3GPP TSG-T (Terminals) Meeting #23
Phoenix, USA
10 - 12 March, 2004

TP-040050

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	Doc-2nd-Level	Workitem
23.140	149	-	Rel-6	On the handling of MM7 messages composed with different XML schema	F	6.4.0	6.5.0	T2-040054	MMS6
23.140	150	-	Rel-5	Correction of the MM7 Schema, change “TimeStamp” to “date”	F	5.9.0	5.10.0	T2-040144	MESS5-MMS
23.140	151	-	Rel-6	Correction of the MM7 Schema, change “TimeStamp” to “date”	A	6.4.0	6.5.0	T2-040141	MMS6
23.140	152	-	Rel-6	MM7 – Charged party, third party value	F	6.4.0	6.5.0	T2-040142	MMS6
23.140	153	-	Rel-6	MMS Online Charging	B	6.4.0	6.5.0	T2-040128	MMS6
23.140	154	-	Rel-6	Updates to Annex M (Delivery Report Generation)	F	6.4.0	6.5.0	T2-040129	MMS6
23.140	155	-	Rel-6	Content of RCPT in MM4	F	6.4.0	6.5.0	T2-040130	MMS6
23.140	156	-	Rel-6	Management of Hyperlinks in MMS	B	6.4.0	6.5.0	T2-040132	MMS6
23.140	157	-	Rel-6	Clarification on recipient list.	F	6.4.0	6.5.0	T2-040145	MMS6

3GPP TSG-T2 #24
Malaga, Spain
16 -20 February 2004

T2-040054

CR-Form-v7

CHANGE REQUEST

⌘ **23.140** **CR** **149** ⌘ **rev** **-** ⌘ Current version: **6.4.0** ⌘

*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:	⌘	On the handling of MM7 messages composed with different XML schema
Source:	⌘	T2
Work item code:	⌘	MMS6
Date:	⌘	2004/02/10
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:	⌘	The specification does not provide any specific version handling/negotiation mechanisms. We then propose, to clarify what an entity shall do upon receipt of a message, "composed" using a different XML schema that it supports. We propose as well mechanisms for responding.
Summary of change:	⌘	An entity (e.g., VASP) receiving an MM7 message from a higher XML schema version than it supports handles the message according to its known functional level. An entity (e.g., VASP) receiving an MM7 message from a lower XML schema version than it supports handles it per the receiver's schema version. It may use default values for the missing data relevant to the receiver. The entity responding may either use its own schema version, or the sender's schema version.
Consequences if not approved:	⌘	VASP/MMS interoperability impaired.

Clauses affected:	⌘	8.7			
Other specs affected:	⌘	**Y**	**N**		⌘
			X	Other core specifications	
			X	Test specifications	
			X	O&M Specifications	

Other comments:	⌘	This CR takes for granted that 3GPP T2 will build 23.140 MM7 XML schema in a backs compatible way.

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 Technical realisation of MMS on reference point MM7

The MMSE may support Value Added Services in addition to the basic messaging services defined for MMS. These Value Added Services may be provided by the network operator of the MMSE or by third-party Value Added Service Providers (VASP). This clause defines the interworking between the MMS Relay/Server and the VASP.

The following figure illustrates an example data-flow of the message exchange involved in a VAS distribution of a MM as outlined by the abstract messages specified here:

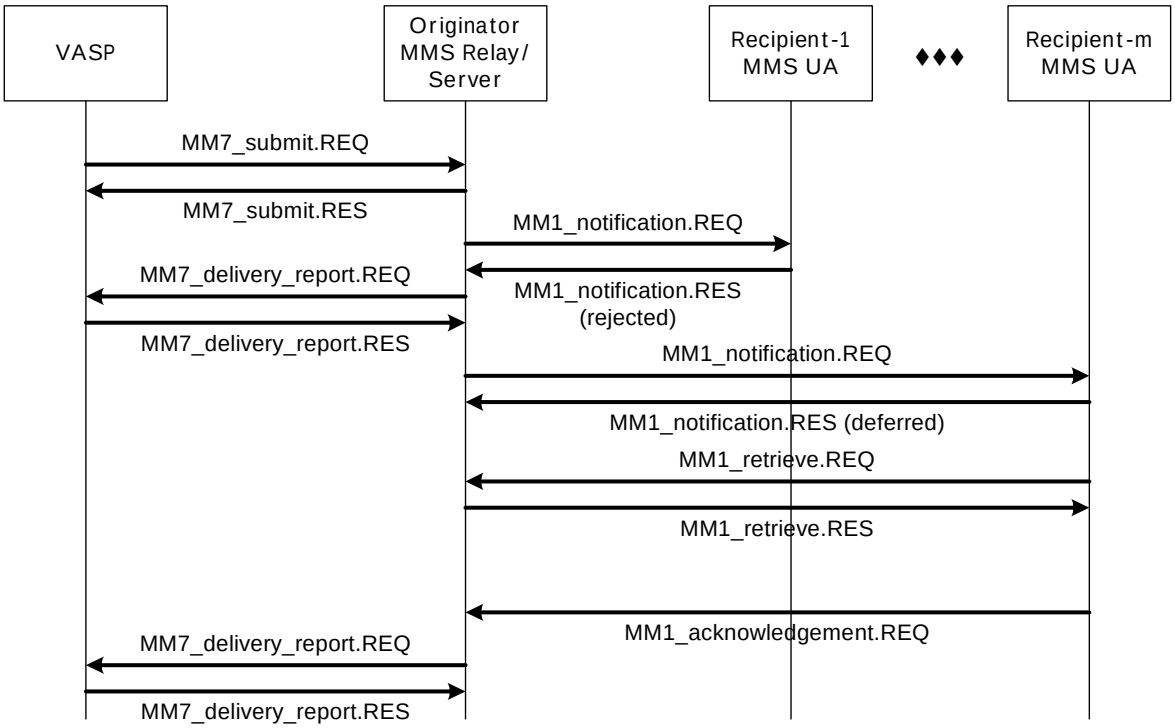

Figure 8. Sample data flow of MM7 message distribution

Subsequent sub-clauses will specify the abstract messages that will define the MM7 protocol.

