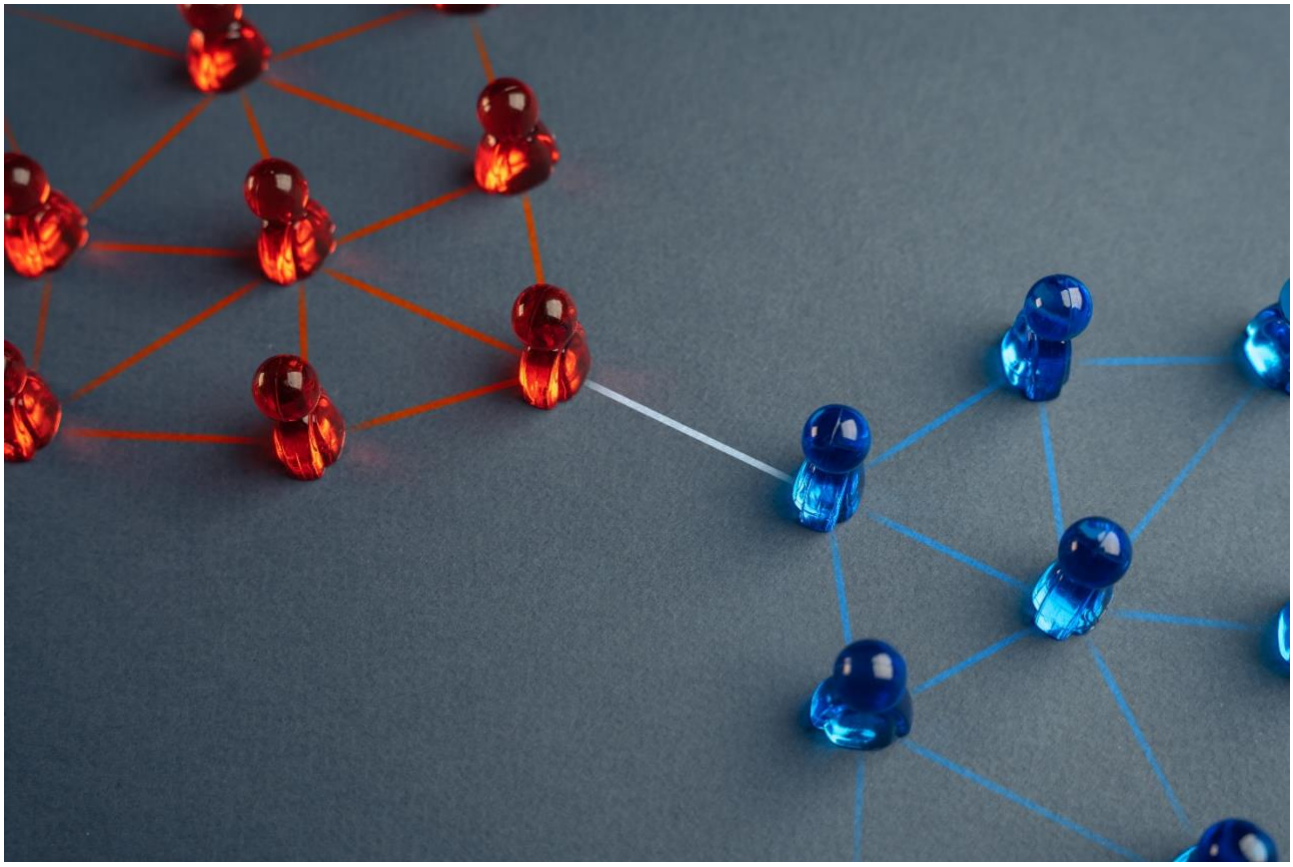

How AI can accelerate IT and OT convergence to transform customer experience

The telecom industry is undergoing a structural transformation as networks become software-defined, cloud-native, and increasingly automated. At the heart of this transformation lies the convergence of Information Technology (IT) and Operational Technology (OT), two domains that have historically operated in silos. AI is emerging as a critical enabler of this convergence, helping operators bridge data, processes, and decision-making across both layers.

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March 2026

Defining IT vs OT in Telecom

In the telecoms industry, the distinction between IT and OT is foundational:

- IT (Information Technology) refers to systems that support business operations. This includes Business Support Systems (BSS) such as billing, customer relationship management (CRM), order management, and digital channels like apps and web portals.
- OT (Operational Technology) refers to systems that manage and operate the network itself. This includes the Radio Access Network (RAN), core network, transport infrastructure, and Operations Support Systems (OSS) responsible for monitoring, provisioning, and fault management.

In simple terms, IT answers the question: *"Can we sell and manage the service?"* while OT answers: *"Can we deliver the service reliably?"*

Historically, these domains have been separated by technology stacks, organisational structures, and operating models. However, the shift to 5G, virtualisation, and cloud-native architectures is blurring these boundaries.

