IT with intent: the interconnected future of telco operations

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Contents

We hope you enjoy the report and, most importantly, find ways to use the ideas, concepts and recommendations detailed within. You can send your feedback to the editorial team at TM Forum via **editor@tmforum.org**

The big picture

A quiet revolution is taking place in telecoms, with communications service providers (CSPs) working steadily towards the industry's next IT operating model. It centers around intent, with AI helping to bring IT and network technologies and ecosystems together to form end-to-end automated operations. The end game will be a transformation in the way telcos approach IT and deliver services.

For more than a decade operators' transformation projects have centered around three key areas:

- In the IT layer there is a focus on automating processes across systems and instilling high levels of interoperability in complex multivendor environments
- In the network space the drive is towards ever more advanced technology and overlying intelligent management and orchestration layers
- And in the business layer the trend is towards platform business models which will drive new services and value, particularly in B2B markets.

Making those three things happen simultaneously has proven to be difficult, and thinking about them as interleafed components of a wider transformation is often overlooked. Solid progress has been made, but much of it in isolated islands of success.

The AI era now presents the industry with opportunities to achieve these goals in a cohesive, joined-up manner, as well as a new way of thinking about future operating models in the form of intent-based operations.

However, the use of AI is not without its own set of challenges. In this report we look at how the path to intent is developing, as well as the major challenges that now need to be overcome. We focus particularly on the IT and business layers in operational and business support systems (OSS/BSS) which are at the center of transformational efforts on the path to holistic intent-based operations.

As part of our research, we surveyed CSP decision-makers to give a snapshot of current attitudes and ambitions in the industry. Their views are represented in the graphics throughout the report. In total we received responses from 110 individuals in 72 companies across 50 countries. Some percentages in the graphics do not add to 100 due to rounding.

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The AI era now presents the industry with... a new way of thinking about future operating models in the form of intent-based operations.

Towards an Intent-based future

Intent-based operations represent a fundamental shift in the philosophy of operating models, marking the move from configuring traditional networks to build services on top, to customers expressing business outcomes and letting intelligent operations work out how to fulfil them. In this model, the operator or customer states what they want from their service – for example, 'guarantee this service type has sub-10 millisecond latency for all London users during peak hours, Monday to Friday' – and generative AI (GenAI) in the business intent engine translates that high-level goal into policies, configurations and closed-loop automation actions across radio, transport, core and IT domains.

In TM Forum's Autonomous Networks Project, the definition of intent-based operations is formalized as: Standard intent models and APIs, plus lifecycle management of intent objects that allow AI and automation to continuously configure, optimize and assure services in line with business objectives rather than static scripts or low-level commands.

The major shift here is that the intent-based operating model is no longer just a collection of static architecture diagrams but rather a dynamic end-to-end system for connecting customer objectives with autonomous networks, while abstracting the underlying complexity, hiding it from the customer.

This concept of abstraction is important. If we think of business customers ordering telco enterprise services today, they need to be familiar with communications technology as well as their own IT and ask their telco partner to build a package that is right for their business. Or they may engage a third-party consultant or systems integrator to do that for them. In an Intent model they just need to be aware of the outcomes they need to achieve, with the GenAI in the business intent layer masking the underlying processes and workflows.

Are we there yet?

In short, no. Components of intent-based operations are coming out of the proof of concept phase into pilots, and progressive telcos are now using intent in live 5G networks and starting to have those deployments independently validated by TM Forum. A clear example of this evolution is demonstrated by Malaysia's DNB, a government organization set up to facilitate 5G rollout.

"Leveraging intent-based operations allows for effective management of the growing complexities involved in delivering differentiated 5G connectivity to multiple parties while adhering to SLAs," says Ken Tan, CTO at DNB. By combining such intent frameworks with accurate, federated inventory as a "real-time knowledge base", telcos and vendors are building networks that can self-configure and self-assure against stated intents – for example, automatically resizing slices or re-routing around predicted faults.

"Autonomous network has been one of the core design principles of DNB's 5G rollout from the very beginning," says Tan, with AI and automation delivering "world-class 5G connectivity at one of the lowest costs globally".

Several TM Forum Catalyst proof of concept projects have addressed specific intent challenges, such as the business intent translation layer and its integration into underlying BSS applications including order management and product catalog. These Catalysts also acknowledge that AI will play a key role in the management and orchestration of an intent-based operating model, but that AI is not currently mature enough to deliver closed loops without human governance.

When we asked in our survey whether the next era of telco operations will center on intent-based operations, almost two-thirds of respondents said yes but that they are finding it difficult to bring components together into a cohesive stack (see graphic). A further one third said the AI aspect of business intent translation isn't advanced enough yet.

One thing that is clear from our conversations for this report, is that the IT layer is key to enabling intent-based operations for CSPs. Automation, simplification and modernization are the cornerstones of building an OSS/BSS for intent-based operations and unlocking the operational and business benefits that come with that model.

On the next page we summarize some of the key report findings / recommendations. And in the first section we explore how and why operators are reinventing IT for intent, and what progress they are making in moving towards end-to-end automated IT operations.

