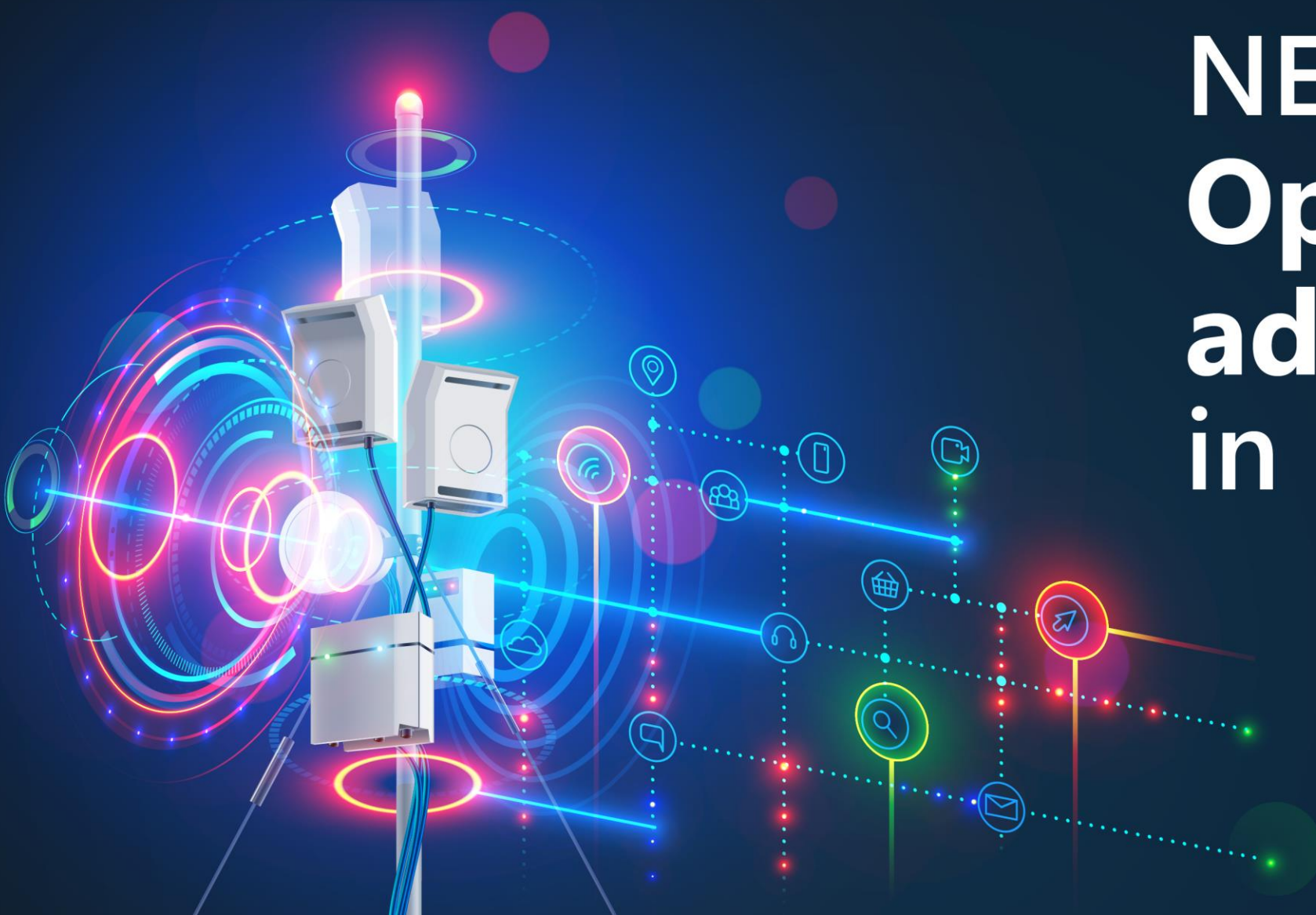


NEC driving Open RAN adoption in India

June, 2021
NEC Corporation India



Expectations from 5G RAN



1 

New Revenue Opportunities

Accommodate hyper diversified use cases by flexible service based network build out

