CEWiT INDIA

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RP-232586

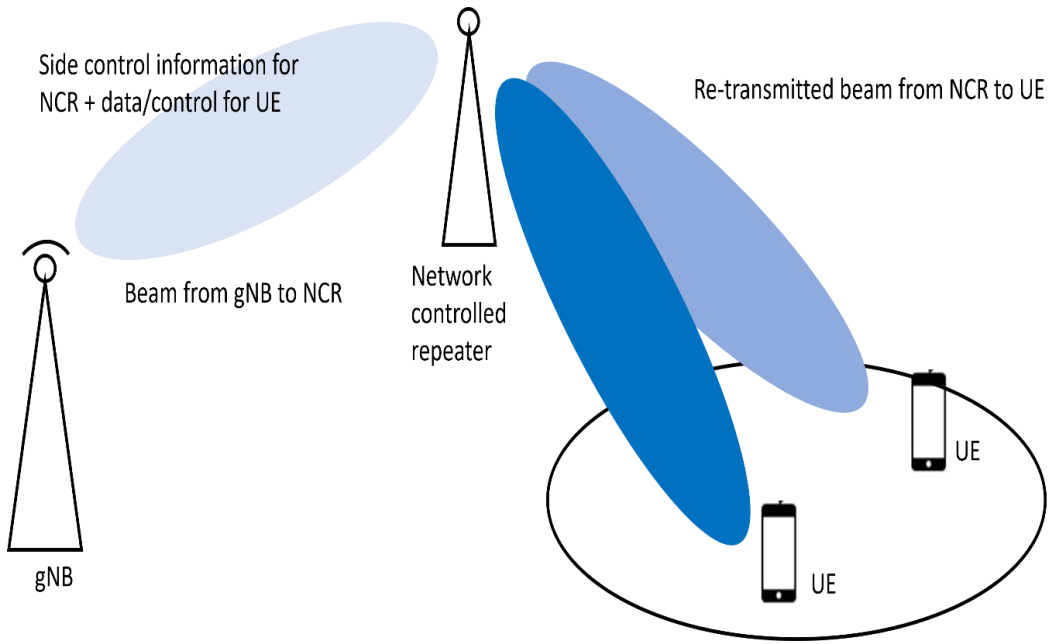
Network Controlled Repeater Enhancements

Agenda item: 8A.2.13.1

Sourced by: **CEWiT, IIT-K, IIT-H**, IIT-M

Motivation and state of art

- Advanced RF repeaters capable of receiving control information from the gNB
  - Control information improves the efficiency of operation of repeater
- Rel. 18 WI focused on
  - Architecture of NCR
  - Sidecontrol information and signalling mechanism
  - NCR behavior
- Limitation of existing framework
  - Assumes NCR-MT and NCR-Fwd operates in same carrier
  - Assumes NCR capable of forming only one beam at a time



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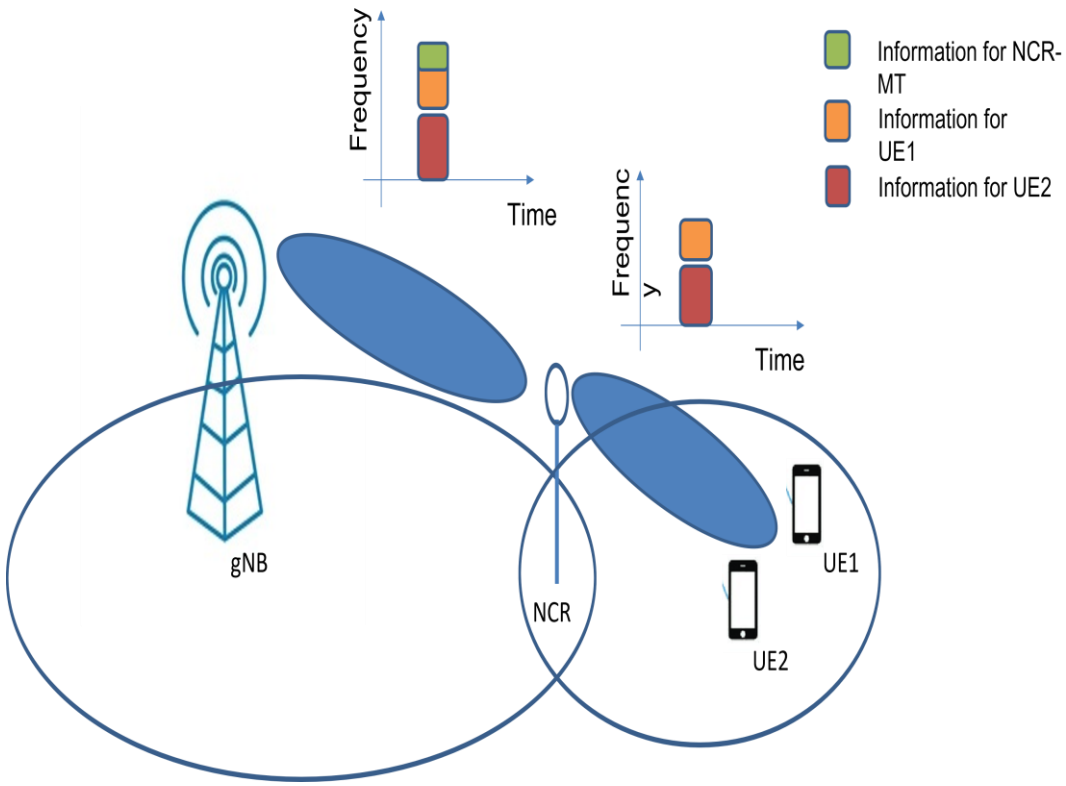
NCR Enhancements for Rel. 19

