



Engineering Self-Governing Telecom Networks

Wipro's Trusted Autonomy Brings
Intent, Intelligence and Integrity

ISG THOUGHT LEADERSHIP PAPER | MARCH 2026

Table of Contents

Executive Summary	01
Section 1: Research Methodology and Scope	03
Section 2: The New Telecom Paradigm	04
Section 3: Leadership Beyond the CNO: Who Drives Autonomy Decisions	07
Section 4: Road to Autonomous Networks: From Task Automation to Self-Governance	09
Section 5: Beyond Technology: The Human and Organizational Imperative	12
Section 6: Technology & Intelligence Enablers (Agentic AI Fabric & A.I.M.S. Framework)	14
Section 7: Wipro's Alignment with Industry Trends	18
Section 8: Outlook and Way Forward	22
Conclusion	23
About the Author	24
Summary Facts	25

Executive Summary

Autonomous networks represent a structural transformation at the intersection of technology, business strategy and organizational evolution. While most telecom operators (telcos) have reached Level 3 maturity, progress is constrained by cross-domain integration challenges, governance gaps and fragmented data architectures. Progress to Level 4 and 5 demands coherent orchestration, agentic AI that can execute anonymously and a skilled workforce operating within a trusted governance model.

For telcos, autonomy has evolved from an efficiency program into a strategic enabler — driving NetCo performance, ServCo agility and the economics required for future digital platforms. Those who treat autonomy as an enterprise-wide capability, rather than a network-specific toolset, are best positioned to lead the next decade of telecom innovation.

Some of the key insights:

- Mobile telcos show the strongest tilt toward Level 3-Level 5 (with over half in this range), while new digital telcos (MVNO/MVNE) skew at earlier stages and show no Level 4-Level 5 presence in this dataset.
- By role, CIO/CNO and core/RAN/transport engineering heads are most represented in the Level 3-Level 5 cohort, while digital/transformation leaders skew earlier, with many concentrated at Level 1. So, most respondents are in the “scale and integrate” phase — capability exists, but it’s not yet systematically operationalized end-to-end.
- ISG’s research also points that Transport/IP and RAN are most frequently identified as the highest-maturity domain (together accounting for over half of mentions), followed by Core and IT/OSS/BSS. A notable pattern emerges in the closed-loop deployments: loops are not restricted to the domain identified as “most mature.” There is a strong cross-domain pairing (e.g., “RAN maturity” frequently linking with “Transport/IP closed-loop” and vice versa). This trend signals that telcos already recognize cross-domain loop dependencies, which is a prerequisite for Level 4 and Level 5, yet maturity outside RAN/Transport remains uneven.
- Also, the measurable automation is heavily concentrated around classic AIOps operational priorities such as fault management and self-healing, incident response and RCA, energy optimization, service assurance and SLA management. This aligns with OPEX reduction and MTTR reduction as primary drivers, with CX improvement present but not yet dominant.
- Further, scenario priority follows a similar pattern: zero-touch fault management and self-healing, predictive service assurance, intent-driven change/configuration and energy optimization rank highest. SLA-based enterprise assurance and 5G slice automation lifecycle rank lower, indicating the path to Level 4 and Level 5 is anchored around fault management and self-healing, predictive assurance and intent-driven operations.
- However, data architecture, governance and skills continue to limit progress. Many telcos are running siloed AI experimentation on partially standardized or highly fragmented data architecture. In most cases, explainability and trust becomes extremely important, yet the operating model — governance frameworks, skilled talent and unified data architectures — lags behind. As a result, the primary barrier is an execution gap: telcos know the importance of trust and explainability) but are still building the operating model (governance and skills) and data foundation required to safely scale autonomy.
- For at least half of respondents, the expected ROI horizon is 12 to 24 months. OPEX and MTTR improvements are expected to be material, while CX improvements are expected to be incremental.
- This landscape increases the need for the right



partners that offer purpose-built telecom AI models, AIOps/MLOps integration, multi-agent orchestration design, workforce transformation and end-to-end transformation governance. Strength in cross-domain complexity, compliance/governance risk management, and AI accuracy is particularly important.

Most telcos remain in Level 2 and Level 3, scaling automation that already delivers value in fault/self-healing, incident response and service assurance, driven primarily by OPEX and MTTR outcomes. The industry's prioritized autonomy roadmap is highly

consistent: zero-touch fault, predictive assurance and intent-driven change. Progress toward Level 4 and Level 5, however, is constrained by enablement layer such as data standardization, governance boards and workforce readiness, even as trust and explainability remain universally critical. ROI expectations are mostly 12 to 36 months, with the strongest gains anticipated in OPEX/MTTR and more modest expectations on CX. Partner support demand mirrors the primary friction points: cross-domain integration, security and risk, and skills transformation.



Section 1: Research Methodology and Scope

ISG's research methodology and aspects of the Global Autonomous Networks Benchmark 2025 Survey:

Aspect	Details/Criteria
Objective	Assess the readiness, priorities, and barriers of CNOs and CXOs in achieving Level 4/5 network autonomy
Sample	95 CNOs, CTOs, VPs Network Ops from Tier-1 and Tier-2 Global telecom operators (US, UK, Germany, France, Spain, Nordics, MENA, Eastern Europe, Singapore, ANZ)
Sectors	Mobile, Fixed, Integrated CSPs, Wholesale Carriers
Methodology	Structured survey, qualitative interviews, data triangulation with public benchmarks
KPIs to Track	MTTR reduction, OPEX impact, energy efficiency, AI governance maturity, CX index correlation, etc.

ISG also reached out to several tier-1 telcos within their CNO divisions across US, Europe, and APAC geographies to get a first-hand view on how autonomous networks look like and where could it navigate within next 24 to 36 months.

Finally, ISG leverages its proprietary insights from multiple internal sources which help in its competitive research processes.



Section 2: The New Telecom Paradigm

Why the Telco Operating Model is under Stress

The traditional telecom operating model is under structural pressure from multiple directions. In ISG's recently launched [IPL® study on telecoms and media](#), telcos identify OPEX reduction, MTTR improvement, energy optimization and customer experience enhancements as their top drivers for pursuing autonomy. These priorities reflect more than operational ambition — they reflect systemic stress in how networks are built, operated and monetized.

Telcos today manage increasingly complex environments, viz., multi-vendor RAN deployments, converged fiber and mobile networks, cloud-native cores, distributed edge compute and hyperscaler interconnectivity. This complexity is further compounded by the need to upgrade and patch massive fleets and IT systems across domains. As one operator noted, conventional upgrade cycles for large router populations could take up to a year; agentic automation reduced this window from weeks to hours. Autonomy is therefore shifting from an optimization tool to an operational mechanism at scale.

At the same time, B2B and B2C priorities are diverging too. B2C segments focus heavily on churn reduction, QoE stability and rapid fault resolution, while B2B customers increasingly demand SLA-backed services, deterministic performance and faster provisioning cycles. Survey results reveal that integration complexity, AI accuracy and governance concerns are among the top barriers preventing telcos from reconciling these divergent demands under a single operating model.

The result is a growing recognition: incremental automation (Level 2) and AI-assisted workflows (Level 3) are no longer sufficient. Telcos must transition toward cross-domain closed-loop operations to reconcile cost, quality and agility simultaneously.

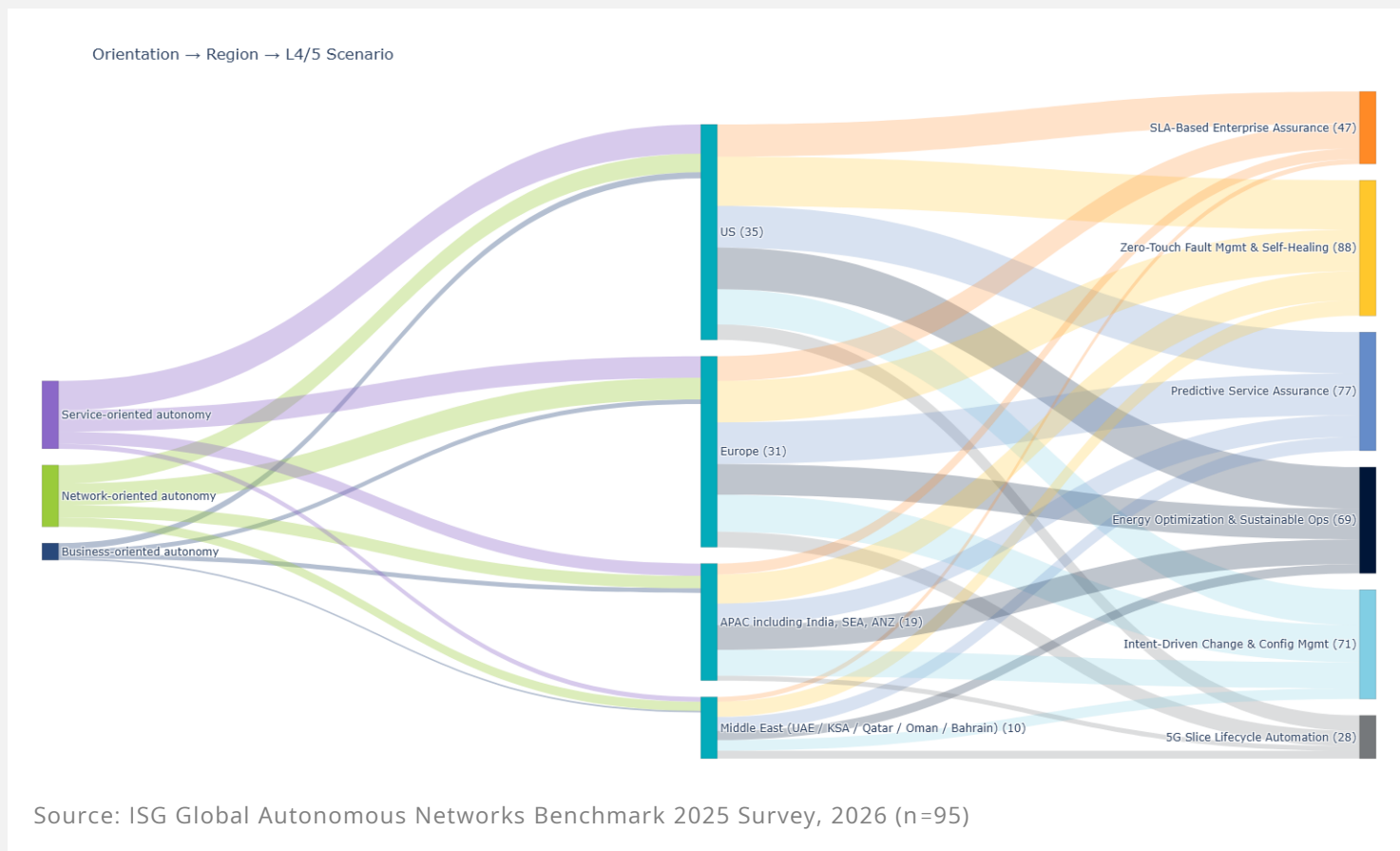
NetCo/ServCo as a Spectrum (Not a Binary)

