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VIEWPOINT

HOW AGENTIC AI IN TELECOM CAN BOOST EFFICIENCY IN OPERATIONS

Agentic AI is revolutionizing the telecom industry by enabling autonomous network management, hyperpersonalized customer experiences, and significant operational cost reductions.

Infosys® | Knowledge Institute

Telecom companies — from global players to regional leaders and mobile virtual network operators (MVNOs) — face ongoing challenges in network optimization, customer experience enhancement, and cost reduction. Despite 76% of consumers expecting personalized services, only 37% of providers can derive actionable insights from their data.

With global data traffic expected to surpass 300 exabytes per month by 2027 — a growth rate of about 250% — the need for efficient networks is growing. Meanwhile, operating costs continue to rise due to digital transformation, network upkeep, inflation, and increasing energy expenses. Additional obstacles include legacy architecture, which creates digital transformation bottlenecks, and service delivery gaps that lead to customer experience shortcomings.

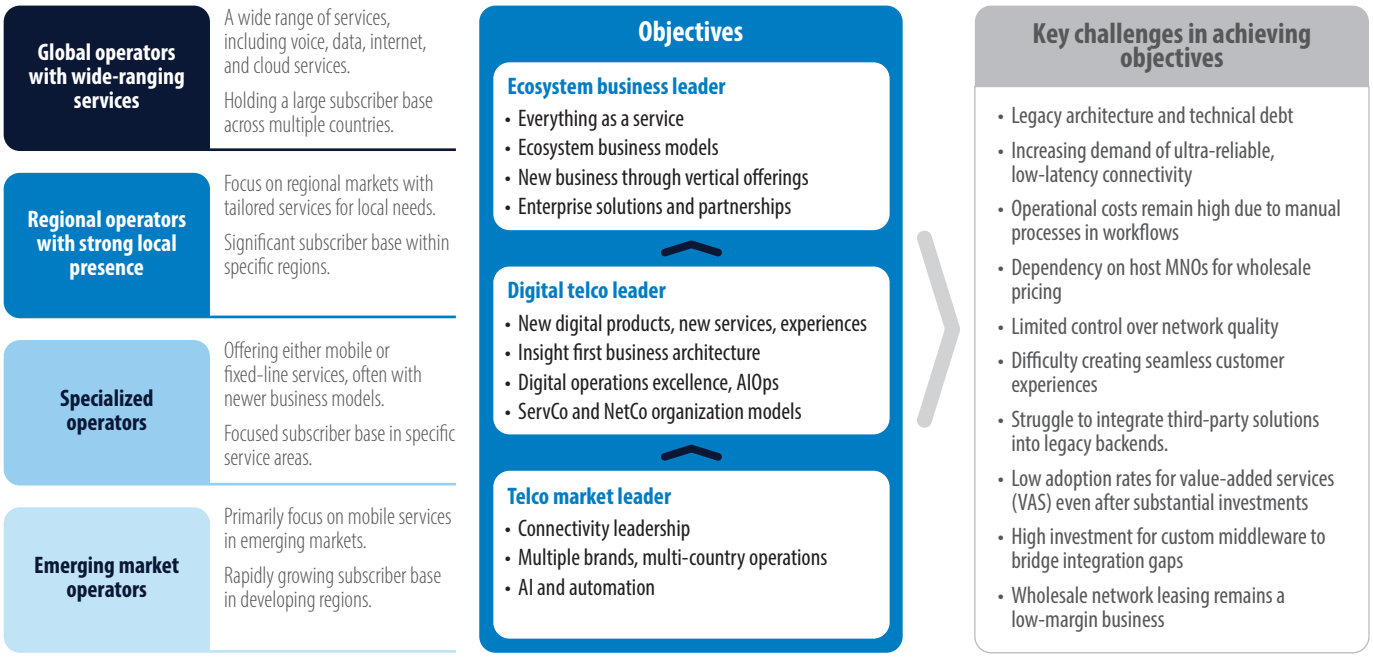
While conventional automation and generative AI have helped ease some of these issues, agentic AI — with its autonomous decision-making capabilities — is emerging as the next step toward greater efficiency, adaptability, and long-term value across telecom operations.

