content.
Content type	**MIME -** Content-Type:	
Sender address	**SMTP -** MAIL FROM **MIME -** From:	see Note 1: below
Message class	*suppressed*	If Message class is "auto" this should affect the MAIL FROM field, see Note 1: below
Date and time	**MIME -** Date:	
Time of Expiry	**SMTP –** DELIVER-BY parameter of RCPT TO	As defined in RFC 2852
Earliest Delivery Time	*suppressed*	There is currently an IETF draft that suggests use of the SMTP AFTER parameter
Delivery report	**SMTP –** DSN	As defined in RFC 3461, dependent on ENVID, see below.
Reply-Charging	*suppressed*	
Reply-Deadline	*suppressed*	
Reply-Charging-Size	*suppressed*	
Priority	**MIME -** X-Priority:	
Sender visibility	*suppressed*	
Store	*suppressed*	
MM State	*suppressed*	
MM Flags	*suppressed*	
Read reply	**MIME –** Disposition-Notification-To:	As defined in RFC 2298
Subject	**MIME -** Subject:	
Reply-Charging-ID	*suppressed*	
Content	*<message body>*	
Message ID	**SMTP –** ENVID **MIME –** Message-ID:	As defined in RFC 3461, used to return DSN, this Message ID should be generated by the MMS Relay for MM that come from MM1_submit.REQ and should use the X-Mms-Message-ID from the MM4_forward.REQ

Table X.2 Mapping of Submitted MM to Voicemail via VPIM

MMS Information Element	Internet VPIM Header	Notes
Message Type	*suppressed*	
MMS Version	*suppressed*	
Transaction ID	*suppressed*	
Recipient address	**SMTP -** RCPT TO **MIME -** To:, Cc:	Bcc recipients should only appear in the SMTP RCPT TO part of the transfer and not part of the MIME content.
Content type	**MIME -** Content-Type:	see Note 2: below
Sender address	**SMTP -** MAIL FROM **MIME -** From:	see Note 1: below
Message class	*suppressed*	If Message class is "auto" this should affect the MAIL FROM field, see Note 1: below
Date and time	**MIME -** Date:	
Time of Expiry	**SMTP –** DELIVER-BY parameter of RCPT TO	As defined in RFC 2852
Earliest Delivery Time	*suppressed*	There is currently an IETF draft that suggests use of the SMTP AFTER parameter
Delivery report	**SMTP –** DSN	As defined in RFC 3461, dependent on ENVID, see below.
Reply-Charging	*suppressed*	
Reply-Deadline	*suppressed*	
Reply-Charging-Size	*suppressed*	
Priority	**MIME -** Importance:	
Sender visibility	*suppressed*	
Store	*suppressed*	
MM State	*suppressed*	
MM Flags	*suppressed*	
Read reply	**MIME –** Disposition-Notification-To:	As defined in RFC 2298
Subject	**MIME -** Subject:	
Reply-Charging-ID	*suppressed*	
Content	*<message body>*	see Note 3: below
Message ID	**SMTP –** ENVID **MIME –** Message-ID:	As defined in RFC 3461, used to return DSN, this Message ID should be generated by the MMS Relay for MM that come from MM1_submit.REQ and should use the X-Mms-Message-ID from the MM4_forward.REQ
	MIME – MIME Version: 1.0 (Voice 2.0)	This field should be added to all MM transferred to VPIM

NOTE 1: When Address Hiding was requested then the MIME From: field shall not contain the originator's address, but some string, e.g. "Anonymous", that indicates that the address is being suppressed. If the Message-class of the MM is "auto", i.e. this MM was automatically generated by the MMS Relay then the SMTP MAIL FROM field should be set to null ("<>") to prevent attempts to respond to the message.

NOTE 2: RFC 2421 (VPIMv2) requires that the content of the voice message be packaged in a "multipart/voice-message" content-type that may contain the actual message within a "audio/*" part of the multipart.

NOTE 3: The actual content must be filtered to transfer only a voice part of the message with possibly a vCard or voice signature. In addition, the content should be encoded in binary if supported by the SMTP servers and if not shall be encoded in Base64 encoding. The transfer encoding must be indicated for each part of the multipart using the Content-Transfer-Encoding: header field.

When receiving a message from an external messaging service, the MMS Relay/Server should use the available information in the transport and message headers to generate appropriate MMS information elements. The following tables indicate what header information should be used when receiving messages from either Internet Email or Voicemail via VPIM.

Table X.3 Mapping of Internet Email / Voicemail via VPIM to MM notification / retrieved MM

MM1 Notification or Retrieve Information Element	Internet Email/VPIM Header	Notes
Message Type		Created by MMS Relay/Server
MMS Version		Created by MMS Relay/Server
Transaction ID		Created by MMS Relay/Server
Recipient address	**MIME -** To:, Cc:	
Content type	**MIME -** Content-Type:	
Sender address	**MIME -** From:	
Message class		Should be set to "personal"
Date and time	**MIME -** Date:	
Time of Expiry	**SMTP –** DELIVER-BY parameter of RCPT TO	Note that the DELIVER-BY is always a relative time
Delivery report	**SMTP –** DSN	
Reply-Charging fields		These will not appear – as they are Optional and are not supported in originating messaging system.
Priority	**MIME -** Importance: or X-Priority:	
Read reply	**MIME –** Disposition-Notification-To:	As defined in RFC 2298
Subject	**MIME -** Subject:	
Content	*<message body>*	
Message ID	**SMTP –** ENVID **MIME –** Message-ID:	As defined in RFC 3461, used to return DSN, this Message ID should be generated by the MMS Relay for MM that come from MM1_submit.REQ and should use the X-Mms-Message-ID from the MM4_forward.REQ
Stored MM State MM Flags Request Status Request Status Text		All of these fields are dependent on MMS Relay/Server settings

X.2 Delivery Reports

The MMS Relay/Server should be prepared to receive delivery reports from external messaging services that such reports were requested from. In addition the MMS Relay/Server should support generation of Delivery Status Notification messages (as specified in RFC3461) when requested from external messaging services. The following table indicates the transformation of a received Delivery Report as defined in RFC 3461 and RFC 1892 to the corresponding MM1-deliveryReport.req PDU.

Note that the DSN as defined in the relevant RFC consists of three content parts in addition to the set of MIME headers. Each of the three parts may contain information necessary for the transformation from DSN to MM1-deliveryReport.

Table X.4 Mapping of Delivery Status Notification to MMS Delivery Report

MM1 DeliveryReport Information Element	RFC3461 DSN report message	Notes
Message Type	DSN top-level : multipart/report, report-type=delivery-status second-part : message/delivery-status	Created by MMS Relay/Server
MMS Version		Created by MMS Relay/Server
Transaction ID		Created by MMS Relay/Server
Message-ID	Original-Envelope-ID field of per-message fields	This is an optional field in the DSN but "should" appear if ENVID was supplied as specified in tables above.
Recipient address	Final-Recipient field	This is a mandatory field in the DSN per-message section of the second-part
Sender address	top-level: To: header field value	In addition, this may be available from the SMTP RCPT TO: field.
Date and Time	top-level: Date: header field value	
MM Status	Action and Status fields of the per-message section of second-part	The DSN Action field may have one of the following values: ▪ delivered (should correspond to the *retrieved*). ▪ failed (may correspond to the expired status – depending on the Status field value. ▪ delayed (should not be transferred to user) ▪ relayed (should correspond to the *indeterminate* status of MMS) ▪ expanded (should not be transferred to user)
MM Status Text	Text from first part of DSN content	
NOTE 1: When the DSN Action field indicates that the action taken by the external messaging service was either "delayed" or "expanded" then the MMS Relay/Server should not forward a delivery-report to the MM originator.		

When an external messaging service requests, via DSN request in SMTP envelope, a delivery report the MMS Relay/Server should generate a DSN with the following information:

- MIME message of content-type: multipart/report with parameter "report-type=delivery-status"
- MIME field To: should be originator of the message that is being delivered according to the address format that appeared in the From; field as it was received at the MMS Relay/Server.
- MIME field From: should be the address of the recipient that the delivery-report is relating to.
- The content of the DSN should be a two-part multipart/report in which the first part is a plain/text part that includes the MM Status Text field that would have been generated for a MM1 delivery-report.

- The second-part of the content should be a message/delivery-status content that should include the following information:
  - Original-Envelope-ID field with the Message-ID that appeared in the ENVID field of the SMTP envelope that was conveyed to the MMS Relay/Server by the external service.
  - Final-Recipient field whose value should be the MMS address of the recipient
  - Action field should indicate if the message was delivered.
  - For failed delivery an appropriate Status value should be included.

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Cambridge, UK
25 -29 August 2003

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CR-Form-v7

CHANGE REQUEST

⌘ **23.140** **CR** **136** ⌘ **rev** **-** ⌘ Current version: **6.2.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Extension of MM4 interface for delivery report
Source:	⌘	T2
Work item code:	⌘	MMS6
Date:	⌘	28/08/2003
Category:	⌘	**B**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	The originator MMS Relay/Server may require to know the status of the MM delivery when a MM goes through different MMS Relay/Server.
Summary of change:	⌘	The originator MMS Relay/Server may need to get the delivery report from the recipient MMS Relay/Server (i.e., over the MM4 interface).
Consequences if not approved:	⌘	The originator MMS Relay/Server will not know the status of the MM delivery when a MM goes through different MMS Relay/Server. The originator MMS Relay/Server can't then get all the information to provide a good quality of service (i.e., charging).
Clauses affected:	⌘	7.1.5; 8.4.1.3, 8.4.1.4, 8.4.2.3; 8.4.2.4; 8.4.4.2, 8.4.4.3, 8.4.4.4; 8.4.4.8, Annex I, new: Annex Y

	Y	N		
Other specs affected: ⌘		X	Other core specifications	⌘
		X	Test specifications	
		X	O&M Specifications	

Other comments: ⌘

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm.
Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

7.1.5 Delivery Report

The MMS Relay/Server shall support the delivery reporting service. Delivery reports shall only be generated for MMs.

The originator MMS User Agent or VASP may be able to request a delivery report for a specific MM.

Within an MM notification or upon MM retrieval the recipient MMS User Agent may receive an indication that a delivery report is requested for the MM.

Within either a response to a notification or a response to an MM's delivery, the recipient MMS User Agent may request a delivery report not to be generated by the MMS Relay/Server. When a VASP has requested the delivery report (via MM7) the MMS Relay/Server ~~must~~ shall send the delivery report regardless of the MMS User Agent's request.

The originator MMS Relay/Server shall generate a delivery report if a delivery report has been requested by the originator MMS User Agent or VASP

- upon routing forward the MM, in case the peer entity is not known by the MMS Relay/Server;
- upon routing forward the MM, in case that originator is VASP.

The originator MMS Relay/Server may generate a delivery report if a delivery report has been requested by the originator MMS User Agent

- upon failure of routing forward the MM.

The recipient MMS Relay/Server shall generate a delivery report if a delivery report has been requested by the originator MMS User Agent and if the recipient MMS User Agent did not request a delivery report not to be generated or in any case that a VASP has requested a delivery report

- upon receipt of a response to a notification, in case the MM is rejected by the recipient MMS User Agent;
- upon receipt of a forwarding request, in case the MM is forwarded by the recipient MMS User Agent to other MM recipient(s), without prior retrieval;
- upon receipt of a response to an MM's delivery, in case the MM is retrieved by the MM recipient;
- upon expiry of the MM, in case the MM is not rejected and not retrieved by the MM recipient before the expiry.

The originator MMS User Agent or VASP, i.e. the MMS User Agent or VASP receiving the delivery report, may match the delivery report to the sent MM by retaining the message identification of the sent MM and comparing it to the received delivery report, which shall contain the message identification of the original MM. In case of multiple MM recipients, it is necessary for the originator MMS User Agent or VASP to retain the MM recipient addresses as well, to match the delivery report to the sent MM.

If a delivery report has been requested by the originator MMS User Agent and if the recipient MMS User Agent did not request a delivery report not to be generated, or in any case that the request for the delivery report comes from a VASP, the recipient MMS Relay/Server

- shall generate the delivery report;
- shall deliver the delivery report to the originator MMS Relay/Server;
- shall store delivery reports in the network until the originator MMS Relay/Server becomes reachable or until the delivery report expires.

In addition to the above, and as depicted in Annex Y, if an agreement exists between the MMS Relay/Servers, the originator MMS Relay/Server may request a delivery report regardless of whether the originator MMS User Agent requested the delivery report. Then, if the originator MMS Relay/Server requests a delivery report, the recipient MMS Relay/Server shall generate a delivery report for each MM received for that specific originator MMS Relay/Server.