Industry discourse often frames the future as a binary split between NetCo and ServCo, but telecom operator interviews indicate a more nuanced reality. Telcos are not uniformly separating infrastructure and services; instead, they are evolving along a spectrum of integration and platform maturity. Some telcos run internal NetCo models, where the network organization functions as a digital factory serving multiple internal and joint-venture business units. In such models, autonomy enables predictable, standardized delivery while maintaining operational efficiency. Other operate as platform-oriented telcos — effectively a Platform NetCo — positioning the network as a programmable platform (more commonly captured as NaaS versions of network services that are captured in [ISG's Managed Network Services IPL®](#)). These telcos emphasize APIs as products, treating connectivity as a service layer that can be consumed programmatically by enterprise customers and ecosystem partners. A third emerging archetype is the AI-native operating company, where autonomy extends beyond the network into sales, marketing, customer service and operations. In these cases, the NetCo-ServCo divide becomes less relevant; autonomy is an enterprise-wide capability rather than a structural separation.

Survey data reinforces this diversity. Telcos identify their Level 4/5 ambitions as primarily service-oriented, network-oriented or business-oriented. This variation confirms that autonomy is not a one-size-fits-all transformation — it aligns with each operator's strategy and market positioning, and with the use cases they prioritize. The figure below shows the same.



Figure 1: Most important Level 4/5 scenario as per region and orientation



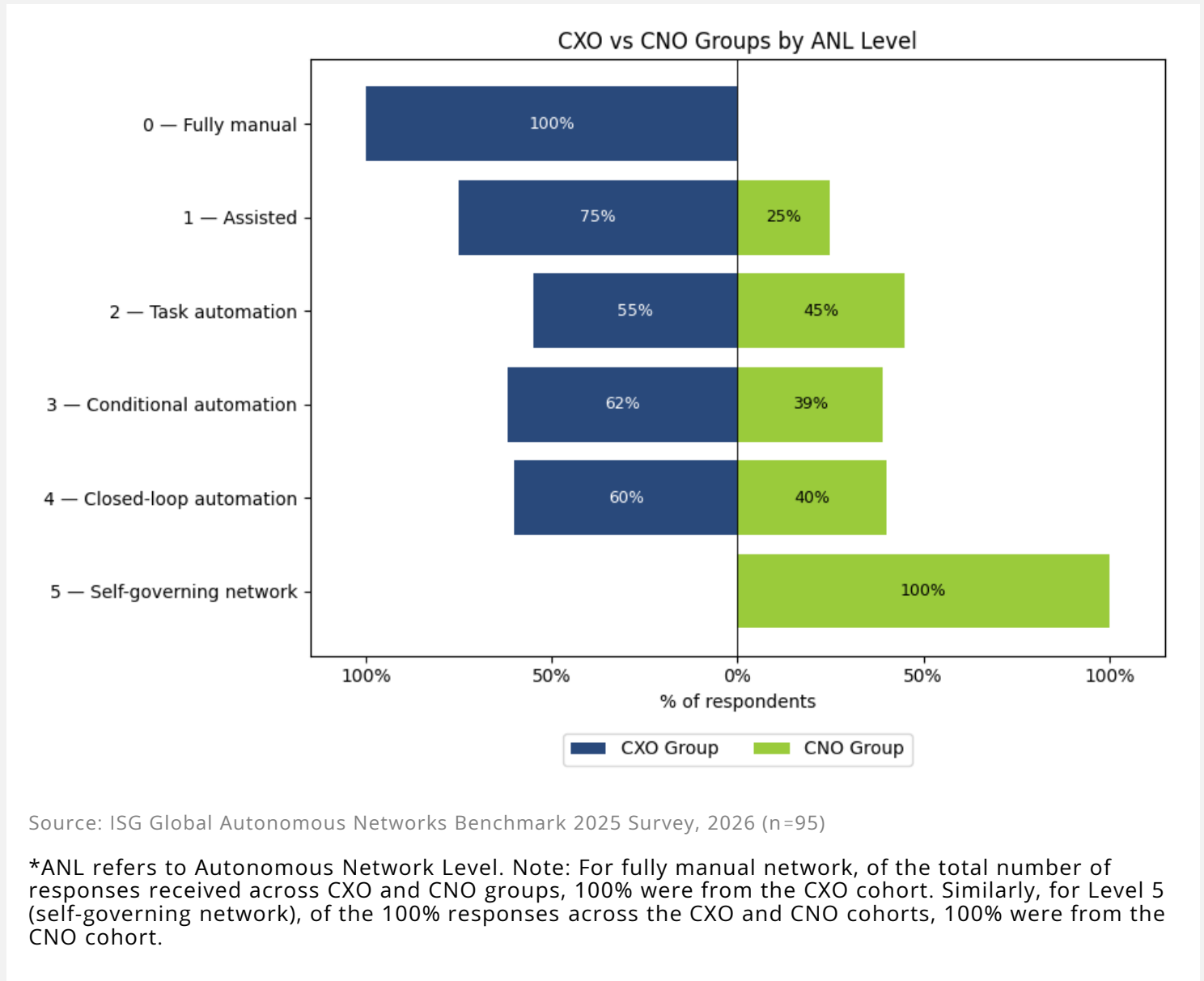
Autonomy as the Enabler of Platform Economics

Autonomy is no longer a modernization initiative — it is the operating backbone of platform economics. Across research, one message was clear: autonomy enables new economic models and underpins competitiveness. Level 4–5 capabilities like zero-touch fault management, SLA assurance, and slice lifecycle automation are directly tied to revenue enablement, with network slicing, NaaS, and SLA-backed private 5G all depending on autonomous provisioning. In B2B, autonomy underpins SLA enforceability — enterprise customers demand visibility, control, and self-service, and without

intent-driven orchestration these commitments can't scale economically. In B2C, it reduces customer-impacting incidents, enables proactive and closed-loop remediation, and improves NPS while lowering support costs, with some telcos reporting significant interaction offload through AI-driven workflows.

Autonomy therefore, becomes the bridge between operational resilience and business growth. It allows telcos to shift from static connectivity providers to programmable service platforms, capable of delivering on-demand slices, API-driven services and differentiated experiences without linear cost increases.

