3GPP TSG CN Plenary Meeting #12 **Tdoc NP-010290**
Stockholm, Sweden, 13th - 15th June 2001

Source: TSG CN WG4

Title: CRs on R98 Work Item LCS

Agenda item: 7.16

Document for: APPROVAL

Introduction:

This document contains 3 CRs on R98 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
09.02	A319		N4-010549	R98	Add support in MAP for Ellipsoid Point	F	7.8.0
29.002	265		N4-010550	R99	Add support in MAP for Ellipsoid Point	A	3.8.0
29.002	266		N4-010551	Rel-4	Add support in MAP for Ellipsoid Point	A	4.3.0

CR-Form-v3

CHANGE REQUEST

⌘ **09.02** **CR** **A319** ⌘ rev **-** ⌘ Current version: **7.8.0** ⌘

*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 **X**

Title:	⌘	Add support in MAP for Ellipsoid Point
Source:	⌘	CN4
Work item code:	⌘	LCS
Date:	⌘	2 May 2001
Category:	⌘	**F** (by consensus)
Release:	⌘	R98

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 03.32. MAP 09.02 supports only a subset of the shapes defined in 03.32. For US E911 phase 2 feature, the GAD 03.32 shapes “Ellipsoid point” and “Ellipsoid point with uncertainty circle” may be the only two shapes that can be sent to a PSAP by a GMLC, but the “ellipsoid point” is not included in MAP 09.02. This restricts an SMLC to use only the “ellipsoid point with uncertainty circle” shape, which may be not appropriate for some position methods or preferred necessarily by an operator, because accuracy information has to be included SA2 has issued the liasion statement S2-010812 towards CN4 to ask for support of Ellipsoid Point in 09.02
Summary of change:	⌘	Modification of parameter Ext-GeographicalInformation
Consequences if not approved:	⌘	Unnecessary restrictions are imposed on the SMLC concerning the shapes to be used for positioning in case of US E911 calls.

Clauses affected:	⌘	17.7.13
Other specs Affected:	⌘	☐ Other core specifications ⌘ ☐ 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 ******

17.7.13 Location service data types

```
MAP-LCS-DataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-LCS-DataTypes (25) version5 (5)}

DEFINITIONS
IMPLICIT TAGS
::=
BEGIN

EXPORTS
   RoutingInfoForLCS-Arg,
   RoutingInfoForLCS-Res,
   ProvideSubscriberLocation-Arg,
   ProvideSubscriberLocation-Res,
   SubscriberLocationReport-Arg,
   SubscriberLocationReport-Res,
   LocationType,
   LCSClientName,
   LCS-QoS,
   Horizontal-Accuracy,
   ResponseTime,
   Ext-GeographicalInformation
;

IMPORTS
   AddressString,
   ISDN-AddressString,
   IMEI,
   IMSI,
   LMSI,
   SubscriberIdentity,
   AgeOfLocationInformation,
   LCSClientExternalID,
   LCSClientInternalID
FROM MAP-CommonDataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-CommonDataTypes (18) version5 (5)}

   ExtensionContainer
FROM MAP-ExtensionDataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-ExtensionDataTypes (21) version5 (5)}

   USSD-DataCodingScheme,
   USSD-String
FROM MAP-SS-DataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1) modules (3)
   map-SS-DataTypes (14) version5 (5)}
;
```

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

RoutingInfoForLCS-Res ::= SEQUENCE {
     targetMS                           [0] SubscriberIdentity,
     lcsLocationInfo                    [1] LCSLocationInfo,
     extensionContainer                 [2] ExtensionContainer          OPTIONAL,
     ...}

LCSLocationInfo ::= SEQUENCE {
     msc-Number                         ISDN-AddressString,
     lmsi                               [0] LMSI                        OPTIONAL,
     extensionContainer                 [1] ExtensionContainer          OPTIONAL,
     ...}