In the event where both the originator MMS User Agent and the originator MMS Relay/Server request a delivery report, and the recipient refuses to have a report generated:

- if the originator MMS Relay/Server requested a delivery report; the recipient MMS Relay/Server shall produce and provide it to the originator MMS Relay/Server (which shall not forward to the requesting originator MMS User Agent)
- if the originator MMS Relay/Server did not request a delivery report; the recipient MMS Relay/Server shall not produce a delivery report

Within the delivery report the recipient MMS Relay/Server

- shall provide the MM originator address to the originator MMS Relay/Server;
- shall provide the MM recipient address to the originator MMS Relay/Server;
- shall provide the identification of the original MM for which the delivery report has been generated to the originator MMS Relay/Server;
- shall provide status information how the MM was handled (e.g. expired, rejected, delivered, forwarded or indeterminate) to the originator MMS Relay/Server;
- shall provide a time stamp when the MM was handled to the originator MMS Relay/Server.

For each MM recipient of the original MM for which the delivery report has been generated and becomes available at the originator MMS Relay/Server, the originator MMS Relay/Server

- shall deliver the delivery report to the originator MMS User Agent (i.e. the recipient MMS User Agent of the delivery report) or VASP, when requested by the originator MMS User Agent and not refused by the recipient.

Within the delivery report the originator MMS Relay/Server

- shall provide the MM recipient's address to the originator MMS User Agent (the recipient MMS User Agent of the delivery report) or VASP;
- shall provide the identification of the original MM for which the delivery report has been generated to the originator MMS User Agent (the recipient MMS User Agent of the delivery report) or VASP;
- shall store delivery reports until the originator MMS User Agent becomes reachable (e.g. user moves back into coverage, switches MMS User Agent on) or until the delivery report expires;
- should store delivery reports until the VASP becomes reachable (e.g. in case of transport failure towards the VASP) or until the delivery report expires.

8.4.1.3 Features

Addressing: The recipient(s) of a routed forward MM shall be indicated in the addressing-relevant information field(s) of the MM4_forward.REQ. If the addresses of several MM recipients of the MM are associated with a single MMS Relay/Server then more than one MM recipient may be indicated in the addressing-relevant information field(s) of the MM4_forward.REQ. Addresses of all MM recipients of the MM (including those that are not associated with the MMS Relay/Server the MM is forwarded to) shall be conveyed in the MM4_forward.REQ for the MM recipient's informational purposes.

The MM originator of a routed forward MM shall be indicated in addressing-relevant information field(s) of the MM4_forward.REQ. If the originator MMS User Agent requested to hide its identity from the MM recipient then the information about this request shall also be conveyed in the MM4_forward.REQ.

Time stamping: The MM4_forward.REQ shall carry the date and time-of the most recent handling of the MM by an MMS User Agent (i.e. either submission or forwarding of the MM). In the case of forwarding the MM4_forward.REQ may carry the date and time of the submission of the MM.

Time constraints: If the originator MMS User Agent requested a time of expiry for the MM then this information shall be conveyed in the MM4_forward.REQ.

Message class, priority and subject: If the MM is qualified further by message class, priority, subject and/or additional qualifiers then this information shall be conveyed in the MM4_forward.REQ.

Reporting: If either the originator MMS User Agent, or the originator MMS Relay/Server requested a delivery report for the MM then the information about this request shall be conveyed in the MM4_forward.REQ. If, in addition, the originator MMS User Agent requested a read-reply report then the information about this request shall be conveyed in the MM4_forward.REQ.

Identification: The originator MMS Relay/Server shall always provide a unique message identification for an MM, which it routed forward to a peer MMS Relay/Server in the MM4_forward.REQ.

Content Type: The type of the multimedia content shall always be identified in the MM4_forward.REQ.

Acknowledgement Request: The originator MMS Relay/Server may request a MM4_forward.RES from the recipient MMS Relay/Server acknowledging the successful reception of the MM.

Request Status: The recipient MMS Relay/Server shall indicate the status of the MM4_forward.REQ in the associated MM4_forward.RES if requested.

Message Type: The type of message used on reference point MM4 indicating MM4_forward.REQ and MM4_forward.RES as such.

Transaction Identification: If the originator MMS Relay/Server requests an MM4_forward.RES from the recipient MMS Relay/Server it shall provide a transaction identification within an MM4_forward.REQ. The MM4_forward.RES shall unambiguously refer to the corresponding MM4_forward.REQ using the same transaction identification.

Forward_Counter: A Counter indicating the number of times the particular MM was forwarded.

Previously-sent-by: The address(es) of the MMS User Agent(s) that submitted or forwarded the MM prior to the last forwarding MMS User Agent. In the multiple forwarding case the order of the provided addresses shall be indicated and the address of the originator MMS User Agent shall be marked, if present.

NOTE: The address of the last forwarding MMS User Agent is carried in other addressing elements.

Version: The MMS protocol shall provide unique means to identify the current version in the particular protocol environment.

8.4.1.4 Information Elements

Table 1: Information elements in the MM4_forward.REQ.

Information element	Presence	Description
3GPP MMS Version	Mandatory	The MMS version of the originator MMS Relay/Server as defined by the present document.
Message Type	Mandatory	The type of message used on reference point MM4: "MM4_forward.REQ".
Transaction ID	Mandatory	The identification of the MM4_forward.REQ/ MM4_forward.RES pair.
Message ID	Mandatory	The identification of the MM.
Recipient(s) address	Mandatory	The address(es) of the MM recipient(s). Multiple addresses are possible.
Sender address	Mandatory	The address of the MMS User Agent that most recently handled the MM, i.e. that either submitted or forwarded the MM. If the originator MMS User Agent has requested her address to be hidden from the recipient her address shall not be provided to the recipient.
Content type	Mandatory	The content type of the MM's content.
Message class	Conditional	The class of the MM (e.g., personal, advertisement, information service) if specified by the originator MMS User Agent
Date and time	Mandatory	The time and date of the most recent handling (i.e. either submission or forwarding) of the MM by an MMS User Agent (time stamp).
Time of Expiry	Conditional	The desired time of expiry for the MM if specified by the originator MMS User Agent (time stamp).
Delivery report	Conditional	A request for delivery report if the originator MMS User Agent has requested a delivery report for the MM.
Originator R/S delivery report	Conditional	A request for delivery report that, when set to "Yes", means the originator MMS Relay/Server has requested a delivery report for the MM. Interpret as "No" in the absence of this Information element.
Priority	Conditional	The priority (importance) of the message if specified by the originator MMS User Agent.
Sender visibility	Conditional	A request to show or hide the sender's identity when the message is delivered to the MM recipient if the originator MMS User Agent has requested her address to be hidden from the recipient.
Read reply	Conditional	A request for read reply report if the originator MMS User Agent has requested a read-reply report for the MM..
Subject	Conditional	The title of the whole MM if specified by the originator MMS User Agent.
Acknowledgement Request	Optional	Request for MM4_forward.RES
Forward_counter	Conditional	A counter indicating the number of times the particular MM was forwarded.
Previously-sent-by	Optional	In case of forwarding this information element contains one or more address(es) of MMS User Agent(s) that handled (i.e. forwarded or submitted) the MM prior to the MMS User Agent whose address is contained in the Sender address information element. The order of the addresses provided shall be marked. The address of the originator MMS User Agent shall be marked, if present.
Previously-sent-date-and-time	Optional	The date(s) and time(s) associated with submission and forwarding event(s) prior to the last handling of the MM by an MMS User Agent (time stamps).
Content	Conditional	The unaltered content of the multimedia message if specified by the originator MMS User Agent.

Table 2: Information elements in the MM4_forward.RES.

Information element	Presence	Description
3GPP MMS Version	Mandatory	The MMS version of the recipient MMS Relay/Server as defined by the present document.
Message Type	Mandatory	The type of message used on reference point MM4: "MM4_forward.RES".
Transaction ID	Mandatory	The identification of the MM4_forward.REQ/ MM4_forward.RES pair.
Message ID	Mandatory	The Message ID of the MM which has been forwarded within the corresponding MM4_forward.REQ
Request Status	Mandatory	The status of the request to route forward the MM.
Request Status text	Optional	Status text corresponding to the Request Status

8.4.2.3 Features

Addressing: Both the address of the recipient (which is the MM originator) and the address of the originator (which is the MM recipient) of a routed forward delivery report shall be provided to the originator MMS Relay/Server in the addressing-relevant information field of MM4_delivery_report.REQ.

Identification: In the MM4_delivery_report.REQ the recipient MMS Relay/Server shall always provide the original message identification of the MM that the delivery report corresponds to as obtained from the associated MM4_forward.req.

MM Time stamping: The MM4_delivery_report.REQ shall carry the time and date of handling of the MM (e.g. retrieval, expiry, rejection)**.**

MM Status: The MM4_delivery_report.REQ shall carry the status of the MM delivery, e.g. retrieved, rejected, expired or indeterminate. The MM Status Extension may be used to provide more granularity.

Acknowledgement Request: The recipient MMS Relay/Server may request a MM4_delivery_report.RES from the originator MMS Relay/Server acknowledging the successful reception of the delivery report.

Forward To originator UA: The recipient MMS Relay/Server shall indicate if the originator MMS Relay/Server is allowed to forward the Delivery Report to the originator MMS User Agent.

Request Status: The originator MMS Relay/Server shall indicate the status of the MM4_delivery_report.REQ in the associated MM4_delivery_report.RES if requested.

Version: The MMS protocol shall provide unique means to identify the current version in the particular protocol environment.

Message Type: The type of message used on reference point MM4 indicating MM4_delivery_report.REQ and MM4_delivery_report.RES as such.

Transaction Identification: If the originator MMS Relay/Server requests an MM4_delivery_report.RES from the recipient MMS Relay/Server it shall provide a transaction identification within an MM4_delivery_report.REQ. The MM4_delivery_report.RES shall unambiguously refer to the corresponding MM4_delivery_report.REQ using the same transaction identification.

8.4.2.4 Information Elements

Table 2: Information elements in the MM4_delivery_report.REQ.

Information element	Presence	Description
3GPP MMS Version	Mandatory	The MMS version of the recipient MMS Relay/Server as defined by the present document.
Message Type	Mandatory	The type of message used on reference point MM4: " MM4_delivery_report.REQ".
Transaction ID	Mandatory	The identification of the MM4_delivery_report.REQ/ MM4_delivery_report.RES pair.
Message ID	Mandatory	The identification of the original MM.
Recipient address	Mandatory	The address of the MM recipient of the original MM.
Sender address	Mandatory	The address of the MM originator of the original MM.
Date and time	Mandatory	Date and time the MM was handled (retrieved, expired, rejected, etc.) (time stamp).
Acknowledgement Request	Optional	Request for MM4_delivery_report.RES
Forward to Originator UA	Optional	If "No", indicates that the originator MMS Relay/Server is not allowed to forward the Delivery Report to the originator MMS User Agent. Interpret as "Yes" in the absence of this Information element.
MM Status	Mandatory	Status of the MM, e.g. retrieved, expired, rejected
MM Status Extension	Optional	Extension of the MM Status, to provide more granularity.
MM Status text	Optional	Status text corresponding to the MM Status

Table 2: Information elements in the MM4_delivery_report.RES.

Information element	Presence	Description
3GPP MMS Version	Mandatory	The MMS version of the recipient MMS Relay/Server as defined by the present document.
Message Type	Mandatory	The type of message used on reference point MM4: “MM4_delivery_report.RES”.
Transaction ID	Mandatory	The identification of the MM4_delivery_report.REQ/ MM4_delivery_report.RES pair.
Message ID	Mandatory	The Message ID of the MM which caused the delivery report
Request Status	Mandatory	The status of the associated MM4_delivery_report.REQ.
Request Status text	Optional	The text explanation corresponding to the Request Status

8.4.4.2 MM4_Forward.REQ Header Mappings

The MM4 Forward request header mappings are detailed below.

Table 3: MM4_Forward.REQ Information Elements to STD 11 Header Mappings

Information element	STD 11 Headers
3GPP MMS Version	X-Mms-3GPP-MMS-Version:
Message Type	X-Mms-Message-Type:
Transaction ID	X-Mms-Transaction-ID:
Message ID	X-Mms-Message-ID:
Recipient(s) address	To:, Cc: , Bcc:
Sender address	From:
Content type	Content-Type:
Message class	X-Mms-Message-Class:
Date and time	Date:
Time of Expiry	X-Mms-Expiry:
Delivery report	X-Mms-Delivery-Report:
Originator R/S delivery report	X-Mms-Originator-R/S-Delivery-Report
Priority	X-Mms-Priority:
Sender visibility	X-Mms-Sender-Visibility:
Read reply	X-Mms-Read-Reply:
Subject	Subject:
Acknowledgement Request	X-Mms-Ack-Request:
Forward counter	X-Mms-Forward-Counter:
Previously-sent-by	X-Mms-Previously-sent-by:
Previously-sent-date and-time	X-Mms-Previously-sent-date-and-time:
Content	*<message body>*
-	Sender:
-	X-Mms-Originator-System:
-	Message-ID:

The table above indicates the mappings from MM4_Forward.REQ information elements to the corresponding STD 11 [5] headers.