Will the next era of telco operations center on Intent-based operations?
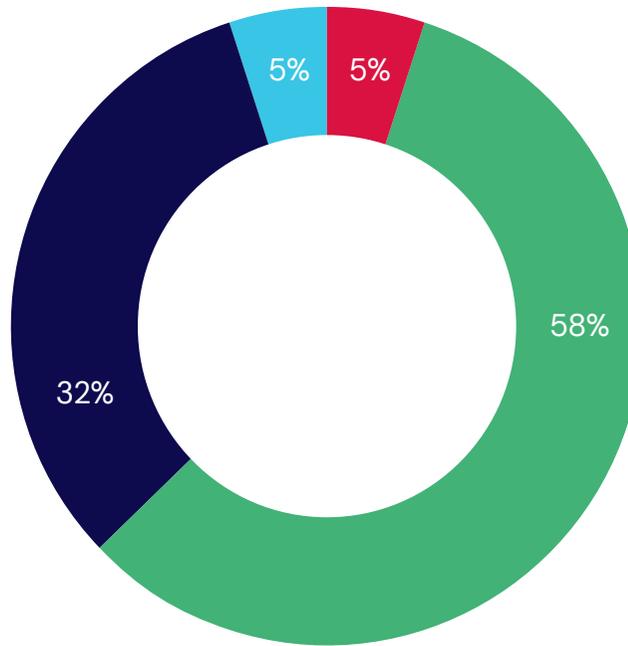
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■ No, intent-based operations are not needed to achieve our business ambitions
■ Yes, but we are finding it difficult to bring the components together into a cohesive stack
■ Yes, but the AI aspect of business intent translation isn't advanced enough yet
■ Yes, we will be delivering services on intent-based operations within the year

Key report findings / recommendations

Make IT modernization the linchpin of future operating models

Opt for a unified data strategy immediately

Adopt cloud-native OSS/BSS to enable agility and automation

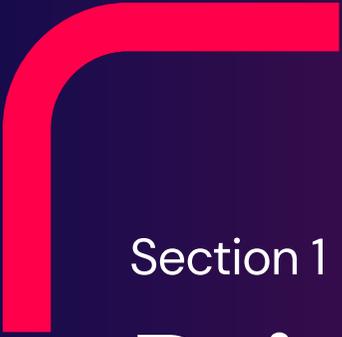Embed AI and agentic systems directly into service workflows

Deploy service orchestration end to end

Prioritize closed-loop automation as the backbone of service quality

Section 1

Reinventing IT for intent

The message we hear time and again from TM Forum members is that the real bottleneck to achieving end-to-end automation, differentiated connectivity and viable B2B2X business models is not in the network layer but rather in the OSS/BSS stacks.

Following huge investments by operators in 5G networks, the center of gravity of transformation has now shifted toward the service layer: the orchestration, assurance, data, catalogs and monetization systems that determine whether a network capability becomes a revenue-generating, scalable service. While autonomous networks and AI-native operations attract much attention, telcos are very much still working on IT transformation and recognize they cannot operationalize intent without modernizing their OSS/BSS foundation.

Our survey shows that telcos believe the industry is moving towards more cohesive, automated, AI-infused operations. More than half of respondents believe significant progress is being made, although one third say that progress is still minimal. Among the main areas of focus are data, AI, service orchestration, cloud transformation and core commerce. These interlink heavily in transformations designed to improve delivery, customer experience and monetization of differentiated connectivity and autonomous networks.

What level of progress are you seeing in telcos working towards end-to-end, automated IT operations?

- 36%
- 51%
- 13%

■ Small progress is being made
■ A lot of progress is being made
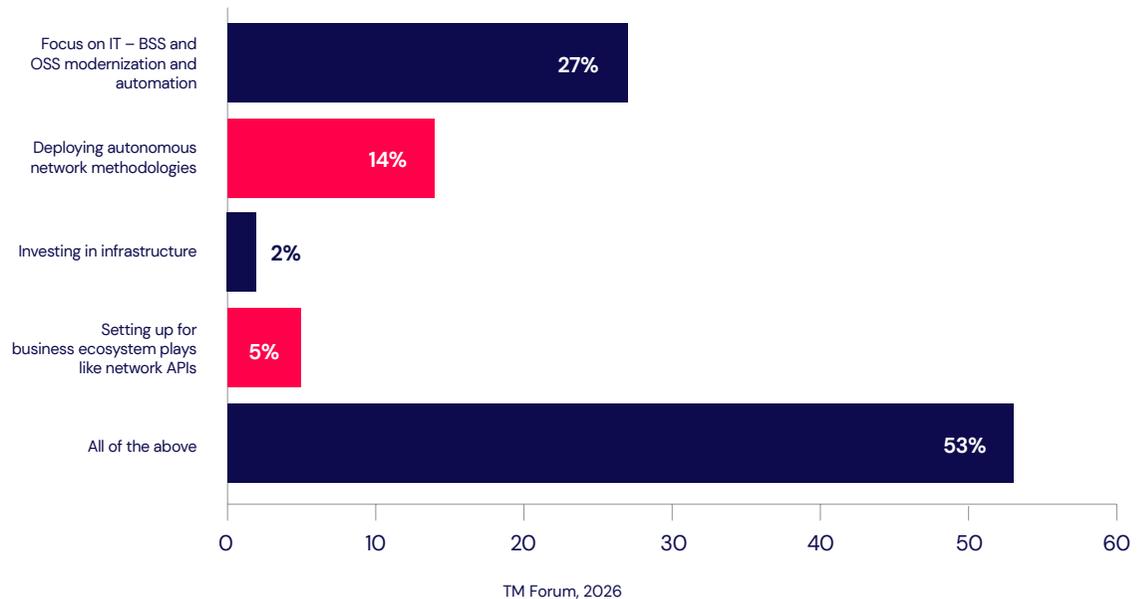■ We already operate like a techco
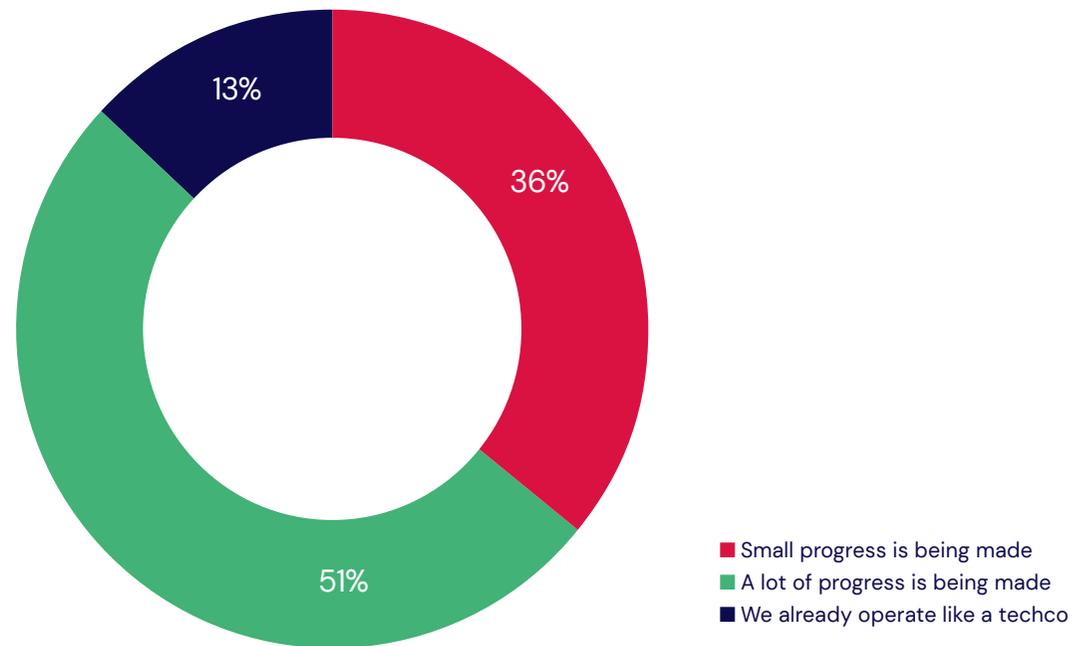
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Respondents see AI as an accelerator, but not a replacement for re-architecting the service layer. The most common narrative we hear from telco IT decision-makers is that AI is essential to the next era of telco IT, but that the hype of 'AI in everything' is not only unrealistic but also damaging.

