

WHITEPAPER

Operationalizing Telco AIOps

And how it can TRANSFORM CSPs to unlock cost-efficiencies, proactive services, and enhanced customer satisfaction

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Executive Summary

As telecom operators evolve toward cloud-native, software-defined, and customer-centric operating models, enterprises are under growing pressure to manage increasingly complex IT and network estates while maintaining service quality, speed, and resilience. Traditional monitoring-led operations are no longer adequate in an environment shaped by 5G, digital channels, converged services, rising customer expectations, and the need for always-on connectivity. This creates a clear imperative for AIOps as a strategic enabler of intelligent, proactive, and business-aware telecom operations. For CSPs, the real challenge is not visibility—it is acting on the right signal at the right time. This is where most traditional operations models fall short.

As telecom operations become increasingly complex, the real challenge is positioning AIOps as the foundation for elevating telecom operations from reactive incident handling to predictive assurance, closed-loop remediation, and progressive autonomy.

It shows how AI, observability, automation, and standard-led integration can help communications service providers reduce alarm noise, improve fault isolation, accelerate root-cause detection, strengthen service assurance, and link operational performance directly to customer experience and business outcomes. More importantly, it demonstrates how telecom operators can translate AIOps ambition into measurable enterprise value through domain-led transformation, leveraging reusable accelerators, responsible AI, and a pragmatic roadmap that improves resilience, reduces cost-to-operate, and accelerates the realization of business benefits.



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Introduction

Communications service providers have invested heavily in automation, yet most remain far from the outcomes that investment promised. TM Forum's 2026 survey of 125 respondents across 80 operators found that only 21% of CSPs now operate at Level 3 autonomy or above, up marginally from 19% the year before.¹ A separate Bain and TM Forum survey found that only 20% of operators have reached Level 4 or 5 autonomy in any domain, even though more than half of telecom leaders expect to get there within two years, or believe they already have.² Generative AI has reached network operations at 32% of CSPs, but adoption of the tool has outpaced any real shift in how operations are run.¹

Current approaches fall short because they add automation without fixing the foundation underneath it.

Most operators have pursued AIOps by layering automated tools onto existing, fragmented monitoring and ticketing systems. Legacy BSS/OSS systems and a shortage of the talent needed to run automation responsibly are the obstacles that keep coming up. In the end, automation adds a new layer of complexity; teams gain more tools to manage, not fewer decisions to make. Alarm volumes keep rising even as detection tooling improves, because the tools are not reading from a shared, service-aware view of what is actually happening across IT, cloud, and network domains.



Industry Context and Tech Mahindra's Narrative

Addressing that challenge calls for a shift in how telcos approach technology and operating models altogether. Looking at the industry needs and the paradigm shift in technology and approach required for telcos to evolve, survive, and succeed in the agentic AI era, Tech Mahindra has built its vision for the future of telecom, "**Unlock Spectrum of Possibilities**," on seven strategic solution pillars, shown in Figure 2. Each pillar houses a set of AI-native, enterprise-ready offerings that help telcos:



GROW: unlock the business spectrum by expanding revenue streams, partnerships, and margins.



EMPOWER: unlock the people spectrum across customers, employees, partners, and societies at large by enabling simplified, contextual, and digitally inclusive experiences.



TRANSFORM: unlock the technology spectrum by adopting agentic AI and other next-gen technologies.

Amongst these, the digital, cloud, and infrastructure solution pillar offers AI-powered frameworks, solutions, and services across digital strategy, tech stack transformation, applications and infrastructure management, access and security, and IT process automation that can help CSPs run lean, cost-efficient autonomous IT operations (AIOps).

Maslow's Hierarchy for Autonomous Operations

Self-Actualization — Autonomous Innovation

Advanced ML enables self-healing and adaptive optimization.

Esteem — Operational Excellence

Automation-driven ROI positions IT as a strategic force.

Social — Cross-Functional Collaboration

AI-enabled workflows unify teams across domains.

Safety — Security & Resilience

Predictive analytics strengthen operational stability.

Physiological — Application & Infrastructure Stability

Automation ensures foundational system health.

