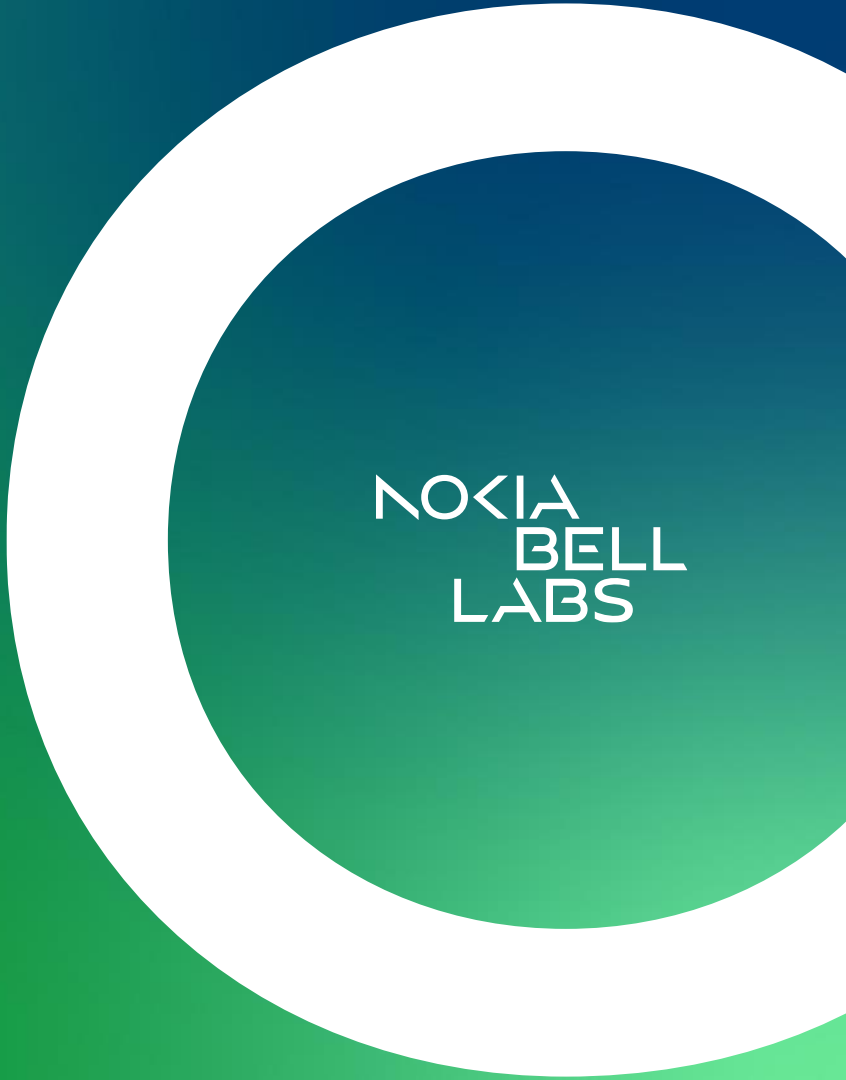


Towards a Unified Architecture for Open RAN-enabled 6G Networks

Gianluca Fontanesi

IEEE MeditCom 2026, Cagliari, Italy

The Nokia Bell Labs logo is positioned on the right side of the slide, centered vertically. It consists of the words "NOKIA", "BELL", and "LABS" stacked vertically in a white, sans-serif font. The logo is set against a background of two concentric circles: a large white outer circle and a smaller dark blue inner circle. The overall background of the slide is a green-to-blue gradient.