Challenges across telecom landscape

Telecom companies aspire to evolve into digital, ecosystem-driven businesses (Figure 1). Industry operators are modernizing their offerings — whether through everything as a service, industry-specific solutions, or strategic partnerships — to stay ahead of evolving market demands. However, many face common challenges: Legacy systems slowing innovation, increasing demand for low-latency connectivity, and operational inefficiencies from manual workflows. MVNOs and regional companies struggle with host network dependencies, limited-service control, outdated systems, and low adoption of value-added services despite significant investments.

> *Agentic AI will transform the telecom industry by reducing operational complexity and unlocking new efficiencies across networks, services, and customer layers."*
>
> **– Balakrishna (Bali) D.R**
>
> *Infosys EVP and global services head of AI and industry.*

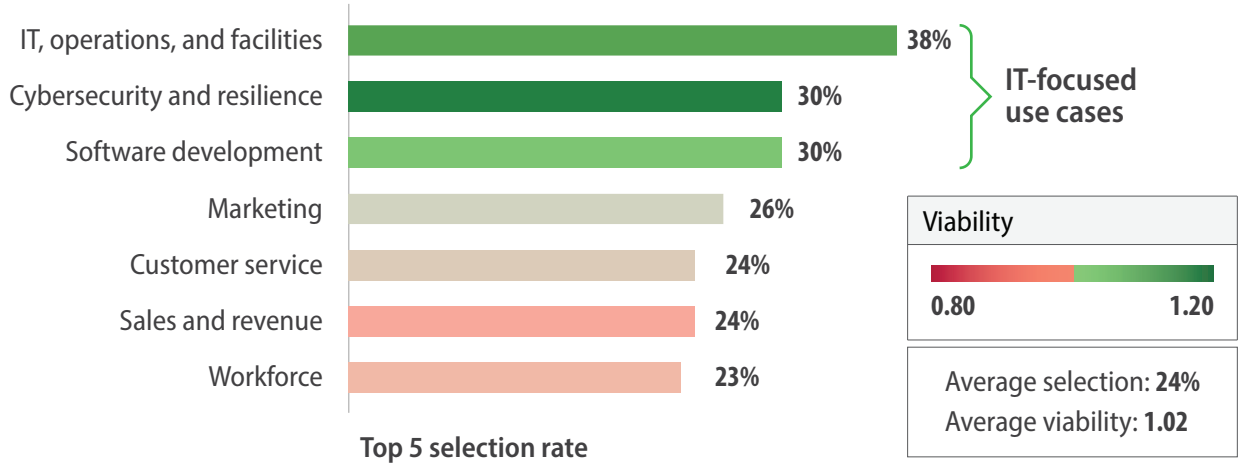
Figure 1. Goals and challenges across the telecom ecosystem



Source: Infosys

To address these issues, companies are rethinking their operating models. Many have turned to AI and automation, pursuing new digital services and adopting more agile structures. Increasingly, agentic AI emerges as a transformative force in the telecom industry. The Infosys Business Value Radar 2025 reported that orchestration of AI use cases ranks high in both relative viability and ease of implementation. The research shows that IT-focused use cases have high viability (Figure 2). These use cases are also well-suited for orchestration or agentic AI. By leveraging agentic AI, operators aim to offer predictive solutions, reduce churn rates, and build stronger relationships with customers through hyperpersonalization — all with minimal or no human intervention.

