

**3GPP TSG CN Plenary Meeting #12
Stockholm, Sweden, 13th - 15th June 2001**

Tdoc NP-010291

Source: TSG CN WG4
Title: CRs on R99 Work Item LCS
Agenda item: 7.14
Document for: APPROVAL

Introduction:

This document contains 10 CRs on R99 Work Item "LCS", that have been agreed by TSG CN WG4, and are forwarded to TSG CN Plenary meeting #12 for approval.

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
24.030	004		N4-010535	R99	Handle new parameters in LCS-MOLR	F	3.1.0
24.030	005		N4-010536	Rel-4	Handle new parameters in LCS-MOLR	A	4.0.0
24.080	007		N4-010537	R99	Add support in DTAP for all shapes defined in 23.032	F	3.4.1
24.080	008		N4-010538	Rel-4	Add support in DTAP for all shapes defined in 23.032	A	4.0.0
29.010	017	1	N4-010753	R99	Mapping between RANAP and BSSMAP for Location Services	F	3.5.0
29.010	018	1	N4-010751	Rel-4	Mapping between RANAP and BSSMAP for Location Services	A	4.0.0
29.010	032		N4-010754	R99	Mapping between RANAP and BSSMAP for Location Services	F	3.5.0
29.010	031		N4-010752	Rel-4	Mapping between RANAP and BSSMAP for Location Services	A	4.0.0
29.002	263	3	N4-010786	R99	Add support in MAP for all shapes defined in 23.032	F	3.8.0
29.002	264	3	N4-010787	Rel-4	dd support in MAP for all shapes defined in 23.032	A	4.3.0

Rio Grande, Puerto Rico, 14-18 May 2001

CR-Form-v3

CHANGE REQUEST

⌘ **24.030 CR 004** ⌘ rev **-** ⌘ Current version: **3.1.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ME/UE Radio Access Network Core Network

Title: ⌘ Handle new parameters in LCS-MOLR

Source: ⌘ CN4

Work item code: ⌘ LCS

Date: ⌘ 2 May 2001

Category: ⌘ **F** (Essential correction)

Release: ⌘ R99

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)

Reason for change: ⌘ As response to a Mobile Originating positioning request, the RNC or the SMLC (depending on the access type) provide a location estimate coded via a "shape". The possible shapes are defined in the TS 23.032. Via a related CR on 24.080, support is added to DTAP for all the shapes defined in 23.032.

Currently the ME/UE has no way to tell Core Network which shapes it can accept, meaning that a not updated ME/UE might receive via 24.080 the result of its positioning request coded with a shape it is not able to understand.

In this case there would be no mean for the ME/UE to notify Core Network that the positioning request actually failed, with possibly wrong billing of the positioning itself.

Due to this, a parameter has been added to LCS-MOLR indicating the shapes the ME/UE supports. In case this optional parameter is not sent then Core Network must assume support only for the limited set of shapes which could be transferred before the introduction of full GAD support in 24.080.

Core Network will reply with an error to the LCS-MOLR operation if the location estimate is coded with a shape the ME/UE does not support.

This CR aims to describe what has to be the behaviour of ME/UE and CN concerning the new parameters added to 24.080

Summary of change: ⌘ Description of handling of supported GAD shapes information.

Consequences if not approved: ⌘ It would be unclear how to handle the added parameters to LCS-MOLR

Clauses affected: ⌘ 2, 5.1.1

Other specs Affected: ⌘ Other core specifications ⌘ CR 007 TS 24.080 N4-010537
 Test specifications

O&M Specifications

Other comments: ☞ The input LS from SA2 is the CN4 N4-010512 T-doc

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.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://www.3gpp.org/specs/>. For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

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**** FIRST MODIFIED SECTION ****

3

2 References

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

- 7 • References are either specific (identified by date of publication, edition number, version number, etc.) or
8 non-specific.
- 9 • For a specific reference, subsequent revisions do not apply.
- 10 • For a non-specific reference, the latest version applies.

11 [1] GSM 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and
12 acronyms"

13 [2] GSM 03.71: "Digital cellular telecommunications system (Phase 2+); Location Services (LCS);
14 (Functional description) - Stage 2"

15 [3] 3G TS 23.171: "Functional stage 2 description of location services in UMTS"

16 [4] 3G TS 24.080: "Mobile radio interface layer 3 supplementary services specification; Formats and
17 coding"

18 [5] 3G TS 23.032: "Universal Geographical Area Description (GAD)"
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**** NEXT MODIFIED SECTION ****

21

22 5.1.1 Normal operation

23 The MS invokes a MO-LR by sending a REGISTER message to the network containing a LCS-MOLR invoke
24 component. In UMTS, the gpsAssistanceData and deCipherringKeys shall not be used as values of molr-Type
25 parameter.

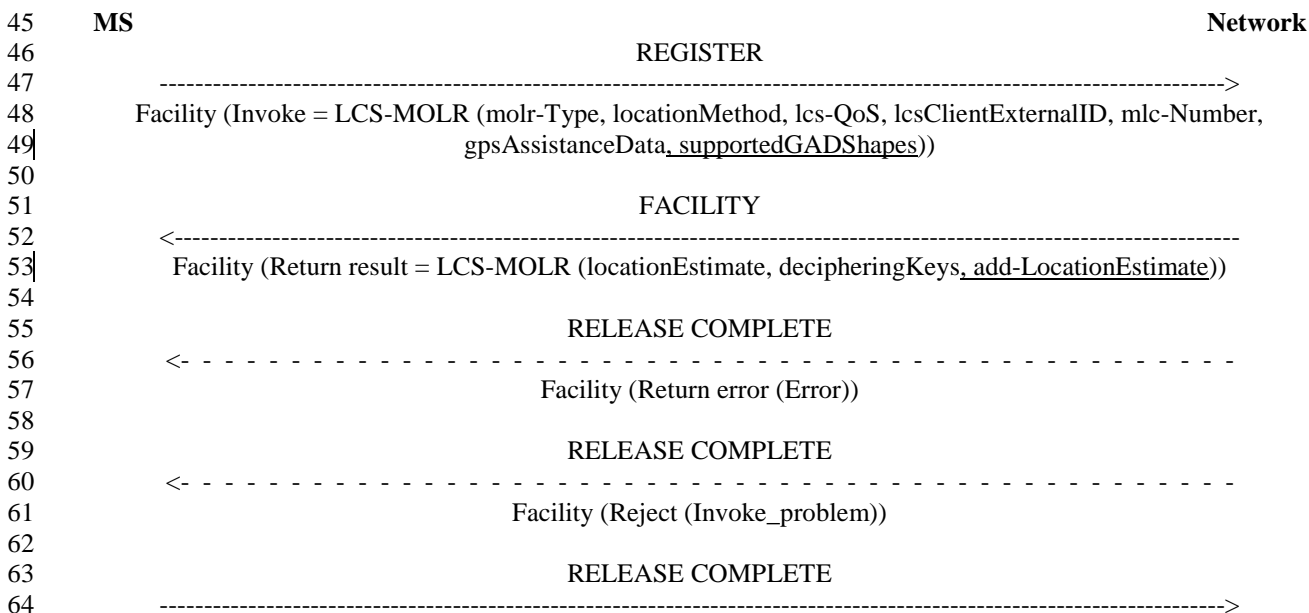
26 The receiving network entity shall initiate the handling of location request in the network. The network shall pass the
 27 result of the location procedure to the MS by sending a FACILITY message to the MS containing a LCS-MOLR return
 28 result component.

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

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

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

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



66 **Figure 5.1: Single mobile originated location request**

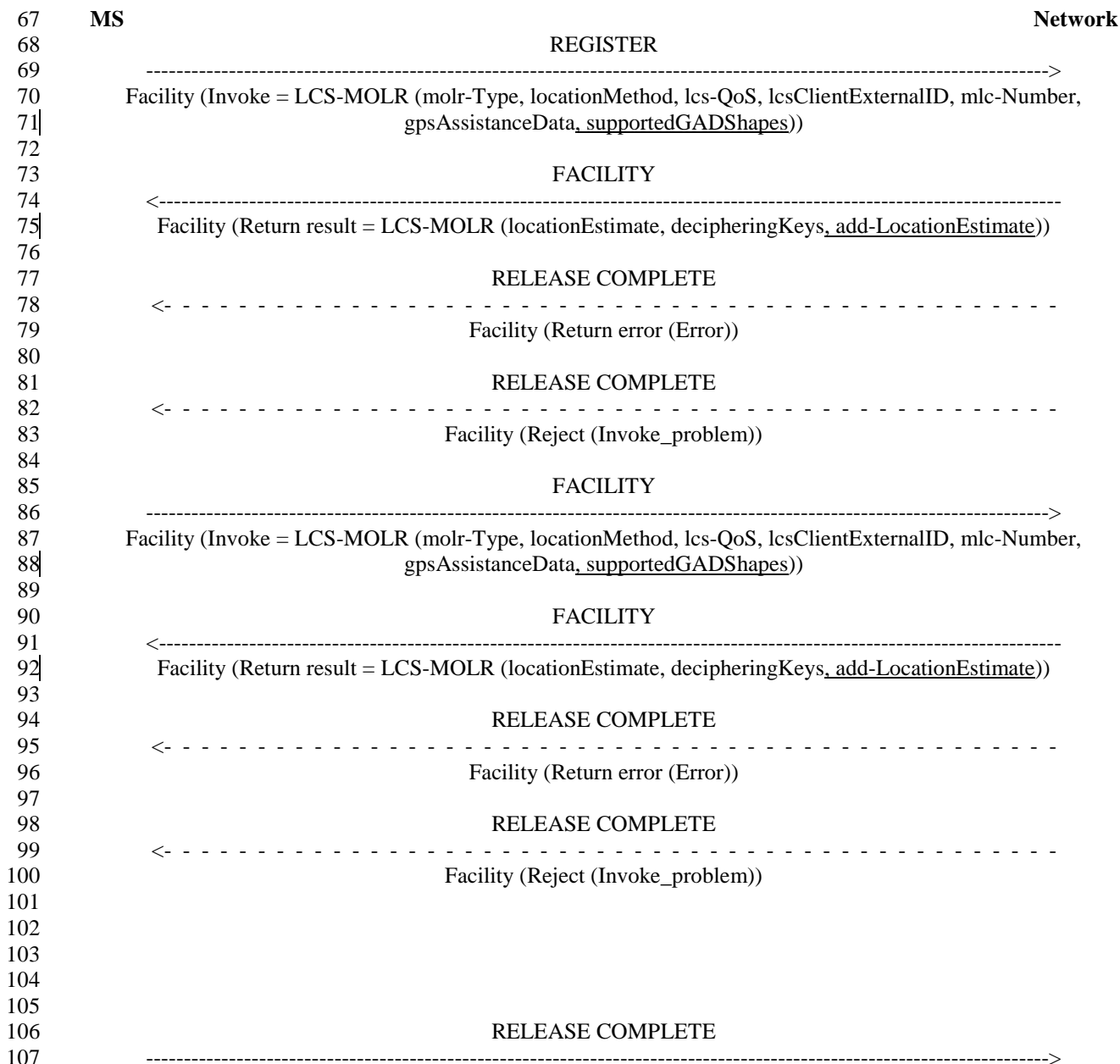


Figure 5.2: Multiple mobile originated location requests

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**** END OF MODIFICATIONS ****

Rio Grande, Puerto Rico, 14-18 May 2001

CR-Form-v3

CHANGE REQUEST

⌘ **24.030 CR 005** ⌘ rev **-** ⌘ Current version: **4.0.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ME/UE Radio Access Network Core Network

Title:	⌘ Handle new parameters in LCS-MOLR		
Source:	⌘ CN4		
Work item code:	⌘ LCS	Date:	⌘ 2 May 2001
Category:	⌘ A	Release:	⌘ REL-4

<p><i>Use <u>one</u> of the following categories:</i></p> <ul style="list-style-type: none"> F (correction) A (corresponds to a correction in an earlier release) B (Addition of feature), C (Functional modification of feature) D (Editorial modification) <p>Detailed explanations of the above categories can be found in 3GPP TR 21.900.</p>	<p><i>Use <u>one</u> of the following releases:</i></p> <ul style="list-style-type: none"> 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)
---	---

Reason for change: ⌘ As response to a Mobile Originating positioning request, the RNC or the SMLC (depending on the access type) provide a location estimate coded via a "shape". The possible shapes are defined in the TS 23.032. Via a related CR on 24.080, support is added to DTAP for all the shapes defined in 23.032.

Currently the ME/UE has no way to tell Core Network which shapes it can accept, meaning that a not updated ME/UE might receive via 24.080 the result of its positioning request coded with a shape it is not able to understand.

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Due to this, a parameter has been added to LCS-MOLR indicating the shapes the ME/UE supports. In case this optional parameter is not sent then Core Network must assume support only for the limited set of shapes which could be transferred before the introduction of full GAD support in 24.080.

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This CR aims to describe what has to be the behaviour of ME/UE and CN concerning the new parameters added to 24.080

Summary of change: ⌘ Description of handling of supported GAD shapes information.

Consequences if not approved: ⌘ It would be unclear how to handle the added parameters to LCS-MOLR

Clauses affected: ⌘ 2, 5.1.1

Other specs Affected: ⌘ Other core specifications ⌘ CR 008 TS 24.080 N4-010538
 Test specifications

O&M Specifications

Other comments: ☞ The input LS from SA2 is the CN4 N4-010512 T-doc

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**** FIRST MODIFIED SECTION ****

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6 document.

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8 non-specific.
- 9 • For a specific reference, subsequent revisions do not apply.
- 10 • For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including
11 a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same*
12 *Release as the present document*.

13 [1] GSM 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and
14 acronyms".

15 [2] 3GPP TS 23.271: "Functional stage 2 description of LCS".

16 [3] 3GPP TS 24.080: "Mobile radio interface layer 3 supplementary services specification; Formats
17 and coding".

18 [4] 3GPP TS 23.032: "Universal Geographical Area Description (GAD)"

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**** NEXT MODIFIED SECTION ****

22

23 5.1.1 Normal operation

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25 component. In UMTS, the gpsAssistanceData and deCIPHERINGKeys shall not be used as values of molr-Type
26 parameter.

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32 supportedGADShapes, which may be sent by the MS in the LCS-MOLR operation.

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39 a return error component. Error values are specified in 3G TS 24.080. If the network is unable to provide a location
40 estimate due to lack of support in the MS for the type of shape of the location estimate, then it shall use the error
41 Facility Not Supported.

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

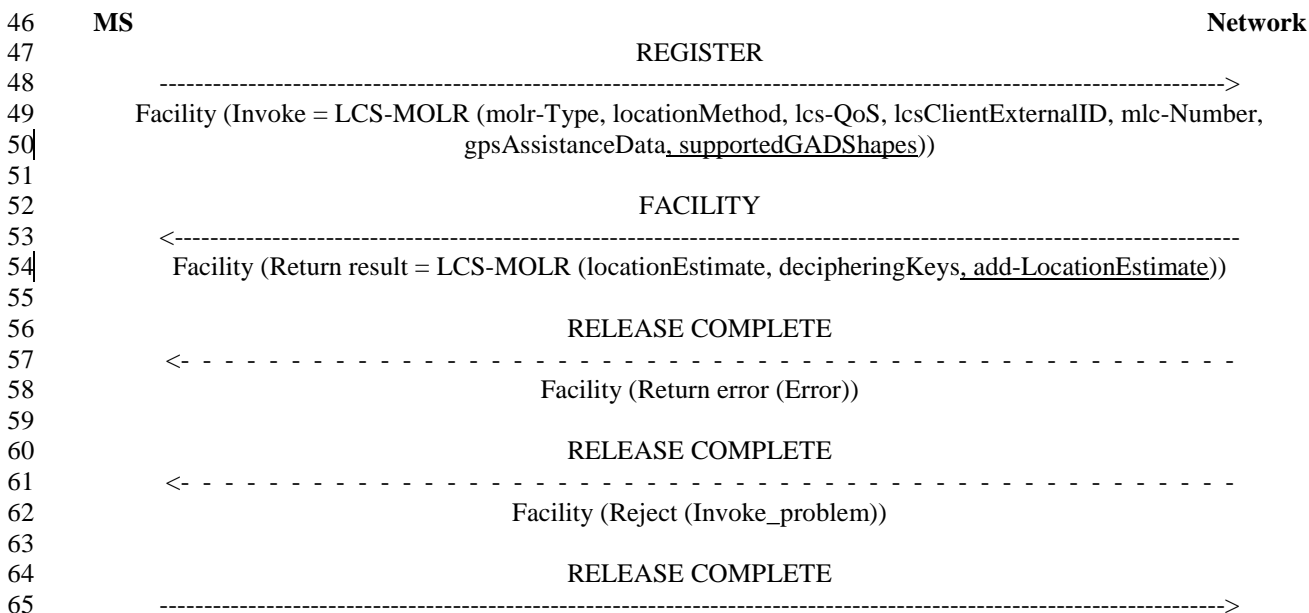


Figure 5.1: Single mobile originated location request

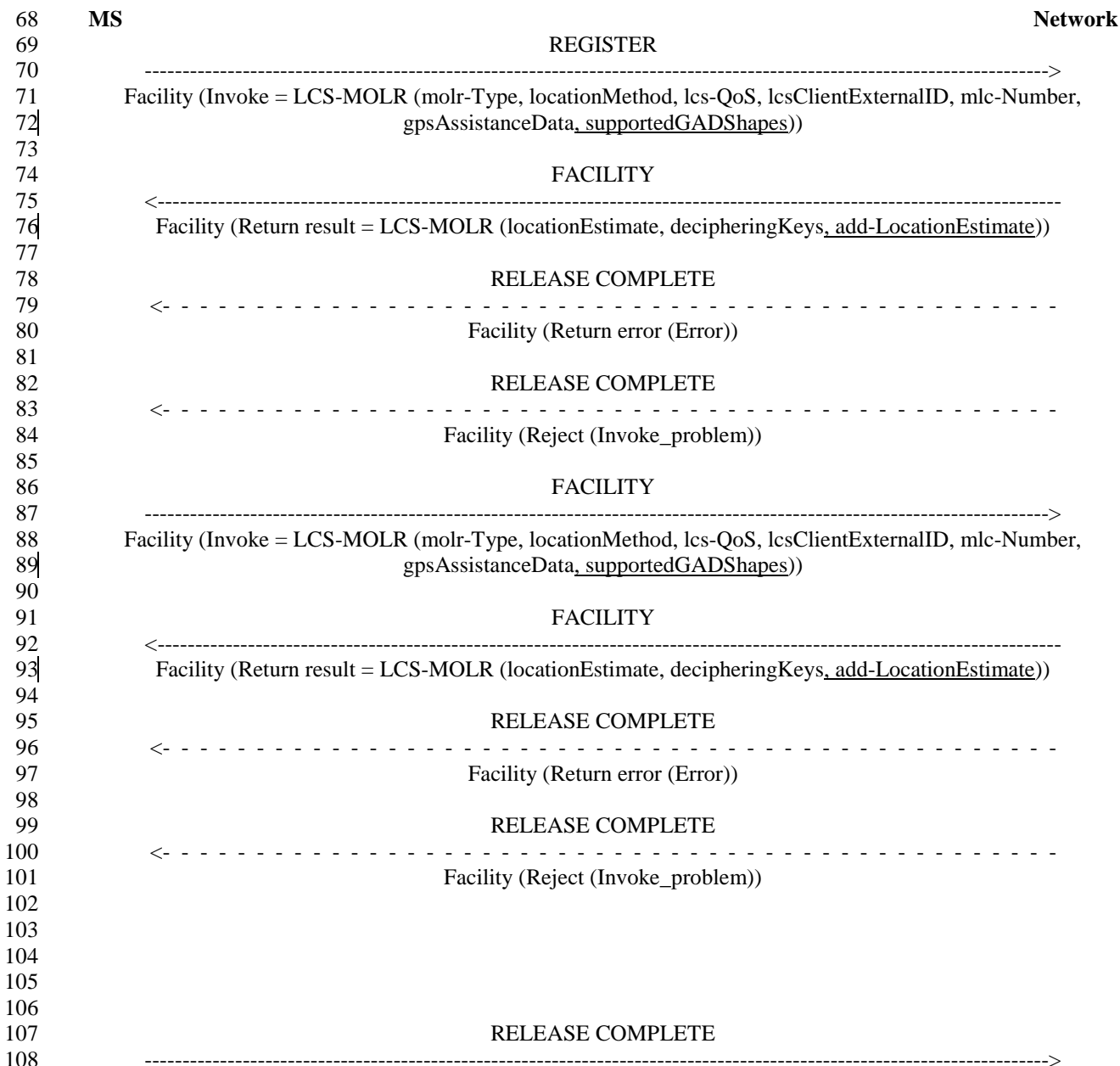


Figure 5.2: Multiple mobile originated location requests

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**** END OF MODIFICATIONS ****

Rio Grande, Puerto Rico, 14-18 May 2001

CR-Form-v3
CHANGE REQUEST
⌘ 24.080 CR 007 ⌘ rev - ⌘ Current version: 3.4.1 ⌘

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

Proposed change affects: ⌘ (U)SIM ME/UE Radio Access Network Core Network

Title:	⌘ Add support in DTAP for all shapes defined in 23.032		
Source:	⌘ CN4		
Work item code:	⌘ LCS Date: ⌘ 2 May 2001		
Category:	⌘ F (essential correction) Release: ⌘ R99		
Use <u>one</u> of the following categories: <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> F (correction) A (corresponds to a correction in an earlier release) B (Addition of feature), C (Functional modification of feature) D (Editorial modification) </td> <td style="width: 50%; vertical-align: top;"> 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) </td> </tr> </table> Detailed explanations of the above categories can be found in 3GPP TR 21.900.		F (correction) A (corresponds to a correction in an earlier release) B (Addition of feature), C (Functional modification of feature) D (Editorial modification)	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)
F (correction) A (corresponds to a correction in an earlier release) B (Addition of feature), C (Functional modification of feature) D (Editorial modification)	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)		

Reason for change:	⌘ As response to a Mobile Originating positioning request, the RNC or the SMLC (depending on the access type) provide a location estimate coded via a "shape". The possible shapes are defined in the TS 23.032. DTAP 24.080 supports only a subset of the shapes defined in 23.032 via the import of the related MAP parameter. RANAP 25.413 supports another subset of 23.032. The intersection of the 23.032 subsets defined 24.080 and 25.413 is non empty, meaning that there are shapes carried by 25.413 that cannot be carried by 24.080. The outcome is that Mobile Originating UMTS Positioning requests that are successfully answered with the required QoS by the RNC will fail because of DTAP, i.e. stage 3 of Location services imposes limitations on the service as specified by stage 2. SA2 has issued the liaison statement S2-010812 towards RAN3 and CN4 to ask for full support in MAP and RANAP for all the shapes defined by 23.032. While investigating the issue for MAP, the similar lack of support for all the shapes has been discovered in 24.080.
Summary of change:	⌘ Addition of new parameters to LCS-MOLR-Arg and LCS-MOLR-Res.
Consequences if not approved:	⌘ MO-Location requests that are successfully answered by the RNC with the required QoS, will fail because of limitations in the DTAP protocol in transferring the location estimate to the UE.

