

Innovation by sharing

Advancing neutral host architectures: OpenRAN integration for next-gen networks

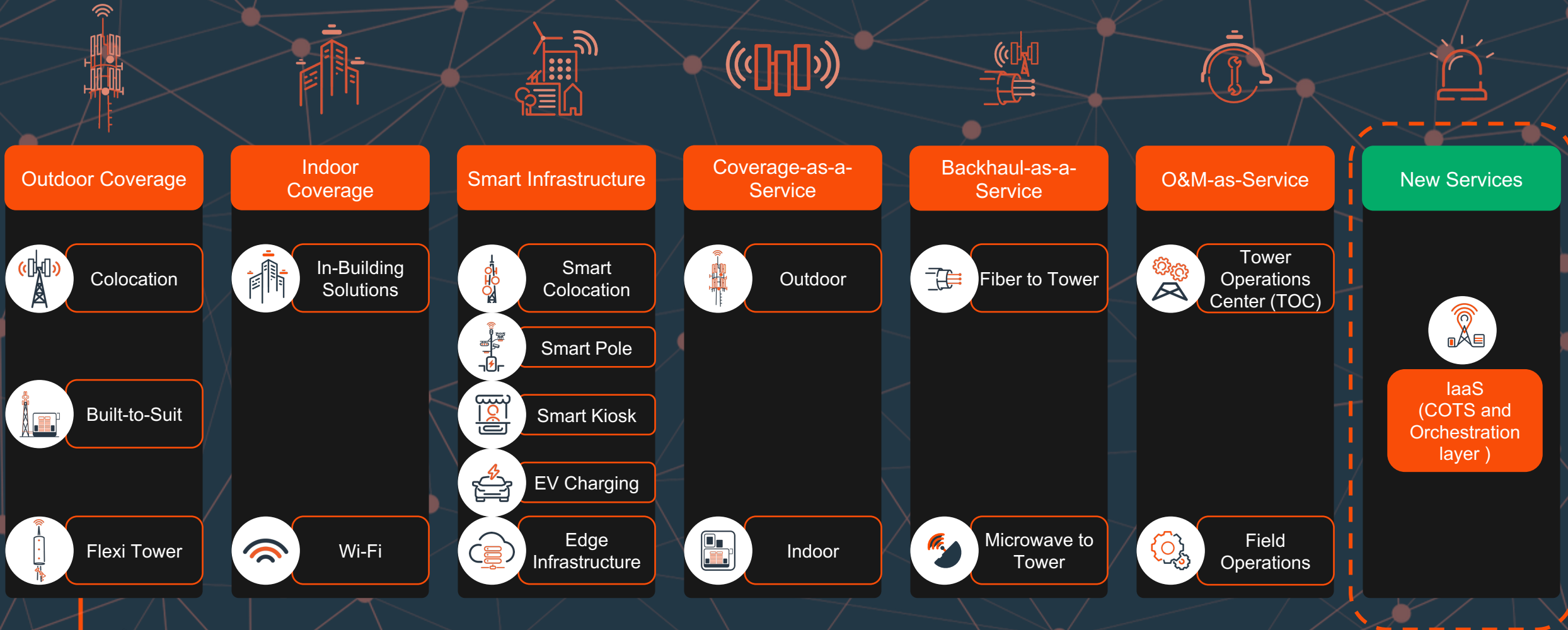
Muhammed Zaryab Nisar – TAWAL
3rd of June 2025



Neutral Host Provider [NHP] Role?

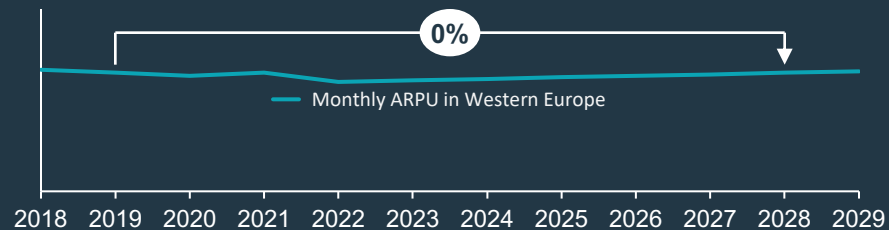
*“With 5G expanding and 6G on the horizon, clinging to classic infrastructure models will only slow us down.
It’s time for NHP to lead—not just support—the transformation.”*

TAWAL



Technology is growing increasingly complex and CapEx-intensive, while telecom services are becoming increasingly commoditized.