The MM4 information element Message ID is not directly mapped to a corresponding STD 11 "Message-ID:" header. Each STD 11 message must have a unique message id, which is carried in the "Message-ID:" header.

Content-type maps directly since both are defined as being MIME content types as specified in RFC 2046 [6].

The STD 11 "From:" header is determined by the mail user agent, or, in this case, the MMS User Agent. This corresponds to the MM4 information element Sender address, as set by the MMS User Agent or MMS Relay/Server.

STD 11 messages are required to have a "Sender:" header that indicates the originator address (as determined by the SMTP "MAIL From" command).

The STD 11 “X-Mms-Originator-System:” header shall be used to indicate the address that the recipient MMS Relay/Server shall use as the recipient address with MM4_Forward.RES.

In case there are only blind carbon-copy recipient(s) (“Bcc:”), the behaviour shall be as recommended by RFC2821 [22], Appendix B, i.e. the originating MMS Relay/Server shall only insert an empty “Bcc:” header and no “To:” or “Cc:” headers. The recipient(s) shall then only be indicated in the SMTP command layer (RCPT TO:).

In case there are both “To:” / “Cc:” and “Bcc:” recipients, the “Bcc:” headers shall be removed by the originating MMS Relay/Server and the “Bcc:” recipients shall only be indicated in the SMTP command level (RCPT TO:). This is in accordance with the functionality recommended by RFC2821 [22], Appendix B.

8.4.4.3 MM4_Forward.RES Header Mappings

The MM4 Forward response information element mappings are detailed in the table below.

The transmission of the Forward Response from the recipient MMS Relay/Server requires a properly addressed STD 11 message. While the addressing of the MM4_Forward.REQ is clearly that of the intended recipients and originator, the MM4_Forward.RES addressing is related to neither the recipients nor the originator of the original MM. Instead, the MM4_Forward.RES addressing is based on special systems addresses. MMS Service Provider should configure appropriate system addresses which will be used as both the recipient and originator of these administrative messages. It is suggested that the administrative addressing be based on the pattern:

system-user@mms-relay-host.mmse-domain.

The STD 11 “To:” header value shall be according to the STD 11 “X-Mms-Originator-System:” header value provided in MM4_Forward.REQ.

Table 4: MM4_Forward.RES Information Elements to STD 11 Header Mappings

Information element	STD 11 Header
3GPP MMS Version	X-Mms-3GPP-MMS-Version:
Message Type	X-Mms-Message-Type:
Transaction ID	X-Mms-Transaction-ID:
Message ID	X-Mms-Message-ID:
Request Status	X-Mms-Request-Status-Code:
Request Status text	X-Mms-Status-Text:
-	Sender:
-	To:
-	Message-ID:
-	Date:

The STD 11 "Sender: " and "To:" headers contain system addresses as described above, and do not map to MM4_Forward.RES information elements. The STD 11 message requires a "Date:" header, but there currently is no corresponding MM4_Forward.RES information element.

8.4.4.4 MM4_Delivery_report.REQ Header Mappings

The mappings of the MM4_Delivery_report.REQ information elements to STD 11 headers is detailed in the table below.

Table 5: MM4_Delivery_report.REQ Information Elements to STD 11 Header Mappings

Information element	STD 11 Header
3GPP MMS Version	X-Mms-3GPP-MMS-Version:
Message Type	X-Mms-Message-Type:
Transaction ID	X-Mms-Transaction-ID:
Message ID	X-Mms-Message-ID:
Recipient address	From:
Sender address	To:
Date and time	Date:
Acknowledgement Request	X-Mms-Ack-Request:
Forward to Originator UA	X-Mms-Forward-To-Originator-UA
MM Status	X-Mms-MM-Status-Code:
MM Status Extension	X-Mms-MM-Status-Extension
MM Status Text	X-Mms-Status-text:
-	Sender:
-	Message-ID:

The meaning of Recipient address is that of the original MM, from whose MMS User Agent this Delivery-report is being generated. The meaning of Sender address is that of the original MM, to whom the Delivery-report is being sent.

The value of the STD 11 "Sender:" header is a system administration address, to which the corresponding response will be sent.

The STD 11 "Sender:" header value is automatically set to the system address of the MMS Relay/Server.

The STD 11 "Message-ID:" value is automatically generated by the MMS Relay/Server, in conformance to STD 11 [5].

The other header mappings from information elements are similar to those already described above.

8.4.4.8 Header Field Value Range

MMS information elements that are mapped to standard STD 11 "header fields", i.e. which do not have an "X-Mms-" prefix, should be used according to [5].

The rest of the header definitions used in this clause, including the mechanisms and pre-defined tokens, are described in an augmented Backus-Naur Form (BNF) defined in [48], similar to that used by RFC 822 [5]. Implementers will need to be familiar with the notation in order to understand these definitions.

For the residual MMS information elements the following applies:

X-Mms-3GPP-MMS-Version:

```
3GPP-MMS-Version = "X-Mms-3GPP-MMS-Version" ":"  1*DIGIT "." 1*DIGIT "."
1*DIGIT
```

Note that the numbers MUST be treated as separate integers and that each may be incremented higher than a single digit. Thus, 2.1.4 is a lower version than 2.1.13, which in turn is lower than 2.3.0 Leading zeros shall be ignored by recipient MMS Relay/Server and shall NOT be sent. The version is according to the version of the present document (see also clause "Foreword").

X-Mms-Message-Type:

```
Message-type = "X-Mms-Message-Type" ":" ( "MM4_forward.REQ" |
"MM4_forward.RES" | "MM4_delivery_report.REQ" | "MM4_delivery_report.RES" |
"MM4_read_reply_report.REQ" | "MM4_read_reply_report.RES" )
```

X-Mms-Transaction-Id:

```
Transaction-id =  "X-Mms-Transaction-ID" ":" quoted-string
```

X-Mms-Message-Id:

```
Message-id =  "X-Mms-Message-ID" ":" quoted-string
```

X-Mms-Message-Class:

```
Message-class = "X-Mms-Message-Class" ":" ( Class-identifier | quoted-string
)

Class-identifier = "Personal" | "Advertisement" | "Informational" | "Auto"
```

X-Mms-Expiry:

```
Expiry-value = "X-Mms-Expiry" ":" ( HTTP-date | delta-seconds )
```

X-Mms-Delivery-Report:

```
Delivery-report =  "X-Mms-Delivery-Report" ":" ( "Yes" | "No" )
```

X-Mms-Originator-R/S-Delivery-Report:

```
Originator-R/S-Delivery-Report =  "X-Mms-Originator-R/S-Delivery-Report" ":"
( "Yes" | "No" )
```

X-Mms-Priority:

```
Priority = "X-Mms-Priority" ":" ( "Low" | "Normal" | "High" )
```

X-Mms-Sender-Visibility:

```
Sender-visibility = "X-Mms-Sender-Visibility" ":" ( "Hide" | "Show" )
```

X-Mms-Read-Reply:

```
Read-reply = "X-Mms-Read-Reply" ":" ( "Yes" | "No" )
```

X-Mms-Ack-Request:

```
Ack-Request = "X-Mms-Ack-Request" ":" ( "Yes" | "No" )
```

X-Mms-Forward-To-Originator-UA:

```
Forward-To-Originator-UA = "X-Mms-Forward-To-Originator-UA" ":" ( "Yes" | "No" )
```

X-Mms-Request-Status-Code:

```
Request-status-Code =  "X-Mms-Request-Status-Code" ":" ( "Ok" | "Error-unspecified" | "Error-service-denied" | "Error-message-format-corrupt" | "Error-sending-address-unresolved" | "Error-message-not-found" | "Error-network-problem" |   "Error-content-not-accepted" | "Error-unsupported-message" )
```

The meaning of the X-Mms-Request-Status-Code header field is further described in section 8.4.4.10 of this specification.

X-Mms-MM-Status-Code:

```
MM-Status-Code = "X-Mms-MM-Status-Code" ":" ( "Expired" | "Retrieved" | "Rejected" | "Deferred" | "Indeterminate" | "Forwarded" | "Unrecognised" )
```

X-Mms-MM-Status-Extension:

```
MM-Status-Extension =  "X-Mms-MM-Status-Extension" ":" ( "Rejection-By-MMS-Recipient" | "Rejection-by-Other-RS" )
```

The meaning of the X- Mms-Status-Extension header field is further described in section 8.4.4.11 of this specification.

X-Mms-Read-Status:

```
Read-Status = “X-Mms-Read-Status” “:” ( “Read” | “Deleted without being read” )
```

X-Mms-Forward-Counter

```
Forward-Counter = "X-Mms-Forward-Counter" ":" 1*DIGIT
```

X-Mms-Previously-sent-by

```
Previously-sent-by = “X-Mms-Previously-sent-by” “:” 1*DIGIT “,” mailbox
```

The address should be machine-usable, as defined by "mailbox" in RFC 2822 [5].

NOTE: The number indicates the chronological order of the submission and forwarding event(s). The number “0” is associated with the submission of the MM. A higher number indicates an event at a later point in time.

X-Mms-Previously-sent-date-and-time

```
Previously-sent-date-and-time = “X-Mms-Previously-sent-date-and-time” “:” 1*DIGIT “,” HTTP-date
```

The date should be machine-usable, as defined by "HTTP-date" in RFC 2616 [48].

NOTE: The number indicates the chronological order of the submission and forwarding events. The number “0” is associated with the submission of the MM. The number indicates the correspondence to the MMS User Agent’s address in the “X-Mms-Previously-sent-by” header field with the same number.

Annex I (normative): MM1 <-> MM4 header mapping

This annex maps the information elements found on MM1 onto the STD 11 header fields of MM4.

The tables below are provided to give a normative end-to-end description of MMS. There is a table for each MM1 abstract message with all its information elements in the left column, the right column shows how the MM1 information elements are mapped onto the STD 11 headers of MM4.

In many cases there is no mapping between MM1 information elements and MM4 STD 11 header fields, this is according to specifications. These information elements are included in the tables below in order to give a complete picture of how the MM1 information elements are handled.

Table I.1: Mapping MM1_submit.REQ -> MM4_forward.REQ

Information elements in MM1_submit.REQ	STD11 Header fields in Egress MM4_forward.REQ
Message Type	-
MMS Version	-
Transaction ID	-
Recipient address	To:, Cc:, Bcc: (NOTE 1, NOTE 2)
Content type	Content-Type:
Sender address	From:
Message class	X-Mms-Message-Class:
Date and time	Date:
Time of Expiry	X-Mms-Expiry:
Earliest Delivery Time	-
Delivery report	X-Mms-Delivery-Report:
-	X-Mms-Originator-R/S-Delivery-Report
Reply-Charging	-
Reply-Deadline	-
Reply-Charging-Size	-
Priority	X-Mms-Priority:
Sender visibility	X-Mms-Sender-Visibility:
Store	-
MM State	-
MM Flags	-
Read reply	X-Mms-Read-Reply:
Subject	Subject:
Reply-Charging-ID	-
Content	*<message body>*
NOTE 1: A "Bcc:" field is created on MM4 only when the original MM on MM1 contains only blind-carbon-copy recipient(s). In this case the "Bcc:" field is left blank, see clause 8.4.4.2. NOTE 2: Recipient addresses for blind-carbon-copy recipient(s) on MM1 are mapped onto <RCPT TO:> commands on SMTP level on MM4.	

