vivo

3GPP TSG RAN Rel-18 Workshop RWS-210177

Electronic Meeting, June 28- July 2, 2021

Enhancement for data collection in Rel-18

Source: vivo

Document for: Discussion & Decision

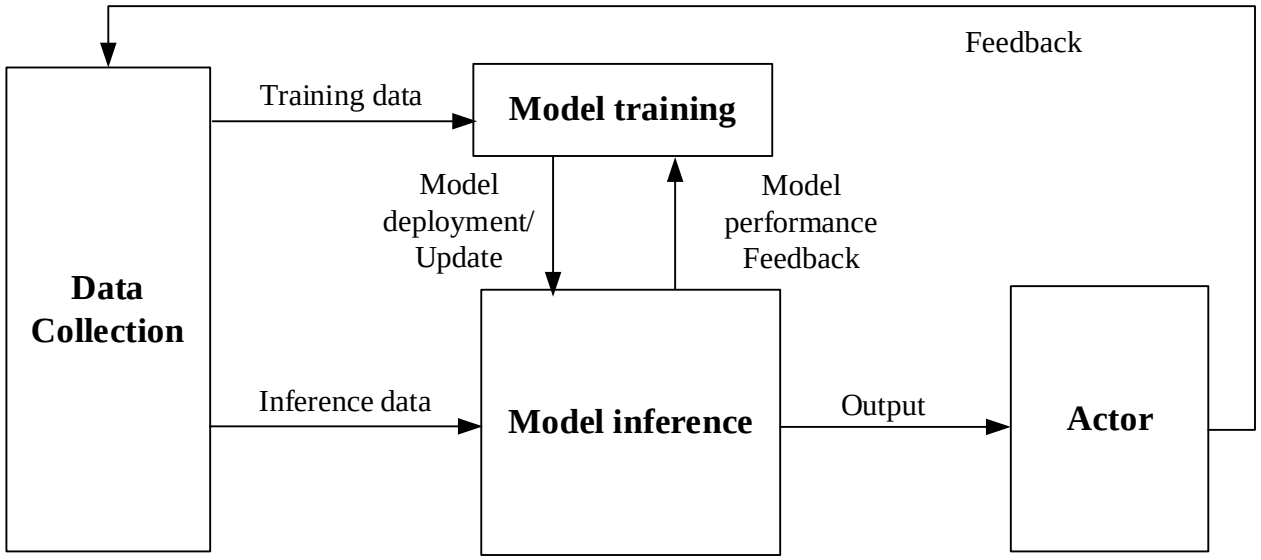
Agenda Item: 4.3

Background

- **The complex system design and optimization issues introduced by 5G features (e.g. MR-DC, BWP, beamforming, slicing) shall be addressed. The conventional schemes are vulnerable to handle these challenges based on current status.**
- **Artificial Intelligence (AI) including machine learning (ML) algorithms provides a powerful tool to improve the network management and the user experience, by analyzing the data collected and autonomously processed that can yield further insights.**
- **The ongoing Rel-17 SI "Enhancement for Data Collection for NR and EN-DC SI" study the functional framework for RAN intelligence enabled by further enhancement of data collection through use cases and identify the potential standardization impacts on current NG-RAN nodes and interfaces.**