MNOs aim cost reductions, but active sharing is not desirable



- TCO for active equipment continues to climb
- ARPU remains flat or declining
- Escalating spectrum costs are further inflating the overall expense



Reality Check

- Majority of global 5G deployments still rely on 4G core (NSA)
- C-band spectrum dominates, balancing coverage and capacity
- 5G specialized use cases are still below expectations



6G Preparations

- Further increase in Capex and OpenX requirements
- Propagation challenges exceed those of current mmWave
- Heavy reliance on software-based upgrades (ORAN Relevance)

OpenRAN has yet to deliver on its promises, held back by single-MNO economics, tech maturity, and interoperability challenges.

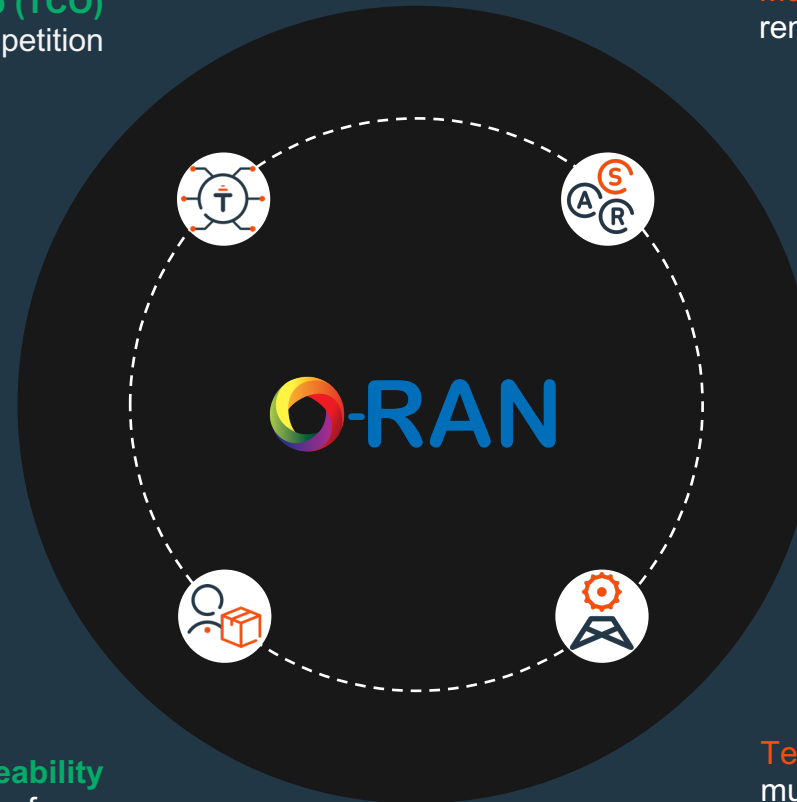
