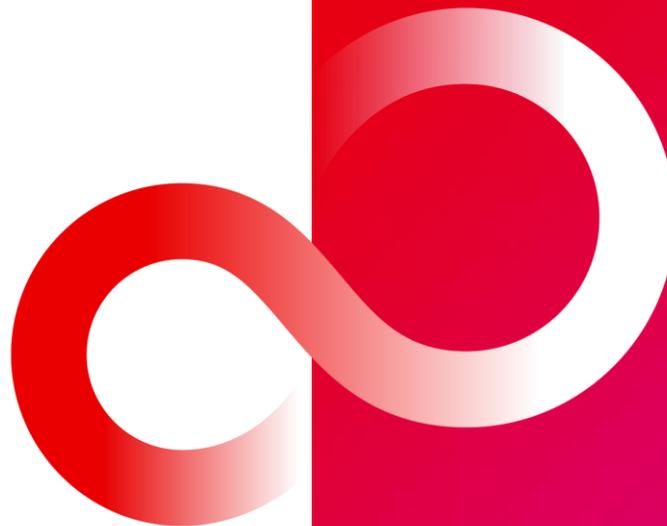


eNCR in Rel-19

Agenda Item:	8A.2.13.1
Source:	Fujitsu
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Categorization of topics based on WS contributions

- 📶 AI/ML Air Interface
- 📶 MIMO Evolution
- 📶 Duplex Evolution
- 📶 Ambient IoT
- 📶 Network Energy Saving Enhancements
- 📶 Mobility Enhancements
- 📶 NTN Evolution
- 📶 XR Evolution
- 📶 AI/ML for NG-RAN
- 📶 SON/MDT
- 📶 Channel Modeling (& possibly additional aspects e.g. for ISAC) for further evolution
- 📶 Additional RAN1-led Candidate Topics
 - LP-WUS/WUR
 - Multi-carrier Enhancements
 - Coverage Enhancements
 - Positioning Enhancements
 - SL Evolution
- 📶 Additional RAN2-led Candidate Topics
 - **NCR**
 - SL Relay Enhancements
 - UAV/UAM
 - MU-SIM
 - Broadcast/multicast
 - UE aggregation, collaboration, and backup
- 📶 Additional RAN3-led Candidate Topics
 - Topological enhancements
 - IAB/WAB/Femto
 - E.g., for public safety/emergency services
 - QoE
- 📶 Others
 - Lean protocol stack/High speed packetization/Layer 2 UP enhancements
 - RAN architectural enhancements/AS Security Enhancements
 - Network/Outer coding
 - RedCap Enh./High reliability and low complexity IoT
 - Combination w/ SL or NTN can be discussed in the SL/NTN topics, respectively)
 - TaaS (Timing as a service)/High Accuracy Timing Service
 - SDT enhancements
 - LTE enhancements
 - Dynamic UE capability update
 - Others (e.g., Idle/Inactive enhancements, RAN slicing enhancements, etc.)

- NCR is categorized as in “additional” WIs in the Chair’s Rel-19 summary
- This contribution discusses the justification and potential scope of Rel-19 NCR WI

- Core functionality of NCR has been finalized in Rel-18, though some functionalities are dropped due to lack of time or consensus
 - Those functionalities can be potentially included in the Rel-19 WI
 - We believe the functionalities are helpful for operators' easy deployment of NCR, which can justify the introduction even in the 2nd release
- On the other hand, according to the contributions for Rel-19 workshop, the interest level of NCR is not high enough to allocate many TUs
 - **The potential WI should include a few very important items**

High priority functionalities

Functionality	Reason
Out-of-band scenario	Currently, FR2 is not deployed alone, and FR1 is always accompanies. To achieve better reliability and coverage, at least NCR-MT with FR1 + NCR-Fwd with FR2 can be considered in Rel-19.
Power control backhaul link and/or downlink of access link Power sharing between C-link and BH-link	There was a big discussion on the necessity of power control in Rel-18. However, no consensus was achieved due to lack of the time/consensus. It would be good to discuss/study for this aspect as Rel-18 study didn't cover it.

Low priority functionalities

Functionality	Reason
Mobility for NCR	The main target of NCR is FR2, and repeater (including NCR) will be used to offer a stable and wide coverage. The benefit will be lost by the heavy interference. Hence, the deployment of repeater should be well-planned. Otherwise, mobile NCR may just worsen the capacity.
Support of Unlicensed band	The major motivation for NCR is to make the maximum use of licensed band operators have already acquired. Thus, the necessity of unlicensed band is not clear.
Other physical layer enhancements <ul style="list-style-type: none">• Signal quality assisted NCR operation• UE detection• Frequency-selective (e.g., RB-/pass-band/CC-level) beam scheduling and ON-OFF for in-band operation• Multiple-beams over the same T-F resource	For repeaters, easy deployment is one of the most important features. Generally, most of the physical layer enhancements in the 2 nd release will not be implemented/deployed in the real network.

- eNCR WI in Rel-19 is approved with the following scope:
 - Out-of-band scenario
 - Power control
 - backhaul link and/or downlink of access link
 - Power sharing between C-link and BH-link

Thank you

