3GPP TSG CN Plenary Meeting #23 **NP-040059**
10th – 12th March 2004 Phoenix, USA.

Source: TSG CN WG4

Title: Corrections on Location Service Enhancements

Agenda item: 9.19

Document for: APPROVAL

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
29.002	724		N4-040182	Rel-6	Removal of R-GMLC Address	F	6.4.0
24.030	015		N4-040197	Rel-6	Removal of R-GMLC Address	F	6.0.0
24.080	034		N4-040198	Rel-6	Removal of R-GMLC Address	F	6.0.0
24.080	033	1	N4-040320	Rel-6	MO-LR Service Identity support	B	6.0.0
24.030	016		N4-040321	Rel-6	MO-LR Service Identity support	B	6.0.0
29.002	725	1	N4-040322	Rel-6	MO-LR Service Identity support	B	6.4.0

3GPP TSG CN WG4 Meeting #22
Atlanta, USA, 16th – 20st February 2003

N4-040182

CR-Form-v7

CHANGE REQUEST

⌘ **29.002** **CR** **724** ⌘ **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:	⌘	Removal of R-GMLC Address
Source:	⌘	CN4
Work item code:	⌘	LCS2
Date:	⌘	06/02/2004
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:	⌘	After the last CN4 meeting it was noticed that SA2 had removed the requirement to send the R-GMLC address during MT-LR procedure for an area event reporting. This change has been approved to the 23.172 specification in SA #22 plenary (12/2003). Also in SA #22 it was approved to the 23.172 that H-GMLC address should be added for a UE available event.
Summary of change:	⌘	R-GMLC Address parameter has been removed. Description of H-GMLC Address changed so that it can be sent also during MT-LR procedure for a UE available event.
Consequences if not approved:	⌘	Misalignment between stage 2 and stage 3.

Clauses affected:	⌘	7.6.2.60, 13A.2, 13A.3

Other specs affected:	⌘	Y	N		⌘	
		X		Other core specifications		24.030 CR 015, 24.080 CR 034
			X	Test specifications		
			X	O&M Specifications		

Other comments:	⌘	

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

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

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

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

7.6.2.60 ~~R-GMLC Address~~Void

~~This parameter refers to the IP address of a R-GMLC.~~

****** NEXT MODIFIED SECTION ******

13A.2 MAP-PROVIDE-SUBSCRIBER-LOCATION Service

13A.2.1 Definition

This service is used by a GMLC to request the location of a target MS from the visited MSC or SGSN at any time. This is a confirmed service using the primitives from table 13A.2/1.

13A.2.2 Service Primitives

Table 13A.2/1: Provide_Subscriber_Location

Parameter name	Request	Indication	Response	Confirm
Invoke id	M	M(=)	M(=)	M(=)
Location Type	M	M(=)		
MLC Number	M	M(=)		
LCS Client ID	M	M(=)		
Privacy Override	U	C(=)		
IMSI	C	C(=)		
MSISDN	C	C(=)		
LMSI	C	C(=)		
LCS Priority	C	C(=)		
LCS QoS	C	C(=)		
IMEI	U	C(=)		
Supported GAD Shapes	C	C(=)		
LCS-Reference Number	C	C(=)		
LCS Codeword	C	C(=)		
LCS Service Type Id	C	C(=)		
LCS Privacy Check	C	C(=)		
Area Event Info	C	C(=)		
H-GMLC Address	C	C(=)		
~~R-GMLC Address~~	~~C~~	~~C(=)~~		
Location Estimate			M	M(=)
Positioning Data			C	C(=)
Age of Location Estimate			C	C(=)
Additional Location Estimate			C	C(=)
Deferred MT-LR Response Indicator			C	C(=)
Cell Id Or SAI			C	C(=)

User error			C	C(=)
Provider error				O

13A.2.3 Parameter Definition and Use

All parameters are defined in clause 7.6. The use of these parameters and the requirements for their presence are specified in. 3GPP TS 23.271

Location Type

This parameter identifies the type of location information requested.

MLC Number

This is the E.164 number of the requesting GMLC.

LCS Client ID

This parameter provides information related to the identity of an LCS client.

Privacy Override

This parameter indicates if MS privacy is overridden by the LCS client when the GMLC and VMSC or SGSN for an MT-LR are in the same country.

IMSI

The IMSI is provided to identify the target MS. At least one of the IMSI or MSISDN is mandatory.

MSISDN

The MSISDN is provided to identify the target MS. At least one of the IMSI or MSISDN is mandatory.

LMSI

The LMSI shall be provided if previously supplied by the HLR. This parameter is only used in the case of the MT-LR for CS domain.

LCS Priority

This parameter indicates the priority of the location request.

LCS QoS

This parameter indicates the required quality of service in terms of response time and accuracy.

IMEI

Inclusion of the IMEI is optional.

Supported GAD Shapes

This parameter indicates which of the shapes defined in 3GPP TS 23.032 [122] are supported.

LCS-Reference Number

This parameter shall be included if a deferred MT-LR procedure is performed for a UE available event or an area event.

LCS Codeword

See definition in clause 7.6.11.18. The requirements for its presence are specified in 3GPP TS 23.271 [26a].

LCS Service Type Id

See definition in clause 7.6.11.15. The requirements for its presence are specified in 3GPP TS 23.271 [26a].

LCS Privacy Check

See definition in clause 7.6.11. The requirements for its and its components presence are specified in 3GPP TS 23.271 [26a].

Area Event Info

See definition in clause 7.6.11. The parameter shall be included if a deferred MT-LR procedure is performed for an area event.

H-GMLC address

See definition in clause 7.6.2. The parameter shall be included if a deferred MT-LR procedure is performed for a UE available event or an area event.

~~R-GMLC address~~

~~See definition in clause 7.6.2. The parameter shall be included if a deferred MT-LR procedure is performed for an area event and the R-GMLC is not the H-GMLC.~~

Location Estimate

This parameter provides the location estimate if this is encoded in one of the supported geographical shapes. Otherwise this parameter shall consist of one octet, which shall be discarded by the receiving node.

Positioning Data

This parameter indicates the usage of each positioning method that was attempted to determine the location estimate either successfully or unsuccessfully. If Positioning Data received from the RAN contains no Positioning Methods, Positioning Data is excluded from the MAP message.

Age of Location Estimate

This parameter indicates how long ago the location estimate was obtained.

Additional Location Estimate

This parameter provides the location estimate when not provided by the Location Estimate parameter. It may be sent only if the parameter Supported GAD Shapes has been received in the Provide Subscriber Location indication and the shape to be included is supported by the GMLC.

Deferred MT-LR Response Indicator

See definition in clause 7.6.11.2.

Cell Id Or SAI

For GERAN access, this parameter indicates Global Cell Identifier of the cell that the served subscriber is currently attached to. For UTRAN access, this parameter contains the Service Area Identifier for the cell that the subscriber is currently attached to. This parameter is included only for North American Emergency Calls as described in 3GPP TS 23.271 [26a].

User error

This parameter is sent by the responder when the location request has failed or cannot proceed and if present, takes one of the following values defined in clause 7.6.1.

- System Failure;
- Data Missing;
- Unexpected Data Value;
- Facility Not Supported;
- Unidentified Subscriber;

- Illegal Subscriber;
- Illegal Equipment;
- Absent Subscriber (diagnostic information may also be provided);
- Unauthorised requesting network;
- Unauthorised LCS Client with detailed reason;
- Position method failure with detailed reason.

Provider error

These are defined in clause 7.6.1.

****** NEXT MODIFIED SECTION ******

13A.3 MAP-SUBSCRIBER-LOCATION-REPORT Service

13A.3.1 Definition

This service is used by a VMSC or SGSN to provide the location of a target MS to a GMLC when a request for location is either implicitly administered or made at some earlier time. This is a confirmed service using the primitives from table 13A.3/1.

13A.3.2 Service Primitives

Table 13A.3/1: Subscriber_Location_Report

Parameter name	Request	Indication	Response	Confirm
Invoke id	M	M(=)	M(=)	M(=)
LCS Event	M	M(=)		
LCS Client ID	M	M(=)		
Network Node Number	M	M(=)		
IMSI	C	C(=)		
MSISDN	C	C(=)		
NA-ESRD	C	C(=)		
NA-ESRK	C	C(=)	C	C(=)
IMEI	U	C(=)		
Location Estimate	C	C(=)		
Positioning Data	C	C(=)		
Age of Location Estimate	C	C(=)		
LMSI	U	C(=)		
GPRS Node Indicator	C	C(=)		
Additional Location Estimate	C	C(=)		
Deferred MT-LR Data	C	C(=)		
LCS-Reference Number	C	C(=)		
NA-ESRK Request	C	C(=)		
Cell Id Or SAI	C	C(=)		
H-GMLC Address	C	C(=)		
~~R-GMLC Address~~	~~C~~	~~C(=)~~		
User error			C	C(=)
Provider error				O

13A.3.3 Parameter Definition and Use

All parameters are defined in clause 7.6. The use of these parameters and the requirements for their presence are specified in. 3GPP TS 23.271 [26a].

LCS Event

This parameter indicates the event that triggered the Subscriber Location Report.

LCS Client ID

This parameter provides information related to the identity of the recipient LCS client.

Network Node Number

See definition in clause 7.6.2. This parameter provides the address of the sending node.

IMSI

The IMSI shall be provided if available to the VMSC or SGSN.

MSISDN

The MSISDN shall be provided if available to the VMSC or SGSN.

NA-ESRD

If the target MS has originated an emergency service call in North America, the NA-ESRD shall be provided by the VMSC if available.

NA-ESRK

If the target MS has originated an emergency service call in North America, the NA-ESRK shall be provided by the VMSC if assigned.

If the target MS has originated an emergency service call in North America and NA-ESRK Request is included in Subscriber_Location_Report-Arg, NA-ESRK may also be included in the response to the MSC, see 3GPP TS 23.271 [26a].

IMEI

Inclusion of the IMEI is optional.

Location Estimate

This parameter provides the location estimate. The absence of this parameter implies that a location estimate was not available or could not be successfully obtained. If the obtained location estimate is not encoded in one of the supported geographical shapes then this parameter shall consist of one octet, which shall be discarded by the receiving node.

Positioning Data

This parameter indicates the usage of each positioning method that was attempted to determine the location estimate either successfully or unsuccessfully. If Positioning Data received from the RAN contains no Positioning Methods, Positioning Data is excluded from the MAP message.

Age of Location Estimate

This parameter indicates how long ago the location estimate was obtained.

LMSI

The LMSI may be provided if assigned by the VLR.

GPRS Node Indicator

See definition in clause 7.6.8. This presence of this parameter is mandatory only if the SGSN number is sent in the Network Node Number.

Additional Location Estimate

This parameter provides the location estimate when not provided by the Location Estimate parameter..

Deferred MT-LR Data

See definition in clause 7.6.11.3.

LCS-Reference Number

This parameter shall be included if the Subscriber Location Report is the response to a deferred MT location request.

NA-ESRK Request

If the target MS has originated an emergency service call in North America, NA-ESRK Request may be included to indicate that the MSC is able to accept NA-ESRK in the Response message, see section 7.6.11.19.

Cell Id Or SAI

For GERAN access, this parameter indicates Global Cell Identifier of the cell that the served subscriber is currently attached to. For UTRAN access, this parameter contains the Service Area Identifier for the cell that the subscriber is currently attached to. This parameter is included only for North American Emergency Calls as described in 3GPP TS 23.271 [26a].

H-GMLC address

See definition in clause 7.6.2. The parameter shall be included if the Subscriber Location Report is the response to a deferred MT location request for a UE available event or an area event.

~~R-GMLC address~~

~~See definition in clause 7.6.2. The parameter shall be included if the parameter was received from the UE and if the Subscriber Location Report is the response to a deferred MT location request for an area event.~~

User error

This parameter is sent by the responder when the received message contains an error, cannot be forwarded or stored for an LCS client or cannot be accepted for some other reason and if present, takes one of the following values defined in clause 7.6.1.

- System Failure;
- Data Missing;
- Unexpected Data Value;
- Resource Limitation;
- Unknown Subscriber;
- Unauthorised requesting network;
- Unknown or unreachable LCS Client.

Provider error

These are defined in clause 7.6.1.