Selective, impactful AI should be pursued first, and much of that is working with suppliers to define how native AI is configured in systems. In terms of impact, GenAI has driven the clearest efficiency gains, largely in the customer contact layer around customer relationship management (CRM), customer care and billing.

Agentic AI is already showing signs of delivering efficiencies through driving automation in process and dynamic control in service and orchestration. Deploying agentic AI to orchestrate and manage networks will require more guarantees of trust, but the journey towards that goal is underway.

When asked about their next priority for end-to-end automated operations, the majority of survey respondents said they are focusing on a range of IT and network investments, acknowledging that OSS/BSS, network automation, cloud and ecosystem readiness must all mature in parallel. The approach many telcos are taking involves a continuous evolution of OSS/BSS application areas to improve specific challenges, but with a guiding principal that a componentized service operations layer is part of a larger operating system – a machine for delivering services.

What is the next priority in transforming towards end-to-end, automated operations?

Category	Value
Focus on IT – BSS and OSS modernization and automation	27%
Deploying autonomous network methodologies	14%
Investing in infrastructure	2%
Setting up for business ecosystem plays like network APIs	5%
All of the above	53%

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**Network and IT alignment**
The process of building an intent-based operations model is forcing telcos to confront long-standing integration gaps between OSS/BSS and the network. The first major challenge here is the disconnect between business-level intents – customer promises, SLAs, product specifications – and the real network capabilities held in inventory, orchestration layers and domain controllers.

Most telcos still run fragmented inventories, bespoke data models, siloed service assurance systems, multiple order management systems and so on. This means the intent engine often can't trust the data it receives or translate an intent into actionable, cross-domain policies. Closed-loop automation depends on highly accurate topology, service models and telemetry, but many telcos admit that the data isn't clean enough, current enough or complete enough for full automation and error free orchestration. TM Forum has published a report which explores how to unlock AI potential through a modern data architecture.

The second major challenge is closing the loop at scale across legacy and modern systems. Very few BSS platforms were designed for real-time interaction with the network, yet intent-based operations require them to set intents, receive state updates and trigger corrective actions continuously. Much of the work that has been done to move to cloud-native IT and adhering to TM Forum's ODA has paved the way for the introduction of BSS that are much more aware of the network ecosystem.

Service assurance, charging, order management, partner management and SLA systems must all participate in the same dynamic control loop. Hybrid environments make this harder: NFV/5G core domains may support intent and policy automation, while transport, RAN and legacy MPLS domains are still driven by command line interface (CLI) scripts or partial orchestration.

Is AI a major driver of alignment and cohesion?
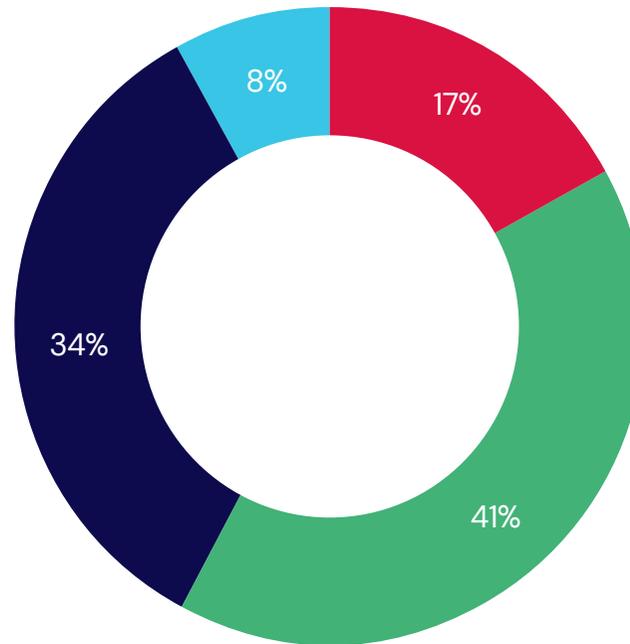
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- No, it was happening anyway
- Somewhat
- Considerably
- Bringing everything together is not possible without AI