ProvideSubscriberLocation-Arg ::= SEQUENCE {
     locationType                      LocationType,
     mlc-Number                         ISDN-AddressString,
     lcs-ClientID                       [0] LCS-ClientID                OPTIONAL,
     privacyOverride                    [1] NULL                        OPTIONAL,
     imsi                               [2] IMSI                        OPTIONAL,
     msisdn                             [3] ISDN-AddressString          OPTIONAL,
     lmsi                               [4] LMSI                        OPTIONAL,
     imei                               [5] IMEI                        OPTIONAL,
     lcs-Priority                       [6] LCS-Priority                OPTIONAL,
     lcs-QoS                            [7] LCS-QoS                     OPTIONAL,
     extensionContainer                 [8] ExtensionContainer          OPTIONAL,
     ...}

-- one of imsi or msisdn is mandatory

LocationType ::= SEQUENCE {
     locationEstimateType               [0] LocationEstimateType,
     ... }

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

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

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

LCSClientName ::= SEQUENCE {
     dataCodingScheme                   [0] USSD-DataCodingScheme,
     nameString                         [2] NameString,
     ...}

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

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

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

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

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

```
Horizontal-Accuracy ::= OCTET STRING (SIZE (1))
     -- bit 8 = 0
     -- bits 7-1 = 7 bit Uncertainty Code defined in GSM 03.32. The horizontal location
     -- error should be less than the error indicated by the uncertainty code with  67%
     -- confidence.
```

```
Vertical-Accuracy ::= OCTET STRING (SIZE (1))
     -- bit 8 = 0
     -- bits 7-1 = 7 bit Vertical Uncertainty Code defined in GSM 03.32. The vertical location
     -- error should be less than the error indicated by the uncertainty code with 67 %
     -- confidence.
```

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

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

```
ProvideSubscriberLocation-Res ::= SEQUENCE {
     locationEstimate                   Ext-GeographicalInformation,
     ageOfLocationEstimate              [0] AgeOfLocationInformation     OPTIONAL,
     extensionContainer                 [1] ExtensionContainer           OPTIONAL,
     ...}
```

```
Ext-GeographicalInformation ::= OCTET STRING (SIZE (1..maxExt-GeographicalInformation))
-- Refers to geographical Information defined in GSM 03.32.
-- This is composed of 1 or more octets with an internal structure according to GSM 03.32
-- Octet 1: Type of shape, only the following shapes in GSM 03.32 are allowed:
--        (a) Ellipsoid point with uncertainty circle
--        (b) Ellipsoid point with uncertainty ellipse
--        (c) Ellipsoid point with altitude and uncertainty ellipsoid
--        (d) Ellipsoid Arc
--        (e) Ellipsoid Point
-- Any other value in octet 1 shall be treated as invalid
-- Octets 2 to 8 for case (a) – Ellipsoid point with uncertainty circle
--        Degrees of Latitude                                              3 octets
--        Degrees of Longitude                                             3 octets
--        Uncertainty code                                                 1 octet
-- Octets 2 to 11 for case (b) – Ellipsoid point with uncertainty ellipse:
--        Degrees of Latitude                                              3 octets
--        Degrees of Longitude                                             3 octets
--        Uncertainty semi-major axis                                      1 octet
--        Uncertainty semi-minor axis                                      1 octet
--        Angle of major axis                                              1 octet
--        Confidence                                                       1 octet
-- Octets 2 to 14 for case (c) – Ellipsoid point with altitude and uncertainty ellipsoid
--        Degrees of Latitude                                              3 octets
--        Degrees of Longitude                                             3 octets
--        Altitude                                                         2 octets
--        Uncertainty semi-major axis                                      1 octet
--        Uncertainty semi-minor axis                                      1 octet
--        Angle of major axis                                              1 octet
--        Uncertainty altitude                                             1 octet
--        Confidence                                                       1 octet
-- Octets 2 to 13 for case (d) – Ellipsoid Arc
--        Degrees of Latitude                                              3 octets
--        Degrees of Longitude                                             3 octets
--        Inner radius                                                     2 octets
--        Uncertainty radius                                               1 octet
--        Offset angle                                                     1 octet
--        Included angle                                                   1 octet
--        Confidence                                                       1 octet
-- Octets 2 to 7 for case (e) – Ellipsoid Point
--        Degrees of Latitude                                              3 octets
--        Degrees of Longitude                                             3 octets
--
-- An Ext-GeogrpahicalInformation parameter containing any other shape or an incorrect number
-- of octets or coding according to GSM 03.32 shall be treated as invalid data by a receiver
```

```
maxExt-GeographicalInformation  INTEGER ::= 20
-- the maximum length allows for further shapes in GSM 03.32 to be included in later versions
-- of GSM 09.02
```

```
SubscriberLocationReport-Arg ::= SEQUENCE {
    lcs-Event                       LCS-Event,
    lcs-ClientID                    LCS-ClientID,
    lcsLocationInfo                 LCSLocationInfo,
    msisdn                          [0] ISDN-AddressString          OPTIONAL,
    imsi                            [1] IMSI                        OPTIONAL,
    imei                            [2] IMEI                        OPTIONAL,
    na-ESRD                         [3] ISDN-AddressString          OPTIONAL,
    na-ESRK                         [4] ISDN-AddressString          OPTIONAL,
    locationEstimate                [5] Ext-GeographicalInformation OPTIONAL,
    ageOfLocationEstimate           [6] AgeOfLocationInformation    OPTIONAL,
    extensionContainer              [7] ExtensionContainer          OPTIONAL,
    ...}

-- one of msisdn or, imsi is mandatory
```

