

3GPP TSG CN Plenary Meeting #21
17th – 19th September 2003 Frankfurt, GERMANY.

NP-030398

Source: TSG CN WG4
Title: Corrections on Location Services
Agenda item: 9.19
Document for: APPROVAL

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
29.002	654		N4-030824	Rel-6	New LCS Service Types	B	6.2.0
29.002	645	1	N4-031038	Rel-6	Introduction of North American Interim Location Based Routing of Emergency Call	B	6.2.0

CR-Form-v7

CHANGE REQUEST

⌘ **29.002 CR 645** ⌘ rev **1** ⌘ Current version: **6.2.0** ⌘

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

Proposed change affects: UICC apps ME Radio Access Network Core Network

Title:	⌘ Introduction of North American Interim Location Based Routing of Emergency Call		
Source:	⌘ CN4		
Work item code:	⌘ LCS2	Date:	⌘ 15/07/2003
Category:	⌘ B	Release:	⌘ Rel-6
	Use <u>one</u> 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 <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

Reason for change:	⌘ At CN4 #19, an LS from T1P1 (N4-030586) was received that identified requirements from North America for emergency calls to be routed to the relevant PSAP based on a subscriber's actual position rather than basing this routing on the cell-Id of the cell that the subscriber was attached to. This new functionality would allow the emergency call to be handled by the PSAP that was physically closest to the subscriber making the call, rather than the PSAP closest to the cell.
Summary of change:	⌘ New functionality is introduced to allow the GMLC to replace the NA-ESRK supplied by the MSC (if the MSC allows for this to take place) by interrogating the LCZTF (a new functional element within the GMLC defined in 23.271). New parameters are introduced for Subscriber Location Report to allow the result of the interrogation to be taken back to the MSC.
Consequences if not approved:	⌘ Emergency calls may be routed to a non-optimal PSAP, resulting ultimately in delays in responses to emergencies.

Clauses affected:	⌘ 7.6.11.19, 13A.3, 17.7.13										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 20px;">Y</td> <td style="width: 20px;">N</td> </tr> <tr> <td>X</td> <td></td> </tr> <tr> <td></td> <td>X</td> </tr> <tr> <td></td> <td>X</td> </tr> </table> Other core specifications Test specifications O&M Specifications	Y	N	X			X		X	⌘ 23.271 CR 198r3	
Y	N										
X											
	X										
	X										
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 Definition of parameters

Following is an alphabetic list of parameters used in the common MAP-services in clause 7.3:

Application context name	7.3.1	Refuse reason	7.3.1
Destination address	7.3.1	Release method	7.3.2
Destination reference	7.3.1	Responding address	7.3.1
Diagnostic information	7.3.4	Result	7.3.1
Originating address	7.3.1	Source	7.3.5
Originating reference	7.3.1	Specific information	7.3.1/7.3.2/7.3.4
Problem diagnostic	7.3.6	User reason	7.3.4
Provider reason	7.3.5		

Following is an alphabetic list of parameters contained in this clause:

Absent Subscriber Diagnostic SM	7.6.8.9	Location Information for GPRS	7.6.2.30a
Access connection status	7.6.9.3	Location update type	7.6.9.6
Access signalling information	7.6.9.5	Long Forwarded-to Number	7.6.2.22A
Additional Absent Subscriber Diagnostic SM	7.6.8.12	Long FTN Supported	7.6.2.22B
Additional <u>LCS Capability Sets</u>	7.6.11.25		
Additional Location Estimate	7.6.11.21	Lower Layer Compatibility	7.6.3.42
Additional number	7.6.2.46	LSA Information	7.6.3.56
Additional signal info	7.6.9.10	LSA Information Withdraw	7.6.3.58
Additional SM Delivery Outcome	7.6.8.11	MC Information	7.6.4.48
Age Indicator	7.6.3.72	MC Subscription Data	7.6.4.47
Alert Reason	7.6.8.8	Mobile Not Reachable Reason	7.6.3.51
Alert Reason Indicator	7.6.8.10	Modification request for CSI	7.6.3.81
Alerting Pattern	7.6.3.44	Modification request for SS Information	7.6.3.82
All GPRS Data	7.6.3.53	More Messages To Send	7.6.8.7
All Information Sent	7.6.1.5	MS ISDN	7.6.2.17
AN-apdu	7.6.9.1	MSC number	7.6.2.11
APN	7.6.2.42	MSISdn-Alert	7.6.2.29
Authentication set list	7.6.7.1	Multicall Bearer Information	7.6.2.52
B-subscriber Address	7.6.2.36	Multiple Bearer Requested	7.6.2.53
B subscriber Number	7.6.2.48	Multiple Bearer Not Supported	7.6.2.54
B subscriber subaddress	7.6.2.49	MWD status	7.6.8.3
		<u>NA-ESRK request</u>	<u>7.6.11.19</u>
Basic Service Group	7.6.4.40	NbrUser	7.6.4.45
Bearer service	7.6.4.38	Network Access Mode	7.6.3.50
BSSMAP Service Handover	7.6.6.5	Network node number	7.6.2.43
BSSMAP Service Handover List	7.6.6.5A	Network resources	7.6.10.1
Call Barring Data	7.6.3.83	Network signal information	7.6.9.8
Call barring feature	7.6.4.19	New password	7.6.4.20
Call barring information	7.6.4.18	No reply condition timer	7.6.4.7
Call barring support indicator	7.6.3.92	North American Equal Accesspreferred	7.6.2.34
		Carrier Id	
Call Direction	7.6.5.8	Number Portability Status	7.6.5.14