Figure 2: Expectations between the CXO group and CNO group



Section 3: Leadership Beyond the CNO: Who Drives Autonomy Decisions

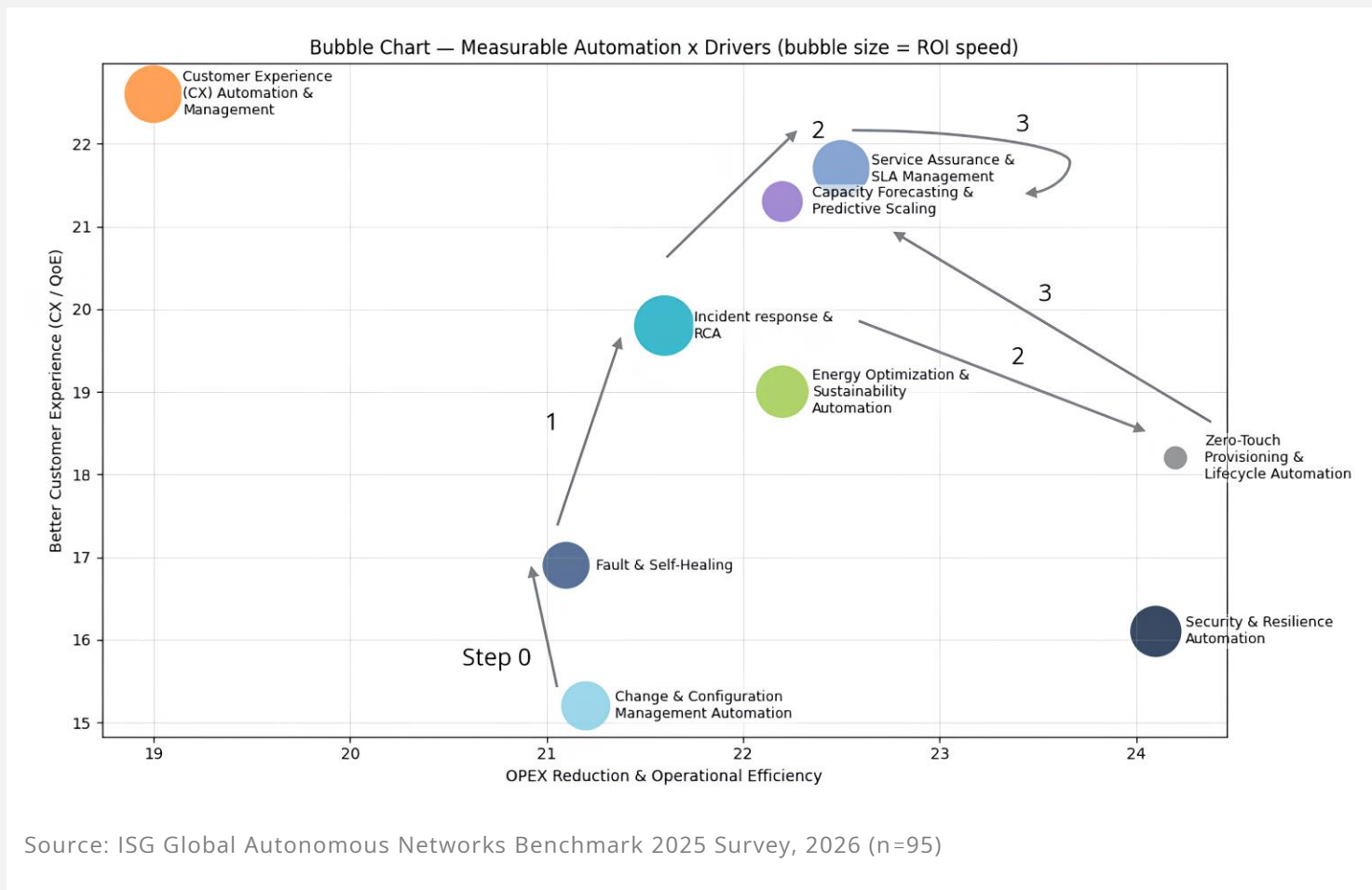
Autonomous networks are no longer a purely technical evolution. They represent a structural shift in how networks are governed, monetized and experienced. While the CNO remains central to the autonomy journey, both survey responses and operator interviews confirm that decision-making authority increasingly spans technology, business and AI leadership. Please see figure 2.

The Expanded Decision-Making Group

Survey responses indicate that autonomy programs now sit at the intersection of network, IT, digital and business functions. While CNOs continue to

lead infrastructure modernization, CIOs and CTOs increasingly shape data platforms, AI architectures and governance models, B2B and B2C leaders influence priorities by owning customer experience, SLAs and revenue outcomes. Telco interviews show autonomy decisions now extend across network, digital and AI units — driven by those accountable for customer intimacy, cost-to-serve, and margin expansion, not just network ops. Survey insights further show that the CNO role itself is evolving from infrastructure guardian to cross-functional orchestrator, balancing operational excellence with higher CX and data-driven business alignment (see below).

Figure 3: Measurable automation with drivers (bubble size represents ROI speed)



Why Network-Only Autonomy Fails

Meaningful autonomy must align with CX ownership, revenue accountability, and SLA governance — without linkage to business KPIs like churn, activation speed, and SLA compliance, transformation stalls. B2B demands deterministic assurance; B2C requires proactive remediation. Advanced telcos treat autonomy as a shared agenda across network, IT, product, and customer ops, with the CNO leading infrastructure stability while B2B/B2C leaders, CIOs, and product owners drive CX, service agility, and monetization.

Significant challenges persist — cross-domain complexity, fragmented toolchains, siloed data, and governance gaps — with core network stability remaining a precondition in regulated markets. CNOs are responding by re-architecting NOC operations, building AI-augmented workforces, and linking technical KPIs directly to business outcomes. Cultural readiness, data transparency, and cross-functional ownership will ultimately determine whether telcos advance beyond Level 3 into true closed-loop autonomy.



Section 4: Road to Autonomous Networks: From Task Automation to Self-Governance

Autonomous networks do not emerge from isolated automation initiatives. They evolve through deliberate architectural, operational and organizational shifts. While many telcos describe ambitious autonomy visions, survey findings suggest that most remain in transitional states — balancing automation maturity with governance readiness and domain complexity.

Defining Autonomous Networks

TM Forum defines an **Autonomous Network** as one that can operate, adapt and optimize itself with minimal human intervention, guided by intent and supported by closed-loop intelligence. The progression from manual operations to full autonomy is structured across Levels 1 to 5, reflecting increasing degrees of automation, intelligence and governance. TM Forum's definition of Level 5 emphasizes a system that can observe, reason, decide and act across domains under policy control.

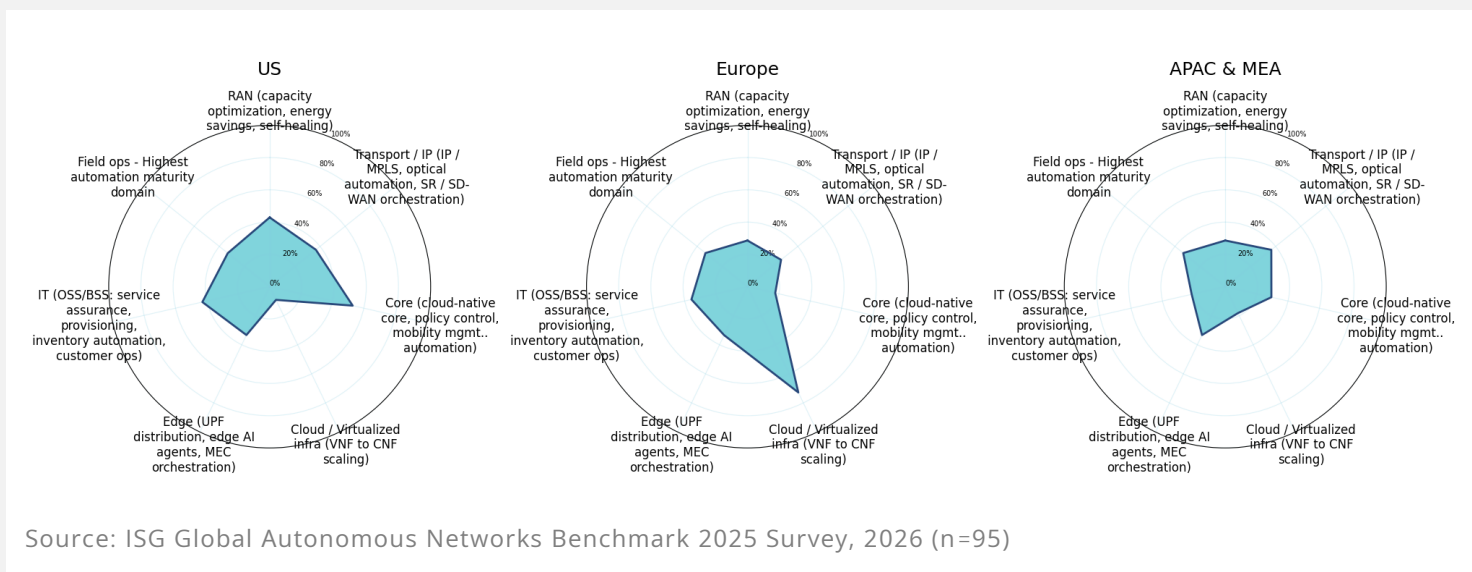
ISG's maturity curve spans five levels: from Level 1 (Assisted), where human-driven operations are supported by monitoring tools, through Level 2 (Task Automation) with rule-based scripted

workflows, to Level 3 (Conditional Automation) where AI assists decisions pending human approval, Level 4 (Closed Loop) enabling autonomous detection, diagnosis, and cross-domain remediation, and finally Level 5 (Self-Governing) — fully adaptive, intent-led, self-learning networks operating within defined policy guardrails. Survey responses indicate that while many telcos self-identify at Level 3, relatively few demonstrate consistent Level 4 behaviors across domains. This reinforces a central finding: autonomy maturity is uneven and domain-specific rather than enterprise-wide. ISG positions Level 5 autonomy further by emphasizing the necessity of auditability, explainability and governance — ensuring that autonomy remains trusted, secure and compliant.

So, Where are Telcos really today?

The survey reveals that maturity is highly domain dependent. RAN and transport automation are often more advanced in monitoring and AI-assisted optimization, while edge, data center fabrics and VNOC capabilities lag in closed-loop implementation (this is evidenced in geo-wise as well as domain-wise splits below).

Figure 4: Regional and orientation split across domain maturity



Source: ISG Global Autonomous Networks Benchmark 2025 Survey, 2026 (n=95)

Many telcos report deploying automation in isolated domains but not achieving cross-domain orchestration. Closed-loop behaviors are frequently limited to pilot use cases or narrow scopes. This creates what can be described as an “L2/L3 plateau” — where AI assists but does not yet autonomously execute across complex, multi-domain environments. AI/ML and GenAI for NOC automation, intent based networking, network digital twins, closed loop automation and network data fabric remain key enablers for the stitch.