Telcos still also face talent and cultural barriers. Moving from ticket-driven workflows to autonomous operations requires new governance, risk models and reliability engineering practices.
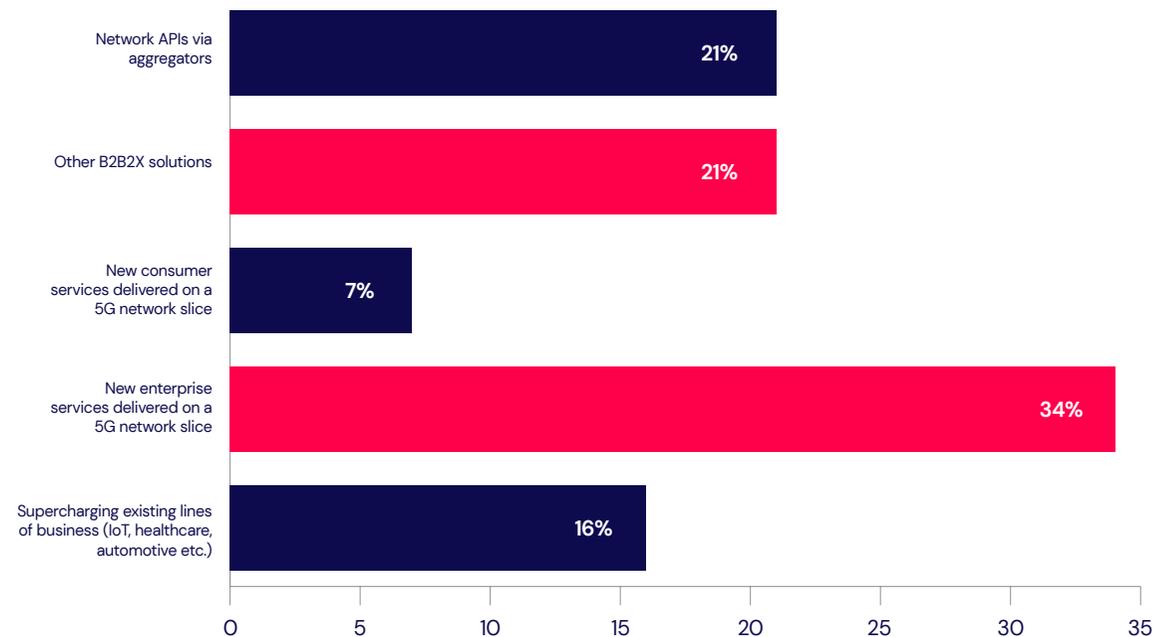
Finally, telcos are just waking up to the need for software platforms which can operate with intent APIs and are essentially futureproofed. In short, the road to intent-based operations is less about the sophistication of the AI and more about cleaning and standardizing the operational architecture underneath so that intents can flow unbroken from customer promise to network behavior.

Monetizing the opportunity

As TM Forum research on telco revenue generation shows, the greatest monetization potential for CSPs in the future lies not in consumer services but in enterprise and B2B2X plays enabled by automation, slicing and platform-based business models. One third of survey respondents for this report are looking towards a coming monetization age for standalone 5G, with network slicing expected to become the vehicle for new enterprise service models.

This aligns with a structural shift: as the industry moves deeper into 5G Advanced and prepares for cloud-native 6G architectures, CSPs face a new competitive reality. Over-the-top aggregators, hyperscalers and API-first platforms are positioning themselves to monetize network capabilities more effectively than the operators which own those assets.

Which business opportunity will return the most revenue via fully automated service operations?

Category	Value
Network APIs via aggregators	21%
Other B2B2X solutions	21%
New consumer services delivered on a 5G network slice	7%
New enterprise services delivered on a 5G network slice	34%
Supercharging existing lines of business (IoT, healthcare, automotive etc.)	16%

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Unless telcos build an IT stack capable of exposing, assuring, orchestrating and monetizing differentiated connectivity, they risk repeating the missed opportunities characterized by 3G, 4G and the internet of things (IoT): heavy infrastructure investment, weak monetization.

The next era of telco transformation will be defined not by network autonomy alone, but by the modernization of OSS/BSS into a cloud-native, AI-driven, intent-aware service layer. This service layer is what will enable:

- Productized, intent-ready connectivity
- Programmable service exposure (network APIs, network-as-a-service, 5G slices)
- Closed-loop automation at both service and business levels
- Faster service innovation
- Partner-friendly business models.

Intent-based operations and differentiated connectivity cannot become a commercial reality without a modern OSS/BSS foundation, incorporating unified data, AI-embedded workflows, catalog-driven orchestration, cloud-native components and automated monetization. The remainder of this report provides a structured view of how telcos see this journey progressing, what their OSS/BSS priorities are, and the commercial drivers behind the shift.

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Section 2

Examining the IT transformation process

The survey for this report confirms that telcos are experiencing meaningful, if uneven, progress in aligning IT and network operations. In this section we consider the typical path being pursued by CSPs experiencing good returns on their transformational efforts in the OSS/BSS layers.