2 

Competitive Landscape

- Remove vendor lock-in
- Ecosystem diversity
- Accelerate multi-vendor network
- Drive down CapEx

3 

Low OpEx

Lean sites and simplified network manageability

4 

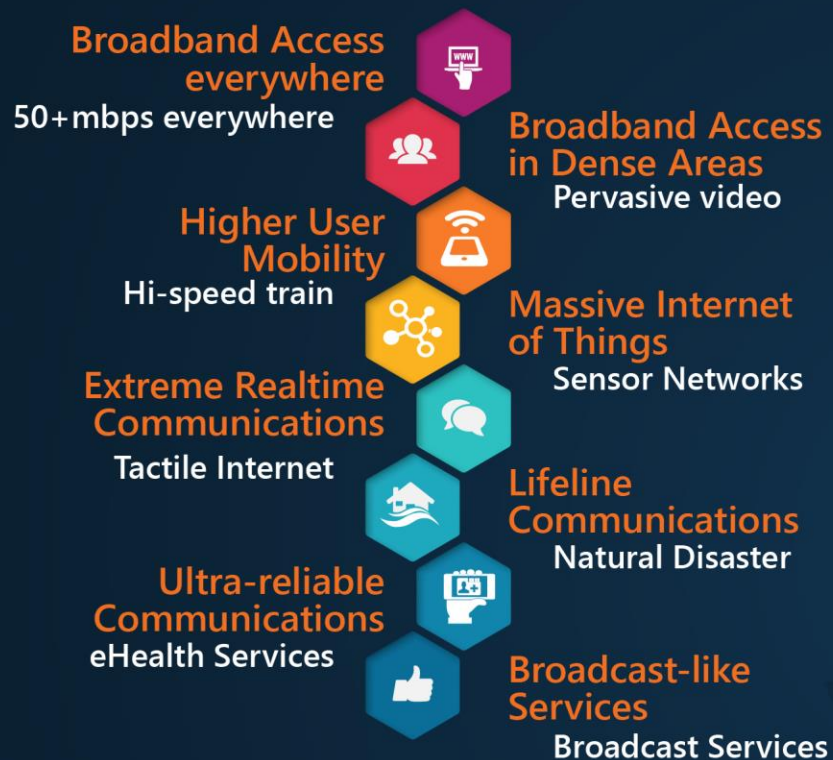
Security

Deliver secured network through trusted supply chain

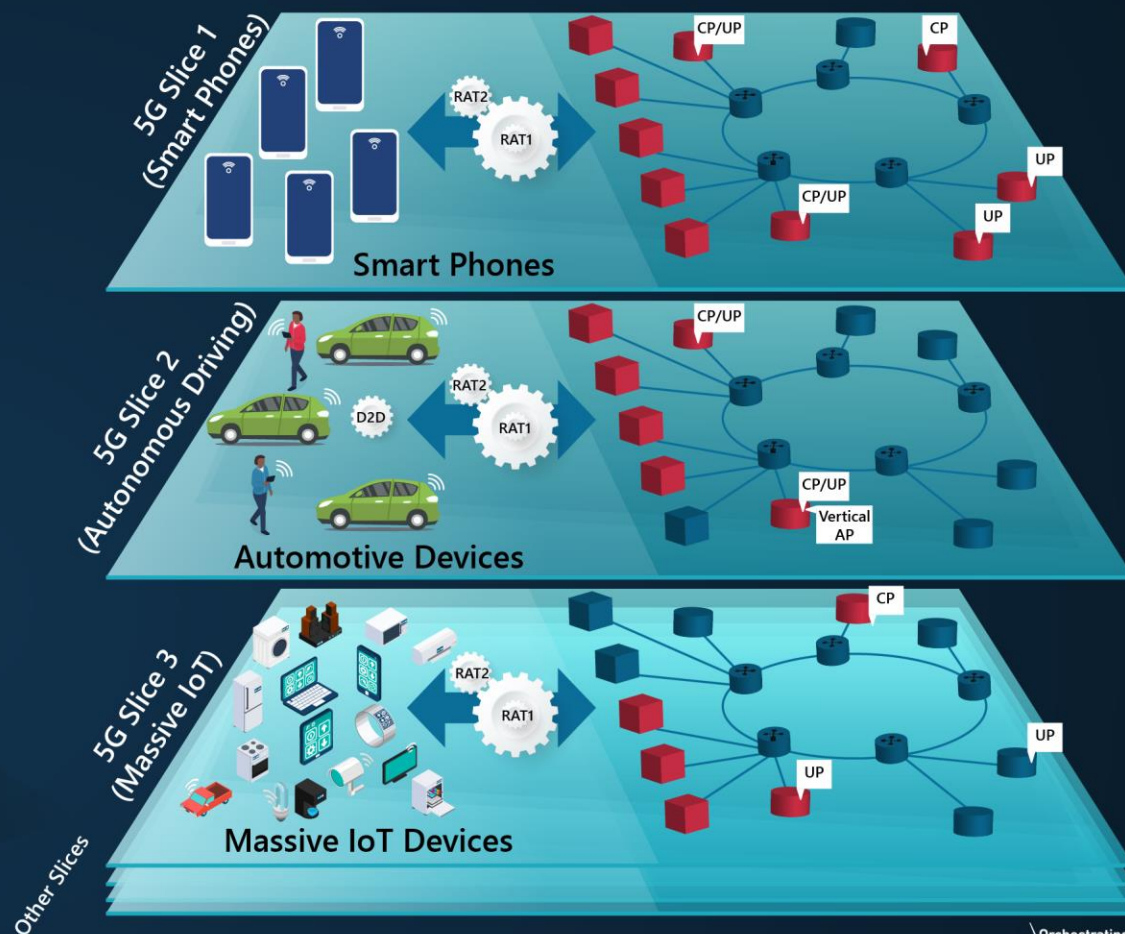