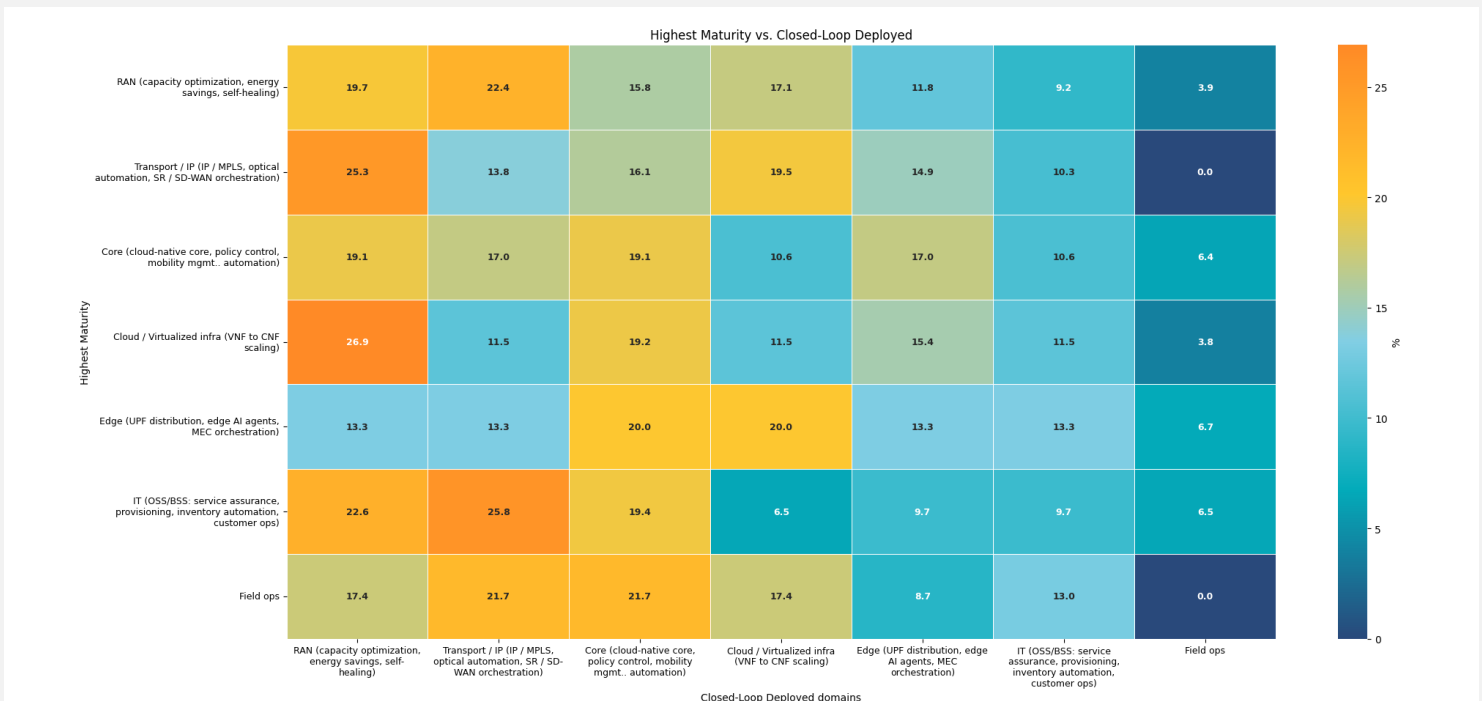
ISG has also derived an ANI™ (Autonomous Network Index) across the six domains mentioned in figure 4 and the global average score is **2.36** (lowest being 0.61 while the highest being 3.42; RAN and data center automation lead but multi-domain VNOC lags). Interviews also reinforce this reality. Telcos acknowledge progress in self-healing fiber or core workflows, but trust, data readiness

and multi-vendor complexity prevent broader scaling. Incremental gains dominate early stages, but transformational uplift only occurs once orchestration, governance and intent frameworks converge. RAN, transport and Core are more on closed loop than other domains.

The Practical Path to Level 4 and Level 5

The transition to autonomy follows a clear evolution: from deterministic, rule-based automation to ML-augmented detection and recommendations, to predictive and reinforcement models for continuous optimization, and finally to agentic self-healing. Survey responses confirm that telcos are actively deploying use cases across RAN, transport, core, edge and VNOC, but progression varies by domain and business priority.

Figure 5: Highest maturity versus closed loop deployed domain maturity



Source: ISG Global Autonomous Networks Benchmark 2025 Survey, 2026 (n=95)



Common Pitfalls and Lessons from Early Adopters

- Skills gap is the most acute barrier. Having a share of 28.2% (rank 1), more respondents flagged skills and data capability as their single biggest obstacle than any other factor — signaling that workforce readiness, not technology, is the binding constraint on autonomy progression.
- Organizational silos are the most pervasive challenge. Fragmentation across IT, network, and business units accumulates the highest overall weight across all ranks, confirming that cross-functional misalignment is a systemic, structural problem — not an isolated one.
- Ownership of AI decisions is a governance blind spot. Despite being a critical dependency for scaling autonomy, lack of clear AI ownership scores low on Rank 1 — suggesting telcos recognize the problem but haven't yet elevated it to a strategic priority.

Four recurring pitfalls emerge (each one is linked to skilling and siloed nature of IT/network/business units inherently) – **tool-led autonomy**: Deploying AI platforms without architectural orchestration or lifecycle governance; **data readiness gaps**: Fragmented telemetry, inconsistent KPIs, and limited topology awareness; **over-ambition without scope control**: Attempting enterprise-wide autonomy before stabilizing core domains; and **trust deficits**: Insufficient explainability, lack of override mechanisms and unclear ownership models.

Telcos that progress successfully share common characteristics viz., they prioritize high-impact domains first (fault management, service assurance, - see figure 3), treat data as a product, implement autonomy incrementally with risk-based guardrails and align autonomy objectives directly to measurable business outcomes. Autonomy is therefore not a deployment cycle, it is a structured transformation journey requiring alignment across architecture, governance and leadership intent.

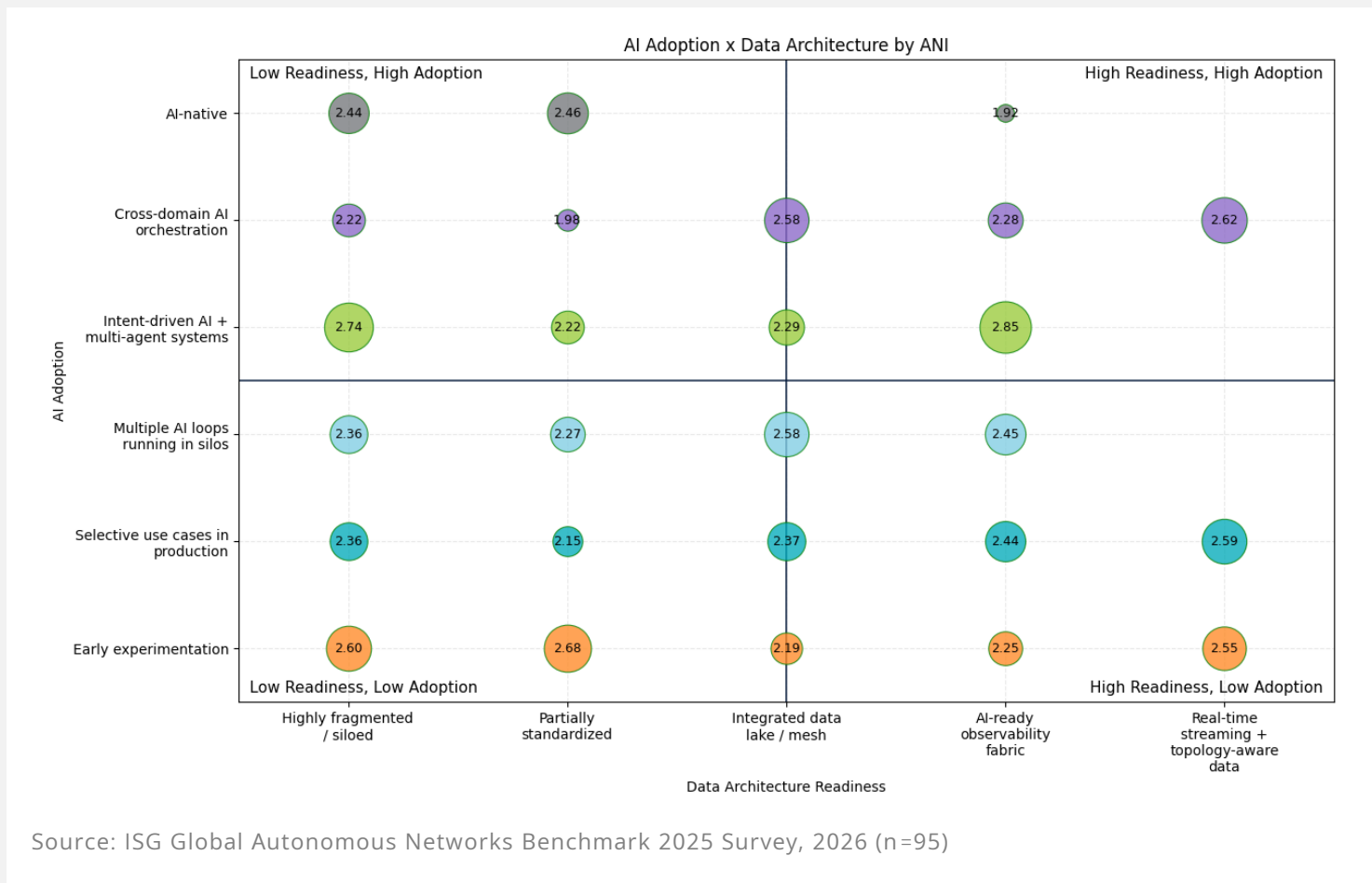
Section 5: Beyond Technology: The Human and Organizational Imperative

Autonomous networks are primarily an organizational transformation enabled by technology. Telcos consistently report that the most significant barriers are not technical but issues of trust, governance, skills, and cross-functional alignment. AI governance and data sovereignty emerge as defining constraints — while most telcos have initiated frameworks, few describe mature, enterprise-wide AI oversight. Data sovereignty is treated as non-negotiable, enforced architecturally with strict in-country controls. AI safety frameworks remain transitional — risk-based and committee-driven rather than systematized — creating tension between accelerating adoption and catching up on governance. The industry is moving from opportunistic experimentation to

structured, risk-aware autonomy, but governance maturity remains uneven and reactive. For this to shift to hold, telcos need a reliable, production-ready foundation and clear risk guardrails. Survey responses also indicate that explainability, audit trails, and override mechanisms are viewed as essential prerequisites. Telcos emphasize the need for kill switches, policy validation layers, and digital twin simulation before allowing closed-loop execution in production environments.