Table I.2: Mapping MM1_submit.RES -> MM4_forward.REQ

Information elements in MM1_submit.RES	STD11 Header fields in Egress MM4_forward.REQ
Message Type	-
MMS Version	-
Transaction ID	-
Request Status	-
Request Status Text	-
Message ID	X-Mms-Message-ID:
Store Status	-
Store Status Text	-
Stored Message Reference	-
-	X-Mms-Originator-R/S-Delivery-Report

Table I.3: Mapping MM1_notification.REQ <- MM4_forward.REQ

Information elements in MM1_notification.REQ	STD11 Header fields in Ingress MM4_forward.REQ
Message Type	-
MMS Version	-
Transaction ID	-
Message class	X-Mms-Message-Class:
Message size	-
Time of expiry	X-Mms-Expiry:
Message Reference	-
Subject	Subject:
Priority	X-Mms-Priority:
Sender address	From:
Stored	-
Delivery report	X-Mms-Delivery-Report:
-	X-Mms-Originator-R/S-Delivery-Report
Reply-Charging	-
Reply-Deadline	-
Reply-Charging-Size	-
Reply-Charging-ID	-
Element-Descriptor	-

Table I.6: Mapping MM1_retrieve.RES <- MM4_forward.REQ

Information elements in MM1_retrieve.RES	STD11 Header fields in Ingress MM4_Forward.REQ
Message Type	-
MMS Version	-
Transaction ID	-
Message ID	X-Mms-Message-ID:
Sender address	From:
Content type	Content-type:
Recipient address	To:
Message class	X-Mms-Message-Class:
Date and time	Date:
Delivery report	X-Mms-Delivery-Report:
-	X-Mms-Originator-R/S-Delivery-Report
Priority	X-Mms-Priority:
Read reply	X-Mms-Read-Reply:
Subject	Subject:
Request Status	-
MM State	-
MM Flags	-
Request Status Text	-
Reply-Charging	-
Reply-Charging-ID	-
Reply-Deadline	-
Reply-Charging-Size	-
Previously-Sent-By	X-Mms-Previously-Sent-By
Previously-Sent-Date	X-Mms-Previously-Sent-Date
Content	*<message body>*

Table I.8: Mapping MM1_forward.REQ -> MM4_forward.REQ

Information elements in MM1_forward.REQ	STD11 Header fields in Egress MM4_Forward.REQ
Message Type	-
MMS Version	-
Transaction ID	-
Recipient address	To:, Cc:, Bcc: (NOTE 1, NOTE 2)
Forwarding address	From:
Date and time	Date:
Time of Expiry	X-Mms-Expiry:
Earliest delivery time	-
Store	-
MM State	-
MM Flags	-
Delivery report	X-Mms-Delivery-Report:
-	X-Mms-Originator-R/S-Delivery-Report
Read reply	X-Mms-Read-Reply:
Message Reference	-

NOTE 1: A "Bcc:" field is created on MM4 only when the original MM on MM1 contains only blind-carbon-copy recipient(s). In this case the "Bcc:" field is left blank, see clause 8.4.4.2.

NOTE 2: Recipient addresses for blind-carbon-copy recipient(s) on MM1 are mapped onto <RCPT TO:> commands on SMTP level on MM4.

Table I.10: Mapping MM1_delivery_report.REQ <- MM4_delivery_report.REQ

Information elements in MM1_delivery_report.REQ	STD11 Header fields in Ingress MM4_delivery_report.REQ
Message Type	-
MMS Version	-
Message ID	X-Mms-Message-ID
Recipient address	From:
Date and Time	Date:
MM Status	X-Mms-MM-Status-Code
-	X-Mms-MM-Status-Extension
-	X-Mms-Forward-To-Originator-UA

Annex Y (informative): Recipient MMS Relay/Server Delivery Report generation and presentation to the originator MMS User Agent.

Table Y.1: Recipient MMS R/S Delivery Report generation and presentation to the originator MMS UA

		Originator MMS UA	
		Request a Delivery Report	Does not request a Delivery Report
Originator MMS R/S	Request a Delivery Report	Recipient allows retrieval, then recipient R/S: o Sends Delivery Report o Forward to Orig UA = Yes	Recipient allows retrieval, then recipient R/S: o Sends Delivery Report o Forward to Orig UA = No
		Recipient does not allow retrieval, then recipient R/S: o Sends Delivery Report o Forward to Orig UA = No	Recipient does not allow retrieval, then recipient R/S: o Sends Delivery Report o Forward to Orig UA = No
	Does not request a Delivery Report	Recipient allows retrieval, then recipient R/S: o Sends Delivery Report o Forward to Orig UA = Yes	Recipient allows retrieval, then recipient R/S: o Does not send Delivery Report
		Recipient does not allow retrieval, then recipient R/S: o Does not send Delivery Report	Recipient does not allow retrieval, then recipient R/S: o Does not send Delivery Report

3GPP TSG-T2 #22
Cambridge, UK
25 -29 August 2003

T2-030499

CR-Form-v7

CHANGE REQUEST

⌘ **23.140** **CR** **137** ⌘ **rev** **-** ⌘ Current version: **6.2.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ [ ] ME [X] Radio Access Network [ ] Core Network [X]

Title:	⌘	Reply charging in case of forwarding
Source:	⌘	T2
Work item code:	⌘	MMS6
Date:	⌘	28/08/2003
Category:	⌘	**B**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	In case of forwarding, forwarding user agent may want to use the function of reply-charging. Current specification does not support this function.
Summary of change:	⌘	Adding three IEs in MM1_Forwarding.Req to implements this feature.
Consequences if not approved:	⌘	Reply-charging function in forwarding is not supported.

Clauses affected:	⌘	7.1.4, 7.1.10, 8.1.6

		Y	N			
Other specs affected:	⌘	X		Other core specifications	⌘	OMA MMS specifications
			X	Test specifications		
			X	O&M Specifications		

Other comments:	⌘	

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

7.1.4 Forwarding of a Multimedia Message

This part of the MMS service describes the mechanism by which an MMS User Agent may request the corresponding MMS Relay/Server, that an MM for which the MMS User Agent is the intended recipient (and is notified of the MM) be forwarded to other specified recipient(s) MMS User Agent(s) whose address(es) shall be specified by the forwarding MMS User Agent, without having to first retrieve the MM.

The support for originating a request that a specific MM be forwarded is optional for the MMS User Agent.

The support for forwarding an MM, in response to a request from a MMS User Agent that a specific MM be forwarded is optional for the MMS Relay/Server.

The original MM is forwarded to a new recipient(s) with the forwarding MMS User Agent's address being provided but without additional content, and without affecting the elements of the original MM. Some additional information elements e.g. ,reply-charging request,delivery report, read-reply report, i.e. requests for reports which are to provide feedback on the forwarded MM to the forwarding MMS User Agent, may be supplied.

Upon requesting an MM to be forwarded the MMS User Agent:

- shall indicate the address of the MM recipient(s);
- shall provide the message reference provided in the MM Notification;
- shall not request address hiding;
- shall not generate a read-reply report to the originator MMS User Agent even if a read-reply report is requested;
- may indicate the address of the Forwarding MMS User Agent (i.e. it's own address);
- may request that a copy of the forwarded MM be stored in the MMBox;
- may provide a time stamp for the time of submission of the request to forward the MM;
- may set the desired time of expiry for the forwarded MM;
- may set the earliest desired time of delivery for the forwarded MM;
- may request a delivery report for the forwarded MM;
- may request a read-reply report for the forwarded MM;
- may indicate the willingness of the forwarding MMS user agent to pay for a reply for the forwarded MM and convey the reply-charging limitations. In this case, forwarding MMS User Agent behaves as the originator MMS User Agent to support reply-charging function. Fowarding MMS User Agent shall not be allowed to forward the reply-charging information set by the originator MMS User Agent;

Upon reception of a request from a forwarding MMS User Agent to forward an MM, the forwarding MMS Relay/Server

- shall assign a Message Identification to the forwarded MM and immediately provide the forwarding MMS User Agent with this Message Identification;
- shall provide status information on the MM forward request to the forwarding MMS User Agent;
- shall retain the forwarded MM until the earliest desired time of delivery, if the optional feature of earliest time of delivery is supported by the MMS Relay/Server of the forwarding MMS User Agent. If this feature is not supported then the MM is immediately routed forward;
- is responsible for copying the MM into the MMBox, if the MMBox is supported, enabled, and if requested. In addition, the stored MM will have new Recipient address, Sender address, and Date and time information elements appended to the stored MM in such a way that the forwarding history of those information elements is accumulated with repeated forwardings, without losing the Recipient and Sender addresses, and Date and time of the original MM;
- may provide a time stamp of the MM submission;

- shall not provide the MM originator's address if the originator MMS User Agent requested its address to be hidden from the MM recipient(s);
- shall not route forward the request for address hiding of the MM originator;
- shall provide the address of the MMS User Agent that requested forwarding of the MM;
- shall provide a time stamp for the request to forward the MM. It may also override the forwarding MMS User Agent's time stamp;
- shall insert the forwarding MMS User Agent's address into the forwarded MM if not yet provided;
- may override the forwarder's address provided by the forwarding MMS User Agent in the forwarding request (subject to MMS service provider's preferences);
- shall resolve the recipient's address(es) of the forwarded MM;
- shall route the forwarded MM towards the MM recipient(s);
- shall pass the indication whether or not a delivery report is requested unaltered when routing the forwarded MM towards the MM recipient(s);
- shall pass the indication whether or not a read-reply report is requested unaltered when routing the forwarded MM towards the MM recipient(s);
- shall generate a delivery report indicating "indeterminate" status of the MM's delivery if a delivery report was requested by the last MMS User Agent that handled the message and if the peer entity the MM is routed forward to is not known to the MMS Relay/Server of the forwarding MMS User Agent;
- shall provide the recipient MMS Relay/Server(s) with a count of the number of times that the particular MM was forwarded;
- shall provide the recipient MMS Relay/Server(s) with a list of addresses of forwarding MMS User Agents for the MM;
- shall generate a delivery report to the originator MMS User Agent if a delivery report is requested.

A special case is where the recipient MMS Relay/Server is also the forwarding MMS Relay/Server. In this case the MM does not have to be routed forward.

……

7.1.10 Support for Reply-Charging in MMS

The MMS User Agent may support reply-charging. If the MMS User Agent supports this feature the MMS User Agent shall support the following behaviour.

The MMS Relay/Server may support reply-charging. If the MMS Relay/Server supports this feature the MMS Relay/Server shall support the following behaviour.

The VASP connected to an MMS Relay/Server over MM7 may support reply-charging. If the VASP supports this feature the VASP shall support the following behaviour.

A User of the MMS (the originator MMS User Agent or VASP) may be able to take over the charge for the sending of a reply-MM to their submitted MM from the recipient(s). In case of forwarding, the forwarding MMS User Agent may be able to take over the charge for the sending of a reply-MM to their forwarding MM from the recipient(s), in this case, forwarding MMS User Agent takes the role of originator MMS User Agent. Therefore the originator of an MM (either MMS User Agent, forwarding MMS User Agent or VASP) should be able to mark the MM as reply-charged. The originator's MMS Relay/Server could either accept the user's or VASP's settings for reply-charging or not and should be able to convey feedback to the originator. It should be possible to take over the charge for reply-MMs from different recipients.

The recipient should be notified if she is not charged for a reply-MM to this particular MM. However, the indication of reply-charging covers only the willingness/fact that a reply-MM to an original MM is free of charge, not that the retrieval of the original MM marked as reply-charged is free of charge. Both the originator and the recipient MMS Relay/Server shall be able to control that not more than one reply-MM per recipient is charged to the originator. The MMS User Agent may indicate to the user if an MM has already been replied to.

The request for reply-charging shall not be passed on to the recipient

- if the recipient is not known to belong to an MMSE peer entity, or
- in the case the MM is forwarded.

NOTE: For this release the following limitations apply: Support for reply-charging in MMS is restricted to MMS User Agents and VASPs belonging to the same MMSE, i.e. originator and recipient MMSE are identical. Reply-charging allows only one reply-MM per recipient, i.e. reply-charging applies to the first successful submission of an MM sent as a reply. Furthermore, a reply-MM is restricted to text only. These limitations may be elaborated further in future releases.

In addition to the service behaviour described in previous clauses the following behaviour is expected to support reply-charging in MMS.

Within the submission of an MM the MM originator (either MMS User Agent or VASP) may indicate a willingness to pay the charge for one reply-MM per MM recipient. In this case the originator MMS User Agent or originator VASP:

- shall indicate the sender's willingness to pay the charge for one reply-MM per MM recipient,
- may define a reply-charging limitation request (e.g. may specify the latest time of submission of the reply-MMs or a maximum size of reply-MMs).

In a response to the MM submission the originator MMS Relay/Server shall inform the MM originator (either MMS User Agent or VASP) whether or not it accepts

- the originator's request for reply-charging in the original MM,
- the reply-charging limitations set by the originator (either MMS User Agent or VASP) in the original MM.

Upon reception of an MM from an originator (either MMS User Agent or VASP) the originator MMS Relay/Server

- may provide reply-charging limitations, i.e. it may also override by further limiting the MMS User Agent's or VASP’s settings for reply-charging limitations,
- shall pass the indication whether or not a reply-MM is requested unaltered when routing the original MM towards the MM recipient(s) if the peer entity is known to be the same MMS Relay/Server,
- shall pass the reply-charging limitations for the reply-MM when routing the original MM towards the MM recipient(s) if the peer entity is known to be the same MMS Relay/Server.

