3GPP TSG RAN Rel-19 Workshop
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RWS-230214

UAV/UAM Enhancements in Rel-19

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Background and Motivation (1/2)

Left over from Rel-18 discussion for UAV/UAM[†].

- CHO[‡] introduced in Rel-16/17 can be utilized for the UAV feature in several ways for better mobility performance.
  - Time/location-based CHO as for Rel-17 NTN: The flight path information of UAV can be utilized for the execution of handover.
  - Additional CHO execution condition of UAV-specific triggering conditions can be adopted e.g., H1/H2.
    - Current CHO is limited to e.g., A3, A5, etc. until Rel-17
  - Many companies showed their interest during RAN2 discussion but RAN2 was not able to make progress due to lack of TU (0.5 TU per meeting) and no explicit objective from the WID.

[†]UAV/UAM: Uncrewed Aerial Vehicles/Urban Air Mobility [‡]CHO: Conditional Handover

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Background and Motivation (2/2)

Support of UAM (e.g., air taxi) scenario

- Multiple communication links would be required to “control” UAM vehicle for the safety purpose:
  - NR can be one of the solutions to provide such communication link.
  - Regulatory body may require to use licensed bands of the selected operator(s) for the reliable communication: operator may need to deploy either dedicated cells for UAV/UAM or shared cell between legacy UEs and UAM UEs.
    - In such cases, UAM UE must be ensured to be operated under supporting cells while in RRC_IDLE/INACTIVE as well as RRC_CONNECTED
    - If cell is shared by legacy UEs and UAM UEs, the resource needs to be well-partitioned by considering the characteristics of UAM UEs (e.g., line-of-sight, the number of UEs, etc.)

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Potential Objectives of the WI

The detailed objective of the work item would be:

- To study and specify mechanism for mobility enhancements considering UAM characteristics [RAN2, RAN3]
  - Connected mode mobility enhancements (e.g. CHO)

- To specify mechanism for a cell to support UAV/UAM UEs [RAN2, RAN1]
  - Idle/inactive mobility enhancements for UAV/UAM UEs (e.g. cell reselection)
  - Enhancements on resource configurations (e.g., PRACH) to support both legacy UEs and UAV/UAM UEs

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