RAN #75

AI 9.1

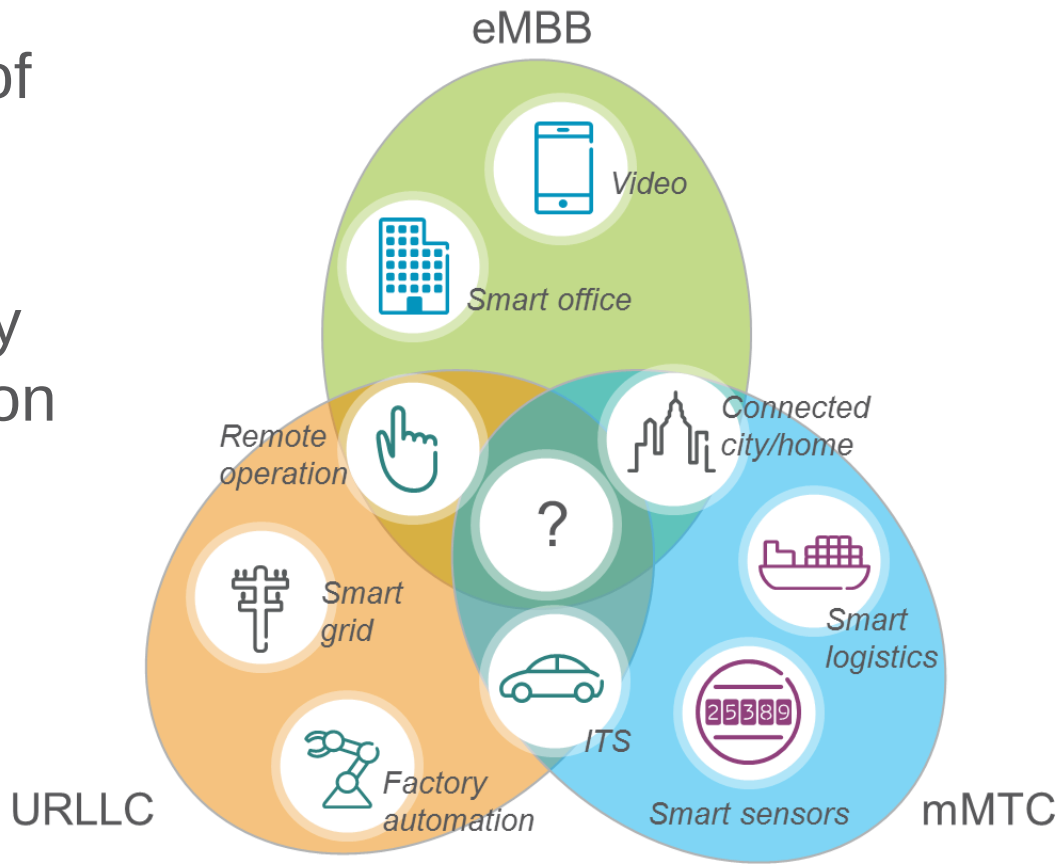
RP-170117

URLLC COMMUNICATIONS WITH NEW RADIO

Motivation for new proposed SI
Ericsson

RELIABILITY AND LATENCY

- The 5G landscape consists of a wide variety of use cases, each with different requirements.
- Ultra-reliable and low latency communication (URLLC) has been identified as one of the key trends of future wireless cellular communication beyond 2020 [1], ranging in use-cases from virtual reality to smart grid control



5G use cases in NR

[1] ITU-R M.2083-0, IMT Vision – Framework and overall objectives of the future development of IMT for 2020 and beyond

JUSTIFICATION

- The Rel-15 NR specification work will include the low-latency-communication part of URLLC as defined in 3GPP TR 38.913. However, in order to fully address the URLLC use cases, also ultra-reliable communications need to be supported, with use-cases including for example:
  - Smart grid
  - Remote (haptic) operation
  - Process automation
  - Factory automation

SI OBJECTIVES

- Study and recommend solutions to fulfill the URLLC requirement with NR:
  - The physical layer improvements include:
    - Techniques to achieve high reliability
    - Scheduling and HARQ mechanisms
    - Physical layer control channel
    - Physical layer data channel
    - Channel coding for URLLC data channel and URLLC control channel
  - The higher layer improvements include:
    - Techniques to achieve high reliability for user plane
    - Techniques to achieve high reliability for control plane
    - Techniques to achieve enhanced mobility

CONCLUSION

- To allow NR to address a more wide variety of use-cases and requirements in the 5G landscape, a study is required to analyze the required capability of the system and identifying solutions to fulfil it
- The work will focus on ultra-reliable communication, building upon the Rel-15 NR specifications where the ultra-low latency part of URLLC is already addressed

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