Clauses affected:	⌘ 4.4.2
Other specs	⌘ <input type="checkbox"/> Other core specifications ⌘ CR 004 TS 24.030 N4-010535 CR 263 TS 29.002 N4.010539
Affected:	<input type="checkbox"/> Test specifications

Other comments: ☞ The input LS from SA2 is the CN4 N4-010512 T-doc

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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.

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2 ****** FIRST MODIFIED SECTION ******

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5 **4.4.2 ASN.1 data types**

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

```

9  SS-DataTypes {
10     ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Access (2) modules (3)
11     ss-DataTypes (2) version6 (6)}
12
13  DEFINITIONS
14
15  IMPLICIT TAGS ::=
16
17  BEGIN
18
19  -- exports all data types defined in this module
20
21  IMPORTS
22
23  SS-Code
24  FROM MAP-SS-Code {
25     ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1) modules (3)
26     map-SS-Code (15) version6 (6)}
27
28  -- imports MAP-SS-DataTypes
29  SS-Status, USSD-DataCodingScheme, USSD-String, CCBS-Feature
30  -- USSD-DataCodingScheme, USSD-String were introduced because of CNAP.
31  FROM MAP-SS-DataTypes {
32     ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1) modules (3)
33     map-SS-DataTypes (14) version6 (6)}
34
35  CUG-Index,
36  NotificationToMSUser
37  FROM MAP-MS-DataTypes {
38     ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1) modules (3)
39     map-MS-DataTypes (11) version6 (6)}
40
41  maxSignalInfoLength,
42  ISDN-AddressString,
43  ISDN-SubaddressString,
44  AlertingPattern,
45  LCSCClientExternalID,
46  AddressString
47  FROM MAP-CommonDataTypes {
    
```

```
48 ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1) modules (3)
49 map-CommonDataTypes (18) version6 (6)}
50
51 LocationType,
52 LCSClientName,
53 LCS-QoS,
54 Horizontal-Accuracy,
55 ResponseTime,
56 Ext-GeographicalInformation,
57 SupportedGADShapes,
58 Add-GeographicalInformation
59 FROM MAP-LCS-DataTypes {
60 ccitt identified-organization (4) etsi (0) mobileDomain (0)
61 gsm-Network (1) modules (3) map-LCS-DataTypes (25) version6 (6)}
62
63 ;
64
65 -- data types definition
66
67 SS-UserData ::= IA5String (SIZE (1.. maxSignalInfoLength))
68
69 NotifySS-Arg ::= SEQUENCE{
70     ss-Code [1] SS-Code OPTIONAL,
71     ss-Status [4] SS-Status OPTIONAL,
72     ss-Notification [5] SS-Notification OPTIONAL,
73     callIsWaiting-Indicator [14] NULL OPTIONAL,
74     callOnHold-Indicator [15] CallOnHold-Indicator OPTIONAL,
75     mpty-Indicator [16] NULL OPTIONAL,
76     cug-Index [17] CUG-Index OPTIONAL,
77     clirSuppressionRejected [18] NULL OPTIONAL,
78     ... ,
79     ect-Indicator [19] ECT-Indicator OPTIONAL,
80     nameIndicator [20] NameIndicator OPTIONAL,
81     ccbs-Feature [21] CCBS-Feature OPTIONAL,
82     alertingPattern [22] AlertingPattern OPTIONAL}
83
84 -- The nameIndicator is defined because of CNAP.
85
86 ForwardChargeAdviceArg ::= SEQUENCE{
87     ss-Code [0] SS-Code,
88     chargingInformation [1] ChargingInformation,
89     ...}
90
91 SS-Notification ::= OCTET STRING (SIZE (1))
92
93 -- Bit 8 7 6 5 4 00000 (Unused)
94
95 -- Bit 3 Call is forwarded indication to A-subscriber
96 -- (calling subscriber)
97 -- 0 No information content
98 -- 1 Outgoing call has been forwarded to C
99
100 -- Bit 2 Call is forwarded indication to B-subscriber
101 -- (forwarding subscriber)
102 -- 0 No information content
103 -- 1 Incoming call has been forwarded to C
104
105 -- Bit 1 Call is forwarded indication to C-subscriber
106 -- (forwarded-to subscriber)
107 -- 0 No information content
108 -- 1 Incoming call is a forwarded call
109
110 ChargingInformation ::= SEQUENCE{
111     e1 [1] E1 OPTIONAL,
112     e2 [2] E2 OPTIONAL,
113     e3 [3] E3 OPTIONAL,
114     e4 [4] E4 OPTIONAL,
115     e5 [5] E5 OPTIONAL,
116     e6 [6] E6 OPTIONAL,
117     e7 [7] E7 OPTIONAL,
118     ...}
119
120 E1 ::= INTEGER (0..max10TimesUnitsPerTime)
121 max10TimesUnitsPerTime INTEGER ::= 8191
122
123 E2 ::= INTEGER (0..max10TimesTimeInterval)
124 max10TimesTimeInterval INTEGER ::= 8191
125
```

```

126 E3 ::= INTEGER (0..max100TimesScalingFactor)
127 max100TimesScalingFactor INTEGER ::= 8191
128
129 E4 ::= INTEGER (0..max10TimesIncrement)
130 max10TimesIncrement INTEGER ::= 8191
131
132 E5 ::= INTEGER (0..max10TimesIncrementPerDataInterval)
133 max10TimesIncrementPerDataInterval INTEGER ::= 8191
134
135 E6 ::= INTEGER (0..maxNumberOfSegmentsPerDataInterval)
136 maxNumberOfSegmentsPerDataInterval INTEGER ::= 8191
137
138 E7 ::= INTEGER (0..max10TimesInitialTime)
139 max10TimesInitialTime INTEGER ::= 8191
140
141 CallOnHold-Indicator ::= ENUMERATED {
142     callRetrieved (0),
143     callOnHold (1)}
144
145 ForwardCUG-InfoArg ::= SEQUENCE {
146     cug-Index [0] CUG-Index OPTIONAL,
147     suppressPrefCUG [1] NULL OPTIONAL,
148     suppressOA [2] NULL OPTIONAL,
149     ...}
150
151 ECT-Indicator ::= SEQUENCE {
152     ect-CallState [0] ECT-CallState,
153     rdn [1] RDN OPTIONAL,
154     ...}
155
156 ECT-CallState ::= ENUMERATED {
157     alerting (0),
158     active (1)}
159
160 NameIndicator ::= SEQUENCE {
161     callingName [0] Name OPTIONAL,
162     ...}
163
164 Name ::= CHOICE {
165     namePresentationAllowed [0] NameSet,
166     presentationRestricted [1] NULL,
167     nameUnavailable [2] NULL,
168     namePresentationRestricted [3] NameSet}
169
170 NameSet ::= SEQUENCE {
171     dataCodingScheme [0] USSD-DataCodingScheme,
172     lengthInCharacters [1] INTEGER,
173     nameString [2] USSD-String,
174     ...}
175
176 -- NameIndicator, Name and NameSet are defined because of CNAP.
177 -- The USSD-DataCodingScheme shall indicate use of the default alphabet through the
178 -- following encoding:
179 -- bit 7 6 5 4 3 2 1 0
180 -- | 0 0 0 0 | 1 1 1 1|
181
182 RDN ::= CHOICE {
183     presentationAllowedAddress [0] RemotePartyNumber,
184     presentationRestricted [1] NULL,
185     numberNotAvailableDueToInterworking [2] NULL,
186     presentationRestrictedAddress [3] RemotePartyNumber}
187
188 RemotePartyNumber ::= SEQUENCE {
189     partyNumber [0] ISDN-AddressString,
190     partyNumberSubaddress [1] ISDN-SubaddressString OPTIONAL,
191     ...}
192
193 AccessRegisterCCEntArg ::= SEQUENCE {
194     ...}
195
196 CallDeflectionArg ::= SEQUENCE {
197     deflectedToNumber [0] AddressString,
198     deflectedToSubaddress [1] ISDN-SubaddressString OPTIONAL,
199     ...}
200
201 UserUserServiceArg ::= SEQUENCE {
202     uUS-Service [0] UUS-Service,
203     uUS-Required [1] BOOLEAN,

```

```
204     ... }
205
206 UUS-Service ::= ENUMERATED {
207     uUS1 (1),
208     uUS2 (2),
209     uUS3 (3),
210     ... }
211
212 -- exception handling:
213 -- In case of UUS-Service with any other value, indicated as "UUS required",
214 -- but not understood by the MS, the call will be cleared.
215
216 LocationNotificationArg ::= SEQUENCE {
217     notificationType [0] NotificationToMSUser,
218     locationType [1] LocationType,
219     lcsClientExternalID [2] LCSClientExternalID OPTIONAL,
220     lcsClientName [3] LCSClientName OPTIONAL,
221     ... }
222 -- exception handling:
223 -- At reception of an unrecognised notificationType value the receiver shall reject the
224 -- operation with a return error cause of unexpected data value.
225 -- At reception of an unrecognised locationType value the receiver shall reject the
226 -- operation with a return error cause of unexpected data value.
227
228
229 LocationNotificationRes ::= SEQUENCE {
230     verificationResponse [0] VerificationResponse OPTIONAL,
231     ... }
232
233 VerificationResponse ::= ENUMERATED {
234     permissionDenied (0),
235     permissionGranted (1),
236     ... }
237
238 -- exception handling:
239 -- an unrecognized value shall be treated the same as value 0 (permissionDenied)
240
241 LCS-MOLRArg ::= SEQUENCE {
242     molr-Type [0] MOLR-Type,
243     locationMethod [1] LocationMethod OPTIONAL,
244     lcs-QoS [2] LCS-QoS OPTIONAL,
245     lcsClientExternalID [3] LCSClientExternalID OPTIONAL,
246     mlc-Number [4] ISDN-AddressString OPTIONAL,
247     gpsAssistanceData [5] GPSAssistanceData OPTIONAL,
248     ...
249     supportedGADShapes [6] SupportedGADShapes OPTIONAL }
250 -- The parameter locationMethod shall be included if and only if the molr-Type is set to value
251 -- deCipherringKeys or assistanceData.
252 -- The parameter gpsAssistanceData shall be included if and only if the molr-Type is set to value
253 -- assistanceData and LocationMethod is set to value assistedGPS.
254
255 MOLR-Type ::= ENUMERATED {
256     locationEstimate (0),
257     assistanceData (1),
258     deCipherringKeys (2),
259     ... }
260 -- exception handling:
261 -- an unrecognized value shall be rejected by the receiver with a return error cause of
262 -- unexpected data value.
263
264 LocationMethod ::= ENUMERATED {
265     msBasedEOTD (0),
266     msAssistedEOTD (1),
267     assistedGPS (2),
268     ... }
269 -- exception handling:
270 -- an unrecognized value shall be rejected by the receiver with a return error cause of
271 -- unexpected data value.
272
273 GPSAssistanceData ::= OCTET STRING (SIZE (1..38))
274 -- Octets 1 to 38 are coded in the same way as the octets 3 to 7+2n of Requested GPS Data IE
275 -- in GSM 09.31.
276
277 LCS-MOLRRes ::= SEQUENCE {
278     locationEstimate [0] Ext-GeographicalInformation OPTIONAL,
279     decipherringKeys [1] DecipherringKeys OPTIONAL,
280     ...
281     add-LocationEstimate [2] Add-GeographicalInformation OPTIONAL }
```

```
282 -- Parameters locationEstimate or add-LocationEstimate (one but not both)
283 -- shall be included if and only if the
284 -- molr-Type in LocationRequestArg was set to value locationEstimate.
285 -- Parameter add-LocationEstimate shall not be included if the supportedGADShapes
286 -- parameter was not received in the LCS-MOLRArg.
287 -- Parameter decipheringKeys shall be included if and only if the molr-Type
288 -- in LocationRequestArg was set to value deCIPHERingKeys.
289 --
290
291
292 DecipheringKeys ::= OCTET STRING (SIZE (15))
293 -- Octets in DecipheringKeys are coded in the same way as the octets 3 to 17 of Deciphering Key IE
294 -- in GSM 09.31. I.e. these octets contain Current Deciphering Key, Next Deciphering Key and
295 -- CIPHERing Key Flag.
296
297
298
299 END
300
301
```

302 ***** END OF MODIFICATIONS *****

303

Rio Grande, Puerto Rico, 14-18 May 2001

CR-Form-v3

CHANGE REQUEST⌘ **24.080 CR 008** ⌘ rev **-** ⌘ Current version: **4.0.0** ⌘For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.Proposed change affects: ⌘ (U)SIM ME/UE Radio Access Network Core Network **Title:** ⌘ Add support in DTAP for all shapes defined in 23.032**Source:** ⌘ CN4**Work item code:** ⌘ LCS**Date:** ⌘ 2 May 2001**Category:** ⌘ **A****Release:** ⌘ REL-4Use 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)

Reason for change: ⌘ As response to a Mobile Originating positioning request, the RNC or the SMLC (depending on the access type) provide a location estimate coded via a "shape". The possible shapes are defined in the TS 23.032. DTAP 24.080 supports only a subset of the shapes defined in 23.032 via the import of the related MAP parameter. RANAP 25.413 supports another subset of 23.032. The intersection of the 23.032 subsets defined 24.080 and 25.413 is non empty, meaning that there are shapes carried by 25.413 that cannot be carried by 24.080.

The outcome is that Mobile Originating UMTS Positioning requests that are successfully answered with the required QoS by the RNC will fail because of DTAP, i.e. stage 3 of Location services imposes limitations on the service as specified by stage 2.

SA2 has issued the liaison statement S2-010812 towards RAN3 and CN4 to ask for full support in MAP and RANAP for all the shapes defined by 23.032. While investigating the issue for MAP, the similar lack of support for all the shapes has been discovered in 24.080.

Summary of change: ⌘ Addition of new parameters to LCS-MOLR-Arg and LCS-MOLR-Res.

Consequences if not approved: ⌘ MO-Location requests that are successfully answered by the RNC with the required QoS, will fail because of limitations in the DTAP protocol in transferring the location estimate to the UE.

Clauses affected: ⌘ 4.4.2

Other specs ⌘ Other core specifications ⌘ CR 005 TS 24.030 N4-010536
CR 264 TS 29.002 N4-010540

Affected: Test specifications

Other comments: ☞ The input LS from SA2 is the CN4 N4-010512 T-doc

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.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://www.3gpp.org/specs/>. For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

1

2 ****** FIRST MODIFIED SECTION ******

3

4

5 **4.4.2 ASN.1 data types**

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

```

9  SS-DataTypes {
10     ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Access (2) modules (3)
11     ss-DataTypes (2) version6 (6)}
12
13  DEFINITIONS
14
15  IMPLICIT TAGS ::=
16
17  BEGIN
18
19  -- exports all data types defined in this module
20
21  IMPORTS
22
23  SS-Code
24  FROM MAP-SS-Code {
25     ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1) modules (3)
26     map-SS-Code (15) version6 (6)}
27
28  -- imports MAP-SS-DataTypes
29  SS-Status, USSD-DataCodingScheme, USSD-String, CCBS-Feature
30  -- USSD-DataCodingScheme, USSD-String were introduced because of CNAP.
31  FROM MAP-SS-DataTypes {
32     ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1) modules (3)
33     map-SS-DataTypes (14) version6 (6)}
34
35  CUG-Index,
36  NotificationToMSUser
37  FROM MAP-MS-DataTypes {
38     ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1) modules (3)
39     map-MS-DataTypes (11) version6 (6)}
40
41  maxSignalInfoLength,
42  ISDN-AddressString,
43  ISDN-SubaddressString,
44  AlertingPattern,
45  LCSCClientExternalID,
46  AddressString
47  FROM MAP-CommonDataTypes {
    
```

```
48     ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1) modules (3)
49     map-CommonDataTypes (18) version6 (6)}
50
51 LocationType,
52 LCSClientName,
53 LCS-QoS,
54 Horizontal-Accuracy,
55 ResponseTime,
56 Ext-GeographicalInformation,
57 SupportedGADShapes,
58 Add-GeographicalInformation
59 FROM MAP-LCS-DataTypes {
60     ccitt identified-organization (4) etsi (0) mobileDomain (0)
61     gsm-Network (1) modules (3) map-LCS-DataTypes (25) version6 (6)}
62
63 ;
64
65 -- data types definition
66
67 SS-UserData ::= IA5String (SIZE (1.. maxSignalInfoLength))
68
69 NotifySS-Arg ::= SEQUENCE{
70     ss-Code                [1]     SS-Code OPTIONAL,
71     ss-Status              [4]     SS-Status OPTIONAL,
72     ss-Notification       [5]     SS-Notification OPTIONAL,
73     callIsWaiting-Indicator [14]   NULL OPTIONAL,
74     callOnHold-Indicator   [15]   CallOnHold-Indicator OPTIONAL,
75     mpty-Indicator        [16]   NULL OPTIONAL,
76     cug-Index             [17]   CUG-Index OPTIONAL,
77     clirSuppressionRejected [18]  NULL OPTIONAL,
78     ... ,
79     ect-Indicator         [19]   ECT-Indicator OPTIONAL,
80     nameIndicator         [20]   NameIndicator OPTIONAL,
81     ccbs-Feature          [21]   CCBS-Feature OPTIONAL,
82     alertingPattern       [22]   AlertingPattern OPTIONAL}
83
84 -- The nameIndicator is defined because of CNAP.
85
86 ForwardChargeAdviceArg ::= SEQUENCE{
87     ss-Code                [0]     SS-Code,
88     chargingInformation    [1]     ChargingInformation,
89     ...}
90
91 SS-Notification ::= OCTET STRING (SIZE (1))
92
93 -- Bit 8 7 6 5 4 00000 (Unused)
94
95 -- Bit 3 Call is forwarded indication to A-subscriber
96 -- (calling subscriber)
97 -- 0 No information content
98 -- 1 Outgoing call has been forwarded to C
99
100 -- Bit 2 Call is forwarded indication to B-subscriber
101 -- (forwarding subscriber)
102 -- 0 No information content
103 -- 1 Incoming call has been forwarded to C
104
105 -- Bit 1 Call is forwarded indication to C-subscriber
106 -- (forwarded-to subscriber)
107 -- 0 No information content
108 -- 1 Incoming call is a forwarded call
109
110 ChargingInformation ::= SEQUENCE{
111     e1 [1] E1 OPTIONAL,
112     e2 [2] E2 OPTIONAL,
113     e3 [3] E3 OPTIONAL,
114     e4 [4] E4 OPTIONAL,
115     e5 [5] E5 OPTIONAL,
116     e6 [6] E6 OPTIONAL,
117     e7 [7] E7 OPTIONAL,
118     ...}
119
120 E1 ::= INTEGER (0..max10TimesUnitsPerTime)
121 max10TimesUnitsPerTime INTEGER ::= 8191
122
123 E2 ::= INTEGER (0..max10TimesTimeInterval)
124 max10TimesTimeInterval INTEGER ::= 8191
125
```

```

126 E3 ::= INTEGER (0..max100TimesScalingFactor)
127 max100TimesScalingFactor INTEGER ::= 8191
128
129 E4 ::= INTEGER (0..max10TimesIncrement)
130 max10TimesIncrement INTEGER ::= 8191
131
132 E5 ::= INTEGER (0..max10TimesIncrementPerDataInterval)
133 max10TimesIncrementPerDataInterval INTEGER ::= 8191
134
135 E6 ::= INTEGER (0..maxNumberOfSegmentsPerDataInterval)
136 maxNumberOfSegmentsPerDataInterval INTEGER ::= 8191
137
138 E7 ::= INTEGER (0..max10TimesInitialTime)
139 max10TimesInitialTime INTEGER ::= 8191
140
141 CallOnHold-Indicator ::= ENUMERATED {
142     callRetrieved (0),
143     callOnHold (1)}
144
145 ForwardCUG-InfoArg ::= SEQUENCE {
146     cug-Index [0] CUG-Index OPTIONAL,
147     suppressPrefCUG [1] NULL OPTIONAL,
148     suppressOA [2] NULL OPTIONAL,
149     ...}
150
151 ECT-Indicator ::= SEQUENCE {
152     ect-CallState [0] ECT-CallState,
153     rdn [1] RDN OPTIONAL,
154     ...}
155
156 ECT-CallState ::= ENUMERATED {
157     alerting (0),
158     active (1)}
159
160 NameIndicator ::= SEQUENCE {
161     callingName [0] Name OPTIONAL,
162     ...}
163
164 Name ::= CHOICE {
165     namePresentationAllowed [0] NameSet,
166     presentationRestricted [1] NULL,
167     nameUnavailable [2] NULL,
168     namePresentationRestricted [3] NameSet}
169
170 NameSet ::= SEQUENCE {
171     dataCodingScheme [0] USSD-DataCodingScheme,
172     lengthInCharacters [1] INTEGER,
173     nameString [2] USSD-String,
174     ...}
175
176 -- NameIndicator, Name and NameSet are defined because of CNAP.
177 -- The USSD-DataCodingScheme shall indicate use of the default alphabet through the
178 -- following encoding:
179 -- bit 7 6 5 4 3 2 1 0
180 -- | 0 0 0 0 | 1 1 1 1|
181
182 RDN ::= CHOICE {
183     presentationAllowedAddress [0] RemotePartyNumber,
184     presentationRestricted [1] NULL,
185     numberNotAvailableDueToInterworking [2] NULL,
186     presentationRestrictedAddress [3] RemotePartyNumber}
187
188 RemotePartyNumber ::= SEQUENCE {
189     partyNumber [0] ISDN-AddressString,
190     partyNumberSubaddress [1] ISDN-SubaddressString OPTIONAL,
191     ...}
192
193 AccessRegisterCCEntArg ::= SEQUENCE {
194     ...}
195
196 CallDeflectionArg ::= SEQUENCE {
197     deflectedToNumber [0] AddressString,
198     deflectedToSubaddress [1] ISDN-SubaddressString OPTIONAL,
199     ...}
200
201 UserUserServiceArg ::= SEQUENCE {
202     uUS-Service [0] UUS-Service,
203     uUS-Required [1] BOOLEAN,

