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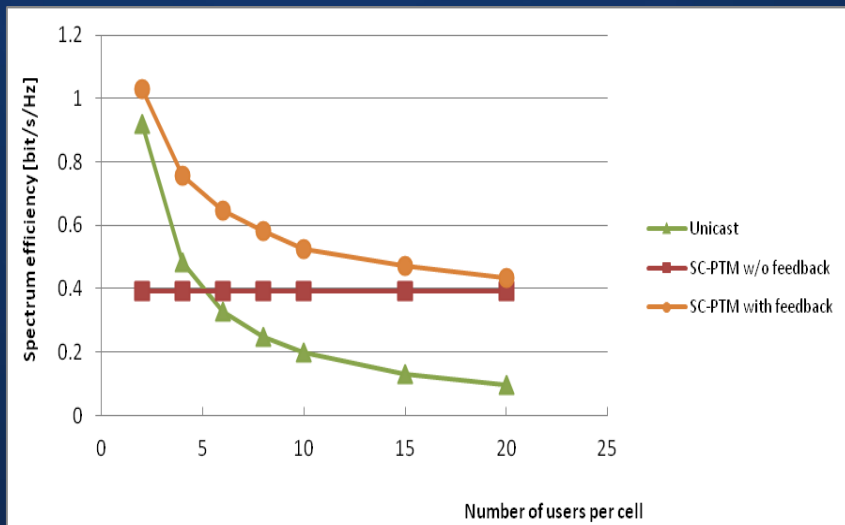
## Motivation for new WI on SC-PTM enhancements for LTE



# Motivation

- Single-cell point-to-multipoint (SC-PTM) was introduced in Rel-13 and provides a high radio efficiency, flexible resource allocation and easy deployment multicast mechanism.
- Due to the tight schedule in Rel-13, some of the component features, e.g. UL CSI/HARQ feedback and HARQ operation, were not introduced.
- It is considered valuable to extend the usage of SC-PTM to support eMTC/NB-IOT UEs.
- In order to meet the industry and operators' demand, it is important to enhance SC-PTM further.

# Support of UL feedback and HARQ operation

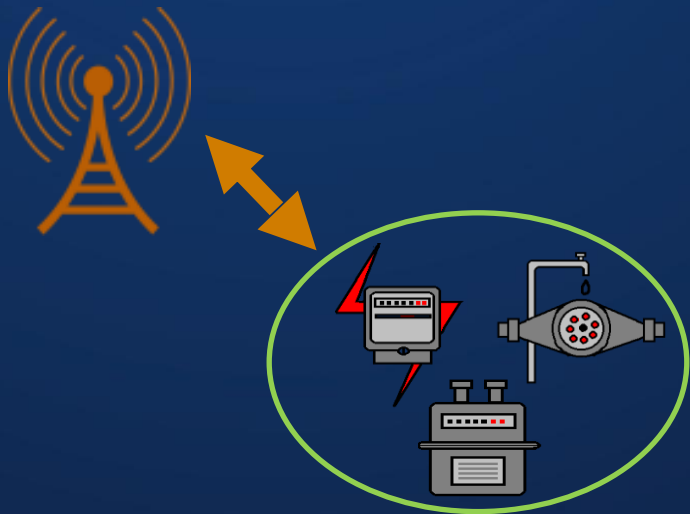


- Link adaptation allowed by the availability of UL HARQ/CSI feedback provides significant gains when the number of receiving users is small (e.g.  $< 15$ ).
- HARQ with retransmissions can further improve the spectral efficiency.

(ITU - rural macro cell, Carrier frequency=800Mhz, Inter-site distance=1732m, Traffic model = full buffer)

**For efficient delivery of Mission Critical Video/Data for MCPTT and TV services.**

# Support of MTC



- Multicast functionality is important for e.g. software update and group message delivery, as identified in the Rel-13 SA2 WI “Group based Enhancements”.
- Compared to MBSFN, it is more simple and straightforward for SC-PTM to support narrowband operation and coverage enhancement for MTC:
  - SC-PTM is PDSCH based transmission, so it can directly reuse the coverage enhancement technologies developed in Rel-13 eMTC and NB-IOT.
  - SC-PTM can naturally support narrowband operation with the support of M/NB-PDCCH.

**To support Multicast delivery for NB-IOT and eMTC UEs.**

# Scope of Work Item

This work item will specify the following enhancements for single-cell point-to-multipoint (SC-PTM) transmission for LTE:

1. Specify means to enable efficient SC-PTM transmission assisted by the UL feedback from group users in RRC\_CONNECTED: [RAN1, RAN2]
2. Specify means to enable SC-PTM reception by eMTC UEs and NB-IOT UEs in both normal coverage and enhanced coverage: [RAN2, RAN1]

# THANK YOU

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