

Open RAN Standardization and Deployment Acceleration through Open Source Leveraging

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Agenda

- **NTT DOCOMO's Vision for 5G Networks**
- **Open RAN and O-RAN ALLIANCE Overview**
- **O-RAN Software Community Activities**
- **Open RAN Deployment Acceleration through Open Source leveraging**

NTT Group Overview



NTT Group

Total Assets: \$205.5 billion **Consolidated Operating Revenue:** \$92.8 billion
Consolidated Operating Income: \$13.3 billion



- Mobile phone services
- Solution business (B2B)
- Financial and payment services
- Entertainment business
- System development business



- System development and operation
- AI and big data analytics
- IT solutions



- Fixed-line communication
- ICT solutions for businesses
- Data center and cloud services



- Real estate investment
- ICT energy solutions

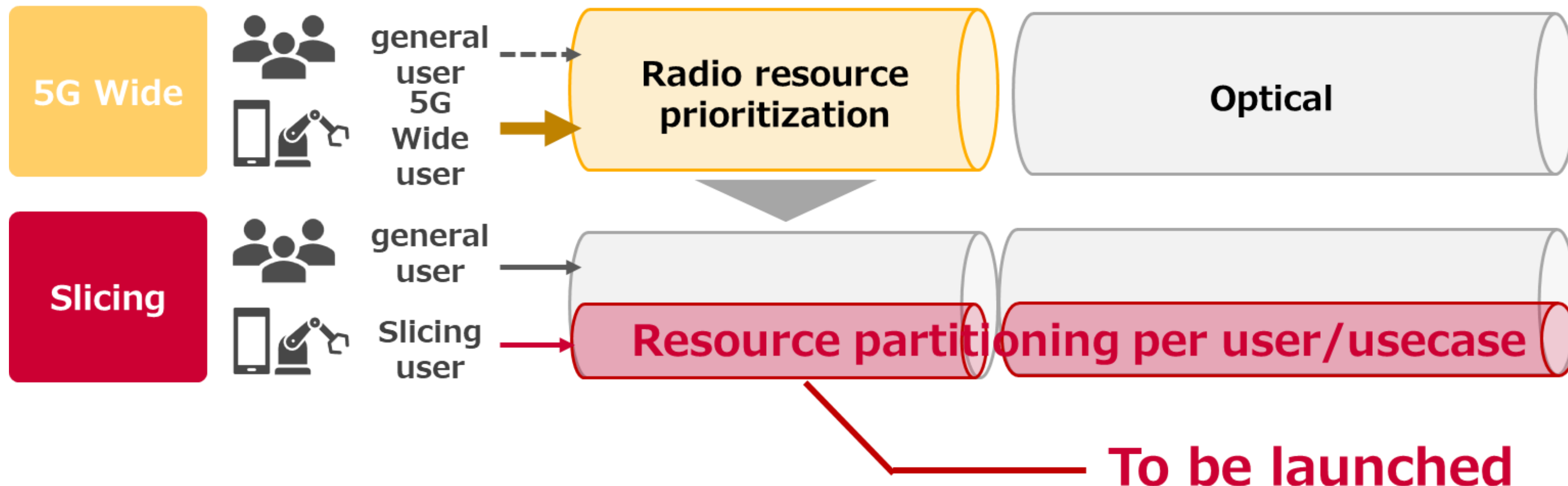
NTT DOCOMO's Vision for 5G Networks

Realizing flexible and high-quality networks
to cope with increasing traffic and diversification of use cases in the 5G era



Network Slicing Services

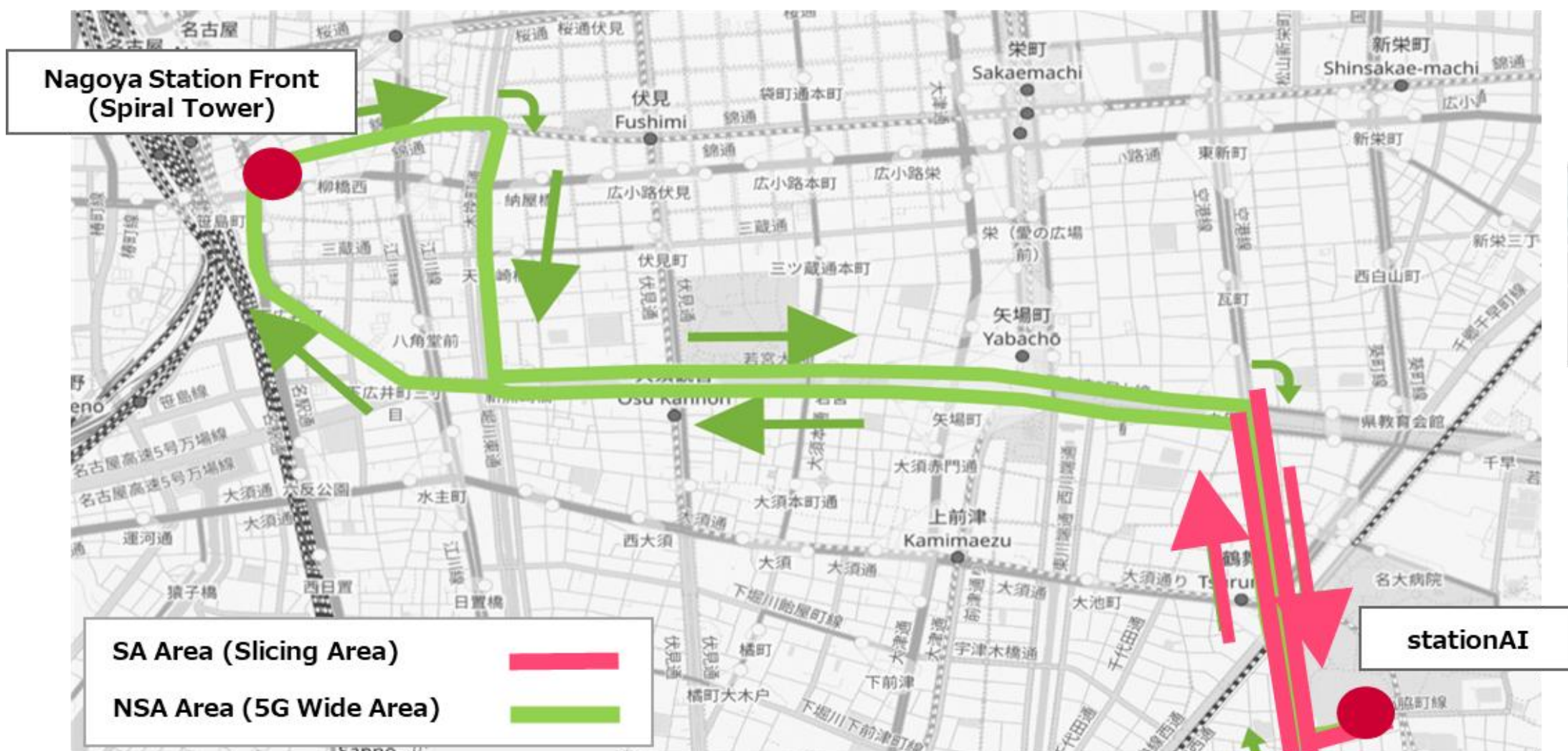
A user prioritization service for enterprises ("5G Wide") is in commercial use, and further enhancements with network slicing are under planning



