3GPP TSG-RAN WG2 #121bis R2-23XXXXX

Online, 17th April– 26th April 2023

**Agenda item: 7.2.2**

**Source: Xiaomi**

**Title:** **[AT121bis-e][424][POS] Group positioning and multiple targets (Xiaomi/Qualcomm)**

**Document for: Discussion and Agreement**

# 1 Introduction

This document is to kick off the following Email discussion:

* [AT121bis-e][424][POS] Group positioning and multiple targets (Xiaomi/Qualcomm)

Scope: Discuss P17-P19 of R2-2302740, attempt to conclude, and evaluate whether we can reply to the SA2 LS on multiple target UEs.

Intended outcome: Report (Xiaomi) and agreeable reply LS (Qualcomm)

Deadline: Friday 2023-04-21 1000 UTC

# 2 Contact Information

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| Company | Contact: Name (E-mail) |
| Ericsson | Ritesh Shreevastav |
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# Discussions

In LS from SA2 [8], SA2 indicates that the group management aspect can be handled by the application layer and is out of scope of SA2:

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| - A Ranging/SL Positioning layer is introduced on the Target UE/Reference UE/SL Positioning Server UE under Application layer and above AS layer to handle service request received from application layer and to control the Sidelink Positioning and Ranging operation:  - Functionalities supported by the Ranging/SL Positioning layer include discovery of the UE(s) in proximity that can participate in Sidelink Positioning and Ranging service sessions and control signalling between UEs or among a group of UEs or between UE and LMF to manage and coordinate the Sidelink Positioning and Ranging operations.  - The group management can be performed at application layer, and the application layer may provide group identifier information to the Ranging/SL Positioning layer.  NOTE 1: Potential group management within RSPP layer is out-of-scope of SA2. |

As analyzed in [3], it is similar to how group operation was designed for NR Sidelink in Rel-16, whereby any group management operations (e.g. discovery for group formation, group members entering or leaving the group, etc.) were transparent to the AS layer. The application layer group ID in this case is managed by the application layer in the UE and/or the application server, which then interacts with the ProSe Layer to determine the Destination L2 ID for use over sidelink interface. From AS layer perspective, the mapping of L2 IDs to specific UEs within the group is handled by the upper layers and no impact is foreseen in RAN2 specifications.

So rapporteur would like to ask:

1. **Whether do you agree that the group management for group positioning is handled by the upper/application layer and no impact is foreseen in RAN2?**

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| Company | Agree or not | Comments |
| Ericsson | Agree | Yes no impact in RAN2 |
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1. **If the answer to the above question is yes, do you agree that the group ID and/or L2 Destination IDs is provided by upper layers of SLPP?**

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| Company | Agree or not | Comments |
| Ericsson | Agree | However, there should be provision in the Core Network to map the L2ID with the SUPI |
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In the LS from SA2 [1], SA2 askes whether the SLPP would support multiple Target UEs in the same signalling session. As analyzed in [3], if group management is performed by upper layer, multiple target UEs can be set in one group. Given that RAN2 has already confirmed that the SL positioning capability and assistance data can be sent in a groupcast/broadcast way, the groupcast of capability/assistant data to the group of multiple target UEs can trigger the session establishment at target UEs. Thus, it is technically feasible to support multiple target UEs in the same signalling session. So, rapporteur would like to ask:

1. **Whether the SLPP would support multiple Target UEs in the same signalling session?**

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| Company | Yes or not | Comments |
| Ericsson | No | We would like to first have solutions with single target only and if there is time left; we can discuss this case.  We should first complete the work for single target UE case. It is already difficult with all different permutation and combination; i.e several UE roles; anchor, SL server, target and the interactions and may be for now for simplicity we should have only one target. |
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1. **If the answer to the above question is yes, do you agree the following procedure and signaling flow for sidelink based group positioning from [3] as baseline?**



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In addition, SA2 asked RAN2 about whether there is possibility of signalling the positioning results of multiple Target UEs in the same message. From rapporteur point of view, the case mentioned by SA2 is majorly about distributing location estimate of one target UE to other UEs in the group. Technically, it is feasible for SLPP to do so. But there might be security/privacy concern of exposing location estimates to other UEs, which should be addressed by SA3.

1. **Do you agree that it is technically feasible from RAN2 point of view to signal the positioning results of multiple Target UEs in the same SLPP message, and the security/privacy issue, if any, should be addressed by SA3？**

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| Company | Yes or not | Comments |
| Ericsson | Down prioritize this scenario for now | We should first complete the work for single target UE case. It is already difficult with all different permutation and combination; i.e several UE roles; anchor, SL server, target and the interactions and may be for now for simplicity we should have only one target. |
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# Reference

## R2-2302448 LS on support of multiple Target UEs (S2-2303837; contact: Qualcomm) SA2 LS in Rel-18 Ranging\_SL To:RAN2 Cc:RAN1

1. R2-2302503 Discussion on sidelink positioning CATT discussion Rel-18 NR\_pos\_enh2
2. R2-2302740 Further considerations on sidelink positioning Intel Corporation discussion Rel-18 NR\_pos\_enh2
3. R2-2302958 Discussion on sidelink positioning vivo discussion Rel-18 FS\_NR\_pos\_enh2
4. R2-2303497 Discussion on sidelink positioning ZTE Corporation discussion Rel-18 NR\_pos\_enh2
5. R2-2303591 Sidelink Positioning Protocol (SLPP) Signaling and Procedures Qualcomm Incorporated discussion
6. R2-2304033 Discussion on SL positioning Xiaomi discussion Rel-18
7. S2-2301786, Reply LS on SL positioning groupcast and broadcast.