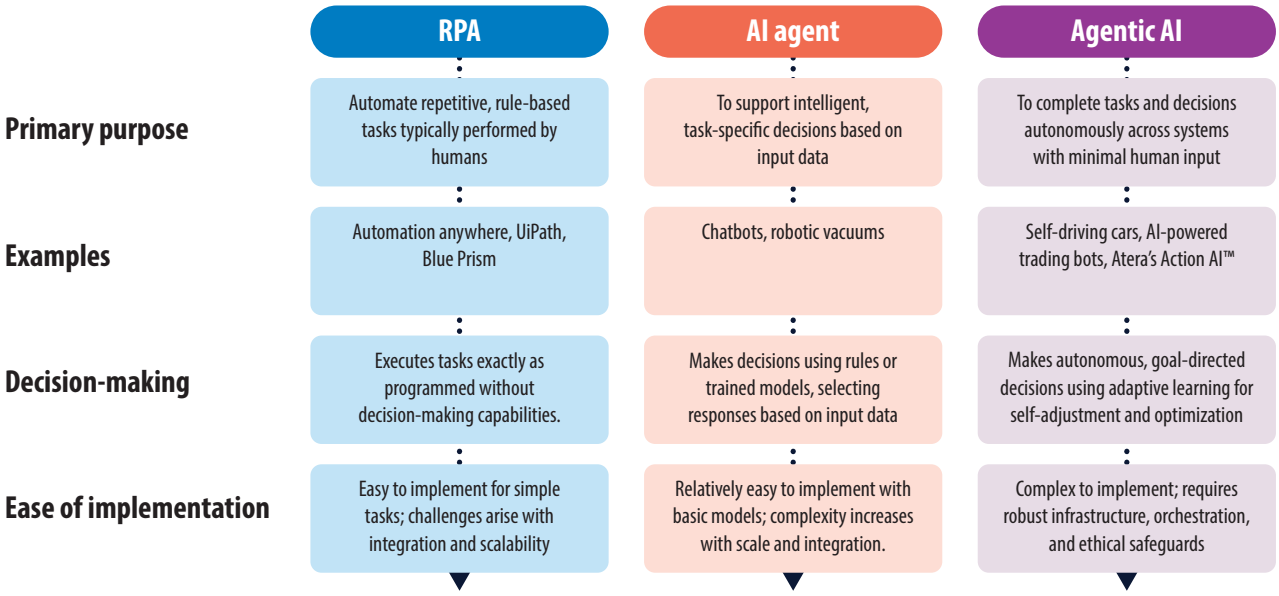
Figure 2. IT-focused AI use cases are the most viable



A viability score above 1 indicates a use case type is more likely to deliver business objectives, with a score less than 1 being less likely. The viability score is the weighted average of deployments achieving some or all business objectives compared to the total deployments of the use case type. The selection rate is the percentage of respondent indicating their company is pursuing AI within a category. See AI Business Value Report for complete Figure 2.

Source: Infosys Knowledge Institute

Figure 3. Comparing RPA, AI agents, and agentic AI



Source: Infosys

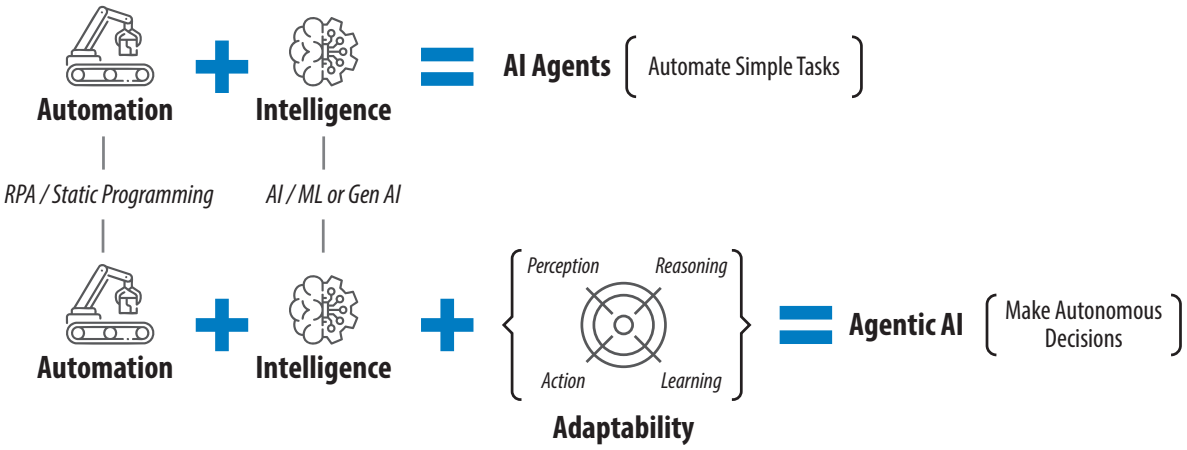
Why telecommunications need agentic AI

What can agentic AI bring that robotic process automation (RPA) and generative AI aren't already doing? In short: Autonomy, adaptability, and goal-driven execution. As detailed in Figure 3, RPA automates repetitive tasks and AI agents enhance human creativity and insights. However, both rely on predefined logic and human input. They react but don't initiate or optimize independently.

