

AI AND SMALL CELLS

**A rising tide of adoption
across the industry**

Simon Fletcher, Small Cell Forum

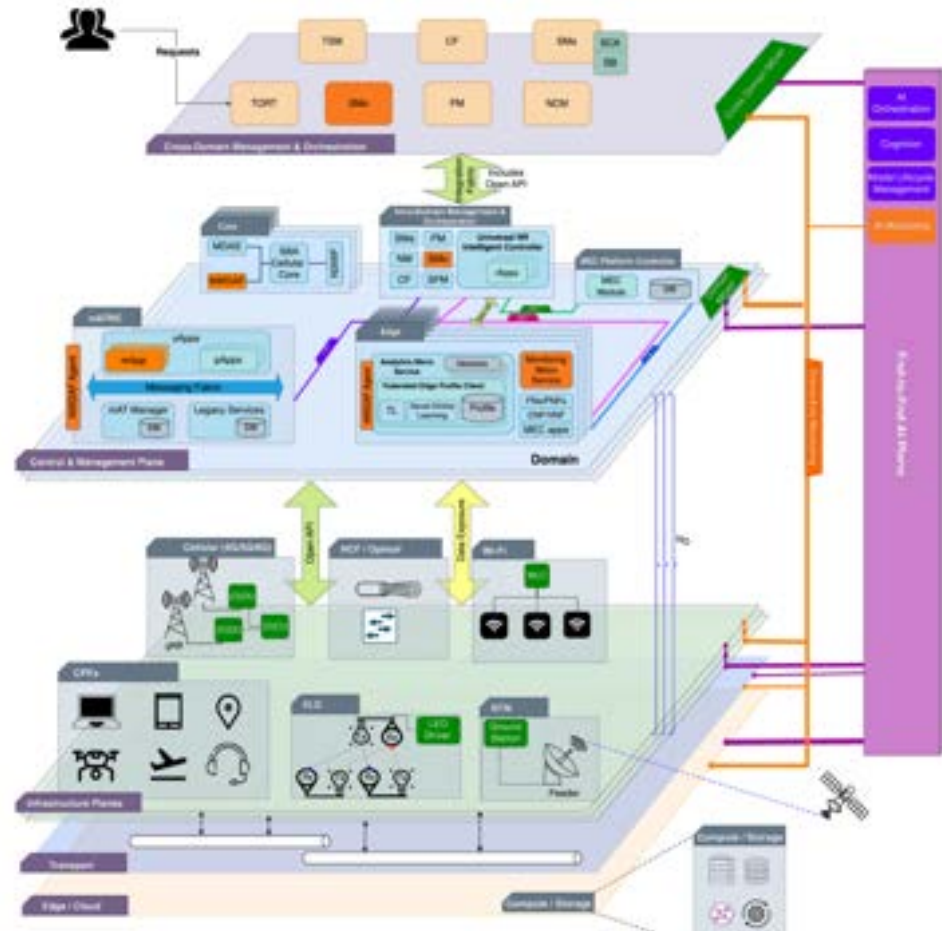




AI in telecoms

- AI is now be engineered into **every layer of telecom and mobile networks**—from planning and optimization to customer service and end-to-end automation.
- RAN Optimization (Radio Access Network)
- Self-Optimizing Networks (SON)
- Core Network Automation
- Edge AI & AI in Small Cells
- Fully AI-Native RAN (AI-RAN)
- Network Planning & Rollout
- Security

Research is still ongoing





AI in the RAN

- AI-native architecture: The trend is toward building RAN where AI is not just an add-on, but native, i.e., integrated into RAN control and data planes.
- Edge intelligence: Through examples like ZTE's QCell and SoftBank/NVIDIA AITRAS, telcos are bringing AI compute very close to the radio edge, enabling low-latency AI applications.
- multi-radio access spectrum sharing (MRSS)
 - Shared spectrum across 5G, 6G, Wi-Fi, satellite-based, and other radio access mediums
 - More automation in network management
- Autonomous control: With agentic AI (e.g., AgentRAN, Ericsson rApps), RAN can potentially operate under high-level goals (like energy efficiency), self-optimize, self-heal, and even be controlled via natural language.
- Energy and resource efficiency: Research (e.g., 6G Twin) shows AI can significantly reduce energy usage while maintaining or boosting performance.



Targets for AI in small cells in the short term

- **Network optimization:** AI helps small cell networks automatically adapt to real-time traffic and user behavior.
- **Automated planning:** AI-driven analytics can determine optimal placement and initial settings for small cells, and use data like historical traffic patterns to plan coverage.
- **Self-optimization:** Small cells use AI to continuously adjust radio settings such as transmit power and handover parameters in real-time, reducing the need for manual intervention.
- **Efficiency:** AI can lower energy consumption and reduce the need for on-site support (“truck rolls”) by enabling remote management and self-managing networks.
- AI is being integrated with small cells for telecom networks to enable automated planning, self-optimization, and efficient management
- [Small cell delivers big value in mobile AI era, says Huawei's Eric Bao](#)



AI for 6G

- In October 2025, NVIDIA and US telecom partners (Booz Allen, Cisco, MITRE, T-Mobile) unveiled an AI-native wireless stack for future 6G / AI-RAN. NVIDIA Investor Relations
- This architecture integrates AI deeply in hardware and software: combining connectivity, compute, and sensing.
- NVIDIA Investor Relations Use-cases they envision: multimodal integrated sensing and communications, AI-driven spectrum management, intelligent resource allocation
- [NVIDIA Corporation - NVIDIA and US Telecom Leaders Unveil the All-American AI-RAN Stack to Accelerate the Path to 6G](#)



Implications for ongoing SCF activities

- Management plane / SMO development
- Edge-AI architectures through the Enterprise and Private networks WI
- Evolution of (n)FAPI with implications for “Open RAN Split-6”
- NTN integration into Terrestrial Network

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