Protocol version handling:

An entity (i.e., MMS Relay/Server or VASP) receiving an MM7 message formatted per a higher XML schema version than the one it supports, should handle the message according to its known functional level (e.g., it should ignore unknown XML tags and subsets of unknown schema structure).

An entity (i.e., MMS Relay/Server or VASP) receiving an MM7 message formatted per a lower XML schema version than it supports, should handle the message per its own schema version. The receiver may use default values for the data missing from the received lower version schema, if this data is relevant to the receiver.

The entity responding may either use its own XML schema version, or the sender's XML schema version.

3GPP TSG-T2 #24
Malaga, Spain
16 -20 February 2004

T2-040144

CR-Form-v7

CHANGE REQUEST

⌘ **23.140** **CR** **150** ⌘ **rev** **-** ⌘ Current version: **5.9.0** ⌘

*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:	⌘	Correction of the MM7 Schema, change “TimeStamp” to “date”
Source:	⌘	T2
Work item code:	⌘	MESS5-MMS
Date:	⌘	13/02/2004
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:	⌘	At the 3GPP T2 #22 (2003/08) meeting, a change was made to the release 6 MM7 schema (T2-030504). That change was as well done to release 5 (T2-030505), which made the schema non backwards compatible within release 5. With this CR, we propose to undo the non backwards compatible change done in 3GPP T2 #22, and to adopt a forwards compatible way. This CR, combined with a Rel-6 companion CR, make the schema forwards compatible between releases.
Summary of change:	⌘	1) change 8.7.9.9. “TimeStamp” for “Date” 2) XML schema change “TimeStamp” for “Date”. Update accordingly schema number and enumeration value.
Consequences if not approved:	⌘	Release 5 MM7 schema is not backwards compatible within release 5, and not forwards compatible with release 6.

Clauses affected:	⌘	8.7.9.9, Annex L

		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.

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~~Date	
MM Status	SOAP Body	MMStatus	Enumeration – possible values: Expired, Retrieved, Rejected, Indeterminate, Forwarded
Status text	SOAP Body	StatusText	

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-MM7-1-4" xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/" <xs:schema
targetNamespace="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-5"
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-MM7-1-4"
xmlns:tns="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-5"
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="~~TimeStamp~~Date" 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="5.10.0"/>
            <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 #24
Malaga, Spain
16 -20 February 2004

T2-040141

CR-Form-v7

CHANGE REQUEST

⌘ **23.140** **CR** **151** ⌘ **rev** **-** ⌘ Current version: **6.4.0** ⌘

*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 the MM7 Schema, change “TimeStamp” to “date”
Source:	⌘	T2
Work item code:	⌘	MMS6
Date:	⌘	17/02/2004
Category:	⌘	**A**
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 the 3GPP T2 #22 (2003/08) meeting, a change was made to the release 6 MM7 schema (T2-030504). That change was as well done to release 5 (T2-030505), which made the schema non backwards compatible within release 5. With this CR, we propose to undo the non forwards compatible change done in 3GPP T2 #22, and to adopt a forwards compatible way. This CR, combined with a Rel-5 companion CR, achieves this goal.
Summary of change:	⌘	1) change 8.7.9.9. “TimeStamp” for “Date” 2) XML schema change “TimeStamp” for “Date”. Update accordingly schema number and enumeration value.
Consequences if not approved:	⌘	Release 6 MM7 schema is not forwards compatible within release 5.

Clauses affected:	⌘	8.7.9.9, Annex L

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.

8.7.9.9 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~~Date	
MM Status	SOAP Body	MMStatus	Enumeration – possible values: Expired, Retrieved, Rejected, Indeterminate, Forwarded
Status text	SOAP Body	StatusText	

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-6-MM7-1-1" xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
<xs:schema targetNamespace="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-6-MM7-1-2" 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-6-MM7-1-1"
xmlns:tns="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-6-MM7-1-2"
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:enumeration value="Unrecognised"/>
        <xs:enumeration value="Deferred"/>
    </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="6.5.0"/>
            <xs:enumeration value="6.4.0"/>
            <xs:enumeration value="6.3.0"/>
            <xs:enumeration value="5.10.0"/>
            <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" default="true" 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 #24
Malaga, Spain
16 -20 February 2004

T2-040142

CR-Form-v7

CHANGE REQUEST

⌘ **23.140** **CR** **152** ⌘ **rev** **-** ⌘ Current version: **6.4.0** ⌘

*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:	⌘	MM7 – Charged party, third party value
Source:	⌘	T2
Work item code:	⌘	MMS6
Date:	⌘	19/02/2004
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:	⌘	In Stage 2 MM7_submit.REQ information element “Charged Party”: it is possible to indicate which party is paying for the message, however the value “third party” is missing from the enumerated types in the stage 3 Schema
Summary of change:	⌘	Value “ThirdParty” is added to the charged party type definition in the stage 3 schema
Consequences if not approved:	⌘	It shall not be possible to indicate that a third party is charged