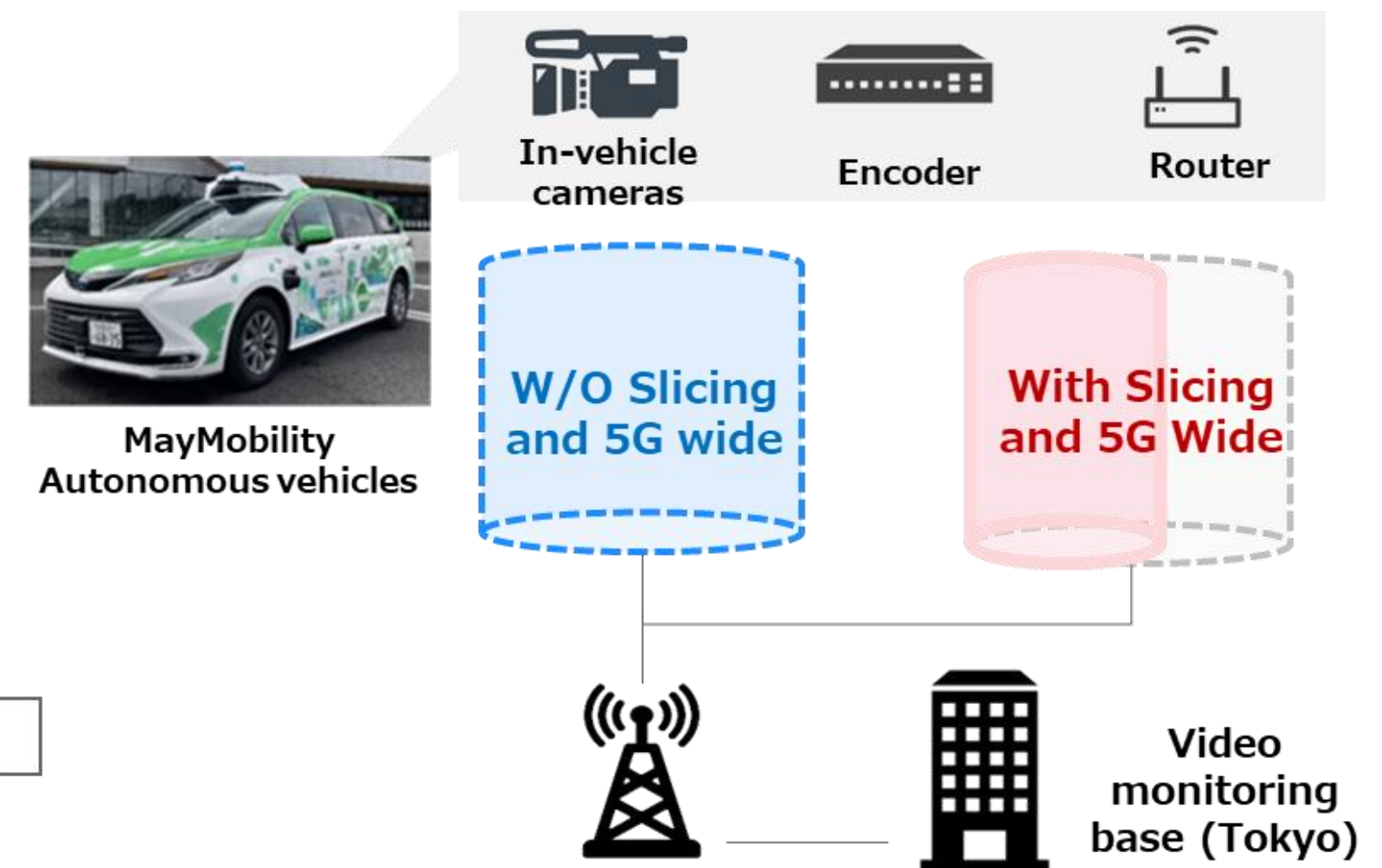
(Ref.) Example of Slicing Services

Remote monitoring of automated driving was verified in March 2025.
Combining slicing and 5G wide enabled
stable uplink communication even on the move.

Self-driving route



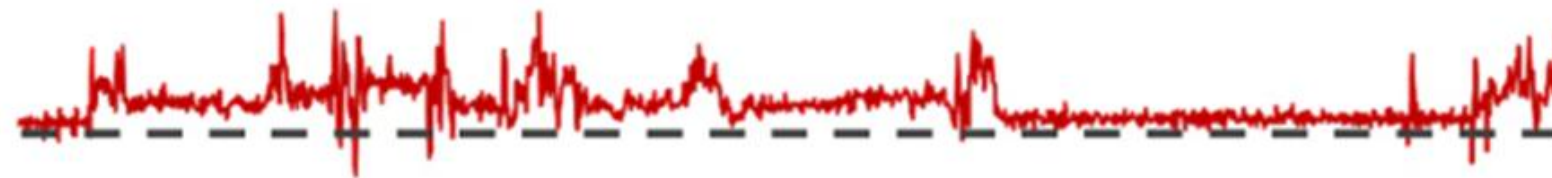
Configuration



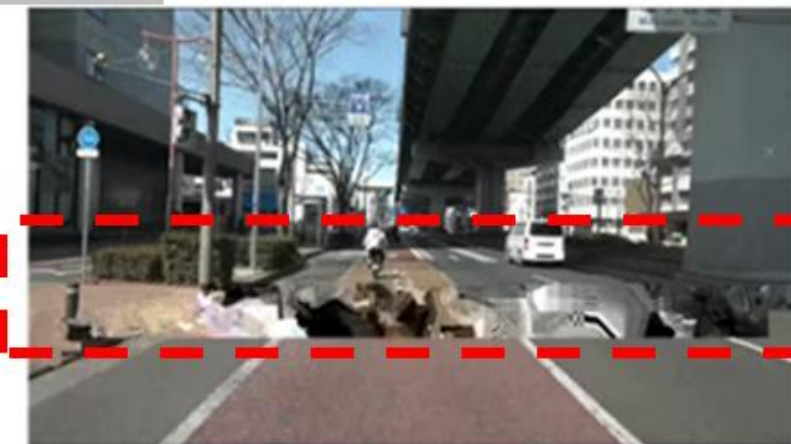
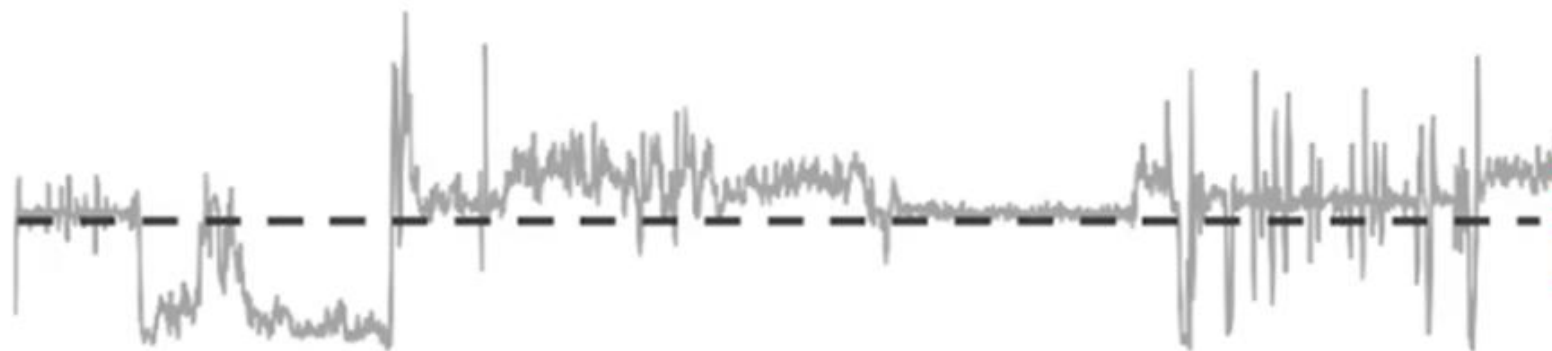
(Ref.) Example of Slicing Services

With slicing and 5G Wide, stable communication by maintaining constant UL throughput over the entire route was achieved