As we saw in the graphic on p.9, more than half of respondents say "a lot of progress" is being made towards end-to-end automated IT operations. The shift to cloud-native network cores, service-centric architectures and API-led integration is creating the preconditions for end-to-end automation. However, as respondents repeatedly emphasized in optional comments, the real friction point is at the service orchestration and business operations layer, not at the network level.

This aligns with learnings from TM Forum's work on autonomous networks: higher AN levels require not just network intelligence but also:

• Unified intent models
• Service orchestration capable of consuming and decomposing intents
• Closed-loop automation across networks and services
• Data fabrics that unify network and IT data
• Automated monetization flows aligned to SLAs and exposure events.

These functions sit predominantly in the OSS/BSS layer and have renewed motivation for IT investments in modernizing the service stack.

AI as an accelerator
AI is widely recognized as one of the catalysts for this end-to-end alignment. But while the graphic on p.13 shows that a significant majority of respondents say AI is a major or absolute driver of cohesion between IT and network operations, nearly one-fifth say the alignment was already happening anyway. This speaks to a critical dynamic: AI cannot compensate for siloed, inconsistent legacy OSS/BSS architectures. Telcos cannot 'AI their way out' of structural fragmentation.

Instead, AI amplifies value only when foundational data, orchestration and automation are already in place. A cohesive approach to the AI-native IT transformation path should include:

• AI-native workflows embedded into OSS/BSS operations
• Multi-agent architectures that augment human operators
• Closed-loop automation that builds on cloud-native orchestration
• Data fabrics harmonized across network and IT systems.

In essence, AI is an enablement layer while OSS/BSS is the foundation layer.

> "
> AI amplifies value only when foundational data, orchestration and automation are already in place.

And while the graphic in the big picture section of this report showed that a striking 95% of respondents believe the next era of telco operations will be centered around intent-based operations, 58% say they currently lack a cohesive technology stack to support it. This is one of the single most important insights in the survey.
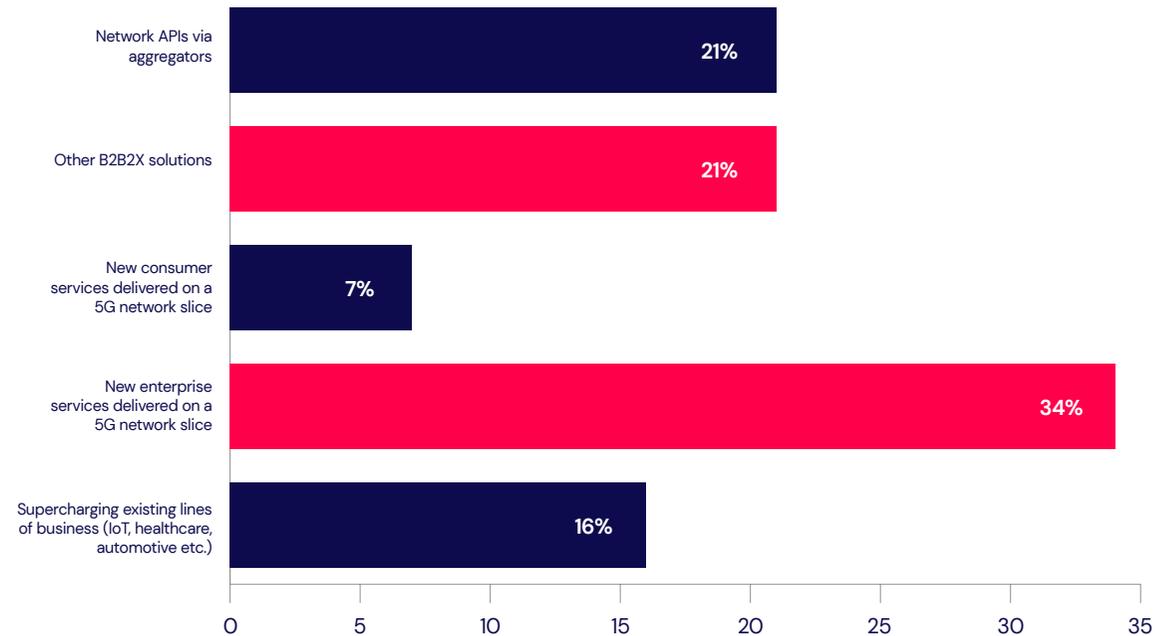
It tells us:

• Telcos understand the destination (intent-driven, autonomous service operations)
• They have made progress in the network domain and AN is now being pursued with ever increasing vigor
• But for the majority, the OSS/BSS layer, data, service orchestration and assurance are not yet capable of supporting intent translation, closed loops or automated service lifecycle management.

A focus on B2B2X
Telcos are not pursuing intent-readiness or automation for internal efficiency or improved customer experience alone. Their commercial ambitions are clear.

In our survey the top revenue opportunities identified were new enterprise services delivered on 5G slices, network APIs via aggregators, and other B2B2X opportunities. New consumer services delivered through 5G slicing were cited by only 7% of respondents.

Which business opportunity will return the most revenue via fully automated service operations?

Bar chart with values:
- Network APIs via aggregators: 21%
- Other B2B2X solutions: 21%
- New consumer services delivered on a 5G network slice: 7%
- New enterprise services delivered on a 5G network slice: 34%
- Supercharging existing lines of business (IoT, healthcare, automotive etc.): 16%

X-axis: 0, 5, 10, 15, 20, 25, 30, 35

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Telcos pursuing growth in B2B2X are, in effect, striving to evolve into platform-based businesses rather than remaining traditional connectivity providers. In this emerging, ecosystem-led model, the operator serves as an enabler, exposing network, data and service assets to an array of partners such as aggregators, independent software vendors, systems integrators, hyperscalers, vertical specialists, developer communities and enterprises. These partners, in turn, create value for the "X" element, whether that represents a factory, hospital, stadium, consumer application or industrial plant, for example.

