TSG RAN Meeting #23 **RP-040075**
Phoenix, Arizona, USA, 10 - 12 March 2004

Title **CR (Rel-6 Category F) to TS 25.453 on Initial UE Position IE only mandatory necessary for GPS**
Source **TSG RAN WG3**
Agenda Item **8.9**

RAN3 Tdoc	CR.	Rev.	Cat	Spec.	curr. Vers.	new Vers.	REL	Work Item	Title
R3-040325	69	-	F	25.453	6.3.0	6.4.0	REL-6	TEI6	Initial UE Position IE only mandatory necessary for GPS

3GPP TSG-RAN WG3 Meeting #41 **⌘R3-040325**
Malaga, Spain, 16th – 20th February 2004

CR-Form-v7

CHANGE REQUEST

⌘ **25.453** **CR** **69** ⌘ **rev** **-** ⌘ Current version: **6.3.0** ⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☒ Core Network ☐

Title:	⌘	Initial UE Position IE only mandatory necessary for GPS
Source:	⌘	RAN3
Work item code:	⌘	TEI6
Date:	⌘	16/02/2004
Category:	⌘	**F**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)

Reason for change:	⌘	For GPS location calculation an Initial UE position is required whereas for other location calculation an Initial UE position is normally not required. Therefore the presence of the *Initial UE Position Estimate* IE should be changed to optional.
Summary of change:	⌘	The Presence of *Initial UE Position Estimate* IE is changed from mandatory to optional. A new value is added to the *Cause* IE, in case the *Initial UE Position Estimate* IE is required for calculating the position estimate of the UE and was not included in the POSITION CALCULATION REQUEST message.
Consequences if not approved:	⌘	If this CR is not approved, the *Initial UE Position Estimate* IE has always to be sent, ie. it is sent in cases where it is not required.

Clauses affected:	⌘	8.2.2, 8.2.3, 9.1.3, 9.2.2.3, 9.3.3, 9.3.4, 9.3.6

Other specs affected: ⌘	Y	N	
		X	Other core specifications
		X	Test specifications
		X	O&M Specifications

⌘

Other comments:	⌘	

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

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

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

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

8.2 Position Calculation

8.2.1 General

The purpose of the Position Calculation procedure is to enable an SRNC to query an SAS for a position estimate of a UE. The procedure uses connectionless signalling.

8.2.2 Successful Operation

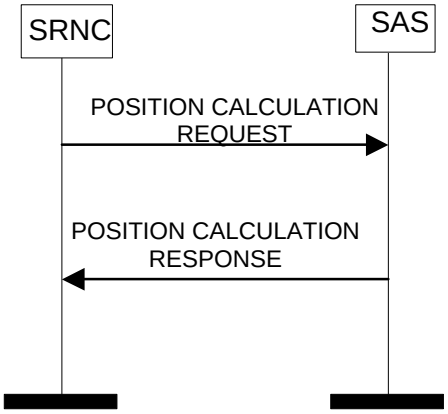

Figure 1: Position Calculation procedure, Successful Operation

The procedure is initiated with a POSITION CALCULATION REQUEST message sent from the SRNC to the SAS. When the SAS receives the POSITION CALCULATION REQUEST message, it shall calculate the UE position based on the provided measurement data.

If the *Initial UE Position Estimate* IE is included in the POSITION CALCULATION REQUEST message, the SAS shall use the values for the calculation of the UE Position Estimate.

Response Message:

If the SAS was able to calculate the position estimate, it shall respond with a POSITION CALCULATION RESPONSE message.

8.2.3 Unsuccessful Operation

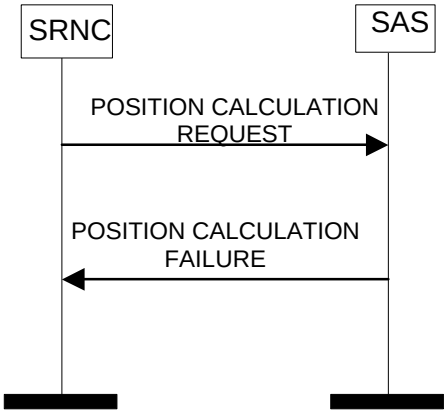

Figure 2: Position Calculation procedure, Unsuccessful Operation

If the SAS is unable to perform the position estimate for any reason, it shall return a POSITION CALCULATION FAILURE message to the SRNC.

Typical cause values are:

- Invalid reference information;
- —Position calculation error: invalid GPS measured results;
- Initial UE Position Estimate missing;
- Processing Overload;
- Hardware Failure;
- O&M Intervention.