The Six Levels of Automation

A useful framework for understanding IT/OT convergence is the concept of autonomous networks, often described across six levels of automation:

- **Level 0: Manual Operations**
  All processes are human-driven, with little to no automation. Network management and business processes are reactive and siloed.
- **Level 1: Assisted Operations**
  Basic automation tools support human operators (e.g., dashboards, alerts), but decision-making remains manual.
- **Level 2: Partial Automation**
  Specific tasks are automated (e.g., provisioning, fault detection), but workflows are still fragmented and require human oversight.
- **Level 3: Conditional Automation**
  Systems can make decisions under predefined conditions. AI begins to assist with analytics and recommendations, but humans remain in the loop for validation.
- **Level 4: High Automation**
  Closed-loop automation is implemented. Systems can detect, analyse, and resolve issues autonomously in many scenarios, with limited human intervention.
- **Level 5: Full Autonomy**
  Fully autonomous networks that are self-configuring, self-healing, and self-optimising. AI drives real-time decisions aligned with business intent, with minimal human involvement.

Most telecom operators today operate between Levels 2 and 3, while full autonomy at Level 5 predominantly remains an aspiration. With increasing autonomy, networks become smarter, more efficient and more cost effective for operators, and can enable enhanced service delivery for both enterprise and consumer customers.

How AI Enables IT/OT Convergence

AI can play a central role in enabling convergence, acting as a unifying intelligence layer across IT and OT. There are five key ways in which this convergence can happen:

- **Cross-domain data correlation:** AI can ingest and analyse data from both domains—network performance metrics (OT) and customer/service data (IT). This enables operators to move from siloed monitoring to end-to-end visibility of service quality and customer experience.
- **Closed-loop automation:** AI enables systems to detect anomalies, diagnose root causes, predict impact, and trigger automated responses across both IT and OT systems. For example, a network issue can automatically trigger both traffic re-routing (OT) and proactive customer communication (IT), enabling smarter, more responsive service delivery.
- **Experience-centric optimisation:** Traditional telecom networks are optimised against technical KPIs such as latency, throughput, and packet loss, but strong network-level performance does not always translate into good user experience. AI can link network performance (OT) with user behaviour and service context (IT) to allow operators to understand what customers are actually doing, such as streaming video, making a VoIP call, or gaming, and dynamically optimise the network accordingly. For example, during periods of congestion, AI can prioritise latency-sensitive applications like voice or video calls, or allocate additional resources to high-value customers. This moves the focus from average network performance to the quality of experience delivered to each user in real time.
- **Predictive operations:** By combining historical network data with demand and usage patterns, AI can forecast congestion, predict failures, and guide capacity planning to align network operations with business needs.
- **Intent-based management:** AI enables operators to define high-level business objectives (e.g., prioritise enterprise customers during peak hours) and translate them into automated network and service configurations.

Key Challenges to IT/OT Convergence

Despite its promise, IT/OT convergence remains complex and difficult to execute. Several structural challenges persist:

- **Data fragmentation:** IT and OT systems often use different data models, formats, and storage environments. Integrating these datasets in real time is technically challenging.
- **Legacy infrastructure:** Many operators still rely on legacy OSS/BSS and proprietary network equipment, which are not designed for interoperability or cloud-native integration.
- **Organisational silos:** IT and network teams are typically separated, with different skill sets, incentives, and governance structures. This creates barriers to collaboration.
- **Real-time vs batch processing:** OT systems require real-time responsiveness, while IT systems are often designed for batch processing. Aligning these operational tempos is can be challenging.

To unlock the full potential of AI-driven IT/OT convergence, telecom operators can take several practical steps. Building a unified data architecture by investing in data platforms that can ingest, normalise, and expose data from both IT and OT systems. This often involves adopting data lakes, streaming architectures, and common data models.

Modernising legacy systems, and gradually transition from monolithic OSS/BSS to modular, cloud-native architectures can also support convergence objectives. Open APIs and microservices can improve interoperability and flexibility.

Alongside these technical aspects, more human-centric aspects are equally important: aligning IT and network teams through shared objectives, integrated workflows, and joint governance structures can support this transition. This may include creating dedicated convergence or platform teams. Furthermore, maintaining human oversight for AI-driven decisions is key, especially in early stages. This builds trust and allows operators to validate models before scaling automation.

AI is not just a tool for automation, it is the connective layer that enables telecom operators to unify IT and OT into a cohesive, intelligent system. By bridging data, aligning decision-making, and enabling closed-loop operations, AI allows operators to shift from network-centric to experience-centric models.

However, achieving this vision requires more than technology. It demands organisational change, architectural modernisation, and a clear, phased approach to automation. Operators that successfully navigate this transition will be better positioned to deliver differentiated services, improve efficiency, and compete in an increasingly digital and software-driven telecom landscape.

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