Call Forwarding Data	7.6.3.84	ODB Data	7.6.3.85
Call Info	7.6.9.9	ODB General Data	7.6.3.9
Call reference	7.6.5.1	ODB HPLMN Specific Data	7.6.3.10
Call Termination Indicator	7.6.3.67	OMC Id	7.6.2.18
Called number	7.6.2.24	Originally dialed number	7.6.2.26
Calling number	7.6.2.25	Originating entity number	7.6.2.10
CAMEL Subscription Info	7.6.3.78	Override Category	7.6.4.4
CAMEL Subscription Info Withdraw	7.6.3.38	P-TMSI	7.6.2.47
Cancellation Type	7.6.3.52	PDP-Address	7.6.2.45
Category	7.6.3.1	PDP-Context identifier	7.6.3.55
CCBS Feature	7.6.5.8	PDP-Type	7.6.2.44
CCBS Request State	7.6.4.49	Positioning Data	7.6.11.11A
Channel Type	7.6.5.9	Pre-paging supported	7.6.5.15
Chosen Channel	7.6.5.10	Previous location area Id	7.6.2.4
Chosen Radio Resource Information	7.6.6.10B	Protocol Id	7.6.9.7
Ciphering mode	7.6.7.7	Provider error	7.6.1.3
Cksn	7.6.7.5	PS LCS Not Supported by UE	7.6.11.10
CLI Restriction	7.6.4.5	QoS-Subscribed	7.6.3.47
CM service type	7.6.9.2	Radio Resource Information	7.6.6.10
Complete Data List Included	7.6.3.54	Radio Resource List	7.6.6.10A
CS Allocation Retention priority	7.6.3.87	RANAP Service Handover	7.6.6.6
CS LCS Not Supported by UE	7.6.11.9	Rand	7.6.7.2
CUG feature	7.6.3.26	LCS-Reference Number	7.6.11.23
CUG index	7.6.3.25	Regional Subscription Data	7.6.3.11
CUG info	7.6.3.22	Regional Subscription Response	7.6.3.12
CUG interlock	7.6.3.24	Relocation Number List	7.6.2.19A
CUG Outgoing Access indicator	7.6.3.8	Requested Info	7.6.3.31
CUG subscription	7.6.3.23	Requested Subscription Info	7.6.3.86
CUG Subscription Flag	7.6.3.37	Roaming number	7.6.2.19
Current location area Id	7.6.2.6	Roaming Restricted In SGSN Due To Unsupported Feature	7.6.3.49
Current password	7.6.4.21	Roaming Restriction Due To Unsupported Feature	7.6.3.13
Deferred MT-LR Data	7.6.11.3	Current Security Context	7.6.7.8
Deferred MT-LR Response Indicator	7.6.11.2	Selected RAB ID	7.6.2.56
eMLPP Information	7.6.4.41	Service centre address	7.6.2.27
Encryption Information	7.6.6.9	Serving Cell Id	7.6.2.37
Equipment status	7.6.3.2	SGSN address	7.6.2.39
Extensible Basic Service Group	7.6.3.5	SGSN CAMEL Subscription Info	7.6.3.75
Extensible Bearer service	7.6.3.3	SGSN number	7.6.2.38
Extensible Call barring feature	7.6.3.21	SIWF Number	7.6.2.35
Extensible Call barring information	7.6.3.20	SoLSA Support Indicator	7.6.3.57
Extensible Call barring information for CSE	7.6.3.79	SM Delivery Outcome	7.6.8.6
Extensible Forwarding feature	7.6.3.16	SM-RP-DA	7.6.8.1
Extensible Forwarding info	7.6.3.15	SM-RP-MTI	7.6.8.16
Extensible Forwarding information for CSE	7.6.3.80	SM-RP-OA	7.6.8.2
Extensible Forwarding Options	7.6.3.18	SM-RP-PRI	7.6.8.5
Extensible No reply condition timer	7.6.3.19	SM-RP-SMEA	7.6.8.17
Extensible QoS-Subscribed	7.6.3.74	SM-RP-UI	7.6.8.4
Extensible SS-Data	7.6.3.29	Sres	7.6.7.3
Extensible SS-Info	7.6.3.14	SS-Code	7.6.4.1
Extensible SS-Status	7.6.3.17	SS-Data	7.6.4.3
Extensible Teleservice	7.6.3.4	SS-Event	7.6.4.42
External Signal Information	7.6.9.4	SS-Event-Data	7.6.4.43
Failure Cause	7.6.7.9	SS-Info	7.6.4.24
Forwarded-to number	7.6.2.22	SS-Status	7.6.4.2
Forwarded-to subaddress	7.6.2.23	Stored location area Id	7.6.2.5
Forwarding feature	7.6.4.16	Subscriber State	7.6.3.30
Forwarding information	7.6.4.15	Subscriber Status	7.6.3.7
Forwarding Options	7.6.4.6	Super-Charger Supported in HLR	7.6.3.70
GERAN Classmark	7.6.6.4	Super-Charger Supported in Serving Network Entity	7.6.3.71
GGSN address	7.6.2.40	Offered Camel4 CSIs	7.6.3.36D
GGSN number	7.6.2.41	Offered Camel4 CSIs in interrogating node	7.6.3.36E
GMSC CAMEL Subscription Info	7.6.3.34	Offered Camel4 CSIs in VMSC	7.6.3.36F
GPRS enhancements support indicator	7.6.3.73		