Out of band control

- NCR-Fwd should have support for multiple cells/carriers of gNB
  - For efficient utilization of NCR
  - Extend coverage of multiple cells of gNB
  - Serve several UEs operating on different cells of gNB

- NCR-MT should not have support for all carriers of NCR-Fwd
  - Support for all carriers is not necessary to handle the side control information
  - Simplify the NCR-MT

- NCR-MT receives side control information in subset of the carriers supported by NCR-Fwd
  - Method of synchronization, beam management and TDD configuration.



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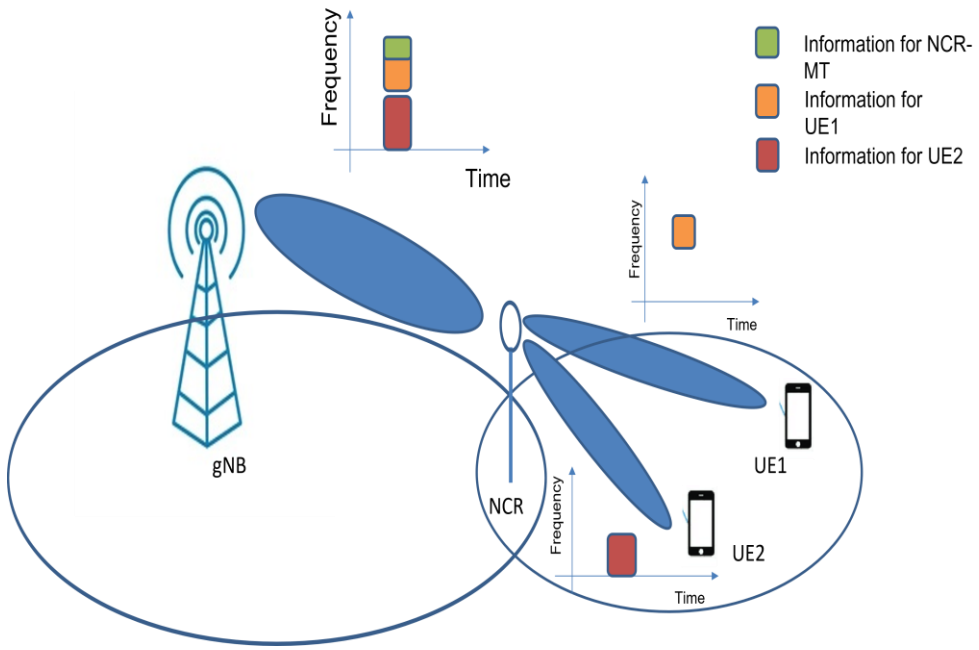
Multi-beam operation

- Rel. 18 NCR support only one beam at a time
  - Only UEs served by single beam of NCR can be scheduled simulateously
- NCR-Fwd should support more than one beam simultaneously
  - Improve scheduling flexibility
  - Simultaneously serve spatially separated UEs efficiently
- Muli-beam operation of NCR
  - Enhancement for the SCI to support multiple beams simultaneously



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Others

- RAN1 should be leading WG for the NCR enhancements in Rel. 19
  - Topics proposed in previous slides where initially considered by RAN1 in Rel. 18 and dropped later due to time constraints
  - Most of the topics considered in first Rel. 19 workshop were considered by RAN1 during Rel. 18 discussions and dropped later due to time constraints
    - E.g., Power control for NCR, Frequency domain On/Off, Feedback for SCI, etc.

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Summary

- Following enhancements are supported for NCR in Rel. 19
  - Out of band control
    - NCR-MT operating in subset of the carriers supported by NCR-Fwd
    - WI should focus on methods for operating NCR-Fwd
      - Methods for synchronization, beam management and TDD configuration.
  - Multi-beam operation
    - NCR-Fwd simultaneously operating with multiple beams in access link
    - WI should focus on
      - Enhancement for the SCI framework to support multiple beams simultaneously
  - RAN1 should be leading WG for the NCR enhancements in Rel. 19

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Thank You

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