Clauses affected:	⌘	Annex L			
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 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-6-MM7-1-21" 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-6-MM7-1-21"
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="TimeStamp" 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:enumeration value="Unrecognised"/>
        <xs:enumeration value="Deferred"/>
    </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:enumeration value="ThirdParty"/>
        </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="6.5.0"/>
            <xs:enumeration value="6.4.0"/>
            <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" default="true" 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 #24
Malaga, Spain
16 -20 February 2004

T2-040128

CR-Form-v7

CHANGE REQUEST

⌘ **23.140** **CR** **153** ⌘ **rev** **-** ⌘ Current version: **6.4.0** ⌘

*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:	⌘	MMS Online Charging
Source:	⌘	T2
Work item code:	⌘	MMS6
Date:	⌘	16/12/2003
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:	⌘	3GPP WG SA5 is currently working on MMS Online Charging based on the approved WID Charging Management for Service domain (SP-030050) for Rel-6. A new reference point for MMS Online Charging is identified for the Online Charging System (OCS) in TS 32.240 “Charging architecture and principles” and needs to be added into the MMS Reference architecture in TS 23.140.
Summary of change:	⌘	Charging reference adapted, additional text added for the MMS Offline charging interface and MMS Online charging interfaced introduced.
Consequences if not approved:	⌘	MMS Online Charging is not supported by the MMS Relay/Server

Clauses affected:	⌘	2, 4.2, 6.1, 6.10, 6.11, Annex C

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.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TS 22.140: "Multimedia Messaging Service; Stage 1".

[2] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[3] WAP Forum: "Wireless Application Environment Specification, Version 1.2", WAP-WAESpec-19991104, . URL: http://www.wapforum.org/.

[4] 3GPP TS 23.057: "Mobile Execution Environment (MExE); Functional description; Stage 2".

[5] IETF; STD 0011 (RFC 2822): "Internet Message Format", URL: http://www.ietf.org/rfc/rfc2822.txt.

[6] IETF; RFC 2046: "Multipurpose Internet Mail extension (MIME) Part Two: Media Types", URL: http://www.ietf.org/rfc/rfc2046.txt.

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

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

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

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

[11] 3GPP TS 24.011: "Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface".

[12] void

[13] void

[14] void

[15] void

[16] void

[17] void

[18] void

[19] void

[20] void

[21] void

[22] IETF; STD 0010 (RFC 2821): "Simple Mail Transfer Protocol", URL: http://www.ietf.org/rfc/rfc2821.txt.

[23] WAP Forum (November 1999): "WAP Wireless Session Protocol", WAP-WSP-19991105- , URL: http://www.wapforum.org/.

[24] WAP Forum (November 1999): "WAP Push Access Protocol", WAP-PAP-19991108, URL: http://www.wapforum.org/.

[25] WAP Forum (November 1999): "WAP User Agent Profile Specification", WAP-UAProf-19991110, URL: http://www.wapforum.org/.

[26] W3C Recommendation 22 February 1999 "Resource Description Framework (RDF) Model and Syntax Specification", URL: http://www.w3.org/TR/REC-rdf-syntax.

[27] WAP Forum (November 1999): "WAP Wireless Markup Language Specification, Version 1.2 ", WAP-WML-19991104, URL: http://www.wapforum.org/.

[28] W3C Recommendation 15-June-1998: "Synchronized Multimedia Integration Language (SMIL) 1.0 Specification" - http://www.w3.org/TR/REC-smil/.

[29] WAP Forum (November 1999): "WAP Wireless Transport Layer Security Specification", WAP-WTLS-19991105, URL: http://www.wapforum.org/.

[30] WAP Forum (November 1999): "WAP Identity Module Specification", WAP-WIM-19991105, URL: http://www.wapforum.org/.

[31] ITU-T Recommendation T.37 (06/98): "Procedures for the transfer of facsimile data via store-and-forward on the Internet".

[32] ITU-T Recommendation T.30 (1996): "Procedures for document facsimile transmission in the general switched telephone network".

[33] IETF; RFC 2421 (Sept. 1998): "Voice Profile for Internet Mail – version 2, VPIM" , URL: http://www.ietf.org/rfc/rfc2421.txt.

[34] IETF; STD 0053 (RFC 1939): "POP 3, Post Office Protocol - Version 3" , URL: http://www.ietf.org/rfc/rfc1939.txt.

[35] IETF; RFC 1730 (December 1994): "IMAP4, Internet Message Access Protocol - Version 4" , URL: http://www.ietf.org/rfc/rfc1730.txt..

[36] Adobe Systems: "Tag Image File Format (TIFF), Version 6", URL:, http://www.adobe.com.

[37] 3GPP TR 23.039: "Interface protocols for the connection of Short Message Service Centres (SMSCs) to Short Message Entities (SMEs)".

[38] void

[39] void

[40] 3GPP TS 26.233: "End-to-end transparent streaming Service (PSS); General Description".

[41] 3GPP TS 26.234: "End-to-end transparent streaming Service (PSS); Protocols and Codecs".

[42] IETF; RFC 3481: "TCP over Second (2.5G) and Third (3G) Generation Wireless Networks"; URL: http://www.ietf.org/rfc/rfc3481.txt

[43] WAP Forum: "Wireless profiled TCP", WAP-225-TCP-20010331-a, URL: http://www.wapforum.org

[44] IETF; RFC 2045: "Multipurpose Internet Mail Extensions (MIME) Part One: Format of Internet Message Bodies", URL: http://www.ietf.org/rfc/rfc2045.txt

[45] IETF; RFC 2047: "Multipurpose Internet Mail Extensions (MIME) Part Three: Message Header Extensions for Non-ASCII-Text", URL: http://www.ietf.org/rfc/rfc2047.txt.