GPRS Node Indicator	7.6.8.14	Offered Camel4 CSIs in VLR	7.6.3.36B
GPRS Subscription Data	7.6.3.46	Offered Camel4 CSIs in SGSN	7.6.3.36C
GPRS Subscription Data Withdraw	7.6.3.45	Offered Camel4 Functionalities	7.6.3.36G
		Supported CAMEL Phases	7.6.3.36H
GPRS Support Indicator	7.6.8.15	Supported CAMEL Phases in VLR	7.6.3.36
Group Id	7.6.2.33	Supported CAMEL Phases in SGSN	7.6.3.36A
		Supported CAMEL Phases in interrogating node	7.6.3.36I
GSM bearer capability	7.6.3.6	Supported GAD Shapes	7.6.11.20
gsmSCF Address	7.6.2.58	Supported LCS Capability Sets	7.6.11.17
gsmSCF Initiated Call	7.6.3.c	Suppress Incoming Call Barring	7.6.3.b
Guidance information	7.6.4.22	Suppress T-CSI	7.6.3.33
Handover number	7.6.2.21	Suppress VT-CSI	7.6.3.a
High Layer Compatibility	7.6.3.43	Suppression of Announcement	7.6.3.32
HLR Id	7.6.2.15	Target cell Id	7.6.2.8
HLR number	7.6.2.13	Target location area Id	7.6.2.7
HO-Number Not Required	7.6.6.7	Target RNC Id	7.6.2.8A
IMEI	7.6.2.3	Target MSC number	7.6.2.12
IMSI	7.6.2.1	Teleservice	7.6.4.39
Integrity Protection Information	7.6.6.8	TMSI	7.6.2.2
Inter CUG options	7.6.3.27	Trace reference	7.6.10.2
Intra CUG restrictions	7.6.3.28	Trace type	7.6.10.3
Invoke Id	7.6.1.1	User error	7.6.1.4
ISDN Bearer Capability	7.6.3.41	USSD Data Coding Scheme	7.6.4.36
IST Alert Timer	7.6.3.66	USSD String	7.6.4.37
IST Information Withdrawn	7.6.3.68	UU Data	7.6.5.12
IST Support Indicator	7.6.3.69	UUS CF Interaction	7.6.5.13
LCS Codeword	7.6.11.18	VBS Data	7.6.3.40
LCS Information	7.6.3.60	VGCS Data	7.6.3.39
LCS Service Type Id	7.6.11.15	VLR CAMEL Subscription Info	7.6.3.35
Kc	7.6.7.4	VLR number	7.6.2.14
Linked Id	7.6.1.2	VPLMN address allowed	7.6.3.48
LMSI	7.6.2.16	Zone Code	7.6.2.28
Location Information	7.6.2.30		

***** Next Changed section *****

7.6.11.19 [NA-ESRK Request](#)~~Void~~

[This parameter allows the MSC to indicate that it requires the GMLC to allocate a NA-ESRK based on the target MS location estimate. This parameter only applies to emergency services calls in North America.](#)

***** Next Changed 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(=)		
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

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. It may be included in the message only if the access network is GERAN, see 3GPP TS 23.271 [26a].

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.](#)

