Open Innovation Catalysts

Sustainable 5G: Smart RAN energy management

Driving sustainable 5G with dynamic energy optimization for cost-effective and eco-friendly RAN operations

The solution:

This Catalyst is pioneering AI-driven energy optimization for 5G RAN operations - reducing costs and carbon footprint for a more sustainable future.

Addressing the challenge:

The solution integrates predictive AI-driven energy management into the Service Management and Orchestration (SMO) layer.
- It leverages **real-time RAN data** through standardized O1/O2 interfaces, intelligently forecasting traffic patterns to dynamically reconfigure radio parameters via rApps.
- A dedicated **RAN simulator** validates energy-saving scenarios to ensure no degradation in QoS.
- The architecture is **built on TM Forum and O-RAN Alliance standards**, ensuring seamless scalability, interoperability, and vendor neutrality - accelerating sustainable 5G deployments

> The most important direct benefits of the Catalyst are:
> - Energy Savings: Achieves 15–20% reduction in RAN energy expenses, supporting ' carbon reduction targets. Reduction in energy consumption across RAN sites Difficult to assess yet, contributing to CSPs' carbon reduction targets
> - Cost Savings: 15-20% cost savings in energy expenses over medium term (12–24 months).
> - Profitability: Potential to improve operator EBITDA margins by ~2.2–3% through energy cost optimization.
> - Efficiency: Enhances network efficiency by around 10% via real-time AI-driven resource allocation without service disruption.
> - Operational Simplification: Enables zero-touch, closed-loop, multi-vendor RAN energy management with explainable AI.
> - Regulatory and Brand Benefits: Helps CSPs comply with environmental standards while enhancing brand reputation.

Hassan Mohamed
Head of Technology Architecture and RAN

Business impact:

Cut RAN energy use by **15%**, save **$100M+** annually, cut emissions **20%**, and achieve **50x ROI** with AI-driven automation.

Champions:

AXIAN TELECOM | dhiraagu | GCI | verizon

Participants:

SUTHERLAND | snowflake | zinkw•rks | TUPL

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Find out more: