

AI-Centric Network

MWC26



CONTENT

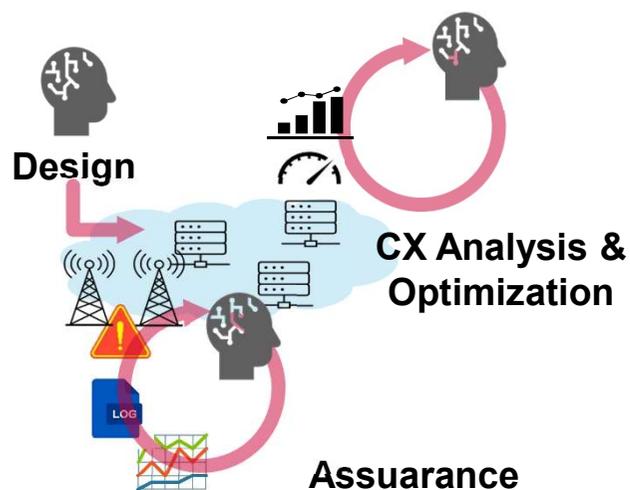
- 01 **AI-Centric Network**
- 02 **Case: Agentic AI for Service Assurance**
- 03 **Case: CX Analysis**
- 04 **Case: In-Network Computing**
- 05 **Toward 6G: AI/ML and Digital Twins at Scale**

01 AI-Centric Network

DOCOMO's AI-Centric Network Initiatives

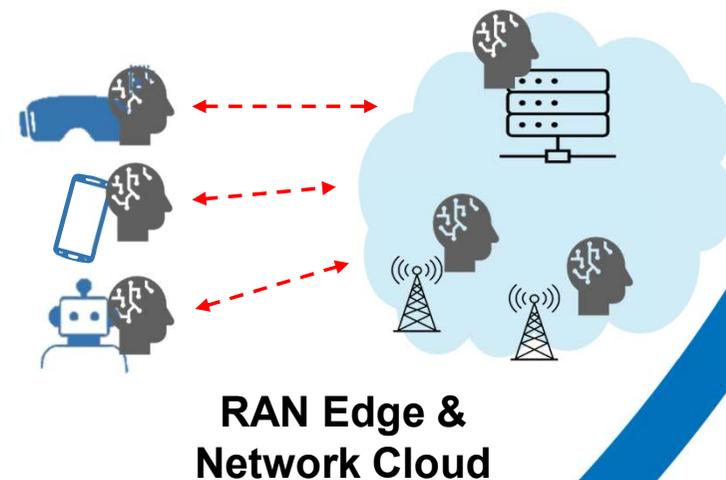
AI for Network

- Autonomous Networks
 - AI-driven network deployment
 - Agentic AI service assurance
 - CX-based network optimization
- Toward 6G: AI/ML and Digital Twins at Scale



Network for AI

- In-Network Computing
- New AI services on mobile (e.g. robots, smart glasses)
- Handling increased AI traffic



DOCOMO's AI-Centric Network Initiatives

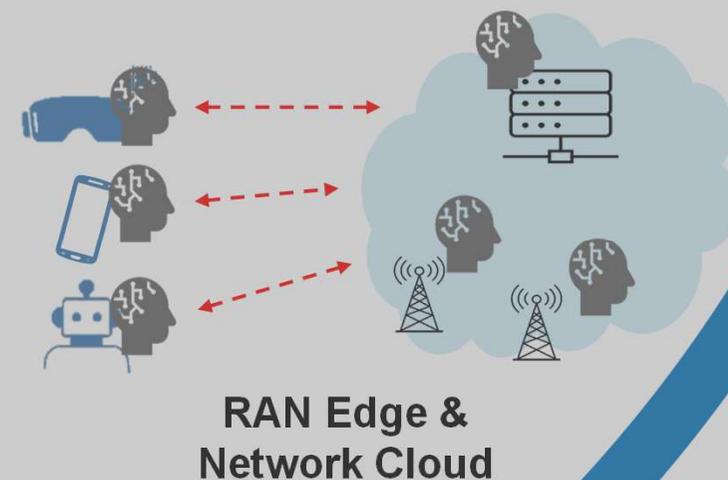
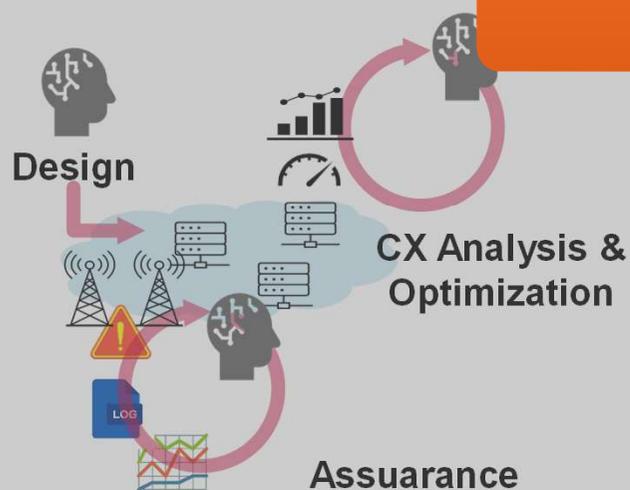
Another session

- Autonomous Networks
 - AI-driven network deployment
 - Agentic AI service assurance
 - CX-based network optimization
- Toward 6G: AI/ML and Digital Twins at Scale