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

```
SubscriberLocationReport-Res ::= SEQUENCE {
    extensionContainer              ExtensionContainer              OPTIONAL,
    ...}
```

```
END
```

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

CR-Form-v3

CHANGE REQUEST

⌘ **29.002** **CR** **265** ⌘ rev **-** ⌘ 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 **X**

Title:	⌘	Add support in MAP for Ellipsoid Point
Source:	⌘	CN4
Work item code:	⌘	LCS
Date:	⌘	2 May 2001
Category:	⌘	**A**
Release:	⌘	R99

Use one of the following categories:
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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. For US E911 phase 2 feature, the GAD 03.32 shapes “Ellipsoid point” and “Ellipsoid point with uncertainty circle” may be the only two shapes that can be sent to a PSAP by a GMLC, but the “ellipsoid point” is not included in MAP 29.002. This restricts an SMLC to use only the “ellipsoid point with uncertainty circle” shape, which may be not appropriate for some position methods or preferred necessarily by an operator, because accuracy information has to be included SA2 has issued the liasion statement S2-010812 towards CN4 to ask for support of Ellipsoid Point in 29.002
Summary of change:	⌘	Modification of parameter Ext-GeographicalInformation
Consequences if not approved:	⌘	Unnecessary restrictions are imposed on the SMLC concerning the shapes to be used for positioning in case of US E911 calls.

Clauses affected:	⌘	17.7.13		
Other specs Affected:	⌘	☐ Other core specifications ☐ 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 ******