[46] IETF; RFC 2048: "Multipurpose Internet Mail Extensions (MIME) Part Four: Registration Procedures", URL: http://www.ietf.org/rfc/rfc2048.txt.

[47] IETF; RFC 2049: "Multipurpose Internet Mail Extensions (MIME) Part Five: Conformance Criteria and Examples", URL: http://www.ietf.org/rfc/rfc2049.txt.

[48] IETF; RFC 2616: “Hypertext Transfer Protocol, HTTP/1.1”, URL: http://www.ietf.org/rfc/rfc2616.txt.

[49] IETF; STD 13 (RFC 1034, 1035): "Domain Names -- concepts and facilities", "Domain names – implementation and specification", URL: http://www.ietf.org/rfc/rfc1034.txt, http://www.ietf.org/rfc/rfc1035.txt.

[50] IETF; STD 14 (RFC 947): "Multi-network broadcasting within the Internet", URL: http://www.ietf.org/rfc/rfc947.txt.

[51] IETF; RFC 2076: "Common Internet Message Headers", URL: http://www.ietf.org/rfc/rfc2076.txt.

[52] IETF; RFC 1893: "Enhanced Mail System Status Codes", URL: http://www.ietf.org/rfc/rfc1893.txt.

[53] IETF; RFC 1327: "Mapping between X.400(1988)/ISO 10021 and RFC 822", URL: http://www.ietf.org/rfc/rfc1327.txt.

[54] 3GPP TS 29.061: "Interworking between the Public Land Mobile Network (PLMN) supporting Packet Based Services and Packet Data Networks (PDN)"

[55] Open Mobile Alliance; OMA-WAP-ProvCont-v1_1-20021112-C, Provisioning Content Version 1.1, URL: http://www.openmobilealliance.org/

[56] Open Mobile Alliance; OMA-MMS-ENC-v1_1, Multimedia Messaging Service, Encapsulation Protocol, Version 1.1, URL: http://www.openmobilealliance.org/

NOTE: Reference [56] is the REL-4 MM1 stage 3 specification. OMA is committed to develop a REL-6 version. Consequently, reference [56] is to be replaced by the appropriate document identifier once the REL-6 MM1 stage 3 specification is approved within OMA.

[57] IETF; RFC 1870: “SMTP Service Extension for Message Size Declaration”, URL: http://www.ietf.org/rfc/rfc1870.txt

[58] IETF; RFC 1652: “SMTP Service Extension for 8bit-MIME transport”, URL: http://www.ietf.org/rfc/rfc1652.txt

[59] void~~3GPP TS 32.235: "Charging Management; Charging Data Description for Application Services~~".

[60] IETF, RFC 2915: “The Naming Authority Pointer (NAPTR) DNS Resource Record”, URL: http://www.ietf.org/rfc/rfc2915.txt

[61] IETF, RFC 2916: “E.164 number and DNS”, URL: http://www.ietf.org/rfc/rfc2916.txt

[62] 3GPP TS 29.002: "Mobile Application Part (MAP) specification".

[63] 3GPP TS 22.066: "Support of Mobile Number Portability (MNP); Service description. Stage 1".

[64] 3GPP TS 23.066: "Support of Mobile Number Portability (MNP); Technical realization. Stage 2".

[65] IETF; RFC 2617 "Access Authentication", URL:http://www.ietf.org/rfc/rfc2617.txt

[66] IETF; RFC 2246 "TLS protocol, version 1.0" , URL:http://www.ietf.org/rfc/rfc2246.txt

[67] 3GPP TS 31.102 "Characteristics of the USIM Application".

[68] W3C Note 08 May 2000 "Simple Object Access Protocol (SOAP) 1.1", URL: http://www.w3.org/TR/SOAP

[69] W3C Note 11 December 2000 "SOAP Messages with Attachments", URL: http://www.w3.org/TR/SOAP-attachments

[70] IETF; RFC 2376: "XML Media Type", URL: http://www.ietf.org/rfc/rfc2376.txt.

[71] IETF; RFC 2387: "The MIME Multipart/Related Content Type", URL: http://www.ietf.org/rfc/rfc2387.txt.

[72] IETF; RFC 2111: "Content-ID and Message-ID Uniform Resource Locators", URL: http://www.ietf.org/rfc/rfc2111.txt.

[73] IETF; RFC 2557: "MIME Encapsulation of Aggregate Documents, such as HTML (MHTML)", URL: http://www.ietf.org/rfc/rfc2557.txt.

[74] 3GPP TS 26.140: "Multimedia Messaging Service; Media formats and codecs".

[75] 3GPP TS 51.011 (Rel-4): "Specification of the Subscriber Identity Module – Mobile Equipment (SIM-ME) interface".

[76] “Digital Rights Management”, Open Mobile AllianceTM, OMA-Download-DRM-v1_0, http://www.openmobilealliance.org/

[77] “DRM Rights Expression Language”, Open Mobile AllianceTM, OMA-Download-DRMREL-v1_0, http://www.openmobilealliance.org/

[78] “DRM Content Format”, Open Mobile AllianceTM, OMA-Download-DRMCF-v1_0, http://www.openmobilealliance.org/

[80] 3GPP TS 32.240: "Charging Management; Charging Architecture and Principles ".

[81] 3GPP TS 32.270: "Charging Management; Multimedia Messaging Service (MMS) charging".

