3GPP TSG RAN Rel-19 workshop
Taipei, June 15 - 16, 2023
Agenda item: 5. Specific RAN1/2/3-led Rel-19 topics

RWS-230135

AI/ML for NG-RAN enhancement

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Motivation for AI/ML for NG-RAN enhancement

- In Rel-18, the WI of AI/ML for NG-RAN enhancement is under discussion, it is specifying data collection enhancements and signaling support within existing NG-RAN interfaces and architecture (including non-split architecture and split architecture) for AI/ML-based Network Energy Saving, Load Balancing and Mobility Optimization.
- Further enhancement for Rel-18 use cases is useful to achieve better performance.

- It is worth supporting new use case(s) to expand AI/ML utilization.
- One possible use case is the Network Slicing:
  - Optimize the network slicing policy and resources by reinforcement learning, evolutionary algorithms.
  - Reduce the high computational complexity of policy-based methods for network slicing resource management.

- In addition, it is important to consider multi-vendor network application.

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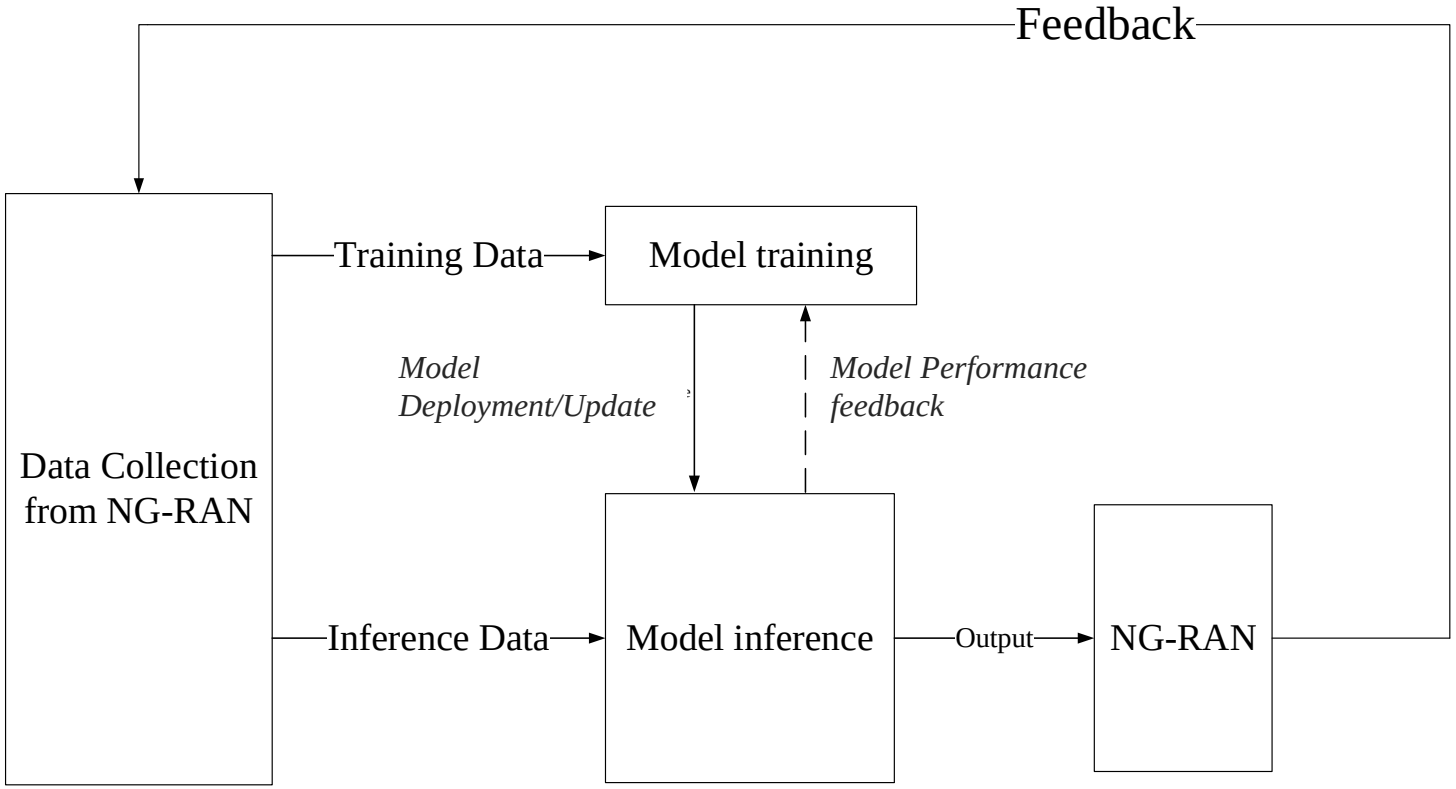
Additional separated network node/function

- Introduce additional separated network node or function to implement the AI model training and model inference:
  - To be Multi-vendor capable induction.
  - To realize higher layer management across multi-vendor and large area network optimization co-operation.



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Objectives for AI/ML for NG-RAN enhancement

- Enhance the functions for Rel-18 use cases
- Introduce new use cases for NG-RAN (e.g., network slicing)
- Introduce additional network node or function to implement the AI model training and model inference.
- Specify interface(s) between the newly introduced AI model training and the legacy network entity, and standardize the signaling for the identified use cases including:
  - the data that may be needed by an AI function as input and data that may be produced by an AI function as output, which is interpretable for multi-vendor support.
- Specify network functionality and interface procedures to support the agreed use cases enabled by AI/ML, including:
  - Integration and collaboration of OAM AI/ML, 5GC AI/ML, NG-RAN AI/ML if identified.
- Specify the network interface(s) to convey the input/output data among network nodes or AI functions.

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Summary

- For Rel-18 use cases (Energy saving, Load balancing, Mobility optimization), enhancement can be considered.
- In addition to the Rel-18 use cases, new use case (e.g. network slicing) should be considered in Rel-19.
- Also, it is worth introducing additional separated network nodes or functions to implement the AI model training and model inference for multi-vendor network deployment.

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