Despite strong strategic commitment to moving 'beyond connectivity', operators have so far captured only a limited portion of the enterprise 5G and digital transformation market, with hyperscalers and large systems integrators frequently orchestrating the value chain instead. Intent-based operations can therefore be seen as strategically pivotal and a tool to access more of the partner ecosystem value.

When telcos talk about creating new business through differentiated connectivity, they're signaling a shift away from selling bandwidth as a flat commodity. Instead, they mean packaging connectivity with specific, assured performance characteristics: latency, throughput, reliability, security, location awareness, exposure of network events, edge compute or API-driven control. These characteristics can be mapped directly to the needs of specific enterprise use cases. In other words, connectivity becomes programmable, contextual and intent-driven, matching the customer's needs as closely as possible.

In this context, intent-based operations extend well beyond operational modernization. They represent the essential control framework that underpins the platform-driven B2B2X business model, allowing CSPs to scale, collaborate and innovate at speed.

In the next section we look at where CSPs are focusing their IT modernization efforts.

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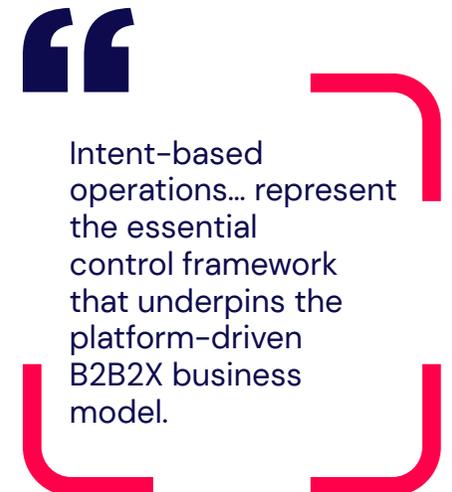
Intent-based operations… represent the essential control framework that underpins the platform-driven B2B2X business model.

Section 3

Joining the telco IT dots

The topic of 'IT legacy' is frequently cited as a blocker for transformational progress. Over the past decade, operators have modernized countless components of their IT estate – service assurance here, a new product catalog there, cloud-native order management somewhere else – yet much of this work has been executed in isolated domains with moderate amounts of architectural convergence.

The result is often an IT landscape that is collectively incoherent, where siloed upgrades still reinforce the very barriers they were meant to remove. As telcos move towards intent-based operations, this fragmentation becomes untenable: end-to-end automation depends on the flow through core commerce, service orchestration and monetization, across the entire stack, without being tripped by bespoke integrations, brittle data models or pockets of unaddressed legacy.

In short, joining the dots in telco IT is no longer optional; it is the prerequisite for achieving the operational autonomy the industry has been promising for years.

Our survey asked CSPs where they are focusing their IT modernization efforts. The results suggest they are distributing their transformation efforts evenly across OSS and BSS application domains, which reinforces the idea that no single system upgrade can unlock meaningful progress on its own (see graphic on p.20).

The highest focus on service orchestration and on data and analytics indicates that operators are now prioritizing overarching and underpinning transformational elements rather than isolated modernization projects:

- On the overarching side, service orchestration is emerging as the strategic anchor for an environment where automated workflows can flow uninterrupted across assurance, catalog, order management and revenue systems without being stalled by legacy constraints
- On the underpinning side, telcos recognize that their data architecture must be rebuilt to support advanced analytics and AI, and to supply the orchestration layer with consistent, trusted and real-time information.

> " Joining the dots in telco IT is no longer optional; it is the prerequisite for achieving the operational autonomy the industry has been promising.
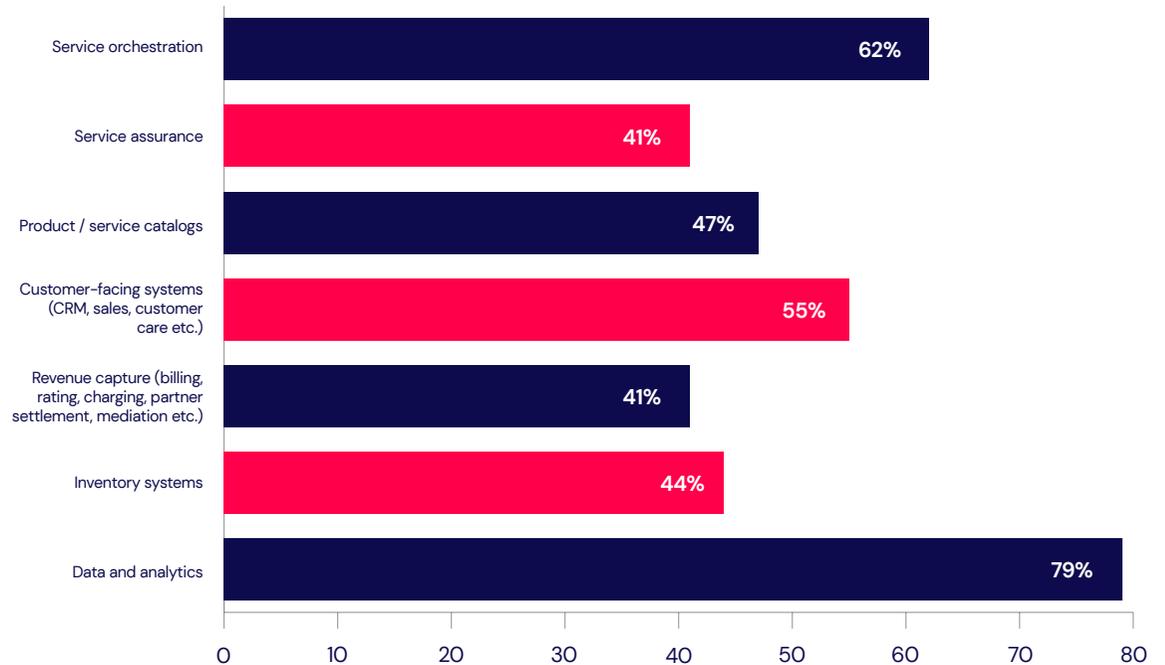
Together, these priorities point to a more holistic investment strategy in which telcos seek coherence across the entire IT estate, aligning modernization with the future intent-based operations model rather than treating each application domain as an independent transformation effort.