17.7.13 Location service data types

```
MAP-LCS-DataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-LCS-DataTypes (25) version6 (6)}

DEFINITIONS
IMPLICIT TAGS
::=
BEGIN

EXPORTS
   RoutingInfoForLCS-Arg,
   RoutingInfoForLCS-Res,
   ProvideSubscriberLocation-Arg,
   ProvideSubscriberLocation-Res,
   SubscriberLocationReport-Arg,
   SubscriberLocationReport-Res,
   LocationType,
   LCSClientName,
   LCS-QoS,
   Horizontal-Accuracy,
   ResponseTime,
   Ext-GeographicalInformation
;

IMPORTS
   AddressString,
   ISDN-AddressString,
   IMEI,
   IMSI,
   LMSI,
   SubscriberIdentity,
   AgeOfLocationInformation,
   LCSClientExternalID,
   LCSClientInternalID
FROM MAP-CommonDataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-CommonDataTypes (18) version6 (6)}

   ExtensionContainer
FROM MAP-ExtensionDataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-ExtensionDataTypes (21) version6 (6)}

   USSD-DataCodingScheme,
   USSD-String
FROM MAP-SS-DataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1) modules (3)
```

```
   map-SS-DataTypes (14) version6 (6)}
;


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

RoutingInfoForLCS-Res ::= SEQUENCE {
     targetMS                           [0] SubscriberIdentity,
     lcsLocationInfo                    [1] LCSLocationInfo,
     extensionContainer                 [2] ExtensionContainer          OPTIONAL,
     ...}

LCSLocationInfo ::= SEQUENCE {
     msc-Number                         ISDN-AddressString,
     lmsi                               [0] LMSI                        OPTIONAL,
     extensionContainer                 [1] ExtensionContainer          OPTIONAL,
     ...}

ProvideSubscriberLocation-Arg ::= SEQUENCE {
     locationType                       LocationType,
     mlc-Number                         ISDN-AddressString,
     lcs-ClientID                       [0] LCS-ClientID                OPTIONAL,
     privacyOverride                    [1] NULL                        OPTIONAL,
     imsi                               [2] IMSI                        OPTIONAL,
     msisdn                             [3] ISDN-AddressString          OPTIONAL,
     lmsi                               [4] LMSI                        OPTIONAL,
     imei                               [5] IMEI                        OPTIONAL,
     lcs-Priority                       [6] LCS-Priority                OPTIONAL,
     lcs-QoS                            [7] LCS-QoS                     OPTIONAL,
     extensionContainer                 [8] ExtensionContainer          OPTIONAL,
     ...}

     -- one of imsi or msisdn is mandatory

LocationType ::= SEQUENCE {
     locationEstimateType               [0] LocationEstimateType,
     ... }

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

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

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

```
LCSClientName ::= SEQUENCE {
     dataCodingScheme                    [0] USSD-DataCodingScheme,
     nameString                          [2] NameString,
     ...}

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

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

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

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

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

```
Horizontal-Accuracy ::= OCTET STRING (SIZE (1))
     -- bit 8 = 0
     -- bits 7-1 = 7 bit Uncertainty Code defined in GSM 03.32. The horizontal location
     -- error should be less than the error indicated by the uncertainty code with 67 %
     -- confidence.
```

```
Vertical-Accuracy ::= OCTET STRING (SIZE (1))
     -- bit 8 = 0
     -- bits 7-1 = 7 bit Vertical Uncertainty Code defined in GSM 03.32. The vertical location
     -- error should be less than the error indicated by the uncertainty code with 67 %
     -- confidence.
```