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 Changed Section* *****

17.7.13 Location service data types

```
1 MAP-LCS-DataTypes {
2   itu-t identified-organization (4) etsi (0) mobileDomain (0)
3   gsm-Network (1) modules (3) map-LCS-DataTypes (25) version9 (9)}
4
5 DEFINITIONS
6 IMPLICIT TAGS
7 ::=
8 BEGIN
9
10 EXPORTS
11   RoutingInfoForLCS-Arg,
12   RoutingInfoForLCS-Res,
13   ProvideSubscriberLocation-Arg,
14   ProvideSubscriberLocation-Res,
15   SubscriberLocationReport-Arg,
16   SubscriberLocationReport-Res,
17   LocationType,
18   LCSClientName,
19   LCS-QoS,
20   Horizontal-Accuracy,
21   ResponseTime,
22   Ext-GeographicalInformation,
23   SupportedGADShapes,
24   Add-GeographicalInformation,
25   LCSRequestorID,
26   LCSCodeword
27 ;
28
29 IMPORTS
30   AddressString,
31   ISDN-AddressString,
32   IMEI,
33   IMSI,
34   LMSI,
35   SubscriberIdentity,
36   AgeOfLocationInformation,
37   LCSClientExternalID,
38   LCSClientInternalID,
39   LCSServiceTypeID,
40   SupportedLCS-CapabilitySets
41 FROM MAP-CommonDataTypes {
42   itu-t identified-organization (4) etsi (0) mobileDomain (0)
43   gsm-Network (1) modules (3) map-CommonDataTypes (18) version9 (9)}
44
45   ExtensionContainer
46 FROM MAP-ExtensionDataTypes {
47   itu-t identified-organization (4) etsi (0) mobileDomain (0)
48   gsm-Network (1) modules (3) map-ExtensionDataTypes (21) version9 (9)}
49
50   USSD-DataCodingScheme,
51   USSD-String
52 FROM MAP-SS-DataTypes {
53   itu-t identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1) modules (3)
54   map-SS-DataTypes (14) version9 (9)}
55
56   APN,
57   GSN-Address
58 FROM MAP-MS-DataTypes {
59   itu-t identified-organization (4) etsi (0) mobileDomain (0)
60   gsm-Network (1) modules (3) map-MS-DataTypes (11) version9 (9)}
61
62   Additional-Number
63 FROM MAP-SM-DataTypes {
64   itu-t identified-organization (4) etsi (0) mobileDomain (0)
65   gsm-Network (1) modules (3) map-SM-DataTypes (16) version9 (9)}
66 ;
67
68
```



```

69 RoutingInfoForLCS-Arg ::= SEQUENCE {
70     mlcNumber                [0] ISDN-AddressString,
71     targetMS                 [1] SubscriberIdentity,
72     extensionContainer       [2] ExtensionContainer          OPTIONAL,
73     ... }
74
75 RoutingInfoForLCS-Res ::= SEQUENCE {
76     targetMS                 [0] SubscriberIdentity,
77     lcsLocationInfo         [1] LCSLocationInfo,
78     extensionContainer       [2] ExtensionContainer          OPTIONAL,
79     ...,
80     v-gmlc-Address          [3] GSN-Address                OPTIONAL,
81     h-gmlc-Address          [4] GSN-Address                OPTIONAL,
82     ppr-Address             [5] GSN-Address                OPTIONAL }
83
84 LCSLocationInfo ::= SEQUENCE {
85     networkNode-Number      ISDN-AddressString,
86     -- NetworkNode-number can be either msc-number or sgsn-number
87     lmsi                    [0] LMSI                      OPTIONAL,
88     extensionContainer       [1] ExtensionContainer          OPTIONAL,
89     ...,
90     gprsNodeIndicator       [2] NULL                      OPTIONAL,
91     -- gprsNodeIndicator is set only if the SGSN number is sent as the Network Node Number
92     additional-Number       [3] Additional-Number          OPTIONAL,
93     supportedLCS-CapabilitySets [4] SupportedLCS-CapabilitySets OPTIONAL,
94     additional-LCS-CapabilitySets [5] SupportedLCS-CapabilitySets OPTIONAL
95     }
96
97 ProvideSubscriberLocation-Arg ::= SEQUENCE {
98     locationType            LocationType,
99     mlc-Number              ISDN-AddressString,
100    lcs-ClientID            [0] LCS-ClientID                OPTIONAL,
101    privacyOverride        [1] NULL                      OPTIONAL,
102    imsi                   [2] IMSI                      OPTIONAL,
103    msisdn                 [3] ISDN-AddressString          OPTIONAL,
104    lmsi                   [4] LMSI                      OPTIONAL,
105    imei                   [5] IMEI                      OPTIONAL,
106    lcs-Priority           [6] LCS-Priority                OPTIONAL,
107    lcs-QoS                [7] LCS-QoS                    OPTIONAL,
108    extensionContainer     [8] ExtensionContainer          OPTIONAL,
109    ...,
110    supportedGADShapes     [9] SupportedGADShapes          OPTIONAL,
111    lcs-ReferenceNumber    [10] LCS-ReferenceNumber        OPTIONAL,
112    lcsServiceTypeID       [11] LCSServiceTypeID          OPTIONAL,
113    lcsCodeword            [12] LCSCodeword                OPTIONAL,
114    lcs-PrivacyCheck       [13] LCS-PrivacyCheck          OPTIONAL }
115
116 -- one of imsi or msisdn is mandatory
117 -- If a location estimate type indicates activate deferred location or cancel deferred
118 -- location, a lcs-Reference number shall be included.
119
120 LocationType ::= SEQUENCE {
121     locationEstimateType    [0] LocationEstimateType,
122     ...,
123     deferredLocationEventType [1] DeferredLocationEventType OPTIONAL }
124
125 LocationEstimateType ::= ENUMERATED {
126     currentLocation        (0),
127     currentOrLastKnownLocation (1),
128     initialLocation        (2),
129     ...,
130     activateDeferredLocation (3),
131     cancelDeferredLocation (4) }
132 -- exception handling:
133 -- a ProvideSubscriberLocation-Arg containing an unrecognized LocationEstimateType
134 -- shall be rejected by the receiver with a return error cause of unexpected data value
135
136 DeferredLocationEventType ::= BIT STRING {
137     msAvailable            (0) } (SIZE (1..16))
138 -- exception handling
139 -- a ProvideSubscriberLocation-Arg containing other values than listed above in
140 -- DeferredLocationEventType shall be rejected by the receiver with a return error cause of
141 -- unexpected data value.
142
143 LCS-ClientID ::= SEQUENCE {
144     lcsClientType          [0] LCSClientType,
145     lcsClientExternalID    [1] LCSClientExternalID        OPTIONAL,
146     lcsClientDialedByMS    [2] AddressString              OPTIONAL,

```

```

147     lcsClientInternalID      [3] LCSCClientInternalID      OPTIONAL,
148     lcsClientName           [4] LCSCClientName          OPTIONAL,
149     ...,
150     lcsAPN                   [5] APN                      OPTIONAL,
151     lcsRequestorID          [6] LCSRequestorID          OPTIONAL }
152