4.2 Involved MMS Elements

Figure 2 shows that multimedia messaging may encompass many different network types. The basis of connectivity between these different networks shall be provided by the Internet protocol and its associated set of messaging protocols. This approach enables messaging in 2G and 3G wireless networks to be compatible with messaging systems found on the Internet.

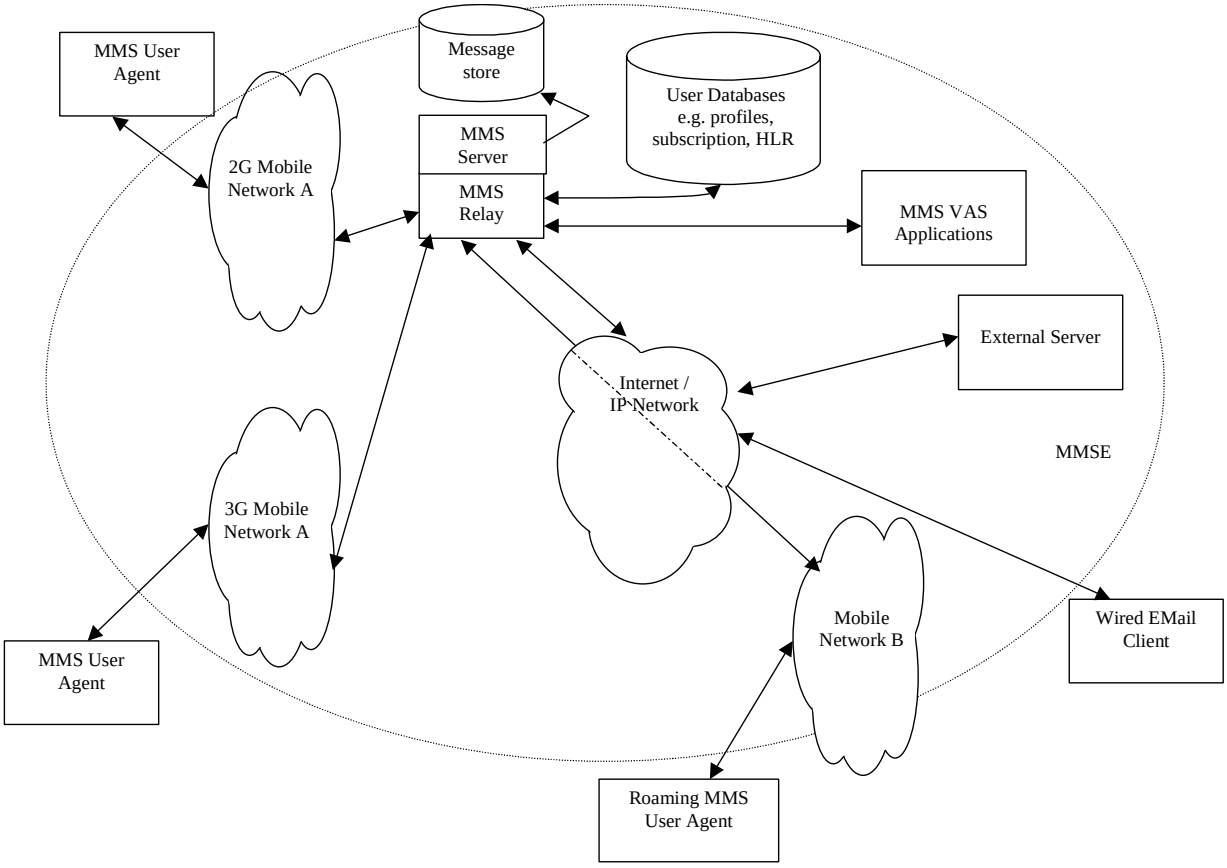

Figure 2: MMS Architectural Elements

MMSNA

The Multimedia Messaging Service Network Architecture encompasses all the various elements that provide a complete MMS to a user (including interworking between service providers).

MMSE

The MMSE is a collection of MMS-specific network elements under the control of a single administration. In the case of roaming the visited network is considered a part of that user's MMSE. However, subscribers to another service provider are considered to be a part of a separate MMSE.

MMS Relay/Server

The MMS Relay/Server is responsible for storage and handling of incoming and outgoing messages and for the transfer of messages between different messaging systems. Depending on the business model, the MMS Relay/Server may be a single logical element or may be separated into MMS Relay and MMS Server elements. These may be distributed across different domains.

The MMS Relay/Server should be able to generate charging data (Charging Data Record - CDR) when receiving MMs from or when delivering MMs to another element of the MMSNA according to 3GPP TS 32.270~~35~~ [~~59~~81]. The MMS Relay/Server should be able to generate charging data for VASP-related operations.

MMS User Databases

This element may be comprised of one or more entities that contain user related information such as subscription and configuration (e.g. user profile, HLR).

MMS User Agent

The MMS User Agent resides on a UE, an MS or on an external device connected to a UE/MS. It is an application layer function that provides the users with the ability to view, compose and handle MMs (e.g. submitting, receiving, deleting of MMs).

MMS VAS Applications

The MMS VAS Applications offer Value Added Services to MMS users. There could be several MMS VAS Applications included in or connected to an MMSE. MMS VAS Applications may be able to generate CDRs.

…

6.1 MMS Reference Architecture

Figure 3 shows the MMS Reference Architecture and identifies reference points within an MMSNA that are further described below. Abstract messages are indicated in clause 8 that describe the logical message exchange on these reference points on a high-level basis.

