3GPP TSG RAN#84
3 - 6 June 2019
Newport Beach, US

TDoc RP-191354
Agenda Item 8

Orange priorities for RAN in Rel17

ORANGE

RAN topics of interest for Orange in 3GPP Rel17 - summary

eMBB Evolution

- Higher UL Spectral Efficiency and coverage
- DL coverage
- Impact of speed on M-MIMO

Verticals

- URLLC “phase 3”: 5G ACIA requirements, resilience & redundancy (RAN & CN)
- C-V2X “phase 4”: Rel16 leftovers, NR Sidelink in 60 GHz unlicensed, predictive QoS
- NR IoT “lower cost, lower battery”, not “long range”
- IoT Relays

Energy Efficiency

- BS power reduction enhancements (Advanced Sleep Mode), at beam level, layer level

Spectrum

- New bands (e.g. 6 GHz, between 7 – 24 GHz, 60 GHz unlicensed)
- New band combinations
- LTE-NR coexistence (Dynamic Spectrum Sharing) enhancements (Rel16 or 17)
- LTE-M – NR co-existence with sharing of same RB resources

Architecture

- New interfaces as defined in O-RAN: (e.g. E2, A1, low-layer split), & update of existing (Xn, F1, W1, E1…)
- Non Stand Alone Non Public Network enhancements (MEC, local break-out,…)
- SON enhancements (e.g. data collection for AI / ML)
- Network Slicing on RAN - enhancements

RAN topics of interest for Orange in 3GPP Rel17

eMBB Evolution

- Higher UL Spectral Efficiency and coverage
  - UL coverage remains a limiting factor for coverage, especially with n78
  - UL capacity was not a limit in FDD, but it will become a constraint mid-term due to imbalanced DL:UL ratio in TDD band(s)
  - Performance requirements for BS (e.g. Advanced Receivers)
  - Higher power UEs

- DL coverage enhancements
  - Performance requirements for UE (e.g. Advanced Receivers)

- Impact of speed on M-MIMO
  - Degradation of channel reciprocity in TDD with speed above 30 km/h
  - Transport (roads, railway) is an essential objective of 5G in Europe

RAN topics of interest for Orange in 3GPP Rel17

Verticals

- URLLC “phase 3”:
  - New use cases or enhancements based on first return of experience (trials, early launch)
  - Liaison with 5G ACIA to align with industry requirements
  - Rel16 leftovers
  - Resilience & redundancy (both RAN & CN) to address not only link reliability but also MTBF requirements, e.g. with further enhancements of multi-TRP
  - Predictive QoS

- C-V2X “phase 4”:
  - Rel16 leftovers
  - NR Sidelink in 60 GHz unlicensed
  - Predictive QoS

- NR IoT
  - “lower complexity, lower cost, lower battery”, not “long range”
    - LTE-M and NB-IoT still seen as the reference for Coverage Extension features in Rel17
  - IoT Relays: UE-based relays favored, not Network-based

RAN topics of interest for Orange in 3GPP Rel17

Energy Efficiency

- BS power reduction enhancements
  - Objective to allow more granularity in the activation / deactivation of BS transmitter elements
  - Power reduction at beam level
  - Power reduction at layer level (per frequency band)

RAN topics of interest for Orange in 3GPP Rel17

Spectrum

- New spectrum bands, e.g.
    - 6425-7125 MHz
    - between 7 – 24 GHz
    - 60 GHz unlicensed
- New band combinations (e.g. EN-DC, NR CA, NR DC,…)
- LTE-NR coexistence (Dynamic Spectrum Sharing) enhancements (Rel16 or 17)
- LTE-M – NR co-existence with sharing of same RB resources

RAN topics of interest for Orange in 3GPP Rel17

Architecture

- Align 3GPP with O-RAN specifications:
  - New interfaces as defined in O-RAN, e.g. E2, A1, low-layer split)
  - Update of existing interfaces as specified in O-RAN (Xn, F1, W1, E1…)

- Non Stand Alone Non Public Network enhancements, e.g. MEC, local break-out,…
  - Non Stand Alone as “hosted by operator PLMN”

- SON enhancements
  - Rel16 leftovers
  - SON for V2x
  - Data collection for Artificial Intelligence / Machine Learning: no specification of AI / ML algorithms, only UE / BS reporting if required to feed into AI / ML engines

- Network Slicing on RAN – enhancements (no specification of RAN scheduler)