Source: SA1

Title: CRs to 22.071 on Various subjects (Rel-6)

Document for: Approval

Agenda Item: 7.1.3

Meet	Doc. No.	Spec	CR	Rev	Phase	Cat	Subject	Vers	New Vers	Doc. SA1
SP-22	SP-030697	22.071	060	-	Rel-6	B	Support of "Advanced Geographic Description" (AGD) information	6.5.0	6.6.0	S1-031269
SP-22	SP-030697	22.071	063	-	Rel-6	F	Correction of "velocity" requirements	6.5.0	6.6.0	S1-031272
SP-22	SP-030697	22.071	064	-	Rel-6	B	Cell ID	6.5.0	6.6.0	S1-031329

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CHANGE REQUEST

| ⌘ | **22.071 CR 060** | ⌘**rev** | **-** | ⌘ | Current version: | **6.5.0** | ⌘ |

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

Title: ⌘	Support of "Advanced Geographic Description" (AGD) information	
Source: ⌘	SA1 (Siemens, Vodafone, Huawei)	
Work item code: ⌘	LCS1	***Date:*** ⌘ 27/10/2003
Category: ⌘ **B**		***Release:*** ⌘ Rel-6

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

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

Reason for change: ⌘	In order to broaden the applicability of location based services and to enhance the quality of such services it should be possible to enrich the provided location information with "Advanced Geographic Description" (AGD) information. AGD is a type of geographic information that can be related to a particular location on the earth, particularly providing information on natural phenomena (e.g. maps of different formats and content), cultural, political and human resources. The format and content of AGD is outside of the scope of 3GPP.
Summary of change: ⌘	This CR requests the introduction of "Advanced Geographic Description" AGD, which may be provided by the LCS server upon request of the LCS client. The AGD may be derived from the UE's location, and could be provided by the PLMNs associated with the target UE or LCS client.
Consequences if not approved: ⌘	Difficulty or inability to support high-quality services that provide the user with location relevant information, e.g. up-to-date geopolitical names and maps.

Clauses affected: ⌘	3.2, 4.2, new section 4.2.3

	Y	N		
Other specs affected: ⌘	X		Other core specifications ⌘	23.071
			Test specifications	
			O&M Specifications	

Other comments: ⌘	SA2 have already started work on this requirement

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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.

<< Changed clause >>

3.2   Definitions

For the purposes of the present document the following definitions apply:

Advanced geographic description (AGD): AGD is a type of geographic information (sometimes referred to as geographic data, geospatial information or spatial data) "that can be related to a particular location defined in terms of points, area or volume on the Earth, particularly giving information on natural phenomena, cultural, political and human resources". Thus, AGD is an improvement of the usability of location information provided in shapes as defined in TS 23.032 or in local reference systems.
The definition of AGD information is outside the scope of this specification

4.2   Location Information

Location Information consists of Geographic Location, Velocity, and Quality of Service information, as described in the subsequent sections. In addition, Location Information may optionally contain Advanced Geographic Description (AGD).

4.2.1   Geographic Location

Provision of the geographic location of a target UE is applicable to all LCS services.

Note: For services other than LCS the network may also determine within which Cell or Service Area the Target UE is located ("Service Area" is a UTRAN concept and it may consist of one (in R99) or more than one cell). The Service Area information or Cell ID may be used for routing of calls or for CAMEL applications.

It should be noted that the Service Area concept is different from the Localized Service Area concept used for SoLSA.

4.2.2   Velocity

Velocity is the combination of Speed and Heading (direction) of a Target UE. The LCS Server may provide the Velocity of an UE.

For Value Added Services and PLMN Operator Services, the following is applicable:

Provision of the velocity of a target UE is application driven. Location Services may allow an LCS Client to request or negotiate the provision of velocity.

For Emergency Services there is no requirement to provide velocity.

4.2.3   Advanced Geographic Description

It shall be possible to provide Advanced geographic description (AGD) of the target UE to the LCS client. AGD may be derived from the UE's location.

The AGD format is outside of the scope of 3GPP.