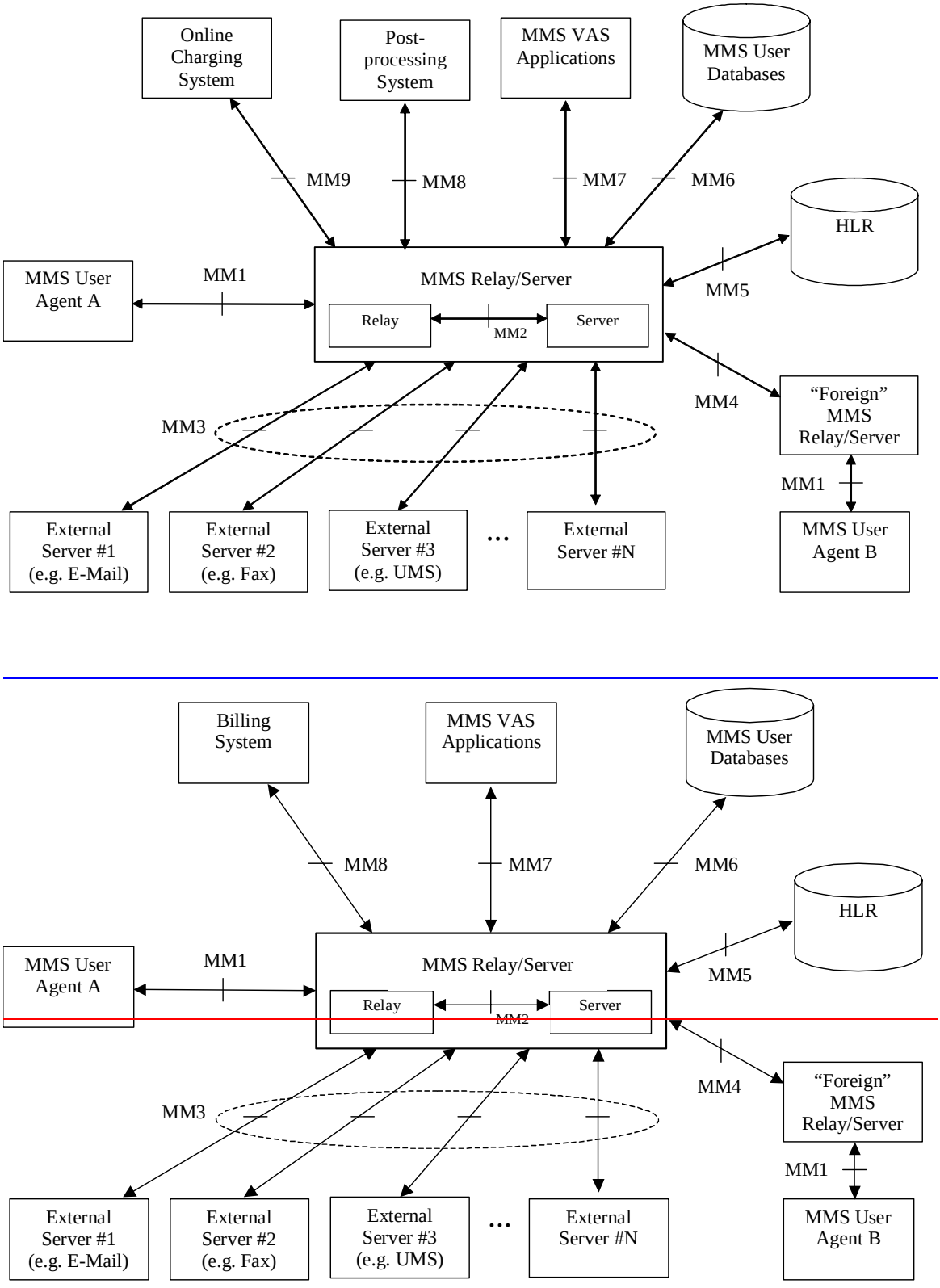

Figure 3: MMS Reference Architecture

The interfaces in the MMS Reference Architecture are:

MM1: The reference point between the MMS User Agent and the MMS Relay/Server.

MM2: The reference point between the MMS Relay and the MMS Server.

MM3: The reference point between the MMS Relay/Server and external (legacy) messaging systems.

MM4: The reference point between the MMS Relay/Server and another MMS Relay/Server that is within another MMSE.

MM5: The reference point between the MMS Relay/Server and the Home Location Register (HLR).

MM6: The reference point between the MMS Relay/Server and the MMS User Databases.

MM7: The reference point between the MMS Relay/Server and MMS VAS Applications.

MM8: The reference point between the MMS Relay/Server and the post-processing ~~a billing~~ system.

MM9: The reference point between the MMS Relay/Server and the online charging system.

…

6.10 MM8: MMS Relay/Server – ~~Billing~~ Post-processing system

Reference point MM8 is used to transfer MMS specific CDRs from MMS Relay/Server to the operators post-processing system, refer TS 32.240[80]. The functionality is further elaborated in TS 32.270 [81].~~This reference point is outside the scope of this release of the present document.~~

6.11 MM9: MMS Relay/Server – Online charging system

Reference point MM9 is used to transfer charging messages from MMS Relay/Server to the online charging system, refer TS 32.240[80]. This functionality is further elaborated in TS 32.270 [81].

Annex C (informative): Charging Data Records

This annex describes information of MMs/abstract messages which may be required for inclusion into Charging Data Records (CDR's) for MMS for the purpose of Billing and Traceability in the operators post-processing system. Further details on the CDR content and transport for MMS are described in the 3GPP TS 32.270~~35~~ [81~~59~~].

