紫光展锐 UNISOC

3GPP TSG RAN Rel-19 workshop **RWS-230085**

Taipei, June 15 - June 16, 2023

Agenda Item: 5

Source: Spreadtrum Communications

Title: AI/ML-based mobility in Rel-19

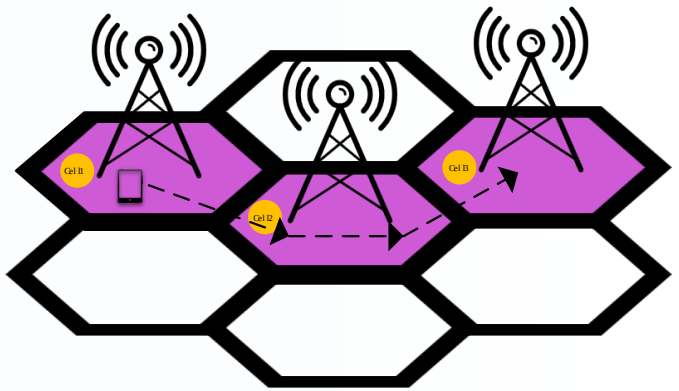
Document for: Discussion and decision

RAN enhancement to AI/ML-based Mobility

RAN3 progress on AI/ML-based mobility

- Main motivation: Improve successful HO probability

  e.g., avoid too early/late HO, HO to wrong cell
- Part of the achieved agreements for AIML-based mobility optimization:
  - ✓ Cell-granularity UE trajectory is predicted in gNB(-CU) side;
  - ✓ With the same structure as UE History Information IE, i.e., provided as a list of cells into the future, each of which is indicated together with an expected time of stay into the cell.



Justification

- In RAN3 discussion, gNB performs trajectory prediction per UE. However, it only knows part of UE data like UHI when UE in its coverage.
- Compared with gNB, UE has the most detailed info collected in RRC IDLE/INACTIVE/CONNECTED state and can predict the most accurate UE trajectory. UE can report its UE trajectory to network for better handover decision.
- UE can perform the cell reselection or Conditional HO considering its predicted trajectory to select the most suitable cell.

Proposal 1: RAN2 can consider enhancement to AI/ML-based HO and cell reselection.

Consideration on AI/ML model generalization

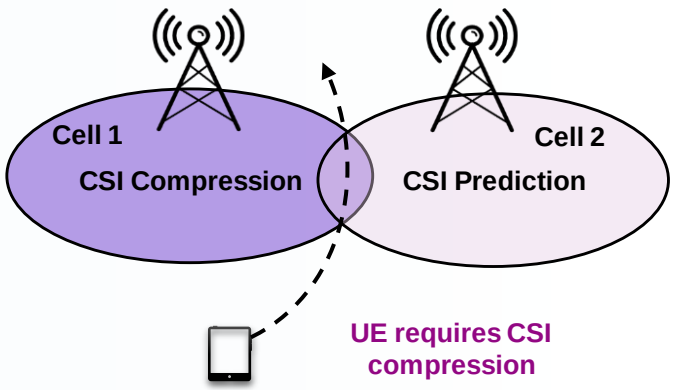
RAN1/2 progress on applicable conditions

- Meta data is important for model identification which is used to make sure the same understanding of AI/ML model between UE and NW.
- Although the details of meta data is FFS, the common view is that it at least includes applicable conditions (e.g., scenario, configuration, site etc).
- The main motivation is to take model generalization into consideration, i.e., the performance of AIML model is guaranteed in some scenarios, but cannot be guaranteed other than those scenarios.

Justification

- Considering the AI/ML model/function is supported only in some cells, if UE wants to use the AIML-based model/function, UE should camp or connect to those cells;
- The related mobility enhancement to HO and cell reselection should be considered.

  e.g., Considering the support of AI/ML model/function when performs HO and cell reselection;



Proposal 2: The support of AI/ML-based model/function should be considered when performs HO and Cell reselection.

AI/ML-based mobility in Rel-19

The following objectives can be considered in Rel-19

- **Study enhancement to AI/ML-based HO/Cell reselection and potential impact [RAN2, RAN3]**
  - Specify assistance information reporting (e.g., UE trajectory).
  - Specify enhancement to CHO/Cell reselection considering UE trajectory.
- **Study enhancement to HO/Cell reselection to enable AI/ML model/function [RAN2, RAN3]**
  - Specify enhancement to HO procedure considering the supporting of AI/ML model/function.
  - Specify enhancement to cell reselection considering the supporting of AI/ML model/function.

Thanks

紫光展锐
UNISOC