**3GPP TSG-CT WG1 Meeting #141-eC1-232094**

**E-meeting, 17-21 April 2023**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **24.282** | **CR** | **0349** | **rev** | **2** | **Current version:** | **18.2.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
|  | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network | **X** |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Addition of 5G MBS inter-RAT information in MCData signalling | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | TD Tech | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | MCOver5MBS | | | | |  | ***Date:*** | | | 2023-04-07 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-18 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change 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](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) ... Rel-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | According to the approved WID MCOver5MBS, the 5G MBS inter-RAT change information should be supported in MCData signalling. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | 1. Add inter-RAT change description in clause 17.1. 2. Add inter-RAT change information in XML, Annex  D.4. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Multicast/broadcast mode support during system change between 5GS and 4G is not supported. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 17.1, D.4 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

\* \* \* 1st Change \* \* \* \*

## 17.1 General

If the participating MCData function needs to obtain location information, the participating MCData function configures the MCData client upon successful MCData service authorization. The configuration contains information the MCData client uses to set up filter criteria for when the MCData client shall send location reports to the participating MCData function.

The participating MCData function can also explicitly request the MCData client to send a location report.

The MCData client will, based on the received configuration or when explicitly requested, send location reports.

The location information can be used by the participating MCData function to determine whether to use MBMS bearers or not.

In case of LTE MBMS and 5G MBS co-existence, the inter-RAT information contained in the location information is used by the participating MCData function to determine how to receive MC services after inter-RAT change.

\* \* \* 2nd Change \* \* \* \*

# D.4 XML schema for MCData location information

## D.4.1 General

This clause defines the XML schema and the MIME type for location information.

## D.4.2 XML schema

<?xml version="1.0" encoding="UTF-8"?>

<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:mcdataloc="urn:3gpp:ns:mcdataLocationInfo:1.0" targetNamespace="urn:3gpp:ns:mcdataLocationInfo:1.0" elementFormDefault="qualified" attributeFormDefault="unqualified"

xmlns:xenc="http://www.w3.org/2001/04/xmlenc#">

<xs:import namespace="http://www.w3.org/2001/04/xmlenc#"/>

<xs:element name="location-info" id="loc">

<xs:annotation>

<xs:documentation>Root element, contains all information related to location configuration, location request and location reporting for the MCData service</xs:documentation>

</xs:annotation>

<xs:complexType>

<xs:choice>

<xs:element name="Configuration" type="mcdataloc:tConfigurationType"/>

<xs:element name="Request" type="mcdataloc:tRequestType"/>

<xs:element name="Report" type="mcdataloc:tReportType"/>

<xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

<xs:element name="anyExt" type="mcdataloc:anyExtType" minOccurs="0"/>

</xs:choice>

<xs:anyAttribute namespace="##any" processContents="lax"/>

</xs:complexType>

</xs:element>

<xs:complexType name="tConfigurationType">

<xs:sequence>

<xs:element name="NonEmergencyLocationInformation" type="mcdataloc:tRequestedLocationType" minOccurs="0"/>

<xs:element name="EmergencyLocationInformation" type="mcdataloc:tRequestedLocationType" minOccurs="0"/>

<xs:element name="TriggeringCriteria" type="mcdataloc:TriggeringCriteriaType"/>

<xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

<xs:element name="anyExt" type="mcdataloc:anyExtType" minOccurs="0"/>

</xs:sequence>

<xs:attribute name="ConfigScope">

<xs:simpleType>

<xs:restriction base="xs:string">

<xs:enumeration value="Full"/>

<xs:enumeration value="Update"/>

</xs:restriction>

</xs:simpleType>

</xs:attribute>

<xs:anyAttribute namespace="##any" processContents="lax"/>

</xs:complexType>

<xs:complexType name="tRequestType">

<xs:complexContent>

<xs:extension base="mcdataloc:tEmptyType">

<xs:attribute name="RequestId" type="xs:string" use="required"/>

</xs:extension>

</xs:complexContent>

</xs:complexType>

<xs:complexType name="tReportType">

<xs:sequence>

<xs:element name="TriggerId" type="xs:string" minOccurs="0" maxOccurs="unbounded"/>

<xs:element name="CurrentLocation" type="mcdataloc:tCurrentLocationType"/>

<xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

<xs:element name="anyExt" type="mcdataloc:anyExtType" minOccurs="0"/>

</xs:sequence>

<xs:attribute name="ReportID" type="xs:string" use="optional"/>

<xs:attribute name="ReportType" use="required">

<xs:simpleType>

<xs:restriction base="xs:string">

<xs:enumeration value="Emergency"/>

<xs:enumeration value="NonEmergency"/>

</xs:restriction>

</xs:simpleType>

</xs:attribute>

<xs:anyAttribute namespace="##any" processContents="lax"/>

</xs:complexType>

<xs:complexType name="TriggeringCriteriaType">

<xs:sequence>

<xs:element name="CellChange" type="mcdataloc:tCellChange" minOccurs="0"/>

<xs:element name="TrackingAreaChange" type="mcdataloc:tTrackingAreaChangeType" minOccurs="0"/>

