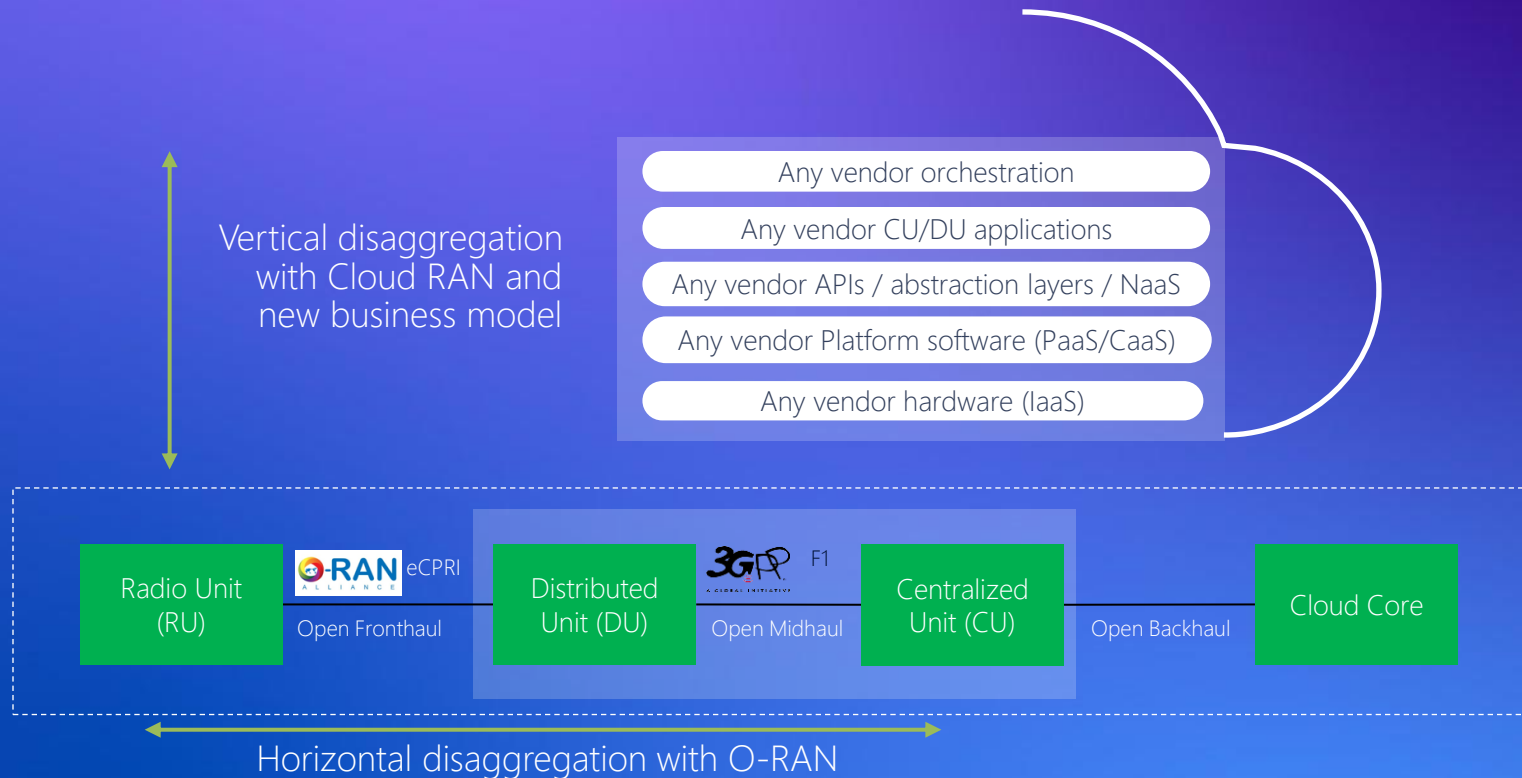# Cloud RAN

## Accelerate the digitalization

*Judicael Vivien Monde*
*Nokia: HoT/CTO Mobile Broadband, North & West Africa*
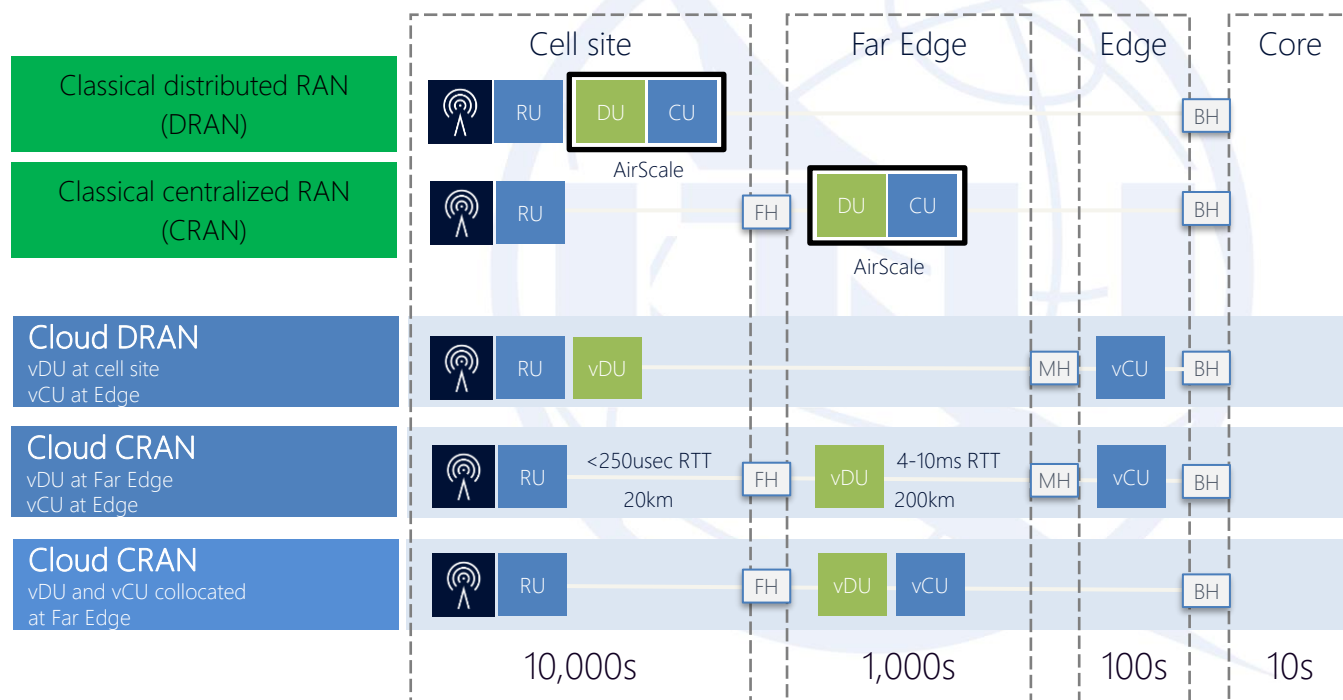
# Disaggregation is evolving, with focus shifting to Cloud RAN

Vertical disaggregation with Cloud RAN and new business model

| Any vendor orchestration |
| Any vendor CU/DU applications |
| Any vendor APIs / abstraction layers / NaaS |
| Any vendor Platform software (PaaS/CaaS) |
| Any vendor hardware (IaaS) |

| Radio Unit (RU) | O-RAN ALLIANCE | eCPRI | Distributed Unit (DU) | 3GPP A GLOBAL INITIATIVE | F1 | Centralized Unit (CU) | | Cloud Core |

Open Fronthaul · Open Midhaul · Open Backhaul

Horizontal disaggregation with O-RAN

NOKIA

# 5G RAN: Flexible deployment options

## Baseband radio functions are placed on the edge or far edge clouds



| | Cell site | Far Edge | Edge | Core |
|---|---|---|---|---|

**Classical distributed RAN (DRAN)**

**Classical centralized RAN (CRAN)**

**Cloud DRAN**
vDU at cell site
vCU at Edge

**Cloud CRAN**
vDU at Far Edge
vCU at Edge

**Cloud CRAN**
vDU and vCU collocated at Far Edge

RU — DU — CU (AirScale) — BH

RU — FH — DU — CU (AirScale) — BH

RU — vDU — MH — vCU — BH

RU — <250usec RTT — 20km — FH — vDU — 4-10ms RTT — 200km — MH — vCU — BH

RU — FH — vDU — vCU — BH

10,000s — 1,000s — 100s — 10s

One common cloud native baseband SW that is running in purpose-built HW and in IT server HW

# Comprehensive management is the heart of Cloud RAN

Unified management for Radio, Core and Enterprise

Unified management for radio, core and enterprise networks

Faster, easy-to-use, and error-free RAN lifecycle with automation

Leading solution for optimization with multivendor capability

Coordination between virtual distributed and centralized units

Automated network rollout and RAN lifecycle management

Automated infrastructure and HW management

# It starts with cloud-native but is much more

Your journey to Multi-Cloud

- Consumer Mobile Broadband
- Connected vehicles
- MVNOs
- Industrial automation
- Web scalers
- Utilities
- Public safety
- Enterprises