```

```

153 LCSCClientType ::= ENUMERATED {
154     emergencyServices          (0),
155     valueAddedServices        (1),
156     plmnOperatorServices      (2),
157     lawfulInterceptServices   (3),
158     ... }
159 -- exception handling:
160 -- unrecognized values may be ignored if the LCS client uses the privacy override
161 -- otherwise, an unrecognized value shall be treated as unexpected data by a receiver
162 -- a return error shall then be returned if received in a MAP invoke
163

```

```

164 LCSCClientName ::= SEQUENCE {
165     dataCodingScheme          [0] USSD-DataCodingScheme,
166     nameString                [2] NameString,
167     ...,
168     lcs-FormatIndicator      [3] LCS-FormatIndicator          OPTIONAL }
169
170 -- The USSD-DataCodingScheme shall indicate use of the default alphabet through the
171 -- following encoding
172 -- bit 7 6 5 4 3 2 1 0
173 --     0 0 0 0 1 1 1 1
174

```

```

175 NameString ::= USSD-String (SIZE (1..maxNameStringLength))
176

```

```

177 maxNameStringLength INTEGER ::= 63
178

```

```

179 LCSRequestorID ::= SEQUENCE {
180     dataCodingScheme          [0] USSD-DataCodingScheme,
181     requestorIDString        [1] RequestorIDString,
182     ...,
183     lcs-FormatIndicator      [2] LCS-FormatIndicator          OPTIONAL }
184

```

```

185 RequestorIDString ::= USSD-String (SIZE (1..maxRequestorIDStringLength))
186

```

```

187 maxRequestorIDStringLength INTEGER ::= 127
188

```

```

189 LCS-FormatIndicator ::= ENUMERATED {
190     logicalName              (0),
191     e-mailAddress            (1),
192     msisdN                   (2),
193     url                       (3),
194     sipUrl                   (4),
195     ... }
196

```

```

197 LCS-Priority ::= OCTET STRING (SIZE (1))
198 -- 0 = highest priority
199 -- 1 = normal priority
200 -- all other values treated as 1
201

```

```

202 LCS-QoS ::= SEQUENCE {
203     horizontal-accuracy      [0] Horizontal-Accuracy          OPTIONAL,
204     verticalCoordinateRequest [1] NULL                      OPTIONAL,
205     vertical-accuracy        [2] Vertical-Accuracy           OPTIONAL,
206     responseTime             [3] ResponseTime                OPTIONAL,
207     extensionContainer        [4] ExtensionContainer          OPTIONAL,
208     ...}
209

```

```

210 Horizontal-Accuracy ::= OCTET STRING (SIZE (1))
211 -- bit 8 = 0
212 -- bits 7-1 = 7 bit Uncertainty Code defined in 3GPP TS 23.032. The horizontal location
213 -- error should be less than the error indicated by the uncertainty code with 67%
214 -- confidence.
215

```

```

216 Vertical-Accuracy ::= OCTET STRING (SIZE (1))
217 -- bit 8 = 0
218 -- bits 7-1 = 7 bit Vertical Uncertainty Code defined in 3GPP TS 23.032.
219 -- The vertical location error should be less than the error indicated
220 -- by the uncertainty code with 67% confidence.
221

```

```

222 ResponseTime ::= SEQUENCE {
223     responseTimeCategory          ResponseTimeCategory,
224     ...}
225 -- note: an expandable SEQUENCE simplifies later addition of a numeric response time.
226
227 ResponseTimeCategory ::= ENUMERATED {
228     lowdelay (0),
229     delaytolerant (1),
230     ... }
231 -- exception handling:
232 -- an unrecognized value shall be treated the same as value 1 (delaytolerant)
233
234 SupportedGADShapes ::= BIT STRING {
235     ellipsoidPoint (0),
236     ellipsoidPointWithUncertaintyCircle (1),
237     ellipsoidPointWithUncertaintyEllipse (2),
238     polygon (3),
239     ellipsoidPointWithAltitude (4),
240     ellipsoidPointWithAltitudeAndUncertaintyElipsoid (5),
241     ellipsoidArc (6) } (SIZE (7..16))
242 -- A node shall mark in the BIT STRING all Shapes defined in 3GPP TS 23.032 it supports.
243 -- exception handling: bits 7 to 15 shall be ignored if received.
244
245 LCS-ReferenceNumber ::= OCTET STRING (SIZE(1))
246
247 LCSCodeword ::= SEQUENCE {
248     dataCodingScheme              [0] USSD-DataCodingScheme,
249     lcsCodewordString             [1] LCSCodewordString,
250     ...}
251
252 LCSCodewordString ::= USSD-String (SIZE (1..maxLCSCodewordStringLength))
253
254 maxLCSCodewordStringLength INTEGER ::= 127
255
256 LCS-PrivacyCheck ::= SEQUENCE {
257     callSessionUnrelated          [0] PrivacyCheckRelatedAction,
258     callSessionRelated            [1] PrivacyCheckRelatedAction    OPTIONAL,
259     ...}
260
261 PrivacyCheckRelatedAction ::= ENUMERATED {
262     allowedWithoutNotification (0),
263     allowedWithNotification (1),
264     allowedIfNoResponse (2),
265     restrictedIfNoResponse (3),
266     notAllowed (4),
267     ...}
268 -- exception handling:
269 -- a ProvideSubscriberLocation-Arg containing an unrecognized PrivacyCheckRelatedAction
270 -- shall be rejected by the receiver with a return error cause of unexpected data value
271
272 ProvideSubscriberLocation-Res ::= SEQUENCE {
273     locationEstimate              Ext-GeographicalInformation,
274     ageOfLocationEstimate         [0] AgeOfLocationInformation    OPTIONAL,
275     extensionContainer            [1] ExtensionContainer          OPTIONAL,
276     ... ,
277     add-LocationEstimate          [2] Add-GeographicalInformation  OPTIONAL,
278     deferredmt-lrResponseIndicator [3] NULL                    OPTIONAL,
279     positioningData               [4] PositioningDataInformation  OPTIONAL }
280
281 -- if deferredmt-lrResponseIndicator is set, locationEstimate is ignored.
282
283 -- the add-LocationEstimate parameter shall not be sent to a node that did not indicate the
284 -- geographic shapes supported in the ProvideSubscriberLocation-Arg
285 -- The locationEstimate and the add-locationEstimate parameters shall not be sent if
286 -- the supportedGADShapes parameter has been received in ProvideSubscriberLocation-Arg
287 -- and the shape encoded in locationEstimate or add-LocationEstimate is not marked
288 -- as supported in supportedGADShapes. In such a case ProvideSubscriberLocation
289 -- shall be rejected with error FacilityNotSupported with additional indication
290 -- shapeOfLocationEstimateNotSupported
291