Figure 1: Maslow's Hierarchy for Autonomous Operations



Autonomous operations are not achieved by simply adding automated layers on fragmented tools. For CSPs, success starts with the fundamentals:

reliable platforms, clean data, end-to-end observability, service context, and clear operational controls. Not adhering to these foundations can increase the risk of automation instead of lowering it. AIOps should be seen as a maturity journey. Better visibility and correlation lead to progress into assisted decision-making, and enable self-healing operations where right actions meet monitored safety and transparency.

7 Strategic Solution Pillars

Underpinning our industry narrative to empower the Telcos of the Future ...

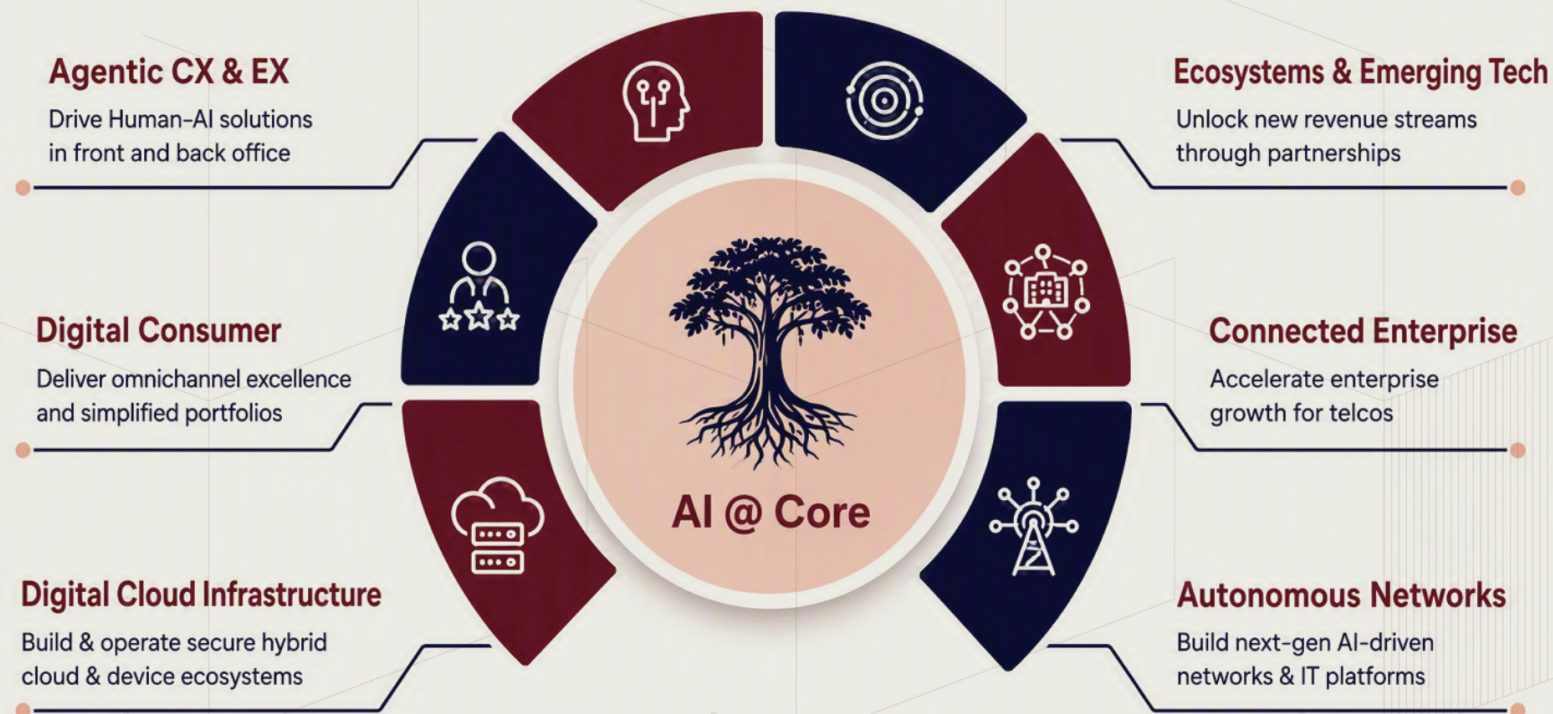


Figure 2: The Seven Strategic Solution Pillars

AIOps Service Model

Agentic AIOps is not just a dashboard layer; it adds value by helping operations teams answer three practical questions: What is happening, why it is happening, and what the next safe move is.

