Smarter technology for all

3GPP TSG RAN#93-e
Electronic Meeting, 13 – 17 September 2021

RP-212458

Agenda Item:	9.0.2
Source:	Lenovo, Motorola Mobility
Document for:	Discussion

Rel-18 Expanded Positioning Areas

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SL Positioning/ranging (1/2)

- The following consolidated description of SL positioning/ranging was made at the end of the *[RAN93e-R18Prep-10]* NWM discussion:
  - *"Study/specify solutions (including reference signals, measurements, procedures, etc) for sidelink positioning considering the following: [RAN1, RAN2]*
  - *To include ranging (i.e. relative positioning) and absolute positioning*
  - *Coverage scenarios to cover: in-coverage, partial-coverage and out-of-coverage*
  - *Requirements: Based on requirements identified in TR38.845 and TS22.261 and TS22.104*
  - *Use cases: V2X (TR38.845), public safety (TR38.845), commercial (TS22.261), IIOT (TS22.104)*
    - *Note: The next phase of discussion will include selection of use cases to be used for evaluation and design. This does not restrict use of the solutions for other use cases.*
  - *Spectrum: ITS, licensed*
  - *Coordination with SA2 as required (e.g. architecture aspects)"*
- Relative positioning is sufficiently general and can already enable distance determination between a pair of UEs, i.e., ranging
- Spectrum candidates for SL positioning will require further scoping based on the input in TR38.845

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SL Positioning/ranging (2/2)

- A companion draft SID (RP-212459) has been provided, which aims to expand on the following high-level study areas for SL positioning/ranging:
  - Identify and evaluate positioning techniques that will be suited for SL positioning/ranging including reference signals to support the identified positioning techniques
  - SL positioning measurements
  - Signalling procedures for transmission and reception of reference signals for positioning
  - Cooperative positioning procedures using a combination of both Uu and PC5 (SL) interfaces
  - Potential architectural enhancements
  - NOTE: Applicable use cases for evaluation in relation to the above objectives can be further discussed.

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Improved accuracy, integrity and power efficiency

- The following consolidated description of improved accuracy, integrity and power efficiency was made at the end of the *[RAN93e-R18Prep-10]* NWM discussion:
  - *"Study/Specify solutions for Integrity for RAT dependent positioning techniques [RAN2, RAN1, Coordination with SA2 as required]*
  - *Study/Specify solutions for accuracy improvement based on PRS/SRS bandwidth aggregation and NR carrier phase measurements [RAN1, RAN4, RAN2]*
  - *Study the requirements on LPHAP as developed by SA1 and evaluate whether existing RAN functionality can support these power consumption and positioning requirements. Based on the evaluation, identify potential enhancements to help address any limitations [RAN1, RAN2]"*
- Support the inclusion of LPHAP in this example of the Rel-18 expanded positioning areas for a more consolidated scope due to SA1 requirements (TS 22.104) and the need by IIoT verticals
- **Proposal**:
  - **Clarification is required on whether LPHAP only targets absolute or relative positioning requirements**
  - **SA2 coordination may also be required for LPHAP**

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RedCap Positioning

- During the *[RAN93e-R18Prep-10]* NWM thread, the following consolidated description of RedCap positioning was proposed:
  - *"Define positioning support for RedCap UEs, considering the following:*
    - *Evaluate performance of existing positioning procedures and measurements with RedCap UEs [RAN1, RAN4]*
    - *Based on the evaluation, identify potential enhancements to help address possible limitations associated with for RedCap UEs [RAN1, RAN2]*
    - *Define performance requirements for positioning by RedCap UEs [RAN4]"*
- Characteristics of RedCap devices in terms of supported bandwidth, number of Rx antennas, can constrain positioning accuracy performance
- Low power consumption is another facet of RedCap positioning devices, which should also be considered
- Detailed scope of such enhancements to be determined after the evaluation study

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thanks.

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