NOKIA
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The Core Problem

Mismatch between environment and operating model



Environment	Traditional Response
Dynamic and context-dependent	Fixed configuration
Multi-domain and interdependent	Siloed optimization
Continuous change	Periodic tuning
Service-sensitive	Network-centric operations
Large-scale complexity	Manual troubleshooting

Traditional Operations Are No Longer Enough

- Static policies cannot keep pace with real-time variability
- Manual intervention does not scale
- Reactive troubleshooting happens after user experience is already degraded
- Periodic optimization misses transient and localized issues
- Human operators cannot continuously optimize radio, topology, compute, and energy together

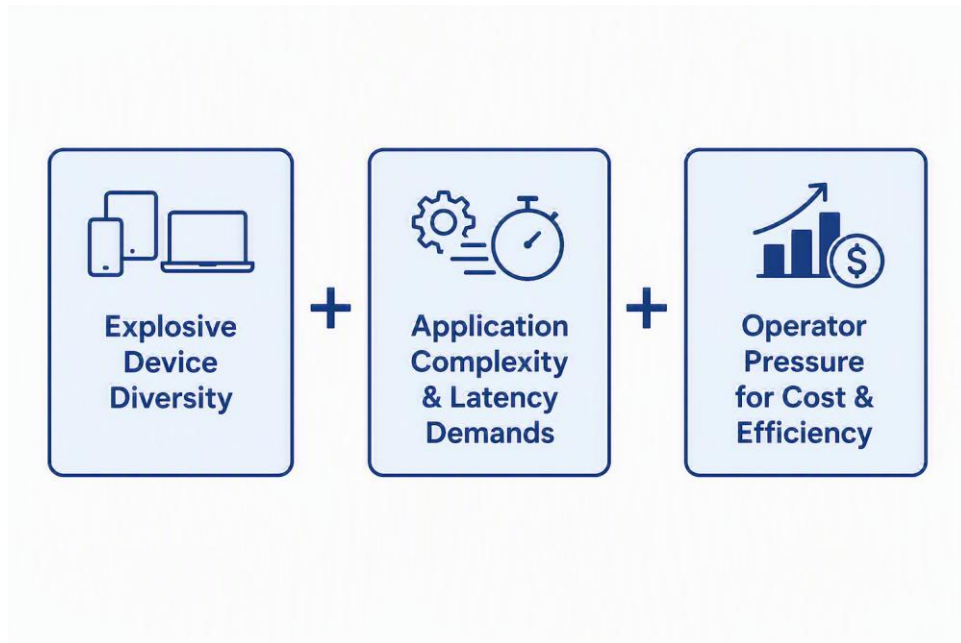
Need for a Transition

Users

- expect seamless connectivity everywhere, all the time,
- support for **low-latency and**
- **time-sensitive services.**

Operators

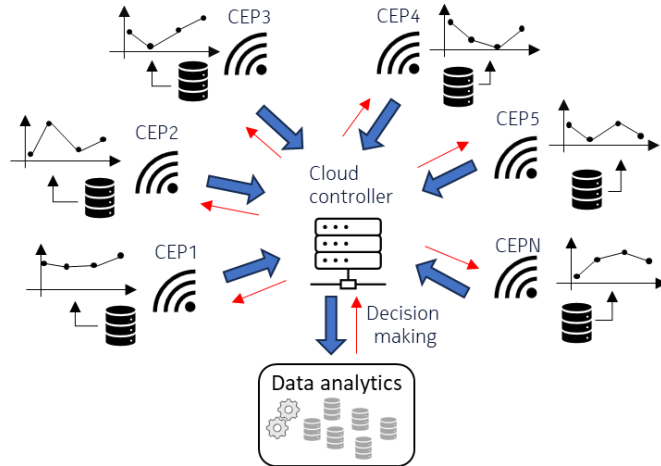
- **lower operational cost,**
- fewer support interventions
- **better energy efficiency,**
- and stronger SLA compliance.