If the MM recipient has requested the original MM to be forwarded to some other address the recipient MMS Relay/Server

- shall not pass any information set by the originator about the reply-charging request towards the addressee(s) of the forwarding request.

If the MM recipient has requested the original MM to be forwarded to some other address, forwarding MMS User Agent may indicate a willingness of forwarding MMS User Agent to pay the charge for one reply-MM per MM recipient. In this case the forwarding MMS User Agent

- shall indicate the forwarding user’s willingness to pay the charge for one reply-MM per MM recipient,
- may define a reply-charging limitation request (e.g. may specify the latest time of submission of the reply-MMs or a maximum size of reply-MMs).

If reply-charging has been requested by the MM originator (either MMS User Agent or VASP) the recipient MMS Relay/Server

- should inform the recipient MMS User Agent with the MM notification and upon MM delivery that the MM originator is willing to pay for a reply-MM to this original MM.
- may notify the recipient about the reply-charging limitations set by the orginator (e.g. the latest time of submission of a reply-MM to the original MM).

When a user intends to send a reply-MM to the MM originator (to the originator MMS User Agent or to the VASP) the recipient MMS User Agent (which is the originator MMS User Agent of the reply-MM):

- shall mark the MM as a reply-MM,
- shall provide the message ID of the original MM which it replies to (if it is the reply-MM),
- shall submit the reply-MM to the recipient MMS Relay/Server,
- may be able to indicate to the user whether this MM has already been replied to,
- may be able to indicate to the user if the reply-charging limitations can not be met.

Upon submission the recipient MMS Relay/Server

- shall reject the reply-MM submission attempt and should convey this information back to the recipient MMS User Agent (which is the originator MMS User Agent of the reply-MM) if the reply-MM submission attempt does not meet the limitations set by the originator (either MMS User Agent or VASP),
- shall be able to uniquely map the reply-MM to the original MM.

8.1.6 Forwarding of Multimedia Message

This part of the MMS service describes the mechanism by which a forwarding MMS User Agent can request from the corresponding MMS Relay/Server, that an MM for which the MMS User Agent is the intended recipient (and has been notified of the MM) be forwarded to other specified recipient(s) MMS User Agent(s) whose address(es) shall be specified by the forwarding MMS User Agent, without having to first retrieve the MM. If the MMBox is supported, the MM being forwarded may also be requested to be stored in to the originator's MMBox.

For forwarding purposes an MM forward request shall always be requested by the forwarding MMS User Agent of the forwarding MMS Relay/Server. Involved abstract messages are outlined in Table 11 from type and direction points of view.

Table 1: Abstract messages for forwarding of MM

Abstract messages	Type	Direction
MM1_forward.REQ	Request	MMS UA -> MMS Relay/Server
MM1_forward.RES	Response	MMS Relay/Server -> MMS UA

8.1.6.1 Normal operation

The forwarding MMS User Agent shall issue an MM1_forward.REQ to the forwarding MMS Relay/Server, which contains MMS control information. The MMS Relay/Server shall respond with an MM1_forward.RES, which provides the status of the request.

The MM1_forward.RES shall unambiguously refer to the corresponding MM1_forward.REQ.

Support for MM1_forward.REQ and MM1_forward.RES is mandatory for the MMS Relay/Server that also supports MMBoxes. Otherwise, support for MM1_forward.REQ is optional for the MMS User Agent, and support for MM1_forward.REQ is optional for the MMS Relay/Server..

8.1.6.2 Abnormal Operation

In this case the MMS Relay/Server shall respond with an MM1_forward.RES encapsulating a status which indicates the reason the request for forwarding was not accepted, e.g. no subscription, service not available, invalid content location, message expired, MMBoxes not supported, MMBox not enabled, MMBox over quota, MMBox system full, MMBox I/O error.

When MM1_forward.REQ contains a Store request, the MMS Relay/Server shall provide the results of the store operation in the MM1_forward.RES. If the MMS Relay/Server does not provide the MM1_forward.RES the MMS User Agent should be able to recover.

8.1.6.3 Features

Addressing: One or several recipients of an MM forward request shall be indicated in the addressing-relevant information field(s) of the MM1_forward.REQ. The forwarding MMS User Agent may be indicated in addressing-relevant information field(s) of the MM1_forward.REQ.

Time stamping: The forwarding MMS User Agent may time stamp the MM.

Time constraints: The forwarding MMS User Agent may request an earliest desired time of delivery of the MM. The forwarding MMS User Agent may request a time of expiry for the MM.

Reporting: The forwarding MMS User Agent may request a delivery report for the MM. In addition, the forwarding MMS User Agent may request a read-reply report when the user has viewed the MM.

Reply-Charging: The forwarding MMS User Agent may indicate it wants to pay for a reply-MM and convey the reply-charging limitations (e.g. the latest time of submission and/or the maximum size of a reply-MM) in the MM1_forward.REQ. In this case, forwarding MMS User Agent behaves as the originator MMS User Agent to support reply-charging function. The fowarding MMS User Agent shall not be allowed to forward the reply-charging information set by the originator MMS User Agent.

Identification: The MMS Relay/Server of the forwarding MMS User Agent shall always provide a message identification for an MM forward request, which it has accepted for being forwarded in the MM1_forward.RES.

Persistent storage: If MMBoxes are supported, the presence of the Store information element in MM1_forward.REQ is a request to have a copy of the message being forwarded stored persistently within the forwarder's MMBox. The MM State and/or MM Flags values of the stored MM may be set with the values from the corresponding information elements.

Store Status: The MMS Relay/Server shall indicate the store status of the MM1_forward.REQ in the Store Status information element of the associated MM1_forward.RES. The Store Status information element of the MM1_forward.RES may be supported with an explanatory text. If this text is available in the Store Status Text information element the MMS User Agent should bring it to the user's attention. The choice of the language used in the Store Status Text information element is at the discretion of the MMS service provider

Message Reference: The forwarding MMS User Agent shall always provide the reference, e.g., URI, for the MM in the MM1_forward.REQ which was provided in MM1_notification.REQ.

Request Status: The MMS Relay/Server of the forwarding MMS User Agent shall indicate the status of the MM1_forward.REQ in the MM1_forward.RES. The reason code given in the status information element of the MM1_forward.RES may be supported with an explanatory text further qualifying the status. If this text is available in the Request status text information element the MMS User Agent should bring it to the user's attention. The choice of the language used in the Request status text information element is at the discretion of the MMS service provider.

Transaction Identification: The forwarding MMS User Agent shall provide unambiguous transaction identification within a request. The response shall unambiguously refer to the corresponding request using the same transaction identification.

Version: The MMS protocol shall provide unique means to identify the current version of the particular protocol environment.

Message Type: The type of the message used on the reference point MM1 indicating MM1_forward.REQ and MM1_forward.RES as such.

8.1.6.4 Information Elements

Table 2: Information elements in the MM1_forward.REQ.

Information element	Presence	Description
Message Type	Mandatory	Identifies this message as MM1_forward.REQ.
Transaction ID	Mandatory	The identification of the MM1_forward.REQ/MM1_forward.RES pair.
MMS Version	Mandatory	Identifies the version of the interface supported by the forwarding MMS User Agent.
Recipient address	Mandatory	The address of the recipient of the forwarded MM. Multiple addresses are possible.
Forwarding address	Optional	The address of the forwarding MMS User Agent.
Date and time	Optional	The time and date of the forwarding of the MM (time stamp).
Time of Expiry	Optional	The desired time of expiry for the forwarded MM (time stamp).
Earliest delivery time	Optional	The earliest desired time of delivery of the MM to the recipient (time stamp).
Store	Optional	If MMBoxes are supported, the presence of the Store information element in MM1_forward.REQ causes a copy of the MM being forwarded to be stored in the user's MMBox, unless the Message Reference is to an MM already in the MMBox.
MM State	Optional	The value to set in the MM State information element of the stored MM, if Store is present.
MM Flags	Optional	One or more MM Flag keywords to set in the MM Flags information element of the stored MM, if Store is present
Delivery report	Optional	A request for delivery report for the forwarded MM.
Read reply	Optional	A request for read reply report.
Reply-Charging	Optional	A request for reply-charging from the forwarding MMS User Agent which indicate the forwarding user's willingness to pay for the reply-MM from the recipient.
Reply-Deadline	Optional	In case of reply-charging the latest time of submission of replies granted to the recipient(s) (time stamp).
Reply-Charging-Size	Optional	In case of reply-charging the maximum size for reply-MM(s) granted to the recipient(s).
Message Reference	Mandatory	A reference, e.g., URI, for the MM being forwarded. This may either be the Message Reference from MM1_notification.REQ, MM1_mmbox_store.REQ, or MM1_mmbox_view.REQ.

Table 3: Information elements in the MM1_forward.RES.

Information element	Presence	Description
Message Type	Mandatory	Identifies this message as MM1_forward.RES.
Transaction ID	Mandatory	The identification of the MM1_forward.REQ/MM1_forward.RES pair.
MMS Version	Mandatory	Identifies the version of the interface supported by the MMS Relay/Server.
Request Status	Mandatory	The status of the MM Forward request.
Request Status Text	Optional	Description which qualifies the status of the MM Forward request.
Message ID	Mandatory	The unique identification of the forwarded MM.
Store status	Conditional	The status of the store request, if the Store request was present in MM1_forward.REQ.
Store Status Text	Optional	The explanatory text corresponding to the Store status, if present.
Stored Message Reference	Conditional	The message reference to the newly stored copy of the forwarded MM, if the Store request was present in MM1_forward.REQ and the store operation was successful.

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Cambridge, UK
25 -29 August 2003

T2-030504

CR-Form-v7

CHANGE REQUEST

⌘ **23.140** **CR** **138** ⌘ **rev** **-** ⌘ Current version: **6.2.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Addition of Information elements to MM7
Source:	⌘	T2
Work item code:	⌘	MMS6
Date:	⌘	28/08/2003
Category:	⌘	**B**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)

Reason for change:	⌘	Addition of features to the MM7 Schema.
Summary of change:	⌘	Incorporates T2-030338 CR 23.140 REL-6 Addition of IEs that currently exist in MM1/MM4 but not in MM7, Nokia T2-030340 CR 23.140 REL-6 Addition of information regarding encrypted or obfuscated address in MM7, Nokia T2-030341 CR 23.140 REL-6 Addition of SPI to MM7 reference point, Nokia T2-030344 CR 23.140 Rel-6: Charged Party ID ,Ericsson T2-030337 Extension of the X-Mms-MM-Status-Code “reject”, in the MM4_Delivery_report.REQ (CR), Erricson Into MM7 Schema. Correction of Date to Timestamp as corrected in T2-030503
Consequences if not approved:	⌘	CRs will not be incorporated into MM7 Schema.