## CSPs' consumer & verticals value creation via Multi-Cloud

| ❶ | ❷ | ❸ | ❹ | ❺ | ❻ | ❼ |
|---|---|---|---|---|---|---|
| Cloud-native foundation | Design for security | Open networks | Cross-domain automation | Service intent orchestration | Multi-vendor continuous delivery | Multi-cloud |

# Taking advantage of the cloud

## Network monetization with the city brain at the center

School, Campus &
Library
Transport
Agriculture

Hospital, city police
Governmental key
ministries

Financial intuitions
Marketplaces
Mines

All around data center
Accelerate
Digitalization

Regional Hub
National or regional
champions

data ownership,
geographic location,
and privacy

# Evolving

**Ready for cloud-native** ⟩ Required for 5G Standalone Core
4G, SDM and Voice can benefit

**New enterprise & industrial customers** ⟩ Reduce latency, localized security
Consistency across countries

**SaaS / NaC strategy** ⟩ Transform customer interaction
Let them create their own slices

## Public & Hybrid Cloud

⟩ Speed up market entry
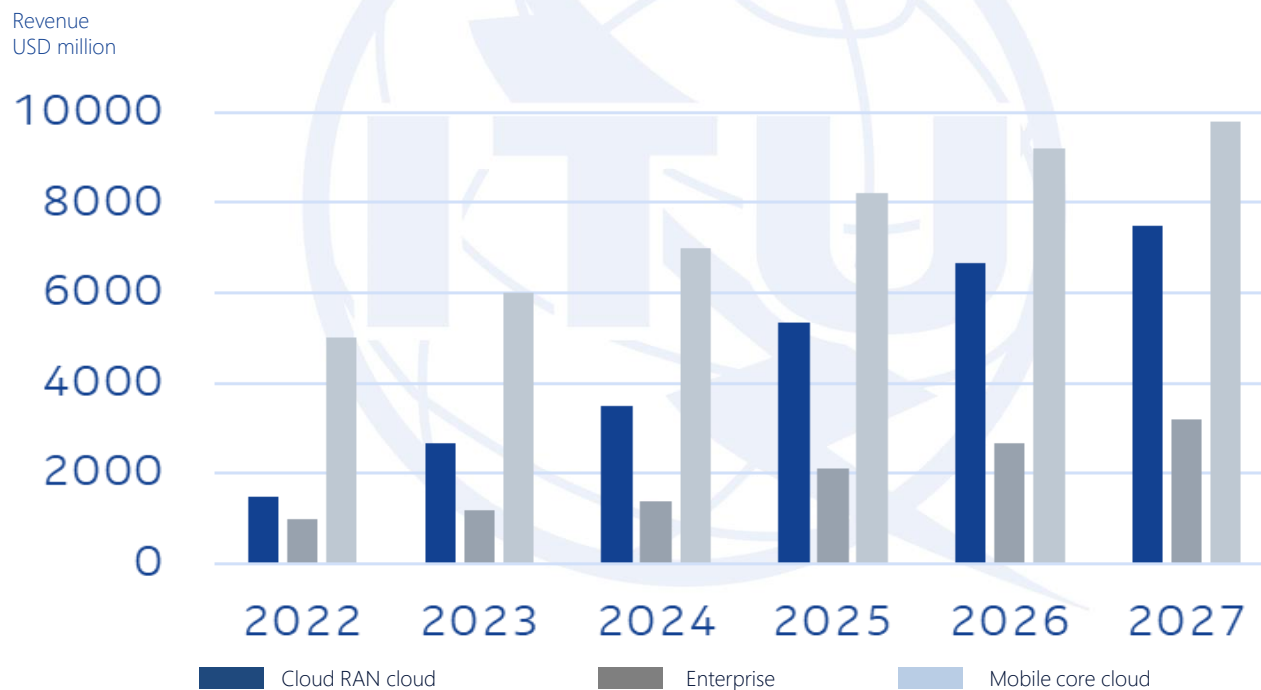
⟩ Jointly pursue new markets

⟩ Achieve full business value of 5G

## By 2027, Cloud RAN accounts for 37% of total network cloud infrastructure spending

### Network cloud infrastructure, worldwide forecast 2022 - 2027



Revenue
USD million

Legend: Cloud RAN cloud | Enterprise | Mobile core cloud

# Conclusion

- Invest in cloud to facilitate the digitalization of the economy

- Manufacturers, CSP, WebScalers, government and etc, collaboration required

- National/regional / Continental data sovereignty required