Confidence in AI accuracy further highlights this transition. While many telcos are comfortable with AI recommendations in low-risk scenarios, fewer express full confidence in AI-driven decisions across critical domains such as core network control planes or transport routing.

Figure 6: AI adoption by data architecture maturity (bubble size represents ANI™ score)



Thus, explainability is a gating factor for Level 4 autonomy. Without transparent reasoning, context awareness and auditability, autonomy cannot move beyond pilot phases. Trust is built through governance, controls and incremental scope expansion.

Workforce and Skills Transformation: Skills gaps in AI, data engineering and orchestration are key blockers. Engineers shift from reactive troubleshooting to supervising AI workflows and designing closed-loop policies. New roles emerge across AI orchestration architects, digital twin custodians, autonomy governance leads, agent lifecycle managers. Standardized workflows and data products accelerate cross-domain orchestration.

Governance and Ownership: Key questions arise here on *'Who owns AI decisions? Who's accountable for machine actions? How are risks classified?'* Mature telcos adopt risk-based autonomy: low-risk operates autonomously, medium-risk requires oversight, high-risk stays human-approved. Intent

becomes the contractual layer between technology and business, translating SLAs and policies into enforceable automation boundaries.

Technology Alone Doesn't Deliver Autonomy: Success requires aligned operating models, not just AI tools. Key architectural principles remain alive around *interoperability over lock-in, modular evolution, context quality over data lakes and explainability-by-design*. Most telcos start with high-impact domains (fault management, quality optimization) before scaling enterprise-wide.

Organizational Inflection Point: Autonomy becomes transformational when technical KPIs (availability, latency, MTTR) link to business KPIs (CX, churn, SLA compliance, margin). Network efficiency merges with service agility; CNO, CIO and business leaders share accountability. Reaching Level 4 and 5 requires risk classification, workforce readiness, governance alignment, incremental trust-building and cross-domain coordination. Technology enables autonomy —organizational alignment determines whether this endures.

Section 6: Technology and Intelligence Enablers (Agentic AI Fabric & A.I.M.S. Framework)

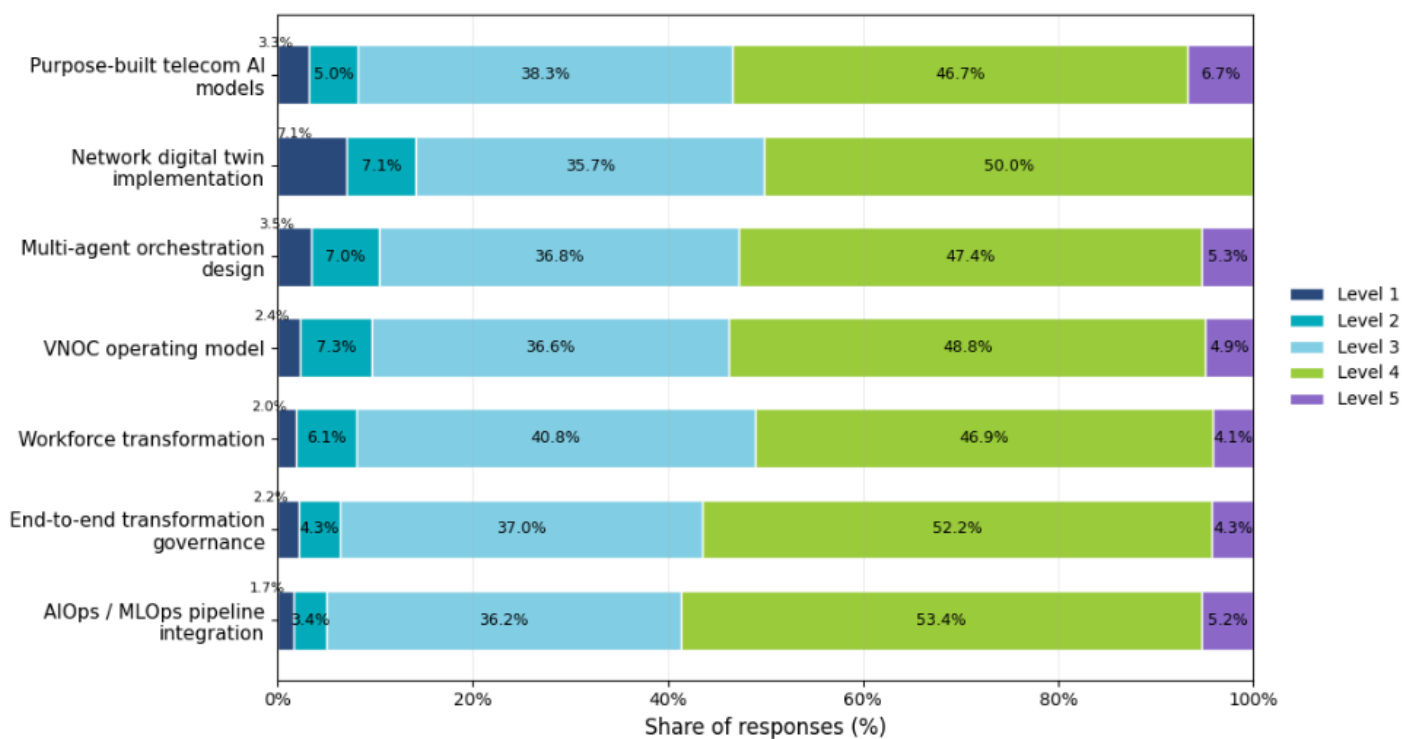
Autonomous networks do not emerge from automation alone. They are enabled by a convergence of agentic intelligence, purpose-built telecom models, orchestration frameworks and trusted governance architectures. Technology becomes the execution layer — but only when aligned to domain context and business intent.

Unlike traditional automation or AI assistants, agentic AI operates continuously toward goals — reasoning, planning, and acting across domains without prompts, with human-on-the-loop oversight. Few telcos yet implement multi-agent orchestration with closed-loop execution; achieving

it requires goal-driven intent alignment, cross-domain coordination, and explainability-by-design. This marks the inflection from Level 3 to Level 4 — from recommendations to guaranteed outcomes under policy guardrails.

Generic AI lacks the semantic depth for telecom-grade autonomy. Purpose-built models trained on network topology, SLA logic, and regulatory constraints are essential, with telcos prioritizing Graph AI, digital twins, and telecom-specific models to enable RAN self-healing, slice lifecycle automation, transport migration, and fabric drift validation.

Figure 7: Partner support required for various ANI levels¹



Source: ISG Global Autonomous Networks Benchmark 2025 Survey, 2026 (n=95); ¹The ANI™ Framework: ANI™ measures autonomy maturity across six core domains: RAN, Transport, Core, Edge/MEC, Data Center Fabric and VNOC/Cross-Domain Orchestration. Each domain is scored on the consolidated Level 1–5 autonomy scale and averaged into a composite index. The result reflects not just automation presence but closed-loop execution and cross-domain coordination. ANI™ bands categorize telcos into reactive, automated, intelligent (L3 plateau), autonomous (L4), and self-governing (L5-ready). ANI™ therefore becomes more than a score, it becomes a transformation compass, highlighting where autonomy is uneven and where investment yields the highest uplift.

Unlike horizontal AI, telecom models balance cost, latency, jitter, packet loss, spectrum allocation and SLA thresholds simultaneously — embedding business logic (penalties, lawful intercept, emergency routing) into autonomous decisions. Autonomy thus becomes a programmable layer supporting NetCo efficiency and ServCo monetization.

The Agentic AI Fabric for Autonomous Network Operations:

The autonomous networks are enabled by the convergence of agentic intelligence, purpose-built telecom models, orchestration frameworks, and trusted governance architectures. Technology thus becomes the execution layer which is bolstered only when aligned to domain context and business intent. This execution layer is realized through an *Agentic AI Fabric* — a distributed, governed architecture designed to operationalize autonomous network operations at scale.

The *Agentic AI Fabric* provides the structural foundation required to move from AI-assisted workflows to true Level 4 and Level 5 autonomy. It consists of a distributed system of specialized AI agents deployed across OSS, BSS, network operations (RAN, transport, core), edge and cloud domains, and customer and service operations. These agents collaborate to support the full network lifecycle with limited human intervention. Each agent can perceive network state through telemetry and contextual data; reasoning over operational conditions; planning actions aligned to intent; and finally executing modifications within defined policy guardrails.

Agents are deployed close to data sources to minimize latency and maximize contextual awareness. Communication occurs through open, standards-aligned interfaces, enabling distributed reasoning and multi-agent coordination.

The Agentic AI Fabric follows a layered, model-agnostic architecture with the data fabric as the base layer that aggregates telemetry, events, logs, topology context, and business signals across domains. The second AI reasoning layer hosts domain-specific models (SLMs/LLMs, Graph AI,

predictive models) either co-located with agents or externally deployed. Then the agent layer could be a single-agent or a collection of multi-agent systems responsible for reasoning, planning, and action execution. The final orchestration layer coordinates workflows, invokes agents, manages task dependencies, and enforces execution policies.

