

Motivation for new Study Item on Enhanced Ultra Reliable Low Latency Communication Enhancements for NR

RP-180981

RAN#80

La Jolla, CA, US, June 11 - 14, 2018

Source: Nokia, Nokia Shanghai Bell

Motivation (1/2)

- URLLC in Release 15 supports the basic set of use cases
 - Reliability of 10^{-6} for example has not been the design criteria in Release 15
- In addition, Release 15 use cases can be improved.
- The use cases identified (as part of email discussions) were as follows:
 - Release 15 enabled use case improvements
 - Such as AR/VR (Entertainment industry)
 - New Release 16 use cases with higher requirements*
 - Factory automation
 - Transport Industry
 - Electrical Power Distribution



The enhanced URLLC allows addressing use cases beyond Release 15 capabilities.

Motivation (2/2)

- Release 16 can improve the operation:
 - Higher reliability
 - Better multiplexing of URLLC and MBB services
 - Both Intra and inter UE case
 - Faster RACH operation
 - Enable support of Wireless Ethernet and TSN (Time Sensitive Networking)
 - Important for example control of industry automation

Several improvement areas over Release 15 URLLC identified

Scope for the Proposed SI on enhanced URLLC in RP-180975

- URLLC L1 improvements (RAN1) for further improved reliability/latency for L1 channels,
- Sharing URLLC with eMBB
- Enhanced UL grant-free transmissions, with study focusing on improved grant free operation
- Multi-carrier URLLC across FDD & TDD
- Data duplication enhancements
- Interference management for higher reliability, including joint multi-cell scheduling
- 2-step RACH
- Time Sensitive Networking:
 - Accurate reference timing delivery
 - Scheduling enhancements / traffic patterns / QoS for wireless Ethernet, Enhancements to support of cyclic traffic

NOKIA