This session's focus

Network for AI

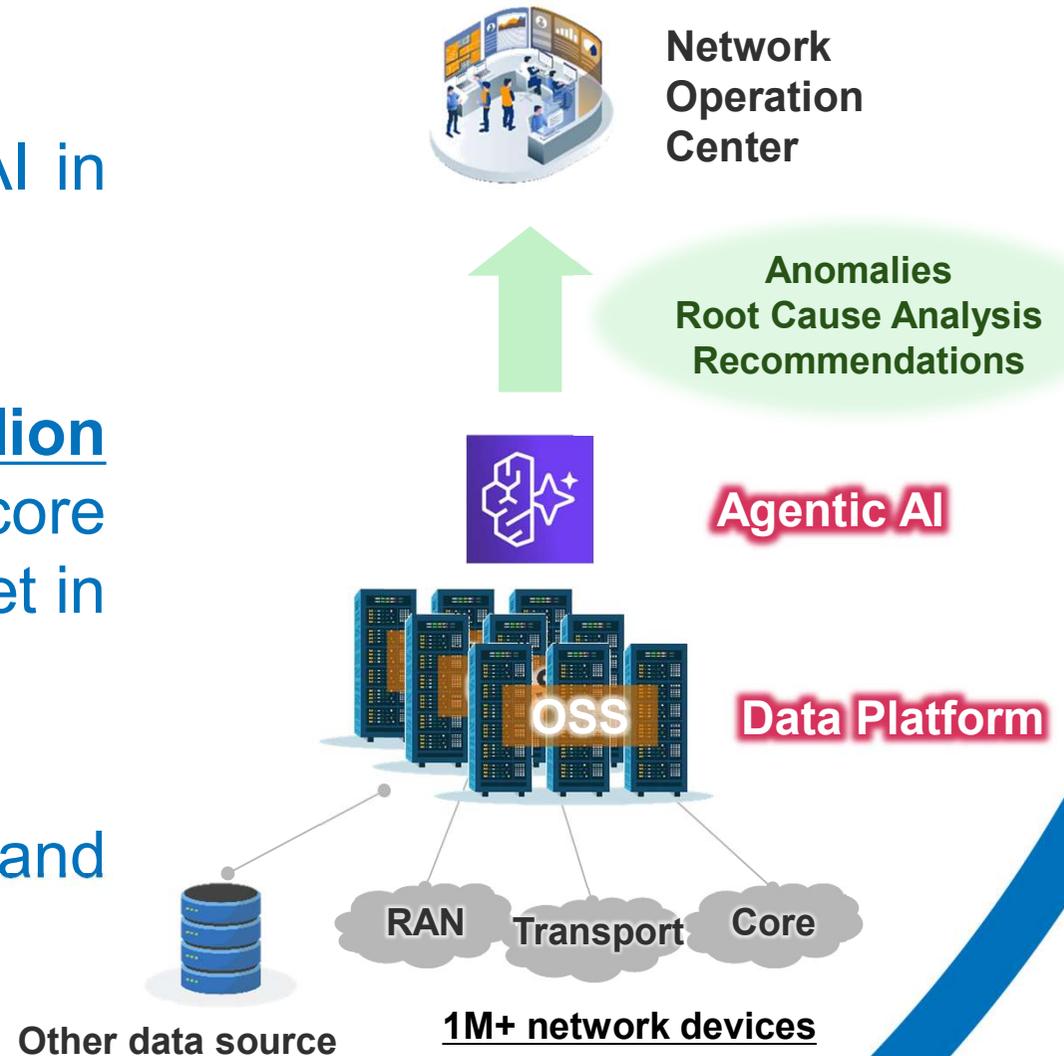
- In-Network Computing
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02 Case : Agentic AI for Service Assurance

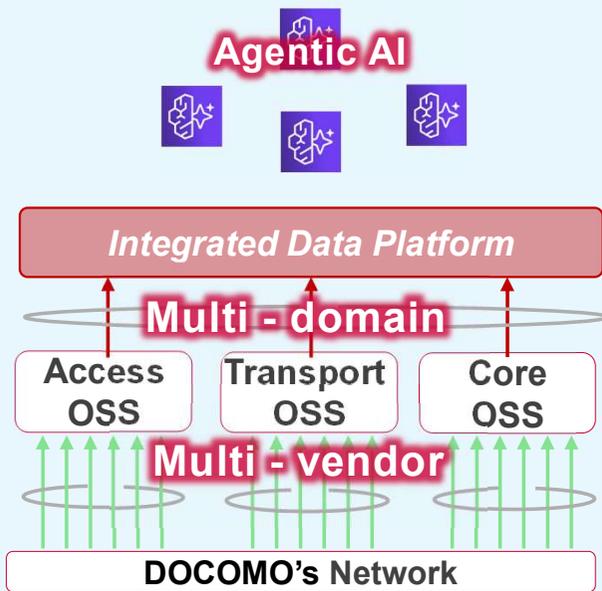
Agentic AI for Service Assurance

- DOCOMO begins using Agentic AI in commercial network operations.
- It analyzes data from over 1 million network devices, from RAN to core networks, one of the largest dataset in the world.
- Multi-agent AI detects anomalies and recommends actions.