****** NEXT MODIFIED SECTION ******

17.7.13 Location service data types

```
MAP-LCS-DataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-LCS-DataTypes (25) version9 (9)}

DEFINITIONS
IMPLICIT TAGS
::=
BEGIN

EXPORTS
   RoutingInfoForLCS-Arg,
   RoutingInfoForLCS-Res,
   ProvideSubscriberLocation-Arg,
   ProvideSubscriberLocation-Res,
   SubscriberLocationReport-Arg,
   SubscriberLocationReport-Res,
   LocationType,
   DeferredLocationEventType,
   LCSClientName,
   LCS-QoS,
   Horizontal-Accuracy,
   ResponseTime,
   Ext-GeographicalInformation,
   SupportedGADShapes,
   Add-GeographicalInformation,
   LCSRequestorID,
   LCS-ReferenceNumber,
   LCSCodeword,
   AreaEventInfo
;

IMPORTS
   AddressString,
   ISDN-AddressString,
   IMEI,
   IMSI,
   LMSI,
   SubscriberIdentity,
   AgeOfLocationInformation,
   LCSClientExternalID,
   LCSClientInternalID,
   LCSServiceTypeID,
   CellGlobalIdOrServiceAreaIdOrLAI
FROM MAP-CommonDataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-CommonDataTypes (18) version9 (9)}

   ExtensionContainer
FROM MAP-ExtensionDataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-ExtensionDataTypes (21) version9 (9)}

   USSD-DataCodingScheme,
   USSD-String
FROM MAP-SS-DataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1) modules (3)
   map-SS-DataTypes (14) version9 (9)}

   APN,
   GSN-Address,
   SupportedLCS-CapabilitySets
FROM MAP-MS-DataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-MS-DataTypes (11) version9 (9)}

   Additional-Number
FROM MAP-SM-DataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-SM-DataTypes (16) version9 (9)}
;
```

```
RoutingInfoForLCS-Arg ::= SEQUENCE {
    mlcNumber                       [0] ISDN-AddressString,
    targetMS                        [1] SubscriberIdentity,
    extensionContainer              [2] ExtensionContainer          OPTIONAL,
    ...}
```

```
RoutingInfoForLCS-Res ::= SEQUENCE {
     targetMS                          [0] SubscriberIdentity,
     lcsLocationInfo                   [1] LCSLocationInfo,
     extensionContainer                [2] ExtensionContainer            OPTIONAL,
     ...,
     v-gmlc-Address                    [3]  GSN-Address                  OPTIONAL,
     h-gmlc-Address                    [4]  GSN-Address                  OPTIONAL,
     ppr-Address                       [5]  GSN-Address                  OPTIONAL }
```

```
LCSLocationInfo ::= SEQUENCE {
     networkNode-Number                ISDN-AddressString,
     -- NetworkNode-number can be either msc-number or sgsn-number
     lmsi                              [0] LMSI                          OPTIONAL,
     extensionContainer                [1] ExtensionContainer            OPTIONAL,
     ... ,
     gprsNodeIndicator                 [2] NULL                          OPTIONAL,
     -- gprsNodeIndicator is set only if the SGSN number is sent as the Network Node Number
     additional-Number                 [3] Additional-Number             OPTIONAL,
     supportedLCS-CapabilitySets       [4]  SupportedLCS-CapabilitySets  OPTIONAL,
     additional-LCS-CapabilitySets     [5]  SupportedLCS-CapabilitySets  OPTIONAL
     }
```

```
ProvideSubscriberLocation-Arg ::= SEQUENCE {
     locationType                      LocationType,
     mlc-Number                        ISDN-AddressString,
     lcs-ClientID                      [0] LCS-ClientID                  OPTIONAL,
     privacyOverride                   [1] NULL                          OPTIONAL,
     imsi                              [2] IMSI                          OPTIONAL,
     msisdn                            [3] ISDN-AddressString            OPTIONAL,
     lmsi                              [4] LMSI                          OPTIONAL,
     imei                              [5] IMEI                          OPTIONAL,
     lcs-Priority                      [6] LCS-Priority                  OPTIONAL,
     lcs-QoS                           [7] LCS-QoS                       OPTIONAL,
     extensionContainer                [8] ExtensionContainer            OPTIONAL,
     ... ,
     supportedGADShapes                [9]  SupportedGADShapes           OPTIONAL,
     lcs-ReferenceNumber               [10] LCS-ReferenceNumber          OPTIONAL,
     lcsServiceTypeID                  [11] LCSServiceTypeID             OPTIONAL,
     lcsCodeword                       [12] LCSCodeword                  OPTIONAL,
     lcs-PrivacyCheck                  [13] LCS-PrivacyCheck             OPTIONAL,
     areaEventInfo                     [14] AreaEventInfo                OPTIONAL,
     h-gmlc-Address                    [15] GSN-Address                  OPTIONAL,
     r-gmlc-Address                    [16] GSN-Address                  OPTIONAL }

     -- one of imsi or msisdn is mandatory
     -- If a location estimate type indicates activate deferred location or cancel deferred
     -- location, a lcs-Reference number shall be included.
```

```
LocationType ::= SEQUENCE {
     locationEstimateType              [0] LocationEstimateType,
     ...,
     deferredLocationEventType         [1] DeferredLocationEventType     OPTIONAL }
```

```
LocationEstimateType ::= ENUMERATED {
     currentLocation                   (0),
     currentOrLastKnownLocation        (1),
     initialLocation                   (2),
     ...,
     activateDeferredLocation          (3),
     cancelDeferredLocation            (4) }
--   exception handling:
--   a ProvideSubscriberLocation-Arg containing an unrecognized LocationEstimateType
--   shall be rejected by the receiver with a return error cause of unexpected data value
```

```
DeferredLocationEventType ::= BIT STRING {
     msAvailable                       (0) ,
     enteringIntoArea                  (1),
     leavingFromArea                   (2),
     beingInsideArea                   (3) } (SIZE (1..16))
-- beingInsideArea is always treated as oneTimeEvent regardless of the possible value
-- of occurrenceInfo inside areaEventInfo.
-- exception handling:
-- a ProvideSubscriberLocation-Arg containing other values than listed above in
-- DeferredLocationEventType shall be rejected by the receiver with a return error cause of
-- unexpected data value.
```

```
LCS-ClientID ::= SEQUENCE {
     lcsClientType                     [0] LCSClientType,
```

```
    lcsClientExternalID                 [1] LCSClientExternalID          OPTIONAL,
    lcsClientDialedByMS                 [2] AddressString                OPTIONAL,
    lcsClientInternalID                 [3] LCSClientInternalID          OPTIONAL,
    lcsClientName                       [4] LCSClientName                OPTIONAL,
    ...,
    lcsAPN                              [5] APN                          OPTIONAL,
    lcsRequestorID                      [6] LCSRequestorID               OPTIONAL }
```

```
LCSClientType ::= ENUMERATED {
    emergencyServices                   (0),
    valueAddedServices                  (1),
    plmnOperatorServices                (2),
    lawfulInterceptServices             (3),
    ... }
    --   exception handling:
    --   unrecognized values may be ignored if the LCS client uses the privacy override
    --   otherwise, an unrecognized value shall be treated as unexpected data by a receiver
    --   a return error shall then be returned if received in a MAP invoke
```

```
LCSClientName ::= SEQUENCE {
    dataCodingScheme                    [0] USSD-DataCodingScheme,
    nameString                          [2] NameString,
    ...,
    lcs-FormatIndicator                 [3] LCS-FormatIndicator          OPTIONAL }

-- The USSD-DataCodingScheme shall indicate use of the default alphabet through the
-- following encoding
--   bit  7 6 5 4 3 2 1 0
--        0 0 0 0 1 1 1 1
```

```
NameString ::= USSD-String (SIZE (1..maxNameStringLength))
```

```
maxNameStringLength  INTEGER ::= 63
```

```
LCSRequestorID ::= SEQUENCE {
    dataCodingScheme                    [0] USSD-DataCodingScheme,
    requestorIDString                   [1] RequestorIDString,
    ...,
    lcs-FormatIndicator                 [2] LCS-FormatIndicator          OPTIONAL }
```

```
RequestorIDString ::= USSD-String (SIZE (1..maxRequestorIDStringLength))
```

```
maxRequestorIDStringLength  INTEGER ::= 63
```

```
LCS-FormatIndicator ::= ENUMERATED {
    logicalName                         (0),
    e-mailAddress                       (1),
    msisdn                              (2),
    url                                 (3),
    sipUrl                              (4),
    ... }
```

```
LCS-Priority ::= OCTET STRING (SIZE (1))
    -- 0 = highest priority
    -- 1 = normal priority
    -- all other values treated as 1
```

```
LCS-QoS ::= SEQUENCE {
    horizontal-accuracy                 [0] Horizontal-Accuracy          OPTIONAL,
    verticalCoordinateRequest           [1] NULL                         OPTIONAL,
    vertical-accuracy                   [2] Vertical-Accuracy            OPTIONAL,
    responseTime                        [3] ResponseTime                 OPTIONAL,
    extensionContainer                  [4] ExtensionContainer           OPTIONAL,
    ...}
```

```
Horizontal-Accuracy ::= OCTET STRING (SIZE (1))
    -- bit 8 = 0
    -- bits 7-1 = 7 bit Uncertainty Code defined in 3GPP TS 23.032. The horizontal location
    -- error should be less than the error indicated by the uncertainty code with 67%
    -- confidence.
```

```
Vertical-Accuracy ::= OCTET STRING (SIZE (1))
    -- bit 8 = 0
    -- bits 7-1 = 7 bit Vertical Uncertainty Code defined in 3GPP TS 23.032.
    -- The vertical location error should be less than the error indicated
    -- by the uncertainty code with 67% confidence.
```

```
ResponseTime ::= SEQUENCE {
     responseTimeCategory                ResponseTimeCategory,
     ...}
--   note: an expandable SEQUENCE simplifies later addition of a numeric response time.
```

```
ResponseTimeCategory ::= ENUMERATED {
     lowdelay  (0),
     delaytolerant  (1),
     ... }
--   exception handling:
--   an unrecognized value shall be treated the same as value 1 (delaytolerant)
```

```
SupportedGADShapes ::= BIT STRING {
     ellipsoidPoint  (0),
     ellipsoidPointWithUncertaintyCircle (1),
     ellipsoidPointWithUncertaintyEllipse (2),
     polygon (3),
     ellipsoidPointWithAltitude (4),
     ellipsoidPointWithAltitudeAndUncertaintyElipsoid (5),
     ellipsoidArc  (6) } (SIZE (7..16))
-- A node shall mark in the BIT STRING all Shapes defined in 3GPP TS 23.032 it supports.
-- exception handling: bits 7 to 15 shall be ignored if received.
```

```
LCS-ReferenceNumber::= OCTET STRING (SIZE(1))
```

```
LCSCodeword ::= SEQUENCE {
     dataCodingScheme                    [0] USSD-DataCodingScheme,
     lcsCodewordString                   [1] LCSCodewordString,
     ...}
```

```
LCSCodewordString ::= USSD-String (SIZE (1..maxLCSCodewordStringLength))
```

```
maxLCSCodewordStringLength  INTEGER ::= 20
```

```
LCS-PrivacyCheck ::= SEQUENCE {
     callSessionUnrelated                [0] PrivacyCheckRelatedAction,
     callSessionRelated                  [1] PrivacyCheckRelatedAction     OPTIONAL,
     ...}
```

```
PrivacyCheckRelatedAction ::= ENUMERATED {
     allowedWithoutNotification (0),
     allowedWithNotification (1),
     allowedIfNoResponse (2),
     restrictedIfNoResponse (3),
     notAllowed (4),
     ...}
--   exception handling:
--   a ProvideSubscriberLocation-Arg containing an unrecognized PrivacyCheckRelatedAction
--   shall be rejected by the receiver with a return error cause of unexpected data value
```

```
AreaEventInfo ::= SEQUENCE {
     areaDefinition                      [0]  AreaDefinition,
     occurrenceInfo                      [1]  OccurrenceInfo               OPTIONAL,
     intervalTime                        [2]  IntervalTime                 OPTIONAL,
     ...}
```

```
AreaDefinition ::= SEQUENCE {
     areaList                            [0]  AreaList,
     ...}
```

```
AreaList ::= SEQUENCE SIZE (1..maxNumOfAreas) OF Area
```

```
maxNumOfAreas  INTEGER ::= 10
```

```
Area ::= SEQUENCE {
     areaType                            [0]  AreaType,
     areaIdentification                  [1]  AreaIdentification,
     ...}
```

```
AreaType ::= ENUMERATED {
     countryCode                        (0),
     plmnId                             (1),
     locationAreaId                     (2),
     routingAreaId                      (3),
     cellGlobalId                       (4),
     ...}
```

```
AreaIdentification ::= OCTET STRING (SIZE (2..7))
     -- The internal structure is defined as follows:
     -- octet 1 bits 4321               Mobile Country Code 1st digit
     --         bits 8765               Mobile Country Code 2nd digit
     -- octet 2 bits 4321               Mobile Country Code 3rd digit
     --         bits 8765               Mobile Network Code 3rd digit if 3 digit MNC included
     --                                 or filler (1111)
     -- octet 3 bits 4321               Mobile Network Code 1st digit
     --         bits 8765               Mobile Network Code 2nd digit
     -- octets 4 and 5                  Location Area Code (LAC)
     -- octet 6                         Routing Area Code (RAC) for Routing Area Id
     -- octets 6 and 7                  Cell Identity (CI) for Cell Global Id
```

```
OccurrenceInfo ::= ENUMERATED {
     oneTimeEvent                       (0),
     multipleTimeEvent                  (1),
     ...}
```

```
IntervalTime ::= INTEGER (1..32767)
     -- minimum interval time between area reports in seconds
```

```
ProvideSubscriberLocation-Res ::= SEQUENCE {
     locationEstimate                   Ext-GeographicalInformation,
     ageOfLocationEstimate              [0] AgeOfLocationInformation      OPTIONAL,
     extensionContainer                 [1] ExtensionContainer            OPTIONAL,
     ... ,
     add-LocationEstimate               [2] Add-GeographicalInformation   OPTIONAL,
     deferredmt-lrResponseIndicator     [3] NULL                          OPTIONAL,
     positioningData                    [4] PositioningDataInformation    OPTIONAL,
     cellIdOrSai                        [5] CellGlobalIdOrServiceAreaIdOrLAI   OPTIONAL }

--   if deferredmt-lrResponseIndicator is set, locationEstimate is ignored.

-- the add-LocationEstimate parameter shall not be sent to a node that did not indicate the
-- geographic shapes supported in the ProvideSubscriberLocation-Arg
-- The locationEstimate and the add-locationEstimate parameters shall not be sent if
-- the supportedGADShapes parameter has been received in ProvideSubscriberLocation-Arg
-- and the shape encoded in locationEstimate or add-LocationEstimate is not marked
-- as supported in supportedGADShapes. In such a case ProvideSubscriberLocation
-- shall be rejected with error FacilityNotSupported with additional indication
-- shapeOfLocationEstimateNotSupported
```

```
Ext-GeographicalInformation ::= OCTET STRING (SIZE (1..maxExt-GeographicalInformation))
    -- Refers to geographical Information defined in 3GPP TS 23.032.
    -- This is composed of 1 or more octets with an internal structure according to
    -- 3GPP TS 23.032
    -- Octet 1: Type of shape, only the following shapes in 3GPP TS 23.032 are allowed:
    --       (a) Ellipsoid point with uncertainty circle
    --       (b) Ellipsoid point with uncertainty ellipse
    --       (c) Ellipsoid point with altitude and uncertainty ellipsoid
    --       (d) Ellipsoid Arc
    --       (e) Ellipsoid Point
    -- Any other value in octet 1 shall be treated as invalid
    -- Octets 2 to 8 for case (a) – Ellipsoid point with uncertainty circle
    --       Degrees of Latitude                                    3 octets
    --       Degrees of Longitude                                   3 octets
    --       Uncertainty code                                       1 octet
    -- Octets 2 to 11 for case (b) – Ellipsoid point with uncertainty ellipse:
    --       Degrees of Latitude                                    3 octets
    --       Degrees of Longitude                                   3 octets
    --       Uncertainty semi-major axis                            1 octet
    --       Uncertainty semi-minor axis                            1 octet
    --       Angle of major axis                                    1 octet
    --       Confidence                                             1 octet
    -- Octets 2 to 14 for case (c) – Ellipsoid point with altitude and uncertainty ellipsoid
    --       Degrees of Latitude                                    3 octets
    --       Degrees of Longitude                                   3 octets
    --       Altitude                                               2 octets
    --       Uncertainty semi-major axis                            1 octet
    --       Uncertainty semi-minor axis                            1 octet
    --       Angle of major axis                                    1 octet
    --       Uncertainty altitude                                   1 octet
    --       Confidence                                             1 octet
    -- Octets 2 to 13 for case (d) – Ellipsoid Arc
    --       Degrees of Latitude                                    3 octets
    --       Degrees of Longitude                                   3 octets
    --       Inner radius                                           2 octets
    --       Uncertainty radius                                     1 octet
    --       Offset angle                                           1 octet
    --       Included angle                                         1 octet
    --       Confidence                                             1 octet
    -- Octets 2 to 7 for case (e) – Ellipsoid Point
    --       Degrees of Latitude                                    3 octets
    --       Degrees of Longitude                                   3 octets

    --
    -- An Ext-GeographicalInformation parameter comprising more than one octet and
    -- containing any other shape or an incorrect number of octets or coding according
    -- to 3GPP TS 23.032 shall be treated as invalid data by a receiver.
    --
    -- An Ext-GeographicalInformation parameter comprising one octet shall be discarded
    -- by the receiver if an Add-GeographicalInformation parameter is received
    -- in the same message.
    --
    -- An Ext-GeographicalInformation parameter comprising one octet shall be treated as
    -- invalid data by the receiver if an Add-GeographicalInformation parameter is not
    -- received in the same message.
```

```
maxExt-GeographicalInformation  INTEGER ::= 20
    -- the maximum length allows for further shapes in 3GPP TS 23.032 to be included in later
    -- versions of 3GPP TS 29.002
```

```
PositioningDataInformation ::= OCTET STRING (SIZE (2..maxPositioningDataInformation))
    -- Refers to the Positioning Data defined in 3GPP TS 49.031 for GERAN or 3GPP TS 25.413
    -- for UTRAN.
    -- This is composed of 2 or more octets with an internal structure according to
    -- 3GPP TS 49.031 for GERAN and 25.413 for UTRAN. Note that the internal structure
    -- of the parameter is identical for GERAN and UTRAN, but the defined code points differ
    -- for GERAN and UTRAN to allow for Radio Technology specific location methods.
```

```
maxPositioningDataInformation INTEGER ::= 10
    --
```

```
Add-GeographicalInformation ::= OCTET STRING (SIZE (1..maxAdd-GeographicalInformation))
    -- Refers to geographical Information defined in 3GPP TS 23.032.
    -- This is composed of 1 or more octets with an internal structure according to
    -- 3GPP TS 23.032
    -- Octet 1: Type of shape, all the shapes defined in 3GPP TS 23.032 are allowed:
    -- Octets 2 to n (where n is the total number of octets necessary to encode the shape
    -- according to 3GPP TS 23.032) are used to encode the shape itself in accordance with
```

```
the
     -- encoding defined in 3GPP TS 23.032
     --
     -- An Add-GeographicalInformation parameter, whether valid or invalid, received
     -- together with a valid Ext-GeographicalInformation parameter in the same message
     -- shall be discarded.
     --
     -- An Add-GeographicalInformation parameter containing any shape not defined in
     -- 3GPP TS 23.032 or an incorrect number of octets or coding according to
     -- 3GPP TS 23.032 shall be treated as invalid data by a receiver if not received
     -- together with a valid Ext-GeographicalInformation parameter in the same message.
```

```
maxAdd-GeographicalInformation  INTEGER ::= 91
     -- the maximum length allows support for all the shapes currently defined in 3GPP TS
23.032
```

```
SubscriberLocationReport-Arg ::= SEQUENCE {
     lcs-Event                          LCS-Event,
     lcs-ClientID                       LCS-ClientID,
     lcsLocationInfo                    LCSLocationInfo,
     msisdn                             [0] ISDN-AddressString            OPTIONAL,
     imsi                               [1] IMSI                          OPTIONAL,
     imei                               [2] IMEI                          OPTIONAL,
     na-ESRD                            [3] ISDN-AddressString            OPTIONAL,
     na-ESRK                            [4] ISDN-AddressString            OPTIONAL,
     locationEstimate                   [5] Ext-GeographicalInformation   OPTIONAL,
     ageOfLocationEstimate              [6] AgeOfLocationInformation      OPTIONAL,
     extensionContainer                 [7] ExtensionContainer            OPTIONAL,
     ... ,
     add-LocationEstimate               [8] Add-GeographicalInformation   OPTIONAL,
     deferredmt-lrData                  [9] Deferredmt-lrData             OPTIONAL,
     lcs-ReferenceNumber                [10] LCS-ReferenceNumber          OPTIONAL,
     positioningData                    [11] PositioningDataInformation   OPTIONAL,
     na-ESRK-Request                    [12] NULL                         OPTIONAL,
     cellIdOrSai                        [13] CellGlobalIdOrServiceAreaIdOrLAI  OPTIONAL,
     h-gmlc-Address                     [14] GSN-Address                  OPTIONAL,
     r-gmlc-Address                     [15] GSN-Address                  OPTIONAL }

     -- one of msisdn or imsi is mandatory
     -- a location estimate that is valid for the locationEstimate parameter should
     -- be transferred in this parameter in preference to the add-LocationEstimate.
     -- the deferredmt-lrData parameter shall be included if and only if the lcs-Event
     -- indicates a deferredmt-lrResponse.
     -- if the lcs-Event indicates a deferredmt-lrResponse then the locationEstimate
     -- and the add-locationEstimate parameters shall not be sent if the
     -- supportedGADShapes parameter had been received in ProvideSubscriberLocation-Arg
     -- and the shape encoded in locationEstimate or add-LocationEstimate was not marked
     -- as supported in supportedGADShapes. In such a case terminationCause
     -- in deferredmt-lrData shall be present with value
     -- shapeOfLocationEstimateNotSupported.
     -- If a lcs event indicates deferred mt-lr response, the lcs-Reference number shall be
     -- included.
```

```
Deferredmt-lrData ::= SEQUENCE {
     deferredLocationEventType          DeferredLocationEventType,
     terminationCause                   [0] TerminationCause              OPTIONAL,
     lcsLocationInfo                    [1] LCSLocationInfo               OPTIONAL,
     ...}
     -- lcsLocationInfo may be included only if a terminationCause is present
     -- indicating mt-lrRestart.
```

```
LCS-Event ::= ENUMERATED {
     emergencyCallOrigination  (0),
     emergencyCallRelease  (1),
     mo-lr  (2),
     ...,
     deferredmt-lrResponse  (3) }
     --   exception handling:
     --   a SubscriberLocationReport-Arg containing an unrecognized LCS-Event
     --   shall be rejected by a receiver with a return error cause of unexpected data value
```

```
TerminationCause ::= ENUMERATED {
     normal  (0),
     errorundefined  (1),
     internalTimeout  (2),
     congestion  (3),
     mt-lrRestart  (4),
     privacyViolation  (5),
     ...,
     shapeOfLocationEstimateNotSupported (6) }
-- mt-lrRestart shall be used to trigger the GMLC to restart the location procedure,
-- either because the sending node knows that the terminal has moved under coverage
-- of another MSC or SGSN (e.g. Send Identification received), or because the subscriber
-- has been deregistered due to a Cancel Location received from HLR.
--
-- exception handling
-- an unrecognized value shall be treated the same as value 1 (errorundefined)
```

```
SubscriberLocationReport-Res ::= SEQUENCE {
     extensionContainer                  ExtensionContainer               OPTIONAL,
     ...,
     na-ESRK                             [0] ISDN-AddressString           OPTIONAL }
```

```
END
```

