

OSC AI ML Project Proposal

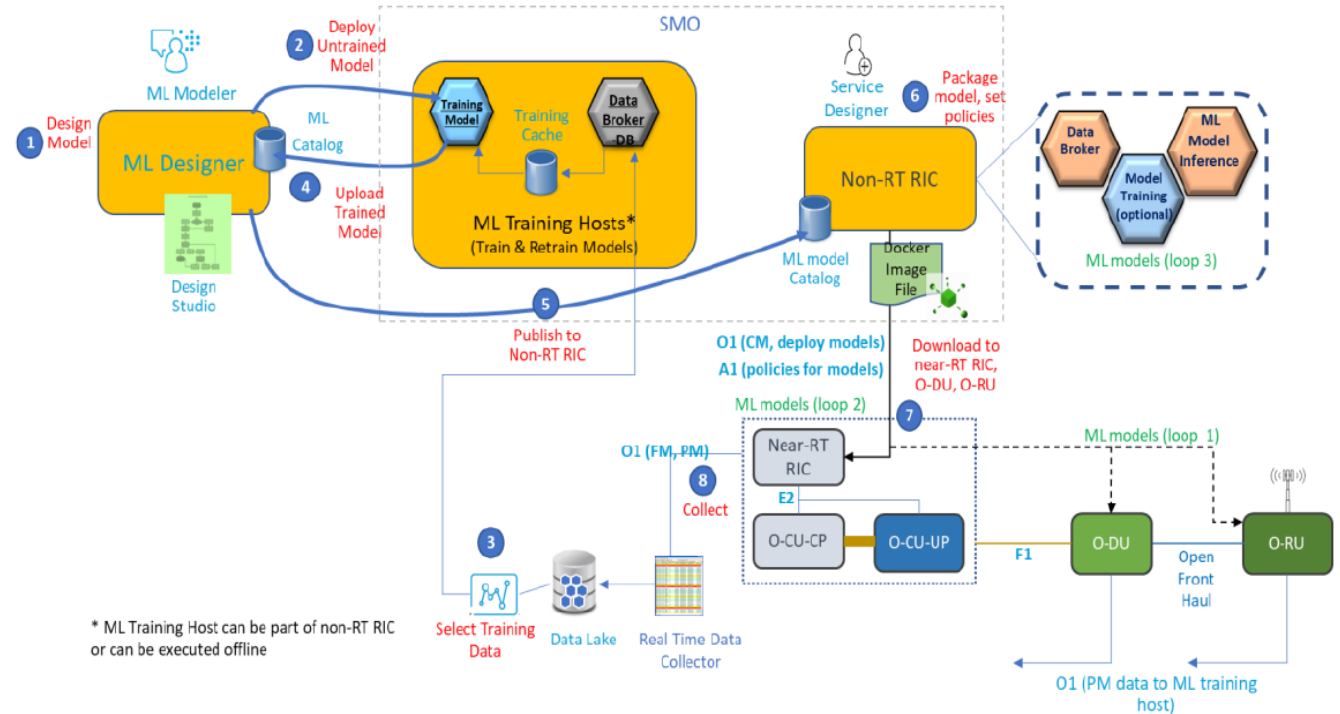
Samsung Open Source

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Samsung Electronics

New Project Proposal (1/2)

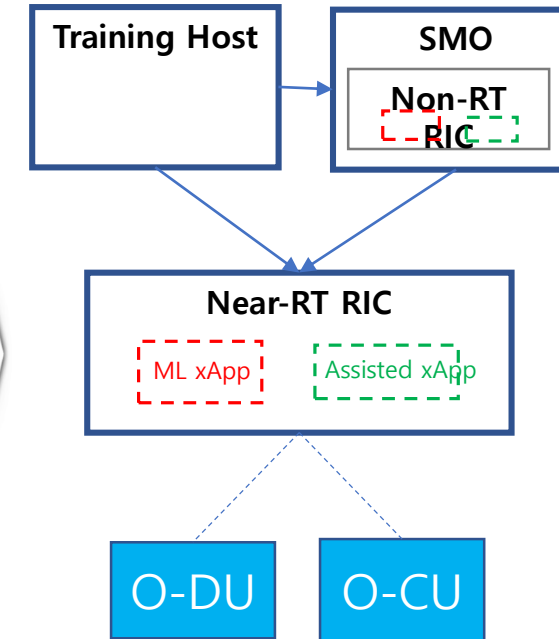
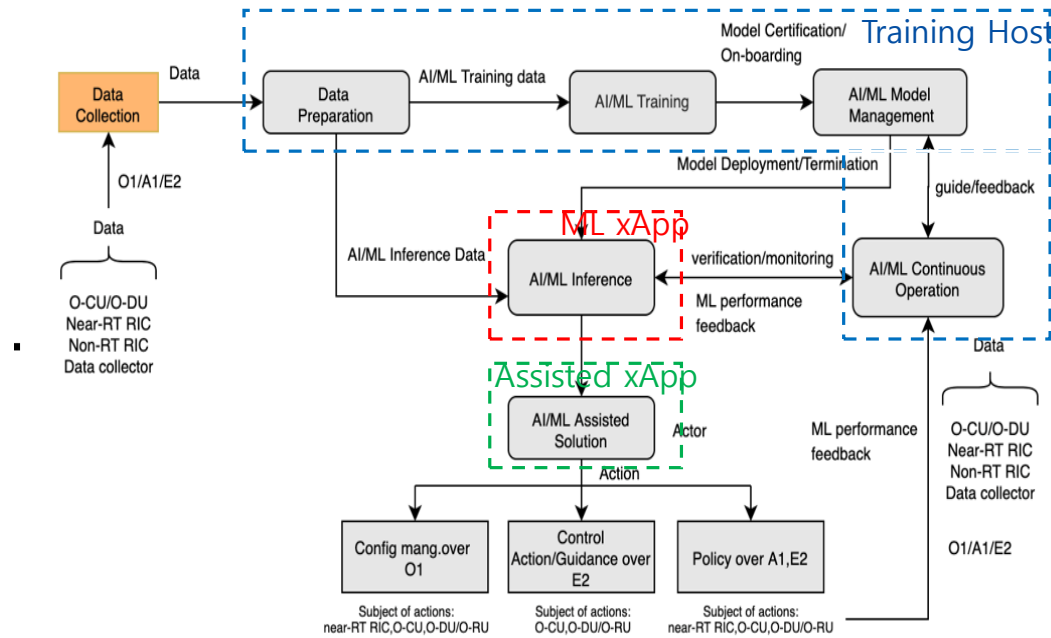
- Support for AI/ML workflow is defined in O-RAN Alliance (WG2/WG3), but the same is not available in O-RAN SC
- AI/ML Framework is an optional component and the deployment option is closely linked with use case
 - xAPP based Use case
 - rAPP based Use Case
 - xAPP + rAPP based use case
- Deployment of xAPP, rAPP, Model Training etc needs a dedicated Management entity (this is not defined in O-RAN Alliance)
- There is a need for an End to end AI/ML framework Management and Platform functions that spans across multiple components.