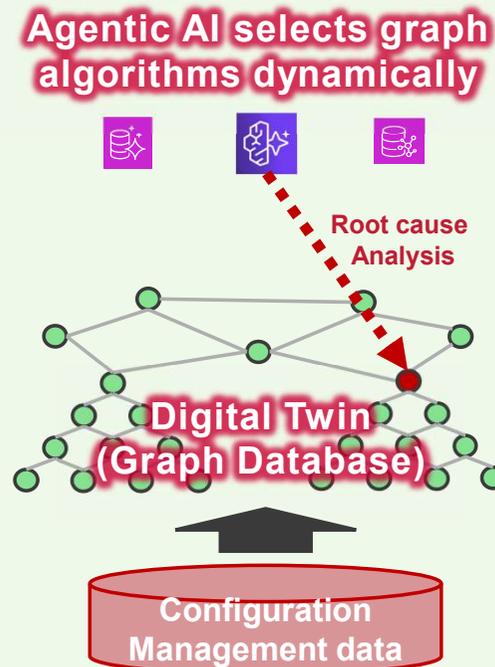


Key Points of DOCOMO's Agentic AI

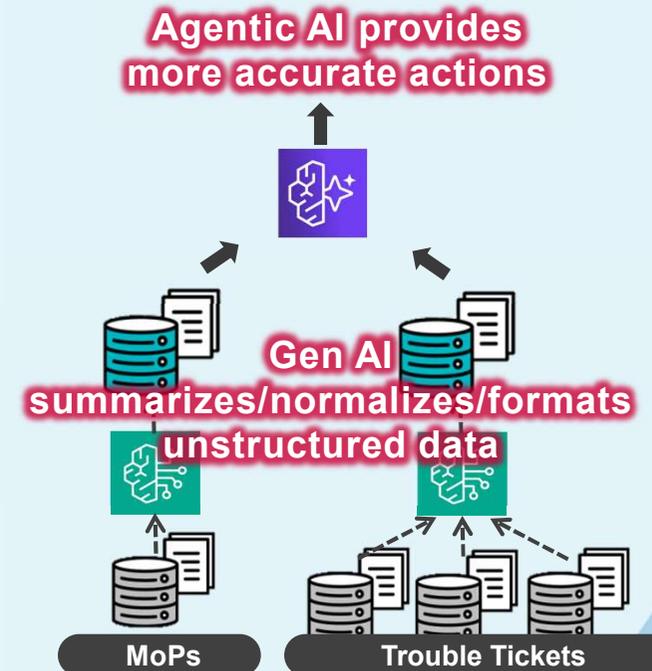
Integrated Data Infrastructure



Advanced Root Cause Analysis

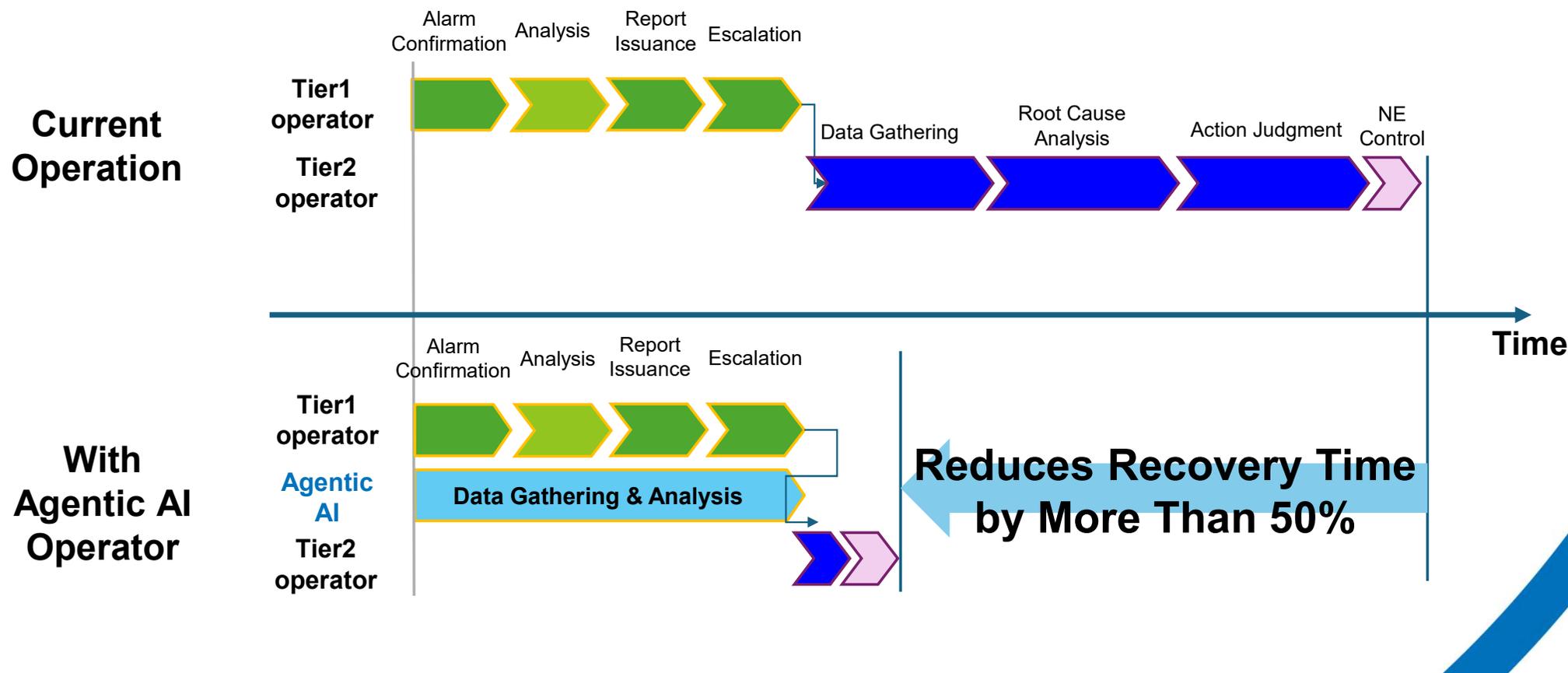


Intelligent Troubleshooting Recommendations



Commercial use case

- Handles complex fault cases requiring in-depth analysis.
- Reduces recovery time by more than 50%.



NAVI: AI Agent Version EN JA

Current Time Dec 03 (Wed) 14:55:00

CORE ?

○

In Service

TRANSPORT ?

○

In Service

prefecture Prefecture judged as abnormal by generative AI

Network Analysis Agent

Examples: Tell me the overall network status Where are the failures occurring?

Ask questions about the current network

Ctrl+Enter: Send, Enter: New LineEXECUTE ANALYSIS CLEAR



NAVI: AI Agent Version > tokyo23 Network Topology > Tokyo_Aggregation_Router_#29 Device Details EN JA

Tokyo_Aggregation_Router_#29 Device Details

Root Cause Analysis

Root Cause Analysis:
Tokyo_Aggregation_Router_#29
(2025/12/3 15:00)
Root Cause: Chassis-level

Recommended Actions

Remediation Recommendations
IMMEDIATE ACTIONS (Priority: CRITICAL)

Network Analysis Agent

Your Question ^

Analyze the number of users affected by this failure.

thinking process

Examples: Show logs related to failures occurring at Analyze the root cause of the failure at

Analyze the number of users affected by this failure.