```

```

292 Ext-GeographicalInformation ::= OCTET STRING (SIZE (1..maxExt-GeographicalInformation))
293 -- Refers to geographical Information defined in 3GPP TS 23.032.
294 -- This is composed of 1 or more octets with an internal structure according to
295 -- 3GPP TS 23.032
296 -- Octet 1: Type of shape, only the following shapes in 3GPP TS 23.032 are allowed:
297 -- (a) Ellipsoid point with uncertainty circle
298 -- (b) Ellipsoid point with uncertainty ellipse
299 -- (c) Ellipsoid point with altitude and uncertainty ellipsoid
300 -- (d) Ellipsoid Arc
301 -- (e) Ellipsoid Point
302 -- Any other value in octet 1 shall be treated as invalid
303 -- Octets 2 to 8 for case (a) - Ellipsoid point with uncertainty circle
304 -- Degrees of Latitude 3 octets
305 -- Degrees of Longitude 3 octets
306 -- Uncertainty code 1 octet
307 -- Octets 2 to 11 for case (b) - Ellipsoid point with uncertainty ellipse:
308 -- Degrees of Latitude 3 octets
309 -- Degrees of Longitude 3 octets
310 -- Uncertainty semi-major axis 1 octet
311 -- Uncertainty semi-minor axis 1 octet
312 -- Angle of major axis 1 octet
313 -- Confidence 1 octet
314 -- Octets 2 to 14 for case (c) - Ellipsoid point with altitude and uncertainty ellipsoid
315 -- Degrees of Latitude 3 octets
316 -- Degrees of Longitude 3 octets
317 -- Altitude 2 octets
318 -- Uncertainty semi-major axis 1 octet
319 -- Uncertainty semi-minor axis 1 octet
320 -- Angle of major axis 1 octet
321 -- Uncertainty altitude 1 octet
322 -- Confidence 1 octet
323 -- Octets 2 to 13 for case (d) - Ellipsoid Arc
324 -- Degrees of Latitude 3 octets
325 -- Degrees of Longitude 3 octets
326 -- Inner radius 2 octets
327 -- Uncertainty radius 1 octet
328 -- Offset angle 1 octet
329 -- Included angle 1 octet
330 -- Confidence 1 octet
331 -- Octets 2 to 7 for case (e) - Ellipsoid Point
332 -- Degrees of Latitude 3 octets
333 -- Degrees of Longitude 3 octets
334 --
335 --
336 -- An Ext-GeographicalInformation parameter comprising more than one octet and
337 -- containing any other shape or an incorrect number of octets or coding according
338 -- to 3GPP TS 23.032 shall be treated as invalid data by a receiver.
339 --
340 -- An Ext-GeographicalInformation parameter comprising one octet shall be discarded
341 -- by the receiver if an Add-GeographicalInformation parameter is received
342 -- in the same message.
343 --
344 -- An Ext-GeographicalInformation parameter comprising one octet shall be treated as
345 -- invalid data by the receiver if an Add-GeographicalInformation parameter is not
346 -- received in the same message.

```

```

347
348 maxExt-GeographicalInformation INTEGER ::= 20
349 -- the maximum length allows for further shapes in 3GPP TS 23.032 to be included in later
350 -- versions of 3GPP TS 29.002

```

```

351
352 PositioningDataInformation ::= OCTET STRING (SIZE (2..maxPositioningDataInformation))
353 -- Refers to the Positioning Data defined in 3GPP TS 49.031.
354 -- This is composed of 2 or more octets with an internal structure according to
355 -- 3GPP TS 49.031.