```

```

204     ... }
205
206 UUS-Service ::= ENUMERATED {
207     uUS1 (1),
208     uUS2 (2),
209     uUS3 (3),
210     ... }
211
212 -- exception handling:
213 -- In case of UUS-Service with any other value, indicated as "UUS required",
214 -- but not understood by the MS, the call will be cleared.
215
216 LocationNotificationArg ::= SEQUENCE {
217     notificationType [0] NotificationToMSUser,
218     locationType      [1] LocationType,
219     lcsClientExternalID [2] LCSCClientExternalID    OPTIONAL,
220     lcsClientName      [3] LCSCClientName          OPTIONAL,
221     ... }
222 -- exception handling:
223 -- At reception of an unrecognised notificationType value the receiver shall reject the
224 -- operation with a return error cause of unexpected data value.
225 -- At reception of an unrecognised locationType value the receiver shall reject the
226 -- operation with a return error cause of unexpected data value.
227
228
229 LocationNotificationRes ::= SEQUENCE {
230     verificationResponse [0] VerificationResponse OPTIONAL,
231     ... }
232
233 VerificationResponse ::= ENUMERATED {
234     permissionDenied (0),
235     permissionGranted (1),
236     ... }
237
238 -- exception handling:
239 -- an unrecognized value shall be treated the same as value 0 (permissionDenied)
240
241 LCS-MOLRArg ::= SEQUENCE {
242     molr-Type [0] MOLR-Type,
243     locationMethod [1] LocationMethod    OPTIONAL,
244     lcs-QoS [2] LCS-QoS    OPTIONAL,
245     lcsClientExternalID [3] LCSCClientExternalID    OPTIONAL,
246     mlc-Number [4] ISDN-AddressString    OPTIONAL,
247     gpsAssistanceData [5] GPSAssistanceData    OPTIONAL,
248     ...
249     supportedGADShapes [6] SupportedGADShapes    OPTIONAL }
250 -- The parameter locationMethod shall be included if and only if the molr-Type is set to value
251 -- deCipherringKeys or assistanceData.
252 -- The parameter gpsAssistanceData shall be included if and only if the molr-Type is set to value
253 -- assistanceData and LocationMethod is set to value assistedGPS.
254
255 MOLR-Type ::= ENUMERATED {
256     locationEstimate (0),
257     assistanceData (1),
258     deCipherringKeys (2),
259     ... }
260 -- exception handling:
261 -- an unrecognized value shall be rejected by the receiver with a return error cause of
262 -- unexpected data value.
263
264 LocationMethod ::= ENUMERATED {
265     msBasedEOTD (0),
266     msAssistedEOTD (1),
267     assistedGPS (2),
268     ... }
269 -- exception handling:
270 -- an unrecognized value shall be rejected by the receiver with a return error cause of
271 -- unexpected data value.
272
273 GPSAssistanceData ::= OCTET STRING (SIZE (1..38))
274 -- Octets 1 to 38 are coded in the same way as the octets 3 to 7+2n of Requested GPS Data IE
275 -- in GSM 09.31.
276
277 LCS-MOLRRes ::= SEQUENCE {
278     locationEstimate [0] Ext-GeographicalInformation    OPTIONAL,
279     decipherringKeys [1] DecipherringKeys    OPTIONAL,
280     ...
281     add-LocationEstimate [2] Add-GeographicalInformation    OPTIONAL }

```

```
282 -- Parameters locationEstimate or add-LocationEstimate (one but not both)
283 -- shall be included if and only if the
284 -- molr-Type in LocationRequestArg was set to value locationEstimate.
285 -- Parameter add-LocationEstimate shall not be included if the supportedGADShapes
286 -- parameter was not received in the LCS-MOLRArg.
287 -- Parameter decipheringKeys shall be included if and only if the molr-Type
288 -- in LocationRequestArg was set to value deCIPHERINGKeys.
289 --
290
291
292 DecipheringKeys ::= OCTET STRING (SIZE (15))
293 -- Octets in DecipheringKeys are coded in the same way as the octets 3 to 17 of Deciphering Key IE
294 -- in GSM 09.31. I.e. these octets contain Current Deciphering Key, Next Deciphering Key and
295 -- CIPHERING Key Flag.
296
297
298
299 END
300
301
```

302 ***** END OF MODIFICATIONS *****

303

Rio Grande, Puerto Rico, 14-18 May 2001

CR-Form-v3

CHANGE REQUEST

⌘ **29.002 CR 263** ⌘ rev **3** ⌘ Current version: **3.8.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ME/UE Radio Access Network Core Network

Title: ⌘ Add support in MAP for all shapes defined in 23.032

Source: ⌘ CN4

Work item code: ⌘ LCS

Date: ⌘ 2 May 2001

Category: ⌘ **F** (essential correction)

Release: ⌘ R99

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)

Reason for change: ⌘ As response to a positioning request, the RNC or the SMLC (depending on the access type) provide a location estimate coded via a "shape". The possible shapes are defined in the TS 23.032. MAP 29.002 supports only a subset of the shapes defined in 23.032. RANAP 25.413 supports another subset of 23.032. The intersection of the 23.032 subsets defined 29.002 and 25.413 is non empty, meaning that there are shapes carried by 25.413 that cannot be carried by 29.002.

The outcome is that UMTS Positioning requests that are successfully answered with the required QoS by the RNC will fail because of MAP, i.e. stage 3 of Location services imposes limitations on the service as specified by stage 2.

SA2 has issued the liaison statement S2-010812 towards RAN3 and CN4 to ask for full support to both protocols for all the shapes defined by 23.032

Summary of change: ⌘ Addition of new parameters to ProvideSubscriberLocation-Arg, ProvideSubscriberLocation-Res and SubscriberLocationReport-Arg

Consequences if not approved: ⌘ Location requests that are successfully answered by the RNC with the required QoS, will fail because of limitations in the MAP protocol in transferring the location estimate.

Clauses affected: ⌘ 2, 7.6, 7.6.11.11, 7.6.11.20, 7.6.11.21, 13A.2.2, 13A.2.3, 13A.3.2, 13A.3.3, 17.7.13,

Other specs Affected: ⌘ Other core specifications ⌘ CR 007 TS 24.080
 Test specifications
 O&M Specifications

Other comments: ☞ The input LS from SA2 is the CN4 N4-010512 T-doc

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.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://www.3gpp.org/specs/>. For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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 MODIFIED SECTION ***

2 References

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

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

- [1] 3GPP TS 21.905: "3G Vocabulary".
- [2] GSM 02.01: "Digital cellular telecommunications system (Phase 2+); Principles of telecommunication services supported by a GSM Public Land Mobile Network (PLMN)".
- [3] 3GPP TS 22.002: "Bearer Services Supported by a GSM Public Land Mobile Network (PLMN)".
- [4] GSM 02.03: "Digital cellular telecommunications system (Phase 2+); Teleservices Supported by a GSM Public Land Mobile Network (PLMN)".
- [5] 3GPP TS 22.004: "General on Supplementary Services".
- [6] GSM 02.09: "Digital cellular telecommunications system (Phase 2+); Security aspects".
- [7] 3GPP TS 22.016: "International Mobile station Equipment Identities (IMEI)".
- [8] 3GPP TS 22.041: "Operator Determined Barring".
- [9] 3GPP TS 22.081: "Line identification supplementary services - Stage 1".
- [10] 3GPP TS 22.082: "Call Forwarding (CF) supplementary services - Stage 1".
- [11] 3GPP TS 22.083: "Call Waiting (CW) and Call Hold (HOLD) Supplementary Services - Stage 1".
- [12] 3GPP TS 22.084: "Multi Party (MPTY) Supplementary Services - Stage 1".
- [13] 3GPP TS 22.085: "Closed User Group (CUG) supplementary services - Stage 1".

- [14] 3GPP TS 22.086: "Advice of charge (AoC) Supplementary Services - Stage 1".
- [15] 3GPP TS 22.088: "Call Barring (CB) supplementary services - Stage 1".
- [16] 3GPP TS 22.090: "Unstructured Supplementary Service Data (USSD); - Stage 1".
- [17] 3GPP TS 23.003: "Numbering, addressing and identification".
- [18] GSM 03.04: "Digital cellular telecommunications system (Phase 2+); Signalling requirements relating to routing of calls to mobile subscribers".
- [19] 3GPP TS 23.007: "Restoration procedures".
- [20] 3GPP TS 23.008: "Organisation of subscriber data".
- [21] 3GPP TS 23.009: "Handover procedures".
- [22] 3GPP TS 23.011: "Technical realization of Supplementary Services - General Aspects".
- [23] 3GPP TS 23.012: "Location registration procedures".
- [24] GSM 03.20: "Digital cellular telecommunications system (Phase 2+); Security related network functions".
- [25] 3GPP TS 23.038: "Alphabets and language".
- [26] 3GPP TS 23.040: "Technical realization of the Short Message Service (SMS) Point to Point (PP)".
- [26a] GSM 03.71: "Digital cellular telecommunications system (Phase 2+); Location Services (LCS); Functional Description; Stage 2".
- [27] 3GPP TS 23.081: "Line Identification Supplementary Services - Stage 2".
- [28] 3GPP TS 23.082: "Call Forwarding (CF) Supplementary Services - Stage 2".
- [29] 3GPP TS 23.083: "Call Waiting (CW) and Call Hold (HOLD) Supplementary Services - Stage 2".
- [30] 3GPP TS 23.084: "Multi Party (MPTY) Supplementary Services - Stage 2".
- [31] 3GPP TS 23.085: "Closed User Group (CUG) Supplementary Services - Stage 2".
- [32] 3GPP TS 23.086: "Advice of Charge (AoC) Supplementary Services - Stage 2".
- [33] 3GPP TS 23.088: "Call Barring (CB) Supplementary Services - Stage 2".
- [34] 3GPP TS 23.090: "Unstructured Supplementary Services Data (USSD) - Stage 2".
- [35] 3GPP TS 24.008: "Mobile Radio Interface Layer 3 specification; Core Network Protocols - Stage 3".
- [36] 3GPP TS 24.010: "Mobile radio interface layer 3 Supplementary Services specification - General aspects".
- [37] 3GPP TS 24.011: "Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface".
- [37a] GSM 04.71: "Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 location services specification".
- [38] 3GPP TS 24.080: "Mobile radio interface layer 3 supplementary services specification - Formats and coding".
- [39] 3GPP TS 24.081: "Line identification supplementary services - Stage 3".
- [40] 3GPP TS 24.082: "Call Forwarding (CF) Supplementary Services - Stage 3".
- [41] 3GPP TS 24.083: "Call Waiting (CW) and Call Hold (HOLD) supplementary services - Stage 3".

- [42] 3GPP TS 24.084: "Multi Party (MPTY) Supplementary Services - Stage 3".
- [43] 3GPP TS 24.085: "Closed User Group (CUG) Supplementary Services - Stage 3".
- [44] 3GPP TS 24.086: "Advice of Charge (AoC) Supplementary Services - Stage 3".
- [45] 3GPP TS 24.088: "Call Barring (CB) Supplementary Services - Stage 3".
- [46] 3GPP TS 24.090: "Unstructured Supplementary Services Data - Stage 3".
- [47] GSM 08.02: "Digital cellular telecommunications system (Phase 2+); Base Station System - Mobile-services Switching Centre (BSS - MSC) interface principles".
- [48] GSM 08.06: "Digital cellular telecommunications system (Phase 2+); Signalling transport mechanism specification for the Base Station System - Mobile-services Switching Centre (BSS - MSC) interface".
- [49] GSM 08.08: "Digital cellular telecommunications system (Phase 2+); Mobile Switching Centre - Base Station System (MSC - BSS) interface Layer 3 specification".
- [49a] GSM 08.08: "Digital cellular telecommunications system (Phase 2+); Mobile Switching Centre - Base Station System (MSC - BSS) interface Layer 3 specification".
- [49a1] GSM 08.31: "Digital cellular telecommunications system (Phase 2+); Location Services (LCS); Serving Mobile Location Centre (SMLC) – Serving Mobile Location Centre (SMLC); SMLC Peer Protocol (SMLCPP)".
- [49b] GSM 08.71: "Digital cellular telecommunications system (Phase 2+); Location Services (LCS); Serving Mobile Location Centre - Base Station System (SMLC - BSS) interface Layer 3 specification".
- [50] GSM 09.01: "Digital cellular telecommunications system (Phase 2+); General network interworking scenarios".
- [51] 3GPP TS 29.002: "Mobile Application Part (MAP) specification".
- [52] GSM 09.03: "Digital cellular telecommunications system (Phase 2+); Signalling requirements on interworking between the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN) and the Public Land Mobile Network (PLMN)".
- [53] GSM 09.04: "Digital cellular telecommunications system (Phase 2+); Interworking between the Public Land Mobile Network (PLMN) and the Circuit Switched Public Data Network (CSPDN)".
- [54] GSM 09.05: "Digital cellular telecommunications system (Phase 2+); Interworking between the Public Land Mobile Network (PLMN) and the Packet Switched Public Data Network (PSPDN) for Packet Assembly/Disassembly facility (PAD) access".
- [55] 3GPP TS 29.006: "Interworking between a Public Land Mobile Network (PLMN) and a Packet Switched Public Data Network/Integrated Services Digital Network (PSPDN/ISDN) for the support of Packet Switched data transmission services".
- [56] 3GPP TS 29.007: "Digital cellular telecommunications system (Phase 2+); General requirements on interworking between the Public Land Mobile Network (PLMN) and the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN)".
- [57] GSM 09.08: "Digital cellular telecommunications system (Phase 2+); Application of the Base Station System Application Part (BSSAP) on the E-interface".
- [58] 3GPP TS 29.010: "Information element mapping between Mobile Station - Base Station System and BSS - Mobile-services Switching Centre (MS - BSS - MSC) Signalling procedures and the Mobile Application Part (MAP)".
- [59] 3GPP TS 29.011: "Signalling interworking for Supplementary Services".
- [59a] GSM 09.31: "Digital cellular telecommunications system (Phase 2+); Location Services (LCS); Base Station System Application Part LCS Extension (BSSAP-LE)".

- [60] GSM 09.90: "Digital cellular telecommunications system (Phase 2+); Interworking between Phase 1 infrastructure and Phase 2 Mobile Stations (MS)".
- [61] GSM 12.08: "Digital cellular telecommunications system (Phase 2); Subscriber and Equipment Trace".
- [62] ETS 300 102-1 (1990): "Integrated Services Digital Network (ISDN); User-network interface layer 3 specifications for basic call control".
- [63] ETS 300 136 (1992): "Integrated Services Digital Network (ISDN); Closed User Group (CUG) supplementary service description".
- [64] ETS 300 138 (1992): "Integrated Services Digital Network (ISDN); Closed User Group (CUG) supplementary service Digital Subscriber Signalling System No.one (DSS1) protocol".
- [65] ETS 300 287: "Integrated Services Digital Network (ISDN); Signalling System No.7; Transaction Capabilities (TC) version 2".
- [66] ETR 060: "Signalling Protocols and Switching (SPS); Guide-lines for using Abstract Syntax Notation One (ASN.1) in telecommunication application protocols".
- [67] ITU-T Recommendation E.164: "Numbering plan for the ISDN era".
- [68] ITU-T Recommendation E.212: "Identification plan for land mobile stations".
- [69] ITU-T Recommendation E.213: "Telephone and ISDN numbering plan for land mobile stations".
- [70] ITU-T Recommendation E.214: "Structuring of the land mobile global title for the signalling connection control part".
- [71] CCITT Recommendation Q.699: "Interworking between the Digital Subscriber Signalling System Layer 3 protocol and the Signalling System No.7 ISDN User part".
- [72] ITU-T Recommendation Q.711: "Specifications of Signalling System No.7; Functional description of the Signalling Connection Control Part".
- [73] ITU-T Recommendation Q.712: "Definition and function of SCCP messages".
- [74] ITU-T Recommendation Q.713: "Specifications of Signalling System No.7; SCCP formats and codes".
- [75] ITU-T Recommendation Q.714: "Specifications of Signalling System No.7; Signalling Connection Control Part procedures".
- [76] ITU-T Recommendation Q.716: "Specifications of Signalling System No.7; Signalling connection control part (SCCP) performances".
- [77] ITU-T Recommendation Q.721 (1988): "Specifications of Signalling System No.7; Functional description of the Signalling System No.7 Telephone user part".
- [78] ITU-T Recommendation Q.722 (1988): "Specifications of Signalling System No.7; General function of Telephone messages and signals".
- [79] ITU-T Recommendation Q.723 (1988): "Specifications of Signalling System No.7; Formats and codes".
- [80] ITU-T Recommendation Q.724 (1988): "Specifications of Signalling System No.7; Signalling procedures".
- [81] ITU-T Recommendation Q.725 (1988): "Specifications of Signalling System No.7; Signalling performance in the telephone application".
- [82] ITU-T Recommendation Q.761 (1988): "Specifications of Signalling System No.7; Functional description of the ISDN user part of Signalling System No.7".
- [83] ITU-T Recommendation Q.762 (1988): "Specifications of Signalling System No.7; General function of messages and signals".