3GPP TSG CN WG4 Meeting #22
Atlanta, USA, 16th – 20st February 2003

N4-040197

CR-Form-v7

CHANGE REQUEST

⌘ **24.030** **CR** **015** ⌘**rev** **-** ⌘ Current version: **6.0.0** ⌘

*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:	⌘	Removal of R-GMLC Address
Source:	⌘	CN4
Work item code:	⌘	LCS2
Date:	⌘	06/02/2004
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:	⌘	After the last CN4 meeting it was noticed that SA2 had removed the requirement to send the R-GMLC address during MT-LR procedure for an area event reporting. This change has been approved to the 23.172 specification in SA #22 plenary (12/2003).
Summary of change:	⌘	R-GMLC Address parameter has been removed.
Consequences if not approved:	⌘	Misalignment between stage 2 and stage 3.

Clauses affected:	⌘	4.2			
		Y	**N**		
Other specs affected:	⌘	**X**		Other core specifications	⌘ 24.080 CR 034, 29.002 CR 724
			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.

4.2 Deferred MT-LR Area Event

4.2.1 Area Event Request

The network invokes a Deferred MT-LR Area Event procedure by sending a REGISTER message containing an LCS-Area Event invoke component to the MS.

If the MS is unable to process the request received from the network, it shall return an error indication by sending a RELEASE COMPLETE message containing a return error component. Error values are specified in 3GPP TS 24.080

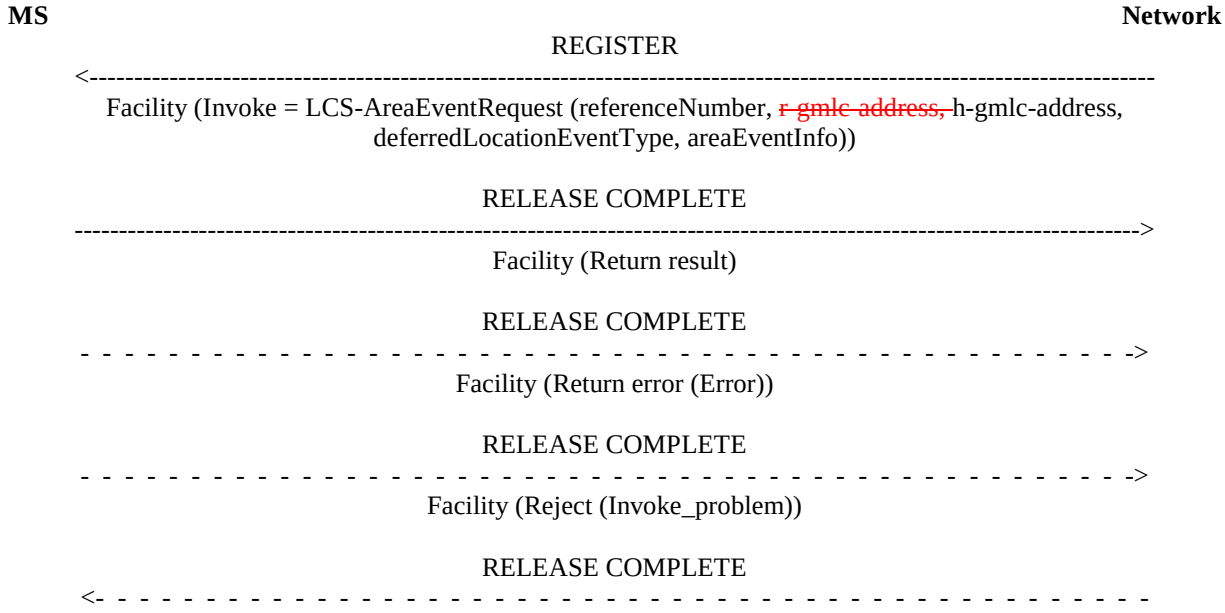

Figure 4.2: Area Event Request

4.2.2 Area Event Report

The MS invokes an Area Event Report by sending a REGISTER message to the network containing an LCS-AreaEventReport invoke component. SS Version Indicator value 1 or above shall be used.

The MS may use the Area Event Report also when cancelling the Area Event Request while monitoring the event.

The receiving network entity shall forward the Area Event Report to the H-GMLC which was included in the invoke component directly or via its associated V-GMLC.

The MS may terminate the dialogue by sending a RELEASE COMPLETE message for a single location request (see figure 4.3). The MS may also initiate another Area Event Report operation by sending a FACILITY message to the network containing an LCS-AreaEventReport invoke component (see figure 4.4). After the Area Event Report operation the MS shall terminate the dialogue by sending a RELEASE COMPLETE message.

If the network cannot successfully process the Area Event Report received from the MS, it shall clear the transaction by sending a RELEASE COMPLETE message containing a return error component. Error values are specified in 3GPP TS 24.080.

If the network has returned a result to the MS in a FACILITY message but, after some PLMN administered time period has elapsed, the network has not received either a new Area Event Report operation in a FACILITY message or a

RELEASE COMPLETE message from the MS, the network may clear the transaction by sending a RELEASE COMPLETE message.

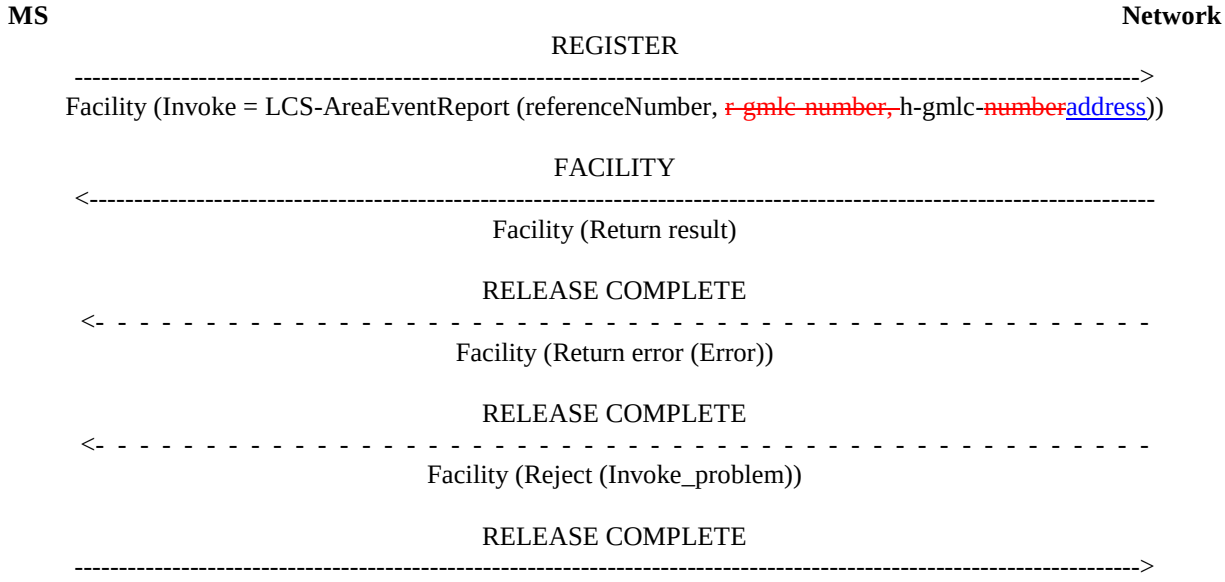

Figure 4.3: Single Area Event Report

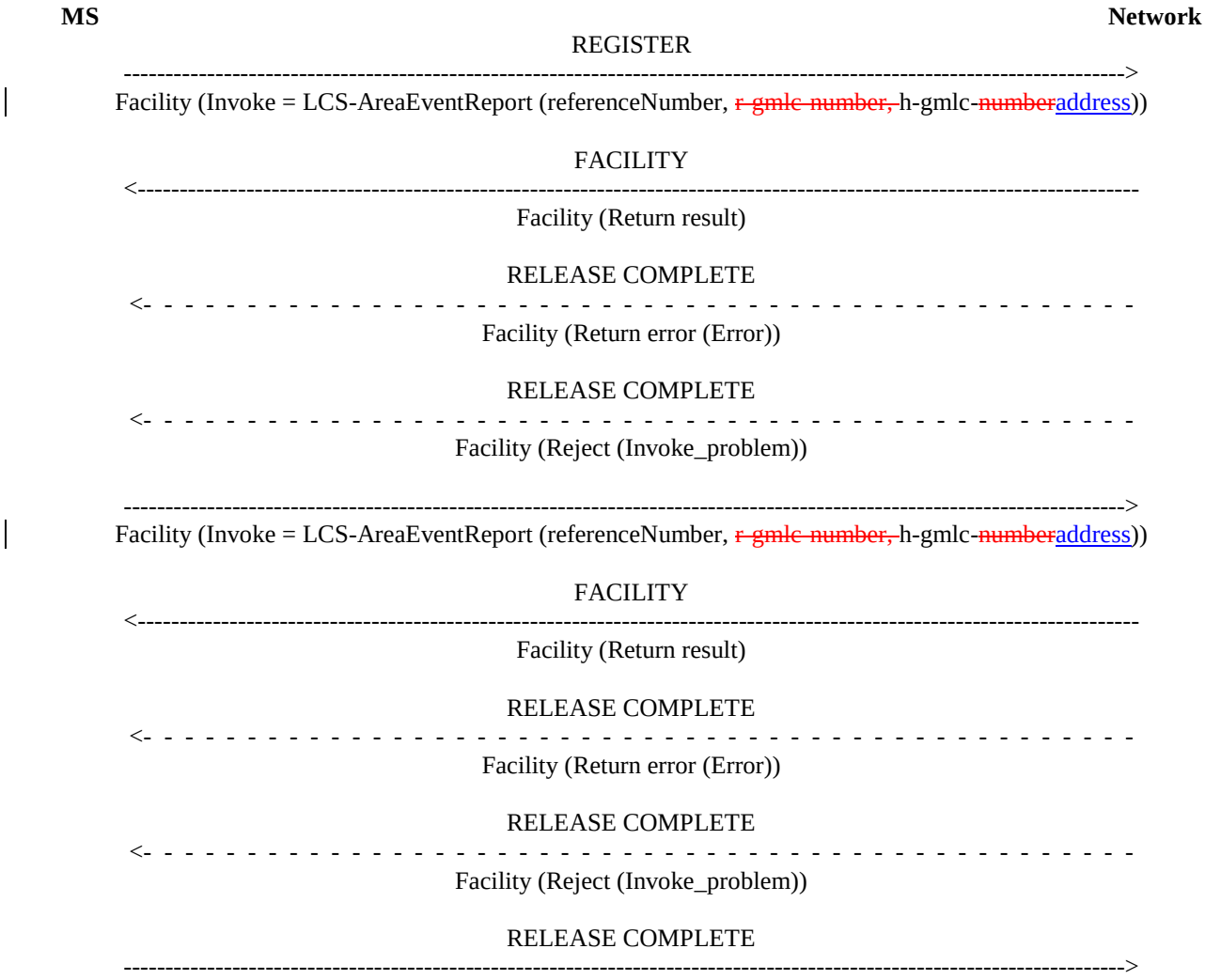

Figure 4.4: Multiple Area Event Reports

4.2.3 Area Event Cancellation

The network invokes a Deferred MT-LR Area Event Cancellation procedure by sending a REGISTER message containing an LCS-Area Event Cancellation invoke component to the MS.

If the MS is unable to process the request received from the network, it shall return an error indication by sending a RELEASE COMPLETE message containing a return error component. Error values are specified in 3GPP TS 24.080

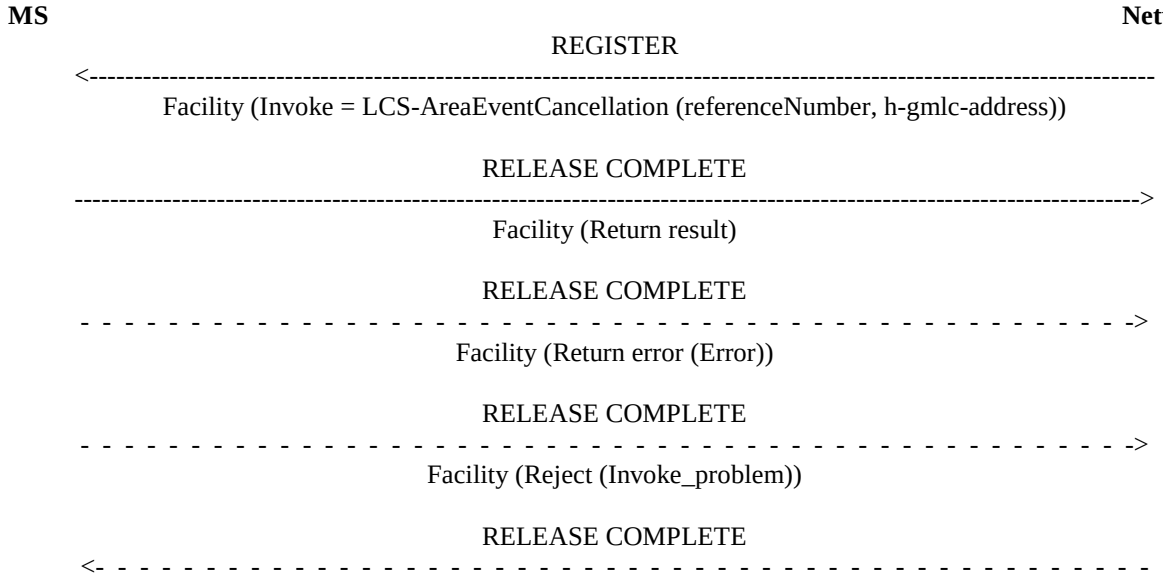

Figure 4.5: Area Event Cancellation

3GPP TSG CN WG4 Meeting #22
Atlanta, USA, 16th – 20st February 2003

N4-040198

CR-Form-v7

CHANGE REQUEST

⌘ **24.080** **CR** **034** ⌘ **rev** **-** ⌘ Current version: **6.0.0** ⌘

*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:	⌘	Removal of R-GMLC Address
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Release:	⌘	Rel-6

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Use one of the following releases:

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

Reason for change:	⌘	After the last CN4 meeting it was noticed that SA2 had removed the requirement to send the R-GMLC address during MT-LR procedure for an area event reporting. This change has been approved to the 23.172 specification in SA #22 plenary (12/2003).
Summary of change:	⌘	R-GMLC Address parameter has been removed.
Consequences if not approved:	⌘	Misalignment between stage 2 and stage 3.

Clauses affected:	⌘	4.4.2			
		Y	**N**		
Other specs affected:	⌘	**X**		Other core specifications	⌘ 24.030 CR 015, 29.002 CR 724
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

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

4.4.2 ASN.1 data types

This subclause provides an ASN.1 module defining the abstract data types in operations and errors specification. Only data types which are specific for this specification are defined. All other data types are imported from MAP together with the import of operations and errors.

```
SS-DataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0) gsm-Access (2) modules (3)
   ss-DataTypes (2) version9 (9)}

DEFINITIONS

IMPLICIT TAGS ::=

BEGIN

-- exports all data types defined in this module

IMPORTS

SS-Code
FROM MAP-SS-Code {
   itu-t identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1) modules (3)
   map-SS-Code (15) version9 (9)}

-- imports MAP-SS-DataTypes
SS-Status, USSD-DataCodingScheme, USSD-String, CCBS-Feature
-- USSD-DataCodingScheme, USSD-String were introduced because of CNAP.
FROM MAP-SS-DataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1) modules (3)
   map-SS-DataTypes (14) version9 (9)}

GSN-Address,
CUG-Index,
NotificationToMSUser
FROM MAP-MS-DataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1) modules (3)
   map-MS-DataTypes (11) version9 (9)}

maxSignalInfoLength,
ISDN-AddressString,
ISDN-SubaddressString,
AlertingPattern,
LCSClientExternalID,
AddressString,
LCSServiceTypeID
FROM MAP-CommonDataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1) modules (3)
   map-CommonDataTypes (18) version9 (9)}

LocationType,
DeferredLocationEventType,
LCSClientName,
LCS-QoS,
Horizontal-Accuracy,
ResponseTime,
Ext-GeographicalInformation,
SupportedGADShapes,
Add-GeographicalInformation,
LCSRequestorID,
LCS-ReferenceNumber,
LCSCodeword,
AreaEventInfo
FROM MAP-LCS-DataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-LCS-DataTypes (25) version9 (9)}

;

-- data types definition
```

```
SS-UserData ::= IA5String (SIZE (1.. maxSignalInfoLength))

NotifySS-Arg ::= SEQUENCE{
    ss-Code                     [1]     SS-Code OPTIONAL,
    ss-Status                   [4]     SS-Status OPTIONAL,
    ss-Notification             [5]     SS-Notification OPTIONAL,
    callIsWaiting-Indicator     [14]    NULL OPTIONAL,
    callOnHold-Indicator        [15]    CallOnHold-Indicator OPTIONAL,
    mpty-Indicator              [16]    NULL OPTIONAL,
    cug-Index                   [17]    CUG-Index OPTIONAL,
    clirSuppressionRejected     [18]    NULL OPTIONAL,
    ... ,
    ect-Indicator               [19]    ECT-Indicator OPTIONAL,
    nameIndicator               [20]    NameIndicator OPTIONAL,
    ccbs-Feature                [21]    CCBS-Feature OPTIONAL,
    alertingPattern             [22]    AlertingPattern OPTIONAL,
    multicall-Indicator         [23]    Multicall-Indicator OPTIONAL}

--  The nameIndicator is defined because of CNAP.

Multicall-Indicator ::= ENUMERATED {
        nbr-SNexceeded (0),
        nbr-Userexceeded (1)}

ForwardChargeAdviceArg ::= SEQUENCE{
    ss-Code                     [0]     SS-Code,
    chargingInformation         [1]     ChargingInformation,
    ...}

SS-Notification ::= OCTET STRING (SIZE (1))

--    Bit 8 7 6 5 4 00000 (Unused)

--  Bit 3   Call is forwarded indication to A-subscriber
--      (calling subscriber)
--  0   No information content
--  1   Outgoing call has been forwarded to C

--  Bit 2   Call is forwarded indication to B-subscriber
--      (forwarding subscriber)
--  0   No information content
--  1   Incoming call has been forwarded to C

--  Bit 1   Call is forwarded indication to C-subscriber
--      (forwarded-to subscriber)
--  0   No information content
--  1   Incoming call is a forwarded call

ChargingInformation ::= SEQUENCE{
    e1  [1] E1 OPTIONAL,
    e2  [2] E2 OPTIONAL,
    e3  [3] E3 OPTIONAL,
    e4  [4] E4 OPTIONAL,
    e5  [5] E5 OPTIONAL,
    e6  [6] E6 OPTIONAL,
    e7  [7] E7 OPTIONAL,
    ...}

E1 ::= INTEGER (0..max10TimesUnitsPerTime)
max10TimesUnitsPerTime INTEGER ::= 8191

E2 ::= INTEGER (0..max10TimesTimeInterval)
max10TimesTimeInterval INTEGER ::= 8191

E3 ::= INTEGER (0..max100TimesScalingFactor)
max100TimesScalingFactor INTEGER ::= 8191

E4 ::= INTEGER (0..max10TimesIncrement)
max10TimesIncrement INTEGER ::= 8191

E5 ::= INTEGER (0..max10TimesIncrementPerDataInterval)
max10TimesIncrementPerDataInterval INTEGER ::= 8191

E6 ::= INTEGER (0..maxNumberOfSegmentsPerDataInterval)
maxNumberOfSegmentsPerDataInterval INTEGER ::= 8191

E7 ::= INTEGER (0..max10TimesInitialTime)
```

```
max10TimesInitialTime INTEGER ::= 8191

CallOnHold-Indicator    ::= ENUMERATED {
            callRetrieved (0),
            callOnHold (1)}

ForwardCUG-InfoArg ::= SEQUENCE {
    cug-Index           [0] CUG-Index OPTIONAL,
    suppressPrefCUG     [1] NULL OPTIONAL,
    suppressOA          [2] NULL OPTIONAL,
    ...}

ECT-Indicator   ::= SEQUENCE {
    ect-CallState       [0] ECT-CallState,
    rdn [1] RDN OPTIONAL,
    ...}

ECT-CallState   ::= ENUMERATED {
        alerting (0),
        active (1)}

    NameIndicator ::= SEQUENCE {
        callingName     [0] Name OPTIONAL,
        ...}

    Name ::= CHOICE {
        namePresentationAllowed     [0] NameSet,
        presentationRestricted      [1] NULL,
        nameUnavailable             [2] NULL,
        namePresentationRestricted  [3] NameSet}

    NameSet ::= SEQUENCE {
        dataCodingScheme        [0] USSD-DataCodingScheme,
        lengthInCharacters      [1] INTEGER,
        nameString              [2] USSD-String,
        ...}

-- NameIndicator, Name and NameSet are defined because of CNAP.
-- The USSD-DataCodingScheme shall indicate use of the default alphabet through the
-- following encoding:
--    bit  7   6   5   4   3   2   1   0
--       | 0   0   0   0 | 1   1   1   1|

RDN ::= CHOICE {
    presentationAllowedAddress              [0] RemotePartyNumber,
    presentationRestricted                  [1] NULL,
    numberNotAvailableDueToInterworking     [2] NULL,
    presentationRestrictedAddress           [3] RemotePartyNumber}

RemotePartyNumber   ::= SEQUENCE {
    partyNumber             [0] ISDN-AddressString,
    partyNumberSubaddress   [1] ISDN-SubaddressString OPTIONAL,
    ...}

AccessRegisterCCEntryArg    ::= SEQUENCE {
    ...}

CallDeflectionArg   ::= SEQUENCE {
    deflectedToNumber       [0] AddressString,
    deflectedToSubaddress   [1] ISDN-SubaddressString OPTIONAL,
    ...}

UserUserServiceArg ::= SEQUENCE {
    uUS-Service     [0] UUS-Service,
    uUS-Required    [1] BOOLEAN,
    ... }

UUS-Service ::= ENUMERATED {
    uUS1 (1),
    uUS2 (2),
    uUS3 (3),
    ... }

-- exception handling:
-- In case of UUS-Service with any other value, indicated as "UUS required",
-- but not understood by the MS, the call will be cleared.

LocationNotificationArg ::= SEQUENCE {
```

```
    notificationType    [0] NotificationToMSUser,
    locationType        [1] LocationType,
    lcsClientExternalID [2] LCSClientExternalID     OPTIONAL,
    lcsClientName       [3] LCSClientName           OPTIONAL,
    ... ,
    lcsRequestorID      [4] LCSRequestorID          OPTIONAL,
    lcsCodeword         [5] LCSCodeword             OPTIONAL,
    lcsServiceTypeID    [6] LCSServiceTypeID        OPTIONAL }
-- exception handling:
-- At reception of an unrecognised notificationType value the receiver shall reject the
-- operation with a return error cause of unexpected data value.
-- At reception of an unrecognised locationType value the receiver shall reject the
-- operation with a return error cause of unexpected data value.


LocationNotificationRes ::= SEQUENCE {
    verificationResponse        [0] VerificationResponse OPTIONAL,
    ...}

VerificationResponse::= ENUMERATED {
    permissionDenied    (0),
    permissionGranted   (1),
    ... }

-- exception handling:
-- an unrecognized value shall be treated the same as value 0 (permissionDenied)

LCS-MOLRArg ::= SEQUENCE {
    molr-Type           [0] MOLR-Type,
    locationMethod      [1] LocationMethod          OPTIONAL,
    lcs-QoS             [2] LCS-QoS                 OPTIONAL,
    lcsClientExternalID [3] LCSClientExternalID     OPTIONAL,
    mlc-Number          [4] ISDN-AddressString      OPTIONAL,
    gpsAssistanceData   [5] GPSAssistanceData       OPTIONAL,
    ...,
    supportedGADShapes  [6] SupportedGADShapes      OPTIONAL}
-- The parameter locationMethod shall be included if and only if the molr-Type is set to value
-- deCipheringKeys or assistanceData.
-- The parameter gpsAssistanceData shall be included if and only if the molr-Type is set to value
-- assistanceData and locationMethod is set to value assistedGPS.

MOLR-Type::= ENUMERATED {
    locationEstimate            (0),
    assistanceData              (1),
    deCipheringKeys             (2),
    ... }
-- exception handling:
-- an unrecognized value shall be rejected by the receiver with a return error cause of
-- unexpected data value.

LocationMethod::= ENUMERATED {
    msBasedEOTD         (0),
    msAssistedEOTD      (1),
    assistedGPS         (2),
    ...,
    msBasedOTDOA        (3)
    }
-- exception handling:
-- When this parameter is received with value msBasedEOTD or msAssistedEOTD and the MS
-- is camped on an UMTS Service Area then the receiver shall reject it
-- with a return error cause of unexpected data value.
-- When this parameter is received with value msBasedOTDOA and the MS
-- is camped on a GSM Cell then the receiver shall reject it with a return error cause of
-- unexpected data value.
-- an unrecognized value shall be rejected by the receiver with a return error cause of
-- unexpected data value.

GPSAssistanceData::= OCTET STRING (SIZE (1..38))
-- Octets 1 to 38 are coded in the same way as the octets 3 to 7+2n of Requested GPS Data IE
-- in 3GPP TS 49.031.

LCS-MOLRRes::= SEQUENCE {
    locationEstimate        [0] Ext-GeographicalInformation     OPTIONAL,
    decipheringKeys         [1] DecipheringKeys                 OPTIONAL,
    ...,
    add-LocationEstimate    [2] Add-GeographicalInformation         OPTIONAL}
-- Parameters locationEstimate or add-LocationEstimate (one but not both)
-- shall be included if and only if the
```

```
-- molr-Type in LocationRequestArg was set to value locationEstimate.
-- Parameter add-LocationEstimate shall not be included if the supportedGADShapes
-- parameter was not received in the LCS-MOLRArg.
-- The locationEstimate and the add-locationEstimate parameters shall not be sent if
-- the supportedGADShapes parameter has been received in LCS-MOLRArg
-- and the shape encoded in locationEstimate or add-LocationEstimate is not marked
-- as supported in supportedGADShapes. In such a case LCS-MOLRArg
-- shall be rejected with error FacilityNotSupported with additional indication
-- shapeOfLocationEstimateNotSupported.
-- Parameter decipheringKeys shall be included if and only if the molr-Type
-- in LocationRequestArg was set to value deCipheringKeys.


DecipheringKeys::= OCTET STRING (SIZE (15))
-- Octets in DecipheringKeys are coded in the same way as the octets 3 to 17 of Deciphering Key IE
-- in 3GPP TS 49.031. I.e. these octets contain Current Deciphering Key, Next Deciphering Key and
-- Ciphering Key Flag.
LCS-AreaEventRequestArg ::= SEQUENCE {
    referenceNumber             [0] LCS-ReferenceNumber,
    h-gmlc-address              [1] GSN-Address,
    r-gmlc-address              [2] GSN-Address             OPTIONAL,
    deferredLocationEventType   [3] DeferredLocationEventType,
    areaEventInfo               [4] AreaEventInfo,
    ... }

-- the msAvailableValue in the DeferredLocationEventType is not applicable for this procedure

LCS-AreaEventReportArg  ::= SEQUENCE {
    referenceNumber             [0] LCS-ReferenceNumber,
    h-gmlc-address              [1] GSN-Address,
    r-gmlc-address              [2] GSN-Address             OPTIONAL,
    ... }

LCS-AreaEventCancellationArg    ::= SEQUENCE {
    referenceNumber             [0] LCS-ReferenceNumber,
    h-gmlc-address              [1] GSN-Address,
    ... }

END
```