<xs:element name="PlmnChange" type="mcdataloc:tPlmnChangeType" minOccurs="0"/>

<xs:element name="MbmsSaChange" type="mcdataloc:tMbmsSaChangeType" minOccurs="0"/>

<xs:element name="MbsfnAreaChange" type="mcdataloc:tMbsfnAreaChangeType" minOccurs="0"/>

<xs:element name="PeriodicReport" type="mcdataloc:tIntegerAttributeType" minOccurs="0"/>

<xs:element name="TravelledDistance" type="mcdataloc:tIntegerAttributeType" minOccurs="0"/>

<xs:element name="McdataSignallingEvent" type="mcdataloc:tSignallingEventType" minOccurs="0"/>

<xs:element name="GeographicalAreaChange" type="mcdataloc:tGeographicalAreaChange"/>

<xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

<xs:element name="anyExt" type="mcdataloc:anyExtType" minOccurs="0"/>

</xs:sequence>

<xs:anyAttribute namespace="##any" processContents="lax"/>

</xs:complexType>

<!-- anyExt elements for "TriggeringCriteriaType" -->

<xs:element name="RatTypeChange" type="mcdataoloc:tRatTypeChange"/>

<xs:complexType name="tCellChange">

<xs:sequence>

<xs:element name="AnyCellChange" type="mcdataloc:tEmptyTypeAttribute" minOccurs="0"/>

<xs:element name="EnterSpecificCell" type="mcdataloc:tSpecificCellType" minOccurs="0" maxOccurs="unbounded"/>

<xs:element name="ExitSpecificCell" type="mcdataloc:tSpecificCellType" minOccurs="0" maxOccurs="unbounded"/>

<xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

<xs:element name="anyExt" type="mcdataloc:anyExtType" minOccurs="0"/>

</xs:sequence>

<xs:anyAttribute namespace="##any" processContents="lax"/>

</xs:complexType>

<xs:complexType name="tEmptyType"/>

<xs:simpleType name="tEcgi">

<xs:restriction base="xs:string">

<xs:pattern value="\d{3}\d{3}[0-1]{28}"/>

</xs:restriction>

</xs:simpleType>

<xs:complexType name="tSpecificCellType">

<xs:simpleContent>

<xs:extension base="mcdataloc:tEcgi">

<xs:attribute name="TriggerId" type="xs:string" use="required"/>

</xs:extension>

</xs:simpleContent>

</xs:complexType>

<xs:complexType name="tEmptyTypeAttribute">

<xs:complexContent>

<xs:extension base="mcdataloc:tEmptyType">

<xs:attribute name="TriggerId" type="xs:string" use="required"/>

</xs:extension>

</xs:complexContent>

</xs:complexType>

<xs:complexType name="tTrackingAreaChangeType">

<xs:sequence>

<xs:element name="AnyTrackingAreaChange" type="mcdataloc:tEmptyTypeAttribute" minOccurs="0"/>

<xs:element name="EnterSpecificTrackingArea" type="mcdataloc:tTrackingAreaIdentity" minOccurs="0" maxOccurs="unbounded"/>

<xs:element name="ExitSpecificTrackingArea" type="mcdataloc:tTrackingAreaIdentity" minOccurs="0" maxOccurs="unbounded"/>

<xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

<xs:element name="anyExt" type="mcdataloc:anyExtType" minOccurs="0"/>

</xs:sequence>

<xs:anyAttribute namespace="##any" processContents="lax"/>

</xs:complexType>

<xs:simpleType name="tTrackingAreaIdentityFormat">

<xs:restriction base="xs:string">

<xs:pattern value="\d{3}\d{3}[0-1]{16}"/>

</xs:restriction>

</xs:simpleType>

<xs:complexType name="tTrackingAreaIdentity">

<xs:simpleContent>

<xs:extension base="mcdataloc:tTrackingAreaIdentityFormat">

<xs:attribute name="TriggerId" type="xs:string" use="required"/>

</xs:extension>

</xs:simpleContent>

</xs:complexType>

<xs:complexType name="tPlmnChangeType">

<xs:sequence>

<xs:element name="AnyPlmnChange" type="mcdataloc:tEmptyTypeAttribute" minOccurs="0"/>

<xs:element name="EnterSpecificPlmn" type="mcdataloc:tPlmnIdentity" minOccurs="0" maxOccurs="unbounded"/>

<xs:element name="ExitSpecificPlmn" type="mcdataloc:tPlmnIdentity" minOccurs="0" maxOccurs="unbounded"/>

<xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

<xs:element name="anyExt" type="mcdataloc:anyExtType" minOccurs="0"/>

</xs:sequence>

<xs:anyAttribute namespace="##any" processContents="lax"/>

</xs:complexType>

<xs:simpleType name="tPlmnIdentityFormat">

<xs:restriction base="xs:string">

<xs:pattern value="\d{3}\d{3}"/>

</xs:restriction>

</xs:simpleType>

<xs:complexType name="tPlmnIdentity">

<xs:simpleContent>

<xs:extension base="mcdataloc:tPlmnIdentityFormat">

<xs:attribute name="TriggerId" type="xs:string" use="required"/>

</xs:extension>

</xs:simpleContent>

</xs:complexType>

<xs:complexType name="tMbmsSaChangeType">

<xs:sequence>

<xs:element name="AnyMbmsSaChange" type="mcdataloc:tEmptyTypeAttribute" minOccurs="0"/>