- [84] ITU-T Recommendation Q.763 (1988): "Specifications of Signalling System No.7; Formats and codes".
- [85] ITU-T Recommendation Q.764 (1988): "Specifications of Signalling System No.7; Signalling procedures".
- [86] ITU-T Recommendation Q.767: "Specifications of Signalling System No.7; Application of the ISDN user part of CCITT signalling System No.7 for international ISDN interconnections".
- [87] ITU-T Recommendation Q.771: "Specifications of Signalling System No.7; Functional description of transaction capabilities".
- [88] ITU-T Recommendation Q.772: "Specifications of Signalling System No.7; Transaction capabilities information element definitions".
- [89] ITU-T Recommendation Q.773: "Specifications of Signalling System No.7; Transaction capabilities formats and encoding".
- [90] ITU-T Recommendation Q.774: "Specifications of Signalling System No.7; Transaction capabilities procedures".
- [91] ITU-T Recommendation Q.775: "Specifications of Signalling System No.7; Guide-lines for using transaction capabilities".
- [92] ITU-T Recommendation X.200: "Reference Model of Open systems interconnection for CCITT Applications".
- [93] ITU-T Recommendation X.208 (1988): "Specification of Abstract Syntax Notation One (ASN.1)".
- [94] ITU-T Recommendation X.209 (1988): "Specification of basic encoding rules for Abstract Syntax Notation One (ASN.1)".
- [95] ITU-T Recommendation X.210: "Open systems interconnection layer service definition conventions".
- [97] 3GPP TS 23.018: "Basic Call Handling".
- [98] 3GPP TS 23.078: "Customised Applications for Mobile network Enhanced Logic (CAMEL) Phase 3 - Stage 2".
- [99] 3GPP TS 23.079: "Support of Optimal Routeing (SOR) - Stage 2".
- [100] GSM 03.68: "Digital cellular telecommunications system (Phase 2+); - Stage 2".
- [101] GSM 03.69: "Digital cellular telecommunications system (Phase 2+); - Stage 2".
- [102] ANSI T1.113: "Signaling System No. 7 (SS7) - ISDN User Part".
- [103] 3GPP TS 23.054 "Shared Inter Working Function (SIWF) - Stage 2".
- [104] 3GPP TS 23.060: "General Packet Radio Service (GPRS) Description; Stage 2".
- [105] 3GPP TS 29.060: "General Packet Radio Service (GPRS); GPRS Tunnelling Protocol (GTP) across the Gn and Gp Interface".
- [106] 3GPP TS 29.018: "General Packet Radio Service (GPRS); Serving GPRS Support Node (SGSN) - Visitors Location Register (VLR); Gs interface layer 3 specification".
- [107] 3GPP TS 23.093: "Technical Realization of Completion of Calls to Busy Subscriber (CCBS); Stage 2".
- [108] 3GPP TS 23.066: "Support of Mobile Number Portability (MNP); Technical Realisation Stage 2".
- [109] ANSI T1.112 (1996): "Telecommunication – Signalling No. 7 – Signaling Connection Control Part (SCCP)".
- [110] 3GPP TS 23.116: "Super-Charger Technical Realisation; Stage 2."

- [111] ITU-T Recommendation Q.711: "Specifications of Signalling System No.7; Signalling System No. 7 – Functional Description of the Signalling Connection Control Part".
- [112] ITU-T Recommendation Q.712: "Specifications of Signalling System No.7; Signalling System No. 7 – Definition and Function of SCCP Messages".
- [113] ITU-T Recommendation Q.713: "Specifications of Signalling System No.7; Signalling System No. 7 – SCCP formats and codes".
- [114] ITU-T Recommendation Q.714: "Specifications of Signalling System No.7; Signalling System No. 7 – Signalling Connection Control Part Procedures".
- [115] ITU-T Recommendation Q.716: "Specifications of Signalling System No.7; Signalling System No. 7 – Signalling Connection Control Part (SCCP) Performance".
- [116] ITU-T Q.850, May 1998: "Usage of cause and location in the Digital Subscriber Signalling System No. 1 and the Signalling System No. 7 ISDN User Part".
- [117] 3GPP TS 22.135: "Multicall; Service description; Stage 1".
- [118] 3GPP TS 23.135: "Multicall supplementary service; Stage 2".
- [119] 3GPP TS 24.135: "Multicall supplementary service; Stage 3".
- [120] 3GPP TS 25.413: "UTRAN Iu Interface RANAP Signalling".
- [121] 3GPP TS 23.032: "Universal Geographical Area Description (GAD)"

**** NEXT MODIFIED SECTION ****

7.6 Definition of parameters

Following is an alphabetic list of parameters used in the common MAP-services in subclause 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	Invoke Id	7.6.1.1
Access connection status	7.6.9.3	ISDN Bearer Capability	7.6.3.41
		IST Alert Timer	7.6.3.66
		IST Information Withdrawn	7.6.3.68
		IST Support Indicator	7.6.3.69
Access signalling information	7.6.9.5	Kc	7.6.7.4
Additional Absent Subscriber Diagnostic SM	7.6.8.12	Linked Id	7.6.1.2
<u>Additional Location Estimate</u>	<u>7.6.11.21</u>		
Additional number	7.6.2.46	LMSI	7.6.2.16
Additional signal info	7.6.9.10	Location Information	7.6.2.30
Additional SM Delivery Outcome	7.6.8.11		
Age Indicator	7.6.3.72	Location update type	7.6.9.6
		Long Forwarded-to Number	7.6.2.22A
		Long FTN Supported	7.6.2.22B
Alert Reason	7.6.8.8	Lower Layer Compatibility	7.6.3.42
		LSA Information	7.6.3.56
		LSA Information Withdraw	7.6.3.58
		MC Information	7.6.4.48
		MC Subscription Data	7.6.4.47
Alert Reason Indicator	7.6.8.10	Mobile Not Reachable Reason	7.6.3.51
Alerting Pattern	7.6.3.44	Modification request for CSI	7.6.3.81
All GPRS Data	7.6.3.53	Modification request for SS Information	7.6.3.82
All Information Sent	7.6.1.5	More Messages To Send	7.6.8.7
AN-apdu	7.6.9.1		
APN	7.6.2.42	MS ISDN	7.6.2.17
Authentication set list	7.6.7.1	MSC number	7.6.2.11
B-subscriber Address	7.6.2.36	MSIsdn-Alert	7.6.2.29
		Multicall Bearer Information	7.6.2.52
		Multiple Bearer Requested	7.6.2.53
		Multiple Bearer Not Supported	7.6.2.54
B subscriber Number	7.6.2.48	MWD status	7.6.8.3
		NbrUser	7.6.4.45
B subscriber subaddress	7.6.2.49	Network Access Mode	7.6.3.50
Basic Service Group	7.6.4.40	Network node number	7.6.2.43
Bearer service	7.6.4.38	Network resources	7.6.10.1
		Network signal information	7.6.9.8
Call Barring Data	7.6.3.83	New password	7.6.4.20
Call barring feature	7.6.4.19	No reply condition timer	7.6.4.7
Call barring information	7.6.4.18	North American Equal Access preferred Carrier Id	7.6.2.34
		Number Portability Status	7.6.5.14
Call Direction	7.6.5.8	ODB Data	7.6.3.85
Call Forwarding Data	7.6.3.84	ODB General Data	7.6.3.9
Call Info	7.6.9.9	ODB HPLMN Specific Data	7.6.3.10
Call reference	7.6.5.1		
Call Termination Indicator	7.6.3.67	OMC Id	7.6.2.18
Called number	7.6.2.24	Originally dialled 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		
CCBS Request State	7.6.4.49	PDP-Type	7.6.2.44
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
Ciphering mode	7.6.7.7	Protocol Id	7.6.9.7
Cksn	7.6.7.5	Provider error	7.6.1.3
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
		Rand	7.6.7.2
Complete Data List Included	7.6.3.54		
CS Allocation Retention priority	7.6.3.87	Regional Subscription Data	7.6.3.11
CUG feature	7.6.3.26	Regional Subscription Response	7.6.3.12
CUG index	7.6.3.25	Relocation Number List	7.6.2.19A
		Requested Info	7.6.3.31
CUG info	7.6.3.22		

CUG interlock	7.6.3.24	Requested Subscription Info	7.6.3.86
CUG Outgoing Access indicator	7.6.3.8	Roaming number	7.6.2.19
CUG subscription	7.6.3.23	Roaming Restricted In SGSN Due To Unsupported Feature	7.6.3.49
CUG Subscription Flag	7.6.3.37	Roaming Restriction Due To Unsupported Feature	7.6.3.13
Current location area Id	7.6.2.6	Current Security Context	7.6.7.8
Current password	7.6.4.21	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
GGSN address	7.6.2.40	Super-Charger Supported in Serving Network Entity	7.6.3.71
GGSN number	7.6.2.41	Supported CAMEL Phases in VLR	7.6.3.36
GMSC CAMEL Subscription Info	7.6.3.34	Supported CAMEL Phases in SGSN	7.6.3.36A
GPRS enhancements support indicator	7.6.3.73	<u>Supported GAD Shapes</u>	<u>7.6.11.20</u>
GPRS Node Indicator	7.6.8.14	Suppress T-CSI	7.6.3.33
GPRS Subscription Data	7.6.3.46	Suppression of Announcement	7.6.3.32
GPRS Subscription Data Withdraw	7.6.3.45	Target cell Id	7.6.2.8
GPRS Support Indicator	7.6.8.15	Target location area Id	7.6.2.7
Group Id	7.6.2.33	Target RNC Id	7.6.2.8A
GSM bearer capability	7.6.3.6	Target MSC number	7.6.2.12
Guidance information	7.6.4.22	Teleservice	7.6.4.39
Handover number	7.6.2.21	TMSI	7.6.2.2
High Layer Compatibility	7.6.3.43	Trace reference	7.6.10.2
HLR Id	7.6.2.15	Trace type	7.6.10.3
HLR number	7.6.2.13	User error	7.6.1.4
HO-Number Not Required	7.6.6.7	USSD Data Coding Scheme	7.6.4.36
IMEI	7.6.2.3	USSD String	7.6.4.37
IMSI	7.6.2.1	UU Data	7.6.5.12
Integrity Protection Information	7.6.6.8	UUS CF Interaction	7.6.5.13
Inter CUG options	7.6.3.27	VBS Data	7.6.3.40
Intra CUG restrictions	7.6.3.28	VGCS Data	7.6.3.39
		VLR CAMEL Subscription Info	7.6.3.35
		VLR number	7.6.2.14
		VPLMN address allowed	7.6.3.48
		Zone Code	7.6.2.28

7.6.11.11 Location Estimate

This parameter gives an estimate of the location of an MS in universal coordinates and the accuracy of the estimate. The estimate is expressed in terms of the geographical shapes defined by 3G TS 23.032, and is composed of the type of shape plus the encoding of the shape itself. Any type of shape defined in 3G TS 23.032 can be filled in in the Location Estimate parameter, but only the encoding of the following shapes shall be carried by Location Estimate:

- Ellipsoid point with uncertainty circle
- Ellipsoid point with uncertainty ellipse
- Ellipsoid point with altitude and uncertainty ellipsoid
- Ellipsoid arc
- Ellipsoid point

The encoding for the remaining types of shape, defined in the 3G TS 23.032, shall be filled in in the Additional Location Estimate parameter.

7.6.11.20 Supported GAD Shapes

This parameter indicates which of the shapes defined in 3G TS 23.032 are supported. If the parameter is not provided then the receiving node shall assume that the sending entity supports the following shapes:

- Ellipsoid point with uncertainty circle
- Ellipsoid point with uncertainty ellipse
- Ellipsoid point with altitude and uncertainty ellipsoid
- Ellipsoid arc
- Ellipsoid point

7.6.11.21 Additional Location Estimate

This parameter gives an estimate of the location of an MS/UE in universal coordinates and the accuracy of the estimate. This parameter allows the location estimate to be expressed in any of the geographical shapes defined in 3G TS 23.032.

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(=)		
<u>Supported GAD Shapes</u>	<u>C</u>	<u>C(=)</u>		
Location Estimate			M	M(=)
Age of Location Estimate			C	C(=)
<u>Additional Location Estimate</u>			<u>C</u>	<u>C(=)</u>
User error			C	C(=)
Provider error				O

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13A.2.3 Parameter Definition and Use

All parameters are defined in subclause 7.6. The use of these parameters and the requirements for their presence are specified in GSM 03.71.

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 for an MR-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.

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 3G TS 23.032 are supported.

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.

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.

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 subclause 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 subclause 7.6.1.

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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(=)		
MSC Number	M	M(=)		
IMSI	C	C(=)		
MSISDN	C	C(=)		
NA-ESRD	C	C(=)		
NA-ESRK	C	C(=)		
IMEI	U	C(=)		
Location Estimate	C	C(=)		
Age of Location Estimate	C	C(=)		
LMSI	U	C(=)		
<u>Additional Location Estimate</u>	<u>C</u>	<u>C(=)</u>		
User error			C	C(=)
Provider error				O

**** NEXT MODIFIED SECTION ****

13A.3.3 Parameter Definition and Use

All parameters are defined in subclause 7.6. The use of these parameters and the requirements for their presence are specified in GSM 03.71.

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.

MSC Number

See definition in subclause 7.6.2. This parameter provides the address of the visited MSC for target MS.

IMSI

The IMSI shall be provided if available to the VMSC.

MSISDN

The MSISDN shall be provided if available to the VMSC.

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.

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.

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.

Additional Location Estimate

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

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 subclause 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 subclause 7.6.1.

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

17.7.13 Location service data types

```
1 MAP-LCS-DataTypes {
2   ccitt identified-organization (4) etsi (0) mobileDomain (0)
3   gsm-Network (1) modules (3) map-LCS-DataTypes (25) version6 (6)}
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 ;
26
27 IMPORTS
28   AddressString,
29   ISDN-AddressString,
30   IMEI,
31   IMSI,
32   LMSI,
33   SubscriberIdentity,
34   AgeOfLocationInformation,
35   LCSClientExternalID,
36   LCSClientInternalID
37 FROM MAP-CommonDataTypes {
38   ccitt identified-organization (4) etsi (0) mobileDomain (0)
39   gsm-Network (1) modules (3) map-CommonDataTypes (18) version6 (6)}
40
41   ExtensionContainer
42 FROM MAP-ExtensionDataTypes {
43   ccitt identified-organization (4) etsi (0) mobileDomain (0)
44   gsm-Network (1) modules (3) map-ExtensionDataTypes (21) version6 (6)}
45
46   USSD-DataCodingScheme,
47   USSD-String
48 FROM MAP-SS-DataTypes {
49   ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1) modules (3)
50   map-SS-DataTypes (14) version6 (6)}
51 ;
52
53

```

<pre> 54 RoutingInfoForLCS-Arg ::= SEQUENCE { 55 mlcNumber 56 targetMS 57 extensionContainer 58 ...} </pre>	<pre> [0] ISDN-AddressString, [1] SubscriberIdentity, [2] ExtensionContainer OPTIONAL, </pre>
---	---

<pre> 60 RoutingInfoForLCS-Res ::= SEQUENCE { 61 targetMS 62 lcsLocationInfo 63 extensionContainer 64 ...} </pre>	<pre> [0] SubscriberIdentity, [1] LCSLocationInfo, [2] ExtensionContainer OPTIONAL, </pre>
---	--

<pre> 66 LCSLocationInfo ::= SEQUENCE { 67 msc-Number 68 lmsi 69 extensionContainer 70 ...} </pre>	<pre> ISDN-AddressString, [0] LMSI [1] ExtensionContainer OPTIONAL, OPTIONAL, </pre>
--	--

71

```

72 ProvideSubscriberLocation-Arg ::= SEQUENCE {
73     locationType                LocationType,
74     lmsc-Number                 ISDN-AddressString,
75     lcs-ClientID                [0] LCS-ClientID                OPTIONAL,
76     privacyOverride             [1] NULL                    OPTIONAL,
77     imsi                       [2] IMSI                    OPTIONAL,
78     msisdn                     [3] ISDN-AddressString        OPTIONAL,
79     lmsi                       [4] LMSI                    OPTIONAL,
80     imei                       [5] IMEI                    OPTIONAL,
81     lcs-Priority                [6] LCS-Priority            OPTIONAL,
82     lcs-QoS                    [7] LCS-QoS                OPTIONAL,
83     extensionContainer          [8] ExtensionContainer        OPTIONAL,
84     ...
85     supportedGADShapes          [9] SupportedGADShapes        OPTIONAL}
86
87     -- one of imsi or msisdn is mandatory
88
89 LocationType ::= SEQUENCE {
90     locationEstimateType        [0] LocationEstimateType,
91     ...
92
93 LocationEstimateType ::= ENUMERATED {
94     currentLocation             (0),
95     currentOrLastKnownLocation (1),
96     initialLocation            (2),
97     ...
98 -- exception handling:
99 -- a ProvideSubscriberLocation-Arg containing an unrecognized LocationEstimateType
100 -- shall be rejected by the receiver with a return error cause of unexpected data value
101
102 LCS-ClientID ::= SEQUENCE {
103     lcsClientType               [0] LCSClientType,
104     lcsClientExternalID         [1] LCSClientExternalID    OPTIONAL,
105     lcsClientDialedByMS        [2] AddressString          OPTIONAL,
106     lcsClientInternalID        [3] LCSClientInternalID    OPTIONAL,
107     lcsClientName              [4] LCSClientName          OPTIONAL,
108     ...
109
110 LCSClientType ::= ENUMERATED {
111     emergencyServices           (0),
112     valueAddedServices          (1),
113     plmnOperatorServices       (2),
114     lawfulInterceptServices    (3),
115     ...
116 -- exception handling:
117 -- unrecognized values may be ignored if the LCS client uses the privacy override
118 -- otherwise, an unrecognized value shall be treated as unexpected data by a receiver
119 -- a return error shall then be returned if received in a MAP invoke
120
121 LCSClientName ::= SEQUENCE {
122     dataCodingScheme            [0] USSD-DataCodingScheme,
123     nameString                  [2] NameString,
124     ...
125
126 -- The USSD-DataCodingScheme shall indicate use of the default alphabet through the
127 -- following encoding
128 -- bit 7 6 5 4 3 2 1 0
129 --     0 0 0 0 1 1 1 1
130
131 NameString ::= USSD-String (SIZE (1..maxNameStringLength))
132
133 maxNameStringLength INTEGER ::= 63
134
135 LCS-Priority ::= OCTET STRING (SIZE (1))
136 -- 0 = highest priority
137 -- 1 = normal priority
138 -- all other values treated as 1
139
140 LCS-QoS ::= SEQUENCE {
141     horizontal-accuracy         [0] Horizontal-Accuracy    OPTIONAL,
142     verticalCoordinateRequest   [1] NULL                    OPTIONAL,
143     vertical-accuracy           [2] Vertical-Accuracy        OPTIONAL,
144     responseTime                [3] ResponseTime            OPTIONAL,
145     extensionContainer          [4] ExtensionContainer        OPTIONAL,
146     ...
147

```

```
148 Horizontal-Accuracy ::= OCTET STRING (SIZE (1))
149     -- bit 8 = 0
150     -- bits 7-1 = 7 bit Uncertainty Code defined in 3G TS 23.032GSM-03-32. The horizontal
151 location
152     -- error should be less than the error indicated by the uncertainty code with 67 %
153     -- confidence.
154
```

```
156 Vertical-Accuracy ::= OCTET STRING (SIZE (1))
157     -- bit 8 = 0
158     -- bits 7-1 = 7 bit Vertical Uncertainty Code defined in 3G TS 23.032GSM-03-32.
159     -- The vertical location
160     -- error should be less than the error indicated
161     -- by the uncertainty code with 67 %
162     -- confidence.
163
```

```
165 ResponseTime ::= SEQUENCE {
166     responseTimeCategory          ResponseTimeCategory,
167     ...}
168 -- note: an expandable SEQUENCE simplifies later addition of a numeric response time.
169
```

```
170 ResponseTimeCategory ::= ENUMERATED {
171     lowdelay (0),
172     delaytolerant (1),
173     ... }
174 -- exception handling:
175 -- an unrecognized value shall be treated the same as value 1 (delaytolerant)
176
```

```
177 SupportedGADShapes ::= BIT STRING {
178     ellipsoidPoint (0),
179     ellipsoidPointWithUncertaintyCircle (1),
180     ellipsoidPointWithUncertaintyEllipse (2),
181     polygon (3),
182     ellipsoidPointWithAltitude (4),
183     ellipsoidPointWithAltitudeAndUncertaintyElipsoid (5),
184     ellipsoidArc (6) } (SIZE (7..16))
185 -- A node shall mark in the BIT STRING all Shapes defined in 3G TS 23.032 it supports.
186 -- exception handling; bits 7 to 15 shall be ignored if received.
187
```

```
188 ProvideSubscriberLocation-Res ::= SEQUENCE {
189     locationEstimate              Ext-GeographicalInformation,
190     ageOfLocationEstimate         [0] AgeOfLocationInformation     OPTIONAL,
191     extensionContainer            [1] ExtensionContainer           OPTIONAL,
192     ...
193     add-LocationEstimate         [2] Add-GeographicalInformation   OPTIONAL}
194
195 -- the add-LocationEstimate parameter shall not be sent to a node that did not indicate the
196 -- geographic shapes supported in the ProvideSubscriberLocation-Arg
197
```

```

198 Ext-GeographicalInformation ::= OCTET STRING (SIZE (1..maxExt-GeographicalInformation))
199 -- Refers to geographical Information defined in GSM-03-323G TS 23.032.
200 -- This is composed of 1 or more octets with an internal structure according to GSM
201 03-323G TS 23.032
202 -- Octet 1: Type of shape, only the following shapes in GSM-03-323G TS 23.032 are
203 allowed:
204 -- (a) Ellipsoid point with uncertainty circle
205 -- (b) Ellipsoid point with uncertainty ellipse
206 -- (c) Ellipsoid point with altitude and uncertainty ellipsoid
207 -- (d) Ellipsoid Arc
208 -- Any other value in octet 1 shall be treated as invalid
209 -- Octets 2 to 8 for case (a) - Ellipsoid point with uncertainty circle
210 -- Degrees of Latitude 3 octets
211 -- Degrees of Longitude 3 octets
212 -- Uncertainty code 1 octet
213 -- Octets 2 to 11 for case (b) - Ellipsoid point with uncertainty ellipse:
214 -- Degrees of Latitude 3 octets
215 -- Degrees of Longitude 3 octets
216 -- Uncertainty semi-major axis 1 octet
217 -- Uncertainty semi-minor axis 1 octet
218 -- Angle of major axis 1 octet
219 -- Confidence 1 octet
220 -- Octets 2 to 14 for case (c) - Ellipsoid point with altitude and uncertainty ellipsoid
221 -- Degrees of Latitude 3 octets
222 -- Degrees of Longitude 3 octets
223 -- Altitude 2 octets
224 -- Uncertainty semi-major axis 1 octet
225 -- Uncertainty semi-minor axis 1 octet
226 -- Angle of major axis 1 octet
227 -- Uncertainty altitude 1 octet
228 -- Confidence 1 octet
229 -- Octets 2 to 13 for case (d) - Ellipsoid Arc
230 -- Degrees of Latitude 3 octets
231 -- Degrees of Longitude 3 octets
232 -- Inner radius 2 octets
233 -- Uncertainty radius 1 octet
234 -- Offset angle 1 octet
235 -- Included angle 1 octet
236 -- Confidence 1 octet
237
238 -- An Ext-GeographicalInformation parameter comprising more than one octet and
239 -- containing any other shape or an incorrect number of octets or coding according
240 -- to GSM-03-323G TS 23.032 shall be treated as invalid data by a receiver.
241 --
242 -- An Ext-GeographicalInformation parameter comprising one octet shall be discarded
243 -- by the receiver if an Add-GeographicalInformation parameter is received
244 -- in the same message.
245 --
246 -- An Ext-GeographicalInformation parameter comprising one octet shall be treated as
247 -- invalid data by the receiver if an Add-GeographicalInformation parameter is not
248 -- received in the same message.