At the core sits a control layer, functioning as an operating system for agents. This layer not only enforces policy and risk boundaries but also manages secure access between agents, tools, and APIs by maintaining agent memory (episodic and semantic). Additionally, this layer also governs execution authority while the architecture is designed to remain model-agnostic, cloud-agnostic, vendor-agnostic, and use-case extensible.

The Agentic AI Fabric operates across both control and data planes and can be deployed across edge and central poly-cloud environments. Every agent action generates telemetry, evidence and proof of authority that ensures observability, auditability and explainability. Human oversight remains integral. Telcos define intent, set policies, and approve or override actions when risk thresholds are exceeded. The system supports exception handling for scenarios that exceed autonomous resolution capacity.

To operationalize the Agentic AI Fabric at enterprise scale, telcos require more than intelligent agents — they require a structured management system governing maturity, orchestration, and risk. The **Autonomous Intelligent Management System (A.I.M.S.)** framework (see figure 8 below) serves as this control and progression framework. It aligns architecture, governance, lifecycle management, and business outcomes into a unified autonomy operating model. While the Agentic AI Fabric framework provides the execution engine, A.I.M.S. provides the governance spine — ensuring autonomy remains aligned to business intent, regulatory requirements, and enterprise risk tolerance. A.I.M.S. institutionalizes policy-as-code, risk-based autonomy classification, agent lifecycle



management, human-on-the-loop oversight, and continuous performance validation.

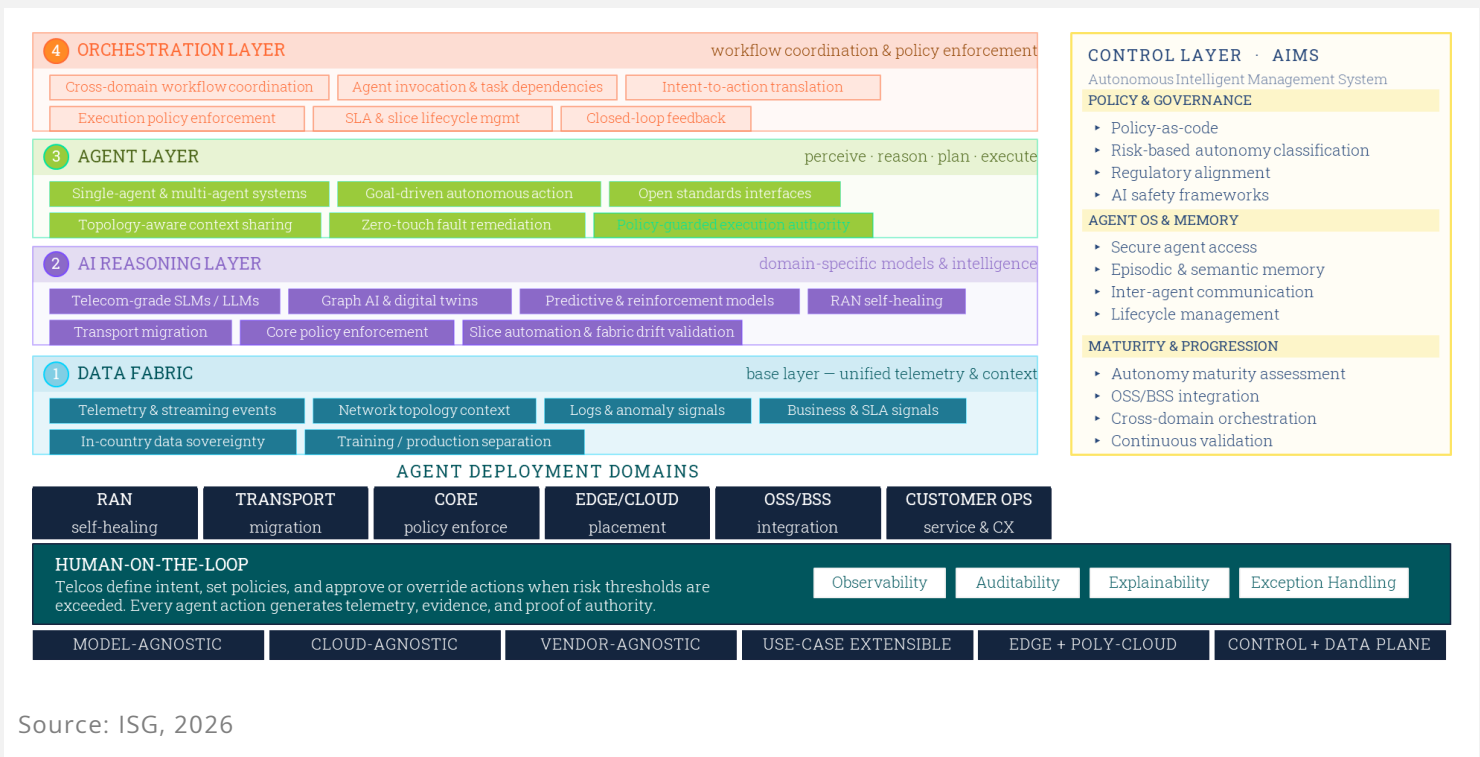
Cognitive Orchestration and Closed Loops:

Closed-loop autonomy requires orchestration connecting detection, reasoning, decision, execution, and validation into continuous feedback cycles aligned to TM Forum standards (TMF 921, 939, 785).

Survey responses show cross-domain orchestration remains uneven. Level 4 telcos demonstrate unified telemetry ingestion (Kafka, Prometheus, gNMI,

YANG), real-time topology awareness, multi-domain intent propagation and automated remediation with rollback safeguards. Predictive loops reduce MTTR by 30-70 percent while enabling proactive QoE optimization. Whereas the VNOC serves as the execution layer — coordinating domain agents and bridging network and business workflows. Explainability becomes non negotiable — AI decisions must be transparent and auditable within regulatory frameworks. Governance must align business intent, technical constraints and legal requirements into enforceable policy layers.

Figure 8: Agentic AI Fabric Framework



"The next leap in network operations is not more automation—it is trustworthy autonomy. Autonomous networks earn trust only when intent is translated into action through governed intelligence with human-on the loop, where every decision is explainable, auditable, and aligned to outcomes. Wipro brings Proof over Promise to autonomy—moving service providers beyond isolated automation to measurable

impact at scale with TMF Level 4/5 autonomy. This means embedding responsible AI guardrails, policy controls, observability and regulatory compliance measures operational transparency so networks can evolve safely, while meeting reliability, security resilience requirements of critical infrastructure." – Ravi Emani, Vice President & Global Head – Connectivity Practice, Wipro Engineering

Staggered Delivery with A.I.M.S. framework: The A.I.M.S. (Autonomous Intelligent Management System) maturity & transformation framework aligns with the TM Forum layered staircase model and reflects real-world operator journeys. A.I.M.S. is a four-stage maturity pathway for advancing from domain-level automation to full-scale, self-governing network autonomy. It provides a

structured progression from benchmarking assessment, to deploying and integrating AI and automation foundations, maturing cross-domain orchestration and ultimately enabling intent-driven, policy-governed autonomy. By coupling agentic AI, purpose-built telecom models, and explainable governance, telcos transition from reactive management to policy-aligned, self-governing networks.



Section 7: Wipro's Alignment with Industry Trends

Autonomous maturity cannot be assessed through isolated use cases or vendor deployments. It must be measured across domains and aligned to business outcomes. The Autonomous Network Index (ANI™) provides a structured way to quantify how far an operator has progressed from automation to true autonomy and where to focus next. Survey inputs provide domain-level maturity and forward ambition, enabling both current-state benchmarking and trajectory analysis.

Preliminary analysis highlights three consistent patterns with ANI™:

1. Regional Variance: North America and parts of Asia show stronger maturity in core and cloud-native domains, while Europe demonstrates depth in virtual core (VNF to CNF scaling). Emerging markets often leapfrog in digital adoption but face data readiness gaps.
2. B2B vs B2C Divergence: Telcos prioritizing enterprise services score higher in core and

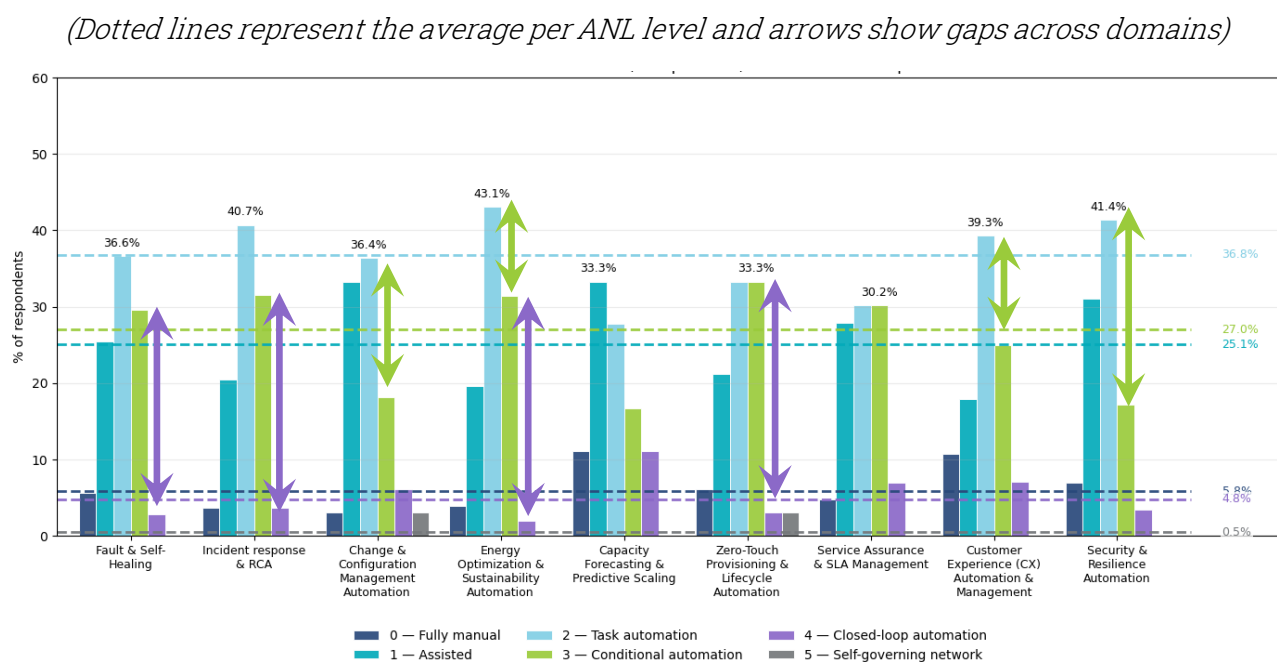
edge autonomy but lag in RAN energy optimization. Consumer-focused telcos demonstrate stronger RAN automation but weaker SLA-driven orchestration.

3. The L3 Plateau: Most telcos cluster in the Intelligent band — AI-assisted but not yet closed-loop. Breaking beyond this plateau requires cross-domain orchestration, governance maturity and business alignment — not just more automation.

Wipro's Vision for Autonomous Networks:

Autonomy is not delivered through technology alone. It requires the orchestration of intelligence, governance, and operating-model transformation. Wipro implements agentic AI as a core execution layer, embedding goal-oriented agents within a common orchestration fabric, ensuring the shift from AI assistants to autonomous agents is seamless and governed. Wipro's approach balances technology depth with organizational readiness, ensuring autonomy is scalable, trusted, and economically aligned.

Figure 9: Measurable automation with ANL levels



Source: ISG Global Autonomous Networks Benchmark 2025 Survey, 2026 (n=95)



Wipro's framework integrates *AI-Driven Orchestration and Network Intelligence* capturing agentic AI, purpose-built telecom models, digital twins, and real-time telemetry operate as an integrated intelligence fabric; *Human-Centered Transformation Design* covering workforce evolution, governance structures and explainability frameworks ensure autonomy is trusted and sustainable; and *Future-Ready Operating Model Enablement* across cross-domain orchestration, VNOC modernization, and sovereign data controls safeguarding compliance and resilience where technology (agentic AI, domain models, orchestration platforms), process (intent-driven workflows, closed loops, lifecycle governance) and people (skills evolution, AI oversight, cross-functional ownership) converge together.

Within Wipro, purpose-built telecom models (deep SLMs/LLMs, Graph AI) are trained on telco semantics and operationalized via reusable model pipelines, enabling intent interpretation that spans network performance, policy, compliance and

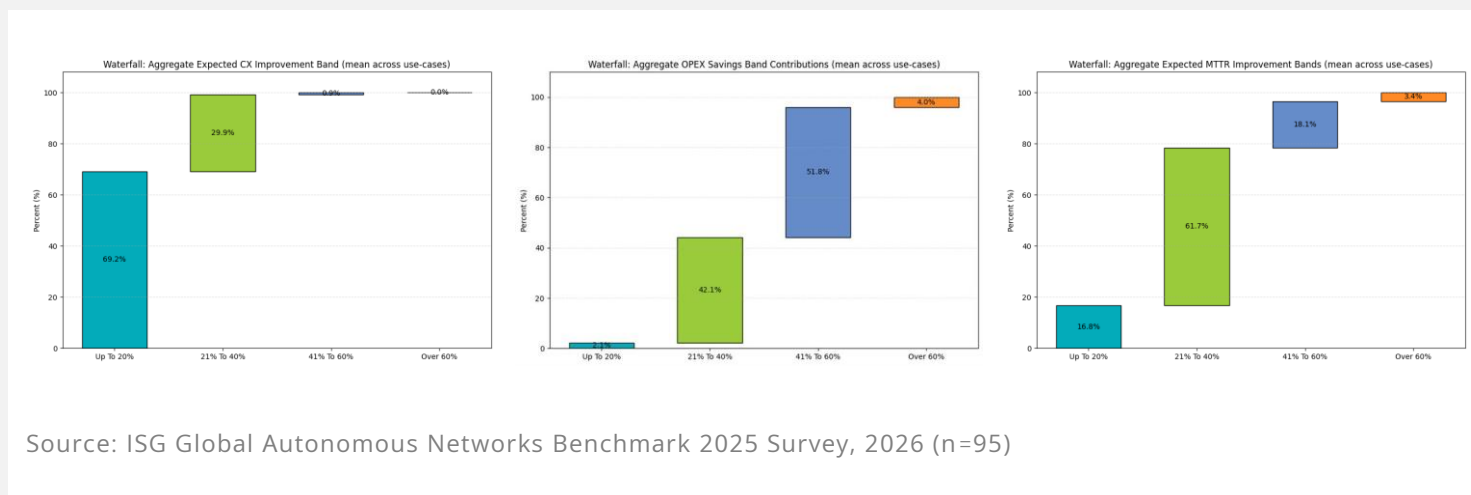
business outcomes. Wipro also treats the VNOC not as a dashboard but as a cognitive command layer, where multi-agent coordination, event streams and intent propagation converge into closed loops aligned to TMF standards. Security, explainability and compliance are embedded by design, with risk-classification, audit trails and attestation services built into workflows.

Key trends and survey highlights

Telcos globally are actively investing in automation and AI. However, progress remains uneven, and the gap between ambition and operational reality is evident across domains.

- **Top Drivers:** Cost, Reliability and Experience: Survey results show autonomy driven by: OPEX reduction, MTTR reduction, CX stability, energy optimization and faster time-to-market. While revenue scenarios (slicing, NaaS) emerge, cost control and reliability dominate. Most telcos start with efficiency and expand to platform economic as confidence grows.

Figure 10: Expected benefits (immediately realized in CX but more gradually in OpEx & MTTR improvements)



- **Top Barriers – Integration and Trust:** Barriers cluster around: integration complexity across domains/vendors, AI accuracy and model drift, governance and explainability, skills gaps and security/compliance. Integration complexity consistently outranks technology immaturity — autonomy stalls due to orchestration and architectural fragmentation, not a lack of tools.
- **Most Valuable Use Cases – Practical, measurable domains:** Use cases with measurable impact concentrate across fault management and closed-loop remediation, incident detection and AI-driven RCA, RAN energy optimization, capacity forecasting and zero-touch provisioning. Service assurance and SLA enforcement grow for B2B telcos. Hence there is a clear pattern emerging: telcos prioritize use cases reducing operational friction or customer impact before expanding to monetization.

The in-depth interviews reinforce and deepen survey findings

A European telco emphasizes fiber-driven autonomy and workforce transformation as a necessity amid aging technical populations; another European telco highlights the need for cross-domain standardization and orchestration to overcome vendor fragmentation; a leading UK operator focuses on agentic AI for service assurance and data-as-product foundations to move beyond AI pilots; a leading operator in India underscores scale and AI-native design as enablers of dark NOC ambitions; a NaaS provider from APAC illustrates how programmable APIs and NaaS models demand embedded autonomy across layers; and a middle eastern operator sees autonomy as structurally unavoidable due to rising complexity and cost, prioritizing energy optimization, predictive maintenance, and VNOC centralization while embedding strict governance and hybrid human oversight to scale safely across multi-market operations.

Common themes emerge on: autonomy succeeding when anchored in specific, high-impact domains

and supported by data foundations and governance — not when deployed as a blanket technology program. Also, most telcos acknowledge maturity being at or near Level 3 in many domains. Few claim sustained Level 4 cross-domain autonomy, reinforcing the existence of an industry-wide plateau.

Wipro’s Capabilities & Differentiators

The findings above underscore the need for a partner that can bridge domain expertise, orchestration, governance, and organizational change. Wipro brings cross-domain depth across: RAN optimization and energy management, Transport migration (IP/MPLS to SRv6, optical modernization), Cloud-native core scaling and policy automation, Edge/MEC orchestration, data center fabric automation, and VNOC modernization and multi-agent orchestration.

This domain fluency enables practical prioritization of autonomy initiatives rather than abstract transformation blueprints.

1. **Cognitive Automation and VNOC Transformation:** Wipro's cognitive automation integrates agentic AI orchestration, purpose-built telecom models, closed-loop automation, and risk-based governance — modernizing VNOC operations into intelligence hubs coordinating cross-domain agents.
2. **Organizational and Workforce Transformation:** Supports AI readiness assessments, skills uplift, operating model redesign, governance implementation, and cross-functional KPI alignment to ensure sustainability beyond pilots.
3. **Ecosystem and Partnerships:** Collaborates with hyperscalers, OEMs, and AI providers across cloud, domain automation, and agentic frameworks — accelerating delivery while reducing vendor lock-in.
4. **Business Outcome-Oriented Delivery:** Autonomy positioned as outcome-driven transformation targeting OPEX reduction,






MTRR improvement, energy efficiency, SLA compliance, and revenue enablement via programmable networks.





Figure 11: Wipro Offerings

Wipro Offerings

Consulting Play

-  **E2E Business Process Transformation**
E2E business process transformation across fulfillment, assurance, network Lifecycle, customer operations, NOC/SOC and field engineering to drive agility, efficiency and Autonomous Operations
-  **Maturity Assessment , Evolution Roadmap & Business Case**
Comprehensive assessment, gap analysis and Roadmap definition across business, customer, service, resource, data, security, AI and organizational layers to enable Autonomous Journey
-  **Workforce Evolution**
Transform telecom workforce capabilities with skills, roles and operating behaviours needed for autonomous AI driven Journey
-  **Telco Operating Model Transformation**
Enable re-design of Telco Operating mode to enable AI assisted and Autonomous operations – covering org structure, roles, governance, decision rights and cross domain operating constructs .