ORAN Promises

Lower Total Cost of Ownership (TCO)
When it comes to competition

Innovation and Flexibility
when it comes to Open interfaces

Faster Time to Market
wider choice of components

Automation and Manageability
thanks to cloudification and Open interfaces



ORAN Challenges

Multi-vendor interoperability at scale
remains a significant hurdle

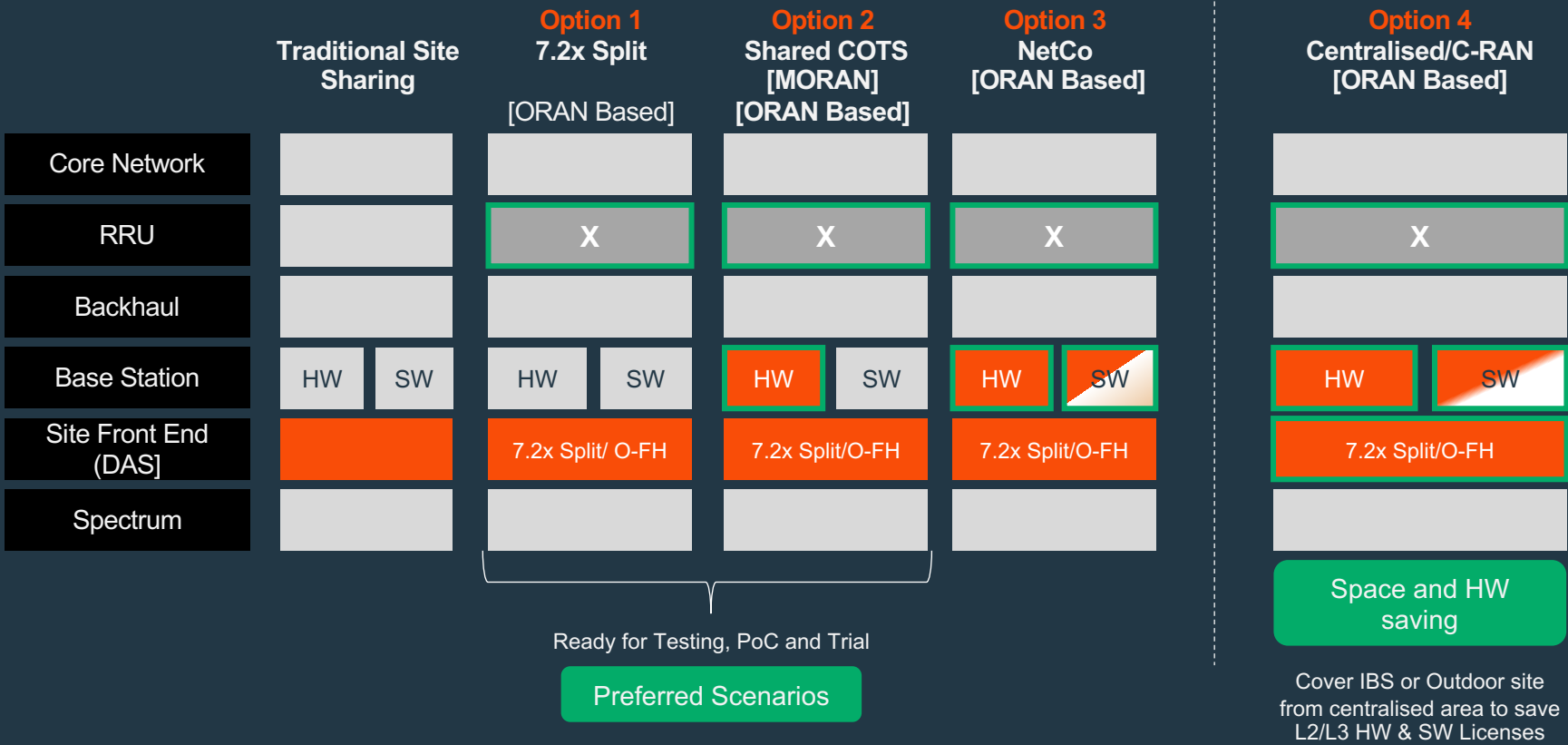
CapEx savings for MNOs
high integration cost & low production volume

Competition remains limited
among traditional RAN vendors

Technology not fully utilise
multi-operator RAN sharing environment



Approaches to deploying **OpenRAN** in Indoor (IBS) environments and have maximum sharing:



Potential Cost-Saving Areas

Owned by Neutral Host Provider (NHP)