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

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

```
ProvideSubscriberLocation-Res ::= SEQUENCE {
     locationEstimate                    Ext-GeographicalInformation,
     ageOfLocationEstimate               [0] AgeOfLocationInformation      OPTIONAL,
     extensionContainer                  [1] ExtensionContainer            OPTIONAL,
     ...}
```

```
Ext-GeographicalInformation ::= OCTET STRING (SIZE (1..maxExt-GeographicalInformation))
    -- Refers to geographical Information defined in GSM 03.32.
    -- This is composed of 1 or more octets with an internal structure according to GSM 03.32
    -- Octet 1: Type of shape, only the following shapes in GSM 03.32 are allowed:
    --       (a) Ellipsoid point with uncertainty circle
    --       (b) Ellipsoid point with uncertainty ellipse
    --       (c) Ellipsoid point with altitude and uncertainty ellipsoid
    --       (d) Ellipsoid Arc
    --       (e) Ellipsoid Point
    -- Any other value in octet 1 shall be treated as invalid
    -- Octets 2 to 8 for case (a) – Ellipsoid point with uncertainty circle
    --       Degrees of Latitude                                        3 octets
    --       Degrees of Longitude                                       3 octets
    --       Uncertainty code                                           1 octet
    -- Octets 2 to 11 for case (b) – Ellipsoid point with uncertainty ellipse:
    --       Degrees of Latitude                                        3 octets
    --       Degrees of Longitude                                       3 octets
    --       Uncertainty semi-major axis                                1 octet
    --       Uncertainty semi-minor axis                                1 octet
    --       Angle of major axis                                        1 octet
    --       Confidence                                                 1 octet
    -- Octets 2 to 14 for case (c) – Ellipsoid point with altitude and uncertainty ellipsoid
    --       Degrees of Latitude                                        3 octets
    --       Degrees of Longitude                                       3 octets
    --       Altitude                                                   2 octets
    --       Uncertainty semi-major axis                                1 octet
    --       Uncertainty semi-minor axis                                1 octet
    --       Angle of major axis                                        1 octet
    --       Uncertainty altitude                                       1 octet
    --       Confidence                                                 1 octet
    -- Octets 2 to 13 for case (d) – Ellipsoid Arc
    --       Degrees of Latitude                                        3 octets
    --       Degrees of Longitude                                       3 octets
    --       Inner radius                                               2 octets
    --       Uncertainty radius                                         1 octet
    --       Offset angle                                               1 octet
    --       Included angle                                             1 octet
    --       Confidence                                                 1 octet
    -- Octets 2 to 7 for case (e) – Ellipsoid Point
    --       Degrees of Latitude                                        3 octets
    --       Degrees of Longitude                                       3 octets

    --   -- An Ext-GeographicalInformation parameter containing any other shape or an
    -- incorrect number of octets or coding according to GSM 03.32 shall be
    -- treated as invalid data by a receiver
```

```
maxExt-GeographicalInformation  INTEGER ::= 20
    -- the maximum length allows for further shapes in GSM 03.32 to be included in later
    -- versions of GSM 09.02
```

```
SubscriberLocationReport-Arg ::= SEQUENCE {
    lcs-Event                       LCS-Event,
    lcs-ClientID                    LCS-ClientID,
    lcsLocationInfo                 LCSLocationInfo,
    msisdn                          [0] ISDN-AddressString            OPTIONAL,
    imsi                            [1] IMSI                          OPTIONAL,
    imei                            [2] IMEI                          OPTIONAL,
    na-ESRD                         [3] ISDN-AddressString            OPTIONAL,
    na-ESRK                         [4] ISDN-AddressString            OPTIONAL,
    locationEstimate                [5] Ext-GeographicalInformation   OPTIONAL,
    ageOfLocationEstimate           [6] AgeOfLocationInformation      OPTIONAL,
    extensionContainer              [7] ExtensionContainer            OPTIONAL,
    ...}

    -- one of msisdn or imsi is mandatory
```

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

```
SubscriberLocationReport-Res ::= SEQUENCE {
    extensionContainer                  ExtensionContainer                OPTIONAL,
    ...}

END
```

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

Rio Grande, Puerto Rico, 14-18 May 2001

CR-Form-v3

CHANGE REQUEST

⌘ **29.002** **CR** **266** ⌘ rev **-** ⌘ 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 **X**

Title:	⌘	Add support in MAP for Ellipsoid Point
Source:	⌘	CN4
Work item code:	⌘	LCS
Date:	⌘	2 May 2001
Category:	⌘	**A**
Release:	⌘	REL-4

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. For US E911 phase 2 feature, the GAD 03.32 shapes "Ellipsoid point" and "Ellipsoid point with uncertainty circle" may be the only two shapes that can be sent to a PSAP by a GMLC, but the "ellipsoid point" is not included in MAP 29.002. This restricts an SMLC to use only the "ellipsoid point with uncertainty circle" shape, which may be not appropriate for some position methods or preferred necessarily by an operator, because accuracy information has to be included SA2 has issued the liasion statement S2-010812 towards CN4 to ask for support of Ellipsoid Point in 29.002
Summary of change:	⌘	Modification of parameter Ext-GeographicalInformation
Consequences if not approved:	⌘	Unnecessary restrictions are imposed on the SMLC concerning the shapes to be used for positioning in case of US E911 calls.