Expectations from 5G RAN



New Revenue Opportunities

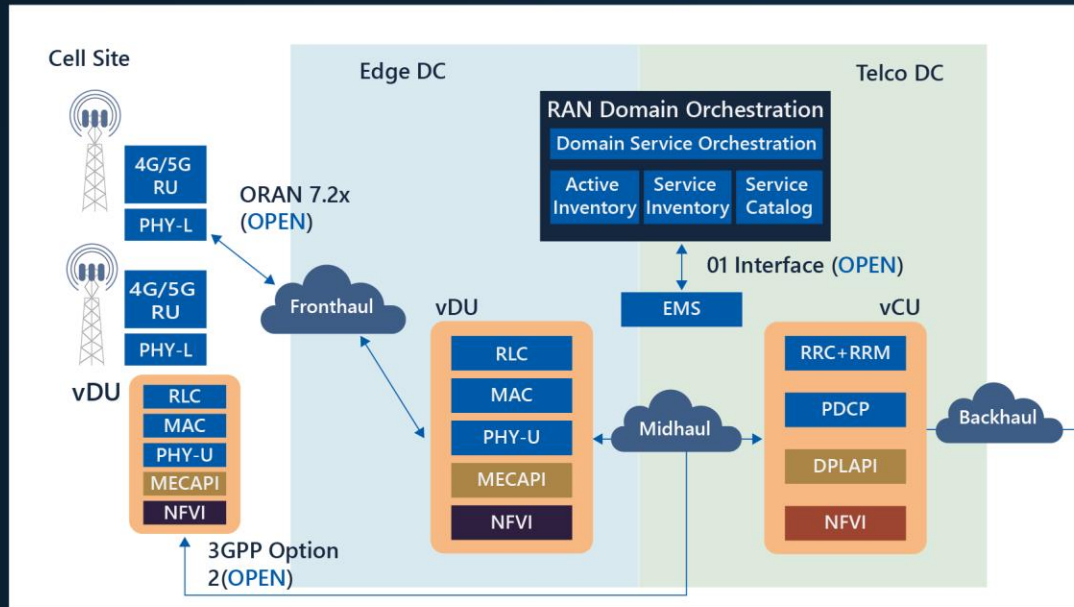


Require Virtualized, Multi-component Flexible 5G Architecture Solution



Requirement – Wider Ecosystem of Vendors

2 Competitive Landscape



Requires a Wider Ecosystem of Vendors

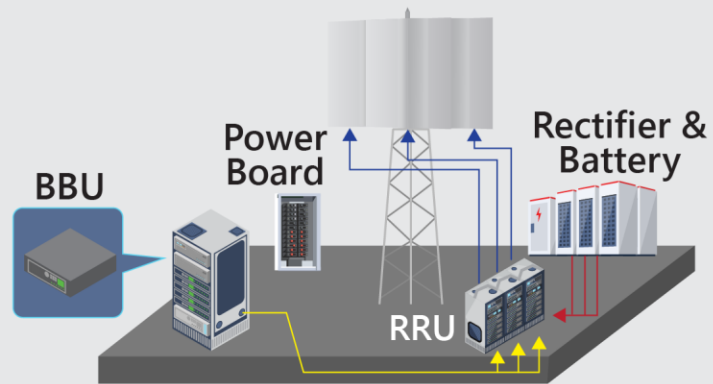