Ctrl+Enter: Send, Enter: New Line ANALYZING... CLEAR

Traffic Alarm Details

Start Date: 12/03/2025 ~ End Date: 12/03/2025 UPDATE

Traffic Data (38Ports)

Port Name	Status	Traffic Trend
Te (32Ports)		
Hu (4Ports)		
other (2Ports)		

Alarm Data

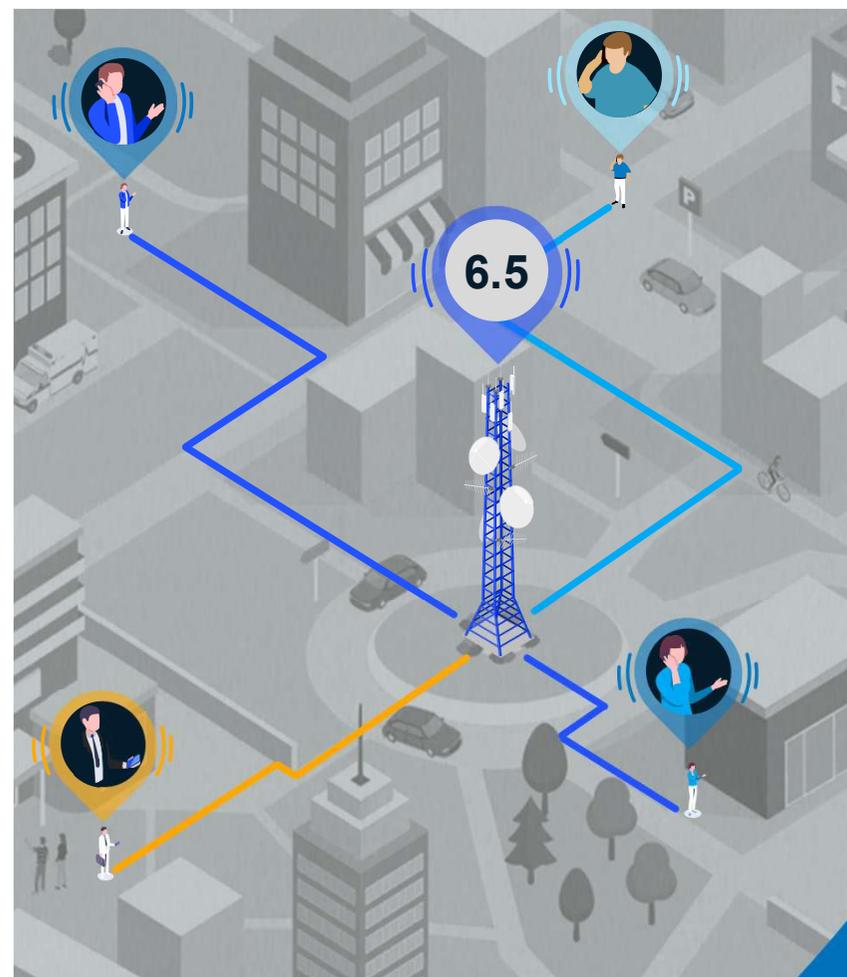
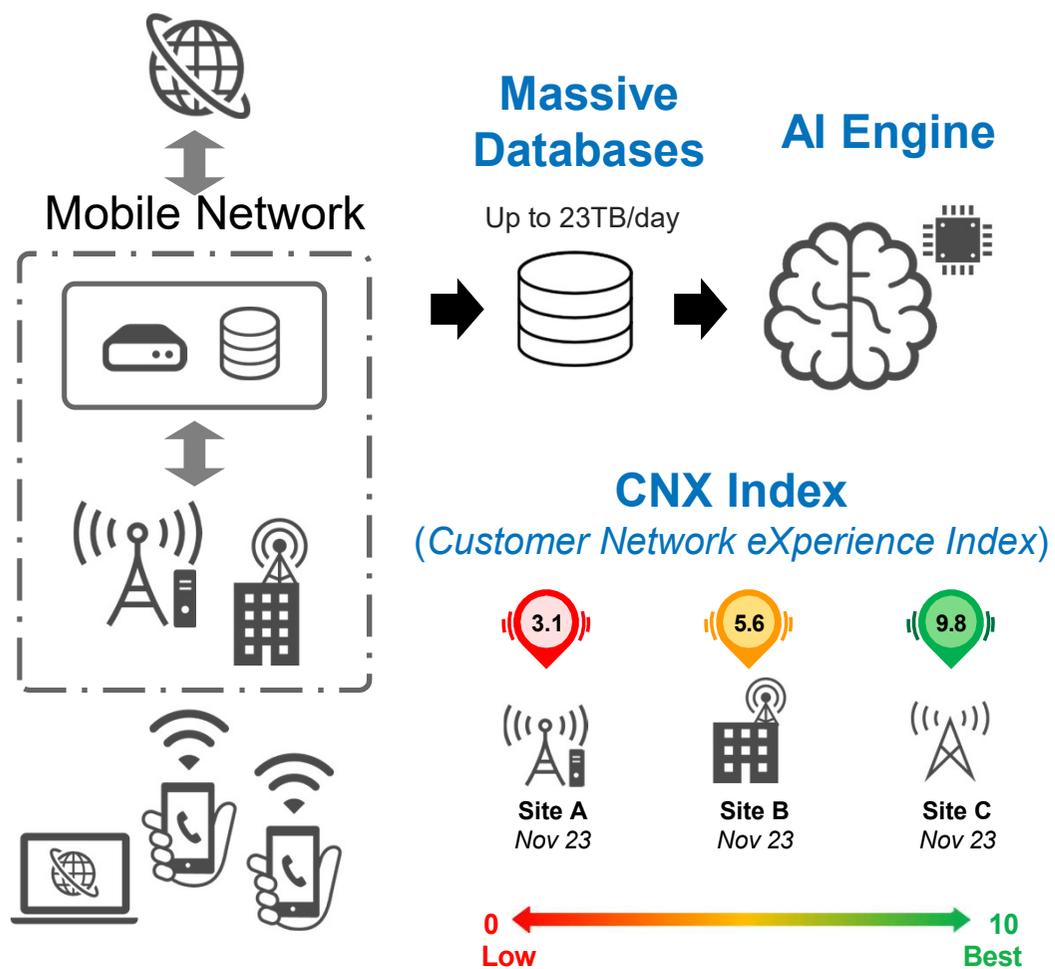
Time	Alarm Count	Alarm Names
Dec 3, 2025 2:00 PM	26	<ul style="list-style-type: none"> IF operation status error occurred Life-of-death surveillance is not po Hardware operation status error oc BFD session state error occurred OSPF neighbor state error occurred

"Prompt-based additional analysis is supported.
 in this case, the number of users affected by the failure is estimated.



03 Case: CX Analysis

Automated Site Evaluation based on CX: Powered by AI-Driven Big Data



AI-Supported Decision-Making for All Base Stations Across Japan

Why does Japan have one of the most demanding network environments in the world?



High Quality Standards



Extreme Site Density



Dual Complexity:
Urban vs. Rural



Smart Site Evaluation & Action: Train Line Case Study

AI detected network quality drops at 15% of sites, triggering immediate action at each location.



Site IDs/ NB Name	Avg. CNX Index	5G	Key Decile Drivers	Potential Interventions
Site #1		NA	Heavy congestion	Add 5G capacity (C-Band)
Site #2		NA	Frequent connection drops (handover)	Optimize handover settings
Site #3		sub6	Weak signal inside tunnels	Adjust antenna power / tilt
Site #4		sub6	Frequent connection drops (SCG Failure)	Optimize SCG accessibility
Site #5		NA	Low VoLTE performance (R-factor <90)	Confirm coverage and plan set up a new site
...				
Site #N		-	High C-Band utilization; low 4G congestion	NA

Driving Business Impact with CNX Index

Use Cases

1. Faster Root Cause Analysis
2. Smart CAPEX Allocation
3. Proactive User Experience

Our Goal:

- ROI-driven CAPEX optimization
- A differentiated customer experience

Key Areas for Further Exploration



Expanding Use Cases

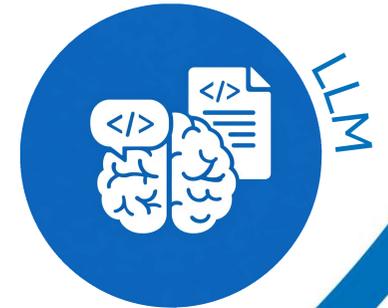
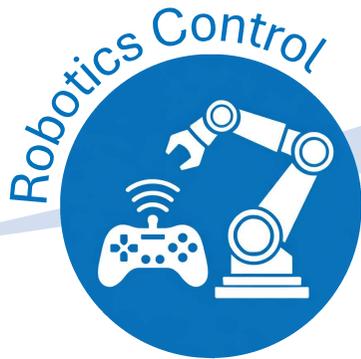