With Slicing and 5G wide



W/O Slicing and 5G wide



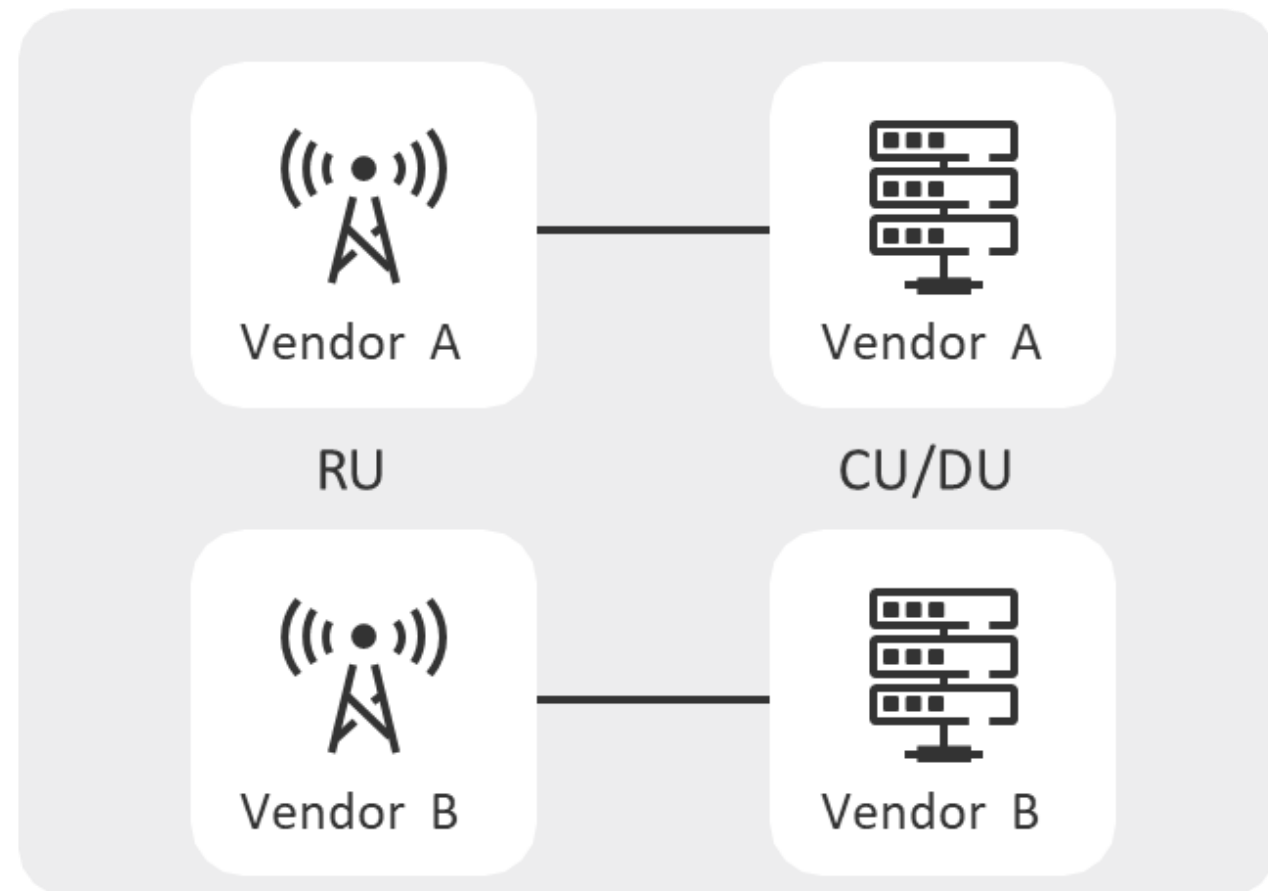
--- Target UL throughput

What is Open RAN?