Requirement – Massive MIMO Radio and Cloud Infra

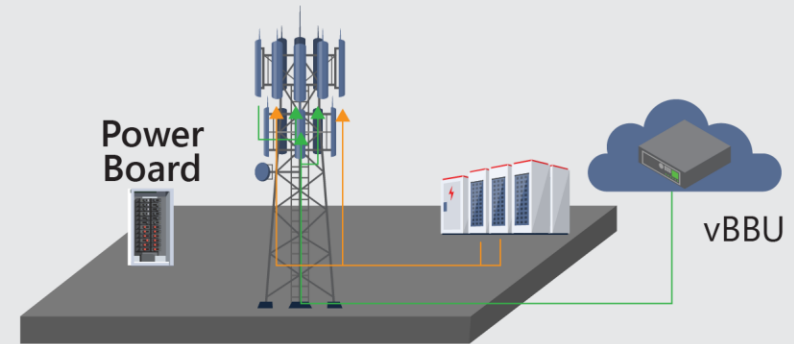
3 Low OpEx

Requires Cloud Infrastructure and Massive MIMO AAU

Traditional Site Deployment



Rakuten Simplified Site Deployment



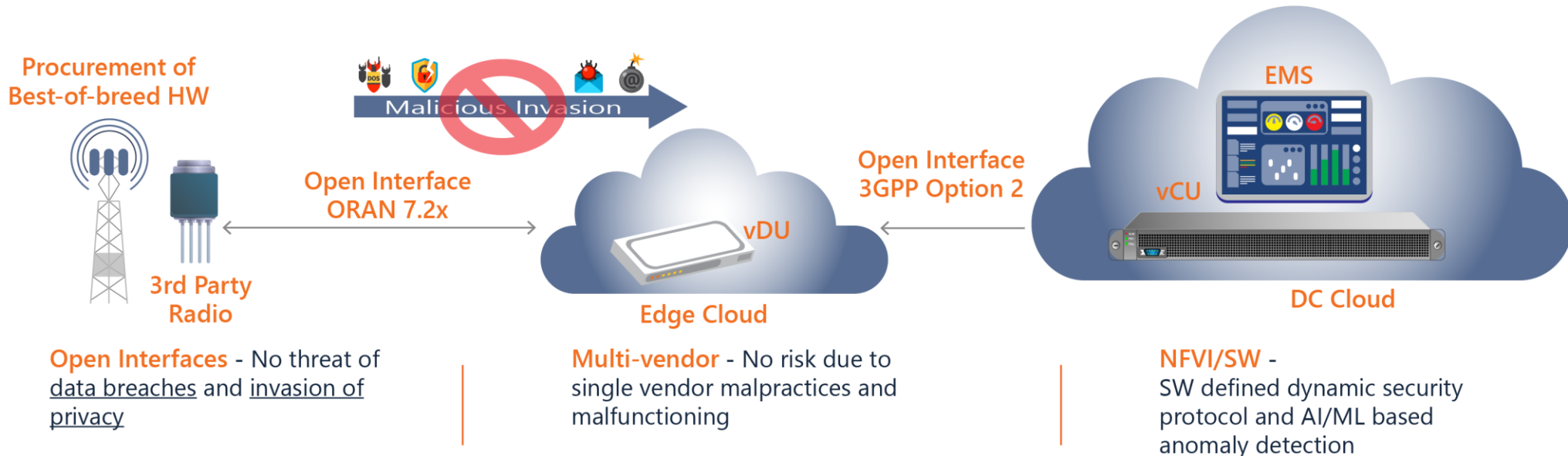
Source: <https://global.rakuten.com/corp/investors/documents/results/>

Requirement – Trusted Vendors and Network Security

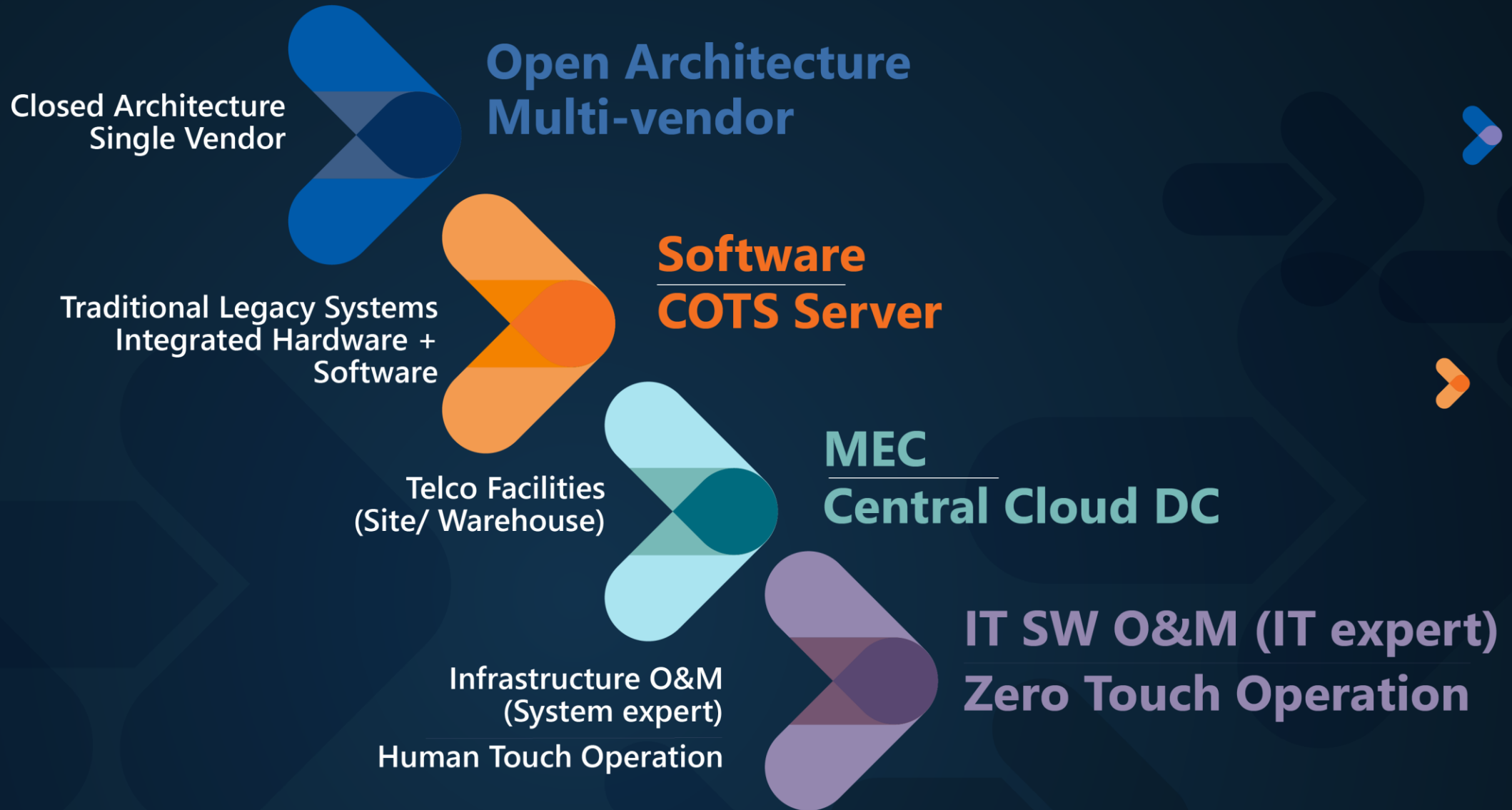


Requires Multi-layer Security and Trusted Vendors

- Multi-tier Access Network
- Securing the Edge (Data Center) - ensuring real-time detection capabilities at the edge before it makes it to the core



5G Open vRAN is the Answer



Challenges in adoption of 5G Open vRAN in India



01

Interoperability and Competence

Require lab facilities and field activities driving interoperability and building competence

02

Solution Integration

Need experienced RAN System Integrator binding the solution technically and commercially

03

Network Manageability

Require assistance in building Cloud Infrastructure, Life Cycle Management and Automation of Network

NEC has setup Open RAN Competence Centre and Labs



**Interoperability
and Competence**

**Local India Open RAN Competencies and
Interoperability and Validation Lab Facilities**

COE Lab in India

- E2E System Validation
- Development of Ecosystem

COE in UK

- Knowledge Pooling
- Central Engineering Support

Local Competence in India

- System and Radio Engineering
- Field Services
- Project Management

COE in Japan

- 5G Strategy Formulation
- Product Development
- Quality Assurance

Market demands
Customer requirements

**Indian Customer
Engagement and
Deployment
Support**

NEC as System Integrator brings Topmost Open Ecosystem



Solution Integration

Selection of Vendors through Due Diligence, Solution Validation, Back-to-back SLA Agreement



Open, Flexible and Best-of-Breed

NEC

Netcracker
