3GPP SA WG2 Meeting #153E S2-220xxxx

Electronic meeting, 10-17 October 2022 (Revision of S2-220xxxx)

**Source: Xiaomi**

**Title: New WID on Architecture Enhancement to support Ranging based services and sidelink positioning**

**Document for: Approval**

**Agenda Item: X.Y**

3GPP™ Work Item Description

Information on Work Items can be found at <http://www.3gpp.org/Work-Items>   
See also the [3GPP Working Procedures](http://www.3gpp.org/specifications-groups/working-procedures), article 39 and the TSG Working Methods in [3GPP TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm)

Title: Architecture Enhancement to support Ranging based services and sidelink positioning

Acronym: Ranging\_SL

Unique identifier:

{A number to be provided by MCC at the plenary}

Potential target Release: Rel-18

# 1 Impacts

{For Normative work, identify the anticipated impacts. For a Study, identify the scope of the study}

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Affects: | UICC apps | ME | AN | CN | Others (specify) |
| Yes |  | X | X | X |  |
| No |  |  |  |  |  |
| Don't know | X |  |  |  | X |

# 2 Classification of the Work Item and linked work items

## 2.1 Primary classification

|  |  |
| --- | --- |
| X | Feature |
|  | Building Block |
|  | *Work Task* |
|  | Study Item |

## 2.2 Parent Work Item

For a brand-new topic, use “N/A” in the table below. Otherwise indicate the parent Work Item.

|  |  |  |  |
| --- | --- | --- | --- |
| Parent Work / Study Items | | | |
| Acronym | Working Group | Unique ID | Title (as in 3GPP Work Plan) |
| FS\_Ranging\_SL | SA2 | 940069 | Study on Ranging based services and sidelink positioning |

### 2.3 Other related Work Items and dependencies

|  |  |  |
| --- | --- | --- |
| Other related Work /Study Items (if any) | | |
| Unique ID | Title | Nature of relationship |
| 880039 | Study on Ranging-based Services | Use cases scenarios and service requirements of Ranging-based Services |
| 910034 | Stage 1 for Ranging | service requirements of Ranging-based Services |
| 820024 | Improvement of V2X service Handling | Requirement on relative position between UEs supporting V2X application |
| 880075 | Study on scenarios and requirements of in-coverage, partial coverage, and out-of-coverage NR positioning use cases | Use cases and service requirements of sidelink positioning between UEs supporting V2X and public safety services |
| 940081 | Study on expanded and improved NR positioning | Study on RAN aspects of Ranging and Sidelink Positioning |
| 960036 | Study on Security Aspects of Ranging Based Services and Sidelink Positioning | Study on Security Aspects of Ranging Based Services and Sidelink Positioning |

**Dependency on non-3GPP (draft) specification:**

# 3 Justification

Ranging based services and Sidelink Positioning can be used for commercial, V2X and public safety use cases in in-coverage, partial coverage, and out-of-coverage of 5G network. To support those use cases, FS\_Ranging\_SL has studied the 5GS architecture enhancements for the following work tasks:

- Authorization and policy/parameter provisioning for a UE or a group of UEs;

- Ranging device discovery and service operation procedures between two UEs, between one UE and multiple UEs or via the assistance of another UE;

- Ranging and sidelink positioning service exposure to a UE or an Application Server who has requested the service.

This work item is to specify the architecture enhancements that have been concluded in TR 23.700-86 as a result of the FS\_Ranging\_SL study.

# 4 Objective

The objective is to specify 5GS architecture enhancements based on conclusions reached within TR 23.700-86 for the following aspects:

- The principle, the necessary and additional information and the procedures for service authorisation and (pre-) configuration/provisioning to the UE

- The support of ranging service operation procedures with the assistance of other UEs (e.g. assistant UEs).

- Discovery of SL Reference UE, Target UE and SL Positioning Server UE for performing Ranging based service and Sidelink Positioning

- Control of Operations for Ranging/Sidelink positioning, including coordination and configuration information exchanged between the UEs, the control signalling procedure to exchange the coordination & configuration information and the Ranging/Sidelink positioning signals measurement results between the UEs, the functionality of upper layers, and parameters exchanged between the upper layers and AS layer for Ranging/ Sidelink positioning.

- Network assisted Sidelink Positioning for In Network Coverage and Partial Network Coverage

- Ranging and sidelink positioning service exposure to a UE

- Ranging/Sidelink Positioning service exposure to Application server and for network assisted sidelink positioning

- The service authorization policy/parameter provisioned to NG-RAN and the procedure

Editor’s Note: The above list of objective items will be updated based on agreed conclusions for specific key issues.

NOTE 1: Privacy protection and other security aspects will be tasked to SA3, and the related impacts to architecture enhancement will be based on SA3 conclusion.

NOTE 2: Architectural implications to RAN or RAN dependent aspects will be coordinated with RAN WGs.

NOTE 3: Energy efficiency aspect need to be taken into account for ranging and sidelink positioning operation to align with RAN.

# 5 Expected Output and Time scale

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| New specifications {One line per specification. Create/delete lines as needed} | | | | | |
| Type | TS/TR number | Title | For info  at TSG# | For approval at TSG# | Rapporteur |
| N/A | N/A | N/A | N/A | N/A | N/A |

|  |  |  |  |
| --- | --- | --- | --- |
| Impacted existing TS/TR {One line per specification. Create/delete lines as needed} | | | |
| TS/TR No. | Description of change | Target completion plenary# | Remarks |
| 23.304 | ProSe Architectural enhancements to support the stated objectives | SA#99 (March 2023) |  |
| 23.273 | eLCS Architectural enhancements to support the stated objectives | SA#99 (March 2023) |  |
| 23.501 | General Architectural enhancements to support the stated objectives | SA#99 (March 2023) |  |
| 23.502 | Procedural enhancements to support the stated objectives | SA#99 (March 2023) |  |
| 23.503 | Policy control and charging enhancements to support the stated objectives | SA#99 (March 2023) |  |

# 6 Work item Rapporteur(s)

Shen, Sherry (Yang), Xiaomi, [shenyang6@xiaomi.com](mailto:shenyang6@xiaomi.com)

# 7 Work item leadership

SA2

# 8 Aspects that involve other WGs

SA3 for the Security aspects, SA5 for the Charging aspects, RAN for the RAN related issues.

# 9 Supporting Individual Members

|  |
| --- |
| Supporting IM name |
| AT&T |
| CATT |
| China Mobile |
| Deutsche Telekom |
| FirstNet |
| Futurewei |
| Huawei |
| HiSilicon |
| Intel |
| LG Electronics |
| MediaTek Inc |
| OPPO |
| Philips |
| Qualcomm Incorporated |
| Sennheiser |
| Tencent |
| Toyota |
| vivo |
| Xiaomi |
| ZTE |