Open RAN is a key enabler for flexible and scalable network

Legacy network

Single vendor operation

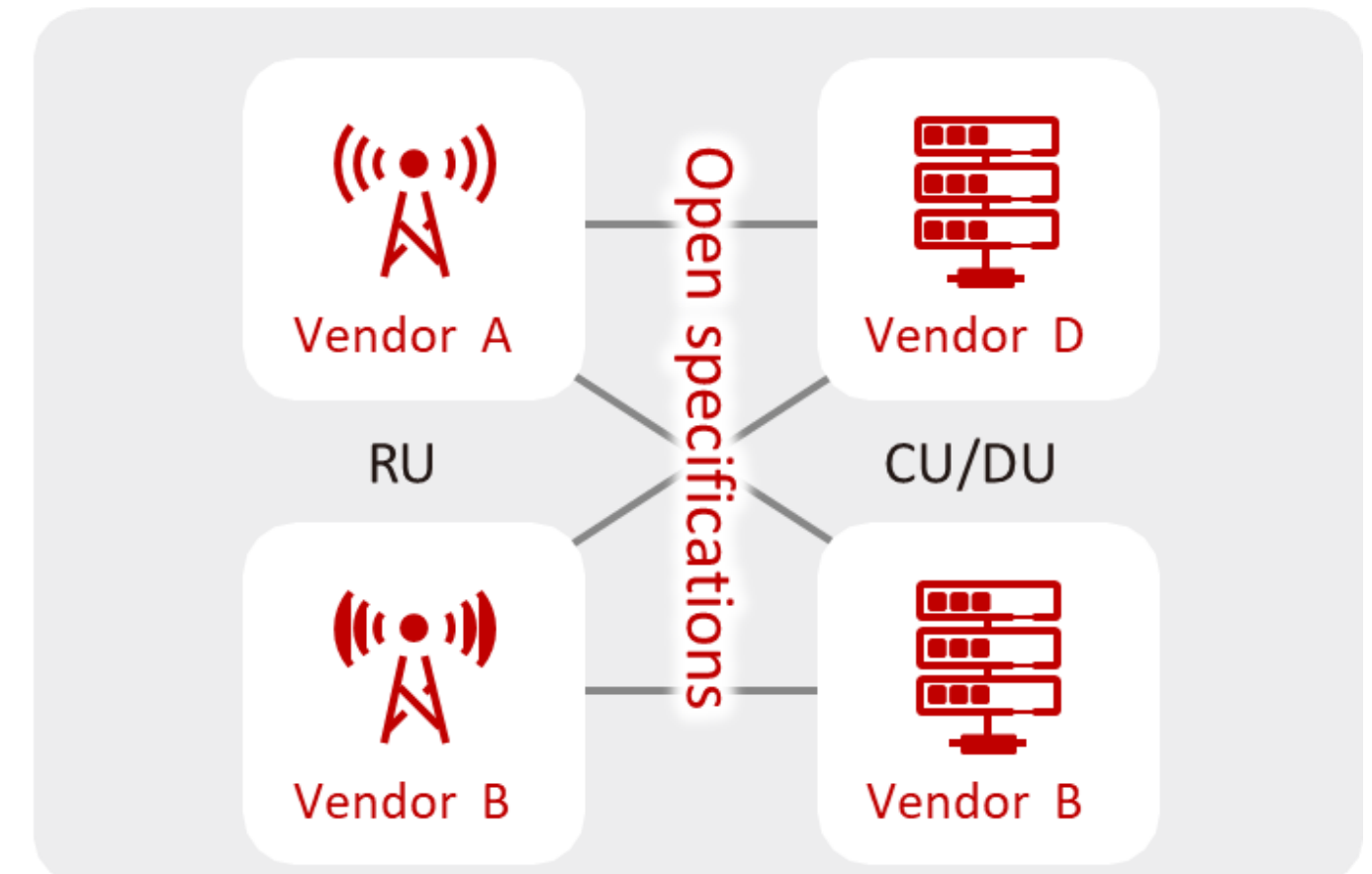


- Vendor lock-in
- Equipment cost remains high



Open RAN

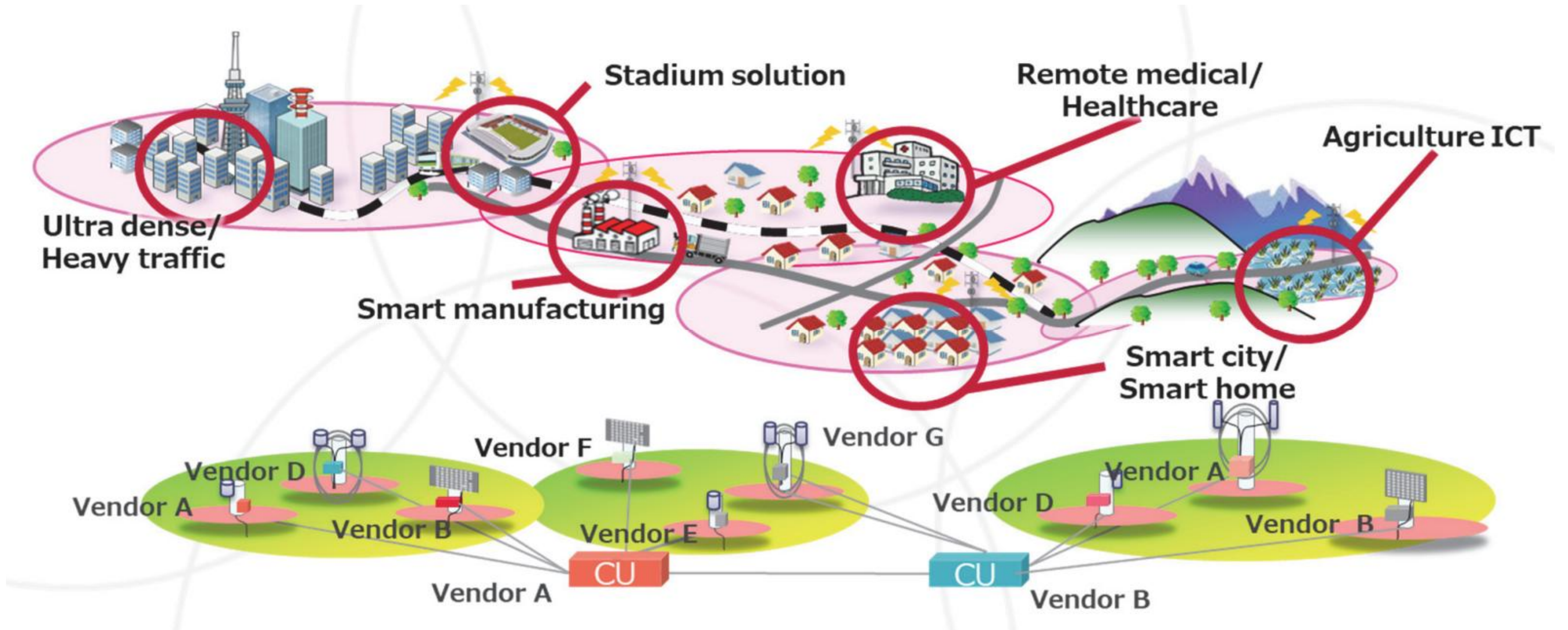
Multi vendor operation



- Flexible and scalable
- Equipment cost can be reduced

Why Open RAN?

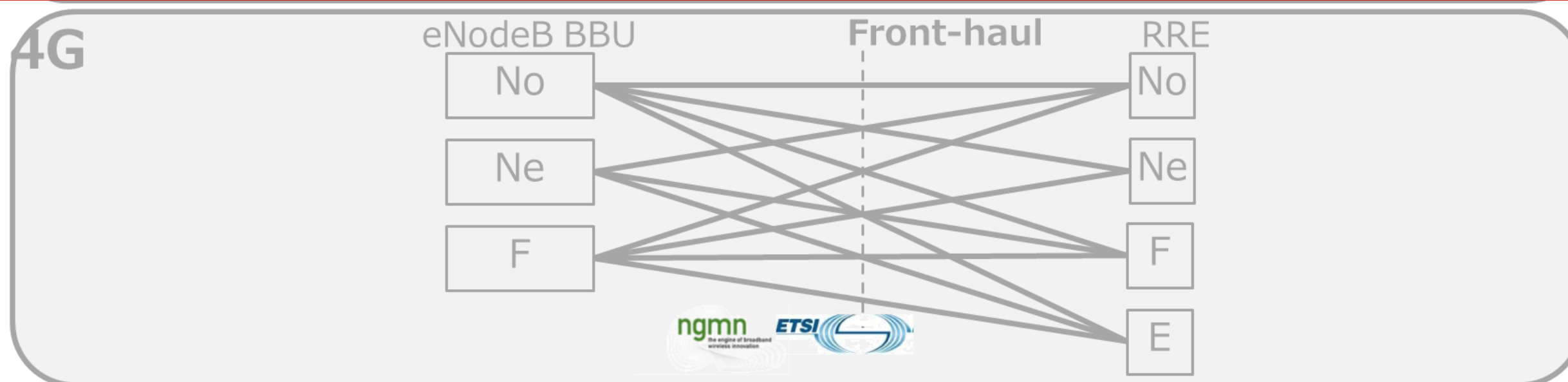
Open RAN enables mix-and-match of solutions from multiple vendors, allowing operators to adopt **best-of-breed** solutions for each deployment scenarios



Lesson Learned from Past Activities

Review of the Past Activity

- DOCOMO has deployed networks in a **full multi-vendor** environment **successfully**. However, the situation is not necessarily a success from the global market point of view.
- Because **only DOCOMO** deploys networks using the standardized fronthaul it can NOT enjoy economies of scale.
- **Globally widespread implementation and deployment are essential.**



“Activities of open RAN With O-RAN - Failure is success in progress”

Presented by Seizo Onoe

at MWC BARCELONA 2022, Open RAN: A Vision of 5G & The Future of 6G, February 28, 2022

O-RAN ALLIANCE

Established O-RAN ALLIANCE to create the global ecosystem of Open RAN, which keeps evolving towards 6G era



Future(6G related)

Below items are being discussed

1. 6G use cases and standard gap analysis
2. Architecture towards 6G O-RAN
3. Native AI and cross domain AI
4. Native security
5. nG research platform

Now

- Maturing and enhancement of open interfaces
- On top of open interfaces, expanding O-RAN specific features like SMO/RIC etc.

Initial (from 2018)

- Focused on proprietary interfaces opened-up
- Fronthaul was the first opened-up and widely operated

O-RAN ALLIANCE Mission



<https://www.o-ran.org/>

Aligned with the Industry

The O-RAN Architecture and specifications build on common standards and care about alignment with other industry bodies to ensure compatibility and to avoid duplication of work



MoU enabling transposition of O-RAN ALLIANCE specifications into national standards with:

- ATIS
- ETSI
- TTA

<https://www.o-ran.org/>

3 Main Thrusts



O-RAN Specification Effort

O-RAN specifications define all aspects of the O-RAN Architecture and are available to everyone



Testing, Integration and Certification

O-RAN supports its Members and Contributors in testing, integration and certification of their O-RAN implementations