An NEC Company

A10	ACCEDIAN	ADVA	ALTIOSTAR
cisco	DELL Technologies	FORTINET	Infinera
juniper networks	KMW	MAVENIR	HYDROELECTRONICS TECHNOLOGY INC. 台基科技股份有限公司
Red Hat	SAMSUNG	... more to come	

Open Architecture with Collaboration

NEC/Netcracker offering Domain Orchestrator & RIC Platform



**Network
Manageability**

**Commercially deployed Cloud Infrastructure,
Orchestration for Life Cycle Management
and Automation**



Domain Orchestration for Dynamic
5G Slicing and a New Digital
Experience, **E2ESI**

RAN Domain Orchestration

RAN Domain Orchestration				
Umbrella UI				NSSMF (AN)
RAN Service Orchestration			xNF Orchestration	Resource Monitoring
Service Catalog	Service Lifecycle Manager	Policy Manager	xNF Orchestration	Fault Management
RAN Inventory	External System Adaptor (EMS,...)	Configuration Management	vResources Management	Performance Management

NEC is the Only Global Vendor that can offer "Open" E2E 5G Stack



NEC has proven record of collaborating with leading Telcos globally to provide E2E solutions

NEC, Global Leader in Open RAN



100% share in the **Rakuten Mobile Network** for 5G C-band Radio Units

Major supplier of 5G Radio Units to **NTT DoCoMo**

Selected by **Vodafone** and **Telefonica** as SI for ORAN trials

Providing **ORAN DO to Etisalat** together with SI services

Ranked by Gartner as a **“Visionary”** in **5G Network Infrastructure** Magic Quadrant – only ORAN vendor in that category

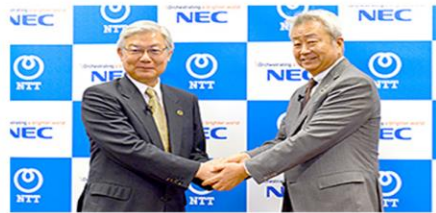
Selected by the **UK Government** for its neutral host Open-RAN based JOTS initiative