Support for enhanced data collection

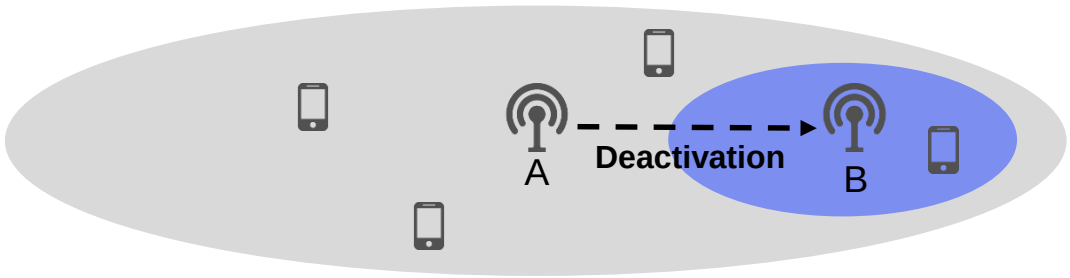
❑ Framework



❑ Solution

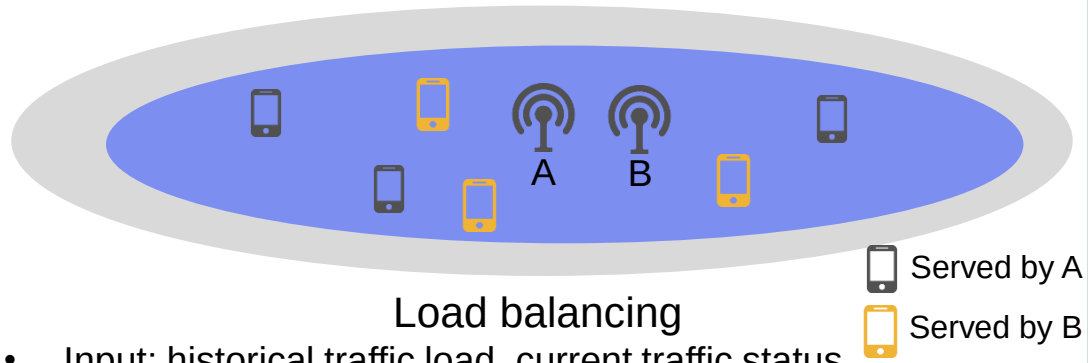
- **Introduce the Data collection and model training functions to generate the AI model;**
- **Enable the model inference function in RAN to get the prediction of cell load, user trail, service experience;**
- **Reduction of the probability of unintended events and optimization of user experience based on the prediction.**

Use cases



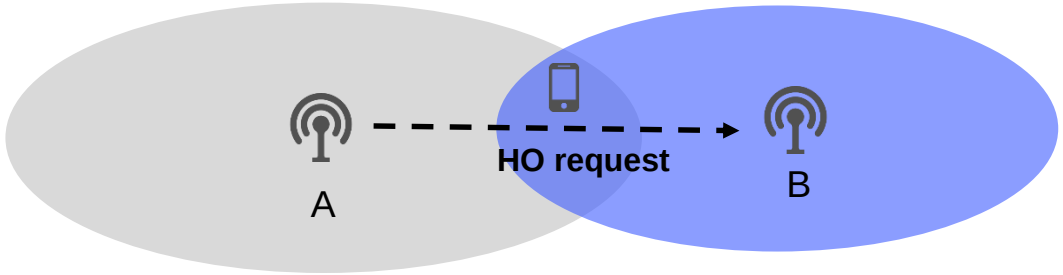
Energy saving

- Input: historical traffic load, current traffic status
- Output:
  - Load prediction
  - Deactivation/activation decision



Load balancing

- Input: historical traffic load, current traffic status
- Output:
  - Load prediction
  - HO configuration & HO decision



Mobility optimization

- Input: historical location, current moving direction
- Output:
  - Trail & performance prediction
  - HO configuration & decision

Slicing/QoE optimization

- Input: historical UE behavior, current radio status
- Output:
  - QoE prediction
  - Resource allocation of each slice

Potential Objectives

Specify the AI enabled data collection in NR for network function optimization purpose.

- **Specify the AI-related capabilities for AI use case support;**
- **Specify the input and output of AI function (e.g. model training, model inference) for some use cases, including:**
  - **Energy saving**
  - **Load balancing**
  - **Mobility optimization**
  - **Others, e.g. Slicing optimization, QoE optimization**
- **Enhancement of data collection at corresponding node;**
- **Specify the inter-node information exchange, including enhancements to NG, Xn, and F1/E1 interfaces.**

THANK YOU