Owned by MNO

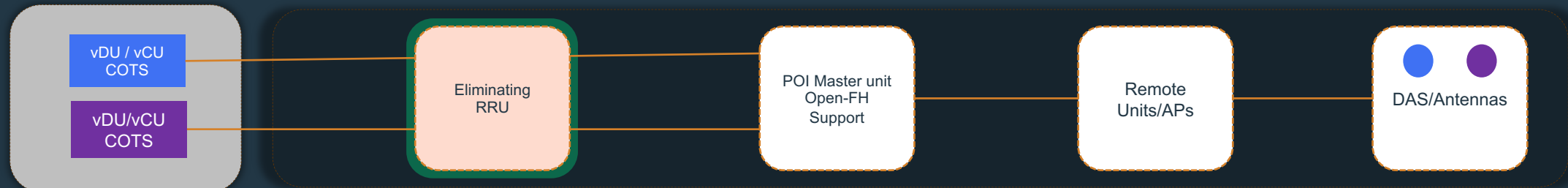


The initial step involves removing the RRU through a simplified ORAN-based architecture, then enabling the shareability using shared compute infrastructure.

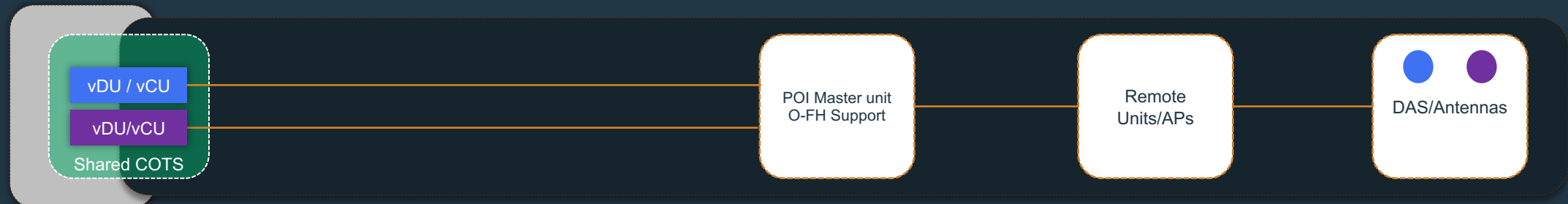
Traditional – IBS



OpenRAN based – IBS (Option 1)



NHP-owned compute server – IBS (Option 2) [Not Traditional MoRAN- with two operators]



MNO 1

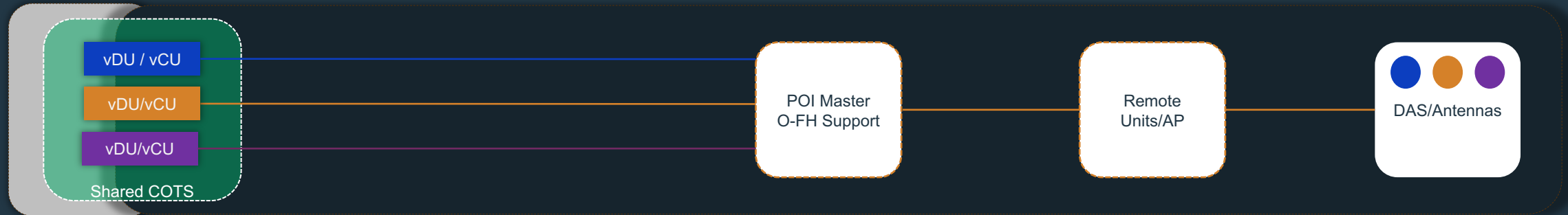
MNO 2

Hosted (NHP)

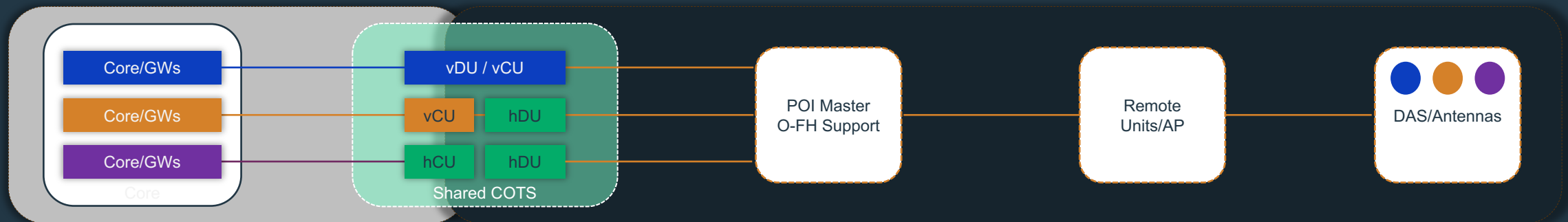


In addition to shared COTS servers, the NHP could also provide the L2 and L3 RAN SW :

