



Agenda: 5
Document for: Discussion & Decision

AI/ML for Air-Interface in Rel-19

CMCC

AI/ML for Air Interface



中国移动
China Mobile



R19 WI - Motivation

- All the 6 sub use cases have shown performance gain over non-AI/ML scheme in Rel-18 SI evaluation
- The selected sub use cases are diverse to support various gNB-UE collaboration levels targeting at separate or joint ML operation (one-sided/two-sided model)
- The general LCM framework should be specified for the identified use cases in Rel-18 and potential new use cases in the future

R19 WI - Potential Objectives

- Specify procedures, protocol and signaling aspects to support the sub-use cases studied in Rel-18 SI
 - Sub-use cases selection for Rel-19 standardization in air interface, considering
 - One-sided model based sub use cases and two-sided model based sub use cases, respectively
 - Specify LCM related procedures and signaling enhancements for selected use cases, including functionality identification/activation/deactivation, model transfer/delivery, model identification/activation/deactivation/switching/selection, model training/inference/monitoring etc.

AI/ML for Air Interface



R19 WI - Potential Objectives

- Specify the necessary model ID-based LCM and functionality-based LCM procedure, including LCM related signaling/configuration/measurement/reporting, etc.
 - Data collection for AI/ML
 - Specify a unified data collection framework to support model training, inference and management, etc.
 - Enhancements on the existing framework (e.g., MDT, LPP, L3 reporting), or define a new data collection entity
 - Model transfer/delivery
 - Specify the procedure and signaling for model transfer/delivery between the UE and network entities
 - Model and functionality related UE capability signaling, e.g., static or dynamic UE capability reporting

AI/ML for Air Interface



中国移动
China Mobile



R19 WI - Motivation (RAN4 Part)

- It is observed that some of the FR2 RRM requirements allow excessively long delay with RX beam sweeping factor (e.g., for cell re-selection, the scaling factor (N1) could be up to 8 for FR2-1)
- In Rel-18, for the use case of AI/ML based beam management, UE could predict beams in time/frequency domain. This approach is also helpful for UE to perform RX beam sweeping, the RX beam sweeping factor could be reduced or eliminated with AI/ML, the FR2 RRM long delay requirements could be reduced

R19 WI - Potential Objectives (RAN4 Part)

- With AI/ML based RX beam sweeping, define enhanced RRM requirements for FR2, including
 - RRC_IDLE state and RRC_inactive state
 - Cell re-selection requirements
 - RRC_Connected state
 - handover delay
 - Radio link monitoring, BFD, CBD, e.g., evaluation period
 - SCell activation delay
 - Cell identification requirements for intra-frequency and inter-frequency measurements

THANK YOU !