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CHANGE REQUEST

| ⌘ | **22.071** CR **063** | ⌘**rev** | **-** | ⌘ | Current version: | **6.5.0** | ⌘ |

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

Title:	⌘	Correction of "velocity" requirements
Source:	⌘	SA1 (Siemens)
Work item code:	⌘ LCS1	**Date:** ⌘ 27/10/2003
Category:	⌘ **F**	**Release:** ⌘ Rel-6

Use <u>one</u> of the following categories:
F (correction)
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B (addition of feature),
C (functional modification of feature)
D (editorial modification)
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use <u>one</u> of the following releases:
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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:	⌘	Currently, requirements in 4.3.1 (Horizontal accuracy) state on determination of velocity that "the response to a single request may provide the results of multiple positionings". This could be interpreted to suggest a particular implementation of the requirement to provide velocity, which should be avoided in stage 1.
Summary of change:	⌘	Removal of the reference to an implementation in 4.3.1
Consequences if not approved:	⌘	Could be read as a requirement for a particular implementation, which currently cannot be complied with due to limitations of the MAP protocol.

Clauses affected:	⌘	4.3.1	

		Y	**N**			
Other specs affected:	⌘	**X**		Other core specifications	⌘	23.071
				Test specifications		
				O&M Specifications		

Other comments:	⌘	It is understood, that determining velocity through the results of multiple positionings is currently not supported by MAP. However, the requirement can also be fulfilled without multiple positionings. Note, that this change does not preclude - now or in the future - determination of velocity through multiple positionings.

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<< Changed clause >>

4.3.1   Horizontal Accuracy

The accuracy that can be provided with various positioning technologies depends on a number of factors, many of which are dynamic in nature. As such the accuracy that will be realistically achievable in an operational system will vary due to such factors as the dynamically varying radio environments (considering signal attenuation and multipath propagation), network topography in terms of base station density and geography, and positioning equipment available.

The accuracy for location services can be expressed in terms of a range of values that reflect the general accuracy level needed for the application. Different services require different levels of positioning accuracy.   The range may vary from tens of meters (navigation services) to perhaps kilometers (fleet management).

The majority of attractive value added location services are enabled when location accuracies of between 25m and 200m can be provided.

Based on decreasing accuracy requirement some examples of location services are provided in table 4.1. The LCS service shall provide techniques that allow operators to deploy networks that can provide at least the level of accuracy required by the regional regulatory bodies (e.g. Annex A).

Table 4.1; Example of location services with decreasing accuracy requirement

·	Location-independent	Most existing cellular services, Stock prices, sports reports
·	PLMN or country	Services that are restricted to one country or one PLMN
·	Regional (up to 200km)	Weather reports, localized weather warnings, traffic information (pre-trip)
·	District (up to 20km)	Local news, traffic reports
·	Up to 1 km	Vehicle asset management, targeted congestion avoidance advice
·	500m to 1km	Rural and suburban emergency services, manpower planning, information services (where are?)
·	100m (67%)	U.S. FCC mandate (99-245) for wireless emergency calls using network based positioning methods
·	300m (95%)	
·	75m-125m	Urban SOS, localized advertising, home zone pricing, network maintenance, network demand monitoring, asset tracking, information services (where is the nearest?)
·	50m (67%)	U.S. FCC mandate (99-245) for wireless emergency calls using handset based positioning methods
·	150m (95%)	
·	10m-50m	Asset Location, route guidance, navigation

Accuracy may be independently considered with respect to horizontal and vertical positioning estimates. Some location services may not require both, others may require both, but with different degrees of accuracy.

Given that the location estimate is the best possible within the bounds of required response time, the location estimates of a fixed position UE (assuming several estimates are made) will reveal a 'spread' of estimates around the actual UE position. The distribution of locations can be described by normal statistical parameters and suggests that a small proportion of location estimates may lie outside of the acceptable Quality of Service (QoS) parameters for specific services (as determined by the network operator).

It may be possible to provide information on the confidence that can be associated with a location estimate. This may be used by location services to decide if a position update should be requested, for example, if the reported accuracy falls below a threshold determined by the LCS Client or Network Operator for a specific service.