Clauses affected:	⌘	

		Y	N			
Other specs affected:	⌘			Other core specifications	⌘	
				Test specifications		
				O&M Specifications		

Other comments: ⌘

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

Annex L (normative): MM7 XML Schema

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema targetNamespace="~~"http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-3"~~"http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-6-MM7-1-0"
xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/" xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:tns="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/~~REL-5-MM7-1-3~~REL-6-MM7-1-0"
elementFormDefault="qualified" attributeFormDefault="unqualified">

<xs:import namespace="http://schemas.xmlsoap.org/soap/envelope/"
schemaLocation="http://schemas.xmlsoap.org/soap/envelope/"/>

    <xs:element name="TransactionID">
        <xs:annotation>
            <xs:documentation>The transaction ID that shall be included in the SOAP
Header</xs:documentation>
        </xs:annotation>
        <xs:complexType>
            <xs:simpleContent>
                <xs:extension base="xs:string">
                    <xs:attribute ref="soap:mustUnderstand"/>
                    <xs:attribute ref="soap:encodingStyle"/>
                    <xs:attribute ref="soap:actor"/>
                </xs:extension>
            </xs:simpleContent>
        </xs:complexType>
    </xs:element>
    <xs:element name="SubmitReq" type="tns:submitReqType">
        <xs:annotation>
            <xs:documentation>VASP to MMS : Sending MM from the VASP to one or more
recipients</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="SubmitRsp" type="tns:submitRspType">
        <xs:annotation>
            <xs:documentation>MMS  to VASP: Response to a VASP after MM submission
request</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="DeliverReq" type="tns:deliverReqType">
        <xs:annotation>
            <xs:documentation>MMS to VASP : Delivery of MM from the MMS Relay/Server to the VASP
</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="DeliverRsp" type="tns:deliverRspType">
        <xs:annotation>
            <xs:documentation>VASP to MMS : Response to a message delivered to the VASP from the MMS
Relay/Server</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="CancelReq" type="tns:cancelReqType">
        <xs:annotation>
            <xs:documentation>VASP  to MMS: Request to cancel a message submission
</xs:documentation>
        </xs:annotation>
```

```
    </xs:element>
    <xs:element name="CancelRsp" type="tns:genericResponseType">
        <xs:annotation>
            <xs:documentation>MMS  to VASP: Response to a VASP after MM cancellation request
</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="ReplaceReq" type="tns:replaceReqType">
        <xs:annotation>
            <xs:documentation>VASP  to MMS: Request to replace a message which was submitted
</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="ReplaceRsp" type="tns:genericResponseType">
        <xs:annotation>
            <xs:documentation>MMS  to VASP: Response to a VASP after MM replace request
</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="DeliveryReportReq" type="tns:deliveryReportReqType">
        <xs:annotation>
            <xs:documentation>MMS to VASP : Delivery Report from one of the MM
recipients</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="DeliveryReportRsp" type="tns:genericResponseType">
        <xs:annotation>
            <xs:documentation>VASP to MMS: Response to a delivery report delivered to the
VASP</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="ReadReplyReq" type="tns:readReplyReqType">
        <xs:annotation>
            <xs:documentation>MMS to VASP : Delivery Report from one of the MM
recipients</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="ReadReplyRsp" type="tns:genericResponseType">
        <xs:annotation>
            <xs:documentation>VASP to MMS: Response to a read reply delivered to the
VASP</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="RSErrorRsp" type="tns:genericResponseType">
        <xs:annotation>
            <xs:documentation>MMS to VASP: Error response to a any bad request sent to the MMS
Relay/Server</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="VASPErrorRsp" type="tns:genericResponseType">
        <xs:annotation>
            <xs:documentation>VASP to MMS: Error response to a any bad request sent to the
VASP</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:complexType name="senderIDType">
        <xs:sequence>
            <xs:element name="VASPID" type="tns:entityIDType" minOccurs="0"/>
            <xs:element name="VASID" type="tns:entityIDType" minOccurs="0"/>
            <xs:element name="SenderAddress" type="tns:addressType" minOccurs="0"/>
        </xs:sequence>
    </xs:complexType>
    <xs:complexType name="submitReqType">
        <xs:complexContent>
            <xs:extension base="tns:genericVASPRequestType">
                <xs:sequence>
                    <xs:element name="Recipients" type="tns:recipientsType"/>
                    <xs:element name="ServiceCode" type="tns:serviceCodeType" minOccurs="0"/>
                    <xs:element name="LinkedID" type="tns:messageIDType" minOccurs="0"/>
                    <xs:element name="MessageClass" type="tns:messageClassType"
default="Informational" minOccurs="0"/>
                    <xs:element name="TimeStamp" type="xs:dateTime" minOccurs="0"/>
                    <xs:element name="ReplyCharging" minOccurs="0">
                        <xs:complexType>
                            <xs:attribute name="replyChargingSize" type="xs:positiveInteger"
use="optional"/>
                            <xs:attribute name="replyDeadline" type="tns:relativeOrAbsoluteDateType"
use="optional"/>
                        </xs:complexType>
                    </xs:element>
                    <xs:element name="EarliestDeliveryTime" type="tns:relativeOrAbsoluteDateType"
minOccurs="0"/>
```

```
                    <xs:element name="ExpiryDate" type="tns:relativeOrAbsoluteDateType"
minOccurs="0"/>
                    <xs:element name="DeliveryReport" type="xs:boolean" minOccurs="0"/>
                    <xs:element name="ReadReply" type="xs:boolean" minOccurs="0"/>
                    <xs:element name="Priority" type="tns:priorityType" minOccurs="0"/>
                    <xs:element name="Subject" type="xs:string" minOccurs="0"/>
                    <xs:element name="ChargedParty" type="tns:chargedPartyType" minOccurs="0"/>
                    <xs:element name="ChargedPartyID" type="tns:chargedPartyIDType" minOccurs="0"/>
                    <xs:element name="DistributionIndicator" type="xs:boolean" minOccurs="0"/>
                    <xs:element name="Content" type="tns:contentReferenceType" minOccurs="0"/>
                </xs:sequence>
            </xs:extension>
        </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="submitRspType">
        <xs:complexContent>
            <xs:extension base="tns:genericResponseType">
                <xs:sequence>
                    <xs:element name="MessageID" type="tns:messageIDType"/>
                </xs:sequence>
            </xs:extension>     </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="deliverReqType">
        <xs:complexContent>
            <xs:extension base="tns:genericRSReqType">
                <xs:sequence>
                    <xs:element name="LinkedID" type="tns:messageIDType" minOccurs="0"/>
                    <xs:element name="Sender" type="tns:addressType"/>
                    <xs:element name="Recipients" type="tns:recipientsType" minOccurs="0"/>
                    <xs:element name="Previouslysentby" type="tns:previouslySentByType"
minOccurs="0"/>
                    <xs:element name="Previouslysentdateandtime" type="tns:previouslySentByDateTime"
minOccurs="0"/>
                    <xs:element name="SenderSPI" type="tns:serviceProviderIDType" minOccurs="0"/>
                    <xs:element name="RecipientSPI" type="tns:serviceProviderIDType" minOccurs="0"/>
                    <xs:element name="TimeStamp" type="xs:dateTime" minOccurs="0"/>
                    <xs:element name="ReplyChargingID" type="tns:messageIDType" minOccurs="0"/>
                    <xs:element name="Priority" type="tns:priorityType" minOccurs="0"/>
                    <xs:element name="Subject" type="xs:string" minOccurs="0"/>
                    <xs:element name="Content" type="tns:contentReferenceType" minOccurs="0"/>
                </xs:sequence>
            </xs:extension>
        </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="deliverRspType">
        <xs:complexContent>
            <xs:extension base="tns:genericResponseType">
                <xs:sequence>
                    <xs:element name="ServiceCode" type="tns:serviceCodeType" minOccurs="0"/>
                </xs:sequence>
            </xs:extension>
        </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="cancelReqType">
        <xs:complexContent>
            <xs:extension base="tns:genericVASPRequestType">
                <xs:sequence>
                    <xs:element name="MessageID" type="tns:messageIDType"/>
                </xs:sequence>
            </xs:extension>
        </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="replaceReqType">
        <xs:complexContent>
            <xs:extension base="tns:genericVASPRequestType">
                <xs:sequence>
                    <xs:element name="MessageID" type="tns:messageIDType"/>
                    <xs:element name="ServiceCode" type="tns:serviceCodeType" minOccurs="0"/>
                    <xs:element name="TimeStamp" type="xs:dateTime" minOccurs="0"/>
                    <xs:element name="ReadReply" type="xs:boolean" minOccurs="0"/>
                    <xs:element name="EarliestDeliveryTime" type="tns:relativeOrAbsoluteDateType"
minOccurs="0"/>
                    <xs:element name="DistributionIndicator" type="xs:boolean" minOccurs="0"/>
                    <xs:element name="Content" type="tns:contentReferenceType" minOccurs="0"/>
                </xs:sequence>
            </xs:extension>
        </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="deliveryReportReqType">
        <xs:complexContent>
            <xs:extension base="tns:genericRSReqType">
                <xs:sequence>
```

```
                    <xs:element name="MessageID" type="tns:messageIDType"/>
                    <xs:element name="Recipient" type="tns:addressType"/>
                    <xs:element name="Sender" type="tns:addressType"/>
                    <xs:element name="TimeStampDate" type="xs:dateTime"/>
                    <xs:element name="MMStatus" type="tns:mmDeliveryStatusType"/>
                    <xs:element name="MMStatusExtension" type="tns:MMStatusExtensionType"
minOccurs="0"/>
                    <xs:element name="StatusText" type="xs:string" minOccurs="0"/>
                </xs:sequence>
            </xs:extension>
        </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="readReplyReqType">
        <xs:complexContent>
            <xs:extension base="tns:genericRSReqType">
                <xs:sequence>
                    <xs:element name="MessageID" type="tns:messageIDType"/>
                    <xs:element name="Recipient" type="tns:addressType"/>
                    <xs:element name="Sender" type="tns:addressType"/>
                    <xs:element name="TimeStamp" type="xs:dateTime"/>
                    <xs:element name="MMStatus" type="tns:mmReadStatusType"/>
                    <xs:element name="StatusText" type="xs:string" minOccurs="0"/>
                </xs:sequence>
            </xs:extension>
        </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="genericRSReqType">
        <xs:annotation>
            <xs:documentation>base for all request messages from R/S to VASP</xs:documentation>
        </xs:annotation>
        <xs:sequence>
            <xs:element name="MM7Version" type="tns:versionType"/>
            <xs:element name="MMSRelayServerID" type="tns:entityIDType" minOccurs="0"/>
        </xs:sequence>
    </xs:complexType>
    <xs:complexType name="genericVASPRequestType">
        <xs:annotation>
            <xs:documentation>Base type for all requests from VASP to R/S</xs:documentation>
        </xs:annotation>
        <xs:sequence>
            <xs:element name="MM7Version" type="tns:versionType"/>
            <xs:element name="SenderIdentification" type="tns:senderIDType"/>
        </xs:sequence>
    </xs:complexType>
    <xs:complexType name="genericResponseType">
        <xs:annotation>
            <xs:documentation>Any simple response sent </xs:documentation>
        </xs:annotation>
        <xs:sequence>
            <xs:element name="MM7Version" type="tns:versionType"/>
            <xs:element name="Status" type="tns:responseStatusType"/>
        </xs:sequence>
    </xs:complexType>
    <xs:complexType name="responseStatusType">
        <xs:annotation>
            <xs:documentation>Status information conveyed in responses</xs:documentation>
        </xs:annotation>
        <xs:all>
            <xs:element name="StatusCode">
                <xs:simpleType>
                    <xs:restriction base="tns:statusCodeType"/>
                </xs:simpleType>
            </xs:element>
            <xs:element name="StatusText" type="tns:statusTextType"/>
            <xs:element name="Details" type="tns:anyDataType" minOccurs="0"/>
        </xs:all>
    </xs:complexType>
    <xs:simpleType name="mmDeliveryStatusType">
        <xs:annotation>
            <xs:documentation>Statuses for MM7_delivery_report</xs:documentation>
        </xs:annotation>
        <xs:restriction base="xs:string">
            <xs:enumeration value="Expired"/>
            <xs:enumeration value="Retrieved"/>
            <xs:enumeration value="Rejected"/>
            <xs:enumeration value="Indeterminate"/>
            <xs:enumeration value="Forwarded"/>
        </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="mmReadStatusType">
        <xs:annotation>
            <xs:documentation>Statuses for MM7_read_reply</xs:documentation>
```

```
        </xs:annotation>
        <xs:restriction base="xs:string">
            <xs:enumeration value="Indeterminate"/>
            <xs:enumeration value="Read"/>
            <xs:enumeration value="Deleted"/>
        </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="messageIDType">
        <xs:annotation>
            <xs:documentation>Message ID</xs:documentation>
        </xs:annotation>
        <xs:restriction base="xs:string"/>
    </xs:simpleType>
    <xs:group name="AddressGroup">
        <xs:choice>
            <xs:element name="RFC2822Address">
                <xs:complexType>
                    <xs:simpleContent>
                        <xs:extension base="xs:string">
                            <xs:attribute name="displayOnly" type="xs:boolean" use="optional"
default="false"/>
                            <xs:attributeGroup ref="tns:addressSecurity"/>
                        </xs:extension>
                    </xs:simpleContent>
                </xs:complexType>
            </xs:element>
            <xs:element name="Number">
                <xs:complexType>
                    <xs:simpleContent>
                        <xs:extension base="xs:string">
                            <xs:attribute name="displayOnly" type="xs:boolean" use="optional"
default="false"/>
                            <xs:attributeGroup ref="tns:addressSecurity"/>
                        </xs:extension>
                    </xs:simpleContent>
                </xs:complexType>
            </xs:element>
            <xs:element name="ShortCode">
                <xs:complexType>
                    <xs:simpleContent>
                        <xs:extension base="xs:string">
                            <xs:attribute name="displayOnly" type="xs:boolean" use="optional"
default="false"/>
                            <xs:attributeGroup ref="tns:addressSecurity"/>
                        </xs:extension>
                    </xs:simpleContent>
                </xs:complexType>
            </xs:element>
        </xs:choice>
    </xs:group>
    <xs:complexType name="multiAddressType">
        <xs:sequence maxOccurs="unbounded">
            <xs:group ref="tns:AddressGroup"/>
        </xs:sequence>
    </xs:complexType>
    <xs:complexType name="addressType">
        <xs:group ref="tns:AddressGroup"/>
    </xs:complexType>
   <xs:attributeGroup name="addressSecurity">
      <xs:attribute name="addressCoding" type="tns:addressCodingType" use="optional"/>
      <xs:attribute name="id" type="xs:ID" use="optional"/>
   </xs:attributeGroup>
   <xs:simpleType name="addressCodingType">
      <xs:annotation>
         <xs:documentation>obfuscated or encrypted address type</xs:documentation>
      </xs:annotation>
      <xs:restriction base="xs:string">
         <xs:enumeration value="encrypted"/>
         <xs:enumeration value="obfuscated"/>
      </xs:restriction>
   </xs:simpleType>
   <xs:complexType name="previouslySentByType">
      <xs:sequence>
         <xs:element name="UserAgent" type="tns:userAgentInfoType" minOccurs="0"
maxOccurs="unbounded"/>
      </xs:sequence>
   </xs:complexType>
   <xs:complexType name="previouslySentByDateTime">
      <xs:sequence>
         <xs:element name="DateTime" type="tns:userAgentDateTimeType" minOccurs="0"
maxOccurs="unbounded"/>
      </xs:sequence>
```