<xs:element name="EnterSpecificMbmsSa" type="mcdataloc:tMbmsSaIdentity" minOccurs="0"/>

<xs:element name="ExitSpecificMbmsSa" type="mcdataloc:tMbmsSaIdentity" minOccurs="0"/>

<xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

<xs:element name="anyExt" type="mcdataloc:anyExtType" minOccurs="0"/>

</xs:sequence>

<xs:anyAttribute namespace="##any" processContents="lax"/>

</xs:complexType>

<xs:simpleType name="tMbmsSaIdentityFormat">

<xs:restriction base="xs:integer">

<xs:minInclusive value="0"/>

<xs:maxInclusive value="65535"/>

</xs:restriction>

</xs:simpleType>

<xs:complexType name="tMbmsSaIdentity">

<xs:simpleContent>

<xs:extension base="mcdataloc:tMbmsSaIdentityFormat">

<xs:attribute name="TriggerId" type="xs:string" use="required"/>

</xs:extension>

</xs:simpleContent>

</xs:complexType>

<xs:complexType name="tMbsfnAreaChangeType">

<xs:sequence>

<xs:element name="EnterSpecificMbsfnArea" type="mcdataloc:tMbsfnAreaIdentity" minOccurs="0"/>

<xs:element name="ExitSpecificMbsfnArea" type="mcdataloc:tMbsfnAreaIdentity" minOccurs="0"/>

<xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

<xs:element name="anyExt" type="mcdataloc:anyExtType" minOccurs="0"/>

</xs:sequence>

<xs:anyAttribute namespace="##any" processContents="lax"/>

</xs:complexType>

<xs:simpleType name="tMbsfnAreaIdentityFormat">

<xs:restriction base="xs:integer">

<xs:minInclusive value="0"/>

<xs:maxInclusive value="255"/>

</xs:restriction>

</xs:simpleType>

<xs:complexType name="tMbsfnAreaIdentity">

<xs:simpleContent>

<xs:extension base="mcdataloc:tMbsfnAreaIdentityFormat">

<xs:attribute name="TriggerId" type="xs:string" use="required"/>

</xs:extension>

</xs:simpleContent>

</xs:complexType>

<xs:complexType name="tIntegerAttributeType">

<xs:simpleContent>

<xs:extension base="xs:integer">

<xs:attribute name="TriggerId" type="xs:string" use="required"/>

</xs:extension>

</xs:simpleContent>

</xs:complexType>

<xs:complexType name="tTravelledDistanceType">

<xs:sequence>

<xs:element name="TravelledDistance" type="xs:positiveInteger"/>

<xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

<xs:element name="anyExt" type="mcdataloc:anyExtType" minOccurs="0"/>

</xs:sequence>

<xs:anyAttribute namespace="##any" processContents="lax"/>

</xs:complexType>

<xs:complexType name="tSignallingEventType">

<xs:sequence>

<xs:element name="InitialLogOn" type="mcdataloc:tEmptyTypeAttribute" minOccurs="0"/>

<xs:element name="GroupCallNonEmergency" type="mcdataloc:tEmptyTypeAttribute" minOccurs="0"/>

<xs:element name="PrivateCallNonEmergency" type="mcdataloc:tEmptyTypeAttribute" minOccurs="0"/>

<xs:element name="LocationConfigurationReceived" type="mcdataloc:tEmptyTypeAttribute" minOccurs="0"/>

<xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

<xs:element name="anyExt" type="mcdataloc:anyExtType" minOccurs="0"/>

</xs:sequence>

<xs:anyAttribute namespace="##any" processContents="lax"/>

</xs:complexType>

<xs:complexType name="tEmergencyEventType">

<xs:sequence>

<xs:element name="GroupCallEmergency" type="mcdataloc:tEmptyTypeAttribute" minOccurs="0"/>

<xs:element name="GroupCallImminentPeril" type="mcdataloc:tEmptyTypeAttribute" minOccurs="0"/>

<xs:element name="PrivateCallEmergency" type="mcdataloc:tEmptyTypeAttribute" minOccurs="0"/>

<xs:element name="InitiateEmergencyAlert" type="mcdataloc:tEmptyTypeAttribute" minOccurs="0"/>

<xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

<xs:element name="anyExt" type="mcdataloc:anyExtType" minOccurs="0"/>

</xs:sequence>

<xs:anyAttribute namespace="##any" processContents="lax"/>

</xs:complexType>

<xs:complexType name="tRequestedLocationType">

<xs:sequence>

<xs:element name="ServingEcgi" type="mcdataloc:tEmptyType" minOccurs="0"/>

<xs:element name="NeighbouringEcgi" type="mcdataloc:tEmptyType" minOccurs="0" maxOccurs="unbounded"/>