PlugFest
O-RAN ALLIANCE



OPEN
TESTING AND
INTEGRATION
CENTRE



O-RAN Software Community

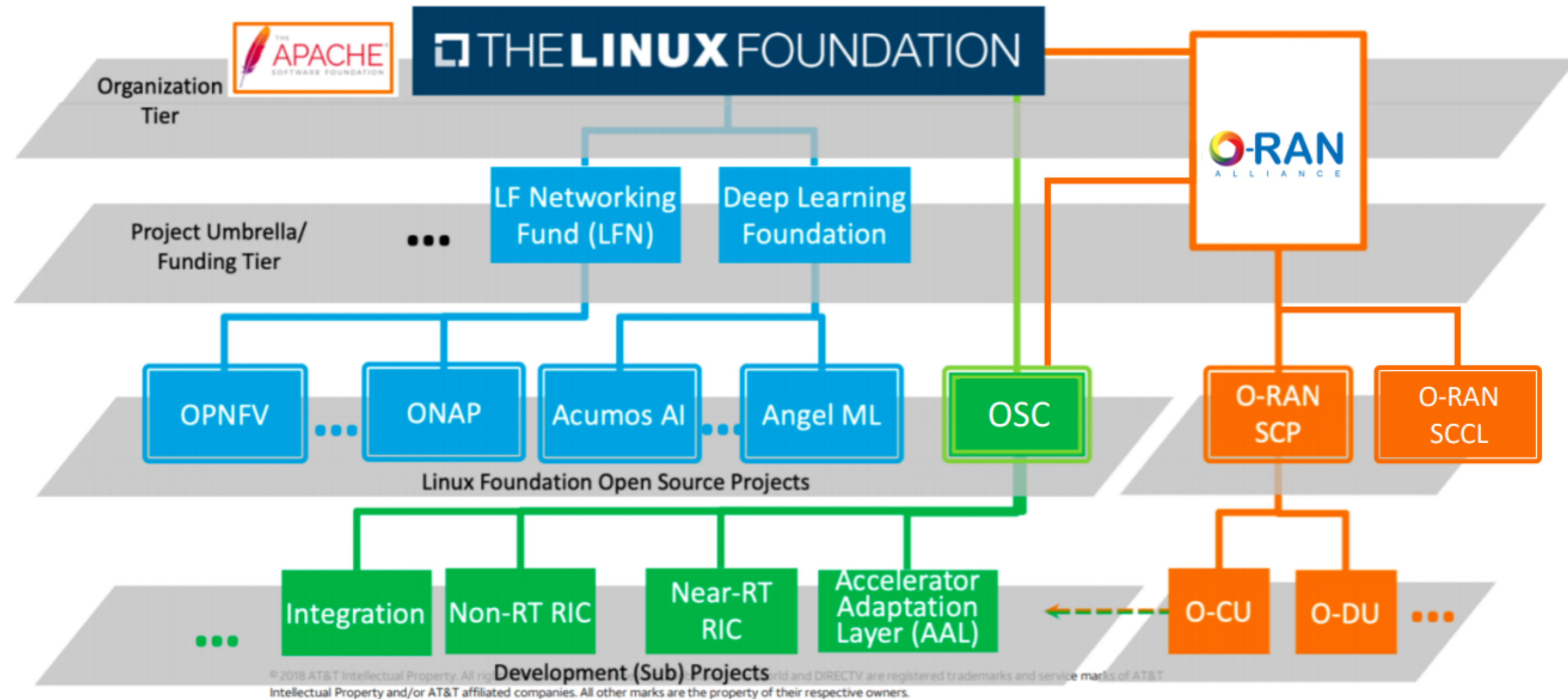
In collaboration with the Linux Foundation, supports the creation of open software for the RAN



<https://www.o-ran.org/>

O-RAN Software Community

A collaboration between O-RAN and Linux Foundation to develop software for RAN as per O-RAN specification and architecture



<https://www.o-ran.org/>

O-RAN Software Community Facts

OSC's open software continues to greatly help companies to develop, test and integrate their commercial open and intelligent RAN solutions

12 software releases so far

2+1 licenses

- Apache License 2.0
- O-RAN Software License
- Standards Collaboration Copyright License (SCCL)

13* active projects, with the ability to represent every key O-RAN component

- New project on AI/ML Framework

OSC also provides insightful feedbacks to O-RAN specification effort

12 members of Technical Oversight Committee (TOC)**

3 Open Labs

- North America East Coast Lab
- North America West Coast Lab
- Asian Pacific Lab

Open to anyone to contribute

- Upon signing the Contributor License Agreement (CLA)
- Learn more at <https://www.o-ran.org/software>

*) For details see: <https://wiki.o-ran-sc.org/display/ORAN/Projects>

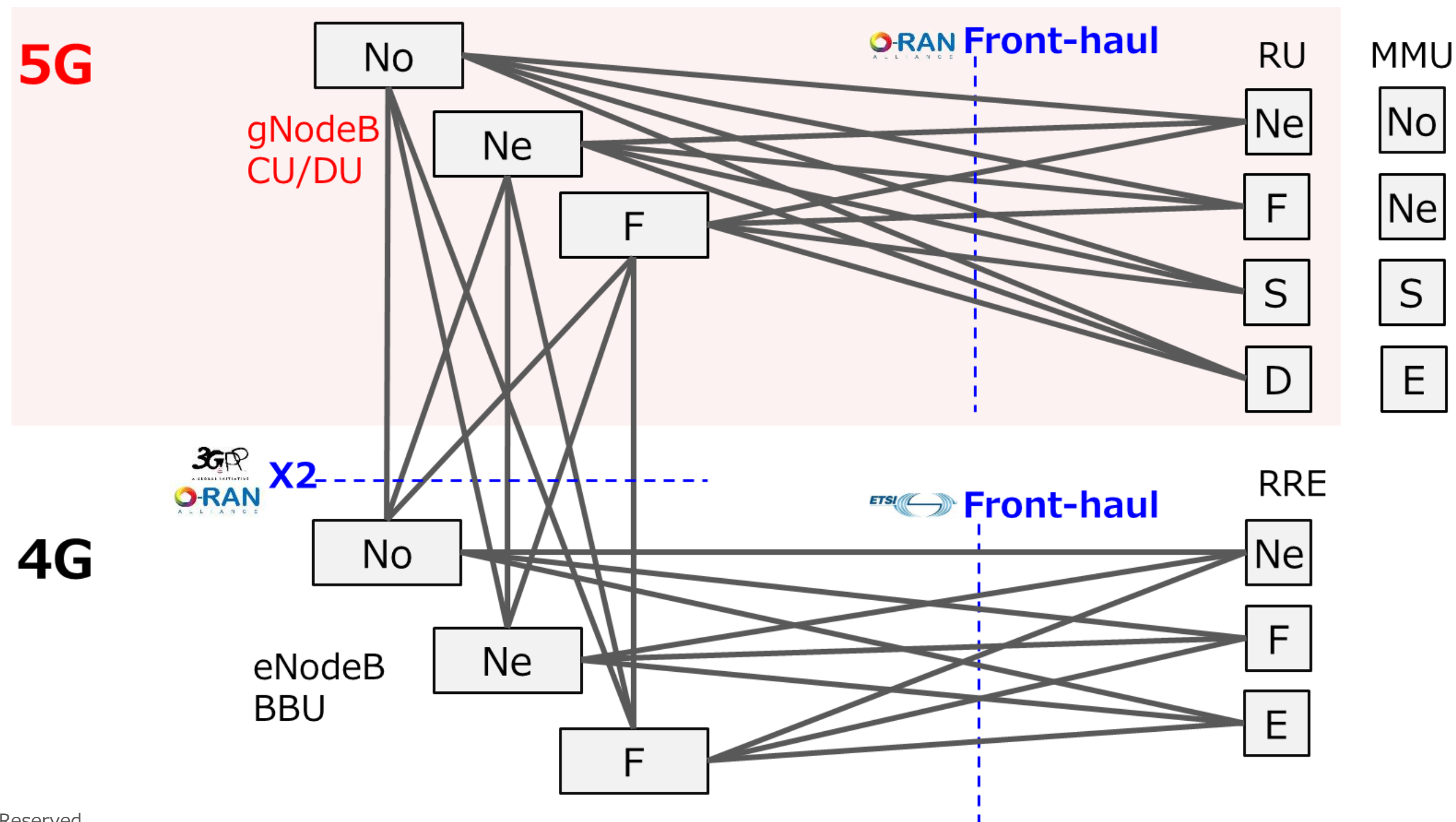
***) For details see: <https://wiki.o-ran-sc.org/display/TOC>

<https://www.o-ran.org/>

NTT DOCOMO Commercial Deployment

In March 2020, NTT DOCOMO launched 5G commercial service with a full-scale multi-vendor network using O-RAN open interfaces (World 1st)

(Note) Nation-wide, large-scale deployment, not for testing nor trial



NTT DOCOMO Shares Best Practices



WHO WE AREWHAT WE DOO-RAN ECOSYSTEMNEWS & EVENTSPORTAL

Best Practices from NTT DOCOMO's Open and Intelligent RAN Deployment

NTT DOCOMO, OREX

August 31, 2025



This white paper shares NTT DOCOMO's extensive experience in deploying a nationwide, multi-vendor Open and Intelligent RAN in Japan.