This list may include:

- Message –ID of Multimedia Message
- Recipient address(es)
- Sender address
- Message size
- Time stamp for submission time, earliest delivery time and time of expiry
- Duration of transmission (for streaming purposes)
- Duration of storage (in the MMS Relay/Server)
- Type of message: (e.g. notification, message MM, delivery report, read-reply)
- Bearer type used
- Content information (e.g. audio, picture, video, text,)
- Message class (e.g. advertisement/informational)

- Delivery Report Request
- Read Reply Request
- Charging Indicator (e.g. Pre paid charging, Reply charging, Charged Party)
- MM7 service code
- MM Status (e.g. delivered, rejected, expired, delivery pending).
- Indication of forwarding
- Conversion of type and media
- Priority of the MM
- Linked ID
- VASP ID
- VAS ID
- Reply-Charging
- Content type
- Reply-Charging-ID
- Charged Party, Charged Party ID
- MCC + MNC

The following information elements at least will be considered for the future.

-

- Identification if a message has been sent to a pre-defined group

NOTE: Some of the above fields may not be available in the MMS Relay/Server e.g. due to network implementation options. Also some fields may not be directly available from MMS Relay/Server CDRs but defined in the Charging and Billing system.

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Malaga, Spain
16 -20 February 2004

T2-040129

CR-Form-v7

CHANGE REQUEST

⌘ **23.140** **CR** **154** ⌘ **rev** **-** ⌘ Current version: **6.4.0** ⌘

*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:	⌘	Updates to Annex M (Delivery Report Generation)
Source:	⌘	T2
Work item code:	⌘	MMS6
Date:	⌘	2004/02/17
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:	⌘	Informative annex wording need to be clarified.
Summary of change:	⌘	Clarify that “allows retrieval” means “permits sending Delivery Report”
Consequences if not approved:	⌘	Risk to misinterpret clauses.

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

Table M.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~~permits sending Delivery Report, then recipient R/S: Sends Delivery Report Forward to Orig UA = Yes	Recipient ~~allows retrieval~~permits sending Delivery Report, then recipient R/S: Sends Delivery Report Forward to Orig UA = No
		Recipient ~~does not allow retrieval~~does not permit sending Delivery Report, then recipient R/S: Sends Delivery Report Forward to Orig UA = No	Recipient ~~does not allow retrieval~~does not permit sending Delivery Report, then recipient R/S: Sends Delivery Report Forward to Orig UA = No
	Does not request a Delivery Report	Recipient ~~allows retrieval~~permits sending Delivery Report, then recipient R/S: Sends Delivery Report Forward to Orig UA = Yes	Recipient ~~allows retrieval~~permits sending Delivery Report, then recipient R/S: Does not send Delivery Report
		Recipient ~~does not allow retrieval~~does not permit sending Delivery Report, then recipient R/S: Does not send Delivery Report	Recipient ~~does not allow retrieval~~does not permit sending Delivery Report, then recipient R/S: Does not send Delivery Report

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16 -20 February 2004

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CHANGE REQUEST

⌘ **23.140** **CR** **155** ⌘ **rev** **-** ⌘ Current version: **6.4.0** ⌘

*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:	⌘	Content of RCPT in MM4
Source:	⌘	T2
Work item code:	⌘	MMS6
Date:	⌘	18/02/2004
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:	⌘	At 3GPP T2#22 (2003/08), Orange & T Mobile identified (in T2-030465) that the current version of 23.140 is unclear on bundling of MMS exchange between different MMS Relay/Servers (e.g., Problems when routing of MMs with multiple addresses, via MM4_Forward; charging/billing problems; and delivery/confirmation due to a single TransactionID). The discussion resulted in a LS to GSMA BARG-CPWP, MMS TF, and SA5 (T2-030496). GSMA and SA5 basically confirm, at 3GPP T2#23, that they see specification related problems with MMS bundling, but that these problems do not exist with unbundling (see T2-030554, and T2-030556). We propose, with this CR, to clarify the content of the related RCPT To: field.
Summary of change:	⌘	Describe that every SMTP (MM4_Forward.REQ) contains a single recipient in RCPT To:.
Consequences if not approved:	⌘	Specification remains unclear, with interoperability risks.

Clauses affected:	⌘	8.4.1, 8.4.4.2

		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 reques

8.4.1.1 Normal operation

After successful discovery of its peer entity the originator MMS Relay/Server shall route an MM forward to the recipient MMS Relay/Server using ~~the~~ a separate MM4_forward.REQ per MM recipient. The MM4_forward.REQ~~, which~~ contains MMS control information and the MM content. The recipient MMS Relay/Server shall respond with a MM4_forward.RES, which provides the status of the request if an MM4_forward.RES was requested. If multiple recipients are addressed in the MM4_Forward.REQ the recipient MMS Relay/Server may respond with any of the following to the originator MMS Relay/Server: a single MM4_Forward.RES message, multiple MM4_Forward.RES messages, or any combination of single or multiple MM4_Forward.RES messages. E.g. this will allow for multiple status indications or a single collective status indication in the MM4_Forward.RES in case of partial addressing failures.

Support for MM4_forward.REQ and MM4_forward.RES is mandatory for the MMS Relay/Server.

8.4.4 Message format on MM4

All elements of an MM shall be included within a single SMTP "mail" message which shall be organised as MIME message with the appropriate 'Content-Type' [44] header field value (e.g. multipart/related, multipart/mixed, image/jpeg, text/plain). All MM elements shall be of standard MIME content types. In addition to the MM elements this SMTP "mail" message should reflect all MMS information elements according to the definitions in clauses 6 and 8.4.