Clauses affected:	⌘	17.7.13		
Other specs Affected:	⌘	☐ Other core specifications ☐ 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 ******

17.7.13 Location service data types

```
MAP-LCS-DataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-LCS-DataTypes (25) version7 (7)}

DEFINITIONS
IMPLICIT TAGS
::=
BEGIN

EXPORTS
   RoutingInfoForLCS-Arg,
   RoutingInfoForLCS-Res,
   ProvideSubscriberLocation-Arg,
   ProvideSubscriberLocation-Res,
   SubscriberLocationReport-Arg,
   SubscriberLocationReport-Res,
   LocationType,
   LCSClientName,
   LCS-QoS,
   Horizontal-Accuracy,
   ResponseTime,
   Ext-GeographicalInformation
;

IMPORTS
   AddressString,
   ISDN-AddressString,
   IMEI,
   IMSI,
   LMSI,
   SubscriberIdentity,
   AgeOfLocationInformation,
   LCSClientExternalID,
      LCSClientInternalID
FROM MAP-CommonDataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-CommonDataTypes (18) version7 (7)}

   ExtensionContainer
FROM MAP-ExtensionDataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-ExtensionDataTypes (21) version7 (7)}

   USSD-DataCodingScheme,
   USSD-String
FROM MAP-SS-DataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1) modules (3)
   map-SS-DataTypes (14) version7 (7)}

   APN
```

```
FROM MAP-MS-DataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-MS-DataTypes (11) version7 (7)}

   Additional-Number
FROM MAP-SM-DataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-SM-DataTypes (16) version7 (7)}
;


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

RoutingInfoForLCS-Res ::= SEQUENCE {
     targetMS                           [0] SubscriberIdentity,
     lcsLocationInfo                    [1] LCSLocationInfo,
     extensionContainer                 [2] ExtensionContainer          OPTIONAL,
     ...}

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

ProvideSubscriberLocation-Arg ::= SEQUENCE {
     locationType                       LocationType,
     mlc-Number                         ISDN-AddressString,
     lcs-ClientID                       [0] LCS-ClientID                OPTIONAL,
     privacyOverride                    [1] NULL                        OPTIONAL,
     imsi                               [2] IMSI                        OPTIONAL,
     msisdn                             [3] ISDN-AddressString          OPTIONAL,
     lmsi                               [4] LMSI                        OPTIONAL,
     imei                               [5] IMEI                        OPTIONAL,
     lcs-Priority                       [6] LCS-Priority                OPTIONAL,
     lcs-QoS                            [7] LCS-QoS                     OPTIONAL,
     extensionContainer                 [8] ExtensionContainer          OPTIONAL,
     ...}

     -- one of imsi or msisdn is mandatory

LocationType ::= SEQUENCE {
     locationEstimateType               [0] LocationEstimateType,
     ... }

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

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

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

LCSClientName ::= SEQUENCE {
     dataCodingScheme                   [0] USSD-DataCodingScheme,
     nameString                         [2] NameString,
     ...}

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

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

maxNameStringLength  INTEGER ::= 63

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

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

Horizontal-Accuracy ::= OCTET STRING (SIZE (1))
     -- bit 8 = 0
     -- bits 7-1 = 7 bit Uncertainty Code defined in GSM 03.32. The horizontal location
     -- error should be less than the error indicated by the uncertainty code with 67%
     -- confidence.

Vertical-Accuracy ::= OCTET STRING (SIZE (1))
     -- bit 8 = 0
     -- bits 7-1 = 7 bit Vertical Uncertainty Code defined in GSM 03.32. The vertical location
     -- error should be less than the error indicated by the uncertainty code with 67%
     -- confidence.

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

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

ProvideSubscriberLocation-Res ::= SEQUENCE {
     locationEstimate                   Ext-GeographicalInformation,
     ageOfLocationEstimate              [0] AgeOfLocationInformation     OPTIONAL,
     extensionContainer                 [1] ExtensionContainer           OPTIONAL,
     ...}
```

```
Ext-GeographicalInformation ::= OCTET STRING (SIZE (1..maxExt-GeographicalInformation))