Continuous Network
Adaptation

04 Case: In-Network Computing

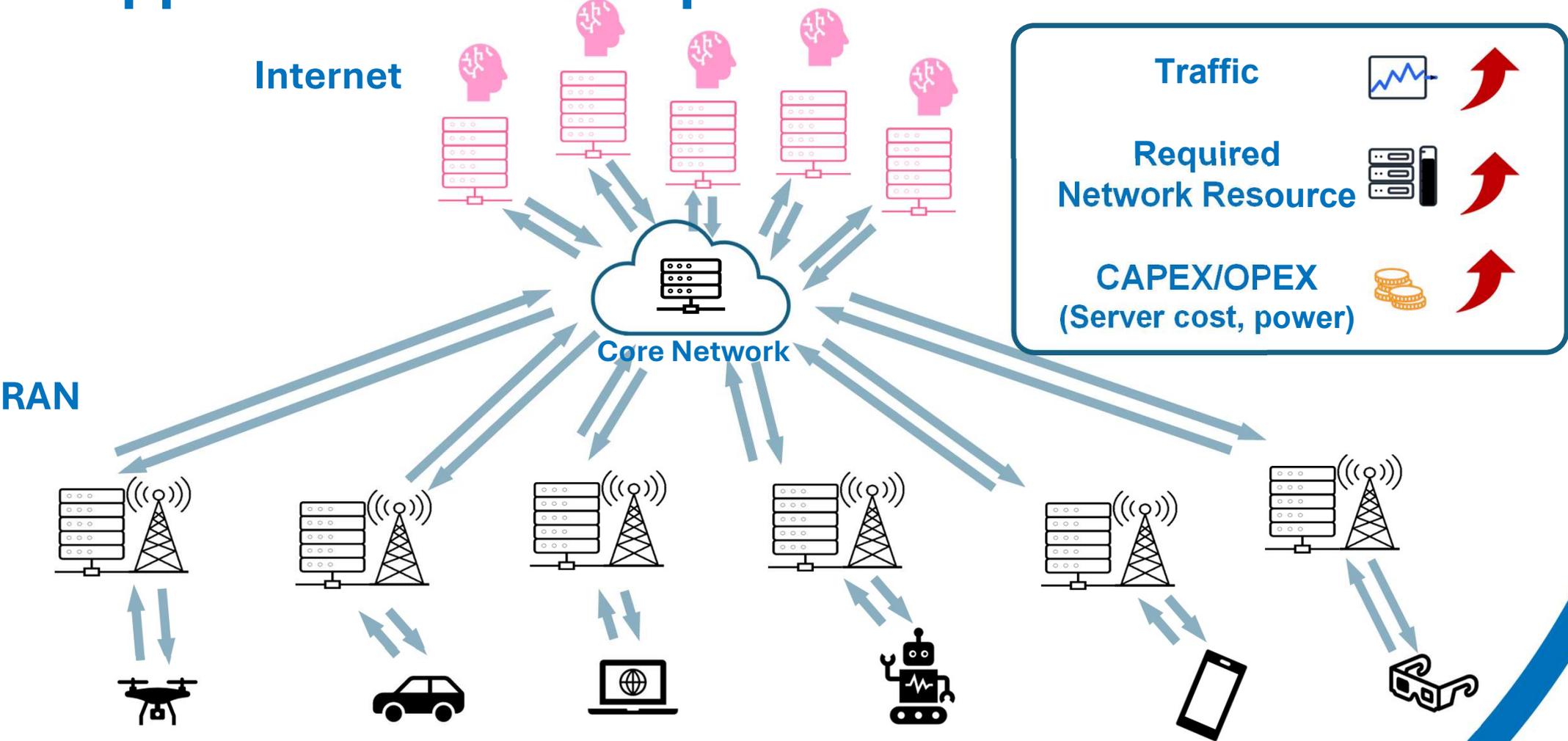
Background: AI market rapidly growing

**Network Traffic
Rapidly Increase**



Challenges:

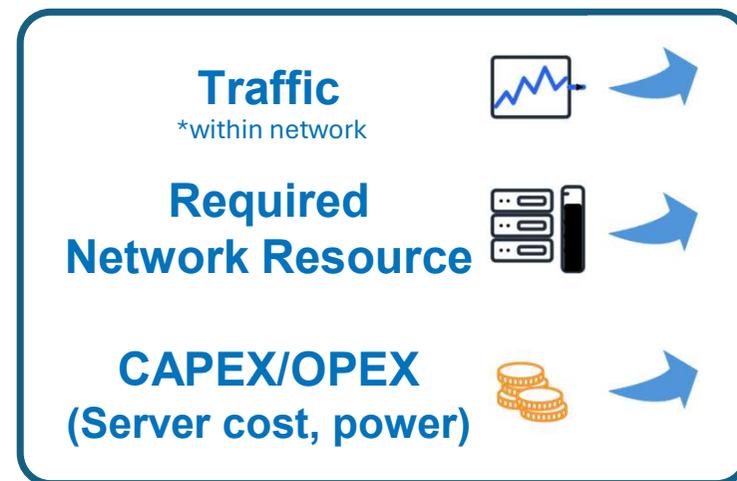
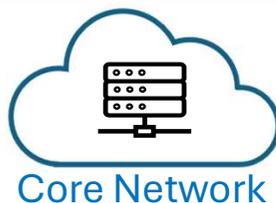
AI Applications Drive Up Traffic & Costs