```

```

356
357 maxPositioningDataInformation INTEGER ::= 10
358 --

```

```

359

```

```

360 Add-GeographicalInformation ::= OCTET STRING (SIZE (1..maxAdd-GeographicalInformation))
361 -- Refers to geographical Information defined in 3GPP TS 23.032.
362 -- This is composed of 1 or more octets with an internal structure according to
363 -- 3GPP TS 23.032
364 -- Octet 1: Type of shape, all the shapes defined in 3GPP TS 23.032 are allowed:
365 -- Octets 2 to n (where n is the total number of octets necessary to encode the shape
366 -- according to 3GPP TS 23.032) are used to encode the shape itself in accordance with
367 the
368 -- encoding defined in 3GPP TS 23.032
369 --
370 -- An Add-GeographicalInformation parameter, whether valid or invalid, received
371 -- together with a valid Ext-GeographicalInformation parameter in the same message
372 -- shall be discarded.
373 --
374 -- An Add-GeographicalInformation parameter containing any shape not defined in
375 -- 3GPP TS 23.032 or an incorrect number of octets or coding according to
376 -- 3GPP TS 23.032 shall be treated as invalid data by a receiver if not received
377 -- together with a valid Ext-GeographicalInformation parameter in the same message.

```

```

378
379 maxAdd-GeographicalInformation INTEGER ::= 91
380 -- the maximum length allows support for all the shapes currently defined in 3GPP TS
381 23.032
382

```

```

383 SubscriberLocationReport-Arg ::= SEQUENCE {
384     lcs-Event                LCS-Event,
385     lcs-ClientID             LCS-ClientID,
386     lcsLocationInfo          LCSLocationInfo,
387     msisdn                   [0] ISDN-AddressString           OPTIONAL,
388     imsi                     [1] IMSI                         OPTIONAL,
389     imei                     [2] IMEI                         OPTIONAL,
390     na-ESRD                  [3] ISDN-AddressString           OPTIONAL,
391     na-ESRK                  [4] ISDN-AddressString           OPTIONAL,
392     locationEstimate         [5] Ext-GeographicalInformation  OPTIONAL,
393     ageOfLocationEstimate    [6] AgeOfLocationInformation    OPTIONAL,
394     extensionContainer       [7] ExtensionContainer           OPTIONAL,
395     ... ,
396     add-LocationEstimate     [8] Add-GeographicalInformation  OPTIONAL,
397     deferredmt-lrData        [9] Deferredmt-lrData            OPTIONAL,
398     lcs-ReferenceNumber      [10] LCS-ReferenceNumber         OPTIONAL,
399     positioningData          [11] PositioningDataInformation  OPTIONAL,
400     na-ESRK-Request          [12] NULL                        OPTIONAL }
401
402 -- one of msisdn or imsi is mandatory
403 -- a location estimate that is valid for the locationEstimate parameter should
404 -- be transferred in this parameter in preference to the add-LocationEstimate.
405 -- the deferredmt-lrData parameter shall be included if and only if the lcs-Event
406 -- indicates a deferredmt-lrResponse.
407 -- if the lcs-Event indicates a deferredmt-lrResponse then the locationEstimate
408 -- and the add-locationEstimate parameters shall not be sent if the
409 -- supportedGADShapes parameter had been received in ProvideSubscriberLocation-Arg
410 -- and the shape encoded in locationEstimate or add-LocationEstimate was not marked
411 -- as supported in supportedGADShapes. In such a case terminationCause
412 -- in deferredmt-lrData shall be present with value
413 -- shapeOfLocationEstimateNotSupported.
414 -- If a lcs event indicates deferred mt-lr response, the lcs-Reference number shall be
415 -- included.

```

```

416
417 Deferredmt-lrData ::= SEQUENCE {
418     deferredLocationEventType DeferredLocationEventType,
419     terminationCause         [0] TerminationCause             OPTIONAL,
420     lcsLocationInfo          [1] LCSLocationInfo              OPTIONAL,
421     ... }
422 -- lcsLocationInfo may be included only if a terminationCause is present
423 -- indicating mt-lrRestart.

```

```

424
425 LCS-Event ::= ENUMERATED {
426     emergencyCallOrigination (0),
427     emergencyCallRelease (1),
428     mo-lr (2),
429     ... ,
430     deferredmt-lrResponse (3) }
431 -- exception handling:
432 -- a SubscriberLocationReport-Arg containing an unrecognized LCS-Event
433 -- shall be rejected by a receiver with a return error cause of unexpected data value
434

```

```

435 TerminationCause ::= ENUMERATED {
436     normal (0),
437     errorundefined (1),
438     internalTimeout (2),
439     congestion (3),
440     mt-lrRestart (4),
441     privacyViolation (5),
442     ...,
443     shapeOfLocationEstimateNotSupported (6) }
444 -- mt-lrRestart shall be used to trigger the GMLC to restart the location procedure,
445 -- either because the sending node knows that the terminal has moved under coverage
446 -- of another MSC or SGSN (e.g. Send Identification received), or because the subscriber
447 -- has been deregistered due to a Cancel Location received from HLR.
448 --
449 -- exception handling
450 -- an unrecognized value shall be treated the same as value 1 (errorundefined)

```

```

451
452 SubscriberLocationReport-Res ::= SEQUENCE {
453     extensionContainer          ExtensionContainer          OPTIONAL,
454     ...,
455     na-ESRK                     [x] ISDN-AddressString    OPTIONAL }