    -- Refers to geographical Information defined in GSM 03.32.
    -- This is composed of 1 or more octets with an internal structure according to GSM 03.32
    -- Octet 1: Type of shape, only the following shapes in GSM 03.32 are allowed:
    --       (a) Ellipsoid point with uncertainty circle
    --       (b) Ellipsoid point with uncertainty ellipse
    --       (c) Ellipsoid point with altitude and uncertainty ellipsoid
    --       (d) Ellipsoid Arc
    --       (e) Ellipsoid Point
    -- Any other value in octet 1 shall be treated as invalid
    -- Octets 2 to 8 for case (a) – Ellipsoid point with uncertainty circle
    --       Degrees of Latitude                                        3 octets
    --       Degrees of Longitude                                       3 octets
    --       Uncertainty code                                           1 octet
    -- Octets 2 to 11 for case (b) – Ellipsoid point with uncertainty ellipse:
    --       Degrees of Latitude                                        3 octets
    --       Degrees of Longitude                                       3 octets
    --       Uncertainty semi-major axis                                1 octet
    --       Uncertainty semi-minor axis                                1 octet
    --       Angle of major axis                                        1 octet
    --       Confidence                                                 1 octet
    -- Octets 2 to 14 for case (c) – Ellipsoid point with altitude and uncertainty ellipsoid
    --       Degrees of Latitude                                        3 octets
    --       Degrees of Longitude                                       3 octets
    --       Altitude                                                   2 octets
    --       Uncertainty semi-major axis                                1 octet
    --       Uncertainty semi-minor axis                                1 octet
    --       Angle of major axis                                        1 octet
    --       Uncertainty altitude                                       1 octet
    --       Confidence                                                 1 octet
    -- Octets 2 to 13 for case (d) – Ellipsoid Arc
    --       Degrees of Latitude                                        3 octets
    --       Degrees of Longitude                                       3 octets
    --       Inner radius                                               2 octets
    --       Uncertainty radius                                         1 octet
    --       Offset angle                                               1 octet
    --       Included angle                                             1 octet
    --       Confidence                                                 1 octet
    -- Octets 2 to 7 for case (e) – Ellipsoid Point
    --       Degrees of Latitude                                        3 octets
    --       Degrees of Longitude                                       3 octets

    --
    -- An Ext-GeographicalInformation parameter containing any other shape or an
    -- incorrect number of octets or coding according to GSM 03.32 shall be
    -- treated as invalid data by a receiver

maxExt-GeographicalInformation  INTEGER ::= 20
    -- the maximum length allows for further shapes in GSM 03.32 to be included in later
    -- versions of GSM 09.02

SubscriberLocationReport-Arg ::= SEQUENCE {
    lcs-Event                       LCS-Event,
    lcs-ClientID                    LCS-ClientID,
    lcsLocationInfo                 LCSLocationInfo,
    msisdn                          [0] ISDN-AddressString          OPTIONAL,
    imsi                            [1] IMSI                        OPTIONAL,
    imei                            [2] IMEI                        OPTIONAL,
    na-ESRD                         [3] ISDN-AddressString          OPTIONAL,
    na-ESRK                         [4] ISDN-AddressString          OPTIONAL,
    locationEstimate                [5] Ext-GeographicalInformation OPTIONAL,
    ageOfLocationEstimate           [6] AgeOfLocationInformation    OPTIONAL,
    extensionContainer              [7] ExtensionContainer          OPTIONAL,
    ...}

    -- one of msisdn or imsi is mandatory

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

```
SubscriberLocationReport-Res ::= SEQUENCE {
    extensionContainer                  ExtensionContainer                OPTIONAL,
    ...}


END
```

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