```

```

249
250 maxExt-GeographicalInformation INTEGER ::= 20
251 -- the maximum length allows for further shapes in 3G TS 23.032GSM-03-32 to be included
252 in later
253 -- versions of GSM-09-023G TS 29.002
254

```

```

255 Add-GeographicalInformation ::= OCTET STRING (SIZE (1..maxAdd-GeographicalInformation))
256 -- Refers to geographical Information defined in 3G TS 23.032.
257 -- This is composed of 1 or more octets with an internal structure according to
258 -- 3G TS 23.032
259 -- Octet 1: Type of shape, all the shapes defined in 3G TS 23.032 are allowed:
260 -- Octets 2 to n (where n is the total number of octets necessary to encode the shape
261 -- according to 3G TS 23.032) are used to encode the shape itself in accordance with the
262 -- encoding defined in 3G TS 23.032
263 --
264 -- An Add-GeographicalInformation parameter, whether valid or invalid, received
265 -- together with a valid Ext-GeographicalInformation parameter in the same message
266 -- shall be discarded.
267 --
268 -- An Add-GeographicalInformation parameter containing any shape not defined in
269 -- 3G TS 23.032 or an incorrect number of octets or coding according to
270 -- 3G TS 23.032 shall be treated as invalid data by a receiver if not received
271 -- together with a valid Ext-GeographicalInformation parameter in the same message.
272

```

```

273 maxAdd-GeographicalInformation INTEGER ::= 90
274 -- the maximum length allows support for all the shapes currently defined in 3G TS 23.032
275

```

```
276 SubscriberLocationReport-Arg ::= SEQUENCE {
277     lcs-Event                LCS-Event,
278     lcs-ClientID            LCS-ClientID,
279     lcsLocationInfo        LCSLocationInfo,
280     msisdn                  [0] ISDN-AddressString          OPTIONAL,
281     imsi                    [1] IMSI                        OPTIONAL,
282     imei                    [2] IMEI                       OPTIONAL,
283     na-ESRD                 [3] ISDN-AddressString          OPTIONAL,
284     na-ESRK                 [4] ISDN-AddressString          OPTIONAL,
285     locationEstimate        [5] Ext-GeographicalInformation OPTIONAL,
286     ageOfLocationEstimate   [6] AgeOfLocationInformation  OPTIONAL,
287     extensionContainer       [7] ExtensionContainer         OPTIONAL,
288     ...
289     add-LocationEstimate    [8] Add-GeographicalInformation OPTIONAL}
290
291     -- one of msisdn or imsi is mandatory
292     -- a location estimate that is valid for the locationEstimate parameter should
293     -- be transferred in this parameter in preference to the add-LocationEstimate
294
295 LCS-Event ::= ENUMERATED {
296     emergencyCallOrigination (0),
297     emergencyCallRelease (1),
298     mo-lr (2),
299     ... }
300     -- exception handling:
301     -- a SubscriberLocationReport-Arg containing an unrecognized LCS-Event
302     -- shall be rejected by a receiver with a return error cause of unexpected data value
303
304 SubscriberLocationReport-Res ::= SEQUENCE {
305     extensionContainer       ExtensionContainer              OPTIONAL,
306     ... }
307
308 END
309
```

310

311

***** END OF MODIFICATIONS *****

312

Rio Grande, Puerto Rico, 14-18 May 2001

CR-Form-v3

CHANGE REQUEST

⌘ **29.002 CR 264** ⌘ rev **3** ⌘ Current version: **4.3.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ME/UE Radio Access Network Core Network

Title:	⌘ Add support in MAP for all shapes defined in 23.032		
Source:	⌘ Ericsson L.M		
Work item code:	⌘ LCS	Date:	⌘ 2 May 2001
Category:	⌘ A	Release:	⌘ REL-4
<p>Use <u>one</u> of the following categories:</p> <p>F (correction) A (corresponds to a correction in an earlier release) B (Addition of feature), C (Functional modification of feature) D (Editorial modification)</p> <p>Detailed explanations of the above categories can be found in 3GPP TR 21.900.</p>		<p>Use <u>one</u> of the following releases:</p> <p>2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)</p>	

Reason for change:	⌘ As response to a positioning request, the RNC or the SMLC (depending on the access type) provide a location estimate coded via a "shape". The possible shapes are defined in the TS 23.032. MAP 29.002 supports only a subset of the shapes defined in 23.032. RANAP 25.413 supports another subset of 23.032. The intersection of the 23.032 subsets defined 29.002 and 25.413 is non empty, meaning that there are shapes carried by 25.413 that cannot be carried by 29.002.
	The outcome is that UMTS Positioning requests that are successfully answered with the required QoS by the RNC will fail because of MAP, i.e. stage 3 of Location services imposes limitations on the service as specified by stage 2.
	SA2 has issued the liaison statement S2-010812 towards RAN3 and CN4 to ask for full support to both protocols for all the shapes defined by 23.032
Summary of change:	⌘ Addition of new parameters to ProvideSubscriberLocation-Arg, ProvideSubscriberLocation-Res and SubscriberLocationReport-Arg
Consequences if not approved:	⌘ Location requests that are successfully answered by the RNC with the required QoS, will fail because of limitations in the MAP protocol in transferring the location estimate.

Clauses affected:	⌘ 2, 7.6, 7.6.11.11, 7.6.11.20, 7.6.11.21, 13A.2.2, 13A.2.3, 13A.3.2, 13A.3.3, 17.7.13,
Other specs Affected:	⌘ <input type="checkbox"/> Other core specifications ⌘ CR 008 TS 24.080 <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications

Other comments: ☹ The input LS from SA2 is the CN4 N4-010512 T-doc

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.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://www.3gpp.org/specs/>. For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

1

2

*** FIRST MODIFIED SECTION ***

3

2 References

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

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

13 [1] 3G TS 21.905: "3G Vocabulary".

14 [2] GSM 02.01: "Digital cellular telecommunications system (Phase 2+); Principles of
15 telecommunication services supported by a GSM Public Land Mobile Network (PLMN)".

16 [3] 3G TS 22.002: "Bearer Services Supported by a GSM Public Land Mobile Network (PLMN)".

17 [4] GSM 02.03: "Digital cellular telecommunications system (Phase 2+); Teleservices Supported by a
18 GSM Public Land Mobile Network (PLMN)".

19 [5] 3G TS 22.004: "General on Supplementary Services".

20 [6] GSM 02.09: "Digital cellular telecommunications system (Phase 2+); Security aspects".

21 [7] 3G TS 22.016: "International Mobile station Equipment Identities (IMEI)".

22 [8] 3G TS 22.041: "Operator Determined Barring".

23 [9] 3G TS 22.081: "Line identification supplementary services - Stage 1".

24 [10] 3G TS 22.082: "Call Forwarding (CF) supplementary services - Stage 1".

25 [11] 3G TS 22.083: "Call Waiting (CW) and Call Hold (HOLD) Supplementary Services - Stage 1".

26 [12] 3G TS 22.084: "Multi Party (MPTY) Supplementary Services - Stage 1".

27 [13] 3G TS 22.085: "Closed User Group (CUG) supplementary services - Stage 1".

- 28 [14] 3G TS 22.086: "Advice of charge (AoC) Supplementary Services - Stage 1".
- 29 [15] 3G TS 22.088: "Call Barring (CB) supplementary services - Stage 1".
- 30 [16] 3G TS 22.090: "Unstructured Supplementary Service Data (USSD); - Stage 1".
- 31 [17] 3G TS 23.003: "Numbering, addressing and identification".
- 32 [18] GSM 03.04: "Digital cellular telecommunications system (Phase 2+); Signalling requirements
33 relating to routing of calls to mobile subscribers".
- 34 [19] 3G TS 23.007: "Restoration procedures".
- 35 [20] 3G TS 23.008: "Organisation of subscriber data".
- 36 [21] 3G TS 23.009: "Handover procedures".
- 37 [22] 3G TS 23.011: "Technical realization of Supplementary Services - General Aspects".
- 38 [23] 3G TS 23.012: "Location registration procedures".
- 39 [24] GSM 03.20: "Digital cellular telecommunications system (Phase 2+); Security related network
40 functions".
- 41 [25] 3G TS 23.038: "Alphabets and language".
- 42 [26] 3G TS 23.040: "Technical realization of the Short Message Service (SMS) Point to Point (PP)".
- 43 [26a] 3G TS 23.271: "Functional stage2 description of LCS (Release 2000)".
- 44 [27] 3G TS 23.081: "Line Identification Supplementary Services - Stage 2".
- 45 [28] 3G TS 23.082: "Call Forwarding (CF) Supplementary Services - Stage 2".
- 46 [29] 3G TS 23.083: "Call Waiting (CW) and Call Hold (HOLD) Supplementary Services - Stage 2".
- 47 [30] 3G TS 23.084: "Multi Party (MPTY) Supplementary Services - Stage 2".
- 48 [31] 3G TS 23.085: "Closed User Group (CUG) Supplementary Services - Stage 2".
- 49 [32] 3G TS 23.086: "Advice of Charge (AoC) Supplementary Services - Stage 2".
- 50 [33] 3G TS 23.088: "Call Barring (CB) Supplementary Services - Stage 2".
- 51 [34] 3G TS 23.090: "Unstructured Supplementary Services Data (USSD) - Stage 2".
- 52 [35] 3G TS 24.008: "Mobile Radio Interface Layer 3 specification; Core Network Protocols - Stage 3".
- 53 [36] 3G TS 24.010: "Mobile radio interface layer 3 Supplementary Services specification - General
54 aspects".
- 55 [37] 3G TS 24.011: "Point-to-Point (PP) Short Message Service (SMS) support on mobile radio
56 interface".
- 57 [37a] GSM 04.71: "Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer
58 3 location services specification".
- 59 [38] 3G TS 24.080: "Mobile radio interface layer 3 supplementary services specification - Formats and
60 coding".
- 61 [39] 3G TS 24.081: "Line identification supplementary services - Stage 3".
- 62 [40] 3G TS 24.082: "Call Forwarding (CF) Supplementary Services - Stage 3".
- 63 [41] 3G TS 24.083: "Call Waiting (CW) and Call Hold (HOLD) supplementary services - Stage 3".
- 64 [42] 3G TS 24.084: "Multi Party (MPTY) Supplementary Services - Stage 3".

65	[43]	3G TS 24.085: "Closed User Group (CUG) Supplementary Services - Stage 3".
66	[44]	3G TS 24.086: "Advice of Charge (AoC) Supplementary Services - Stage 3".
67	[45]	3G TS 24.088: "Call Barring (CB) Supplementary Services - Stage 3".
68	[46]	3G TS 24.090: "Unstructured Supplementary Services Data - Stage 3".
69	[47]	GSM 08.02: "Digital cellular telecommunications system (Phase 2+); Base Station System - Mobile-services Switching Centre (BSS - MSC) interface principles".
70		
71	[48]	GSM 08.06: "Digital cellular telecommunications system (Phase 2+); Signalling transport mechanism specification for the Base Station System - Mobile-services Switching Centre (BSS - MSC) interface".
72		
73		
74	[49]	GSM 08.08: "Digital cellular telecommunications system (Phase 2+); Mobile Switching Centre - Base Station System (MSC - BSS) interface Layer 3 specification".
75		
76	[49a]	GSM 08.08: "Digital cellular telecommunications system (Phase 2+); Mobile Switching Centre - Base Station System (MSC - BSS) interface Layer 3 specification".
77		
78	[49a1]	GSM 08.31: "Digital cellular telecommunications system (Phase 2+); Location Services (LCS); Serving Mobile Location Centre (SMLC) – Serving Mobile Location Centre (SMLC); SMLC Peer Protocol (SMLCPP)".
79		
80		
81	[49b]	GSM 08.71: "Digital cellular telecommunications system (Phase 2+); Location Services (LCS); Serving Mobile Location Centre - Base Station System (SMLC - BSS) interface Layer 3 specification".
82		
83		
84	[50]	GSM 09.01: "Digital cellular telecommunications system (Phase 2+); General network interworking scenarios".
85		
86	[51]	3G TS 29.002: "Mobile Application Part (MAP) specification".
87	[52]	GSM 09.03: "Digital cellular telecommunications system (Phase 2+); Signalling requirements on interworking between the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN) and the Public Land Mobile Network (PLMN)".
88		
89		
90	[53]	GSM 09.04: "Digital cellular telecommunications system (Phase 2+); Interworking between the Public Land Mobile Network (PLMN) and the Circuit Switched Public Data Network (CSPDN)".
91		
92	[54]	GSM 09.05: "Digital cellular telecommunications system (Phase 2+); Interworking between the Public Land Mobile Network (PLMN) and the Packet Switched Public Data Network (PSPDN) for Packet Assembly/Disassembly facility (PAD) access".
93		
94		
95	[55]	3G TS 29.006: "Interworking between a Public Land Mobile Network (PLMN) and a Packet Switched Public Data Network/Integrated Services Digital Network (PSPDN/ISDN) for the support of Packet Switched data transmission services".
96		
97		
98	[56]	3G TS 29.007: "Digital cellular telecommunications system (Phase 2+); General requirements on interworking between the Public Land Mobile Network (PLMN) and the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN)".
99		
100		
101	[57]	GSM 09.08: "Digital cellular telecommunications system (Phase 2+); Application of the Base Station System Application Part (BSSAP) on the E-interface".
102		
103	[58]	3G TS 29.010: "Information element mapping between Mobile Station - Base Station System and BSS - Mobile-services Switching Centre (MS - BSS - MSC) Signalling procedures and the Mobile Application Part (MAP)".
104		
105		
106	[59]	3G TS 29.011: "Signalling interworking for Supplementary Services".
107	[59a]	GSM 09.31: "Digital cellular telecommunications system (Phase 2+); Location Services (LCS); Base Station System Application Part LCS Extension (BSSAP-LE)".
108		

- 109 [60] GSM 09.90: "Digital cellular telecommunications system (Phase 2+); Interworking between
110 Phase 1 infrastructure and Phase 2 Mobile Stations (MS)".
- 111 [61] GSM 12.08: "Digital cellular telecommunications system (Phase 2); Subscriber and Equipment
112 Trace".
- 113 [62] ETS 300 102-1 (1990): "Integrated Services Digital Network (ISDN); User-network interface
114 layer 3 specifications for basic call control".
- 115 [63] ETS 300 136 (1992): "Integrated Services Digital Network (ISDN); Closed User Group (CUG)
116 supplementary service description".
- 117 [64] ETS 300 138 (1992): "Integrated Services Digital Network (ISDN); Closed User Group (CUG)
118 supplementary service Digital Subscriber Signalling System No.one (DSS1) protocol".
- 119 [65] ETS 300 287: "Integrated Services Digital Network (ISDN); Signalling System No.7; Transaction
120 Capabilities (TC) version 2".
- 121 [66] ETR 060: "Signalling Protocols and Switching (SPS); Guide-lines for using Abstract Syntax
122 Notation One (ASN.1) in telecommunication application protocols".
- 123 [67] ITU-T Recommendation E.164: "Numbering plan for the ISDN era".
- 124 [68] ITU-T Recommendation E.212: "Identification plan for land mobile stations".
- 125 [69] ITU-T Recommendation E.213: "Telephone and ISDN numbering plan for land mobile stations".
- 126 [70] ITU-T Recommendation E.214: "Structuring of the land mobile global title for the signalling
127 connection control part".
- 128 [71] CCITT Recommendation Q.699: "Interworking between the Digital Subscriber Signalling System
129 Layer 3 protocol and the Signalling System No.7 ISDN User part".
- 130 [72] ITU-T Recommendation Q.711: "Specifications of Signalling System No.7; Functional description
131 of the Signalling Connection Control Part".
- 132 [73] ITU-T Recommendation Q.712: "Definition and function of SCCP messages".
- 133 [74] ITU-T Recommendation Q.713: "Specifications of Signalling System No.7; SCCP formats and
134 codes".
- 135 [75] ITU-T Recommendation Q.714: "Specifications of Signalling System No.7; Signalling Connection
136 Control Part procedures".
- 137 [76] ITU-T Recommendation Q.716: "Specifications of Signalling System No.7; Signalling connection
138 control part (SCCP) performances".
- 139 [77] ITU-T Recommendation Q.721 (1988): "Specifications of Signalling System No.7; Functional
140 description of the Signalling System No.7 Telephone user part".
- 141 [78] ITU-T Recommendation Q.722 (1988): "Specifications of Signalling System No.7; General
142 function of Telephone messages and signals".
- 143 [79] ITU-T Recommendation Q.723 (1988): "Specifications of Signalling System No.7; Formats and
144 codes".
- 145 [80] ITU-T Recommendation Q.724 (1988): "Specifications of Signalling System No.7; Signalling
146 procedures".
- 147 [81] ITU-T Recommendation Q.725 (1988): "Specifications of Signalling System No.7; Signalling
148 performance in the telephone application".
- 149 [82] ITU-T Recommendation Q.761 (1988): "Specifications of Signalling System No.7; Functional
150 description of the ISDN user part of Signalling System No.7".
- 151 [83] ITU-T Recommendation Q.762 (1988): "Specifications of Signalling System No.7; General
152 function of messages and signals".