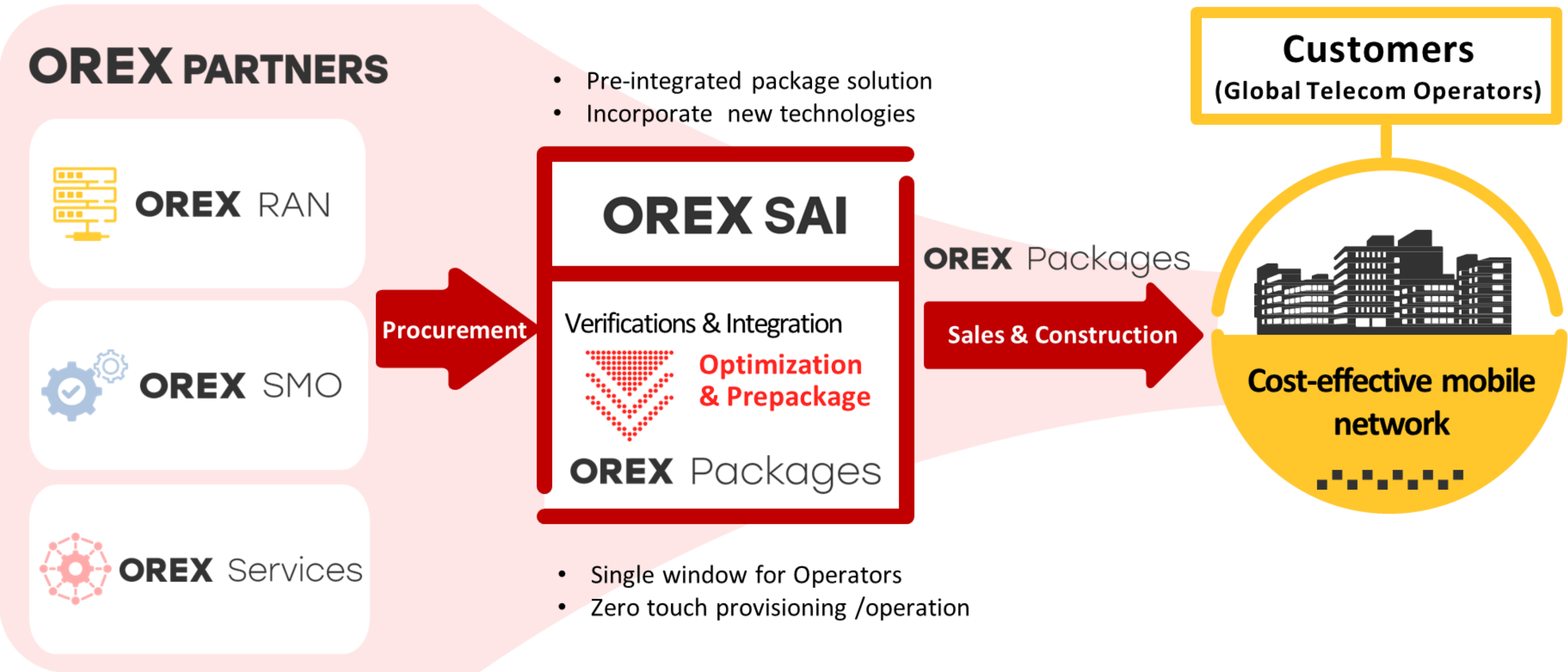
It highlights motivations, business drivers, phased deployment strategies, key success factors, and lessons learned—ranging from interoperability testing to system integration frameworks like OREX.

The insights provide practical guidance for operators worldwide, offering a deep dive into the organizational, technical, and ecosystem aspects essential for successful Open RAN adoption.

<https://www.o-ran.org/>

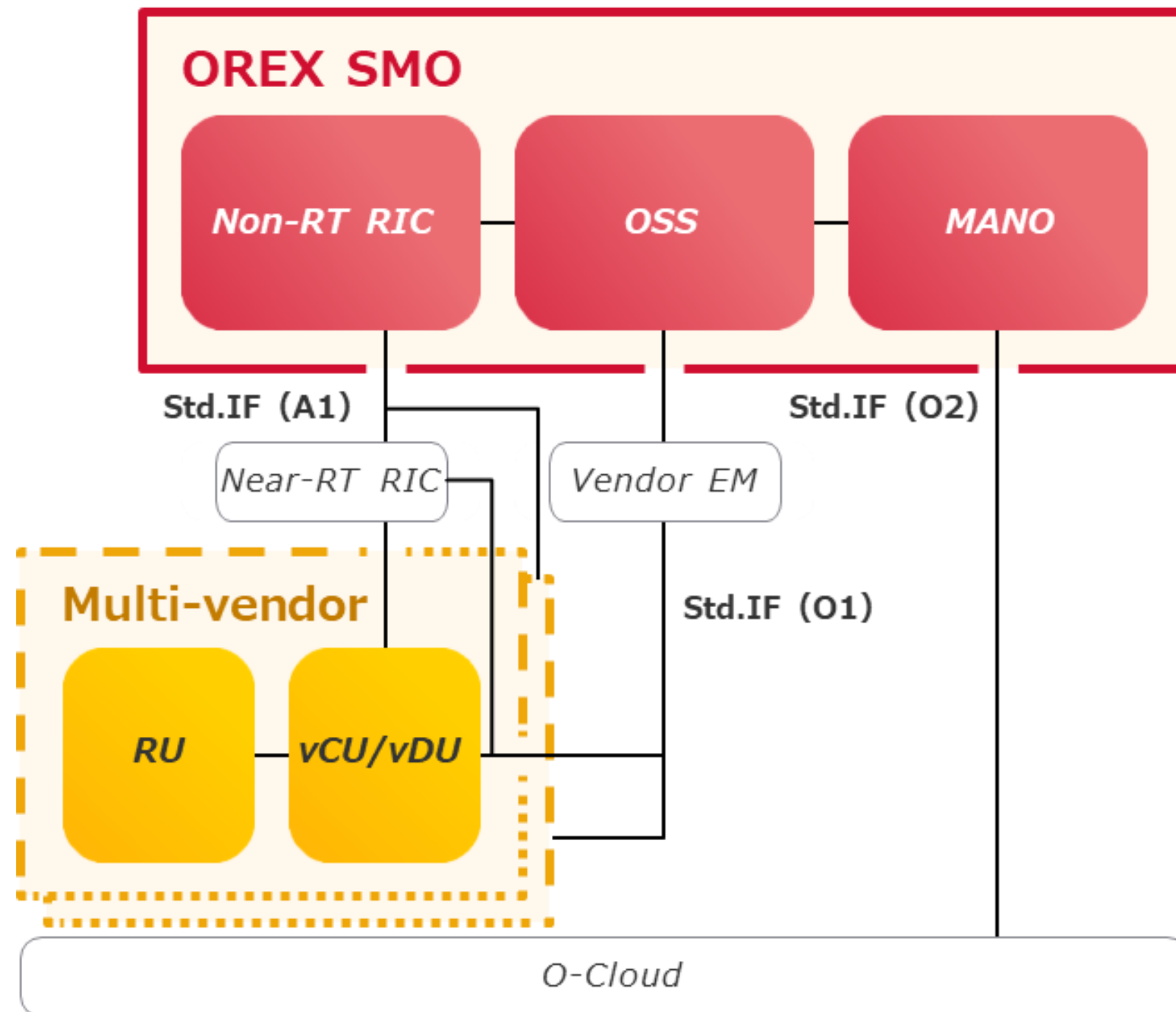
Further Open RAN Ecosystem Creation

New joint venture company “OREX SAI” provides pre-integrated Open RAN packages to global operators



Service Management and Orchestration

Service Management and Orchestration (SMO) realizes modernization of mobile network to optimize OPEX and minimize Time-to-market



