

Views on Rel-17

Rel-17 Outline

NR Track:

- Apart from maintenance work, main part should focus in addressing issues related to the initial NR deployments (e.g. coverage, power consumption, mobility ...)
 - Enhancements to Rel-16 features,
 - Rel-16 leftovers that could be identified in December 2019
- Based on well defined new use cases that have not been covered previously, it is proposed to study new topics to allow 3GPP to expand its ecosystem
 - “Purpose built” NR solutions to meet vertical application needs
 - SA1 has done Rel-17 normative work on a number of new use cases which relate in RAN.

LTE Track

- We propose that MTC/NB-IoT should continue being the 5G solutions for LPWA
 - It is suggested that TSG RAN endorse a similar statement to the one endorsed in Rel-16
 - *No NR based solution will be studied or specified for the LPWA use cases*
 - *LPWA use cases will continue to be addressed by evolving LTE-M(eMTC) and NB-IoT*
 - MTC/NB-IoT WIs should address real deployment issues
 - Consider having a common WI

Rel-17 Summary of Topics

NR Track: Enhancements

- URLLC & IoT
- Power Saving
- Mobility Enhancements
- NR-U
- Positioning
- IAB
- MIMO
- V2X

LTE Track: Enhancements

- MTC/NB-IoT

NR Track: New Features

- NR-Based IoT
 - Industrial Wireless Sensor Networks (IWSN)
- UL Enhancements
 - Achieve high UL data rates in a power efficiency manner
- NTN

Rel-17 Enhancements ^(1/4)

URLLC/IOT

- Items from the Rel-16 SI that were not selected for the Rel-16 WI
- Further power consumption optimisations when operating URLLC
- Enhancements to Intra-UE prioritization, multiplexing and resource efficiency
- Enhancements to MCG or SCG link failure in higher layer multi connectivity
- High throughput URLLC/IoT

Power Saving

- Power saving enhancements in idle mode (e.g. idle mode WUS) and connected mode (pending on progress of Rel-16)
- Relaxation of measurements – in idle, inactive, and connected, (pending on progress of Rel-16)

Mobility Enhancements

- Aim for UE complexity reduction through UL mobility, shifting complexity to the network side while maintaining 0 msec interruption time

Rel-17 Enhancements (2/4)

NR-U

- Advanced channel access scheme (e.g. Beam-formed LBT, Receiver assisted LBT)
- Consider looking into use cases apart from eMBB

Positioning

- Enhancements of Rel-16 positioning to support further commercial requirements
- V2X side-link positioning
- Items pending Rel-16 WI progress:
 - e.g: Idle mode positioning, Hybrid positioning

IAB

- Mobility support for IAB node
- Consider FDM/SDM multiplexing of access/backhaul traffic
- Spectrum efficiency enhancements (e.g. advanced modulation) and overhead reduction

Rel-17 Enhancements (3/4)

MIMO

- Overhead and latency reduction for beam management
 - UE triggered beam management
- Simultaneous UL multi-beam/multi-panel transmission
- Antenna switching for URLLC

NR V2X

- Local manager coordination (agreed in SI but not included in WI)

Rel-17 Enhancements (4/4)

LTE-M/NB-IoT

- Battery constrained devices (i.e. coin cell battery)
- Enhancements for application layer responses in idle mode
- LTE-M: Sub-PRB UE max power boosting: 20dBm UE can transmit 23dBm & 23dBm UE can transmit at 26dBm

Potential New Rel-17 items (1/2)

NR-Based IoT

- Use case: Lower Complexity NR, Industrial Wireless Sensor Networks (IWSN)
- Main Characteristics:
 - Lower complexity URLLC
 - Low power consumption (covering from few weeks up to few years)
 - Support higher data rates than LTE Cat M2
 - Small form factor
 - Normal Coverage
 - Relays & D2D (using V2X sidelink as a baseline)
- It is suggested that the SI on NR-Based IoT should span the whole of Rel-17 aiming for a WI in Rel-18

NR Uplink Enhancements

- Use case: Video Surveillance cameras, AVPROD and other eMBB UL-centric applications
- Main Characteristics:
 - Enhancements to support increased UL throughput
 - UE power consumption optimisation aiming to avoid UE overheating issues
 - Coexistence and backwards compatibility aspects need to be taken into account

Potential New Rel-17 items (2/2)

NTN

- Use Case: support of NTN with the aim to focus on essential features
- Service continuity between terrestrial network and NTN
- Adaptations of essential mechanisms:
 - Mobility/Handover considering satellite beams and satellites, Open loop control procedures, Efficient UE location reporting, Initial access procedures, Doppler compensation

NR beyond 52.6 GHz

- Use case: Short range/D2D, V2X, iIoT
- RAN Plenary study should progress into RAN WGs
- Include operation of NR-U in 60 GHz unlicensed spectrum

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