3GPP TSG CN WG4 Meeting #22
Atlanta, USA, 16th – 20th February 2004

N4-040320
Revised N4-040195

CR-Form-v7

CHANGE REQUEST

⌘ **24.080** **CR** **033** ⌘ **rev** **1** ⌘ Current version: **6.0.0** ⌘

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

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

Title:	⌘	MO-LR Service Identity support
Source:	⌘	CN4
Work item code:	⌘	LCS2
Date:	⌘	19/02/2004
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:	⌘	For an LCS Client that supports MO-LR, it may provide various MO-LR services to the subscriber. When the UE requests that its own location be sent to an external LCS client, the UE may specify a Service Identity to indicate which MO-LR service of the LCS Client it requests. Then in case the LCS Client obtains the location estimate of the UE, it shall handle the location estimate according to the Service Identity. In the TS 24.080, the lcs-MOLRArg data type should be enhanced to fulfil this requirement.
Summary of change:	⌘	Add the parameter "lcsServiceTypeID" to the lcs-MOLRArg data type.
Consequences if not approved:	⌘	The stage 3 cannot support Service Identity in MO-LR procedure.

Clauses affected:	⌘	4.4.2			
		Y	**N**		
Other specs affected:	⌘	**X**		Other core specifications	⌘ 23.271 CR 238, 24.030 CR 016, 29.002 CR 725, 24.008
			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.

<< First changed clause >>

4.4.2 ASN.1 data types

This subclause provides an ASN.1 module defining the abstract data types in operations and errors specification. Only data types which are specific for this specification are defined. All other data types are imported from MAP together with the import of operations and errors.

```
SS-DataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0) gsm-Access (2) modules (3)
   ss-DataTypes (2) version9 (9)}

DEFINITIONS

IMPLICIT TAGS ::=

BEGIN

-- exports all data types defined in this module

IMPORTS

SS-Code
FROM MAP-SS-Code {
   itu-t identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1) modules (3)
   map-SS-Code (15) version9 (9)}

-- imports MAP-SS-DataTypes
SS-Status, USSD-DataCodingScheme, USSD-String, CCBS-Feature
-- USSD-DataCodingScheme, USSD-String were introduced because of CNAP.
FROM MAP-SS-DataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1) modules (3)
   map-SS-DataTypes (14) version9 (9)}

GSN-Address,
CUG-Index,
NotificationToMSUser
FROM MAP-MS-DataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1) modules (3)
   map-MS-DataTypes (11) version9 (9)}

maxSignalInfoLength,
ISDN-AddressString,
ISDN-SubaddressString,
AlertingPattern,
LCSClientExternalID,
AddressString,
LCSServiceTypeID
FROM MAP-CommonDataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1) modules (3)
   map-CommonDataTypes (18) version9 (9)}

LocationType,
DeferredLocationEventType,
LCSClientName,
LCS-QoS,
Horizontal-Accuracy,
ResponseTime,
Ext-GeographicalInformation,
SupportedGADShapes,
Add-GeographicalInformation,
LCSRequestorID,
LCS-ReferenceNumber,
LCSCodeword,
AreaEventInfo
FROM MAP-LCS-DataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-LCS-DataTypes (25) version9 (9)}

;

-- data types definition

SS-UserData ::= IA5String (SIZE (1.. maxSignalInfoLength))
```

```
NotifySS-Arg ::= SEQUENCE{
    ss-Code                     [1]     SS-Code OPTIONAL,
    ss-Status                   [4]     SS-Status OPTIONAL,
    ss-Notification             [5]     SS-Notification OPTIONAL,
    callIsWaiting-Indicator     [14]    NULL OPTIONAL,
    callOnHold-Indicator        [15]    CallOnHold-Indicator OPTIONAL,
    mpty-Indicator              [16]    NULL OPTIONAL,
    cug-Index                   [17]    CUG-Index OPTIONAL,
    clirSuppressionRejected     [18]    NULL OPTIONAL,
    ... ,
    ect-Indicator               [19]    ECT-Indicator OPTIONAL,
    nameIndicator               [20]    NameIndicator OPTIONAL,
    ccbs-Feature                [21]    CCBS-Feature OPTIONAL,
    alertingPattern             [22]    AlertingPattern OPTIONAL,
    multicall-Indicator         [23]    Multicall-Indicator OPTIONAL}

--  The nameIndicator is defined because of CNAP.

Multicall-Indicator ::= ENUMERATED {
        nbr-SNexceeded (0),
        nbr-Userexceeded (1)}

ForwardChargeAdviceArg ::= SEQUENCE{
    ss-Code                     [0]     SS-Code,
    chargingInformation         [1]     ChargingInformation,
    ...}

SS-Notification ::= OCTET STRING (SIZE (1))

--    Bit 8 7 6 5 4  00000 (Unused)

--  Bit 3   Call is forwarded indication to A-subscriber
--      (calling subscriber)
--  0   No information content
--  1   Outgoing call has been forwarded to C

--  Bit 2   Call is forwarded indication to B-subscriber
--      (forwarding subscriber)
--  0   No information content
--  1   Incoming call has been forwarded to C

--  Bit 1   Call is forwarded indication to C-subscriber
--      (forwarded-to subscriber)
--  0   No information content
--  1   Incoming call is a forwarded call

ChargingInformation ::= SEQUENCE{
    e1  [1] E1 OPTIONAL,
    e2  [2] E2 OPTIONAL,
    e3  [3] E3 OPTIONAL,
    e4  [4] E4 OPTIONAL,
    e5  [5] E5 OPTIONAL,
    e6  [6] E6 OPTIONAL,
    e7  [7] E7 OPTIONAL,
    ...}

E1 ::= INTEGER (0..max10TimesUnitsPerTime)
max10TimesUnitsPerTime INTEGER ::= 8191

E2 ::= INTEGER (0..max10TimesTimeInterval)
max10TimesTimeInterval INTEGER ::= 8191

E3 ::= INTEGER (0..max100TimesScalingFactor)
max100TimesScalingFactor INTEGER ::= 8191

E4 ::= INTEGER (0..max10TimesIncrement)
max10TimesIncrement INTEGER ::= 8191

E5 ::= INTEGER (0..max10TimesIncrementPerDataInterval)
max10TimesIncrementPerDataInterval INTEGER ::= 8191

E6 ::= INTEGER (0..maxNumberOfSegmentsPerDataInterval)
maxNumberOfSegmentsPerDataInterval INTEGER ::= 8191

E7 ::= INTEGER (0..max10TimesInitialTime)
max10TimesInitialTime INTEGER ::= 8191
```

```
CallOnHold-Indicator    ::= ENUMERATED {
            callRetrieved (0),
            callOnHold (1)}

ForwardCUG-InfoArg ::= SEQUENCE {
    cug-Index           [0] CUG-Index OPTIONAL,
    suppressPrefCUG     [1] NULL OPTIONAL,
    suppressOA          [2] NULL OPTIONAL,
    ...}

ECT-Indicator   ::= SEQUENCE {
    ect-CallState       [0] ECT-CallState,
    rdn [1] RDN OPTIONAL,
    ...}

ECT-CallState   ::= ENUMERATED {
        alerting (0),
        active (1)}

    NameIndicator ::= SEQUENCE {
        callingName     [0] Name OPTIONAL,
        ...}

    Name ::= CHOICE {
        namePresentationAllowed     [0] NameSet,
        presentationRestricted      [1] NULL,
        nameUnavailable             [2] NULL,
        namePresentationRestricted  [3] NameSet}

    NameSet ::= SEQUENCE {
        dataCodingScheme        [0] USSD-DataCodingScheme,
        lengthInCharacters      [1] INTEGER,
        nameString              [2] USSD-String,
        ...}

-- NameIndicator, Name and NameSet are defined because of CNAP.
-- The USSD-DataCodingScheme shall indicate use of the default alphabet through the
-- following encoding:
--   bit  7  6  5  4  3  2  1  0
--      | 0  0  0  0 | 1  1  1  1|

RDN ::= CHOICE {
    presentationAllowedAddress              [0] RemotePartyNumber,
    presentationRestricted                  [1] NULL,
    numberNotAvailableDueToInterworking     [2] NULL,
    presentationRestrictedAddress           [3] RemotePartyNumber}

RemotePartyNumber   ::= SEQUENCE {
    partyNumber             [0] ISDN-AddressString,
    partyNumberSubaddress   [1] ISDN-SubaddressString OPTIONAL,
    ...}

AccessRegisterCCEntryArg    ::= SEQUENCE {
    ...}

CallDeflectionArg   ::= SEQUENCE {
    deflectedToNumber       [0] AddressString,
    deflectedToSubaddress   [1] ISDN-SubaddressString OPTIONAL,
    ...}

UserUserServiceArg ::= SEQUENCE {
    uUS-Service     [0] UUS-Service,
    uUS-Required    [1] BOOLEAN,
    ... }

UUS-Service ::= ENUMERATED {
    uUS1 (1),
    uUS2 (2),
    uUS3 (3),
    ... }

-- exception handling:
-- In case of UUS-Service with any other value, indicated as "UUS required",
-- but not understood by the MS, the call will be cleared.

LocationNotificationArg ::= SEQUENCE {
    notificationType    [0] NotificationToMSUser,
    locationType        [1] LocationType,
```

```
    lcsClientExternalID [2] LCSClientExternalID     OPTIONAL,
    lcsClientName       [3] LCSClientName           OPTIONAL,
    ... ,
    lcsRequestorID      [4] LCSRequestorID          OPTIONAL,
    lcsCodeword         [5] LCSCodeword             OPTIONAL,
    lcsServiceTypeID    [6] LCSServiceTypeID        OPTIONAL }
-- exception handling:
-- At reception of an unrecognised notificationType value the receiver shall reject the
-- operation with a return error cause of unexpected data value.
-- At reception of an unrecognised locationType value the receiver shall reject the
-- operation with a return error cause of unexpected data value.


LocationNotificationRes ::= SEQUENCE {
    verificationResponse        [0] VerificationResponse OPTIONAL,
    ...}

VerificationResponse::= ENUMERATED {
    permissionDenied    (0),
    permissionGranted   (1),
    ... }

-- exception handling:
-- an unrecognized value shall be treated the same as value 0 (permissionDenied)

LCS-MOLRArg ::= SEQUENCE {
    molr-Type           [0] MOLR-Type,
    locationMethod      [1] LocationMethod          OPTIONAL,
    lcs-QoS             [2] LCS-QoS                 OPTIONAL,
    lcsClientExternalID [3] LCSClientExternalID     OPTIONAL,
    mlc-Number          [4] ISDN-AddressString      OPTIONAL,
    gpsAssistanceData   [5] GPSAssistanceData       OPTIONAL,
    ...,
    supportedGADShapes  [6] SupportedGADShapes      OPTIONAL,
    lcsServiceTypeID    [7] LCSServiceTypeID        OPTIONAL }
-- The parameter locationMethod shall be included if and only if the molr-Type is set to value
-- deCipheringKeys or assistanceData.
-- The parameter gpsAssistanceData shall be included if and only if the molr-Type is set to value
-- assistanceData and locationMethod is set to value assistedGPS.

MOLR-Type::= ENUMERATED {
    locationEstimate            (0),
    assistanceData              (1),
    deCipheringKeys             (2),
    ... }
-- exception handling:
-- an unrecognized value shall be rejected by the receiver with a return error cause of
-- unexpected data value.

LocationMethod::= ENUMERATED {
    msBasedEOTD         (0),
    msAssistedEOTD      (1),
    assistedGPS         (2),
    ...,
    msBasedOTDOA        (3)
    }
-- exception handling:
-- When this parameter is received with value msBasedEOTD or msAssistedEOTD and the MS
-- is camped on an UMTS Service Area then the receiver shall reject it
-- with a return error cause of unexpected data value.
-- When this parameter is received with value msBasedOTDOA and the MS
-- is camped on a GSM Cell then the receiver shall reject it with a return error cause of
-- unexpected data value.
-- an unrecognized value shall be rejected by the receiver with a return error cause of
-- unexpected data value.

GPSAssistanceData::= OCTET STRING (SIZE (1..38))
-- Octets 1 to 38 are coded in the same way as the octets 3 to 7+2n of Requested GPS Data IE
-- in 3GPP TS 49.031.

LCS-MOLRRes::= SEQUENCE {
    locationEstimate        [0] Ext-GeographicalInformation     OPTIONAL,
    decipheringKeys         [1] DecipheringKeys                 OPTIONAL,
    ...,
    add-LocationEstimate    [2] Add-GeographicalInformation     OPTIONAL}
-- Parameters locationEstimate or add-LocationEstimate (one but not both)
-- shall be included if and only if the
-- molr-Type in LocationRequestArg was set to value locationEstimate.
```

```
-- Parameter add-LocationEstimate shall not be included if the supportedGADShapes
-- parameter was not received in the LCS-MOLRArg.
-- The locationEstimate and the add-locationEstimate parameters shall not be sent if
-- the supportedGADShapes parameter has been received in LCS-MOLRArg
-- and the shape encoded in locationEstimate or add-LocationEstimate is not marked
-- as supported in supportedGADShapes. In such a case LCS-MOLRArg
-- shall be rejected with error FacilityNotSupported with additional indication
-- shapeOfLocationEstimateNotSupported.
-- Parameter decipheringKeys shall be included if and only if the molr-Type
-- in LocationRequestArg was set to value deCipheringKeys.


DecipheringKeys::= OCTET STRING (SIZE (15))
-- Octets in DecipheringKeys are coded in the same way as the octets 3 to 17 of Deciphering Key IE
-- in 3GPP TS 49.031. I.e. these octets contain Current Deciphering Key, Next Deciphering Key and
-- Ciphering Key Flag.
LCS-AreaEventRequestArg ::= SEQUENCE {
    referenceNumber             [0] LCS-ReferenceNumber,
    h-gmlc-address              [1] GSN-Address,
    r-gmlc-address              [2] GSN-Address             OPTIONAL,
    deferredLocationEventType   [3] DeferredLocationEventType,
    areaEventInfo               [4] AreaEventInfo,
    ... }

-- the msAvailableValue in the DeferredLocationEventType is not applicable for this procedure

LCS-AreaEventReportArg  ::= SEQUENCE {
    referenceNumber             [0] LCS-ReferenceNumber,
    h-gmlc-address              [1] GSN-Address,
    r-gmlc-address              [2] GSN-Address             OPTIONAL,
    ... }

LCS-AreaEventCancellationArg    ::= SEQUENCE {
    referenceNumber             [0] LCS-ReferenceNumber,
    h-gmlc-address              [1] GSN-Address,
    ... }

END
```