8.2.4 Abnormal Conditions

-

9.1.3 Position Calculation Request

Table 6

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.2.24		YES	reject
Transaction ID	M		9.2.2.28		-	
Initial UE Position Estimate	O~~M~~		9.2.2.6		YES	reject
GPS Measured Results		*0..<maxNoOfSets>*			GLOBAL	reject
>GPS Measured Results	M		9.2.2.12		-	
Cell-ID Measured Results Sets		*0..<maxNoOfMeasurements>*			GLOBAL	reject
>Cell-ID Measured Results Info List	M		9.2.2.31		-	
OTDOA Measurement Group		*0..1*			YES	reject
>OTDOA Reference Cell Info	M		9.2.2.34		-	
>OTDOA Neighbour Cell Info List		*1..< maxNoOfMeasNCell >*			-	
>>OTDOA Neighbour Cell Info	M		9.2.2.33		-	
>OTDOA Measured Results Sets		*1..<maxNoOfMeasurements>*			-	
>>OTDOA Measured Results Info List	M		9.2.2.32		-	

Table 7

Range bound	Explanation
MaxNoOfMeasNCell	Maximum number of neighbouring cells on which information can be reported. The value of MaxNoOfMeasCell is 32.
MaxNoOfSets	Maximum number of sets of Measured Results included in the Position Calculation Request message. The value for maxNoOfSets is 3.
maxNoOfMeasurements	Maximum number of Measurements of Cell-ID Measured Results Info List and OTDOA Measured Results Info List included in the Position Calculation Request message. The value for maxNoOfMeasurements is 16.

/* partly omitted */

9.2.2.3 Cause

The purpose of the cause information element is to indicate the reason for a particular event for the whole protocol.

Table 20

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
CHOICE *Cause Group*				
>Radio Network Layer				
>>Radio Network Layer Cause	M		ENUMERATED (invalid reference information, information temporarily not available, information provision not supported for the object, position calculation error: invalid GPS measured results, ..., position calculation error: invalid Cell-ID measured results, position calculation error: invalid OTDOA measured results, position calculation error: A-GPS positioning method not supported, position calculation error: Cell-ID positioning method not supported, position calculation error: OTDOA positioning method not supported, Initial UE Position Estimate missing)	
>Transport Layer				
>>Transport Layer Cause	M		ENUMERATED (Transport Resource Unavailable, Unspecified, ...)	
>Protocol				
>>Protocol Cause	M		ENUMERATED (Transfer Syntax Error, Abstract Syntax Error (Reject), Abstract Syntax Error (Ignore and Notify), Message not Compatible with Receiver State, Semantic Error, Unspecified, Abstract Syntax Error (Falsely Constructed Message), ...)	
> Misc				
>>Misc Cause	M		ENUMERATED (Processing Overload, Hardware Failure, O&M Intervention, Unspecified ...)	

The meaning of the different cause values is described in the following table. In general, "not supported" cause values indicate that the concerning capability is missing. On the other hand, "not available" cause values indicate that the concerning capability is present, but insufficient resources were available to perform the requested action.

Table 21

Radio Network Layer cause	Meaning
Invalid reference information	The reference information (GPS-UTRAN Time Relationship Uncertainty and/or Initial UE Position Estimate) provided by the RNC are invalid
Information temporarily not available	The information requested by RNC is temporarily not available
Information Provision not supported for the object	The SAS does not support provision of the requested information for the concerned object types
Position calculation error: invalid GPS measured results	The SAS cannot calculate position due to invalid GPS measured results
Position calculation error: invalid Cell-ID measured results	The SAS cannot calculate position due to invalid Cell-ID measured results
Position calculation error: invalid OTDOA measured results	The SAS cannot calculate position due to invalid OTDOA measured results
Position calculation error: A-GPS positioning method not supported	The SAS cannot calculate position because it does not support the A-GPS positioning method
Position calculation error: Cell-ID positioning method not supported	The SAS cannot calculate position because it does not support the Cell-ID positioning method
Position calculation error: OTDOA positioning method not supported	The SAS cannot calculate position because it does not support the OTDOA positioning method

Table 22

Transport Network Layer cause	Meaning
Transport resource unavailable	The required transport resources are not available
Unspecified	Sent when none of the above cause values applies but still the cause is Transport Network Layer related

Table 23

Protocol cause	Meaning
Abstract Syntax Error (Reject)	The received message included an abstract syntax error and the concerning criticality indicated "reject" (see clause 10.3)
Abstract Syntax Error (Ignore and Notify)	The received message included an abstract syntax error and the concerning criticality indicated "ignore and notify" (see clause 10.3)
Abstract syntax error (falsely constructed message)	The received message contained IEs or IE groups in wrong order or with too many occurrences (see clause 10.3)
Message not Compatible with Receiver State	The received message was not compatible with the receiver state (see clause 10.4)
Semantic Error	The received message included a semantic error (see clause 10.4)
Transfer Syntax Error	The received message included a transfer syntax error (see clause 10.2)
Unspecified	Sent when none of the above cause values applies but still the cause is Protocol related

Table 24

Miscellaneous cause	Meaning
Processing Overload	RNC/SAS processing overload
Hardware Failure	RNC/SAS hardware failure
O&M Intervention	Operation and Maintenance intervention related to RNC/SAS equipment
Unspecified	Sent when none of the above cause values applies and the cause is not related to any of the categories Radio Network Layer, Transport Network Layer or Protocol