Agentic AI, on the other hand, brings true autonomy (Figure 4). It can set objectives, decide how to achieve them, and act without needing a prompt. It learns and improves over time through reinforcement learning, adjusting strategies based on outcomes. For telecom companies, this means intelligent systems that can:

- Monitor network performance and self-correct in real time.
- Predict and prevent outages before they happen.
- Optimize customer experiences without manual tuning.
- Streamline internal operations by automating routine tasks and improving cross-functional workflows.

Figure 4. Agentic AI: From automation to autonomy



Source: Infosys

Key considerations for agentic AI adoption in telecom

As telecom companies move toward agentic AI adoption, the following four strategic factors must guide their journey:

1. Assessing whether agentic AI's adaptive capabilities are needed. Does its autonomous decision-making provide significant benefit when compared to traditional RPA?
2. Identifying high-impact use cases and prioritizing them across functions. Which agentic AI use cases enhance customer experience, operations, and networks?
3. Evaluating return on investment (ROI) and how it aligns with organizational metrics. With most companies facing cost pressures, they need to ask whether each agentic AI deployment is worth the investment.
4. Defining a robust deployment strategy. How should telecoms approach the make-vs-buy decision?

These steps are essential to avoid redundant investments, ensure meaningful business outcomes, and maximize the value of this advanced technology.

Needs assessment: RPA vs. agentic AI

Companies have already invested heavily in automation and transformation roadmaps. So it's crucial to avoid replicating existing RPA solutions with agentic AI simply because it's a new, emerging technology. The key is to clearly understand and demarcate use cases best suited for RPA and those where agentic AI can deliver added value. Figure 5 illustrates where RPA is sufficient and where agentic AI can have a significant impact.

Agentic AI use cases in telecom

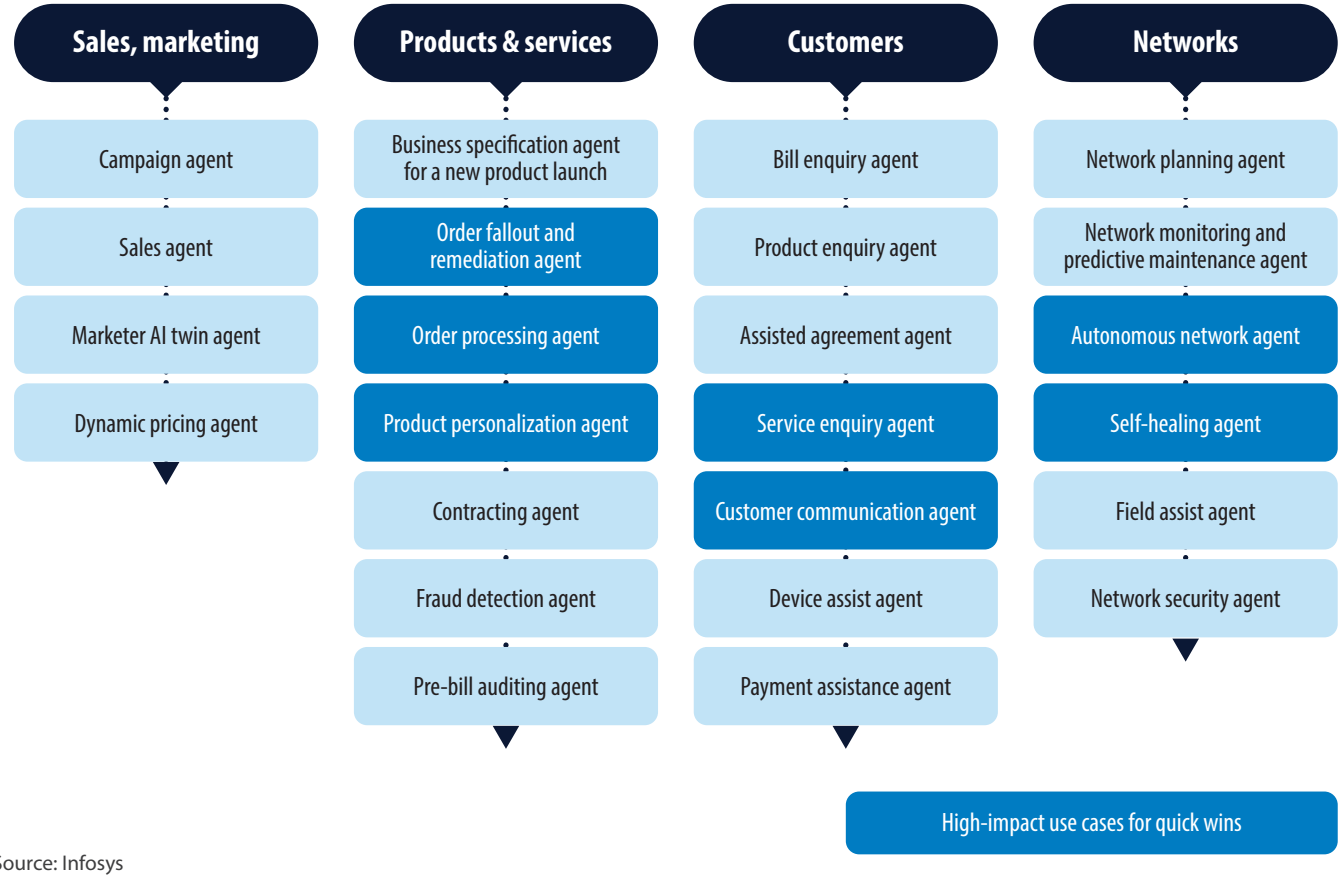
TM Forum (TMF), the global industry association for telecom service providers, simplifies its members' digital transformation by defining clear functional domains, including products & services, customer engagement, and network operations. Agentic AI use cases can deliver tangible business outcomes across these established core domains.