<< End of changed clause >>

3GPP TSG CN WG4 Meeting #22 **N4-040321**
Atlanta, USA, 16th – 20th February 2004

CR-Form-v7

CHANGE REQUEST

⌘ **24.030** **CR** **016** ⌘ **rev** **-** ⌘ Current version: **6.0.0** ⌘

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

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

Title:	⌘	MO-LR Service Identity support
Source:	⌘	CN4
Work item code:	⌘	LCS2
Date:	⌘	19/02/2004
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:	⌘	For an LCS Client that supports MO-LR, it may provide various MO-LR services to the subscriber. When the UE requests that its own location be sent to an external LCS client, the UE may specify a Service Identity to indicate which MO-LR service of the LCS Client it requests. Then in case the LCS Client obtains the location estimate of the UE, it shall handle the location estimate according to the Service Identity. In the TS 24.030, the LCS-MOLR operation should be enhanced to fulfil this requirement.
Summary of change:	⌘	Add the parameter "lcsServiceTypeID" to the LCS-MOLR operation.
Consequences if not approved:	⌘	The stage 3 cannot support Service Identity in MO-LR procedure.

Clauses affected:	⌘	5.1.1			
		Y	**N**		
Other specs affected:	⌘	**X**		Other core specifications	⌘ 23.271 CR 238, 24.080 CR 033, 29.002 CR 725, 24.008
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

How to create CRs using this form:
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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.

<< First changed clause >>

5.1.1 Normal operation

The MS invokes a MO-LR by sending a REGISTER message to the network containing a LCS-MOLR invoke component. SS Version Indicator value 1 or above shall be used.

The receiving network entity shall initiate the handling of location request in the network. The network shall pass the result of the location procedure to the MS by sending a FACILITY message to the MS containing a LCS-MOLR return result component.

The network shall pass the result of the location procedure to the MS only if the location estimate is given in a format that the MS supports, as indicated by either the presence (and content) or the absence of the parameter supportedGADShapes, which may be sent by the MS in the LCS-MOLR operation.

The MS may terminate the dialogue by sending a RELEASE COMPLETE message in the case of single location request (see figure 5.1). The MS may also initiate another location request operation by sending a FACILITY message to the network containing a LCS-MOLR invoke component (see figure 5.2). After the last location request operation the MS shall terminate the dialogue by sending a RELEASE COMPLETE message.

If the network is unable to successfully fulfil the request received from the MS (e.g. to provide a location estimate or location assistance information), it shall clear the transaction by sending a RELEASE COMPLETE message containing a return error component. Error values are specified in 3GPP TS 24.080. If the network is unable to provide a location estimate due to lack of support in the MS for the type of shape of the location estimate, then it shall use the error Facility Not Supported.

If the network has returned a result to the MS in a FACILITY message but, after some PLMN administered time period has elapsed, has not received either a new location request operation in a FACILITY message or a RELEASE COMPLETE message from the MS, the network may clear the transaction by sending a RELEASE COMPLETE message.

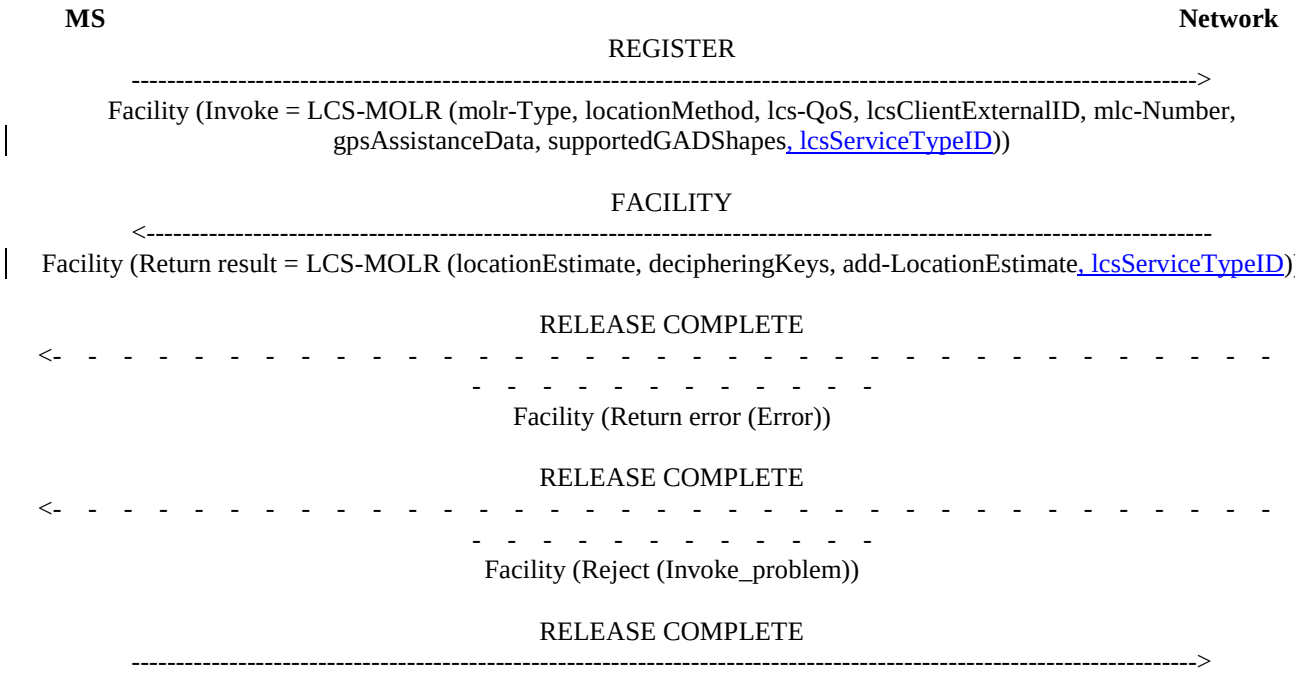

Figure 5.1: Single mobile originated location request

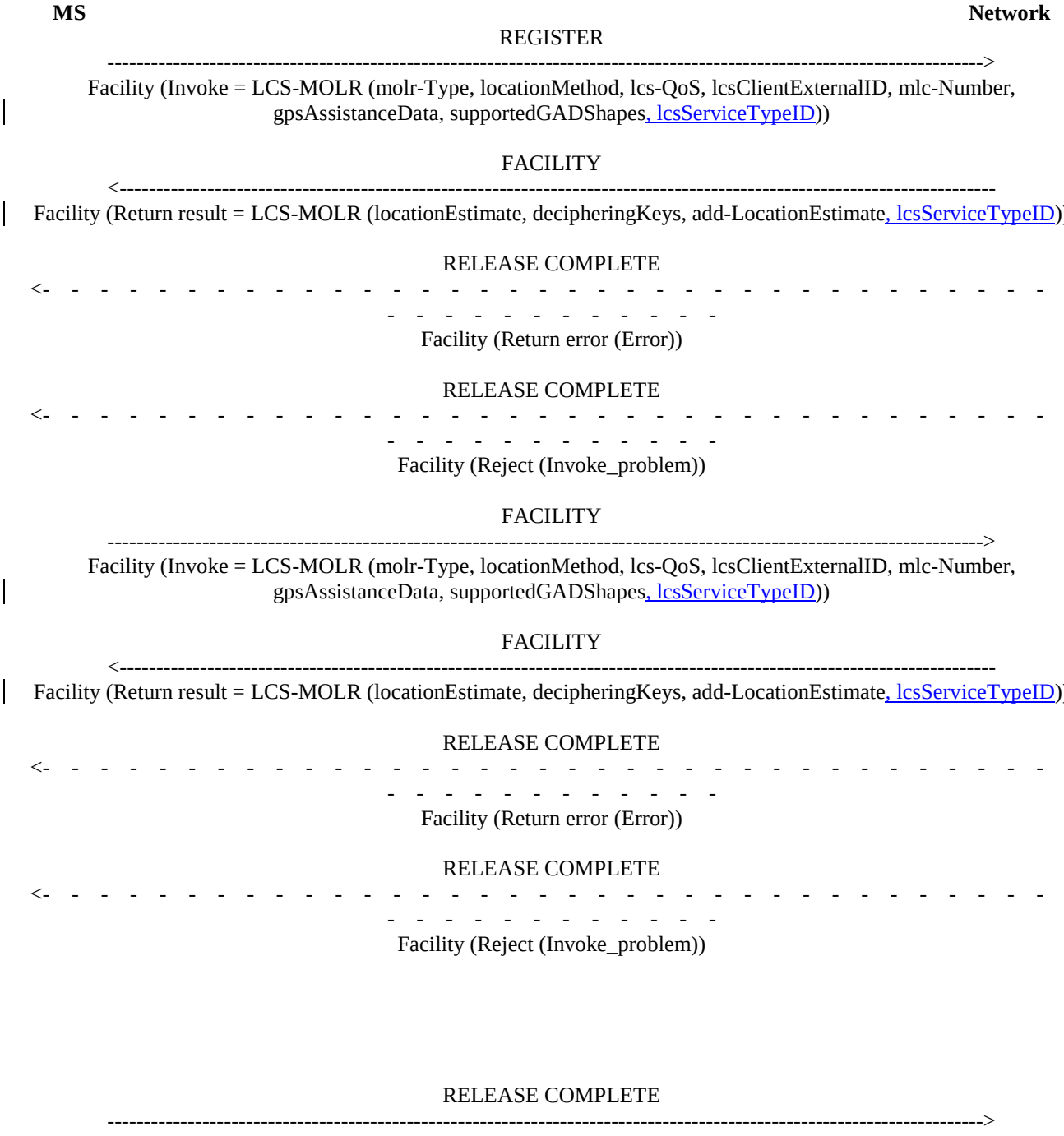

Figure 5.2: Multiple mobile originated location requests

<< End of changed clause >>

3GPP TSG CN WG4 Meeting #22
Atlanta, USA, 16th – 20th February 2004

N4-040322
Revised N4-040196

CR-Form-v7

CHANGE REQUEST

⌘ **29.002** **CR** **725** ⌘ **rev** **1** ⌘ 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 [X] Radio Access Network [ ] Core Network [X]

Title:	⌘	MO-LR Service Identity support
Source:	⌘	CN4
Work item code:	⌘	LCS2
Date:	⌘	19/02/2004
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:	⌘	For an LCS Client that supports MO-LR, it may provide various MO-LR services to the subscriber. When the UE requests that its own location be sent to an external LCS client, the UE may specify a Service Identity to indicate which MO-LR service of the LCS Client it requests. Then in case the LCS Client obtains the location estimate of the UE, it shall handle the location estimate according to the Service Identity. In the TS 29.002, the Subscriber_Location_Report message should be enhanced to fulfil this requirement.
Summary of change:	⌘	Add the parameter "LCS Service Type Id" to the Subscriber_Location_Report message.
Consequences if not approved:	⌘	The stage 3 cannot support Service Identity in MO-LR procedure.