Transition in the Techniques

Evolving Operator Expectations

- Clustering as an energy saving and operational simplicity opportunity (lower operational cost)

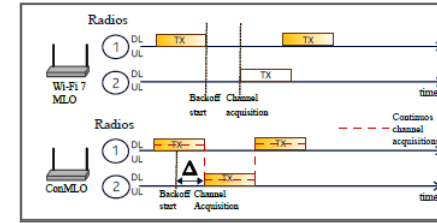


Fontanesi, Gianluca, et al. "Cluster-Specific Predictive Modeling: A Scalable Solution for Resource-Constrained Wi-Fi Controllers.", MEDITCOM2026

Evolving User Expectations

- Decrease latency and improve time-sensitive services.

Continuous Multi-Link



- MLO Wi-Fi 7: **contention** (Listen-before-talk (LBT)) over **different links**, but restarts channel access after finalizing a transmission

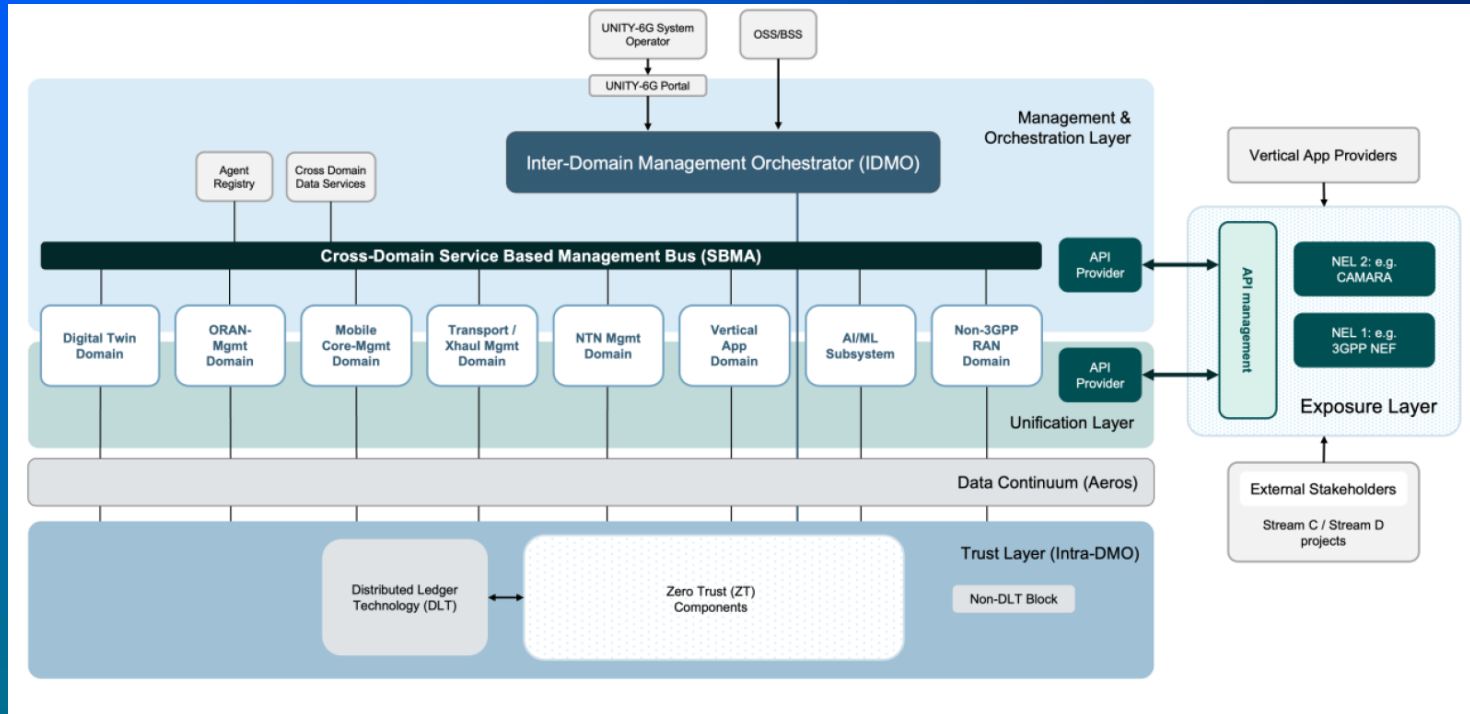
- **ConMLO Contention-free**: uninterrupted channel access
Continuity: provides channel access continuity anticipating the contention by Δ in other links

Fontanesi, Gianluca, et al.. "Continuous multi-link operation. A contention-free mechanism for the unlicensed spectrum." (SPAWC). IEEE, 2024.