AI Powered Network Operations

-  **OSS Transformation**
Modernize Operations Support Systems with AI-driven automation enabling closed loop autonomous capabilities across resource, service & product layers. Shift from Reactive to Proactive / Preventive model
-  **NOC/SOC Automation**
Human centric to AI Centric NOC Transformation enabled through AI Agents, Network Knowledge Graph - automating problem root cause analysis, remediation, change and service management workflows
-  **Customer Operations Transformation**
Agentic AI powered Customer operations transformation with automation of customer interactions, guiding next best actions through AI assisted troubleshooting
-  **Field Operations Transformation**
AI enabled Portable NOC solutions enabling field teams with On site diagnostics, guided workflows and fault analysis enabling reduction of truck rolls and first time fix rates & tighter integration between Field, NOC teams

Key Differentiators : comprehensive service Offering | Custom Engineered Telco Models SLM/LLM | Outcome focussed | Self Funded Transformation Model

Source: Wipro

Section 8: Outlook and Way Forward

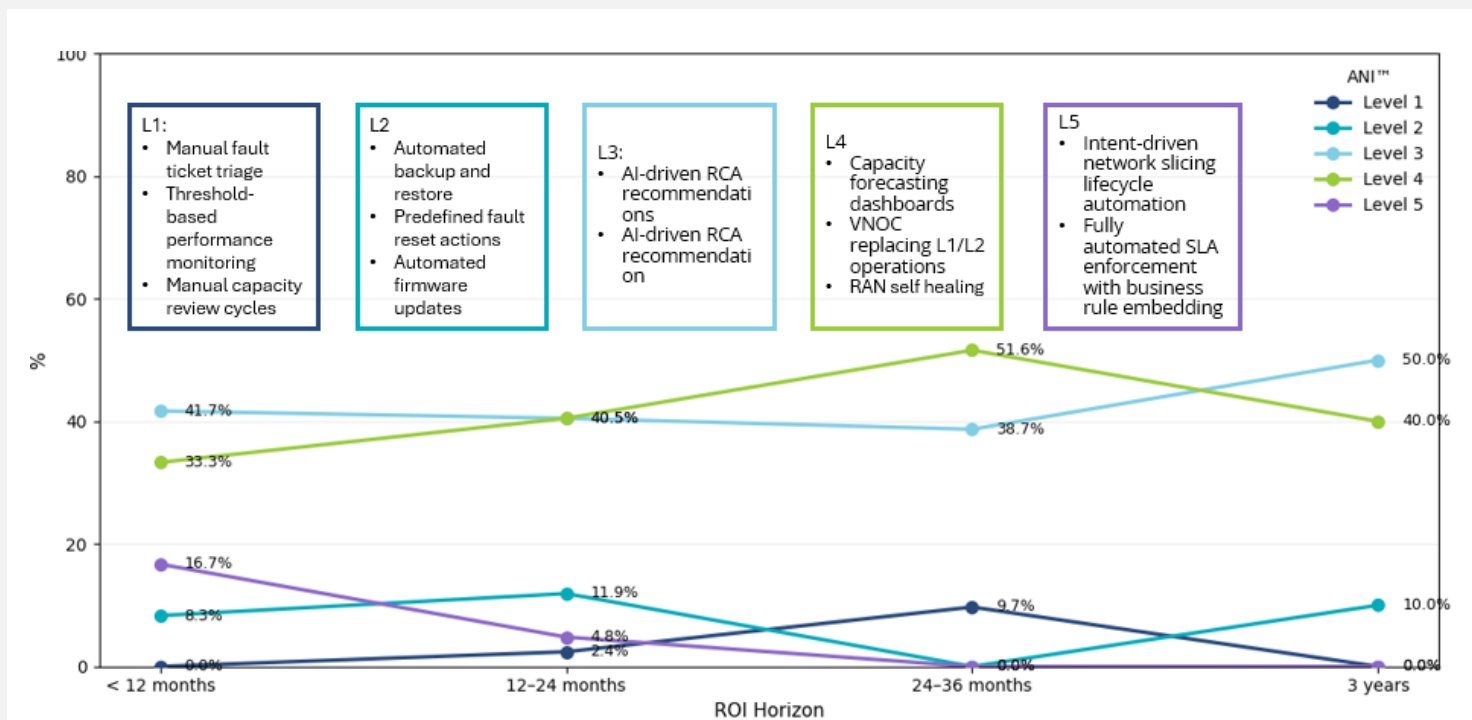
Autonomous networks are becoming the operating prerequisite for the next decade of telecom evolution. Survey responses indicate that most telcos expect to progress at least one maturity level within three years, yet ROI expectations remain concentrated within 12-36 months. This tension underscores a central reality: autonomy must deliver measurable value while building toward structural transformation.

From Automation to Agentic, Self-Governing Networks: The next phase of network evolution will not be defined by incremental automation. It will be defined by the emergence of agentic, intent-driven systems capable of orchestrating multi-domain networks in real time. A key theme reinforced by this research is that most telcos remain strong in AI experimentation but weak in

agent lifecycle management and orchestration maturity. The shift is from AI assistants to goal-driven agents and from pilots to operationalized intelligence. That is the step from Level 3 to Level 4. Remember, the current global ANI™ average is **2.36**.

In the 6G horizon, networks will need to integrate AI directly into assurance and operations workflows, support distributed edge intelligence, enable dynamic slicing and programmable services, and harden infrastructure to support AI-native applications. Hence, Level 4 advancement requires combining predictive analytics with agent-driven remediation — shifting from reactive fault resolution to proactive anomaly prevention. Closed-loop architectures will improve fault tolerance, reduce MTTR, optimize energy consumption and stabilize customer experience across B2B and B2C domains.

Figure 12: ROI horizon to ANI™ level progression



Source: ISG Global Autonomous Networks Benchmark 2025 Survey, 2026 (n=95)



Building the Proactive, Data-Driven NOC: The future NOC is not a monitoring center — it is a cognitive coordination layer. To scale non-linearly without proportional headcount growth, telcos must embed multi-agent orchestration across domains, implement topology-aware reasoning, adopt data-as-product architectures, treat AI agents as lifecycle-managed assets, and establish policy-driven risk guardrails. The result is a proactive VNOC capable of detecting, diagnosing, and resolving issues autonomously while escalating exceptions intelligently.

Sustaining Momentum - Continuous Transformation: Survey findings show that ROI expectations cluster within three years (especially for Level 3 and Level 4), suggesting that autonomy must generate tangible impact early. Telcos that sustain momentum typically prioritize domain-specific high-impact use cases first, invest in reusable data foundations before scaling AI, institutionalize governance and explainability early,

and align network KPIs to business KPIs. Incremental automation gains dominate early phases; transformational impact occurs when orchestration, governance and workforce alignment converge.

Holistic Autonomy as a Leadership Imperative: Over the next decade, telecom leadership will be defined not by who deploys the most AI tools, but by who integrates technology, people and process into a coherent autonomy strategy. Holistic autonomy combines technological intelligence (agentic AI, digital twins, domain models), operational discipline (closed loops, lifecycle governance), human oversight (trust, explainability, ethics) and business alignment (CX, revenue, cost, sustainability). Telcos that treat autonomy as a strategic operating model — rather than a technology project — will move beyond the L3 plateau and define the competitive frontier of programmable, self-governing networks.

Conclusion

Autonomous networks are no longer optional — they are the foundation of the next telecom era. Those who align technology, data, governance and people around intent-driven, agentic intelligence

will move beyond incremental automation and redefine cost efficiency, CX and service innovation for the decade ahead. The advantage is that telcos operate trust, codify intent and scale closed loops across domains.



About the Author



Yash Jethani

Principal Analyst

ISG

As ISG's Principal Analyst, Yash brings his experience in consulting, research, thought leadership, corporate marketing, due diligence, account management and business development. As an analyst, he currently contributes to ISG's Provider Lens® global competitive research studies across cybersecurity, telecom & media, software defined networking, cybersecurity, robotics & physical AI as well as managed network services. He is also involved in supporting client queries, generating marketing assets for the firm and advisors, supporting surveys and leading active discussions in building relationships and driving business outcomes.



Summary Facts



Headquarters

Bangalore, India



Employee count

233000+



Key industries

Telecom Media & Technology, BFSI, Healthcare & Life Sciences, Manufacturing, Energy & Utilities, Hi-tech, Consumer



Portfolio

Technology Services, Consulting, BPS, Engineering Services



Geography focus

Global (Americas, Europe, APMEA)





About Wipro

Wipro Limited (NYSE: WIT, BSE: 507685, NSE: WIPRO) is a leading technology services and consulting company focused on building innovative solutions that address clients' most complex digital transformation needs. Leveraging our holistic portfolio of capabilities in consulting, design, engineering, and operations, we help clients realize their boldest ambitions and build future-ready, sustainable businesses. With over 233000+ employees across 65 countries, we deliver on the promise of helping our clients, colleagues, and communities thrive in an ever-changing world.

About ISG

ISG (Nasdaq: III) is a global *AI-centered* technology research and advisory firm. A trusted partner to more than 900 clients, including 75 of the world's top 100 enterprises, ISG is a long-time leader in technology and business services that is now at the forefront of leveraging AI to help organizations achieve operational excellence and faster growth. The firm, founded in 2006, is known for its proprietary market data, in-depth knowledge of provider ecosystems, and the expertise of its 1,600 professionals worldwide working together to help clients maximize the value of their technology investments.

For more information, visit www.isg-one.com.