Figure 5. Use cases for RPA and agentic AI

RPA	Agentic AI
Invoice and purchase order processing Automates data entry, validation, and reconciliation of billing systems Vodafone's automated invoice processing reduces errors by 90% and cuts cycle times by 70%	**Customer service automation** Resolves complex queries via chatbots with contextual reasoning Microsoft 365 Copilot augmented Lumen's sales and support teams, revolving 80% of internal IT helpdesk tickets without human intervention
Customer onboarding/offboarding Streamlines know your customer (KYC) checks, SIM activation, and service termination Vodafone has automated 80% of onboarding tasks, reducing manual labor by 50	**Fraud detection** Detects SIM swap fraud and billing anomalies via pattern recognition Orange reduced fraud losses by 25% using AI agents to monitor 10 million plus transactions daily
Network maintenance Monitors network health, triggers alerts, and logs incidents AT&T uses RPA to automate 60% of network diagnostics, freeing engineers for complex tasks	**Network optimization** Uses real-time data to predict congestion, reroute traffic, and balance loads Telenor and Ericsson report 4% energy savings, improved radio access network performance using agentic AI

Source: Infosys

Figure 6. Agentic AI use cases aligning with TMF functional domains



Source: Infosys

Identifying use cases within these domains is essential to ensure strategic deployment that maximizes ROI, avoids redundancy with existing solutions, and targets areas where agentic AI can drive measurable improvements.

Infosys has identified and prioritized high-impact use cases (Figure 6) best suited for agentic AI implementation and mapped them to TMF functional domains.

Products & services

Agentic AI can transform service fulfillment and product personalization by automating order handling and tailoring offerings to individual customer needs. These use cases focus on reducing manual effort and improving critical metrics.

Order fallout and remediation agent: Handles order failures by autonomously identifying and resolving issues, such as stock unavailability or billing mismatches, to ensure successful order fulfillment and improve right-first-time metrics.

Order processing agent: Automates the end-to-end life cycle of telecom order execution, from KYC validation to SIM provisioning, reducing manual handoffs and accelerating service activation.

Product personalization agent: Applies real-time usage insights to recommend personalized telecom offerings, such as data boosters or roaming packs, which maximize customer satisfaction and increase revenue per user.

Benefits of agentic AI in customer support

Agentic AI enhances customer engagement by enabling intelligent agents to handle complex interactions with minimal human input. These agents deliver seamless, personalized experiences by coordinating tasks across systems in real time.

Service inquiry agent: Autonomously resolves service requests — such as activations, plan changes, or issue resolution — by orchestrating multistep tasks across systems, reducing manual intervention and improving customer experience.

Customer communication agent: Delivers hyperpersonalized, context-aware interactions across digital channels by orchestrating backend agents. This

ensures consistent and relevant communication at every touchpoint of the customer journey, enhancing engagement and overall customer experience. Multiple agents — such as billing, communication, and campaign agents — can collaborate to deliver personalized responses, coordinated by an overarching agent that routes queries to the right source.

Network operations

Agentic AI is reshaping network operations by enabling autonomous systems that can monitor, manage, and optimize performance without manual intervention. These intelligent agents work together to ensure resilient, efficient, and adaptive network management at scale.

Autonomous network agent: An overarching agent that manages the end-to-end automation of network operations. It coordinates various specialized agents for traffic routing, resource allocation, and security enforcement to enable real-time self-healing, optimization, and configuration with minimal human oversight.

Self-healing agent: A specialized agent focused on fault detection and recovery. It autonomously identifies network issues, diagnoses root causes, and initiates corrective actions in real time to maintain service continuity and reduce downtime.

A value-driven approach to prioritize agentic AI use cases

Selecting the right agentic AI use cases requires a structured, value-driven approach. Failing to apply this approach can lead to misaligned AI investments — wasting resources on low-impact initiatives while missing opportunities for transformative gains. To do this effectively, organizations must evaluate each use case along two key dimensions: Desirability and value generation.

- Desirability reflects both customer expectations and the organization's view of how feasible and practical a use case is to implement.
- Value generation refers to the potential impact of the use case across key business objectives, such as increased revenue, cost optimization, and improved customer experience.

ROI versus cost justification

While many telecom operators focus on justifying the cost of AI initiatives, agentic AI demands a shift in perspective — from short-term savings to long-term ROI. The real value lies not only in reducing operational costs but in unlocking transformative capabilities that drive sustainable growth, efficiency, and customer satisfaction. However, these benefits are only attainable if the right foundational infrastructure is in place.

Executing an agentic AI transformation requires investment in:

- Data platform with real-time network element correlation.
- Advanced operation support system (OSS) and business support system (BSS) architecture for handling autonomous decision-making capabilities.
- Standardized APIs for seamless inventory and fulfillment integration.
- Streamlined quality service monitoring with automated compliance testing.

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While the upfront investment in agentic AI is significant, long-term gains in operational efficiency, customer experience, and revenue growth justify the cost in many cases. Based on experience working with telecom companies, Infosys has found that investments in agentic AI lead to measurable improvements in many key performance indicators (KPIs), including:

- A reduction of over 30% in operational costs, driven by smarter resource management.
- More than 60% decrease in manual network operations through automated provisioning.
- Improved net promoter scores, reflecting enhanced subscriber experience.

How telecom can prepare for agentic AI

Implementing agentic AI effectively requires a well-structured deployment strategy tailored to business needs and technological maturity. This includes making informed choices between commercial off-the-shelf (COTS) solutions and custom development, leveraging proven blueprint models, and ensuring strategic adoption guided by responsible AI principles.

Figure 7. COTS vs. proprietary agentic AI development

Strategic consideration	COTS implementation	Proprietary development
Time-to-market velocity	Accelerated deployment through preconfigured integration	Extended development cycles with customization overhead
Scalability of architecture	Vendor managed infrastructure	Requires dedicated internal capabilities
Competitive differentiation	Limited customization potential	Maximum strategic differentiation potential
Decision autonomy	Architectural constraints on complex decisions	Unlimited decision architecture potential
Total cost of ownership	Lower initial capital outlay; higher lifetime costs	Higher initial investment, potential long-term efficiency
Risk management	Industry standard compliance frameworks	Requires proprietary compliance architecture

Source: Infosys

Balancing off-the-shelf with custom AI solutions

Most telecoms have already invested in commercial off-the-shelf solutions (COTS) across core domains, such as quoting, order management, provisioning, and IT service management. Many of these platforms now offer out-of-the-box agentic AI capabilities.

However, these packaged solutions often leave critical gaps — especially when it comes to cross-domain intelligence and customization. Tier 1 telecom providers typically bridge these gaps by combining commercial off-the-shelf (COTS) products with targeted custom development. In contrast, Tier 2 and 3 players may need to start by leveraging built-in AI capabilities before progressively evolving their own bespoke solutions. Over time, a hybrid model is likely to emerge where COTS-based agentic AI coexists with in-house innovations — maximizing value by combining speed of deployment with strategic differentiation.