```

```

456
457
458 END

```

CHANGE REQUEST

⌘ **29.002 CR 654** ⌘ rev **-** ⌘ Current version: **6.2.0** ⌘

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

Proposed change affects: UICC apps ME Radio Access Network Core Network

Title:	⌘ New LCS Service Types		
Source:	⌘ CN4		
Work item code:	⌘ LCS2	Date:	⌘ 04/08/2003
Category:	⌘ B	Release:	⌘ Rel-6
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)	R96	2 (GSM Phase 2)
	A (corresponds to a correction in an earlier release)	R97	(Release 1996)
	B (addition of feature),	R98	(Release 1997)
	C (functional modification of feature)	R99	(Release 1998)
	D (editorial modification)	Rel-4	(Release 1999)
	Detailed explanations of the above categories can	Rel-5	(Release 4)
	be found in 3GPP TR 21.900 .	Rel-6	(Release 5)
			(Release 6)

Reason for change:	⌘ To align with 22.071		
Summary of change:	⌘ Add new service types		
Consequences if not approved:	⌘ New LCS Service Types cannot be used		

Clauses affected:	⌘ 17.7.8										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> </tr> </table>	Y	N	⌘	X	⌘	X	⌘	X	Other core specifications Test specifications O&M Specifications	⌘
Y	N										
⌘	X										
⌘	X										
⌘	X										
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/](http://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.

17.7.8 Common data types

.....

LCSServiceTypeID ::= INTEGER (0..127) <i>-- the integer values 0-63 are reserved for Standard LCS service types</i> <i>-- the integer values 64-127 are reserved for Non Standard LCS service types</i>	
-- Standard LCS Service Types	
emergencyServices	LCSServiceTypeID ::= 0
emergencyAlertServices	LCSServiceTypeID ::= 1
personTracking	LCSServiceTypeID ::= 2
fleetManagement	LCSServiceTypeID ::= 3
assetManagement	LCSServiceTypeID ::= 4
trafficCongestionReporting	LCSServiceTypeID ::= 5
roadsideAssistance	LCSServiceTypeID ::= 6
routingToNearestCommercialEnterprise	LCSServiceTypeID ::= 7
navigation	LCSServiceTypeID ::= 8
<i>--this service type is reserved for use in previous releases</i>	
citySightseeing	LCSServiceTypeID ::= 9
localizedAdvertising	LCSServiceTypeID ::= 10
mobileYellowPages	LCSServiceTypeID ::= 11
trafficAndPublicTransportationInfo	LCSServiceTypeID ::= 12
weather	LCSServiceTypeID ::= 13
assetAndServiceFinding	LCSServiceTypeID ::= 14
gaming	LCSServiceTypeID ::= 15
findYourFriend	LCSServiceTypeID ::= 16
dating	LCSServiceTypeID ::= 17
chatting	LCSServiceTypeID ::= 18
routeFinding	LCSServiceTypeID ::= 19
whereAmI	LCSServiceTypeID ::= 20
<i>-- The values of LCSServiceTypeID are defined according to 3GPP TS 22.071.</i>	

-- Non Standard LCS Service Types

serv64	LCSServiceTypeID ::= 64
serv65	LCSServiceTypeID ::= 65
serv66	LCSServiceTypeID ::= 66
serv67	LCSServiceTypeID ::= 67
serv68	LCSServiceTypeID ::= 68
serv69	LCSServiceTypeID ::= 69
serv70	LCSServiceTypeID ::= 70
serv71	LCSServiceTypeID ::= 71
serv72	LCSServiceTypeID ::= 72
serv73	LCSServiceTypeID ::= 73
serv74	LCSServiceTypeID ::= 74
serv75	LCSServiceTypeID ::= 75
serv76	LCSServiceTypeID ::= 76
serv77	LCSServiceTypeID ::= 77
serv78	LCSServiceTypeID ::= 78
serv79	LCSServiceTypeID ::= 79
serv80	LCSServiceTypeID ::= 80
serv81	LCSServiceTypeID ::= 81
serv82	LCSServiceTypeID ::= 82
serv83	LCSServiceTypeID ::= 83
serv84	LCSServiceTypeID ::= 84
serv85	LCSServiceTypeID ::= 85
serv86	LCSServiceTypeID ::= 86
serv87	LCSServiceTypeID ::= 87
serv88	LCSServiceTypeID ::= 88
serv89	LCSServiceTypeID ::= 89
serv90	LCSServiceTypeID ::= 90
serv91	LCSServiceTypeID ::= 91
serv92	LCSServiceTypeID ::= 92
serv93	LCSServiceTypeID ::= 93
serv94	LCSServiceTypeID ::= 94
serv95	LCSServiceTypeID ::= 95
serv96	LCSServiceTypeID ::= 96
serv97	LCSServiceTypeID ::= 97
serv98	LCSServiceTypeID ::= 98
serv99	LCSServiceTypeID ::= 99
serv100	LCSServiceTypeID ::= 100
serv101	LCSServiceTypeID ::= 101
serv102	LCSServiceTypeID ::= 102
serv103	LCSServiceTypeID ::= 103
serv104	LCSServiceTypeID ::= 104
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serv113	LCSServiceTypeID ::= 113
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serv115	LCSServiceTypeID ::= 115
serv116	LCSServiceTypeID ::= 116
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serv121	LCSServiceTypeID ::= 121
serv122	LCSServiceTypeID ::= 122
serv123	LCSServiceTypeID ::= 123
serv124	LCSServiceTypeID ::= 124
serv125	LCSServiceTypeID ::= 125
serv126	LCSServiceTypeID ::= 126
serv127	LCSServiceTypeID ::= 127