```
    </xs:complexType>
    <xs:complexType name="userAgentInfoType">
       <xs:complexContent>
          <xs:extension base="tns:addressType">
             <xs:attribute name="sequence" type="xs:positiveInteger" use="optional"/>
          </xs:extension>
       </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="userAgentDateTimeType">
       <xs:simpleContent>
          <xs:extension base="tns:relativeOrAbsoluteDateType">
             <xs:attribute name="sequence" type="xs:positiveInteger" use="optional"/>
          </xs:extension>
       </xs:simpleContent>
    </xs:complexType>
    <xs:simpleType name="serviceProviderIDType">
       <xs:annotation>
          <xs:documentation>Service Provider Identification</xs:documentation>
       </xs:annotation>
       <xs:restriction base="xs:string"/>
    </xs:simpleType>
    <xs:simpleType name="chargedPartyIDType">
       <xs:annotation>
          <xs:documentation>The address of the third party which is expected to pay for the
MM</xs:documentation>
       </xs:annotation>
       <xs:restriction base="xs:string"/>
    </xs:simpleType>
    <xs:simpleType name="MMStatusExtensionType">
       <xs:restriction base="xs:string">
          <xs:enumeration value="RejectionByMMSRecipient"/>
          <xs:enumeration value="RejectionByOtherRS"/>
       </xs:restriction>
    </xs:simpleType>

    <xs:complexType name="serviceCodeType">
        <xs:annotation>
            <xs:documentation>Used to identify the specific service given for billing
purposes</xs:documentation>
        </xs:annotation>
        <xs:simpleContent>
            <xs:extension base="xs:string">
                <xs:anyAttribute namespace="##other" processContents="lax"/>
            </xs:extension>
        </xs:simpleContent>
    </xs:complexType>
    <xs:simpleType name="entityIDType">
        <xs:annotation>
            <xs:documentation>String used to identify the VAS, VASP and MMSC</xs:documentation>
        </xs:annotation>
        <xs:restriction base="xs:string"/>
    </xs:simpleType>
    <xs:complexType name="recipientsType">
        <xs:annotation>
            <xs:documentation>At least one of To,CC,Bcc</xs:documentation>
        </xs:annotation>
        <xs:sequence maxOccurs="unbounded">
            <xs:choice>
                <xs:element name="To" type="tns:multiAddressType"/>
                <xs:element name="Cc" type="tns:multiAddressType"/>
                <xs:element name="Bcc" type="tns:multiAddressType"/>
            </xs:choice>
        </xs:sequence>
    </xs:complexType>
    <xs:simpleType name="messageClassType">
        <xs:annotation>
            <xs:documentation>Message class</xs:documentation>
        </xs:annotation>
        <xs:restriction base="xs:string">
            <xs:enumeration value="Personal"/>
            <xs:enumeration value="Informational"/>
            <xs:enumeration value="Advertisement"/>
            <xs:enumeration value="Auto"/>
        </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="priorityType">
        <xs:annotation>
            <xs:documentation>Priority of MM</xs:documentation>
        </xs:annotation>
        <xs:restriction base="xs:string">
            <xs:enumeration value="Normal"/>
            <xs:enumeration value="High"/>
```