It may also be possible to determine velocity (speed and heading) information from a ~~single~~ location request. ~~(i.e. the response to a single request may provide the results of multiple positionings).~~

When delivered with a location estimate, the confidence region parameters, speed and heading may allow an application to improve the service delivered to the UE user. Some examples are given below:

   a) Confidence Region: Simple measure of uncertainty that specifies the size and orientation of the ellipse in which an UE is likely to lie with a predetermined confidence (e.g. 67%). The size of the confidence region may be used by the network operator or the LCS Client to request an updated location estimate.

   b) Speed: enables e.g. congestion monitoring, and average travel time estimates between locations.

   c) Heading: the location estimate of a vehicle may be improved to identify the appropriate side of the highway. This may enable the provision of traffic information that relates only to the user's direction of travel.

For Value Added Services and PLMN Operator Services, the following is applicable:

Accuracy is application driven and is one of the negotiable Quality of Service (QoS) parameters.

The precision of the location shall be network design dependent, i.e., should be an operator's choice. This precision requirement may vary from one part of a network to another.

The LCS shall allow an LCS Client to specify or negotiate the required horizontal accuracy. The LCS shall normally attempt to satisfy or approach as closely as possible the requested or negotiated accuracy when other quality of service parameters are not in conflict. The achieved accuracy level of location information shall be indicated using the shapes and uncertainty areas defined in 3GPP TS 23.032 [2].

For Emergency Services (where required by local regulatory requirements) the following requirements shall be met:

   - The LCS Server shall attempt to obtain the horizontal location of the calling UE, in terms of universal latitude and longitude coordinates, and shall provide this to an Emergency Service Provider. The accuracy shall be defined by local regulatory requirements. Annex A shows such requirements as exist in the United States.

   NOTE: The LCS Server provides the location service capabilities but the mechanism by which location is reported to an emergency service provider is outside the scope of this service.

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CHANGE REQUEST

| ⌘ | **22.071** CR **064** | ⌘**rev** | | ⌘ | Current version: | **6.5.0** | ⌘ |

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

Title: ⌘	Cell ID	
Source: ⌘	SA1 (Nortel Networks, AWS, T-Mobile USA)	
Work item code: ⌘	LCS	**Date:** ⌘ 29/10/2003
Category: ⌘ **B**		**Release:** ⌘ Rel-6

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R98 *(Release 1998)*
R99 *(Release 1999)*
Rel-4 *(Release 4)*
Rel-5 *(Release 5)*
Rel-6 *(Release 6)*

Reason for change: ⌘	The current 3GPP specifications do not allow the option of sending the serving cell id of the originating MS. In North America this information (serving cell id) is required to be passed to the emergency centers (PASPs) as part of the FCC E911 phase 1 mandate.
	The cell id is needed because the NA-ESRD (which is used to provide the phase1 information) is not always sent by the MSC to GMLC, and if an NA-ESRK is sent, the GMLC only has the phase2 information and not phase1 information (cell id or ESRD).
Summary of change: ⌘	A high level requirement is added to enable the optional capability of forwarding the serving cell id of the originating MS.
Consequences if not approved: ⌘	Emergency call location information is not mandated to be available to phase 1 PSAPs.

Clauses affected: ⌘	4.1

	Y	N		
Other specs affected: ⌘	X		Other core specifications ⌘	*TS 23.271, TS 29.002*
		X	Test specifications	
		X	O&M Specifications	

Other comments: ⌘	

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4.1 High Level Requirements

The following high level requirements are applicable:

1 The supporting mechanisms should incorporate flexible modular components with open interfaces that facilitate equipment interoperability and the evolution of service providing capabilities.

2 The network should be sufficiently flexible to accommodate evolving enabling mechanisms and service requirements to provide new and improved services.

3 It shall be possible to provide multiple layers of permissions to comply with local, national, and regional privacy requirements.

4 Multiple positioning methods should be supported in the different Access Networks, including (but not limited to) UL-TOA, E-OTD, IPDL-OTDOA, Network Assisted GPS and methods using cell site or sector information and Timing Advance or RoundTrip Time measurements.

5 The location determining process should be able to combine diverse positioning techniques and local knowledge when considering quality of service parameters to provide an optimal positioning request response.

6 It should be possible to provide position information to location services applications existing within the PLMN, external to the PLMN, or in Mobile Equipment;

7 Support should be provided for networks based on an Intelligent Network architecture (i.e. with specific support for CAMEL based Location Services).

8 Support may optionally be provided to enable the routing of emergency calls based on the geographic coordinates (latitude and longitude) of the calling party.

9 It shall be possible to provide the originating party's serving cell id to the LCS client.