Extensively investing in global integration infrastructure - **Centers of Excellence (COEs)**

Actively contributing to global standards bodies and Open RAN forums

NEC, Global Leader in Open RAN

NEC's RAN integrated via
O-RAN Compliant Fronthaul



NEC's O-RAN Compliant
RU, OSS & E2E SI
cloud-native 5G network



Domain Orchestration for
Dynamic 5G Slicing and a New
Digital Experience, **E2ESI**



Pre-commercial **Open vRAN** trial with
Telefonica & **Prime SI** validating the
E2E system as a total solution

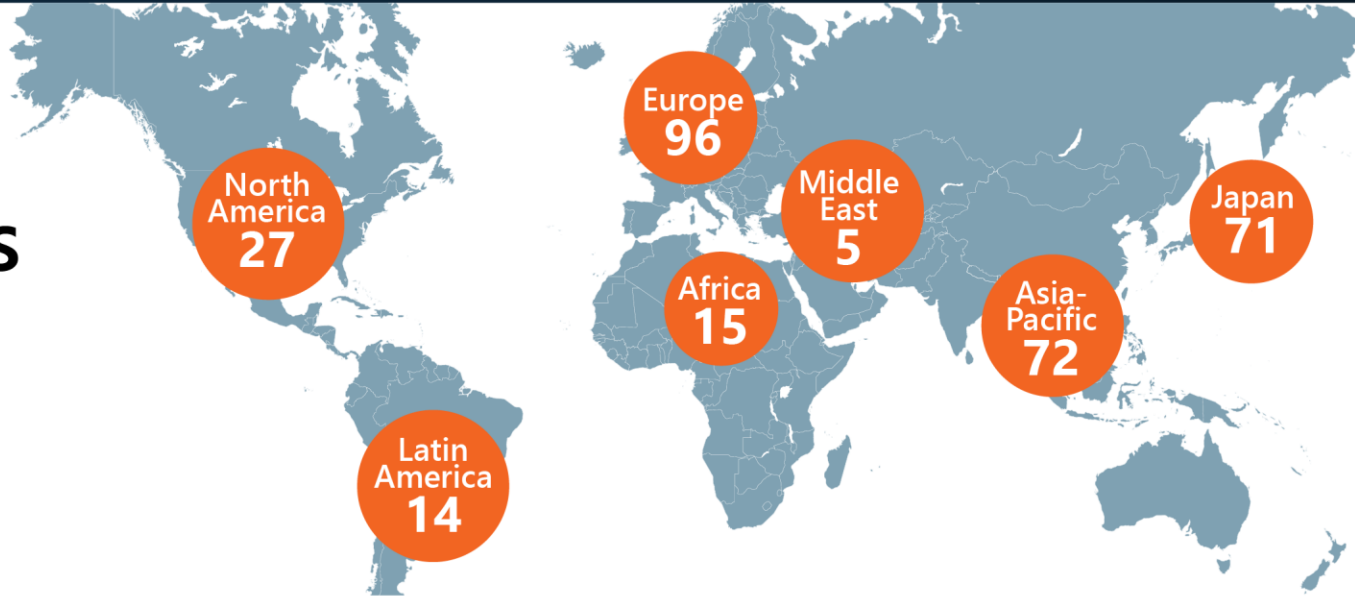


The first successful **voice call over**
Open vRAN on Vodafone's network;
NEC contributes as a **SI** and potential
product supplier



NEC Corporation Overview

300
group companies
do business in
>50 countries



1899

Establishment
Longstanding
relationships of trust
with customers



3,095.2 bn Yen

Revenue

Public Solutions Business 15%
Public Infrastructure Business 22%

Enterprise Business 18%
Network Services Business 16%
Global Business 16%
Others 13%



Approx.
110,000
Employees



A List

Inclusion in the CDP
Climate Change and
Water A List



Approx

5.2 times
Rate of contribution
to CO2 emission reductions
across supply chain



Approx.

47,000
patents



109.8Bn
Yen
Research
expenses



0 cases
of involvement
with cartels and/or
bid-rigging

\Orchestrating a brighter world

NEC