153	[84]	ITU-T Recommendation Q.763 (1988): "Specifications of Signalling System No.7; Formats and codes".
154		
155	[85]	ITU-T Recommendation Q.764 (1988): "Specifications of Signalling System No.7; Signalling procedures".
156		
157	[86]	ITU-T Recommendation Q.767: "Specifications of Signalling System No.7; Application of the ISDN user part of CCITT signalling System No.7 for international ISDN interconnections".
158		
159	[87]	ITU-T Recommendation Q.771: "Specifications of Signalling System No.7; Functional description of transaction capabilities".
160		
161	[88]	ITU-T Recommendation Q.772: "Specifications of Signalling System No.7; Transaction capabilities information element definitions".
162		
163	[89]	ITU-T Recommendation Q.773: "Specifications of Signalling System No.7; Transaction capabilities formats and encoding".
164		
165	[90]	ITU-T Recommendation Q.774: "Specifications of Signalling System No.7; Transaction capabilities procedures".
166		
167	[91]	ITU-T Recommendation Q.775: "Specifications of Signalling System No.7; Guide-lines for using transaction capabilities".
168		
169	[92]	ITU-T Recommendation X.200: "Reference Model of Open systems interconnection for CCITT Applications".
170		
171	[93]	ITU-T Recommendation X.208 (1988): "Specification of Abstract Syntax Notation One (ASN.1)".
172	[94]	ITU-T Recommendation X.209 (1988): "Specification of basic encoding rules for Abstract Syntax Notation One (ASN.1)".
173		
174	[95]	ITU-T Recommendation X.210: "Open systems interconnection layer service definition conventions".
175		
176	[97]	3G TS 23.018: "Basic Call Handling".
177	[98]	3G TS 23.078: "Customised Applications for Mobile network Enhanced Logic (CAMEL) Phase 3 - Stage 2".
178		
179	[99]	3G TS 23.079: "Support of Optimal Routeing (SOR) - Stage 2".
180	[100]	GSM 03.68: "Digital cellular telecommunications system (Phase 2+); - Stage 2".
181	[101]	GSM 03.69: "Digital cellular telecommunications system (Phase 2+); - Stage 2".
182	[102]	ANSI T1.113: "Signaling System No. 7 (SS7) - ISDN User Part".
183	[103]	3G TS 23.054 "Shared Inter Working Function (SIWF) - Stage 2".
184	[104]	3G TS 23.060: "General Packet Radio Service (GPRS) Description; Stage 2".
185	[105]	3G TS 29.060: "General Packet Radio Service (GPRS); GPRS Tunnelling Protocol (GTP) across the Gn and Gp Interface".
186		
187	[106]	3G TS 29.018: "General Packet Radio Service (GPRS); Serving GPRS Support Node (SGSN) - Visitors Location Register (VLR); Gs interface layer 3 specification".
188		
189	[107]	3G TS 23.093: "Technical Realization of Completion of Calls to Busy Subscriber (CCBS); Stage 2".
190		
191	[108]	3G TS 23.066: "Support of Mobile Number Portability (MNP); Technical Realisation Stage 2".
192	[109]	ANSI T1.112 (1996): "Telecommunication – Signalling No. 7 - Signaling Connection Control Part (SCCP)".
193		
194	[110]	3G TS 23.116: "Super-Charger Technical Realisation; Stage 2."

- 195 [111] ITU-T Recommendation Q.711: "Specifications of Signalling System No.7; Signalling System
196 No. 7 – Functional Description of the Signalling Connection Control Part".
- 197 [112] ITU-T Recommendation Q.712: "Specifications of Signalling System No.7; Signalling System
198 No. 7 – Definition and Function of SCCP Messages".
- 199 [113] ITU-T Recommendation Q.713: "Specifications of Signalling System No.7; Signalling System
200 No. 7 – SCCP formats and codes".
- 201 [114] ITU-T Recommendation Q.714: "Specifications of Signalling System No.7; Signalling System
202 No. 7 – Signalling Connection Control Part Procedures".
- 203 [115] ITU-T Recommendation Q.716: "Specifications of Signalling System No.7; Signalling System
204 No. 7 – Signalling Connection Control Part (SCCP) Performance".
- 205 [116] ITU-T Q.850, May 1998: "Usage of cause and location in the Digital Subscriber Signalling System
206 No. 1 and the Signalling System No. 7 ISDN User Part".
- 207 [117] 3G TS 22.135: "Multicall; Service description; Stage 1".
- 208 [118] 3G TS 23.135: "Multicall supplementary service; Stage 2".
- 209 [119] 3G TS 24.135: "Multicall supplementary service; Stage 3".
- 210 [120] 3G TS 25.413: "UTRAN Iu Interface RANAP Signalling".
- 211 [121] 3G TS 29.202: "SS7 signalling transport in core network"
- 212 [122] 3G TS 23.032: "Universal Geographical Area Description (GAD)"
- 213

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

215

216 7.6 Definition of parameters

217 Following is an alphabetic list of parameters used in the common MAP-services in subclause 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		

218

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

Absent Subscriber Diagnostic SM	7.6.8.9	Invoke Id	7.6.1.1
Access connection status	7.6.9.3	ISDN Bearer Capability	7.6.3.41
		IST Alert Timer	7.6.3.66
		IST Information Withdrawn	7.6.3.68
		IST Support Indicator	7.6.3.69
Access signalling information	7.6.9.5	Kc	7.6.7.4
Additional Absent Subscriber Diagnostic SM	7.6.8.12	Linked Id	7.6.1.2
<u>Additional Location Estimate</u>	<u>7.6.11.21</u>		
Additional number	7.6.2.46	LMSI	7.6.2.16
Additional signal info	7.6.9.10	Location Information	7.6.2.30
Additional SM Delivery Outcome	7.6.8.11		
Age Indicator	7.6.3.72	Location update type	7.6.9.6
		Long Forwarded-to Number	7.6.2.22A

Alert Reason	7.6.8.8	Long FTN Supported	7.6.2.22B
		Lower Layer Compatibility	7.6.3.42
		LSA Information	7.6.3.56
		LSA Information Withdraw	7.6.3.58
		MC Information	7.6.4.48
		MC Subscription Data	7.6.4.47
Alert Reason Indicator	7.6.8.10	Mobile Not Reachable Reason	7.6.3.51
Alerting Pattern	7.6.3.44	Modification request for CSI	7.6.3.81
All GPRS Data	7.6.3.53	Modification request for SS Information	7.6.3.82
All Information Sent	7.6.1.5	More Messages To Send	7.6.8.7
AN-apdu	7.6.9.1		
APN	7.6.2.42	MS ISDN	7.6.2.17
Authentication set list	7.6.7.1	MSC number	7.6.2.11
B-subscriber Address	7.6.2.36	MSISdn-Alert	7.6.2.29
		Multicall Bearer Information	7.6.2.52
		Multiple Bearer Requested	7.6.2.53
		Multiple Bearer Not Supported	7.6.2.54
B subscriber Number	7.6.2.48	MWD status	7.6.8.3
		NbrUser	7.6.4.45
B subscriber subaddress	7.6.2.49	Network Access Mode	7.6.3.50
Basic Service Group	7.6.4.40	Network node number	7.6.2.43
Bearer service	7.6.4.38	Network resources	7.6.10.1
		Network signal information	7.6.9.8
Call Barring Data	7.6.3.83	New password	7.6.4.20
Call barring feature	7.6.4.19	No reply condition timer	7.6.4.7
Call barring information	7.6.4.18	North American Equal Access preferred Carrier Id	7.6.2.34
		Number Portability Status	7.6.5.14
Call Direction	7.6.5.8	ODB Data	7.6.3.85
Call Forwarding Data	7.6.3.84	ODB General Data	7.6.3.9
Call Info	7.6.9.9	ODB HPLMN Specific Data	7.6.3.10
Call reference	7.6.5.1		
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		
CCBS Request State	7.6.4.49	PDP-Type	7.6.2.44
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
Ciphering mode	7.6.7.7	Protocol Id	7.6.9.7
Cksn	7.6.7.5	Provider error	7.6.1.3
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
		Rand	7.6.7.2
Complete Data List Included	7.6.3.54	Regional Subscription Data	7.6.3.11
CS Allocation Retention priority	7.6.3.87	Regional Subscription Response	7.6.3.12
CUG feature	7.6.3.26	Relocation Number List	7.6.2.19A
CUG index	7.6.3.25	Requested Info	7.6.3.31
		Requested Subscription Info	7.6.3.86
CUG info	7.6.3.22	Roaming number	7.6.2.19
CUG interlock	7.6.3.24	Roaming Restricted In SGSN Due To Unsupported Feature	7.6.3.49
CUG Outgoing Access indicator	7.6.3.8	Roaming Restriction Due To Unsupported Feature	7.6.3.13
CUG subscription	7.6.3.23	Current Security Context	7.6.7.8
		Selected RAB ID	7.6.2.56
CUG Subscription Flag	7.6.3.37	Service centre address	7.6.2.27
		Serving Cell Id	7.6.2.37
Current location area Id	7.6.2.6	SGSN address	7.6.2.39
Current password	7.6.4.21		
eMLPP Information	7.6.4.41	SGSN CAMEL Subscription Info	7.6.3.75
Encryption Information	7.6.6.9	SGSN number	7.6.2.38
Equipment status	7.6.3.2	SIWF Number	7.6.2.35
Extensible Basic Service Group	7.6.3.5	SoLSA Support Indicator	7.6.3.57
Extensible Bearer service	7.6.3.3		

Extensible Call barring feature	7.6.3.21	SM Delivery Outcome	7.6.8.6
Extensible Call barring information	7.6.3.20	SM-RP-DA	7.6.8.1
Extensible Call barring information for CSE	7.6.3.79	SM-RP-MTI	7.6.8.16
Extensible Forwarding feature	7.6.3.16	SM-RP-OA	7.6.8.2
Extensible Forwarding info	7.6.3.15	SM-RP-PRI	7.6.8.5
Extensible Forwarding information for CSE	7.6.3.80	SM-RP-SMEA	7.6.8.17
Extensible Forwarding Options	7.6.3.18	SM-RP-UI	7.6.8.4
Extensible No reply condition timer	7.6.3.19	Sres	7.6.7.3
Extensible QoS-Subscribed	7.6.3.74	SS-Code	7.6.4.1
Extensible SS-Data	7.6.3.29	SS-Data	7.6.4.3
Extensible SS-Info	7.6.3.14	SS-Event	7.6.4.42
Extensible SS-Status	7.6.3.17	SS-Event-Data	7.6.4.43
Extensible Teleservice	7.6.3.4	SS-Info	7.6.4.24
External Signal Information	7.6.9.4	SS-Status	7.6.4.2
Failure Cause	7.6.7.9		
Forwarded-to number	7.6.2.22	Stored location area Id	7.6.2.5
Forwarded-to subaddress	7.6.2.23	Subscriber State	7.6.3.30
Forwarding feature	7.6.4.16	Subscriber Status	7.6.3.7
Forwarding information	7.6.4.15	Super-Charger Supported in HLR	7.6.3.70
Forwarding Options	7.6.4.6	Super-Charger Supported in Serving Network Entity	7.6.3.71
		Supported CAMEL Phases in VLR	7.6.3.36
GGSN address	7.6.2.40	Supported CAMEL Phases in SGSN	7.6.3.36A
GGSN number	7.6.2.41	Supported GAD Shapes	7.6.11.20
		Supported LCS Capability Sets	7.6.11.17
GMSC CAMEL Subscription Info	7.6.3.34	Suppress T-CSI	7.6.3.33
GPRS enhancements support indicator	7.6.3.73	Suppression of Announcement	7.6.3.32
GPRS Node Indicator	7.6.8.14	Target cell Id	7.6.2.8
GPRS Subscription Data	7.6.3.46	Target location area Id	7.6.2.7
		Target RNC Id	7.6.2.8A
GPRS Subscription Data Withdraw	7.6.3.45	Target MSC number	7.6.2.12
GPRS Support Indicator	7.6.8.15	Teleservice	7.6.4.39
Group Id	7.6.2.33	TMSI	7.6.2.2
GSM bearer capability	7.6.3.6	Trace reference	7.6.10.2
Guidance information	7.6.4.22	Trace type	7.6.10.3
Handover number	7.6.2.21	User error	7.6.1.4
High Layer Compatibility	7.6.3.43	USSD Data Coding Scheme	7.6.4.36
HLR Id	7.6.2.15	USSD String	7.6.4.37
HLR number	7.6.2.13	UU Data	7.6.5.12
HO-Number Not Required	7.6.6.7	UUS CF Interaction	7.6.5.13
IMEI	7.6.2.3	VBS Data	7.6.3.40
IMSI	7.6.2.1	VGCS Data	7.6.3.39
Integrity Protection Information	7.6.6.8		
Inter CUG options	7.6.3.27	VLR CAMEL Subscription Info	7.6.3.35
Intra CUG restrictions	7.6.3.28	VLR number	7.6.2.14
		VPLMN address allowed	7.6.3.48
		Zone Code	7.6.2.28

220

221

222

**** NEXT MODIFIED SECTION ****

223 7.6.11.11 Location Estimate

224 This parameter gives an estimate of the location of an MS in universal coordinates and the accuracy of the estimate. The
 225 estimate is expressed in terms of the geographical shapes defined by 3G TS 23.032, and is composed of the type of
 226 shape plus the encoding of the shape itself. Any type of shape defined in 3G TS 23.032 can be filled in in the Location
 227 Estimate parameter, but only the encoding of the following shapes shall be carried by Location Estimate:

228 - Ellipsoid point with uncertainty circle

229 - Ellipsoid point with uncertainty ellipse

230 - Ellipsoid point with altitude and uncertainty ellipsoid

231 - Ellipsoid arc

232 - Ellipsoid point

233 The encoding for the remaining types of shape, defined in the 3G TS 23.032, shall be filled in in the Additional
234 Location Estimate parameter.

235

236

237

238 ****** NEW SECTIONS ******

239

240 7.6.11.20 Supported GAD Shapes

241 This parameter indicates which of the shapes defined in 3G TS 23.032 are supported. If the parameter is not provided
242 then the receiving node shall assume that the sending entity supports the following shapes:

243 - Ellipsoid point with uncertainty circle

244 - Ellipsoid point with uncertainty ellipse

245 - Ellipsoid point with altitude and uncertainty ellipsoid

246 - Ellipsoid arc

247 - Ellipsoid point

248 7.6.11.21 Additional Location Estimate

249 This parameter gives an estimate of the location of an MS/UE in universal coordinates and the accuracy of the estimate.
250 This parameter allows the location estimate to be expressed in any of the geographical shapes defined in 3G TS 23.032

251

252

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

254

255 13A.2.2 Service Primitives

256

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(=)		

<u>Supported GAD Shapes</u>	<u>C</u>	<u>C(=)</u>		
Location Estimate			M	M(=)
Age of Location Estimate			C	C(=)
<u>Additional Location Estimate</u>			C	C(=)
User error			C	C(=)
Provider error				O

257

258

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

260

261 13A.2.3 Parameter Definition and Use

262 All parameters are defined in subclause 7.6. The use of these parameters and the requirements for their presence are
263 specified in. 3G TS 23.271

264 Location Type

265 This parameter identifies the type of location information requested.

266 MLC Number

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

268 LCS Client ID

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

270 Privacy Override

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

273 IMSI

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

275 MSISDN

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

277 LMSI

278 The LMSI shall be provided if previously supplied by the HLR.

279 LCS Priority

280 This parameter indicates the priority of the location request.

281 LCS QoS

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

283 IMEI

284 Inclusion of the IMEI is optional.

285 Supported GAD Shapes

286 This parameter indicates which of the shapes defined in 3G TS 23.032 are supported.

287 Location Estimate

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

290 Age of Location Estimate

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

292 Additional Location Estimate

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

296 User error

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

- 299 - System Failure;
- 300 - Data Missing;
- 301 - Unexpected Data Value;
- 302 - Facility Not Supported;
- 303 - Unidentified Subscriber;
- 304 - Illegal Subscriber;
- 305 - Illegal Equipment;
- 306 - Absent Subscriber (diagnostic information may also be provided);
- 307 - Unauthorised requesting network;
- 308 - Unauthorised LCS Client with detailed reason;
- 309 - Position method failure with detailed reason.

310 Provider error

311 These are defined in subclause 7.6.1.

312

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

314

315 **13A.3.2 Service Primitives**

316 **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(=)		
IMEI	U	C(=)		
Location Estimate	C	C(=)		
Age of Location Estimate	C	C(=)		

LMSI	U	C(=)		
GPRS Node Indicator	C	C(=)		
<u>Additional Location Estimate</u>	<u>C</u>	<u>C(=)</u>		
User error			C	C(=)
Provider error				O

317

318

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

320

321 13A.3.3 Parameter Definition and Use

322 All parameters are defined in subclause 7.6. The use of these parameters and the requirements for their presence are
323 specified in. 3G TS 23.271

324 LCS Event

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

326 LCS Client ID

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

328 Network Node Number

329 See definition in subclause 7.6.2. This parameter provides the address of the visited MSC or SGSN for target MS.

330 IMSI

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

332 MSISDN

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

334 NA-ESRD

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

337 NA-ESRK

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

340 IMEI

341 Inclusion of the IMEI is optional.

342 Location Estimate

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

346

347 Age of Location Estimate

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

349 LMSI

350 The LMSI may be provided if assigned by the VLR.

351 GPRS Node Indicator

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

354 Additional Location Estimate

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

356 User error

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

360 - System Failure;

361 - Data Missing;

362 - Unexpected Data Value;

363 - Resource Limitation;

364 - Unknown Subscriber;

365 - Unauthorised requesting network;

366 - Unknown or unreachable LCS Client.

367 Provider error

368 These are defined in subclause 7.6.1.

**** NEXT MODIFIED SECTION ****

17.7.13 Location service data types

```
1 MAP-LCS-DataTypes {
2   ccitt identified-organization (4) etsi (0) mobileDomain (0)
3   gsm-Network (1) modules (3) map-LCS-DataTypes (25) version7 (7)}
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 ;
26
27 IMPORTS
28   AddressString,
29   ISDN-AddressString,
30   IMEI,
31   IMSI,
32   LMSI,
33   SubscriberIdentity,
34   AgeOfLocationInformation,
35   LCSClientExternalID,
36   LCSClientInternalID
37 FROM MAP-CommonDataTypes {
38   ccitt identified-organization (4) etsi (0) mobileDomain (0)
39   gsm-Network (1) modules (3) map-CommonDataTypes (18) version7 (7)}
40
41   ExtensionContainer
42 FROM MAP-ExtensionDataTypes {
43   ccitt identified-organization (4) etsi (0) mobileDomain (0)
44   gsm-Network (1) modules (3) map-ExtensionDataTypes (21) version7 (7)}
45
46   USSD-DataCodingScheme,
47   USSD-String
48 FROM MAP-SS-DataTypes {
49   ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1) modules (3)
50   map-SS-DataTypes (14) version7 (7)}
51
52   APN
53 FROM MAP-MS-DataTypes {
54   ccitt identified-organization (4) etsi (0) mobileDomain (0)
55   gsm-Network (1) modules (3) map-MS-DataTypes (11) version7 (7)}
56
57   Additional-Number
58 FROM MAP-SM-DataTypes {
59   ccitt identified-organization (4) etsi (0) mobileDomain (0)
60   gsm-Network (1) modules (3) map-SM-DataTypes (16) version7 (7)}
61 ;
62
63

```

<pre> 64 RoutingInfoForLCS-Arg ::= SEQUENCE { 65 mlcNumber 66 targetMS 67 extensionContainer 68 ...} </pre>	<pre> [0] ISDN-AddressString, [1] SubscriberIdentity, [2] ExtensionContainer </pre>	<pre> OPTIONAL, </pre>
---	---	------------------------

<pre> 70 RoutingInfoForLCS-Res ::= SEQUENCE { 71 targetMS 72 lcsLocationInfo 73 extensionContainer 74 ...} </pre>	<pre> [0] SubscriberIdentity, [1] LCSLocationInfo, [2] ExtensionContainer </pre>	<pre> OPTIONAL, </pre>
---	--	------------------------

<pre> 76 LCSLocationInfo ::= SEQUENCE { 77 networkNode-Number 78 -- NetworkNode-number can be either msc-number or sgsn-number 79 lmsi 80 extensionContainer 81 ... , 82 gprsNodeIndicator 83 -- gprsNodeIndicator is set only if the SGSN number is sent as the Network Node Number 84 additional-Number 85 } </pre>	<pre> ISDN-AddressString, [0] LMSI [1] ExtensionContainer [2] NULL [3] Additional-Number </pre>	<pre> OPTIONAL, OPTIONAL, OPTIONAL, OPTIONAL </pre>
---	---	---