/* partly omitted */

9.3.3 PDU Definitions

/* partly omitted */

```
    id-Cause,
    id-CriticalityDiagnostics,
    id-GPS-UTRAN-TRU,
    id-InformationExchangeID,
    id-InformationExchangeObjectType-InfEx-Rprt,
    id-InformationExchangeObjectType-InfEx-Rqst,
    id-InformationExchangeObjectType-InfEx-Rsp,
    id-InformationReportCharacteristics,
    id-InformationType,
    id-GPS-MeasuredResultsList,
    id-RequestedDataValue,
    id-RequestedDataValueInformation,
    id-TransactionID,
    id-UE-PositionEstimate,
    id-CellId-MeasuredResultsSets,
    id-OTDOA-MeasurementGroup
FROM PCAP-Constants;


-- **************************************************************
--
-- POSITION CALCULATION REQUEST
--
-- **************************************************************

PositionCalculationRequest ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {PositionCalculationRequestIEs} },
    protocolExtensions  ProtocolExtensionContainer { {PositionCalculationRequestExtensions} }
    OPTIONAL,
    ...
}

PositionCalculationRequestIEs PCAP-PROTOCOL-IES ::= {
    { ID id-UE-PositionEstimate     CRITICALITY reject  TYPE UE-PositionEstimate    PRESENCE
optional~~mandatory~~   } |
    { ID id-GPS-MeasuredResultsList     CRITICALITY reject  TYPE MeasuredResultsList    PRESENCE
mandatory   },
    ...
}

PositionCalculationRequestExtensions PCAP-PROTOCOL-EXTENSION ::= {
    { ID id-CellId-MeasuredResultsSets      CRITICALITY reject  EXTENSION CellId-MeasuredResultsSets
PRESENCE optional   } |
    { ID id-OTDOA-MeasurementGroup          CRITICALITY reject  EXTENSION OTDOA-MeasurementGroup
PRESENCE optional   },
    ...
}
```

/* partly omitted */

9.3.4 Information Element Definitions

```
-- **************************************************************
--
-- Information Element Definitions
--
-- **************************************************************

PCAP-IEs {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
umts-Access (20) modules (3) pcap(4) version1 (1) pcap-IEs (2) }

DEFINITIONS AUTOMATIC TAGS ::=
```

```
BEGIN
/* partly omitted */

-- **************************************************************
--
-- Cause IE
--
-- **************************************************************

Cause ::= CHOICE {
    radioNetwork            CauseRadioNetwork,
    transport               CauseTransport,
    protocol                CauseProtocol,
    misc                    CauseMisc,
    ...
}
CauseRadioNetwork ::= ENUMERATED {
    invalid-reference-information,
    information-temporarily-not-available,
    information-provision-not-supported-for-the-object,
    position-calculation-error-invalid-GPS-measured-results,
    ...,
    position-calculation-error-invalid-CellID-measured-results,
    position-calculation-error-invalid-OTDOA-measured-results,
    position-calculation-error-AGPS-positioning-method-not-supported,
    position-calculation-error-CellID-positioning-method-not-supported,
    position-calculation-error-OTDOA-positioning-method-not-supported,
    initial-UE-position-estimate-missing
}

CauseTransport ::= ENUMERATED {
    transport-resource-unavailable,
    unspecified,
    ...
}
```

/* partly omitted */

9.3.6 Constant Definitions

/* partly omitted */

```
id-Cause                                    ProtocolIE-ID ::= 1
id-CriticalityDiagnostics                   ProtocolIE-ID ::= 2
id-GPS-UTRAN-TRU                            ProtocolIE-ID ::= 3
id-InformationExchangeID                    ProtocolIE-ID ::= 4
id-InformationExchangeObjectType-InfEx-Rprt ProtocolIE-ID ::= 5
id-InformationExchangeObjectType-InfEx-Rqst ProtocolIE-ID ::= 6
id-InformationExchangeObjectType-InfEx-Rsp  ProtocolIE-ID ::= 7
id-InformationReportCharacteristics         ProtocolIE-ID ::= 8
id-InformationType                          ProtocolIE-ID ::= 9
id-GPS-MeasuredResultsList                  ProtocolIE-ID ::= 10
id-MessageStructure                         ProtocolIE-ID ::= 19
id-MethodType                               ProtocolIE-ID ::= 11
id-RefPosition-InfEx-Rqst                   ProtocolIE-ID ::= 12
id-RefPosition-InfEx-Rsp                    ProtocolIE-ID ::= 13
id-RefPosition-Inf-Rprt                     ProtocolIE-ID ::= 14
id-RequestedDataValue                       ProtocolIE-ID ::= 15
id-RequestedDataValueInformation            ProtocolIE-ID ::= 16
id-TransactionID                            ProtocolIE-ID ::= 17
id-UE-PositionEstimate                      ProtocolIE-ID ::= 18
id-CellId-MeasuredResultsSets               ProtocolIE-ID ::= 20
id-TypeOfError                              ProtocolIE-ID ::= 21
id-OTDOA-MeasurementGroup                   ProtocolIE-ID ::= 22

END
```