All other MMS-related messages, such as delivery reports, read-reply reports, transfer acknowledgements shall each be transferred as a single SMTP "mail" message which shall be organised as MIME type text/plain. This SMTP "mail" message should reflect all MMS information elements as defined above.

8.4.4.1 Message header fields

MMS information elements should be reflected as "header fields" according to STD 11 in the SMTP "mail" message. See RFC 1327 [53] for a detailed description of the X.400 header to STD 11 headers mappings. Some of the mappings are context dependent.

For those information elements that cannot be mapped to standard STD 11 "header fields" the "X-" extensions mechanism shall be used with an "X-MMS-" prefix.

The mapping of information elements to commonly used (RFC 1327) [53] or standard STD 11 "header fields" is shown in following tables.

8.4.4.2 MM4_Forward.REQ Header Mappings

The MM4 Forward request header mappings are detailed below.

Table 1: 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.

The SMTP RCPT TO: shall convey the MM to the recipient, one recipient at a time.

For example, if an MMS originator sends an MM to 3 recipients (e.g., To: userA, Cc: userB; Bcc: userC), all served by the same MMS Relay/Server, differing from the originator’s MMS Relay/Server; the originator MMS Relay/Server shall send:

an SMTP MM4_Forward.REQ, with RCPT To: = userA,
a different SMTP MM4_Forward.REQ, with RCPT To: = userB,
and another SMTP MM4_Forward.REQ, with RCPT To: = userC.

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CHANGE REQUEST

⌘ **23.140** **CR** **156** ⌘ **rev** **-** ⌘ Current version: **6.4.0** ⌘

*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:	⌘	Management of Hyperlinks in MMS
Source:	⌘	T2
Work item code:	⌘	MMS6
Date:	⌘	16/02/2004
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:	⌘	Requirements have been defined to transfer hyperlinks embedding them in a multimedia messages. This will improve the user experience and will allow easier utilisation of functionalities of terminals such as internet browsing. Furthermore a hyperlink may reference to additional mobile services e.g. mobile office, organizer, streaming and SIP addresses which lead to increased user convenience for further upcoming Rel.6 services. In order to ensure that the functionality will be available in a user friendly manner a certain level of standardisation is required.
Summary of change:	⌘	This CR is aimed to fulfil the requirements on hyperlink recently introduced in the MMS stage 1 description. Functional description is added to section 7.1.
Consequences if not approved:	⌘	Extensive links and references have to be put in manually in order to use well deployed and further enhanced mobile data services. Different implementation of the hyperlink functionalities on different terminals will make this feature difficult to understand for the subscribers.

Clauses affected:	⌘	new clause 7.1.X

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.

7.1.X Support of Hyperlinks in MMS

An MMS User Agent should support hyperlinks within an MM as described below:

Note: There is no requirement on the MMS User Agent for supporting any specific transport protocols for following URLs conveyed in hyperlinks.

If a hyperlink is embedded in a SMIL presentation it shall be according to PSS SMIL [74].

If the MMS User Agent supports Rich Text Encoding in XHTML Mobile Profile [74] the hyperlink may also be embedded according to XHTML Mobile Profile [74].

An MMS User Agent should ask for end-user confirmation before following a hyperlink which triggers a terminal action (e.g. placing a phone call) or which refers to a resource that is not part of the same MM.

Note: End user confirmation is recommended as accessing a resource on the network might result in additional charges.

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CHANGE REQUEST

⌘ **23.140** **CR** **157** ⌘ **rev** **-** ⌘ Current version: **6.4.0** ⌘

*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:	⌘	Clarification on recipient list
Source:	⌘	T2
Work item code:	⌘	MMS6
Date:	⌘	25/02/2004
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:	⌘	The current specification does not make a clear distinction between - the recipients of an MM as specified by the originator user (agent) and - the recipient to that the recipient MMS Relay/Server is requested to forward an MM. Also, the encoding of the corresponding information is not clearly specified. This could lead to incompatible impementations. The CR removes the ambiguities.
Summary of change:	⌘	Addition of a new *Recipient address for routing* Information Element in the MM4_forward.REQ abstract message definition; addition of a definition how this IE is signalled. Note that the addition in the abstract definition does not entail an additional field in the MM.
Consequences if not approved:	⌘	Possible irritations when implementing.

Clauses affected:	⌘	Clauses 8.4.1.3, 8.4.1.4, 8.4.4.2, Annex I

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

Other comments:	⌘	

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:~~.~~

- The *Recipient(s) address* Information Element of the MM4_forward.REQ shall consist of all "To:" and "Cc:"addresses of MM recipients (including those that are not associated with the MMS Relay/Server the MM is forwarded to).
- The *Recipient address for routing* Information Element of the MM4_forward.REQ shall specify the recipient address for that routing is expected.

Note: The *Recipient address for routing* Information Element is encoded only on SMTP level, see clause 8.4.4.2. It is specified in the abstract message definition for methodology reasons.

~~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.
Recipient address for routing	Mandatory	The recipient address for that routing is requested.
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

8.4.4.2 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:
Recipient address for routing	- (NOTE)
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:
NOTE: The *Recipient address for routing* Information Element of the MM4_forward.REQ is not directly mapped to a corresponding STD 11 header. It is only indicated in the SMTP command layer (RCPT TO:).	

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.

The *Recipient address for routing* Information Element of the MM4_forward.REQ is not directly mapped to a corresponding STD 11 header. It shall only be indicated in the SMTP command layer (RCPT TO:).

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.

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.

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>*
-	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. NOTE 3: The *Recipient address for routing* Information Element of the MM4_forward.REQ is not specified with an STD 11 header. It is only indicated in the SMTP command layer (RCPT TO:).	