NHP-owned compute server – IBS (Option 2) [Not Traditional MoRAN- with 3x Operators]



NHP-owned compute server and RAN SW – IBS (Option 3)



MNO1

MNO2

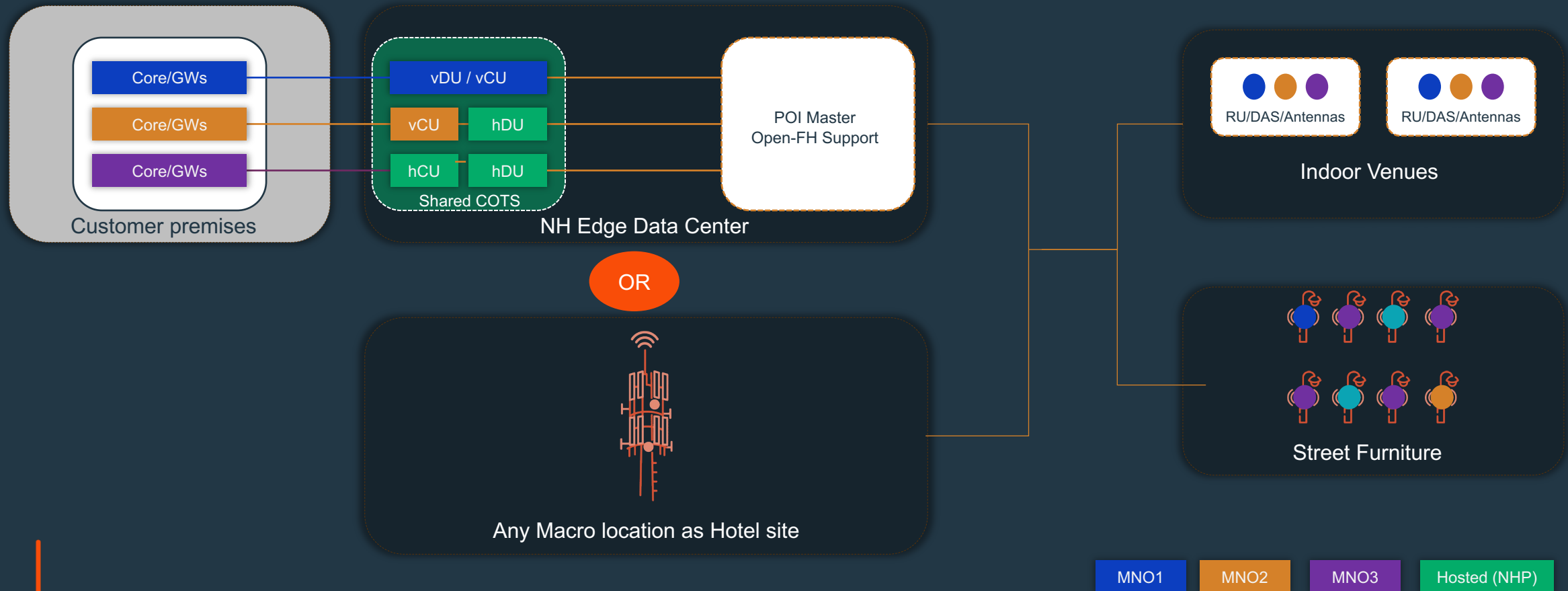
MNO3

NHP Hosted (hDU/hCU)