86

```

87 ProvideSubscriberLocation-Arg ::= SEQUENCE {
88     locationType                LocationType,
89     lcs-Number                  ISDN-AddressString,
90     lcs-ClientID                [0] LCS-ClientID                OPTIONAL,
91     privacyOverride            [1] NULL                        OPTIONAL,
92     imsi                       [2] IMSI                        OPTIONAL,
93     msisdn                     [3] ISDN-AddressString        OPTIONAL,
94     lmsi                       [4] LMSI                        OPTIONAL,
95     imei                       [5] IMEI                        OPTIONAL,
96     lcs-Priority               [6] LCS-Priority            OPTIONAL,
97     lcs-QoS                    [7] LCS-QoS                    OPTIONAL,
98     extensionContainer         [8] ExtensionContainer        OPTIONAL,
99     ...
100    supportedGADShapes          [9] SupportedGADShapes        OPTIONAL}
101
102 -- one of imsi or msisdn is mandatory
103
104 LocationType ::= SEQUENCE {
105     locationEstimateType        [0] LocationEstimateType,
106     ... }
107
108 LocationEstimateType ::= ENUMERATED {
109     currentLocation             (0),
110     currentOrLastKnownLocation (1),
111     initialLocation             (2),
112     ... }
113 -- exception handling:
114 -- a ProvideSubscriberLocation-Arg containing an unrecognized LocationEstimateType
115 -- shall be rejected by the receiver with a return error cause of unexpected data value
116
117 LCS-ClientID ::= SEQUENCE {
118     lcsClientType               [0] LCSClientType,
119     lcsClientExternalID        [1] LCSClientExternalID    OPTIONAL,
120     lcsClientDialedByMS       [2] AddressString            OPTIONAL,
121     lcsClientInternalID       [3] LCSClientInternalID      OPTIONAL,
122     lcsClientName             [4] LCSClientName            OPTIONAL,
123     ...,
124     lcsAPN                    [5] APN                        OPTIONAL }
125
126 LCSClientType ::= ENUMERATED {
127     emergencyServices           (0),
128     valueAddedServices         (1),
129     plmnOperatorServices       (2),
130     lawfulInterceptServices    (3),
131     ... }
132 -- exception handling:
133 -- unrecognized values may be ignored if the LCS client uses the privacy override
134 -- otherwise, an unrecognized value shall be treated as unexpected data by a receiver
135 -- a return error shall then be returned if received in a MAP invoke
136
137 LCSClientName ::= SEQUENCE {
138     dataCodingScheme            [0] USSD-DataCodingScheme,
139     nameString                  [2] NameString,
140     ...}
141
142 -- The USSD-DataCodingScheme shall indicate use of the default alphabet through the
143 -- following encoding
144 -- bit 7 6 5 4 3 2 1 0
145 --    0 0 0 0 1 1 1 1
146
147 NameString ::= USSD-String (SIZE (1..maxNameStringLength))
148
149 maxNameStringLength INTEGER ::= 63
150
151 LCS-Priority ::= OCTET STRING (SIZE (1))
152 -- 0 = highest priority
153 -- 1 = normal priority
154 -- all other values treated as 1
155
156 LCS-QoS ::= SEQUENCE {
157     horizontal-accuracy         [0] Horizontal-Accuracy    OPTIONAL,
158     verticalCoordinateRequest   [1] NULL                        OPTIONAL,
159     vertical-accuracy          [2] Vertical-Accuracy          OPTIONAL,
160     responseTime               [3] ResponseTime              OPTIONAL,
161     extensionContainer         [4] ExtensionContainer          OPTIONAL,
162     ...}
163

```



```

164 Horizontal-Accuracy ::= OCTET STRING (SIZE (1))
165     -- bit 8 = 0
166     -- bits 7-1 = 7 bit Uncertainty Code defined in 3G TS 23.032 GSM-03-32. The horizontal
167 location
168     -- error should be less than the error indicated by the uncertainty code with 67%
169     -- confidence.
170
171 Vertical-Accuracy ::= OCTET STRING (SIZE (1))
172     -- bit 8 = 0
173     -- bits 7-1 = 7 bit Vertical Uncertainty Code defined in GSM-03-32 3G TS 23.032.
174     -- The vertical location
175     -- error should be less than the error indicated
176     -- by the uncertainty code with 67%
177     -- confidence.
178
179 ResponseTime ::= SEQUENCE {
180     responseTimeCategory          ResponseTimeCategory,
181     ... }
182 -- note: an expandable SEQUENCE simplifies later addition of a numeric response time.
183
184 ResponseTimeCategory ::= ENUMERATED {
185     lowdelay (0),
186     delaytolerant (1),
187     ... }
188 -- exception handling:
189 -- an unrecognized value shall be treated the same as value 1 (delaytolerant)
190
191 SupportedGADShapes ::= BIT STRING {
192     ellipsoidPoint (0),
193     ellipsoidPointWithUncertaintyCircle (1),
194     ellipsoidPointWithUncertaintyEllipse (2),
195     polygon (3),
196     ellipsoidPointWithAltitude (4),
197     ellipsoidPointWithAltitudeAndUncertaintyElipsoid (5),
198     ellipsoidArc (6) } (SIZE (7..16))
199 -- A node shall mark in the BIT STRING all Shapes defined in 3G TS 23.032 it supports.
200 -- exception handling: bits 7 to 15 shall be ignored if received.
201
202 ProvideSubscriberLocation-Res ::= SEQUENCE {
203     locationEstimate              Ext-GeographicalInformation,
204     ageOfLocationEstimate         [0] AgeOfLocationInformation      OPTIONAL,
205     extensionContainer            [1] ExtensionContainer           OPTIONAL,
206     ...
207     add-LocationEstimate         [2] Add-GeographicalInformation    OPTIONAL}
208
209 -- the add-LocationEstimate parameter shall not be sent to a node that did not indicate the
210 -- geographic shapes supported in the ProvideSubscriberLocation-Arg
211

```

```

212 Ext-GeographicalInformation ::= OCTET STRING (SIZE (1..maxExt-GeographicalInformation))
213 -- Refers to geographical Information defined in GSM-03-323G TS 23.032.
214 -- This is composed of 1 or more octets with an internal structure according to GSM
215 GSM-03-323G TS 23.032
216 -- Octet 1: Type of shape, only the following shapes in GSM-03-323G TS 23.032 are
217 allowed:
218 -- (a) Ellipsoid point with uncertainty circle
219 -- (b) Ellipsoid point with uncertainty ellipse
220 -- (c) Ellipsoid point with altitude and uncertainty ellipsoid
221 -- (d) Ellipsoid Arc
222 -- Any other value in octet 1 shall be treated as invalid
223 -- Octets 2 to 8 for case (a) - Ellipsoid point with uncertainty circle
224 -- Degrees of Latitude 3 octets
225 -- Degrees of Longitude 3 octets
226 -- Uncertainty code 1 octet
227 -- Octets 2 to 11 for case (b) - Ellipsoid point with uncertainty ellipse:
228 -- Degrees of Latitude 3 octets
229 -- Degrees of Longitude 3 octets
230 -- Uncertainty semi-major axis 1 octet
231 -- Uncertainty semi-minor axis 1 octet
232 -- Angle of major axis 1 octet
233 -- Confidence 1 octet
234 -- Octets 2 to 14 for case (c) - Ellipsoid point with altitude and uncertainty ellipsoid
235 -- Degrees of Latitude 3 octets
236 -- Degrees of Longitude 3 octets
237 -- Altitude 2 octets
238 -- Uncertainty semi-major axis 1 octet
239 -- Uncertainty semi-minor axis 1 octet
240 -- Angle of major axis 1 octet
241 -- Uncertainty altitude 1 octet
242 -- Confidence 1 octet
243 -- Octets 2 to 13 for case (d) - Ellipsoid Arc
244 -- Degrees of Latitude 3 octets
245 -- Degrees of Longitude 3 octets
246 -- Inner radius 2 octets
247 -- Uncertainty radius 1 octet
248 -- Offset angle 1 octet
249 -- Included angle 1 octet
250 -- Confidence 1 octet
251 --
252 --
253 -- An Ext-GeographicalInformation parameter comprising more than one octet and
254 -- containing any other shape or an incorrect number of octets or coding according
255 -- to GSM-03-323G TS 23.032 shall be treated as invalid data by a receiver.
256 --
257 -- An Ext-GeographicalInformation parameter comprising one octet shall be discarded
258 -- by the receiver if an Add-GeographicalInformation parameter is received
259 -- in the same message.
260 --
261 -- An Ext-GeographicalInformation parameter comprising one octet shall be treated as
262 -- invalid data by the receiver if an Add-GeographicalInformation parameter is not
263 -- received in the same message.

```

```

264
265 maxExt-GeographicalInformation INTEGER ::= 20
266 -- the maximum length allows for further shapes in 3G TS 23.032GSM-03-32 to be included
267 in later
268 -- versions of 3G TS 29.002GSM-09-02

```

```

270 Add-GeographicalInformation ::= OCTET STRING (SIZE (1..maxAdd-GeographicalInformation))
271 -- Refers to geographical Information defined in 3G TS 23.032.
272 -- This is composed of 1 or more octets with an internal structure according to
273 3G TS 23.032
274 -- Octet 1: Type of shape, all the shapes defined in 3G TS 23.032 are allowed:
275 -- Octets 2 to n (where n is the total number of octets necessary to encode the shape
276 -- according to 3G TS 23.032) are used to encode the shape itself in accordance with the
277 -- encoding defined in 3G TS 23.032
278 --
279 -- An Add-GeographicalInformation parameter, whether valid or invalid, received
280 -- together with a valid Ext-GeographicalInformation parameter in the same message
281 -- shall be discarded.
282 --
283 -- An Add-GeographicalInformation parameter containing any shape not defined in
284 -- 3G TS 23.032 or an incorrect number of octets or coding according to
285 -- 3G TS 23.032 shall be treated as invalid data by a receiver if not received
286 -- together with a valid Ext-GeographicalInformation parameter in the same message.
287

```

```

288 maxAdd-GeographicalInformation INTEGER ::= 90
289 -- the maximum length allows support for all the shapes currently defined in 3G TS 23.032
290
291 SubscriberLocationReport-Arg ::= SEQUENCE {
292     lcs-Event                LCS-Event,
293     lcs-ClientID             LCS-ClientID,
294     lcsLocationInfo          LCSLocationInfo,
295     msisdn                   [0] ISDN-AddressString           OPTIONAL,
296     imsi                     [1] IMSI                         OPTIONAL,
297     imei                     [2] IMEI                         OPTIONAL,
298     na-ESRD                  [3] ISDN-AddressString           OPTIONAL,
299     na-ESRK                  [4] ISDN-AddressString           OPTIONAL,
300     locationEstimate         [5] Ext-GeographicalInformation  OPTIONAL,
301     ageOfLocationEstimate    [6] AgeOfLocationInformation    OPTIONAL,
302     extensionContainer        [7] ExtensionContainer           OPTIONAL,
303     ...
304     add-LocationEstimate     [8] Add-GeographicalInformation  OPTIONAL}
305
306 -- one of msisdn or imsi is mandatory
307 -- a location estimate that is valid for the locationEstimate parameter should
308 -- be transferred in this parameter in preference to the add-LocationEstimate
309
310 LCS-Event ::= ENUMERATED {
311     emergencyCallOrigination (0),
312     emergencyCallRelease (1),
313     mo-lr (2),
314     ... }
315 -- exception handling:
316 -- a SubscriberLocationReport-Arg containing an unrecognized LCS-Event
317 -- shall be rejected by a receiver with a return error cause of unexpected data value
318
319 SubscriberLocationReport-Res ::= SEQUENCE {
320     extensionContainer        ExtensionContainer           OPTIONAL,
321     ...}
322
323
324
325 END
326
327

```

```

328 **** END OF MODIFICATIONS ****

```

```

329

```

CHANGE REQUEST

⌘ **29.010 CR 017** ⌘ rev **1** ⌘ Current version: **3.5.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ME/UE Radio Access Network Core Network

Title:	⌘ Mapping between RANAP and BSSMAP for Location Services				
Source:	⌘ CN4				
Work item code:	⌘ LCS	Date:	⌘ 7 May 2001		
Category:	⌘ F (by consensus)	Release:	⌘ R99		
	<p><i>Use <u>one</u> of the following categories:</i></p> <p>F (correction) A (corresponds to a correction in an earlier release) B (Addition of feature), C (Functional modification of feature) D (Editorial modification)</p> <p>Detailed explanations of the above categories can be found in 3GPP TR 21.900.</p>		<p><i>Use <u>one</u> of the following releases:</i></p> <p>2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)</p>		

Reason for change:	⌘ In case of completed GSM to UMTS Inter MSC Handover, a positioning request issued by the GMLC will be handled by the anchor MSC, which has to forward the request to the non anchor 3G MSC by encapsulating BSSMAP messages on the E-interface. These messages need to be mapped with the corresponding RANAP messages before being exchanged with the RNC.
	The mapping between RANAP and BSSMAP and vice versa is missing in the TS 29.010.
Summary of change:	⌘ Add mapping tables between RANAP and BSSMAP messages and corresponding parameters in case of Location services.
Consequences if not approved:	⌘ Mapping might be performed in different ways by different vendors, causing problems in case of RNC's and MSC's not provided by the same vendor.

Clauses affected:	⌘ 1.1, 2.2, 4.9, 4.9.1, 4.9.2
Other specs affected:	⌘ <input checked="" type="checkbox"/> Other core specifications ⌘ <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications
Other comments:	⌘ If this CR is rejected, then CR 032 on 29.010 must be rejected too. Note to the editor: 29.010 CR 032 adds an extra subsection to the section 4.9 introduced by this CR. Please note that section numbered 4.9.1 in CR 032 must be inserted between sections 4.9.1 and 4.9.2 introduced by this CR.

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.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://www.3gpp.org/specs/>. For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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 MODIFIED SECTION** ****

1.1 References

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

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

- [1] 3GPP TS 21.905: "3G Vocabulary".
- [2] 3GPP TS 23.009: "Handover procedures".
- [3] 3GPP TS 23.040: "Technical realization of the Short Message Service (SMS) Point to Point (PP)".
- [4] 3GPP TS 24.008: "Mobile Radio Interface Layer 3 specification; Core Network Protocols-Stage 3".
- [5] 3GPP TS 24.010: "Mobile radio interface layer 3 Supplementary services specification - General aspects".
- [6] 3GPP TS^o24.011: "Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface".
- [7] 3GPP TS 25.413: "Iu interface RANAP signalling".
- [8] 3GPP TS 27.001: " General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)".
- [9] 3GPP TS 29.002: "Mobile Application Part (MAP) specification".
- [10] 3GPP TS 29.007: "General requirements on interworking between the Public Land Mobile Network (PLMN) and the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN)".
- [11] 3GPP TS 29.011: "Digital cellular telecommunications system (Phase 2+); Signalling interworking for supplementary services".
- [12] GSM 08.08: "Digital cellular telecommunications system (Phase 2+); Mobile Switching Centre - Base Station System (MSC - BSS) interface Layer 3 specification".
- [13] GSM 09.03: "Digital cellular telecommunications system (Phase 2+); Signalling requirements on interworking between the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN) and the Public Land Mobile Network (PLMN)".
- [14] GSM 09.08: "Digital cellular telecommunications system (Phase 2+); Application of the Base Station System Application Part (BSSAP) on the E-interface".
- [15] 3GPP TS 29.108: "Application of the Radio Access Network Application Part (RANAP) on the E-interface".
- [16] GSM 03.71: "Digital cellular telecommunications system (Phase 2+); Location Services (LCS); (Functional description) – Stage 2".
- [17] 3GPP TS 23.171: "Functional stage 2 description of location services in UMTS".

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

2.2 Non-transparent procedures

Procedures in this class require processing in the MSC and information element mapping. These procedures include those related to:

- outgoing call set-up;
- incoming call set-up;
- handover;
- cipher mode setting;
- location services.

****** NEW SECTIONS ******

4.9 Location Services

The general principles of the location services procedures are given in Technical Specification GSM 03.71 and 3GPP TS 23.171.

3GPP TS 29.010 gives the necessary information for interworking between the 3GPP TS 25.413 RANAP protocol and the GSM 08.08 BSSMAP protocol. The interworking is necessary for positioning requests issued after a completed GSM to UMTS inter system handover. BSSMAP messages carried by MAP over the E-interface must be mapped by the non-anchor 3G-MSC into the corresponding RANAP messages to be sent over the Iu-interface and vice versa.

4.9.1 Completed Location Acquisition

After a successful GSM to UMTS inter system handover, any positioning request received by the anchor MSC via the MAP message Provide Subscriber Location triggers the BSSMAP procedure Location Acquisition described in GSM 08.08. In case of handover this procedure is executed according to GSM 09.08 with the anchor MSC playing the role of the MSC and the non anchor 3G MSC playing the role of the BSS.

The needed BSSMAP signalling is sent over the E-interface encapsulated in the MAP messages Process Access Signalling and Forward Access Signalling.

At the non anchor 3G MSC the received BSSMAP messages are mapped into the corresponding RANAP messages to be sent to the RNS, and the received RANAP messages are mapped into the corresponding BSSMAP messages to be sent over the E-interface to the anchor MSC.

The signalling for a completed Location Acquisition procedure is shown in figures 65.

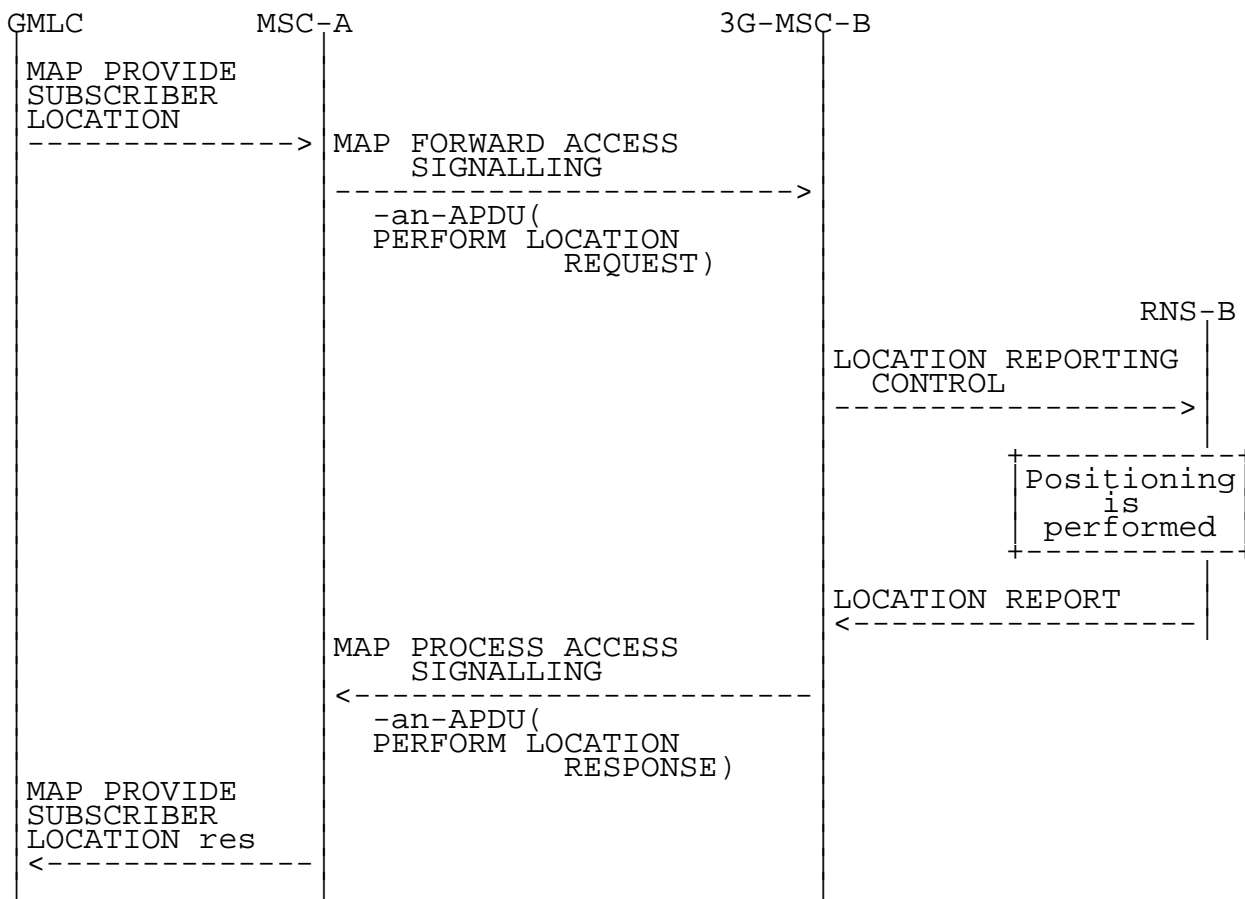


Figure 65: Signalling for a completed Location Acquisition procedure

The interworking between the BSSMAP location acquisition messages in MAP and the RANAP location reporting messages is as follows:

	29.002	25.413	Notes
Forward message	MAP FORWARD ACCESS SIG. request -an-APDU(PERFORM LOCATION REQUEST) BSSMAP information elements: Location Type >Current Geographic Location Cell Identifier Classmark Inf. Type3 LCS Client Type Chosen Channel LCS Priority LCS QoS GPS Assistance Data APDU	LOCATION REPORTING CONTROL RANAP information elements: Request Type >Event = Direct >Report Area = Geo. Coord. ---- ---- ---- ---- ---- Request Type >Accuracy Code ---- ----	1
Result	MAP PROCESS ACCESS SIG. request -an-APDU(PERFORM LOCATION RESPONSE) BSSMAP information elements: Location Estimate Positioning Data Deciphering Keys LCS Cause ----	LOCATION REPORT RANAP information elements: Area Identity >Geographical Area ---- ---- Cause Request Type	

NOTE 1: All other Location Type possibilities are not supported by UMTS positioning,

4.9.2 Cause Code Mapping

When a Mobile Station is handed over between GSM and UMTS, a mapping of the cause codes used in the RANAP and the BSSMAP protocols is needed. The mapping described here is applicable to the BSSMAP protocol even when used inside MAP in the E-interface.