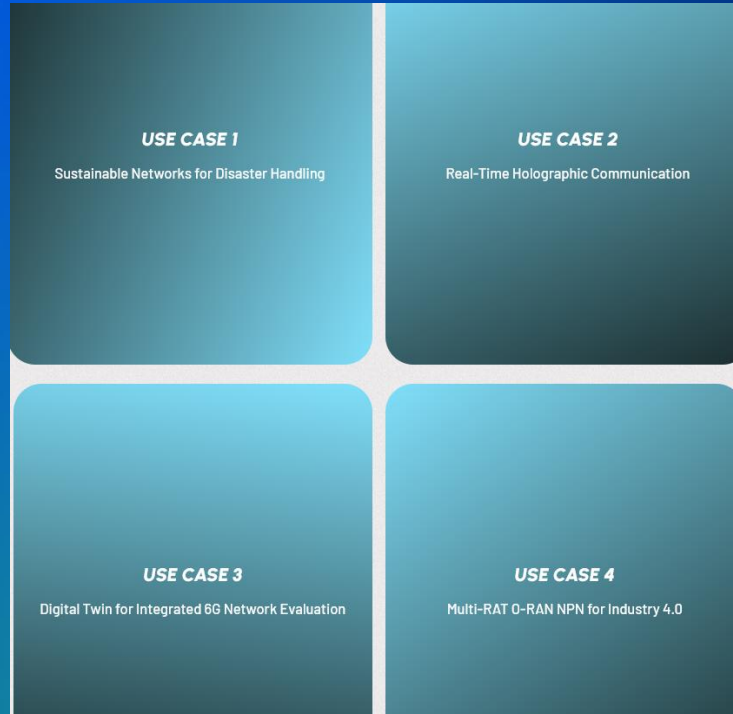
- From Reactive Management to Predictive, Autonomous, and Intent-driven Control.



