**3GPP TSG-SA WG6 Meeting #52-bis-e S6-230482**

**e-meeting*,* 11th – 20th January 2023 (revision of S6-230411)**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **23.434** | **CR** | **0****147** | **rev** | **2** | **Current version:** |  |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network | **X** |

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|  | | | | | | | | | | |
| ***Title:*** | Location profiling for supporting fused location service enablement | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | CATT, Lenovo | | | | | | | | | |
| ***Source to TSG:*** | SA6 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5GFLS | | | | |  | ***Date:*** | | | 2023-01-10 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | B |  | | | | | ***Release:*** | | |  |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change 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](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Based on the conclusion of KI#3 in TR 23.700-96, the solution#5 will be considered in the normative phase. The related function, procedure and information flow will be specified in TS 23.434 to support solution#5. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | To add the procedure and information flow for location profiling according to the conclusion of KI#3 in TR 23.700-96. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The 5G-enabled fused location service capability will not support location profiling for SEAL location management. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 9.3.x(new),9.3.2.3,Annex X(new) | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

\* \* \* First Change \* \* \* \*

## 9.3 Procedures and information flows for Location management (on-network)

### 9.3.x Location profiling for supporting location service enablement

### 9.3.x.1 Location profiling

The location management server enhanced with the Fuse Location Function(FLF) supports the creation of location profiles for location service at the application enablement layer and the mapping of location profiles to one or more vertical applications. Location profiling is based on the vertical driven hybrid positioning requirements and policies.

The example of attributes that can be used for the location profiles is specified in Annex X.

### 9.3.x.2 Procedure of Location profiling for location service

The procedure includes the translation of the vertical request to a location profile and the derivation of the requested location information report.

Pre-condition: The Location Management Server has configured a set of location service profiles.



Figure 9.3.x.2-1: Location profiling for location derivation and exposure

1. The LM Server receives a location reporting trigger from VAL server and activates a location reporting procedure as defined in clause 9.3.5.

2. The Fused Location Function determines a mapping of the vertical location services to a location service profile based on the location request information, the location profiles and the location capability of VAL UE which registered to the LM Server before.

3a. The LM Server requests from the LMC the location information of the target VAL UE optionally with the requested location information (the access type, positioning method) based on the determined location profiles in LM server obtained in step 2.

3b. The LM Client responds to the LM Server the location report based on the request.

4. The LM Server performs a location information request to one or more of the following (based on the location profile):

- to GMLC directly or via NEF (as defined in TS 23.273[x]), acting as AF.

- to 3rd party location servers.

5. The Fused Location Function calculates the location information based on combined location reports from step 3~4 and checks whether the location reports fulfil the location profile requirements.

6-7. If the requirements are not fulfilled, the LM Server will repeat the step 3~5 iteratively to request location information and re-check whether the requirements are met or not.

8. If the requirements are fulfilled, the LM Server sends the location information report to the VAL server.\* \* \* Next Change \* \* \* \*

#### 9.3.2.3 Location information request

Table 9.3.2.3-1 describes the information flow from the VAL server to the location management server and/or from the location management server to the location management client for requesting an immediate location information report.

Table 9.3.2.3-1: Location information request

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| Identity list | M | List of VAL users or VAL UEs whose location information is requested |
| VAL service ID | O | Identity of the VAL service for which the location information is requested. |
| Requested location information | O | Identifies what location information is requested |
| > access type | O  (NOTE) | Identity of the access type for which the location information is requested. |
| > positioning method | O  (NOTE) | Identity of the positioning method for which the location information is requested. |
| NOTE: This is only applicable for request sent from LM server to LM client, and at least one IE shall be present. | | |

Editor's Note: It's FFS whether and how the LMS need to identify the VAL service when the VAL UE ID is used for location request.

Editor's Note: It's FFS the security aspects for LM-Uu and LM-S in relation to the VAL service ID that need to be coordinated with SA3.

\* \* \* Next Change \* \* \* \*

Annex X (informative):  
Exemplary location profile attributes

The table X-1 shows shows the example of attributes that can be used for the location profiles.

Table X-1: Exemplary location profile attributes

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Profile ID / name | Vertical / use case/environment | Positioning Service Level (for IIOT) / QoS / accuracy | Positioning Method(s) / Priorities | Involved 3GPP functionalities / Priorities | Involved non-3gpp access networks | Required APIs / API info | Other |
| Location profile #1 | Industrial scenario; indoors; mobile robots/ AGVs | Service Level 6 /  cm level accuracy / absolute/relative/ both | 1. DL-TDOA,  2. UL-TDOA,  3. Multi-RTT methods,  4. WLAN, 5. motion sensors,  6. Bluetooth | 1. LMF  2. RAN-LMC, 3. SEAL LMS | 1. WLAN ID | NEF APIs, SEAL APIs | Verification / augmentation required |
| Location profile #2 | V2X;  outdoor | Decimeter level accuracy /... absolute/relative/both | 1. DL-TDOA,  2. Multi-RTT methods,  3. GNSS-RTK,  4. Sensor fusion,  5. A-GPS | 1. LMF  2. SEAL LMS  3. Other UEs | 1. GNSS #x, #y,  2. MEC #x | NEF APIs, MEC APIs | Support for sidelink positioning |

\* \* \* End of Changes \* \* \* \*