Clauses affected:	⌘	13A.3.2, 13A.3.3, 17.7.13			
		Y	**N**		
Other specs affected:	⌘	**X**		Other core specifications	⌘ 23.271 CR 238, 24.030 CR 016, 24.080 CR 033, 24.008
			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.

<< First changed clause >>

13A.3.2 Service Primitives

Table 13A.3/1: Subscriber_Location_Report

Parameter name	Request	Indication	Response	Confirm
Invoke id	M	M(=)	M(=)	M(=)
LCS Event	M	M(=)		
LCS Client ID	M	M(=)		
Network Node Number	M	M(=)		
IMSI	C	C(=)		
MSISDN	C	C(=)		
NA-ESRD	C	C(=)		
NA-ESRK	C	C(=)	C	C(=)
IMEI	U	C(=)		
Location Estimate	C	C(=)		
Positioning Data	C	C(=)		
Age of Location Estimate	C	C(=)		
LMSI	U	C(=)		
GPRS Node Indicator	C	C(=)		
Additional Location Estimate	C	C(=)		
Deferred MT-LR Data	C	C(=)		
LCS-Reference Number	C	C(=)		
NA-ESRK Request	C	C(=)		
Cell Id Or SAI	C	C(=)		
H-GMLC Address	C	C(=)		
R-GMLC Address	C	C(=)		
LCS Service Type Id	C	C(=)		
User error			C	C(=)
Provider error				O

<< Second changed clause >>

13A.3.3 Parameter Definition and Use

All parameters are defined in clause 7.6. The use of these parameters and the requirements for their presence are specified in. 3GPP TS 23.271 [26a].

LCS Event

This parameter indicates the event that triggered the Subscriber Location Report.

LCS Client ID

This parameter provides information related to the identity of the recipient LCS client.

Network Node Number

See definition in clause 7.6.2. This parameter provides the address of the sending node.

IMSI

The IMSI shall be provided if available to the VMSC or SGSN.

MSISDN

The MSISDN shall be provided if available to the VMSC or SGSN.

NA-ESRD

If the target MS has originated an emergency service call in North America, the NA-ESRD shall be provided by the VMSC if available.

NA-ESRK

If the target MS has originated an emergency service call in North America, the NA-ESRK shall be provided by the VMSC if assigned.

If the target MS has originated an emergency service call in North America and NA-ESRK Request is included in Subscriber_Location_Report-Arg, NA-ESRK may also be included in the response to the MSC, see 3GPP TS 23.271 [26a].

IMEI

Inclusion of the IMEI is optional.

Location Estimate

This parameter provides the location estimate. The absence of this parameter implies that a location estimate was not available or could not be successfully obtained. If the obtained location estimate is not encoded in one of the supported geographical shapes then this parameter shall consist of one octet, which shall be discarded by the receiving node.

Positioning Data

This parameter indicates the usage of each positioning method that was attempted to determine the location estimate either successfully or unsuccessfully. If Positioning Data received from the RAN contains no Positioning Methods, Positioning Data is excluded from the MAP message.

Age of Location Estimate

This parameter indicates how long ago the location estimate was obtained.

LMSI

The LMSI may be provided if assigned by the VLR.

GPRS Node Indicator

See definition in clause 7.6.8. This presence of this parameter is mandatory only if the SGSN number is sent in the Network Node Number.

Additional Location Estimate

This parameter provides the location estimate when not provided by the Location Estimate parameter..

Deferred MT-LR Data

See definition in clause 7.6.11.3.

LCS-Reference Number

This parameter shall be included if the Subscriber Location Report is the response to a deferred MT location request.

NA-ESRK Request

If the target MS has originated an emergency service call in North America, NA-ESRK Request may be included to indicate that the MSC is able to accept NA-ESRK in the Response message, see section 7.6.11.19.

Cell Id Or SAI

For GERAN access, this parameter indicates Global Cell Identifier of the cell that the served subscriber is currently attached to. For UTRAN access, this parameter contains the Service Area Identifier for the cell that the subscriber is currently attached to. This parameter is included only for North American Emergency Calls as described in 3GPP TS 23.271 [26a].

H-GMLC address

See definition in clause 7.6.2. The parameter shall be included if the Subscriber Location Report is the response to a deferred MT location request for an area event.

R-GMLC address

See definition in clause 7.6.2. The parameter shall be included if the parameter was received from the UE and if the Subscriber Location Report is the response to a deferred MT location request for an area event.

LCS Service Type Id

See definition in clause 7.6.11.15. The requirements for its presence are specified in 3GPP TS 23.271 [26a].

User error

This parameter is sent by the responder when the received message contains an error, cannot be forwarded or stored for an LCS client or cannot be accepted for some other reason and if present, takes one of the following values defined in clause 7.6.1.

- System Failure;
- Data Missing;
- Unexpected Data Value;
- Resource Limitation;
- Unknown Subscriber;
- Unauthorised requesting network;
- Unknown or unreachable LCS Client.

Provider error

These are defined in clause 7.6.1.

<< Third changed clause >>

17.7.13 Location service data types

```
MAP-LCS-DataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-LCS-DataTypes (25) version9 (9)}

DEFINITIONS
IMPLICIT TAGS
::=
BEGIN

```

```
EXPORTS
        RoutingInfoForLCS-Arg,
        RoutingInfoForLCS-Res,
        ProvideSubscriberLocation-Arg,
        ProvideSubscriberLocation-Res,
        SubscriberLocationReport-Arg,
        SubscriberLocationReport-Res,
    LocationType,
    DeferredLocationEventType,
    LCSClientName,
    LCS-QoS,
    Horizontal-Accuracy,
    ResponseTime,
    Ext-GeographicalInformation,
    SupportedGADShapes,
    Add-GeographicalInformation,
    LCSRequestorID,
    LCS-ReferenceNumber,
    LCSCodeword,
    AreaEventInfo
;

IMPORTS
        AddressString,
        ISDN-AddressString,
        IMEI,
        IMSI,
        LMSI,
        SubscriberIdentity,
        AgeOfLocationInformation,
        LCSClientExternalID,
        LCSClientInternalID,
    LCSServiceTypeID,
    CellGlobalIdOrServiceAreaIdOrLAI
FROM MAP-CommonDataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-CommonDataTypes (18) version9 (9)}

        ExtensionContainer
FROM MAP-ExtensionDataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-ExtensionDataTypes (21) version9 (9)}

        USSD-DataCodingScheme,
    USSD-String
FROM MAP-SS-DataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1) modules (3)
   map-SS-DataTypes (14) version9 (9)}

        APN,
        GSN-Address,
        SupportedLCS-CapabilitySets
FROM MAP-MS-DataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-MS-DataTypes (11) version9 (9)}

        Additional-Number
FROM MAP-SM-DataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-SM-DataTypes (16) version9 (9)}
;


RoutingInfoForLCS-Arg ::= SEQUENCE {
     mlcNumber                          [0] ISDN-AddressString,
     targetMS                           [1] SubscriberIdentity,
     extensionContainer                 [2] ExtensionContainer          OPTIONAL,
     ...}

RoutingInfoForLCS-Res ::= SEQUENCE {
     targetMS                           [0] SubscriberIdentity,
     lcsLocationInfo                    [1] LCSLocationInfo,
     extensionContainer                 [2] ExtensionContainer          OPTIONAL,
     ...,
     v-gmlc-Address                     [3]  GSN-Address                OPTIONAL,
     h-gmlc-Address                     [4]  GSN-Address                OPTIONAL,
     ppr-Address                        [5]  GSN-Address                OPTIONAL }