```
            <xs:enumeration value="Low"/>
        </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="relativeOrAbsoluteDateType">
        <xs:annotation>
            <xs:documentation>Date which can be relative or absolute</xs:documentation>
        </xs:annotation>
        <xs:union memberTypes="xs:dateTime xs:duration"/>
    </xs:simpleType>
    <xs:simpleType name="chargedPartyType">
        <xs:annotation>
            <xs:documentation>Allows specification of which party - Sender or Reciever pays for
transmission</xs:documentation>
        </xs:annotation>
        <xs:restriction base="xs:string">
            <xs:enumeration value="Sender"/>
            <xs:enumeration value="Recipient"/>
            <xs:enumeration value="Both"/>
            <xs:enumeration value="Neither"/>
        </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="versionType">
        <xs:annotation>
            <xs:documentation>Version number in the format of x.y.z </xs:documentation>
        </xs:annotation>
        <xs:restriction base="xs:string">
            <xs:enumeration value="6.3.0"/>
            <xs:enumeration value="5.8.0"/>
            <xs:enumeration value="5.6.0"/>
            <xs:enumeration value="5.5.0"/>
            <xs:enumeration value="5.3.0"/>
        </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="statusCodeType">
        <xs:annotation>
            <xs:documentation>request status resonse codes in RES </xs:documentation>
        </xs:annotation>
        <xs:restriction base="xs:positiveInteger"/>
    </xs:simpleType>
    <xs:complexType name="contentReferenceType">
        <xs:annotation>
            <xs:documentation>content element including only href</xs:documentation>
        </xs:annotation>
        <xs:attribute name="href" type="xs:anyURI" use="required"/>
        <xs:attribute name="allowAdaptations" type="xs:boolean" use="optional"/>
    </xs:complexType>
    <xs:complexType name="anyDataType">
        <xs:annotation>
            <xs:documentation>Any element and attribute </xs:documentation>
        </xs:annotation>
        <xs:complexContent>
            <xs:restriction base="xs:anyType">
                <xs:sequence>
                    <xs:any processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
                </xs:sequence>
            </xs:restriction>
        </xs:complexContent>
    </xs:complexType>
    <xs:simpleType name="statusTextType">
        <xs:annotation>
            <xs:documentation>list of standard human-readable status descriptions</xs:documentation>
        </xs:annotation>
        <xs:restriction base="xs:string"/>
    </xs:simpleType>
</xs:schema>
```

3GPP TSG-T2 #22
Cambridge, UK
25 -29 August 2003

T2-030505

CR-Form-v7

CHANGE REQUEST

⌘ **23.140** **CR** **139** ⌘ **rev** **-** ⌘ Current version: **5.7.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Correction of “Date” to “TimeStamp” in MM7 Schema
Source:	⌘	T2
Work item code:	⌘	MESS5-MMS
Date:	⌘	28/08/2003
Category:	⌘	**F**
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	T2-030502 Identified incorrect element name “Date”
Summary of change:	⌘	“Date” Changed to “TimeStamp”; Schema number and enumeration value updated
Consequences if not approved:	⌘	Schema remains Invalid

Clauses affected:	⌘	Annex L

		Y	N		
Other specs affected:	⌘			Other core specifications	⌘
				Test specifications	
				O&M Specifications	

Other comments: ⌘

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can

be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

Annex L (normative): MM7 XML Schema

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema targetNamespace="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-43" xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:tns="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-43"
elementFormDefault="qualified" attributeFormDefault="unqualified">

<xs:import namespace="http://schemas.xmlsoap.org/soap/envelope/"
schemaLocation="http://schemas.xmlsoap.org/soap/envelope/"/>

    <xs:element name="TransactionID">
        <xs:annotation>
            <xs:documentation>The transaction ID that shall be included in the SOAP
Header</xs:documentation>
        </xs:annotation>
        <xs:complexType>
            <xs:simpleContent>
                <xs:extension base="xs:string">
                    <xs:attribute ref="soap:mustUnderstand"/>
                    <xs:attribute ref="soap:encodingStyle"/>
                    <xs:attribute ref="soap:actor"/>
                </xs:extension>
            </xs:simpleContent>
        </xs:complexType>
    </xs:element>
    <xs:element name="SubmitReq" type="tns:submitReqType">
        <xs:annotation>
            <xs:documentation>VASP to MMS : Sending MM from the VASP to one or more
recipients</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="SubmitRsp" type="tns:submitRspType">
        <xs:annotation>
            <xs:documentation>MMS  to VASP: Response to a VASP after MM submission
request</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="DeliverReq" type="tns:deliverReqType">
        <xs:annotation>
            <xs:documentation>MMS to VASP : Delivery of MM from the MMS Relay/Server to the VASP
</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="DeliverRsp" type="tns:deliverRspType">
        <xs:annotation>
            <xs:documentation>VASP to MMS : Response to a message delivered to the VASP from the MMS
Relay/Server</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="CancelReq" type="tns:cancelReqType">
        <xs:annotation>
            <xs:documentation>VASP  to MMS: Request to cancel a message submission
</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="CancelRsp" type="tns:genericResponseType">
        <xs:annotation>
            <xs:documentation>MMS  to VASP: Response to a VASP after MM cancellation request
</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="ReplaceReq" type="tns:replaceReqType">
        <xs:annotation>
            <xs:documentation>VASP  to MMS: Request to replace a message which was submitted
</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="ReplaceRsp" type="tns:genericResponseType">
        <xs:annotation>
            <xs:documentation>MMS  to VASP: Response to a VASP after MM replace request
</xs:documentation>
        </xs:annotation>
```

```
    </xs:element>
    <xs:element name="DeliveryReportReq" type="tns:deliveryReportReqType">
        <xs:annotation>
            <xs:documentation>MMS to VASP : Delivery Report from one of the MM
recipients</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="DeliveryReportRsp" type="tns:genericResponseType">
        <xs:annotation>
            <xs:documentation>VASP to MMS: Response to a delivery report delivered to the
VASP</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="ReadReplyReq" type="tns:readReplyReqType">
        <xs:annotation>
            <xs:documentation>MMS to VASP : Delivery Report from one of the MM
recipients</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="ReadReplyRsp" type="tns:genericResponseType">
        <xs:annotation>
            <xs:documentation>VASP to MMS: Response to a read reply delivered to the
VASP</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="RSErrorRsp" type="tns:genericResponseType">
        <xs:annotation>
            <xs:documentation>MMS to VASP: Error response to a any bad request sent to the MMS
Relay/Server</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="VASPErrorRsp" type="tns:genericResponseType">
        <xs:annotation>
            <xs:documentation>VASP to MMS: Error response to a any bad request sent to the
VASP</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:complexType name="senderIDType">
        <xs:sequence>
            <xs:element name="VASPID" type="tns:entityIDType" minOccurs="0"/>
            <xs:element name="VASID" type="tns:entityIDType" minOccurs="0"/>
            <xs:element name="SenderAddress" type="tns:addressType" minOccurs="0"/>
        </xs:sequence>
    </xs:complexType>
    <xs:complexType name="submitReqType">
        <xs:complexContent>
            <xs:extension base="tns:genericVASPRequestType">
                <xs:sequence>
                    <xs:element name="Recipients" type="tns:recipientsType"/>
                    <xs:element name="ServiceCode" type="tns:serviceCodeType" minOccurs="0"/>
                    <xs:element name="LinkedID" type="tns:messageIDType" minOccurs="0"/>
                    <xs:element name="MessageClass" type="tns:messageClassType"
default="Informational" minOccurs="0"/>
                    <xs:element name="TimeStamp" type="xs:dateTime" minOccurs="0"/>
                    <xs:element name="ReplyCharging" minOccurs="0">
                        <xs:complexType>
                            <xs:attribute name="replyChargingSize" type="xs:positiveInteger"
use="optional"/>
                            <xs:attribute name="replyDeadline" type="tns:relativeOrAbsoluteDateType"
use="optional"/>
                        </xs:complexType>
                    </xs:element>
                    <xs:element name="EarliestDeliveryTime" type="tns:relativeOrAbsoluteDateType"
minOccurs="0"/>
                    <xs:element name="ExpiryDate" type="tns:relativeOrAbsoluteDateType"
minOccurs="0"/>
                    <xs:element name="DeliveryReport" type="xs:boolean" minOccurs="0"/>
                    <xs:element name="ReadReply" type="xs:boolean" minOccurs="0"/>
                    <xs:element name="Priority" type="tns:priorityType" minOccurs="0"/>
                    <xs:element name="Subject" type="xs:string" minOccurs="0"/>
                    <xs:element name="ChargedParty" type="tns:chargedPartyType" minOccurs="0"/>
                    <xs:element name="DistributionIndicator" type="xs:boolean" minOccurs="0"/>
                    <xs:element name="Content" type="tns:contentReferenceType" minOccurs="0"/>
                </xs:sequence>
            </xs:extension>
        </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="submitRspType">
        <xs:complexContent>
            <xs:extension base="tns:genericResponseType">
                <xs:sequence>
                    <xs:element name="MessageID" type="tns:messageIDType"/>
```

```
            </xs:sequence>
        </xs:extension>     </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="deliverReqType">
        <xs:complexContent>
            <xs:extension base="tns:genericRSReqType">
                <xs:sequence>
                    <xs:element name="LinkedID" type="tns:messageIDType" minOccurs="0"/>
                    <xs:element name="Sender" type="tns:addressType"/>
                    <xs:element name="Recipients" type="tns:recipientsType" minOccurs="0"/>
                    <xs:element name="TimeStamp" type="xs:dateTime" minOccurs="0"/>
                    <xs:element name="ReplyChargingID" type="tns:messageIDType" minOccurs="0"/>
                    <xs:element name="Priority" type="tns:priorityType" minOccurs="0"/>
                    <xs:element name="Subject" type="xs:string" minOccurs="0"/>
                    <xs:element name="Content" type="tns:contentReferenceType" minOccurs="0"/>
                </xs:sequence>
            </xs:extension>
        </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="deliverRspType">
        <xs:complexContent>
            <xs:extension base="tns:genericResponseType">
                <xs:sequence>
                    <xs:element name="ServiceCode" type="tns:serviceCodeType" minOccurs="0"/>
                </xs:sequence>
            </xs:extension>
        </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="cancelReqType">
        <xs:complexContent>
            <xs:extension base="tns:genericVASPRequestType">
                <xs:sequence>
                    <xs:element name="MessageID" type="tns:messageIDType"/>
                </xs:sequence>
            </xs:extension>
        </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="replaceReqType">
        <xs:complexContent>
            <xs:extension base="tns:genericVASPRequestType">
                <xs:sequence>
                    <xs:element name="MessageID" type="tns:messageIDType"/>
                    <xs:element name="ServiceCode" type="tns:serviceCodeType" minOccurs="0"/>
                    <xs:element name="TimeStamp" type="xs:dateTime" minOccurs="0"/>
                    <xs:element name="ReadReply" type="xs:boolean" minOccurs="0"/>
                    <xs:element name="EarliestDeliveryTime" type="tns:relativeOrAbsoluteDateType"
minOccurs="0"/>
                    <xs:element name="DistributionIndicator" type="xs:boolean" minOccurs="0"/>
                    <xs:element name="Content" type="tns:contentReferenceType" minOccurs="0"/>
                </xs:sequence>
            </xs:extension>
        </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="deliveryReportReqType">
        <xs:complexContent>
            <xs:extension base="tns:genericRSReqType">
                <xs:sequence>
                    <xs:element name="MessageID" type="tns:messageIDType"/>
                    <xs:element name="Recipient" type="tns:addressType"/>
                    <xs:element name="Sender" type="tns:addressType"/>
                    <xs:element name="TimeStampDate" type="xs:dateTime"/>
                    <xs:element name="MMStatus" type="tns:mmDeliveryStatusType"/>
                    <xs:element name="StatusText" type="xs:string" minOccurs="0"/>
                </xs:sequence>
            </xs:extension>
        </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="readReplyReqType">
        <xs:complexContent>
            <xs:extension base="tns:genericRSReqType">
                <xs:sequence>
                    <xs:element name="MessageID" type="tns:messageIDType"/>
                    <xs:element name="Recipient" type="tns:addressType"/>
                    <xs:element name="Sender" type="tns:addressType"/>
                    <xs:element name="TimeStamp" type="xs:dateTime"/>
                    <xs:element name="MMStatus" type="tns:mmReadStatusType"/>
                    <xs:element name="StatusText" type="xs:string" minOccurs="0"/>
                </xs:sequence>
            </xs:extension>
        </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="genericRSReqType">
```

```
        <xs:annotation>
            <xs:documentation>base for all request messages from R/S to VASP</xs:documentation>
        </xs:annotation>
        <xs:sequence>
            <xs:element name="MM7Version" type="tns:versionType"/>
            <xs:element name="MMSRelayServerID" type="tns:entityIDType" minOccurs="0"/>
        </xs:sequence>
    </xs:complexType>
    <xs:complexType name="genericVASPRequestType">
        <xs:annotation>
            <xs:documentation>Base type for all requests from VASP to R/S</xs:documentation>
        </xs:annotation>
        <xs:sequence>
            <xs:element name="MM7Version" type="tns:versionType"/>
            <xs:element name="SenderIdentification" type="tns:senderIDType"/>
        </xs:sequence>
    </xs:complexType>
    <xs:complexType name="genericResponseType">
        <xs:annotation>
            <xs:documentation>Any simple response sent </xs:documentation>
        </xs:annotation>
        <xs:sequence>
            <xs:element name="MM7Version" type="tns:versionType"/>
            <xs:element name="Status" type="tns:responseStatusType"/>
        </xs:sequence>
    </xs:complexType>
    <xs:complexType name="responseStatusType">
        <xs:annotation>
            <xs:documentation>Status information conveyed in responses</xs:documentation>
        </xs:annotation>
        <xs:all>
            <xs:element name="StatusCode">
                <xs:simpleType>
                    <xs:restriction base="tns:statusCodeType"/>
                </xs:simpleType>
            </xs:element>
            <xs:element name="StatusText" type="tns:statusTextType"/>
            <xs:element name="Details" type="tns:anyDataType" minOccurs="0"/>
        </xs:all>
    </xs:complexType>
    <xs:simpleType name="mmDeliveryStatusType">
        <xs:annotation>
            <xs:documentation>Statuses for MM7_delivery_report</xs:documentation>
        </xs:annotation>
        <xs:restriction base="xs:string">
            <xs:enumeration value="Expired"/>
            <xs:enumeration value="Retrieved"/>
            <xs:enumeration value="Rejected"/>
            <xs:enumeration value="Indeterminate"/>
            <xs:enumeration value="Forwarded"/>
        </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="mmReadStatusType">
        <xs:annotation>
            <xs:documentation>Statuses for MM7_read_reply</xs:documentation>
        </xs:annotation>
        <xs:restriction base="xs:string">
            <xs:enumeration value="Indeterminate"/>
            <xs:enumeration value="Read"/>
            <xs:enumeration value="Deleted"/>
        </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="messageIDType">
        <xs:annotation>
            <xs:documentation>Message ID</xs:documentation>
        </xs:annotation>
        <xs:restriction base="xs:string"/>
    </xs:simpleType>
    <xs:group name="AddressGroup">
        <xs:choice>
            <xs:element name="RFC2822Address">
                <xs:complexType>
                    <xs:simpleContent>
                        <xs:extension base="xs:string">
                            <xs:attribute name="displayOnly" type="xs:boolean" use="optional"
default="false"/>
                        </xs:extension>
                    </xs:simpleContent>
                </xs:complexType>
            </xs:element>
            <xs:element name="Number">
                <xs:complexType>
```

```
                    <xs:simpleContent>
                        <xs:extension base="xs:string">
                            <xs:attribute name="displayOnly" type="xs:boolean" use="optional"
default="false"/>
                        </xs:extension>
                    </xs:simpleContent>
                </xs:complexType>
            </xs:element>
            <xs:element name="ShortCode">
                <xs:complexType>
                    <xs:simpleContent>
                        <xs:extension base="xs:string">
                            <xs:attribute name="displayOnly" type="xs:boolean" use="optional"
default="false"/>
                        </xs:extension>
                    </xs:simpleContent>
                </xs:complexType>
            </xs:element>
        </xs:choice>
    </xs:group>
    <xs:complexType name="multiAddressType">
        <xs:sequence maxOccurs="unbounded">
            <xs:group ref="tns:AddressGroup"/>
        </xs:sequence>
    </xs:complexType>
    <xs:complexType name="addressType">
        <xs:group ref="tns:AddressGroup"/>
    </xs:complexType>
    <xs:complexType name="serviceCodeType">
        <xs:annotation>
            <xs:documentation>Used to identify the specific service given for billing
purposes</xs:documentation>
        </xs:annotation>
        <xs:simpleContent>
            <xs:extension base="xs:string">
                <xs:anyAttribute namespace="##other" processContents="lax"/>
            </xs:extension>
        </xs:simpleContent>
    </xs:complexType>
    <xs:simpleType name="entityIDType">
        <xs:annotation>
            <xs:documentation>String used to identify the VAS, VASP and MMSC</xs:documentation>
        </xs:annotation>
        <xs:restriction base="xs:string"/>
    </xs:simpleType>
    <xs:complexType name="recipientsType">
        <xs:annotation>
            <xs:documentation>At least one of To,CC,Bcc</xs:documentation>
        </xs:annotation>
        <xs:sequence maxOccurs="unbounded">
            <xs:choice>
                <xs:element name="To" type="tns:multiAddressType"/>
                <xs:element name="Cc" type="tns:multiAddressType"/>
                <xs:element name="Bcc" type="tns:multiAddressType"/>
            </xs:choice>
        </xs:sequence>
    </xs:complexType>
    <xs:simpleType name="messageClassType">
        <xs:annotation>
            <xs:documentation>Message class</xs:documentation>
        </xs:annotation>
        <xs:restriction base="xs:string">
            <xs:enumeration value="Personal"/>
            <xs:enumeration value="Informational"/>
            <xs:enumeration value="Advertisement"/>
            <xs:enumeration value="Auto"/>
        </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="priorityType">
        <xs:annotation>
            <xs:documentation>Priority of MM</xs:documentation>
        </xs:annotation>
        <xs:restriction base="xs:string">
            <xs:enumeration value="Normal"/>
            <xs:enumeration value="High"/>
            <xs:enumeration value="Low"/>
        </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="relativeOrAbsoluteDateType">
        <xs:annotation>
            <xs:documentation>Date which can be relative or absolute</xs:documentation>
        </xs:annotation>
```

```
        <xs:union memberTypes="xs:dateTime xs:duration"/>
    </xs:simpleType>
    <xs:simpleType name="chargedPartyType">
        <xs:annotation>
            <xs:documentation>Allows specification of which party - Sender or Reciever pays for
transmission</xs:documentation>
        </xs:annotation>
        <xs:restriction base="xs:string">
            <xs:enumeration value="Sender"/>
            <xs:enumeration value="Recipient"/>
            <xs:enumeration value="Both"/>
            <xs:enumeration value="Neither"/>
        </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="versionType">
        <xs:annotation>
            <xs:documentation>Version number in the format of x.y.z </xs:documentation>
        </xs:annotation>
        <xs:restriction base="xs:string">
            <xs:enumeration value="5.8.0"/>
            <xs:enumeration value="5.6.0"/>
            <xs:enumeration value="5.5.0"/>
            <xs:enumeration value="5.3.0"/>
        </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="statusCodeType">
        <xs:annotation>
            <xs:documentation>request status resonse codes in RES </xs:documentation>
        </xs:annotation>
        <xs:restriction base="xs:positiveInteger"/>
    </xs:simpleType>
    <xs:complexType name="contentReferenceType">
        <xs:annotation>
            <xs:documentation>content element including only href</xs:documentation>
        </xs:annotation>
        <xs:attribute name="href" type="xs:anyURI" use="required"/>
        <xs:attribute name="allowAdaptations" type="xs:boolean" use="optional"/>
    </xs:complexType>
    <xs:complexType name="anyDataType">
        <xs:annotation>
            <xs:documentation>Any element and attribute </xs:documentation>
        </xs:annotation>
        <xs:complexContent>
            <xs:restriction base="xs:anyType">
                <xs:sequence>
                    <xs:any processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
                </xs:sequence>
            </xs:restriction>
        </xs:complexContent>
    </xs:complexType>
    <xs:simpleType name="statusTextType">
        <xs:annotation>
            <xs:documentation>list of standard human-readable status descriptions</xs:documentation>
        </xs:annotation>
        <xs:restriction base="xs:string"/>
    </xs:simpleType>
</xs:schema>
```