<xs:element name="MbmsSaId" type="mcdataloc:tEmptyType" minOccurs="0"/>

<xs:element name="MbsfnArea" type="mcdataloc:tEmptyType" minOccurs="0"/>

<xs:element name="GeographicalCoordinate" type="mcdataloc:tEmptyType" minOccurs="0"/>

<xs:element name="minimumIntervalLength" type="xs:positiveInteger"/>

<xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

<xs:element name="anyExt" type="mcdataloc:anyExtType" minOccurs="0"/>

</xs:sequence>

<xs:anyAttribute namespace="##any" processContents="lax"/>

</xs:complexType>

<xs:complexType name="tCurrentLocationType">

<xs:sequence>

<xs:element name="CurrentServingEcgi" type="mcdataloc:tLocationType" minOccurs="0"/>

<xs:element name="NeighbouringEcgi" type="mcdataloc:tLocationType" minOccurs="0" maxOccurs="unbounded"/>

<xs:element name="MbmsSaId" type="mcdataloc:tLocationType" minOccurs="0"/>

<xs:element name="MbsfnArea" type="mcdataloc:tLocationType" minOccurs="0"/>

<xs:element name="CurrentCoordinate" type="mcdataloc:tPointCoordinate" minOccurs="0"/>

<xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

<xs:element name="anyExt" type="mcdataloc:anyExtType" minOccurs="0"/>

</xs:sequence>

<xs:anyAttribute namespace="##any" processContents="lax"/>

</xs:complexType>

<!-- anyExt elements for "tCurrentLocationType" -->

<xs:element name="locTimestamp" type="xs:dateTime"/>

<xs:element name="InterRatType" type="mcdataloc:tInterRatType"/>

<xs:simpleType name="tInterRatType">

<xs:restriction base="xs:string">

<xs:enumeration value="5G-MBS-to-LTE-MBMS"/>

<xs:enumeration value="5G-MBS-to-LTE-unicast"/>

<xs:enumeration value="LTE-MBMS-to-5G-MBS"/>

<xs:enumeration value="LTE-MBMS-to-5G-unicast"/> </xs:restriction>

</xs:simpleType>

<xs:simpleType name="protectionType">

<xs:restriction base="xs:string">

<xs:enumeration value="Normal"/>

<xs:enumeration value="Encrypted"/>

</xs:restriction>

</xs:simpleType>

<xs:complexType name="tLocationType">

<xs:choice minOccurs="1" maxOccurs="1">

<xs:element name="Ecgi" type="mcdataloc:tEcgi" minOccurs="0"/>

<xs:element name="SaId" type="mcdataloc:tMbmsSaIdentity" minOccurs="0"/>

<xs:element name="MbsfnAreaId" type="mcdataloc:tMbsfnAreaIdentity" minOccurs="0"/>

<xs:any namespace="##other" processContents="lax"/>

<xs:element name="anyExt" type="mcdataloc:anyExtType" minOccurs="0"/>

</xs:choice>

<xs:attribute name="type" type="mcdataloc:protectionType"/>

<xs:anyAttribute namespace="##any" processContents="lax"/>

</xs:complexType>

<xs:complexType name="tGeographicalAreaChange">

<xs:sequence>

<xs:element name="AnyAreaChange" type="mcdataloc:tEmptyTypeAttribute" minOccurs="0"/>

<xs:element name="EnterSpecificAreaType" type="mcdataloc:tSpecificAreaType" minOccurs="0"/>

<xs:element name="ExitSpecificAreaType" type="mcdataloc:tSpecificAreaType" minOccurs="0"/>

<xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

<xs:element name="anyExt" type="mcdataloc:anyExtType" minOccurs="0"/>

</xs:sequence>

<xs:anyAttribute namespace="##any" processContents="lax"/>

</xs:complexType>

<xs:complexType name="tSpecificAreaType">

<xs:sequence>

<xs:element name="GeographicalArea" type="mcdataloc:tGeographicalAreaDef"/>

<xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

<xs:element name="anyExt" type="mcdataloc:anyExtType" minOccurs="0"/>

</xs:sequence>

<xs:attribute name="TriggerId" type="xs:string" use="required"/>

<xs:anyAttribute namespace="##any" processContents="lax"/>

</xs:complexType>

<xs:complexType name="tRatTypeChange">

<xs:sequence>

<xs:element name="AnyRatTypeChange" type="MCdataloc:tEmptyTypeAttribute" minOccurs="0"/>

<xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

<xs:element name="anyExt" type="MCdataloc:anyExtType" minOccurs="0"/>

</xs:sequence>

<xs:anyAttribute namespace="##any" processContents="lax"/>

</xs:complexType>

<xs:complexType name="tPointCoordinate">

<xs:sequence>

<xs:element name="longitude" type="mcdataloc:tCoordinateType"/>

<xs:element name="latitude" type="mcdataloc:tCoordinateType"/>

<xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

<xs:element name="anyExt" type="mcdataloc:anyExtType" minOccurs="0"/>

</xs:sequence>

<xs:anyAttribute namespace="##any" processContents="lax"/>

</xs:complexType>

<!-- anyExt elements for "tPointCoordinate" -->

<xs:element name="altitude" type="mcdataloc:tCoordinateType2Bytes"/>

<xs:element name="horizontalaccuracy" type="mcdataloc:tCoordinateType1Byte"/>

<xs:element name="verticalaccuracy" type="mcdataloc:tCoordinateType1Byte"/>

<xs:complexType name="tCoordinateType">

<xs:choice minOccurs="1" maxOccurs="1">

<xs:element name="threebytes" type="mcdataloc:tThreeByteType" minOccurs="0"/>

<xs:any namespace="##other" processContents="lax"/>

<xs:element name="anyExt" type="mcdataloc:anyExtType" minOccurs="0"/>

</xs:choice>

<xs:attribute name="type" type="mcdataloc:protectionType"/>

<xs:anyAttribute namespace="##any" processContents="lax"/>

</xs:complexType>

<xs:complexType name="tCoordinateType2Bytes">

<xs:choice minOccurs="1" maxOccurs="1">

<xs:element name="twobytes" type="mcdataloc:tTwoByteType" minOccurs="0"/>

<xs:any namespace="##other" processContents="lax"/>

<xs:element name="anyExt" type="mcdataloc:anyExtType" minOccurs="0"/>

</xs:choice>

<xs:attribute name="type" type="mcdataloc:protectionType"/>

<xs:anyAttribute namespace="##any" processContents="lax"/>

</xs:complexType>

<xs:complexType name="tCoordinateType1Byte">

<xs:choice minOccurs="1" maxOccurs="1">

<xs:element name="onebyteunsignedhalfrange" type="mcdataloc:tOneByteUnsignedHalfRangeType" minOccurs="0"/>

<xs:any namespace="##other" processContents="lax"/>

<xs:element name="anyExt" type="mcdataloc:anyExtType" minOccurs="0"/>

</xs:choice>

<xs:attribute name="type" type="mcdataloc:protectionType"/>

<xs:anyAttribute namespace="##any" processContents="lax"/>

</xs:complexType>

<xs:simpleType name="tThreeByteType">

<xs:restriction base="xs:integer">

<xs:minInclusive value="0"/>

<xs:maxInclusive value="16777215"/>

</xs:restriction>

</xs:simpleType>

<xs:simpleType name="tTwoByteType">

<xs:restriction base="xs:integer">

<xs:minInclusive value="-32768"/>

<xs:maxInclusive value="32767"/>

</xs:restriction>

</xs:simpleType>

<xs:simpleType name="tOneByteUnsignedHalfRangeType">

<xs:restriction base="xs:integer">

<xs:minInclusive value="0"/>

<xs:maxInclusive value="127"/>

</xs:restriction>

</xs:simpleType>

<xs:complexType name="tGeographicalAreaDef">

<xs:sequence>

<xs:element name="PolygonArea" type="mcdataloc:tPolygonAreaType" minOccurs="0"/>

<xs:element name="EllipsoidArcArea" type="mcdataloc:tEllipsoidArcType" minOccurs="0"/>

<xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

<xs:element name="anyExt" type="mcdataloc:anyExtType" minOccurs="0"/>

</xs:sequence>

<xs:anyAttribute namespace="##any" processContents="lax"/>

</xs:complexType>

<xs:complexType name="tPolygonAreaType">

<xs:sequence>

<xs:element name="Corner" type="mcdataloc:tPointCoordinate" minOccurs="3" maxOccurs="15"/>

<xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

<xs:element name="anyExt" type="mcdataloc:anyExtType" minOccurs="0"/>

</xs:sequence>

<xs:anyAttribute namespace="##any" processContents="lax"/>

</xs:complexType>

<xs:complexType name="tEllipsoidArcType">

<xs:sequence>

<xs:element name="Center" type="mcdataloc:tPointCoordinate"/>

<xs:element name="Radius" type="xs:nonNegativeInteger"/>

<xs:element name="OffsetAngle" type="xs:unsignedByte"/>

<xs:element name="IncludedAngle" type="xs:unsignedByte"/>

<xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

<xs:element name="anyExt" type="mcdataloc:anyExtType" minOccurs="0"/>

</xs:sequence>

<xs:anyAttribute namespace="##any" processContents="lax"/>

</xs:complexType>

<xs:complexType name="anyExtType">

<xs:sequence>

<xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

</xs:sequence>

</xs:complexType>

<!-- anyEXT elements for the Configuration element – begin -->

<xs:element name="EmergencyTriggeringCriteria" type="mcdataloc:TriggeringCriteriaType"/>

<!-- anyEXT elements for the Configuration element – end -->

</xs:schema>

## D.4.3 Semantic

The <location-info> element is the root element of the XML document. The <location-info> element contains the <Configuration>, <Request> and <Report> subelements, of which only one can be present.