```

```
LCSLocationInfo ::= SEQUENCE {
     networkNode-Number                 ISDN-AddressString,
     -- NetworkNode-number can be either msc-number or sgsn-number
     lmsi                               [0] LMSI                          OPTIONAL,
     extensionContainer                 [1] ExtensionContainer            OPTIONAL,
     ... ,
     gprsNodeIndicator                  [2] NULL                          OPTIONAL,
     -- gprsNodeIndicator is set only if the SGSN number is sent as the Network Node Number
     additional-Number                  [3] Additional-Number             OPTIONAL,
     supportedLCS-CapabilitySets        [4]  SupportedLCS-CapabilitySets  OPTIONAL,
     additional-LCS-CapabilitySets      [5]  SupportedLCS-CapabilitySets  OPTIONAL
     }

ProvideSubscriberLocation-Arg ::= SEQUENCE {
     locationType                       LocationType,
     mlc-Number                         ISDN-AddressString,
     lcs-ClientID                       [0] LCS-ClientID                  OPTIONAL,
     privacyOverride                    [1] NULL                          OPTIONAL,
     imsi                               [2] IMSI                          OPTIONAL,
     msisdn                             [3] ISDN-AddressString            OPTIONAL,
     lmsi                               [4] LMSI                          OPTIONAL,
     imei                               [5] IMEI                          OPTIONAL,
     lcs-Priority                       [6] LCS-Priority                  OPTIONAL,
     lcs-QoS                            [7] LCS-QoS                       OPTIONAL,
     extensionContainer                 [8] ExtensionContainer            OPTIONAL,
     ... ,
     supportedGADShapes                 [9]  SupportedGADShapes           OPTIONAL,
     lcs-ReferenceNumber                [10] LCS-ReferenceNumber          OPTIONAL,
     lcsServiceTypeID                   [11] LCSServiceTypeID             OPTIONAL,
     lcsCodeword                        [12] LCSCodeword                  OPTIONAL,
     lcs-PrivacyCheck                   [13] LCS-PrivacyCheck             OPTIONAL,
     areaEventInfo                      [14] AreaEventInfo                OPTIONAL,
     h-gmlc-Address                     [15] GSN-Address                  OPTIONAL,
     r-gmlc-Address                     [16] GSN-Address                  OPTIONAL }

     -- one of imsi or msisdn is mandatory
     -- If a location estimate type indicates activate deferred location or cancel deferred
     -- location, a lcs-Reference number shall be included.

LocationType ::= SEQUENCE {
     locationEstimateType               [0] LocationEstimateType,
     ...,
     deferredLocationEventType          [1] DeferredLocationEventType     OPTIONAL }

LocationEstimateType ::= ENUMERATED {
     currentLocation                    (0),
     currentOrLastKnownLocation         (1),
     initialLocation                    (2),
     ...,
     activateDeferredLocation           (3),
     cancelDeferredLocation             (4) }
--   exception handling:
--   a ProvideSubscriberLocation-Arg containing an unrecognized LocationEstimateType
--   shall be rejected by the receiver with a return error cause of unexpected data value

DeferredLocationEventType ::= BIT STRING {
     msAvailable                        (0) ,
     enteringIntoArea                   (1),
     leavingFromArea                    (2),
     beingInsideArea                    (3) } (SIZE (1..16))
-- beingInsideArea is always treated as oneTimeEvent regardless of the possible value
-- of occurrenceInfo inside areaEventInfo.
-- exception handling:
-- a ProvideSubscriberLocation-Arg containing other values than listed above in
-- DeferredLocationEventType shall be rejected by the receiver with a return error cause of
-- unexpected data value.

LCS-ClientID ::= SEQUENCE {
     lcsClientType                      [0] LCSClientType,
     lcsClientExternalID                [1] LCSClientExternalID           OPTIONAL,
     lcsClientDialedByMS                [2] AddressString                 OPTIONAL,
     lcsClientInternalID                [3] LCSClientInternalID           OPTIONAL,
     lcsClientName                      [4] LCSClientName                 OPTIONAL,
     ...,
     lcsAPN                             [5] APN                           OPTIONAL,
     lcsRequestorID                     [6] LCSRequestorID                OPTIONAL }
```

```
LCSClientType ::= ENUMERATED {
     emergencyServices                  (0),
     valueAddedServices                 (1),
     plmnOperatorServices               (2),
     lawfulInterceptServices            (3),
     ... }
     --   exception handling:
     --   unrecognized values may be ignored if the LCS client uses the privacy override
     --   otherwise, an unrecognized value shall be treated as unexpected data by a receiver
     --   a return error shall then be returned if received in a MAP invoke
```

```
LCSClientName ::= SEQUENCE {
     dataCodingScheme                   [0] USSD-DataCodingScheme,
     nameString                         [2] NameString,
     ...,
     lcs-FormatIndicator                [3] LCS-FormatIndicator          OPTIONAL }

-- The USSD-DataCodingScheme shall indicate use of the default alphabet through the
-- following encoding
--   bit  7 6 5 4 3 2 1 0
--        0 0 0 0 1 1 1 1
```

```
NameString ::= USSD-String (SIZE (1..maxNameStringLength))
```

```
maxNameStringLength  INTEGER ::= 63
```

```
LCSRequestorID ::= SEQUENCE {
     dataCodingScheme                   [0] USSD-DataCodingScheme,
     requestorIDString                  [1] RequestorIDString,
     ...,
     lcs-FormatIndicator                [2] LCS-FormatIndicator          OPTIONAL }
```

```
RequestorIDString ::= USSD-String (SIZE (1..maxRequestorIDStringLength))
```

```
maxRequestorIDStringLength  INTEGER ::= 63
```

```
LCS-FormatIndicator ::= ENUMERATED {
     logicalName                        (0),
     e-mailAddress                      (1),
     msisdn                             (2),
     url                                (3),
     sipUrl                             (4),
     ... }
```

```
LCS-Priority ::= OCTET STRING (SIZE (1))
     -- 0 = highest priority
     -- 1 = normal priority
     -- all other values treated as 1
```

```
LCS-QoS ::= SEQUENCE {
     horizontal-accuracy                [0] Horizontal-Accuracy          OPTIONAL,
     verticalCoordinateRequest          [1] NULL                         OPTIONAL,
     vertical-accuracy                  [2] Vertical-Accuracy            OPTIONAL,
     responseTime                       [3] ResponseTime                 OPTIONAL,
     extensionContainer                 [4] ExtensionContainer           OPTIONAL,
     ...}
```

```
Horizontal-Accuracy ::= OCTET STRING (SIZE (1))
     -- bit 8 = 0
     -- bits 7-1 = 7 bit Uncertainty Code defined in 3GPP TS 23.032. The horizontal location
     -- error should be less than the error indicated by the uncertainty code with 67%
     -- confidence.
```

```
Vertical-Accuracy ::= OCTET STRING (SIZE (1))
     -- bit 8 = 0
     -- bits 7-1 = 7 bit Vertical Uncertainty Code defined in 3GPP TS 23.032.
     -- The vertical location error should be less than the error indicated
     -- by the uncertainty code with 67% confidence.
```

```
ResponseTime ::= SEQUENCE {
     responseTimeCategory               ResponseTimeCategory,
     ...}
--   note: an expandable SEQUENCE simplifies later addition of a numeric response time.
```

```
ResponseTimeCategory ::= ENUMERATED {
     lowdelay  (0),
     delaytolerant  (1),
     ... }
--   exception handling:
--   an unrecognized value shall be treated the same as value 1 (delaytolerant)
```

```
SupportedGADShapes ::= BIT STRING {
     ellipsoidPoint  (0),
     ellipsoidPointWithUncertaintyCircle (1),
     ellipsoidPointWithUncertaintyEllipse (2),
     polygon (3),
     ellipsoidPointWithAltitude (4),
     ellipsoidPointWithAltitudeAndUncertaintyElipsoid (5),
     ellipsoidArc  (6) } (SIZE (7..16))
-- A node shall mark in the BIT STRING all Shapes defined in 3GPP TS 23.032 it supports.
-- exception handling: bits 7 to 15 shall be ignored if received.
```

```
LCS-ReferenceNumber::= OCTET STRING (SIZE(1))
```

```
LCSCodeword ::= SEQUENCE {
     dataCodingScheme                    [0] USSD-DataCodingScheme,
     lcsCodewordString                   [1] LCSCodewordString,
     ...}
```

```
LCSCodewordString ::= USSD-String (SIZE (1..maxLCSCodewordStringLength))
```

```
maxLCSCodewordStringLength  INTEGER ::= 20
```

```
LCS-PrivacyCheck ::= SEQUENCE {
     callSessionUnrelated                [0] PrivacyCheckRelatedAction,
     callSessionRelated                  [1] PrivacyCheckRelatedAction     OPTIONAL,
     ...}
```

```
PrivacyCheckRelatedAction ::= ENUMERATED {
     allowedWithoutNotification (0),
     allowedWithNotification (1),
     allowedIfNoResponse (2),
     restrictedIfNoResponse (3),
     notAllowed (4),
     ...}
--   exception handling:
--   a ProvideSubscriberLocation-Arg containing an unrecognized PrivacyCheckRelatedAction
--   shall be rejected by the receiver with a return error cause of unexpected data value
```

```
AreaEventInfo ::= SEQUENCE {
     areaDefinition                      [0]  AreaDefinition,
     occurrenceInfo                      [1]  OccurrenceInfo               OPTIONAL,
     intervalTime                        [2]  IntervalTime                 OPTIONAL,
     ...}
```

```
AreaDefinition ::= SEQUENCE {
     areaList                            [0]  AreaList,
     ...}
```

```
AreaList ::= SEQUENCE SIZE (1..maxNumOfAreas) OF Area
```

```
maxNumOfAreas  INTEGER ::= 10
```

```
Area ::= SEQUENCE {
     areaType                            [0]  AreaType,
     areaIdentification                  [1]  AreaIdentification,
     ...}
```

```
AreaType ::= ENUMERATED {
     countryCode                         (0),
     plmnId                              (1),
     locationAreaId                      (2),
     routingAreaId                       (3),
     cellGlobalId                        (4),
     ...}
```

```
AreaIdentification ::= OCTET STRING (SIZE (2..7))
     -- The internal structure is defined as follows:
     -- octet 1 bits 4321                Mobile Country Code 1st digit
     --       bits 8765                 Mobile Country Code 2nd digit
     -- octet 2 bits 4321                Mobile Country Code 3rd digit
     --       bits 8765                 Mobile Network Code 3rd digit if 3 digit MNC included
     --                                 or filler (1111)
     -- octet 3 bits 4321                Mobile Network Code 1st digit
     --       bits 8765                 Mobile Network Code 2nd digit
     -- octets 4 and 5                   Location Area Code (LAC)
     -- octet 6                          Routing Area Code (RAC) for Routing Area Id
     -- octets 6 and 7                   Cell Identity (CI) for Cell Global Id
```

```
OccurrenceInfo ::= ENUMERATED {
     oneTimeEvent                       (0),
     multipleTimeEvent                  (1),
     ...}
```

```
IntervalTime ::= INTEGER (1..32767)
     -- minimum interval time between area reports in seconds
```

```
ProvideSubscriberLocation-Res ::= SEQUENCE {
     locationEstimate                   Ext-GeographicalInformation,
     ageOfLocationEstimate              [0] AgeOfLocationInformation      OPTIONAL,
     extensionContainer                 [1] ExtensionContainer            OPTIONAL,
     ... ,
     add-LocationEstimate               [2] Add-GeographicalInformation   OPTIONAL,
     deferredmt-lrResponseIndicator     [3] NULL                          OPTIONAL,
     positioningData                    [4] PositioningDataInformation    OPTIONAL,
     cellIdOrSai                        [5] CellGlobalIdOrServiceAreaIdOrLAI     OPTIONAL }

--   if deferredmt-lrResponseIndicator is set, locationEstimate is ignored.

-- the add-LocationEstimate parameter shall not be sent to a node that did not indicate the
-- geographic shapes supported in the ProvideSubscriberLocation-Arg
-- The locationEstimate and the add-locationEstimate parameters shall not be sent if
-- the supportedGADShapes parameter has been received in ProvideSubscriberLocation-Arg
-- and the shape encoded in locationEstimate or add-LocationEstimate is not marked
-- as supported in supportedGADShapes. In such a case ProvideSubscriberLocation
-- shall be rejected with error FacilityNotSupported with additional indication
-- shapeOfLocationEstimateNotSupported
```

```
Ext-GeographicalInformation ::= OCTET STRING (SIZE (1..maxExt-GeographicalInformation))
    -- Refers to geographical Information defined in 3GPP TS 23.032.
    -- This is composed of 1 or more octets with an internal structure according to
    -- 3GPP TS 23.032
    -- Octet 1: Type of shape, only the following shapes in 3GPP TS 23.032 are allowed:
    --       (a) Ellipsoid point with uncertainty circle
    --       (b) Ellipsoid point with uncertainty ellipse
    --       (c) Ellipsoid point with altitude and uncertainty ellipsoid
    --       (d) Ellipsoid Arc
    --       (e) Ellipsoid Point
    -- Any other value in octet 1 shall be treated as invalid
    -- Octets 2 to 8 for case (a) – Ellipsoid point with uncertainty circle
    --       Degrees of Latitude                                    3 octets
    --       Degrees of Longitude                                   3 octets
    --       Uncertainty code                                       1 octet
    -- Octets 2 to 11 for case (b) – Ellipsoid point with uncertainty ellipse:
    --       Degrees of Latitude                                    3 octets
    --       Degrees of Longitude                                   3 octets
    --       Uncertainty semi-major axis                            1 octet
    --       Uncertainty semi-minor axis                            1 octet
    --       Angle of major axis                                    1 octet
    --       Confidence                                             1 octet
    -- Octets 2 to 14 for case (c) – Ellipsoid point with altitude and uncertainty ellipsoid
    --       Degrees of Latitude                                    3 octets
    --       Degrees of Longitude                                   3 octets
    --       Altitude                                               2 octets
    --       Uncertainty semi-major axis                            1 octet
    --       Uncertainty semi-minor axis                            1 octet
    --       Angle of major axis                                    1 octet
    --       Uncertainty altitude                                   1 octet
    --       Confidence                                             1 octet
    -- Octets 2 to 13 for case (d) – Ellipsoid Arc
    --       Degrees of Latitude                                    3 octets
    --       Degrees of Longitude                                   3 octets
    --       Inner radius                                           2 octets
    --       Uncertainty radius                                     1 octet
    --       Offset angle                                           1 octet
    --       Included angle                                         1 octet
    --       Confidence                                             1 octet
    -- Octets 2 to 7 for case (e) – Ellipsoid Point
    --       Degrees of Latitude                                    3 octets
    --       Degrees of Longitude                                   3 octets

    --
    -- An Ext-GeographicalInformation parameter comprising more than one octet and
    -- containing any other shape or an incorrect number of octets or coding according
    -- to 3GPP TS 23.032 shall be treated as invalid data by a receiver.
    --
    -- An Ext-GeographicalInformation parameter comprising one octet shall be discarded
    -- by the receiver if an Add-GeographicalInformation parameter is received
    -- in the same message.
    --
    -- An Ext-GeographicalInformation parameter comprising one octet shall be treated as
    -- invalid data by the receiver if an Add-GeographicalInformation parameter is not
    -- received in the same message.

maxExt-GeographicalInformation  INTEGER ::= 20
    -- the maximum length allows for further shapes in 3GPP TS 23.032 to be included in later
    -- versions of 3GPP TS 29.002

PositioningDataInformation ::= OCTET STRING (SIZE (2..maxPositioningDataInformation))
    -- Refers to the Positioning Data defined in 3GPP TS 49.031 for GERAN or 3GPP TS 25.413
    -- for UTRAN.
    -- This is composed of 2 or more octets with an internal structure according to
    -- 3GPP TS 49.031 for GERAN and 25.413 for UTRAN. Note that the internal structure
    -- of the parameter is identical for GERAN and UTRAN, but the defined code points differ
    -- for GERAN and UTRAN to allow for Radio Technology specific location methods.

maxPositioningDataInformation INTEGER ::= 10
    --

Add-GeographicalInformation ::= OCTET STRING (SIZE (1..maxAdd-GeographicalInformation))
    -- Refers to geographical Information defined in 3GPP TS 23.032.
    -- This is composed of 1 or more octets with an internal structure according to
    -- 3GPP TS 23.032
    -- Octet 1: Type of shape, all the shapes defined in 3GPP TS 23.032 are allowed:
    -- Octets 2 to n (where n is the total number of octets necessary to encode the shape
    -- according to 3GPP TS 23.032) are used to encode the shape itself in accordance with
```

```
the
     -- encoding defined in 3GPP TS 23.032
     --
     -- An Add-GeographicalInformation parameter, whether valid or invalid, received
     -- together with a valid Ext-GeographicalInformation parameter in the same message
     -- shall be discarded.
     --
     -- An Add-GeographicalInformation parameter containing any shape not defined in
     -- 3GPP TS 23.032 or an incorrect number of octets or coding according to
     -- 3GPP TS 23.032 shall be treated as invalid data by a receiver if not received
     -- together with a valid Ext-GeographicalInformation parameter in the same message.
```

```
maxAdd-GeographicalInformation  INTEGER ::= 91
     -- the maximum length allows support for all the shapes currently defined in 3GPP TS
23.032
```

```
SubscriberLocationReport-Arg ::= SEQUENCE {
     lcs-Event                          LCS-Event,
     lcs-ClientID                       LCS-ClientID,
     lcsLocationInfo                    LCSLocationInfo,
     msisdn                             [0] ISDN-AddressString            OPTIONAL,
     imsi                               [1] IMSI                          OPTIONAL,
     imei                               [2] IMEI                          OPTIONAL,
     na-ESRD                            [3] ISDN-AddressString            OPTIONAL,
     na-ESRK                            [4] ISDN-AddressString            OPTIONAL,
     locationEstimate                   [5] Ext-GeographicalInformation   OPTIONAL,
     ageOfLocationEstimate              [6] AgeOfLocationInformation      OPTIONAL,
     extensionContainer                 [7] ExtensionContainer            OPTIONAL,
     ... ,
     add-LocationEstimate               [8] Add-GeographicalInformation   OPTIONAL,
     deferredmt-lrData                  [9] Deferredmt-lrData             OPTIONAL,
     lcs-ReferenceNumber                [10] LCS-ReferenceNumber          OPTIONAL,
     positioningData                    [11] PositioningDataInformation   OPTIONAL,
     na-ESRK-Request                    [12] NULL                         OPTIONAL,
     cellIdOrSai                        [13] CellGlobalIdOrServiceAreaIdOrLAI    OPTIONAL,
     h-gmlc-Address                     [14] GSN-Address                  OPTIONAL,
     r-gmlc-Address                     [15] GSN-Address                  OPTIONAL,
     lcsServiceTypeID                   [16] LCSServiceTypeID             OPTIONAL }

     -- one of msisdn or imsi is mandatory
     -- a location estimate that is valid for the locationEstimate parameter should
     -- be transferred in this parameter in preference to the add-LocationEstimate.
     -- the deferredmt-lrData parameter shall be included if and only if the lcs-Event
     -- indicates a deferredmt-lrResponse.
     -- if the lcs-Event indicates a deferredmt-lrResponse then the locationEstimate
     -- and the add-locationEstimate parameters shall not be sent if the
     -- supportedGADShapes parameter had been received in ProvideSubscriberLocation-Arg
     -- and the shape encoded in locationEstimate or add-LocationEstimate was not marked
     -- as supported in supportedGADShapes. In such a case terminationCause
     -- in deferredmt-lrData shall be present with value
     -- shapeOfLocationEstimateNotSupported.
     -- If a lcs event indicates deferred mt-lr response, the lcs-Reference number shall be
     -- included.
```

```
Deferredmt-lrData ::= SEQUENCE {
     deferredLocationEventType          DeferredLocationEventType,
     terminationCause                   [0] TerminationCause              OPTIONAL,
     lcsLocationInfo                    [1] LCSLocationInfo               OPTIONAL,
     ...}
     -- lcsLocationInfo may be included only if a terminationCause is present
     -- indicating mt-lrRestart.
```

```
LCS-Event ::= ENUMERATED {
     emergencyCallOrigination  (0),
     emergencyCallRelease  (1),
     mo-lr  (2),
     ...,
     deferredmt-lrResponse  (3) }
     --   exception handling:
     --   a SubscriberLocationReport-Arg containing an unrecognized LCS-Event
     --   shall be rejected by a receiver with a return error cause of unexpected data value
```

```
TerminationCause ::= ENUMERATED {
     normal  (0),
     errorundefined  (1),
     internalTimeout  (2),
     congestion  (3),
     mt-lrRestart  (4),
     privacyViolation  (5),
     ...,
     shapeOfLocationEstimateNotSupported (6) }
-- mt-lrRestart shall be used to trigger the GMLC to restart the location procedure,
-- either because the sending node knows that the terminal has moved under coverage
-- of another MSC or SGSN (e.g. Send Identification received), or because the subscriber
-- has been deregistered due to a Cancel Location received from HLR.
--
-- exception handling
-- an unrecognized value shall be treated the same as value 1 (errorundefined)
```

```
SubscriberLocationReport-Res ::= SEQUENCE {
     extensionContainer                  ExtensionContainer               OPTIONAL,
     ...,
     na-ESRK                             [0] ISDN-AddressString           OPTIONAL }
```

```
END
```

<< End of changed clause >>