CONCEPT

AI for Telecom Networks: AIOps, Predictive Maintenance and RAN Optimisation

4 – 8 January 2027
Dubai - Five-star CBD venue



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Introduction:

AI for telecom networks matters because operators now drown in alarms, performance counters and trouble tickets while NOC headcount, energy bills and customer expectations all move the wrong way. Alarm storms hide the real fault, radio parameters drift from their best settings, and data science pilots stall before they reach live operations. This Core Concept course equips operations, planning and data teams to apply AIOps, predictive maintenance, self-organising network functions and capacity forecasting to live network data. Participants build an AIOps Use-Case Portfolio and Pilot Plan for a case operator.

Course Objectives:

- Assess the alarm, performance counter, call detail record, probe and inventory data an operator holds for fitness to feed AIOps models
- Design alarm deduplication, event correlation and root cause analysis pipelines that cut ticket volumes and mean time to repair in the NOC
- Apply anomaly detection and failure prediction models to cell sites, power systems and fibre routes to schedule maintenance before outages
- Evaluate self-organising network functions and machine learning tuning of radio parameters for coverage, mobility robustness and energy saving
- Build traffic and capacity forecasts that guide spectrum, site and backhaul investment decisions
- Prioritise and govern AIOps use cases with an MLOps operating model, human approval gates and value tracking

Target Audience:

- Network operations centre managers responsible for fault handling, ticket queues and service restoration targets
- Radio access and core planning managers responsible for coverage, capacity and parameter optimisation
- Network performance and quality managers responsible for KPI dashboards and service degradation analysis
- Field maintenance and site operations managers responsible for preventive and corrective work orders
- Telecom data and analytics leads responsible for operator data platforms and machine learning delivery
- Operations transformation and automation leads responsible for autonomous network roadmaps

Course Outline:

Day 1: Operator Data Estate and the AIOps Landscape

- Telecom Operations Data Map: Fault Alarms, PM Counters, CDRs, Probe Records and Topology Inventory
- AIOps Capability Stack: Observe, Correlate, Predict and Act Loops for Operators
- TM Forum Autonomous Networks Mission and Operator Autonomy Ambition Setting
- NOC Pain-Point Baseline: Alarm Volume, Ticket Backlog and Mean Time to Repair
- Data Readiness Scorecard for Counter Granularity, Time Alignment and Label Quality

Day 2: Machine Learning Toolkit and Network Automation Architecture

- Time-Series Anomaly Detection on KPI Streams: Seasonal Baselines and Isolation Forests
- Supervised Failure Classification and Survival Models for Equipment Degradation
- Graph-Based Topology Models for Fault Propagation Across Radio, Transport and Core
- 3GPP and NGMN SON Function Groups: Self-Configuration, Self-Optimisation and Self-Healing
- Closed-Loop Automation Architecture with Policy Engines and Orchestrator Hooks

Day 3: AIOps in the NOC, Predictive Maintenance and Radio Optimisation

- Alarm Deduplication, Event Correlation and Probable Root Cause Ranking Workflow
- Ticket Enrichment, Auto-Routing and Remediation Runbook Automation
- Predictive Maintenance for Cell Site Power, Batteries, Cooling and Fibre Route Cuts
- Automatic Neighbour Relation, Random Access and Mobility Robustness Tuning with Machine Learning
- Cell Outage Detection and Neighbour Compensation as Self-Healing Use Cases

Day 4: Capacity, Energy, Customer Experience and Model Risk

- Traffic Forecasting and Busy-Hour Capacity Triggers for Spectrum, Sites and Backhaul
- AI-Driven Energy Saving: Night-Time Cell Switch-Off, Carrier Shutdown and Sleep Modes
- Customer Experience Scoring and Churn Risk Signals from Network Quality Data
- MLOps for Operators: Feature Store, Model Registry, Drift Monitoring and Retraining Cadence
- AI Governance for Network Operations: Explainability, Human Approval Gates and Rollback Controls

Day 5: Case Study: AIOps Use-Case Portfolio and Pilot Plan

- Case Operator Brief: Multi-Vendor Mobile and Fixed Network with Rising Alarm Load
- Use-Case Scoring Matrix: Business Value, Data Readiness and Automation Risk
- Pilot Design: Success KPIs, Control Cells and Shadow-Mode Operation
- Operating Model and Skills Plan for NOC, Planning and Data Teams
- AIOps Use-Case Portfolio and Pilot Plan Defence Before an Operations Review Panel

Skills You Will Gain:

- Telecom Data Readiness Assessment
- Event Correlation Design
- KPI Anomaly Detection
- Predictive Maintenance Modelling
- Radio Parameter Optimisation
- Network Capacity Forecasting
- Energy Saving Analytics
- Telecom MLOps Governance

Why Attend This Course:

- Leave with an AIOps Use-Case Portfolio and Pilot Plan scored on value, data readiness and automation risk for a case operator
- Separate the root fault from the alarm storm by working through correlation and root cause ranking on realistic NOC data
- Challenge vendor AIOps and SON claims with pilot designs that use control cells and shadow-mode evidence
- Compare operations automation practice with peers from mobile, fixed and converged operators and network service companies

Conclusion:

Operators gain from AI when network data, models and operations processes are designed together rather than as isolated pilots. The course moves from the operator data estate and the AIOps landscape, through anomaly detection, failure prediction, topology models and self-organising network functions, to NOC correlation, ticket automation, predictive maintenance and radio tuning, then capacity forecasting, energy saving, customer experience signals, MLOps and governance. The final day applies these methods to a case operator and produces an AIOps Use-Case Portfolio and Pilot Plan ready for review.