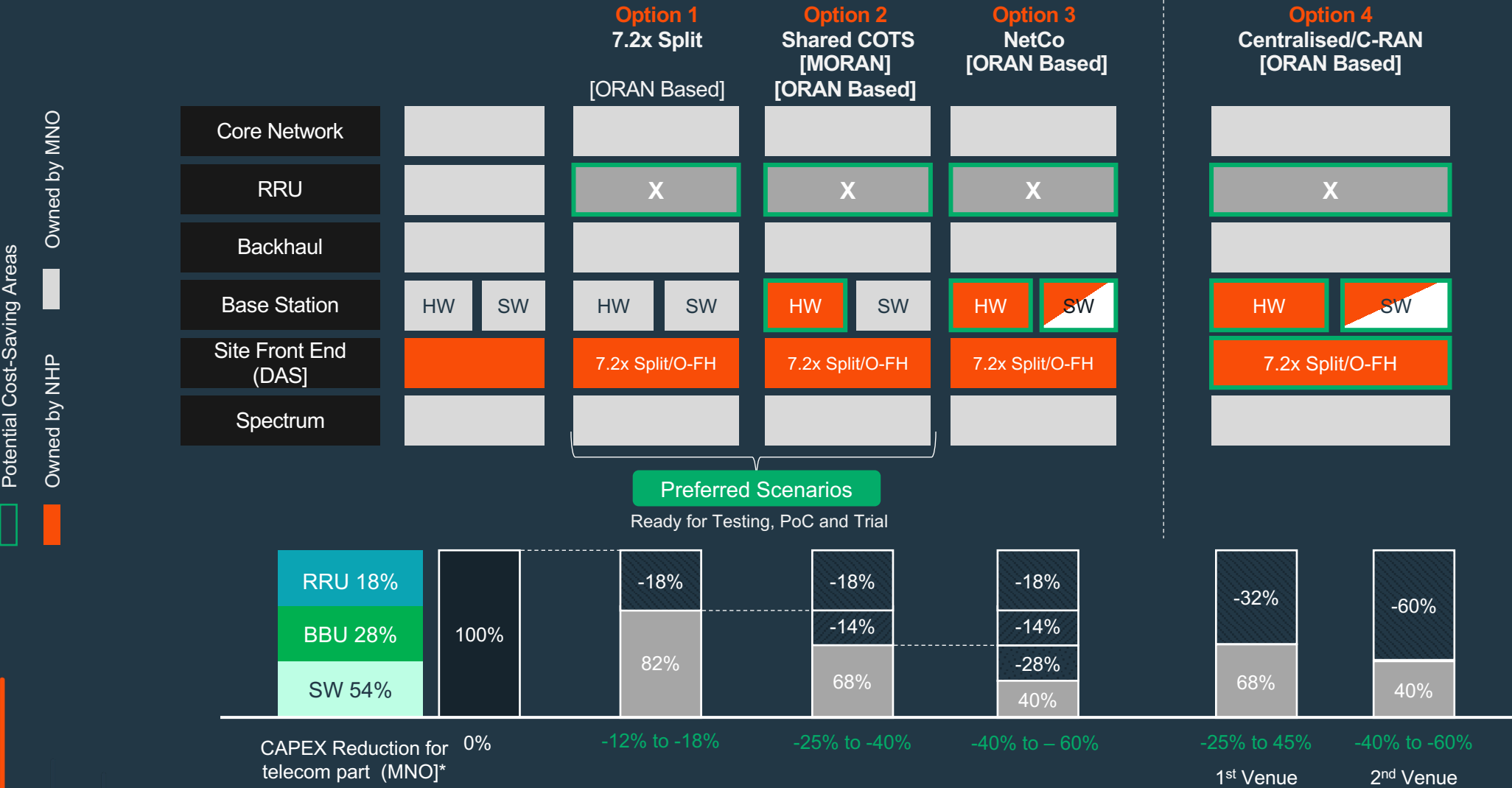


To maximize the benefits of shared infrastructures, a single, centralized location could support multiple indoor and Small Cell sites.

Shared and Centralized Data Center (Option 4)



A comprehensive solution could result in up to a 60% reduction in CAPEX. However, to test viability, we recommend initiating PoCs on Option 2.



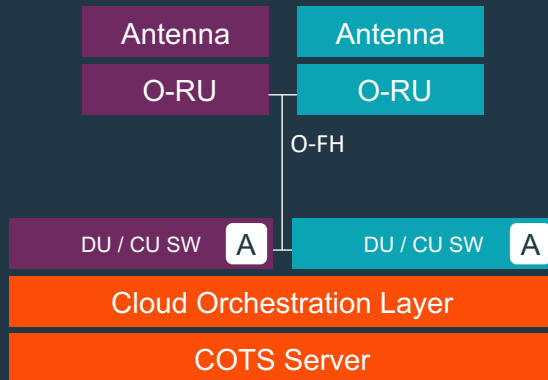
*This is an estimated and high-level cost analysis for a 3-sector site. The Opex will increase depending on the DAS solution.

Option 2: To realize the full potential of this vision, further OpenRAN-based NW sharing innovations are necessary (Macro , Micro & IBS).

1. Today: Ready for deployment



(Multi-Tenant Solution with Single RAN vendor)



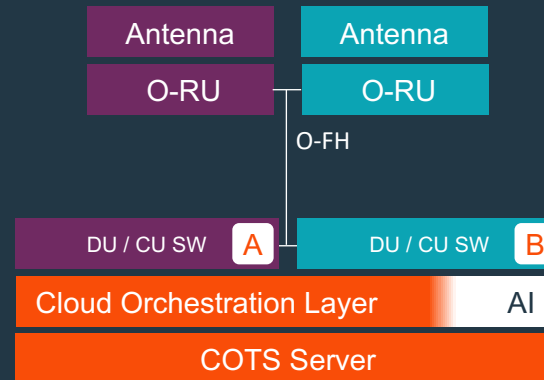
- RAN Management & relevant costs by Lead Host
- MNOs have full control on network
- cost-efficient solutions

LEAP Showcases

*future research area of the O-RAN Alliance.

2. Tomorrow: Testing + R&D needed

(Multi-Tenant Solution with Multi-RAN vendor)



- Individual RAN SW choice creates MNO service differentiation potential
- Higher number of Tenants
- More Flexibility

White Paper

مركز الأبحاث
للتنمية
البحث والتطوير
والابتكار



R&D Award

Neutral Host

MNO 1

MNO 2

MNO 3

A B

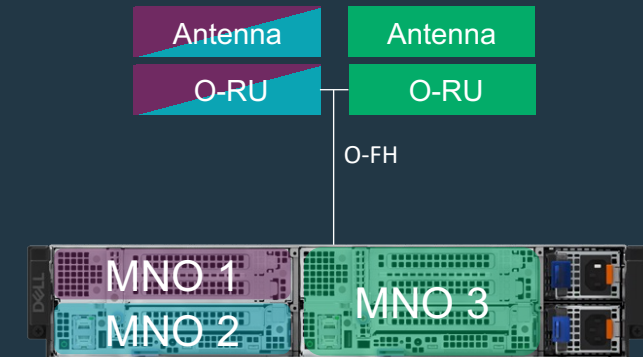
Different RAN Software Vendor

A A

Same RAN Software Vendor

3. In the Future: R&D needed

(Multi-Tenant Shared O-RU Solution with Multi-RAN vendor)



- All RAN-elements shared incl. Antenna & O-RU* creating additional savings
- Unified infrastructure, thus more sustainable and less visually polluting

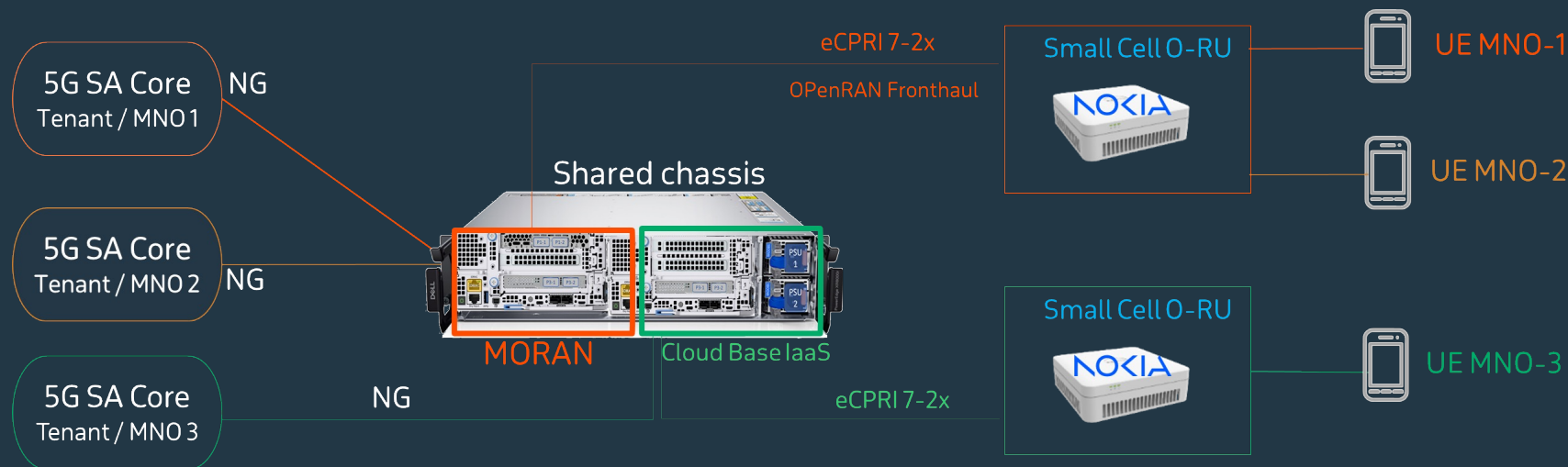
TAWAL & Nokia successfully demonstrate Multi-Tenant Shareable OpenRAN solution at LEAP 2025.

Solution Proven ✓

 LEAP 2025, Riyadh

Live testing of Shareable OpenRAN Infrastructure

“The successful demonstration of multi-tenant Shareable OpenRAN Infrastructure signifies a major advancement in how we can leverage shared networks, improve service delivery, and empower our customers with innovative and cost-efficient solutions.”



IBS provides an ideal starting point due to its deeper technology aggregation compared to Macro.

IBS



Coverage-as-a-Service is already operational and shares Radio Units (RUs).

Cost benefits and strategic indoor coverage make it easier to persuade MNOs.

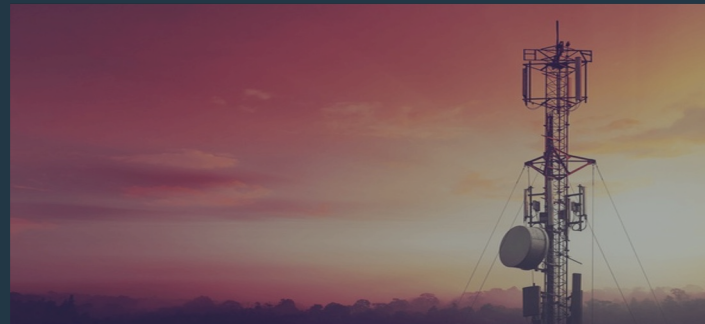
Description:

Support large scale IBS Landlord owners to allow for next-generation connectivity.

Benefits:

- + Decrease the colocation costs for MNOs
- + Increase multi-MNO service availability
- + Create more space efficient solutions

Greenfield



Description:

Use RAN-sharing via NHP to enable MNOs to connect to the unconnected.

Benefits:

- + Overall cost reductions via NHP
- + 'Connect the unconnected'
- + Less government subsidies needed for rural areas

Megaprojects



Description:

Enable future communication ecosystems on Megaprojects and Urbanised areas.

Benefits:

- + Build next-gen communication ecosystems.
- + Allow cost reductions on regional scale.
- + Enable business models based on decreased costs.



TAWAL

Thank You!