<Configuration> element has a <ConfigScope> attribute that can assume the values "Full" and "Update". The value "Full" means that the Configuration> element contains the full location configuration which replaces any previous location configuration. The value "Update" means that the location configuration is in addition to any previous location configuration. To remove configuration elements a "Full" configuration is needed. The <Configuration> element contains the following child elements:

1) <NonEmergencyLocationInformation>, an optional element that specifies the location information requested in non-emergency situations. The <NonEmergencyLocationInformation> has the subelements:

a) <ServingEcgi>, an optional element specifying that the serving E-UTRAN Cell Global Identity (ECGI) needs to be reported;

b) <NeighbouringEcgi>, an optional element that can occur multiple times, specifying that neighbouring ECGIs need to be reported;

c) <MbmsSaId>, an optional element specifying that the serving MBMS Service Area Id needs to be reported;

d) <MbsfnArea>, an optional element specifying that the MBSFN area Id needs to be reported;

e) <GeographicalCoordinate>, an optional element specifying that the geographical coordinate specified in clause 6.1 in 3GPP TS 23.032 [47] needs to be reported; and

f) <minimumIntervalLength>, a mandatory element specifying the minimum time the MCData client needs to wait between sending location reports. The value is given in seconds;

2) <EmergencyLocationInformation>, an optional element that specifies the location information requested in emergency situations. The <EmergencyLocationInformation> has the subelements:

a) <ServingEcgi>, an optional element specifying that the serving ECGI needs to be reported;

b) <NeighbouringEcgi>, an optional element that can occur multiple times, specifying that neighbouring ECGIs need to be reported;

c) <MbmsSaId>, an optional element specifying that the serving MBMS Service Area Id needs to be reported;

d) <MbsfnArea>, an optional element specifying that the MBSFN area Id needs to be reported;

e) <GeographicalCoordinate>, an optional element specifying that the geographical coordinate specified in clause 6.1 in 3GPP TS 23.032 [47] needs to be reported; and

f) <minimumIntervalLength>, a mandatory element specifying the minimum time the MCData client needs to wait between sending location reports. The value is given in seconds;

3) <TriggeringCriteria>, a mandatory element specifying the triggers for the MCData client to perform reporting in non emergency status. The <TriggeringCriteria> element contains the following sub-elements:

a) <CellChange>, an optional element specifying what cell changes trigger location reporting. Consists of the following sub-elements:

I) <AnyCellChange>, an optional element. The presence of this element specifies that any cell change is a trigger. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

II) <EnterSpecificCell>, an optional element specifying an ECGI which when entered triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string; and

III) <ExitSpecificCell>, an optional element specifying an ECGI which when exited triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

b) <TrackingAreaChange>, an optional element specifying what tracking area changes trigger location reporting. Consists of the following sub-elements:

I) <AnyTrackingAreaChange>, an optional element. The presence of this element specifies that any tracking area change is a trigger. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

II) <EnterSpecificTrackingArea>, an optional element specifying a Tracking Area Id which when entered triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string; and

III) <ExitSpecificTrackingArea>, an optional element specifying a Tracking Area Id which when exited triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

c) <PlmnChange>, an optional element specifying what PLMN changes trigger location reporting. Consists of the following sub-elements:

I) <AnyPlmnChange>, an optional element. The presence of this element specifies that any PLMN change is a trigger. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

II) <EnterSpecificPlmn>, an optional element specifying a PLMN Id which when entered triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string; and

III) <ExitSpecificPlmn>, an optional element specifying a PLMN Id which when exited triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

d) <MbmsSaChange>, an optional element specifying what MBMS changes trigger location reporting. Consists of the following sub-elements:

I) <AnyMbmsSaChange>, an optional element. The presence of this element specifies that any MBMS SA change is a trigger. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

II) <EnterSpecificMbmsSa>, an optional element specifying an MBMS Service Area Id which when entered triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string; and

III) <ExitSpecificMbmsSa>, an optional element specifying an MBMS Service Area Id which when exited triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

e) <MbsfnAreaChange>, an optional element specifying what MBSFN changes trigger location reporting. Consists of the following sub-elements:

I) <AnyMbsfnAreaChange>, an optional element. The presence of this element specifies that any MBSFN area change is a trigger. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

II) <EnterSpecificMbsfnArea>, an optional element specifying an MBSFN area which when entered triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string; and

III) <ExitSpecificMbsfnArea>, an optional element specifying an MBSFN area which when exited triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

f) <PeriodicReport>, an optional element specifying that periodic location reports shall be sent. The value in seconds specifies the reporting interval. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

g) <TravelledDistance>, an optional element specifying that the travelled distance shall trigger a report. The value in metres specified the travelled distance. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

h) <McdataSignallingEvent>, an optional element specifying what signalling events triggers a location report. The <McdataSignallingEvent> element has the following sub-elements:

I) <InitialLogOn>, an optional element specifying that an initial log on triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

II) <GroupCallNonEmergency>, an optional element specifying that a non-emergency group call triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

III) <PrivateCallNonEmergency>, an optional element specifying that a non-emergency private call triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string; and

IV) <LocationConfigurationReceived>, an optional element specifying that a received location configuration triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string; and

i) <GeographicalAreaChange>, an optional element specifying what geographical area changes trigger location reporting. Consists of the following sub-elements:

I) <AnyAreaChange>, an optional element. The presence of this element specifies that any geographical area change is a trigger. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

II) <EnterSpecificArea>, an optional element specifying a geographical area which when entered triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string. The <EnterSpecificArea> element has the following sub-elements:

A) <GeographicalArea>, an optional element containing a <TriggerId> attribute and the following two subelements:

x1) <PolygonArea>, an optional element specifying the area as a polygon specified in clause 5.2 in 3GPP TS 23.032 [47]; and

x2) <EllipsoidArcArea>, an optional element specifying the area as an Ellipsoid Arc specified in clause 5.7 in 3GPP TS 23.032 [47]; and

III) <ExitSpecificAreaType>, an optional element specifying a geographical area which when exited triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string; and

j) <RatTypeChange>, an optional element specifying what inter-RAT changes trigger location reporting. Consists of the following sub-elements:

I) <AnyRatTypeChange>, an optional element. The presence of this element specifies that the inter-system RAT changes is a trigger. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

4) the <anyExt> shall be included with the following element not declared in the XML schema:

a) <EmergencyTriggeringCriteria>, a mandatory element specifying the triggers for the MCData client to perform reporting in emergency status. The <TriggeringCriteria> element contains the following sub-elements:

I) <CellChange>, an optional element specifying what cell changes trigger location reporting. Consists of the following sub-elements:

A) <AnyCellChange>, an optional element. The presence of this element specifies that any cell change is a trigger. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

B) <EnterSpecificCell>, an optional element specifying an ECGI which when entered triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string; and

C) <ExitSpecificCell>, an optional element specifying an ECGI which when exited triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

II) <TrackingAreaChange>, an optional element specifying what tracking area changes trigger location reporting. Consists of the following sub-elements:

A) <AnyTrackingAreaChange>, an optional element. The presence of this element specifies that any tracking area change is a trigger. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

B) <EnterSpecificTrackingArea>, an optional element specifying a Tracking Area Id which when entered triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string; and

C) <ExitSpecificTrackingArea>, an optional element specifying a Tracking Area Id which when exited triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

III) <PlmnChange>, an optional element specifying what PLMN changes trigger location reporting. Consists of the following sub-elements:

A) <AnyPlmnChange>, an optional element. The presence of this element specifies that any PLMN change is a trigger. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

B) <EnterSpecificPlmn>, an optional element specifying a PLMN Id which when entered triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string; and

C) <ExitSpecificPlmn>, an optional element specifying a PLMN Id which when exited triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

IV) <MbmsSaChange>, an optional element specifying what MBMS changes trigger location reporting. Consists of the following sub-elements:

A) <AnyMbmsSaChange>, an optional element. The presence of this element specifies that any MBMS SA change is a trigger. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

B) <EnterSpecificMbmsSa>, an optional element specifying an MBMS Service Area Id which when entered triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string; and

C <ExitSpecificMbmsSa>, an optional element specifying an MBMS Service Area Id which when exited triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

V) <MbsfnAreaChange>, an optional element specifying what MBSFN changes trigger location reporting. Consists of the following sub-elements:

A) <AnyMbsfnAreaChange>, an optional element. The presence of this element specifies that any MBSFN area change is a trigger. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

B) <EnterSpecificMbsfnArea>, an optional element specifying an MBSFN area which when entered triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string; and

C) <ExitSpecificMbsfnArea>, an optional element specifying an MBSFN area which when exited triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

VI) <PeriodicReport>, an optional element specifying that periodic location reports shall be sent. The value in seconds specifies the reporting interval. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

VII) <TravelledDistance>, an optional element specifying that the travelled distance shall trigger a report. The value in metres specified the travelled distance. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

VIII) <McdataSignallingEvent>, an optional element specifying what signalling events triggers a location report. The <McdataSignallingEvent> element has the following sub-elements:

A) <InitialLogOn>, an optional element specifying that an initial log on triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

B) <GroupCallNonEmergency>, an optional element specifying that a non-emergency group call triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

C) <PrivateCallNonEmergency>, an optional element specifying that a non-emergency private call triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string; and

D) <LocationConfigurationReceived>, an optional element specifying that a received location configuration triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string; and

IX) <GeographicalAreaChange>, an optional element specifying what geographical area changes trigger location reporting. Consists of the following sub-elements:

A) <AnyAreaChange>, an optional element. The presence of this element specifies that any geographical area change is a trigger. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

B) <EnterSpecificArea>, an optional element specifying a geographical area which when entered triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string. The <EnterSpecificArea> element has the following sub-elements:

x1) <GeographicalArea>, an optional element containing a <TriggerId> attribute and the following two subelements:

i1) <PolygonArea>, an optional element specifying the area as a polygon specified in clause 5.2 in 3GPP TS 23.032 [47]; and

i2) <EllipsoidArcArea>, an optional element specifying the area as an Ellipsoid Arc specified in clause 5.7 in 3GPP TS 23.032 [47]; and

C) <ExitSpecificAreaType>, an optional element specifying a geographical area which when exited triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string.

<Request> is an element with a <RequestId> attribute. The <Request> element is used to request a location report. The value of the <RequestId> attribute is returned in the corresponding <ReportId> attribute in order to correlate the request and the report.

