3GPP TSG RAN Rel-18 workshop
Electronic Meeting, June 28 – July 2, 2021

RWS-210187

Agenda Item: 4.3

Source: Samsung

Title: Sidelink Enhancement for 5G Advanced

Document for: Discussion and Decision

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Motivation

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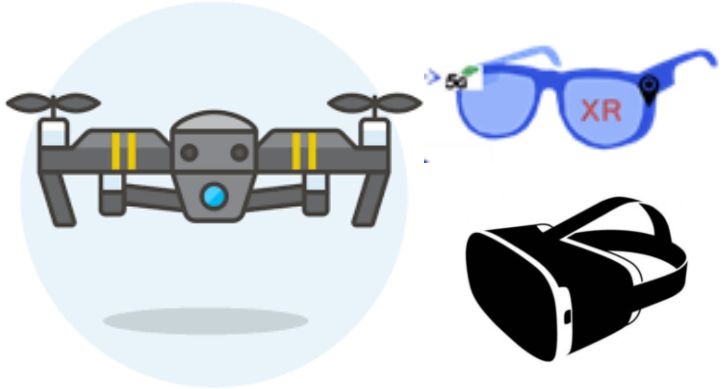
- **New types of devices have been introduced in the industry and Rel-18 sidelink enhancement should be able to support those devices efficiently**
  - XR devices including AR glasses and HMDs (Head Mounted Displays)
  - Unmanned Aerial Vehicles (UAV)
  - Very low power (VLP) devices
  - UEs for Public Safety based on NR (PS-NR)
  - Self-driving cars for V2X



- **Rel-16/17 NR sidelink have been more focused on V2X use cases and further optimization is necessary for Commercial use cases and Public Safety in Rel-18 sidelink enhancement**
  - Sidelink operation over unlicensed spectrum for commercial use cases
  - UE-to-UE relay for Public Safety

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Key Features: Sidelink over Unlicensed Spectrum

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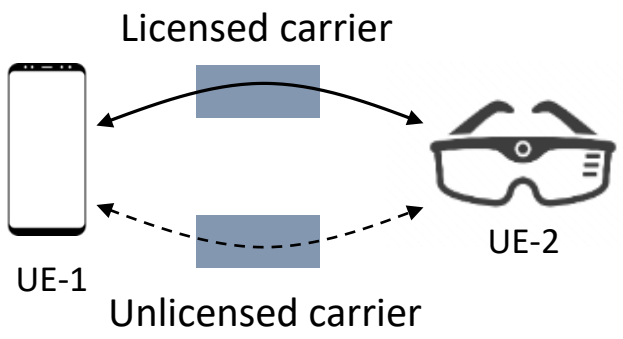
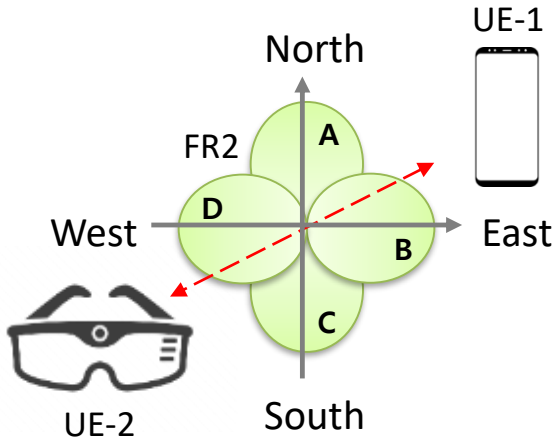
- **LBT (listen-before-talk) for sidelink operation over unlicensed spectrum**
  - Channel access mechanism
  - PHY channel structure
  - Sidelink CSI feedback and sidelink HARQ procedures
- **Sidelink carrier aggregation**
  - To support license-assisted approach for Rel-18 completion on time and to keep backward compatibility with Rel-16/17 sidelink UEs
  - To provide higher throughput for Rel-18 sidelink UEs operating in licensed spectrum
- **Multi-beam operation for sidelink not only in unlicensed spectrum but also in licensed spectrum**
- **Performance comparison with Wi-Fi direct in terms of latency, power consumption, coverage and throughput**

License-assisted approach



Multi-beam operation



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Key Features: UE-to-UE Relay

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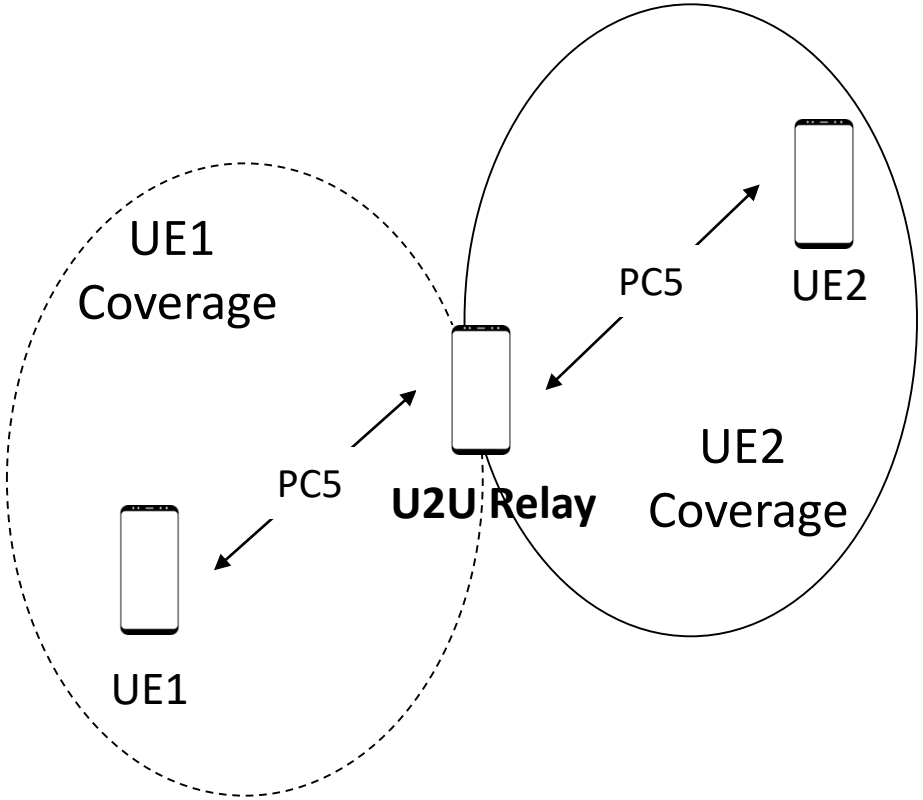
- **Single-hop is prioritized**
- **Both L3 relaying and L2 relaying are supported**
- **Aspects of Rel-17 UE-to-NW (U2N) relay are reused**
  - Relay (re-)selection mechanism including sidelink measurement
  - U2U relay discovery
  - Authorization for U2U relay and remote UE
- **L2 specific feature for U2U relay can be specified**
  - PC5 adaptation layer design for L2 relaying



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