To support this blended strategy, telecom companies must weigh the trade-offs between COTS implementations and proprietary development. Figure 7 outlines the key strategic considerations that should guide this evaluation.

Blueprint for AI implementation

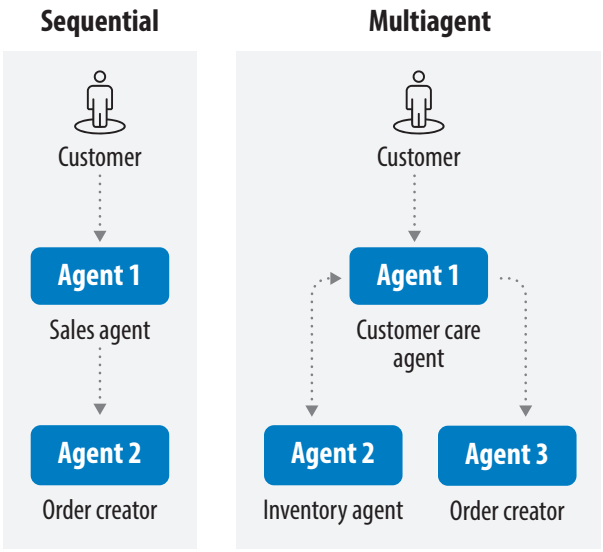
Agentic AI operates through three core functions: Perception, reasoning, and action. In telecom, perception involves gathering real-time data from network elements, service databases, and customer touchpoints. Reasoning leverages telecom trained small language models (SLMs) and broader large language models (LLMs) to analyze this data and generate adaptive strategies. Action executes decisions using task-specific actuators, such as API calls, while retaining contextual memory for personalized and continuous interactions.

These capabilities are powered by two foundational architectural models: Language models and workflow models. Compound architectures that combine LLMs and SLMs offer both broad analytical depth and task-specific precision. Agentic workflows enable these models to operate autonomously, making decisions with minimal human input.

There are two primary types of agentic workflows: Sequential and multiagent (Figures 8). Sequential workflows suit processes that follow a strict order, such as a customer selecting a mobile plan and the system generating a subscription. Multiagent workflows are ideal for concurrent tasks, such as querying device availability via an inventory agent before initiating an order. Selecting the right workflow model is essential to addressing telecom-specific challenges efficiently and at scale.

Ethical considerations: Agentic AI adoption should be accompanied by responsible AI practices to ensure ethical, transparent, and secure AI deployment. Telecoms

Figure 8. Sequential and multiagent workflow



Source: Infosys

must prioritize fairness, privacy, and accountability while ensuring AI decisions are explainable and compliant with regulatory frameworks. As agentic systems take on more autonomous roles in areas like network optimization, fraud detection, and customer service, embedding responsibility into their architecture becomes essential. Techniques such as human-in-the-loop oversight, federated fairness audits, and API-driven governance can help telecoms manage risks while maintaining operational agility.

The future of agentic AI in telecommunications

To fully realize the benefits of agentic AI in the telecom industry, companies must act decisively and strategically.

"The telecom industry is at a tipping point," says Jinu Koshy, Infosys global head of domain consulting for communications, media, and technology. "Agentic AI is no longer a future concept; it's a competitive differentiator today. Those who act quickly, apply it to the right use cases, and invest strategically will gain an early-mover advantage, secure market leadership, and deliver real value." Telecom companies improve their chances of successful AI deployments by focusing on four key transformation principles:

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- **Target high impact use cases** to overcome technical limitations in network optimization, predictive maintenance, and customer service automation.
- **Modernize integration architecture** by addressing legacy OSS and BSS challenges and adopting headless APIs, which allow smoother integration with agentic AI systems.
- **Build an AI-literate workforce** through upskilling, cross-functional collaboration, and feedback-driven iteration to reduce resistance and improve adoption.
- **Ensure transparency and compliance** by strengthening data infrastructure for real-time decision-making and auditability and to address concerns regarding black box AI behavior.

Authors

Ankur Goel

Industry principal, communications, media, and technology

Dinesh Shah

Prinipal consultant, communications, media, and technology

Ankit Kashyap

Lead consultant, communications, media, and technology

Vanishree Mahesh

Producer, Infosys Knowledge Institute

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