<Report> is an element used to include the location report. It contains a <ReportId> attribute and a <ReportType> attribute. The <ReportId> attribute is used to return the value in the <RequestId> attribute in the <Request> element. The <ReportType> attribute has two values "Emergency" and "NonEmergency" used to inform whether the client is sending the report in an emergency situation or not. The <Report> element contains the following sub-elements:

1) <TriggerId>, an optional element which can occur multiple times that contain the value of the <TriggerId> attribute associated with a trigger that has fired; and

2) <CurrentLocation>, a mandatory element that contains the location information. The <CurrentLocation> element contains the following sub-elements:

a) <CurrentServingEcgi>, an optional element containing the ECGI of the serving cell;

b) <NeighbouringEcgi>, an optional element that can occur multiple times. It contains the ECGI of any neighbouring cell the MCData client can detect;

c) <MbmsSaId>, an optional element containing the MBMS Service Area Id the MCData client is using;

d) <MbsfnArea>, an optional element containing the MBSFN area the MCData is located in;

e) <CurrentCoordinate>, an optional element containing:

i) the longitude and latitude coded as in clause 6.1 in 3GPP TS 23.032 [47]; and

ii) an optional <anyExt> element containing:

A) an <altitude> element coded as in clause 6.3 in 3GPP TS 23.032 [47];

B) an optional <horizontalaccuracy> element where the <onebyteunsignedhalfrange> subelement is coded as in clause 6.2 in 3GPP TS 23.032 [47], which describes the uncertainty for latitude and longitude; and

C) an optional <verticalaccuracy> element where the <onebyteunsignedhalfrange> subelement is coded as in clause 6.2 in 3GPP TS 23.032 [47], which describes the uncertainty for altitude; and

f) <anyExt>, an optional element containing:

i) an optional <locTimestamp> element containing the date and time the location measurement was made.

ii) an optional <InterRatType> element containing the inter-RAT change type. The <InterRatType> element set to:

A) "5G-MBS-to-LTE-MBMS" when the inter-system switching from 5G MBS session to LTE MBMS bearer;

B) "5G-MBS-to-LTE-unicast" when the inter-system switching from 5G MBS session to LTE unicast bearer;

C) "LTE-MBMS-to-5G-MBS" when the inter-system switching from LTE MBMS to 5G MBS session; or

D) "LTE-MBMS-to-5G-unicast" when the inter-system switching from LTE MBMS to 5G unicast PDU session;The contents of the subelements in the <CurrentLocation> subelement of the <Report> element can be encrypted. The following rules are applied when any of these elements are included:

1) if confidentiality protection is not required, then:

a) the "type" attributes associated with the <CurrentServingEcgi>, <NeighbouringEcgi>, <MbmsSaId>, and <MbsfnArea> elements of the <Report> element have the value "Normal" and

ii) the <Ecgi> subelement of the <CurrentServingEcgi> element contains the unencrypted value of the ECGI of the serving cell;

iii) the <Ecgi> subelement of the <NeighbouringEcgi> element contains the unencrypted value of the ECGI of any neighbouring cell;

iv) the <SaId> subelement of the <MbmsSaId> element contains the unencrypted value of the MBMS Service Area Id the MCData client is using; and

v) the <MbsfnAreaId> subelement of the <MbsfnArea>, element contains the unencrypted value of the MBSFN area the MCData is located in; and

b) the "type" attributes associated with the <longitude>, <latitude>, <altitude>, <horizontalaccuracy>, and <verticalaccuracy> subelements of the <CurrentCoordinate> element have the value "Normal" and the <three-bytes> subelements of <longitude> and <latitude> subelements, the <twobytes> subelement of the <altitude> subelement, the <onebyteunsignedhalfrange> subelement of the <horizontalaccuracy>, and the <onebyteunsignedhalfrange> subelement of the <verticalaccuracy> subelement contain the unencrypted value of longitude, latitude, altitude, horizontalaccuracy, and verticalaccuracy respectively; and

2) if confidentiality protection is required, then:

a) the "type" attributes associated with the <CurrentServingEcgi>, <NeighbouringEcgi>, <MbmsSaId>, and <MbsfnArea> elements have the value "Encrypted";

b) the "type" attributes associated with the <longitude>, <latitude>, <altitude>, <horizontalaccuracy>, and <verticalaccuracy> subelements of the <CurrentCoordinate> element have the value "Encrypted"; and

c) for each of the elements described in 2a) and subelements described in 2b) above, the <xenc:EncryptedData> element from the "[http://www.w3.org/2001/04/xmlenc#](http://www.w3.org/2001/04/xmlenc)" namespace is included and:

i) can have a "Type" attribute can be included with a value of "<http://www.w3.org/2001/04/xmlenc#Content>";

ii) can include an <EncryptionMethod> element with the "Algorithm" attribute set to value of "http://www.w3.org/2009/xmlenc11#aes128-gcm";

iii) can include a <KeyInfo> element with a <KeyName> element containing the base 64 encoded XPK-ID; and

iv) includes a <CipherData> element with a <CipherValue> element containing the encrypted data.

NOTE: When the optional attributes and elements are not included within the <xenc:EncryptedData> element, the information they contain is known to sender and the receiver by other means.

The recipient of the XML ignores any unknown element and any unknown attribute.

\* \* \* End Change\* \* \*