Overall ML Model Lifecycle Management Example from WG2

Source: O-RAN.WG2.AI ML-v01.03

ML Lifecycle Management includes Model Training, Model Inference, Use case management etc

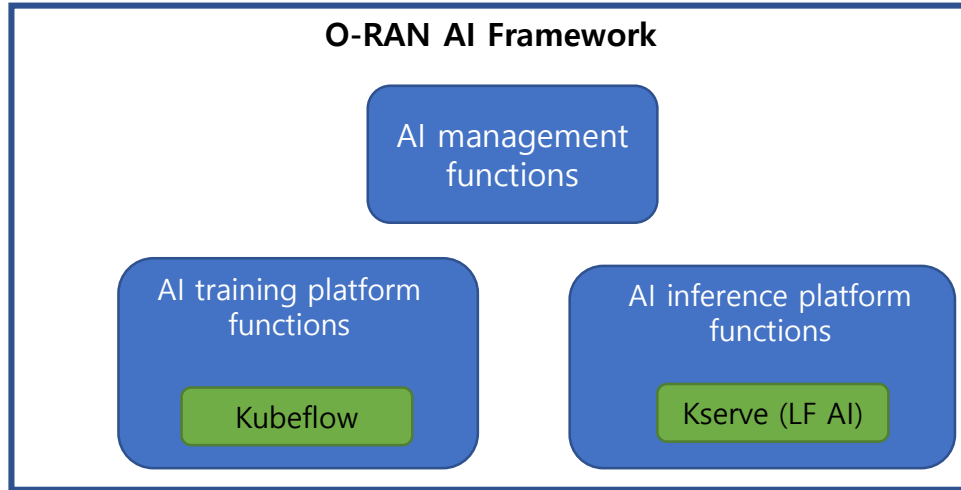


Ref : O-RAN.WG2.AI/ML Figure 4-1. AI/ML General Procedure

Key Findings

- Model Training & Model Inference Platform requirements are common between Near-RT RIC & Non-RT RIC
- Management of rAPP/xAPP is identical and only time criticality decides the position of the application

- Project Name: O-RAN AI Framework



O-RAN AI Framework Subcomponents

- AI management functions
 - Usecase management function
 - Training job management
 - AI/ML xApp/rApp and Asssit xApp/rApp deployment functions
 - AI/ML trained model management
 - Kubeflow Adapter
- AI training platform functions
 - Kubeflow (open source)
 - Data broker,
 - Feature store,
 - AI Model storage
- AI inference platform functions
 - Kserve (open source, LF AI project),
 - Kserve Adapter
 - Data broker

O-RAN AI Framework Deployment Options

Options	AI management functions	AI training platform functions	AI inference platform functions
Option 1	Separate Standalone	Separate Standalone	Non-RT RIC/Near-RT RIC
Option 2	Separate Standalone	Non-RT RIC	Non-RT RIC/Near-RT RIC
Option 3	Separate Standalone	Near-RT RIC	Near-RT RIC

Deployment Scenario for Near-RT RIC

Option 1 :

Prerequisite: Installation of Near-RT RIC platform

Deployment of AI inference platform functions in existing Near-RT RIC platform for option 1,2,3 :

- `git clone < AI inference platform repository url>`
- `./deploy_ai-inference-platform --node ric`

Deployment of AI training platform functions in existing Near-RT RIC platform for option 3 :

- `git clone < AI training platform repository url>`
- `./deploy_ai-training-platform --node ric`

Option 2:

To install AI training/ inference platform functions:

- Modify the install scripts in ric-plt-ric-dep repository. (<https://github.com/o-ran-sc/ric-plt-ric-dep/blob/master/bin/install>)

Note: This involves changes scripts in other repositories.

Thank You