The capabilities outlined below demonstrate how intelligent agents reduce noise, shorten triage times, and shift routine fixes from manual firefighting to managed automation:

- **Unified Observability and Data Foundation Layer:** Gathers metrics, logs, traces, and events in a single pane view to connect technical signals to affected services, dependencies, and customer impact by separating noise from real risk.
- **Automation and Orchestration Layer:** Interprets intent, translating an operational goal into specific checks, actions, validations, and runbooks that agents can execute under defined controls.
- **System of Intelligence Layer:** Adds the semantic context required for application, database, network, cloud, and service agents to work from a shared perspective.
- **Business Operations Layer:** Links IT and network operations to business services so that resolution options factor in service priority, customer impact, dependency, risk, and fallback steps.
- **Learning, Governance, and Accountability:** Ensures models learn from previous incidents, execute only approved actions, maintain human accountability, and document recordings for audit and improvement.
 - a. **Builds on past learning:** Uses previous incidents, failed fixes, known workarounds, and recurring patterns to guide better decisions the next time a similar issue appears.
 - b. **Acts only where it is safe:** Runs approved fixes through governed tools, runbooks, scripts, or APIs, with rollback options where the risk is minimal and the way forward is clear.
 - c. **Keeps control with operations teams:** Applies policy checks, approvals, and validation steps so automation moves in sync with the phase and comfort of the business.
 - d. **Makes every action traceable:** Captures the lifecycle of the agent from 'why' to 'where it worked,' so teams can review outcomes for further model improvements over time.



Table 1: Layered AI Service Model for Telecom AIOps

Service Stage	Key Actions	Business Outcomes
Observe	One view of what is happening across IT, cloud, and network layers.	Stronger data-driven insight with a 360-degree view.
Understand	Less alert noise and faster identification of the likely root cause.	Faster triage and reduced MTTD and MTTR.
Act	Routine fixes are handled faster, with approvals where risk is higher.	Operational efficiency with controlled execution risk.
Engage	Better handover between tools, tickets, and operations teams.	Improved collaboration and more consistent resolution quality.
Learn	Every incident improves the next response.	Continuous improvement and higher service availability.

With this layered AI service model, alarms become more than technical signals. They are flanked by service and business context, making it easier to understand their real impact. As a result:

- Each alarm is mapped to the affected service and its business priority.
- Service outages can be linked more quickly to customer-facing impact.
- Topology views help teams see where the issue started, not just the problem layer.

On the whole, context-aware AI operations help customers experience better outcomes with fast resolution and structured alignment between IT performance and business KPIs.