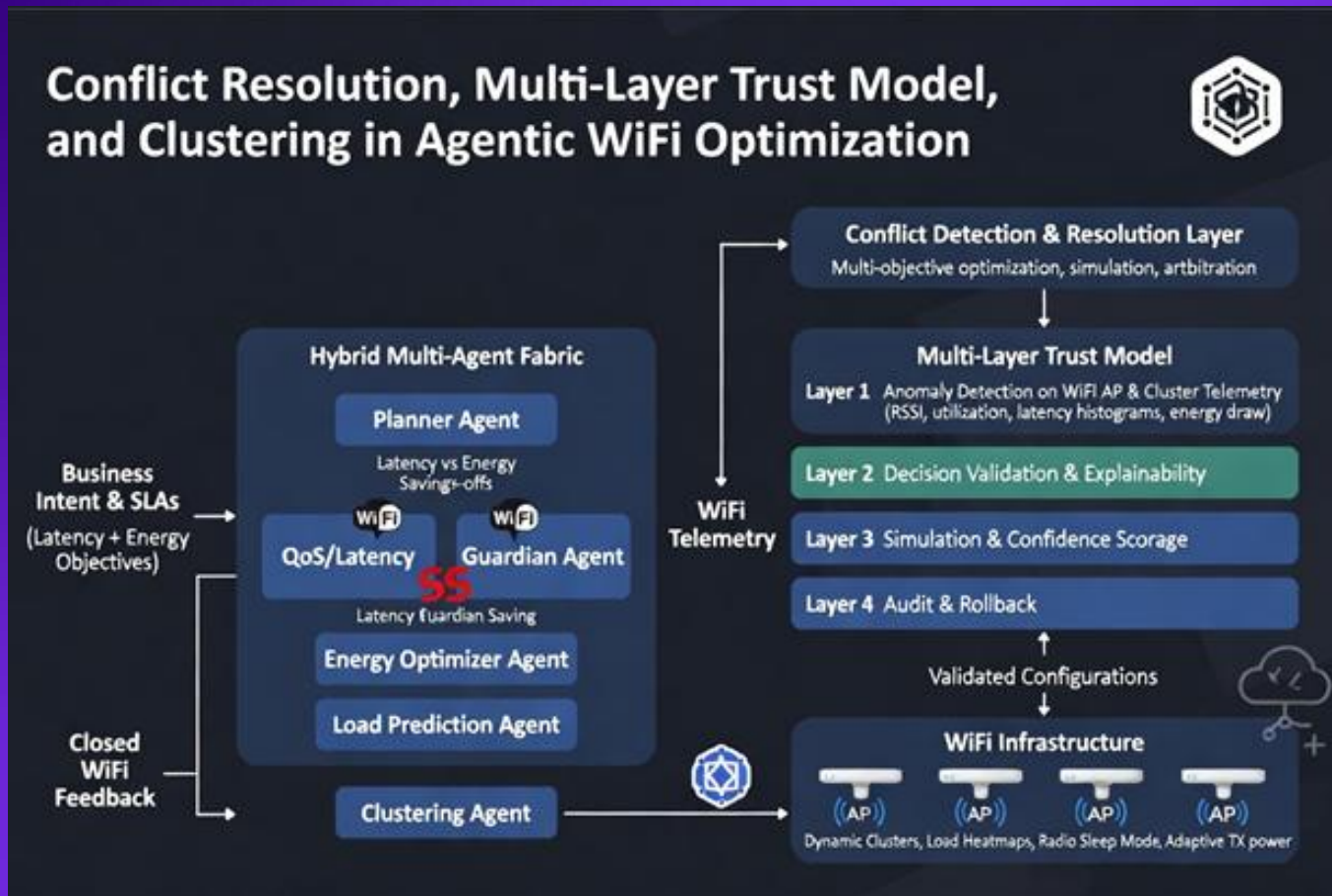
A More Technical View



Use Cases



Translated into the Wi-Fi Domain



Network Infrastructure



The world's most trusted systems partner for the world's most critical networks

- < IP networks
- < Fixed networks
- < Optical networks
- < R&D

Customer Experience & Delivery

- < Pre-Sales & Sales
- < Project Management
- < Customer Engineering
- < Deployment

Network Operation Center



- Network and Service Management
- ISO 27001 certified
- < 24/7 Network Operation
- < Technical Support
- < OSS Integration
- < Information Security

Bell Labs



Nokia's industrial research lab, innovating with purpose, pursuing responsible, sustainable technologies that will have a demonstrable impact on society

Global recognition for ground-breaking discoveries

- < 10 Nobel Prizes

Support Functions

- < Chief Financial Office
- < People

Collaboration with Academia

- < Dual study programs
- < Ph.D. programs
- < Participation in EU and National funded projects

Key Takeaways

- Wi-Fi is a dynamic, complex system that demands intelligent, continuous management — not periodic tuning.
- The traditional configure-tune-react model has reached its limits. The operating model must change.
- Agentic AI is the right architectural response: specialized, goal-directed, coordinated agents managing radio, topology, compute, energy, and services.
- Wi-Fi AI agents are not optimization add-ons —they are service delivery entities in their own right.
- UNITY-6G provides a coherent framework for realizing this vision within the broader 6G architecture, through domain convergence and agentic design.

Panel Questions

What does a “unified architecture” mean in the context of Open RAN-enabled 6G networks, and where are the main risks of fragmentation across access, transport, edge, and application domains?

What will be the most difficult challenges in translating the vision of a unified 6G architecture into large-scale real-world deployments?

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