OREX SMO Key Features



Open



Multi-vendor



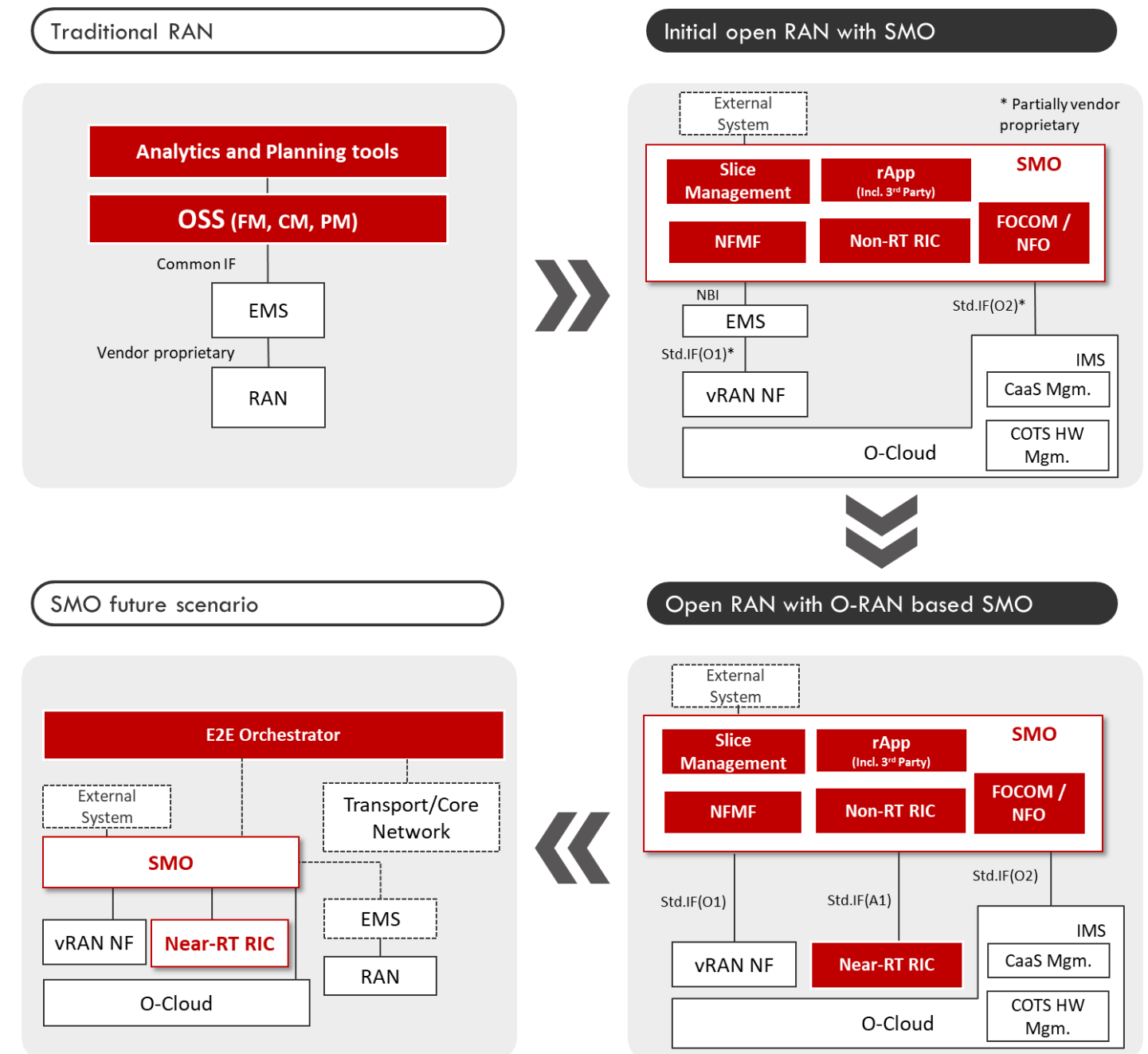
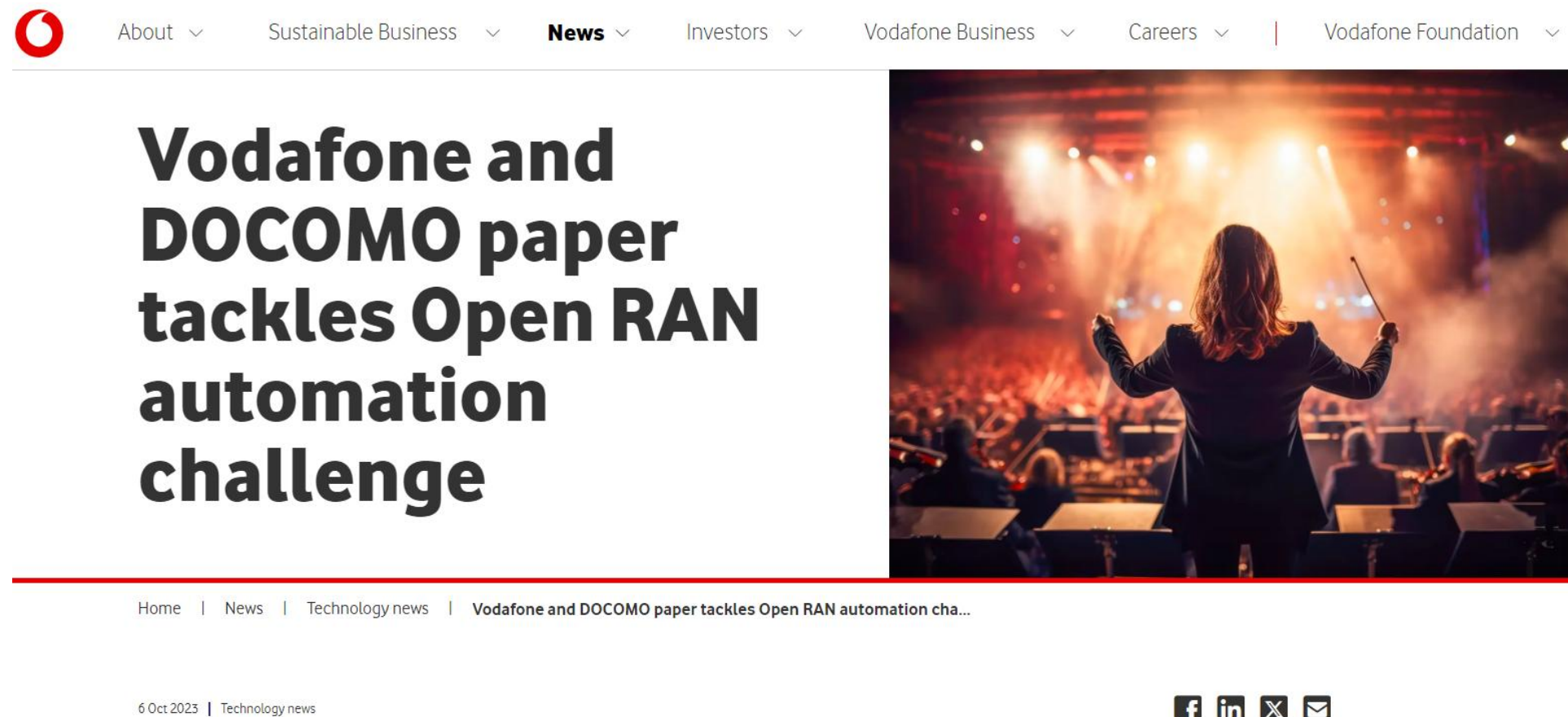
Intelligent



