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Views on NR Rel-19 AI/ML for NG-RAN

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Motivations

- In Rel-18, AI/ML for NG-RAN focuses on three use cases including load balancing, network energy saving, and mobility optimization. 3GPP is specifying data collection enhancements and signaling support within existing NG-RAN interfaces and architecture especially for Xn interface.
- In Rel-19, new use cases such as slicing and QoE can be considered with introducing AI/ML enhancement for NG-RAN.

New use cases for AI/ML NG-RAN

Slicing and QoE

- Network deployment for ToB (To Business) includes both public network and non-public network (NPN). For public network, network slicing may be used to implement the resource isolation to guarantee the performance for ToB. For NPN or private network, it can have different ways to implement the network deployment. For example, one way is to deploy private network equipment completely, such as gNB, UPF and 5GC. The network equipment can only provide services for the private use. The other way is to use network slicing to implement a virtual network, which means some of the network equipment are deployed for private use only. Meanwhile, the others are shared with the public network. The network resource isolation can be implemented by network slicing.
- Both system performance and UE QoE can be improved by introducing AI/ML method. AI/ML can be used for generating slicing resource allocation strategies to improve performance of system and users, such as
  - » Resource allocation ratio among different slice groups.
  - » Derive the strategies for resources allocation usage, e.g., dedicated, shared and exclusive, for RAN slices in same slice group.
- AI/ML can also be used for improving UE QoE. E.g., optimize resource allocation of each service type, and improve user experience.

Conclusion

In this contribution, we have following proposals:

- Start discussions on new use case(s) of Rel-19 AI/ML for NG-RAN.
- Study the standard impacts for slicing and QoE in Rel-19 [RAN3].
- Any new use cases of NR Rel-19 AI/ML for NG-RAN would need a study first.

Thanks!