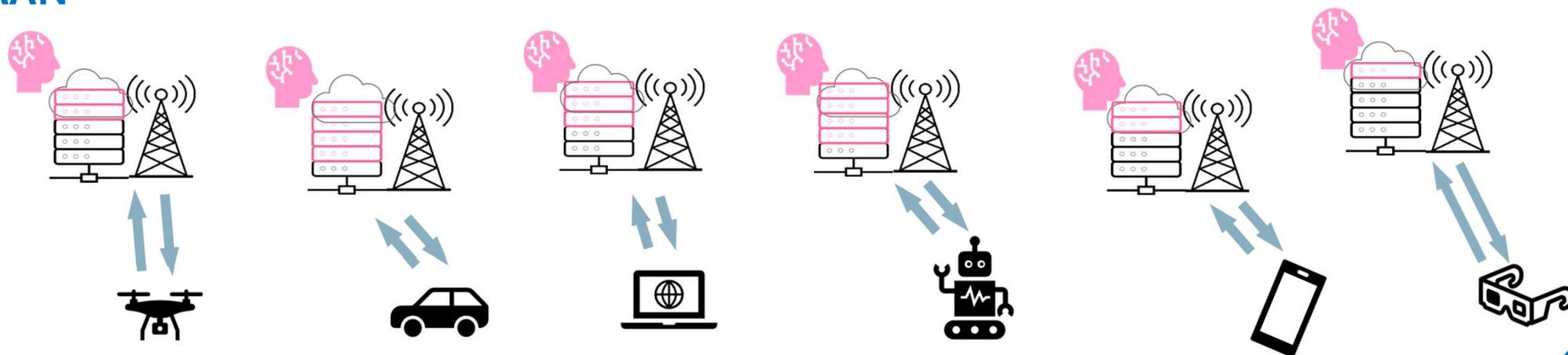
Solution: Edge Computing in Cloud RAN

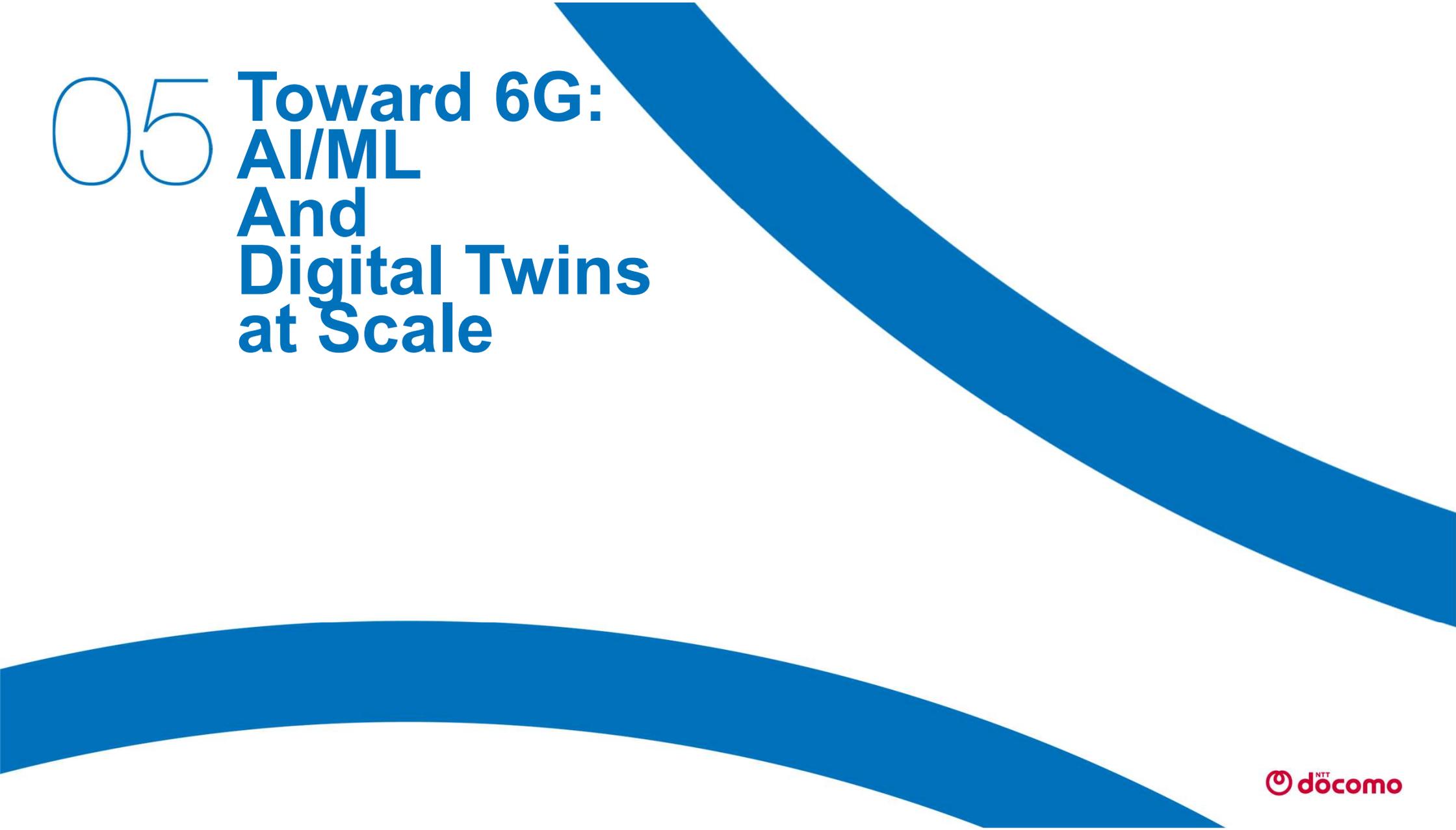
Integrating AI applications directly into RAN base stations

- ✓ Transactions between AI servers and devices can be terminated within RAN
- ✓ Utilizing xPU resources in vRAN (general-purpose server) for AI task
 - ✓ Especially, **CPU utilization is key** to realize cost-efficient network



RAN

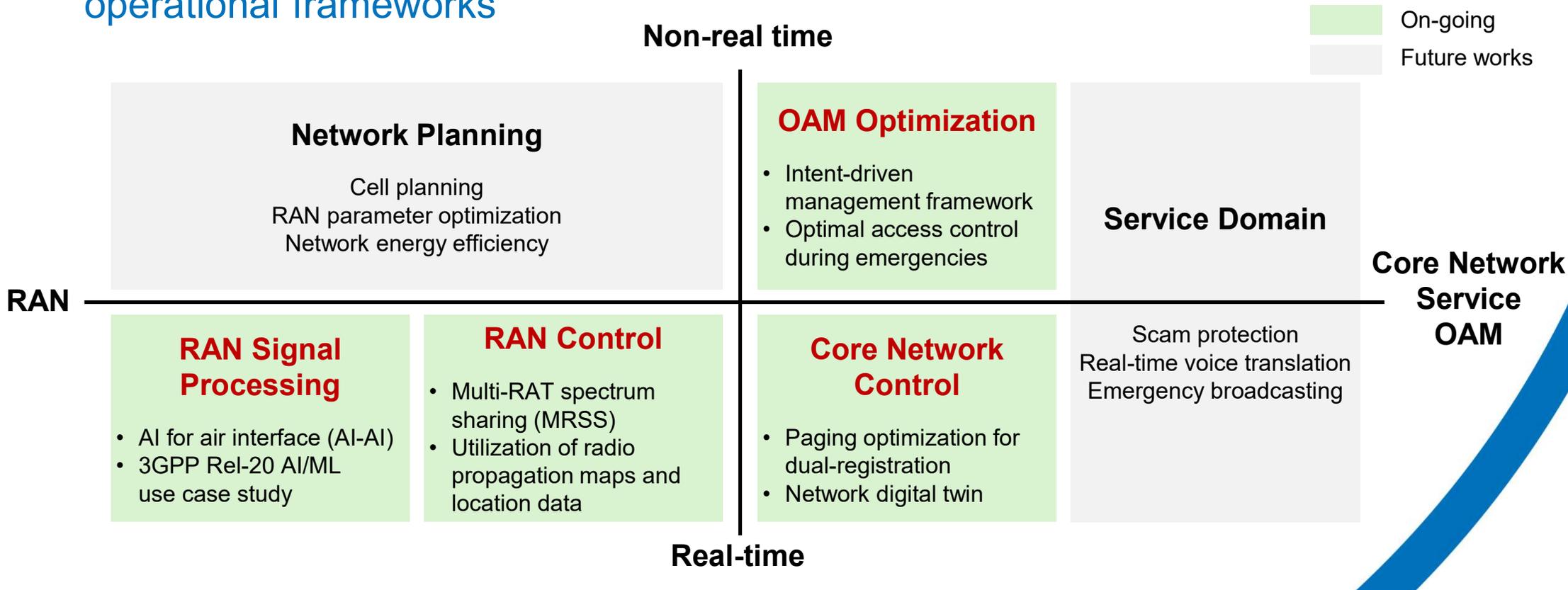


The background features two thick, blue, curved lines. One line starts at the top center and curves downwards and to the right, ending at the right edge. The other line starts at the bottom left and curves upwards and to the right, ending at the right edge. These lines create a sense of movement and flow.