The mapping between the cause codes received in RANAP Location Report and the LCS cause codes sent in BSSMAP Perform Location Response is as follows:

25.413	08.08	Notes
LOCATION REPORT	PERFORM LOCATION RESPONSE	
- Requested Report Type not Supported	- Position method failure	
- Requested Information not Available	- System Failure	
- all other cause codes	- System Failure	

*** END OF MODIFICATIONS ***

1.1 References

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

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
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- [4] 3GPP TS 24.008: "Mobile Radio Interface Layer 3 specification; Core Network Protocols-Stage 3".
- [5] 3GPP TS 24.010: "Mobile radio interface layer 3 Supplementary services specification - General aspects".
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- [7] 3GPP TS 25.413: "Iu interface RANAP signalling".
- [8] 3GPP TS 27.001: " General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)".
- [9] 3GPP TS 29.002: "Mobile Application Part (MAP) specification".
- [10] 3GPP TS 29.007: "General requirements on interworking between the Public Land Mobile Network (PLMN) and the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN)".
- [11] 3GPP TS 29.011: "Digital cellular telecommunications system (Phase 2+); Signalling interworking for supplementary services".
- [12] GSM 08.08: "Digital cellular telecommunications system (Phase 2+); Mobile Switching Centre - Base Station System (MSC - BSS) interface Layer 3 specification".
- [13] GSM 09.03: "Digital cellular telecommunications system (Phase 2+); Signalling requirements on interworking between the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN) and the Public Land Mobile Network (PLMN)".
- [14] GSM 09.08: "Digital cellular telecommunications system (Phase 2+); Application of the Base Station System Application Part (BSSAP) on the E-interface".
- [15] 3GPP TS 29.108: "Application of the Radio Access Network Application Part (RANAP) on the E-interface"²
- [16] 3GPP TS 23.271: "Functional stage 2 description of LCS"

2.2 Non-transparent procedures

Procedures in this class require processing in the MSC and information element mapping. These procedures include those related to:

- outgoing call set-up;
- incoming call set-up;
- handover;
- cipher mode setting;
- location services.

**** NEW SECTIONS ****

4.9 Location Services

The general principles of the location services procedures are given in Technical Specification 3GPP TS 23.271.

3GPP TS 29.010 gives the necessary information for interworking between the 3GPP TS 25.413 RANAP protocol and the GSM 08.08 BSSMAP protocol. The interworking is necessary for positioning requests issued after a completed GSM to UMTS inter system handover. BSSMAP messages carried by MAP over the E-interface must be mapped by the non-anchor 3G-MSC into the corresponding RANAP messages to be sent over the Iu-interface and vice versa.

4.9.1 Completed Location Acquisition

After a successful GSM to UMTS inter system handover, any positioning request received by the anchor MSC via the MAP message Provide Subscriber Location triggers the BSSMAP procedure Location Acquisition described in GSM 08.08. In case of handover this procedure is executed according to GSM 09.08 with the anchor MSC playing the role of the MSC and the non anchor 3G MSC playing the role of the BSS.

The needed BSSMAP signalling is sent over the E-interface encapsulated in the MAP messages Process Access Signalling and Forward Access Signalling.

At the non anchor 3G MSC the received BSSMAP messages are mapped into the corresponding RANAP messages to be sent to the RNS, and the received RANAP messages are mapped into the corresponding BSSMAP messages to be sent over the E-interface to the anchor MSC.

The signalling for a completed Location Acquisition procedure is shown in figures 65.

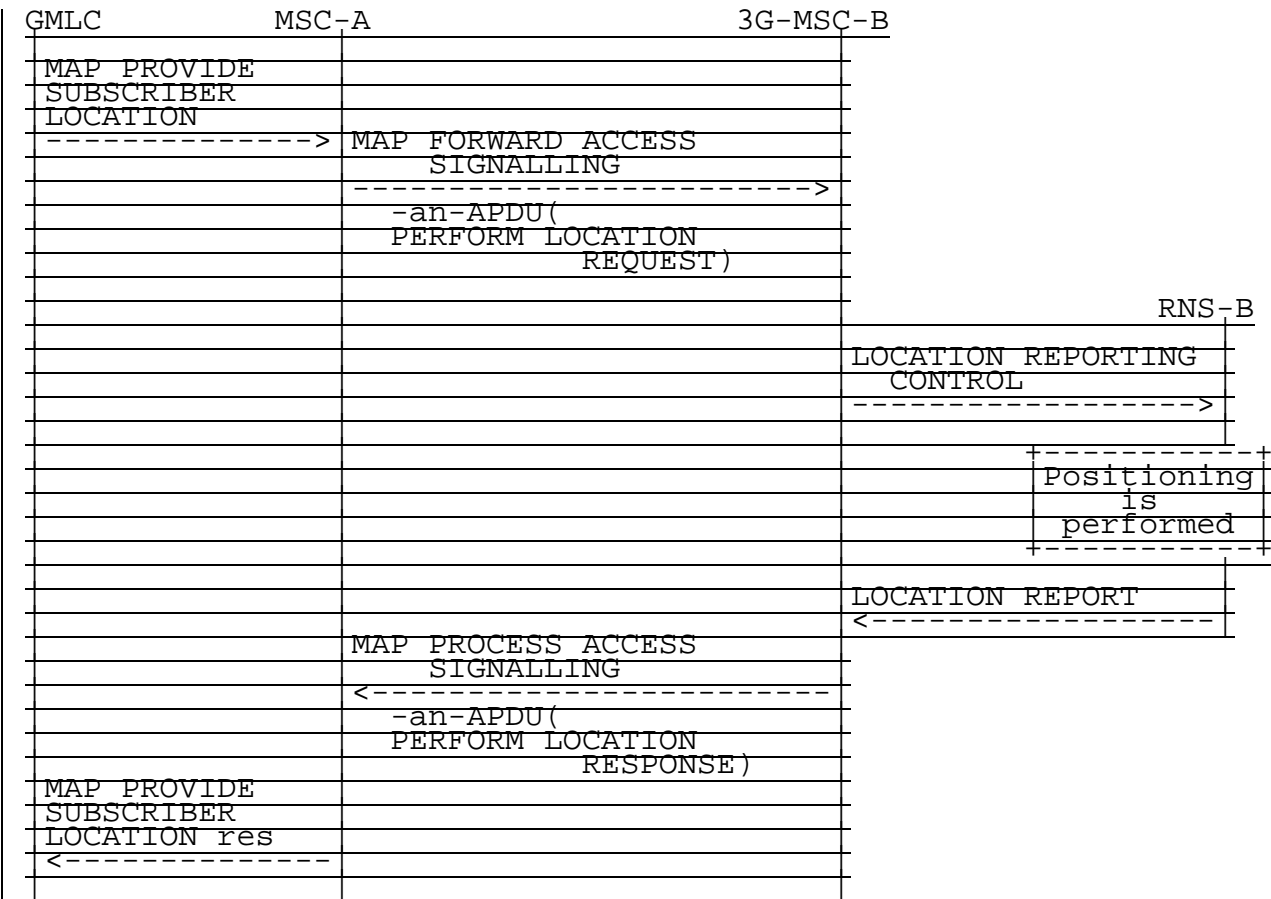


Figure 65: Signalling for a completed Location Acquisition procedure

The interworking between the BSSMAP location acquisition messages in MAP and the RANAP location reporting messages is as follows:

	29.002	25.413	Notes
Forward message	MAP FORWARD ACCESS SIG. request	LOCATION REPORTING CONTROL	
	-an-APDU(PERFORM LOCATION REQUEST)		
	BSSMAP information elements:	RANAP information elements:	
	Location Type	Request Type	1
	>Current Geographic Location	>Event = Direct	
		>Report Area = Geo. Coord.	
	Cell Identifier	----	
	Classmark Inf. Type3	----	
	LCS Client Type	----	
	Chosen Channel	----	
	LCS Priority	----	
	LCS QoS	Request Type	
		>Accuracy Code	
	GPS Assistance Data	----	
	APDU	----	
Result	MAP PROCESS ACCESS SIG. request	LOCATION REPORT	
	-an-APDU(PERFORM LOCATION RESPONSE)		
	BSSMAP information elements:	RANAP information elements:	
	Location Estimate	Area Identity	
		>Geographical Area	
	Positioning Data	----	
	Deciphering Keys	----	
	LCS Cause	Cause	
	----	Request Type	

NOTE 1: All other Location Type possibilities are not supported by UMTS positioning

4.9.2 Cause Code Mapping

When a Mobile Station is handed over between GSM and UMTS, a mapping of the cause codes used in the RANAP and the BSSMAP protocols is needed. The mapping described here is applicable to the BSSMAP protocol even when used inside MAP in the E-interface.

The mapping between the cause codes received in RANAP Location Report and the LCS cause codes sent in BSSMAP Perform Location Response is as follows:

25.413	08.08	Notes
LOCATION REPORT	PERFORM LOCATION RESPONSE	
- Requested Report Type not Supported	- Position method failure	
- Requested Information not Available	- System Failure	
- all other cause codes	- System Failure	

***** END OF MODIFICATIONS *****

4.9 Location Services

4.9.2 Aborted Location Acquisition

When for any reason the on going location acquisition procedure needs to be aborted, the anchor MSC sends the BSSMAP message Perform Location Abort over the E-interface.

Figure 66 shows the signalling for an aborted Location Acquisition procedure.

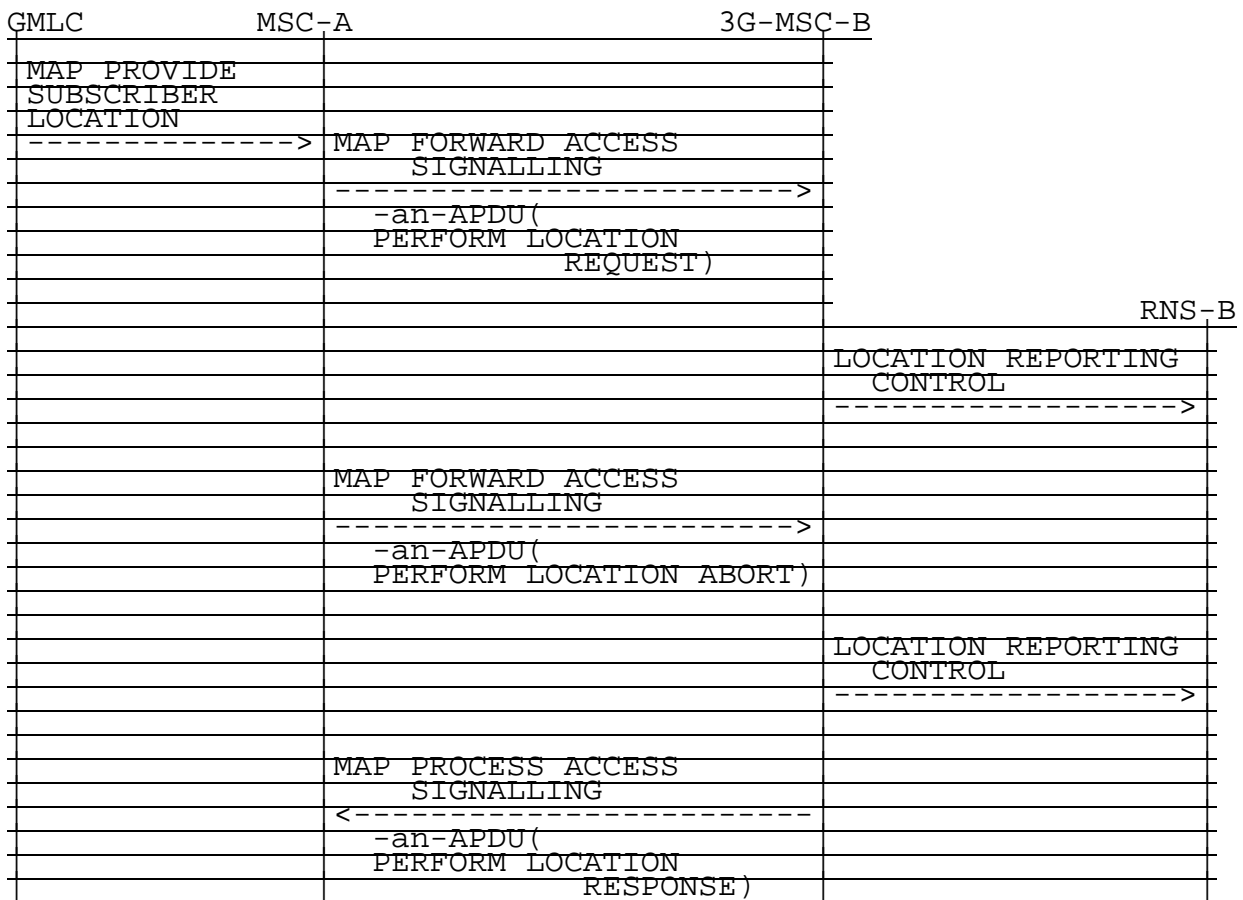


Figure 66: Signalling for an aborted Location Acquisition procedure

The interworking between the BSSMAP location acquisition messages in MAP and the RANAP location reporting messages is as follows:

	29.002	25.413	Notes
Forward message	MAP FORWARD ACCESS SIG. request	LOCATION REPORTING CONTROL	
	-an-APDU(PERFORM LOCATION ABORT)		
	BSSMAP information elements:	RANAP information elements:	
	LCS Cause	Request Type >Event = Stop >Report Area = Geo. Coord.	
Result	MAP PROCESS ACCESS SIG. request	-	1
	-an-APDU(PERFORM LOCATION RESPONSE)		
	BSSMAP information elements:		
	---- LCS Cause ----		

NOTE 1: PERFORM LOCATION RESPONSE with LCS cause shall be generated by 3G-MSC-B.

***** END OF MODIFICATIONS *****

CHANGE REQUEST

⌘ **29.010 CR 032** ⌘ rev **-** ⌘ Current version: **3.5.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ME/UE Radio Access Network Core Network

Title:	⌘ Mapping between RANAP and BSSMAP for Location Services		
Source:	⌘ CN4		
Work item code:	⌘ LCS	Date:	⌘ 7 May 2001
Category:	⌘ F (by consensus)	Release:	⌘ R99
	<p>Use <u>one</u> of the following categories:</p> <p>F (correction) A (corresponds to a correction in an earlier release) B (Addition of feature), C (Functional modification of feature) D (Editorial modification)</p> <p>Detailed explanations of the above categories can be found in 3GPP TR 21.900.</p>	<p>Use <u>one</u> of the following releases:</p> <p>2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)</p>	

Reason for change:	⌘ In case of completed GSM to UMTS Inter MSC Handover, a positioning request issued by the GMLC will be handled by the anchor MSC, which has to forward the request to the non anchor 3G MSC by encapsulating BSSMAP messages on the E-interface. These messages need to be mapped with the corresponding RANAP messages before being exchanged with the RNC.
	The mapping between RANAP and BSSMAP and vice versa is missing in the TS 29.010 for the Aborted Location procedure.
Summary of change:	⌘ Add mapping tables between RANAP and BSSMAP messages and corresponding parameters in case of Aborted Location procedure.
Consequences if not approved:	⌘ Mapping might be performed in different ways by different vendors, causing problems in case of RNC's and MSC's not provided by the same vendor.

Clauses affected:	⌘ 4.9.1						
Other specs affected:	<table style="width: 100%;"> <tr> <td style="width: 50%;">⌘ <input checked="" type="checkbox"/> Other core specifications</td> <td style="width: 50%;">⌘ 25.413 CRxxx R99</td> </tr> <tr> <td><input type="checkbox"/> Test specifications</td> <td></td> </tr> <tr> <td><input type="checkbox"/> O&M Specifications</td> <td></td> </tr> </table>	⌘ <input checked="" type="checkbox"/> Other core specifications	⌘ 25.413 CRxxx R99	<input type="checkbox"/> Test specifications		<input type="checkbox"/> O&M Specifications	
⌘ <input checked="" type="checkbox"/> Other core specifications	⌘ 25.413 CRxxx R99						
<input type="checkbox"/> Test specifications							
<input type="checkbox"/> O&M Specifications							
Other comments:	<p>⌘ If CR 017 on 29.010 is rejected then this CR has to be rejected too.</p> <p>Note to the editor: This CR adds an extra subsection to the section 4.9 introduced by CR 017 on 29.010. Please note that section numbered 4.9.1 in this CR must be inserted between sections 4.9.1 and 4.9.2 introduced by the CR 017.</p>						

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.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://www.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

**** NEW SECTIONS ****

4.9 Location Services

4.9.1 Aborted Location Acquisition

When for any reason the on going location acquisition procedure needs to be aborted, the anchor MSC sends the BSSMAP message Perform Location Abort over the E-interface.

Figure 66 shows the signalling for an aborted Location Acquisition procedure.

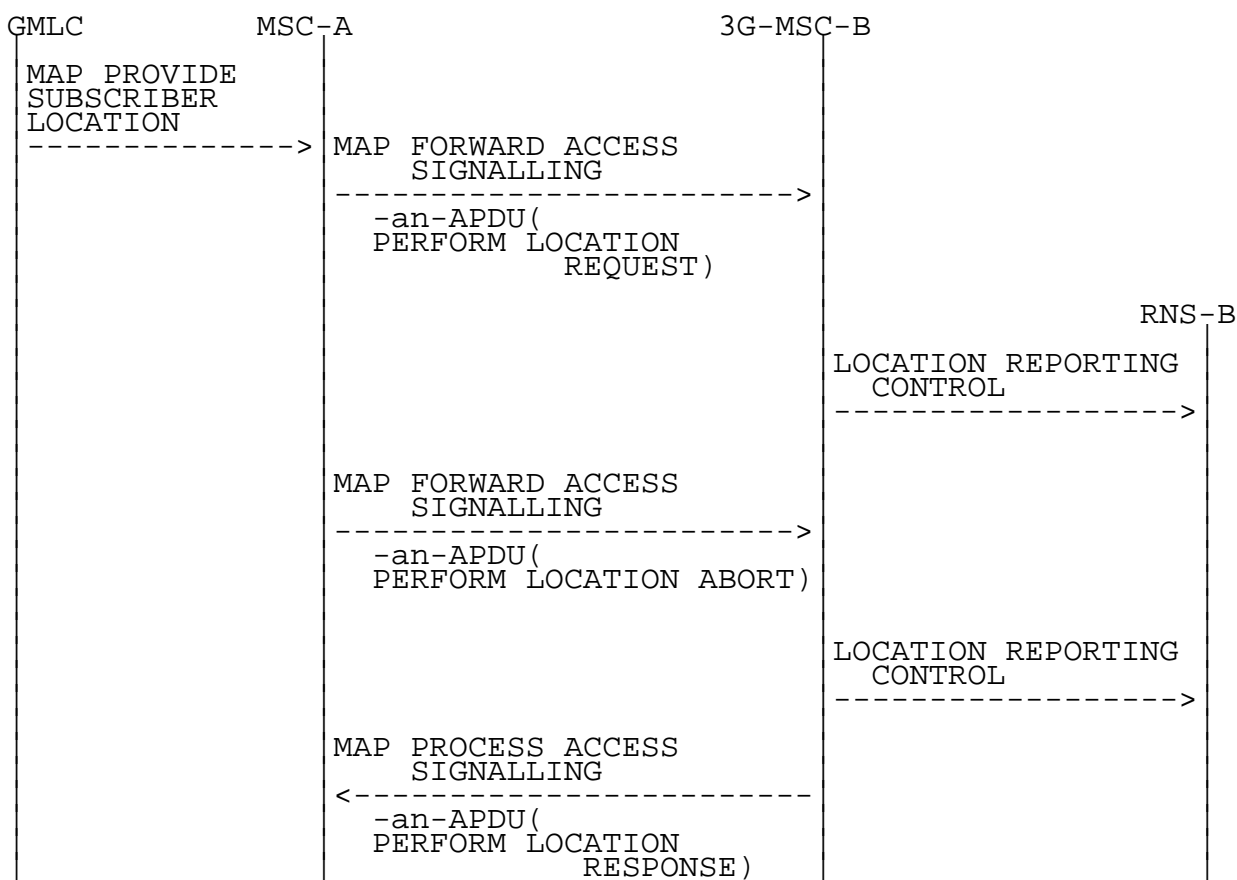


Figure 66: Signalling for an aborted Location Acquisition procedure

The interworking between the BSSMAP location acquisition messages in MAP and the RANAP location reporting messages is as follows:

	29.002	25.413	Notes
Forward message	MAP FORWARD ACCESS SIG. request -an-APDU(PERFORM LOCATION ABORT) BSSMAP information elements: LCS Cause	LOCATION REPORTING CONTROL RANAP information elements: Request Type >Event = Stop >Report Area = Geo. Coord.	
Result	MAP PROCESS ACCESS SIG. request -an-APDU(PERFORM LOCATION RESPONSE) BSSMAP information elements: ---- LCS Cause ----	-	1

NOTE 1: PERFORM LOCATION RESPONSE with LCS cause shall be generated by 3G-MSC-B.

*** END OF MODIFICATIONS ***