Automated / Autonomous

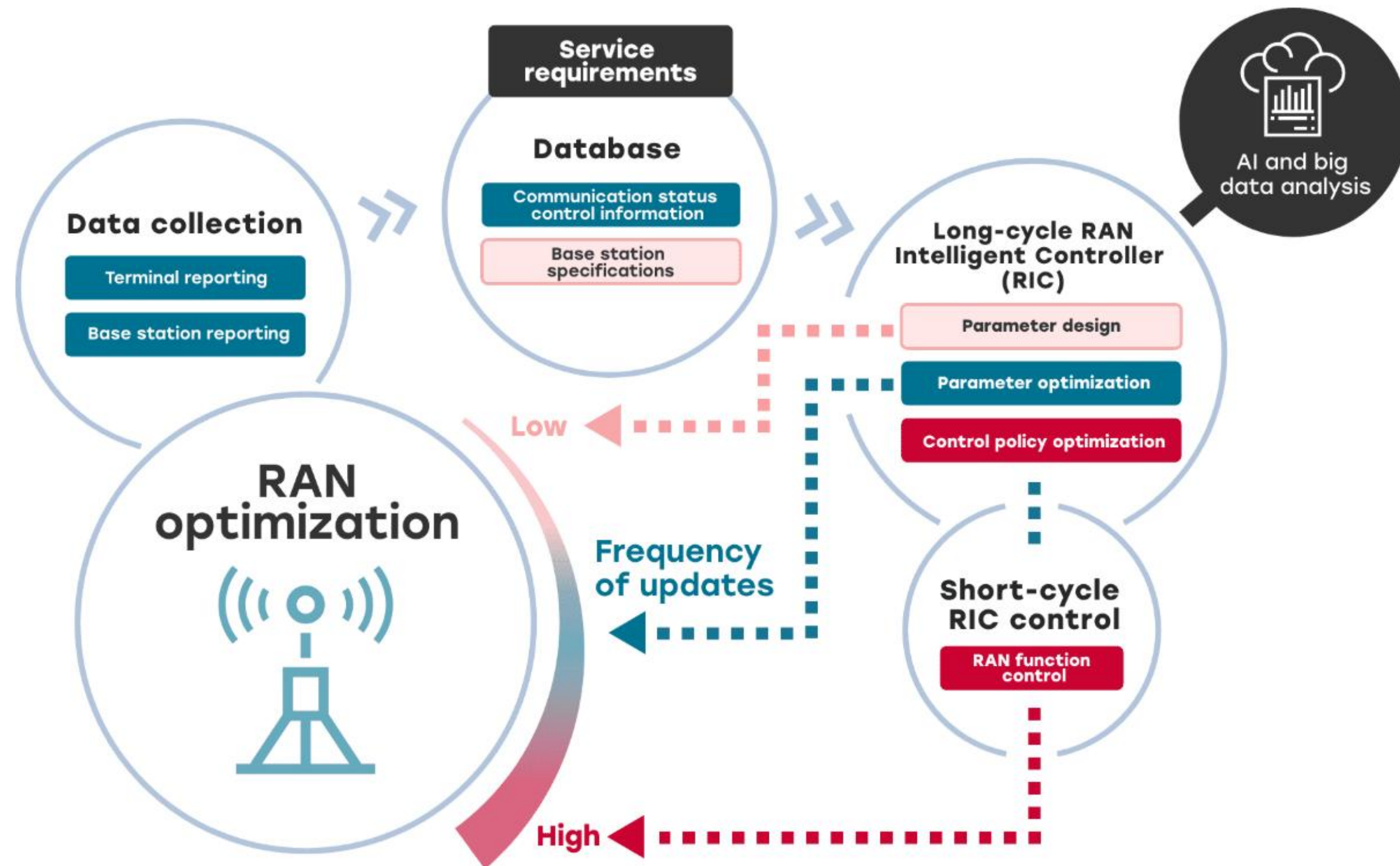
SMO Deployment Challenges

Standardization, simplification and a phased approach of migration are key to successful and smooth SMO deployment

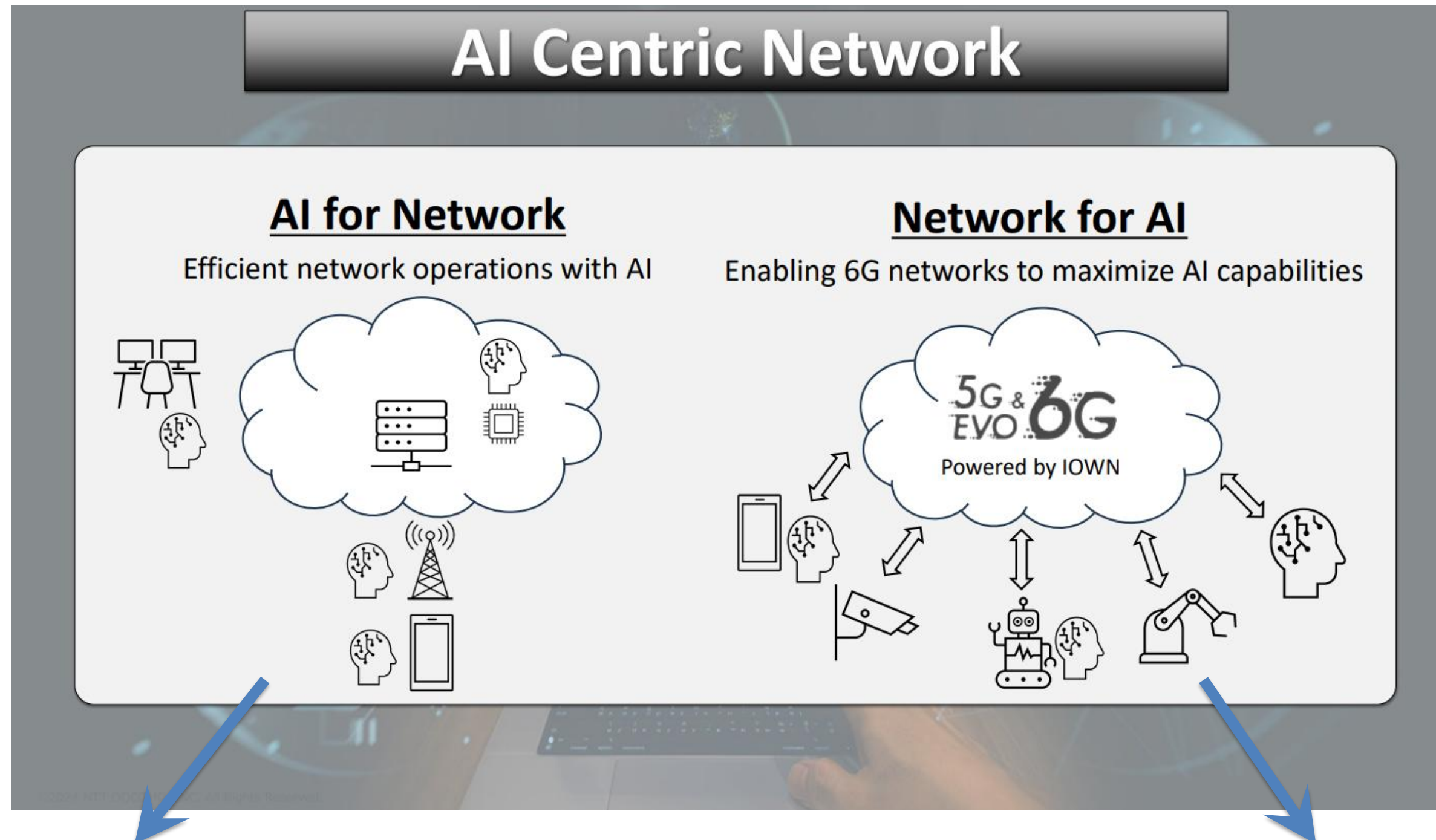


Intelligence in Open RAN

RAN Intelligent Controller (RIC) is a key technology to provide “Intelligence” in Open RAN



AI Centric Network



Utilize AI to realize more efficient network design, operation and optimization (incl. automation)

Realize network that can accommodate AI traffic efficiently and maximize AI capabilities

Summary

- **NTT DOCOMO has pioneered nationwide Open RAN commercialization (World 1st in 2020) through O-RAN ALLIANCE standards.**
- **Accelerating deployment via O-RAN Software Community—especially open source leveraging in SMO and RIC with AI/ML integration—will drive multi-vendor ecosystem creation and 5G evolution towards 6G era.**

Changing worlds with you.

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docomo