05 Toward 6G: AI/ML And Digital Twins at Scale

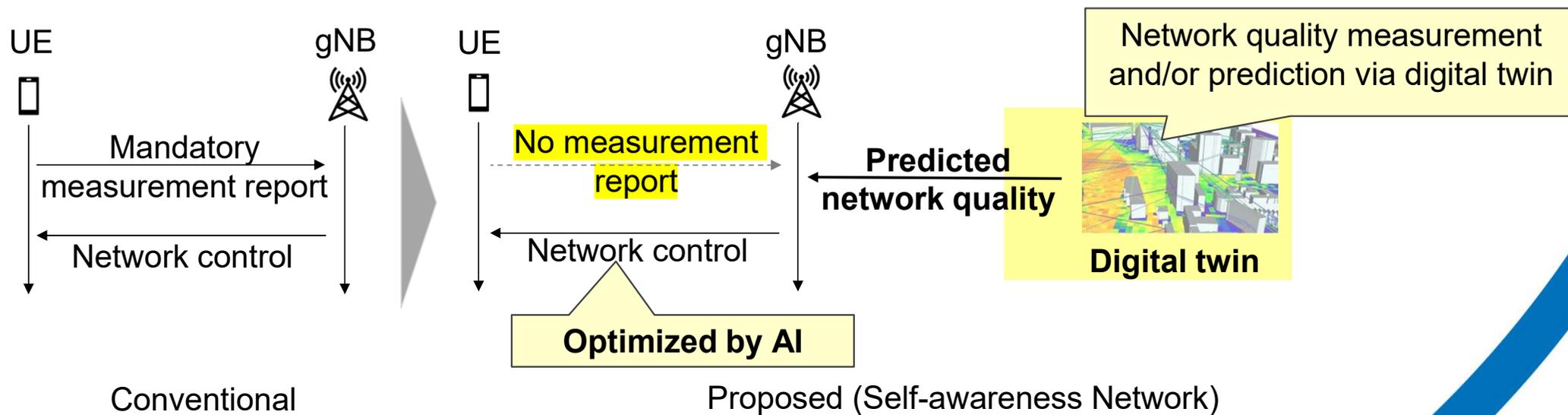
R&D Scope of AI for Network toward 6G

- Identify areas where **AI/Data can deliver significant impact** across RAN, CN, and OAM (especially for network operators)
- **Collaborate across domains** to strengthen AI/ML foundations and operational frameworks



Self-Awareness Network

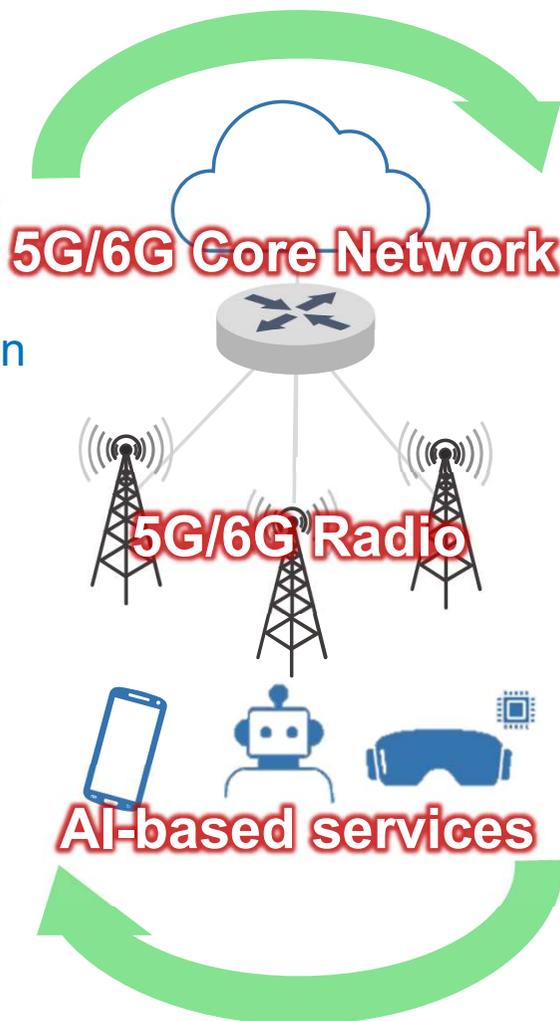
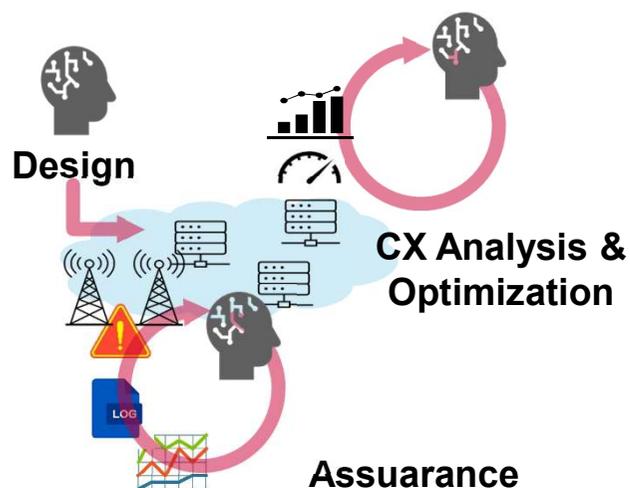
- Leverages **operator-owned data**, such as location and radio maps, to improve network performance
- Overview: Uses AI/ML to process **location data and signal measurements in a virtual environment** and apply real-time control in the real world
- Expected gain: **Reduces traditional control overhead** and improves spectrum efficiency



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