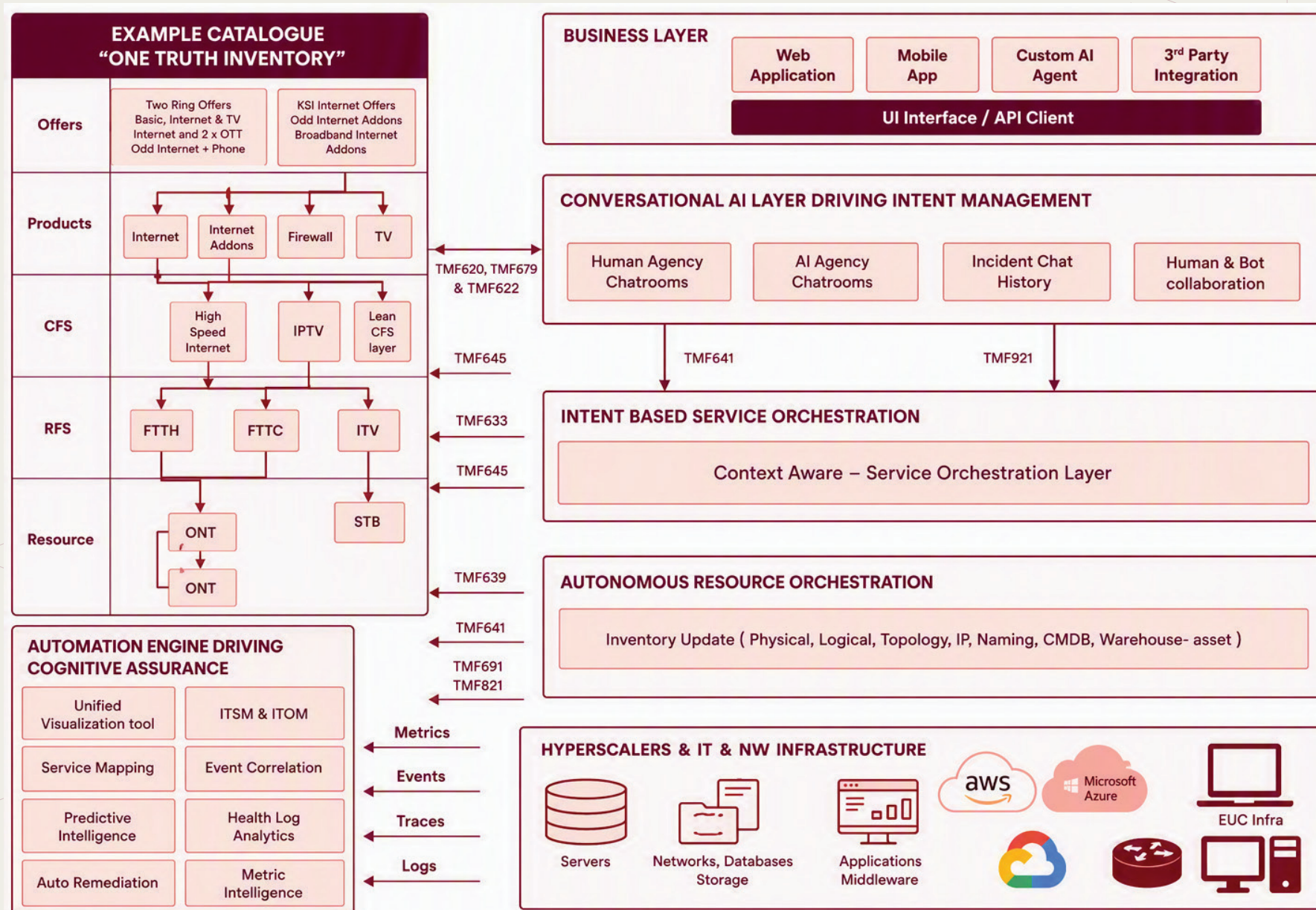
Solution Architecture of AIOps

The illustrative AIOps architecture operationalizes the AI service model by turning the Observe-Understand-Act-Engage-Learn lifecycle into an intent-driven, service-aware operating architecture. Service orchestration is positioned as the telco control plane, translating business, services, and networks into policy-led actions across sensing, correlation, decisioning, fulfillment, assurance, remediation, and learning, with standardized APIs providing an integration fabric across IT, cloud, and network domains.

The primary goal of this architecture is to move from reactive operations to self-healing, context-aware operations, where human teams retain control of policy, governance, and exceptions—while the platform handles routine detection, decisioning, and remediation at machine speed.



Solution Architecture of AIOps





This diagram shows how a TMF 921-aligned intent layer, powered by conversational and agentic AI, orchestrates end-to-end IT and network operations across product, service, resource, and party domains. It connects telemetry, service context, and action, addressing a key AIOps challenge where automation often fails without operational semantics, knowledge ontology, or topology awareness.

- System of agency orchestrating customer intent and conversations: Goal-oriented agents support customer- and employee-facing channels by understanding intent, using relevant context, and guiding the next best action.
- System of intelligence connecting intent to execution: The orchestration layer translates intent into executable workflows across Learn, Buy, Get, Use, Pay, and Support journeys.
- Standard-led integration across TMF, CAMARA, and MEF: Open APIs operate as the backbone of integration across IT and network systems to enable a better flow through network exposure, marketplace monetization, and partner automation.
- Continuous observability to drive closed-loop assurance: The intelligence layer unifies topology and operational data to detect anomalies, predict degradation, and drive governed remediation in real time.

