

3GPP TSG RAN Rel-19 workshop

Taipei, June 15 - 16, 2023

Agenda item: 5. Specific RAN1/2/3-led Rel-19 topics

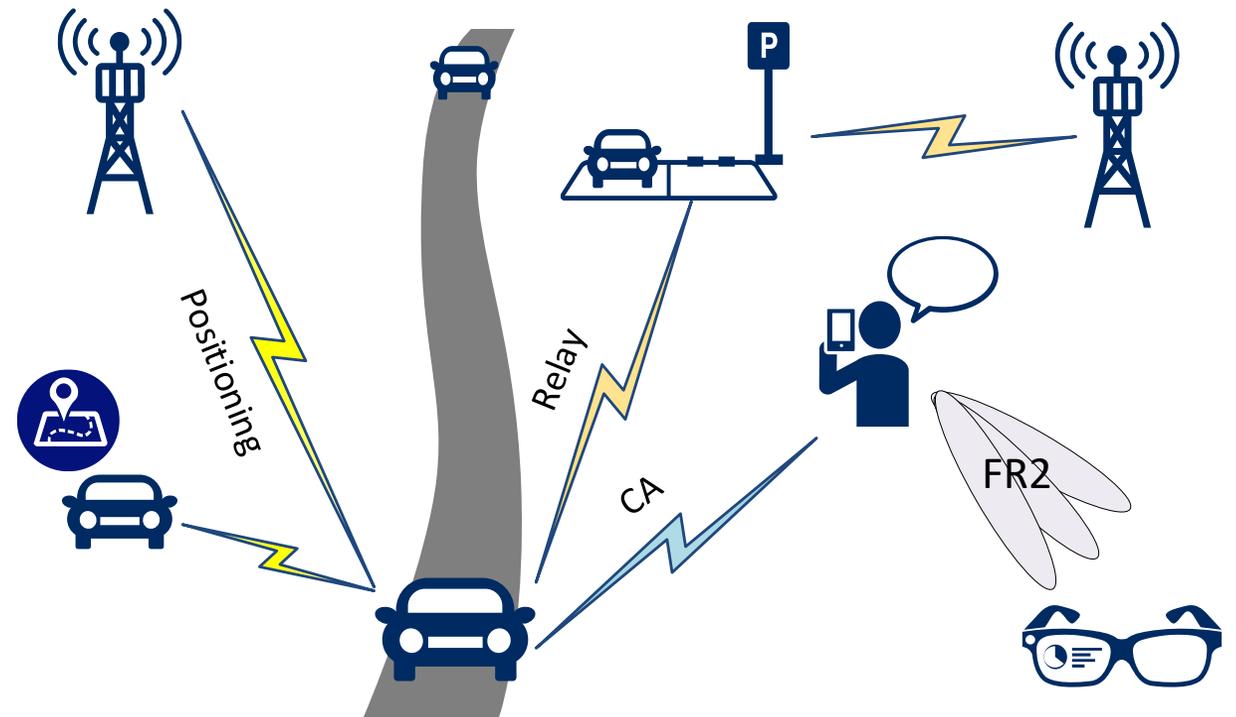
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Continual Sidelink evolution

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Overview of continual sidelink evolution

- ◆ Sidelink functions have been specified and enhanced in every releases from Rel-16.
- ◆ In Rel-19, there can be following topics to be further enhanced:
 - SL-FR2 & SL-CA
 - SL-Positioning
 - SL-Relay
 - Other topics (SL sensing, SL-U enhancement)



SL-FR2 & SL-CA

◆ Motivation

- Study on sidelink operation on FR2 licensed spectrum (SL-FR2) will be completed in Rel-18 and the normative work can be continued in Rel-19.
- SL-CA is also one of the objectives in Rel-18 SL. However, it is extremely down scoped due to limited TU in RAN#99. Rel-19 SL could continue the work.

◆ Considerations for Rel-19

■ SL-FR2 WI

- Specify SL-FR2 beam management including initial beam-pairing, beam maintenance, and beam failure recovery, etc.
- Specify necessary enhancements to resource allocation (both mode 1 and mode 2) considering the beam management impacts.
- Specify SL-FR2 for groupcast and broadcast communication.
- Specify SL operation on FR2 unlicensed band.

■ SL-CA enhancements

- Support resource allocation mode 1, different SCS between carriers, cross-carrier HARQ-ACK, etc. which are removed in Rel-18.
- Specify necessary enhancements related to SCI transmissions on PSCCH/PSSCH, PSFCH transmission, RSRP feedback, CSI feedback and congestion control.
- Specify SL-CA including unlicensed band.

SL-Positioning

◆ Motivation

- For Rel-19 SL positioning, it is natural to extend the Rel-18 work to meet different requirements on accuracy, latency and other criteria in various use cases and scenarios.
- Although SL PRS transmission in FR2 is not precluded in Rel-18, no FR2 specific aspects will be specified according to the latest WID. The corresponding normative work is logically anticipated in Rel-19.
- Based on the outcome of SL-U topic in Rel-18, it is well expected to introduce the rich unlicensed spectrum into Rel-19 SL positioning to improve accuracy and adaptability.
- For successfully supported DL and UL carrier phase positioning (CPP) in Rel-18 NR positioning, the application of CPP in Rel-19 SL positioning is reasonable and has been proposed before.

◆ Considerations for Rel-19

- Specify SL PRS and corresponding resource allocation for support of SL positioning in FR2.
- Specify necessary enhancements to beam based operation of SL positioning in FR2.
- Specify necessary channel access, frame structure, resource pool and other aspects for SL positioning on unlicensed spectrum.
- Specify measurement and signaling to support CPP for SL positioning.

SL-Relay

◆ Motivation

- For U2N SL-Relay,
 - Rel-17 restricts U2N to 1-hop only. And only the basic procedure is designed for mobility.
 - Rel-18 restricts Multi-path relaying of U2N to intra-gNB only and only one indirect path.
 - Only unicast service is considered in both Rel-17 and Rel-18.
- For U2U SL-Relay,
 - Rel-18 restricts U2U to 1-hop only.

◆ Considerations for Rel-19

- Specify necessary enhancements for mobility of U2N SL-Relay
 - Condition based mobility and DAPS-like mechanism for Remote UE.
 - Group based mobility.
- Specify necessary enhancements for multi-path relaying of U2N SL-Relay
 - Inter-gNB mobility.
 - Dual indirect links and more than 2 path including one direct path.
- Specify necessary enhancements for multi-hop U2N SL-Relay
- Specify necessary enhancements for multi-hop U2U SL-Relay
- Specify necessary enhancements for group-cast and broadcast service via U2N SL-Relay

Other possible topics

◆ SL sensing

- Study mechanisms to support SL-based sensing, including UE-based sidelink sensing and UE assistant sensing with network control, etc.

◆ SL-U enhancement

- Specify enhancement of mode 1 schemes for SL-U, including Uu operation on licensed and/or unlicensed spectrum.
- Specify support of SL-U operation on FR2 unlicensed bands. (may be involved in FR2 topic)

Summary

- ◆ For the scope of Rel-19 sidelink, we propose to include following topics
 - Normative work of SL-FR2 based on Rel-18 study work
 - Normative work of SL-CA to supplement the SL-CA scope in Rel-18
 - Necessary enhancements for SL-Positioning
 - Necessary enhancements for SL-Relay
 - Other topics if workload is reasonable:
 - SL-U enhancement
 - SL-Sensing

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