This Intent-Driven AIOps Architecture accelerates the autonomy maturity curve by enabling CSPs to build on existing AI, automation, observability, and orchestration investments while adding a contextual intelligence layer. It also supports responsible AI with governed operational practices.

CSPs do not need to replace existing investments in observability, automation, ITSM, orchestration, and AI. The opportunity lies in connecting these capabilities with service context and governed decision-making. The real risk of process stall is treating AIOps as just another tool without trusted data, clear decision rights, service ownership, and confidence in automation.



Quick Look at Sample Use-case Journey: High-value Contract Renewal

Customer Journey Example	Description
Event	A high-value client attempts to cancel their service online during a renewal process.
Observe and Detect	The intent-driven agent detects the high-churn risk.
Offer	The sales agent offers a tailored stay-connected discount bundle.
Customer Query Handling	The customer asks questions, and the AI explains benefits and pro-rated billing in real time.
Human-in-Intervention the-Loop	If the customer rejects the offer, the AI triggers a high-touch alert to a senior sales agent.
Human Action	The human advisor receives the full interaction history, contacts the customer, and resolves the nuanced issue.
Feedback and Learning	future automated offers. The sale is finalized, and the AI records the interaction to refine

Data flow breakdown for high-value contract renewal in Multimodal AIOps

- A high-value customer starts the contract cancellation journey through the online portal. The portal captures the event and sends it to the CRM through the API gateway.
- The AI predictive agent gathers and analyses usage history, sentiment, customer lifetime value, service experience, and recent interactions to assess churn risk.
- An AI sales agent uses the product catalog, eligibility rules, and retention policies to generate a personalized offer and present it through the portal.
- If the customer asks follow-up questions, conversational AI retrieves relevant billing and plan information and explains the offer in real time.
- If human intervention is required, the agent passes the recommended offer, customer context, and interaction history to a human advisor.
- The human advisor uses the full context to finalize the revised contract and updates the CRM record.



Expanded AIOps Telco Use Cases and Business Outcomes

AIOps Domain	Key Telco Use Cases	Architecture Anchor	Outcome
Service Assurance	Alarm-to-service-impact correlation	Observability + semantic ontology	Lower MTTR and SLA protection
Network Operations	Predictive congestion and backhaul degradation sensing	Telemetry + AI correlation	Proactive experience assurance
Digital CX	App journey observability and care deflection	Intent layer + customer context	Improved NPS, lower assisted care volumes
Order-to-Activate	Stuck order and fallout prediction	CRM + inventory + orchestration	Faster activation, fewer order fallouts
Billing & Revenue	Bill shock and revenue leakage detection	Billing data + anomaly intelligence	Fewer disputes, stronger revenue assurance
Field Operations	Truck-roll avoidance and smart dispatch	Device telemetry + workforce orchestration	Lower field cost, higher first-time fix rate
IT Operations	Application dependency RCA	Logs + traces + dependency maps	Shorter war rooms, faster service restoration
Security Operations	Service-aware security event prioritization	Asset criticality + business context	Reduced alert fatigue, faster response

Conclusion

Reaching Level 5 autonomy is not achieved through tooling alone. CSPs need a structured AIOps roadmap that starts with observability and service context, then progresses to trusted automation and closed-loop remediation. Early wins should focus on high-impact use cases like alarm noise reduction, service impact correlation, order fallout remediation, and proactive assurance before scaling to broader autonomous operations. The key is a practical, phased approach to build a strong data foundation, govern AI responsibly, prove value, and then industrialize the model across IT, infrastructure, and network operations.

About the Author



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Neha Saxena is a Principal Solution Architect with 18+ years of experience in telecom transformation, enterprise architecture, and AI-driven operations. She specializes in autonomous IT, helping enterprises build predictive, self-healing, and AI-augmented operations while ensuring governance, security, compliance, and resilience. Her expertise spans telco operating models, AIOps, observability, customer experience, and data sovereignty.

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