Data strategies for telco AI

We asked survey participants where the introduction of AI is having the most impact within IT systems (see graphic on the next page). Customer-facing systems stand out because GenAI is transforming both digital and assisted channels at remarkable speed. Chatbots, virtual agents and knowledge assistants can now draw on multiple data sources simultaneously, giving customers faster and more accurate responses while also helping call center staff understand the real state of a service or an order in real time.

On the service assurance front, modern networks produce vast volumes of telemetry and event data, far too large and complex for traditional rules-based systems to interpret effectively. AI excels at recognizing patterns within these data flows, supporting faster diagnosis of faults and earlier prediction of service issues.

Where are you focusing your modernization efforts to drive end-to-end operations capabilities (choose all that apply)?

| Category	%
Service orchestration	62%
Service assurance	41%
Product / service catalogs	47%
Customer-facing systems (CRM, sales, customer care etc.)	55%
Revenue capture (billing, rating, charging, partner settlement, mediation etc.)	41%
Inventory systems	44%
Data and analytics	79%

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Within TM Forum's Autonomous Networks Project, operators consistently identify fault management as the natural starting point for their journey toward Level four operations – the point at which networks represent a major shift from traditional human-defined automation processes to true autonomous decision-making – precisely because AI is proving so effective at lifting the burden of manual triage and accelerating root cause analysis.

The strongest signal in the survey, however, is the overwhelming emphasis on data and analytics. This reflects a broader truth inside telcos: AI coupled with better data management together provides the key to overcoming decades of accumulating disparate data models, fragmented databases and siloed OSS and BSS systems.

Instead of attempting costly and risky rip and replace programs, operators are increasingly using AI to reconcile inconsistent data, infer missing relationships and generate a trusted and coherent view of customers, products, services and network states. This, in turn, has a direct impact on service orchestration and on business outcomes in general.

Historically, orchestration struggled to execute error free workflows across OSS and BSS because the underlying data was incomplete, contradictory or difficult to access. By applying AI-driven data enrichment and data harmonization, telcos can now give orchestration engines the consistent inputs they need to automate processes with confidence.

Where is the introduction of AI having the most impact within your IT (choose all that apply)?
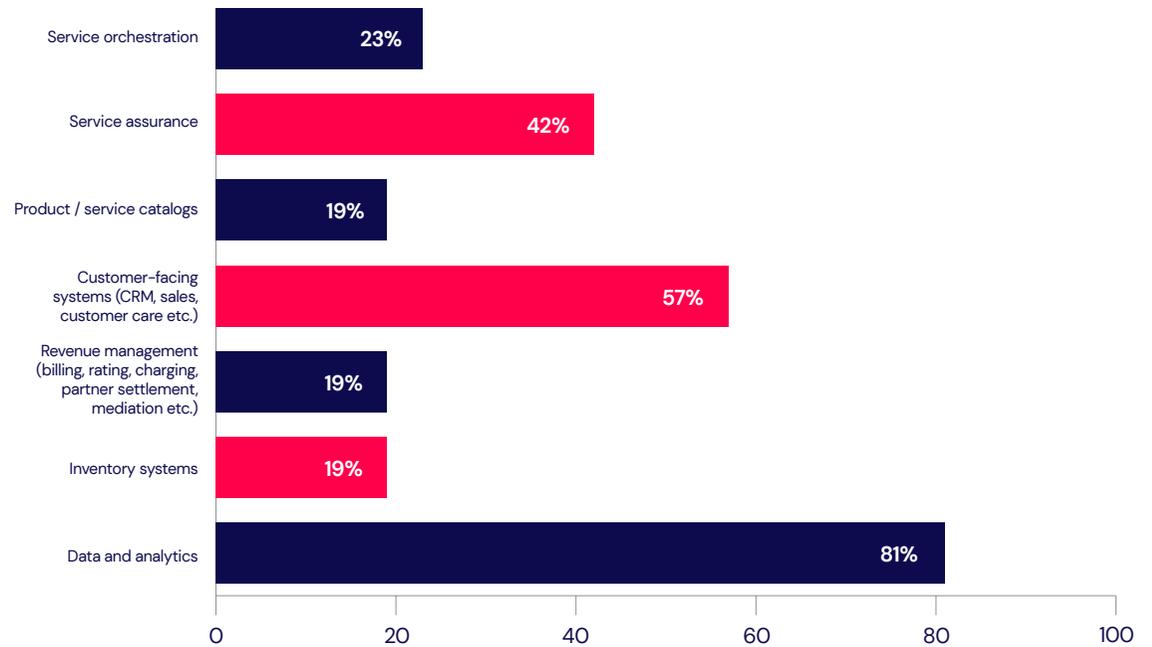
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We asked whether telcos have a strategy for storing and using data to get the most from AI (see graphic right). The results confirm that:

- Telcos know their data estates are fragmented and not enabling successful AI investments
- Unified, cloud-ready data strategies are becoming essential
- The service layer cannot become AI-native without coherent data fabric
- Data maturity is a primary prerequisite for intent-based operations.

To make data more useful, the right data needs to get to the right place, at the right time, in the right format. More volumes of data are coming from all across the network and from external sources, with a growing number of demanding consumers, applications and (agentic) AI requirements.

Cloud-native strategy is still important
Due to the current focus on AI, industry dialog has largely switched away from the last great IT talking point: the move to cloud. However, cloud-native IT plays an important role in the move towards composable IT architectures, essential for intent-based operations. Indeed, our survey shows that CSPs are still focused on the move from legacy to cloud-native IT.

Do you have a strategy for storing and using data to get the most from AI?

9%

56%

31%

3%
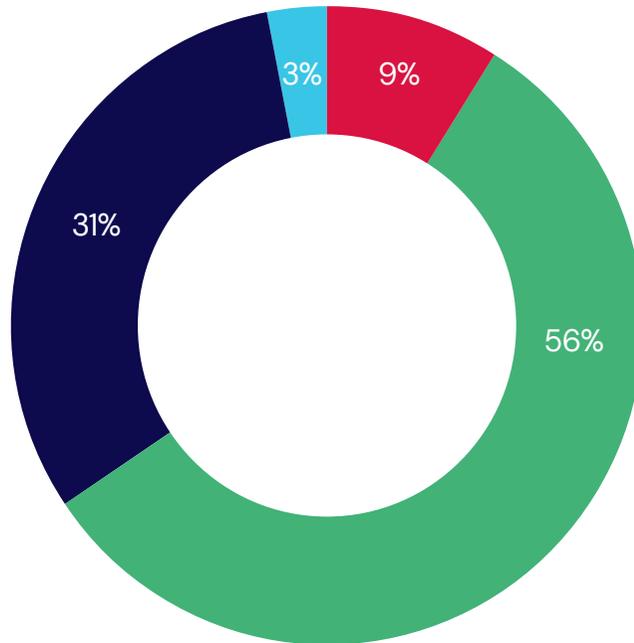
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- ■ Not currently
- ■ We are developing a data strategy for AI
- ■ We are currently implementing a new data strategy for AI
- ■ We have completed implementing a new data strategy for AI

The results show that telcos remain firmly committed to the long-running task of moving from legacy IT estates toward modern cloud-native architectures. The strongest response, selected by more than one third of respondents, is the migration of legacy systems into container- and microservice-based environments, which reflects a recognition that the future operating model cannot be delivered on monolithic and tightly coupled platforms.

Cloud-native IT provides the componentized, open and modular structure required for genuine interoperability, for efficient automation and for scalable adoption of AI across OSS and BSS. This direction aligns closely with TM Forum's ODA vision, where capability-based components sit within the TM Forum ODA Canvas and can be orchestrated to support flexible, intent-driven operations.

Telcos increasingly understand that AI, autonomous networks and data-driven orchestration will only achieve their potential if the underlying IT foundation is decomposed, cloud ready and based on standards. Cloud modernization is not a parallel initiative to intent-based operations, but rather the essential platform upon which the next-generation operating model can be built.

What are your priorities for cloud modernization?
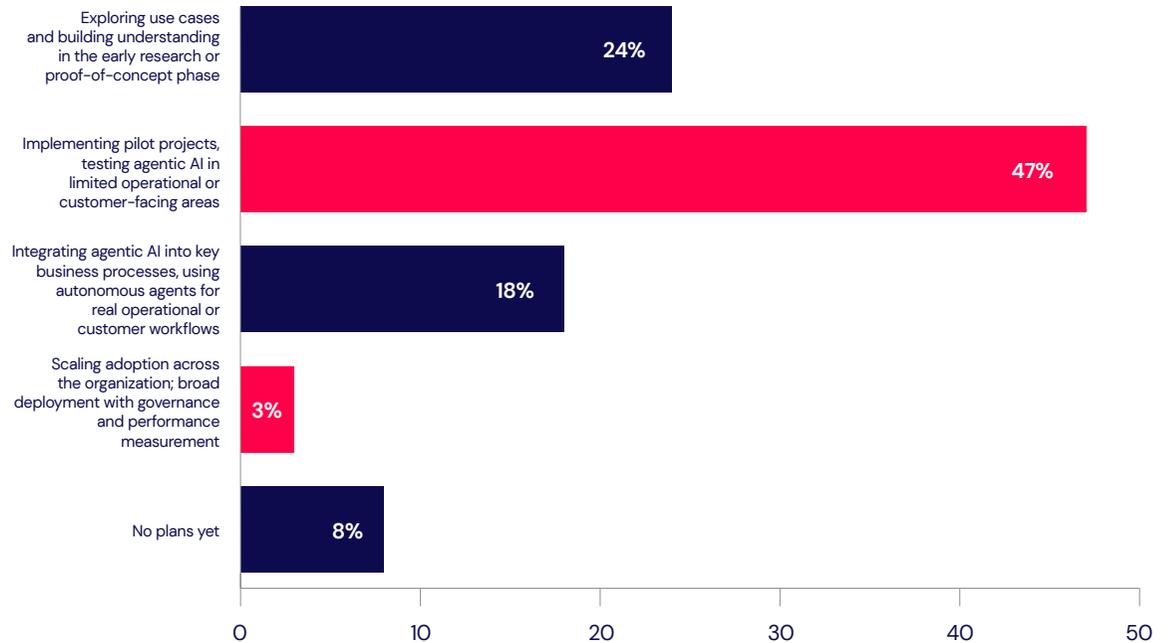

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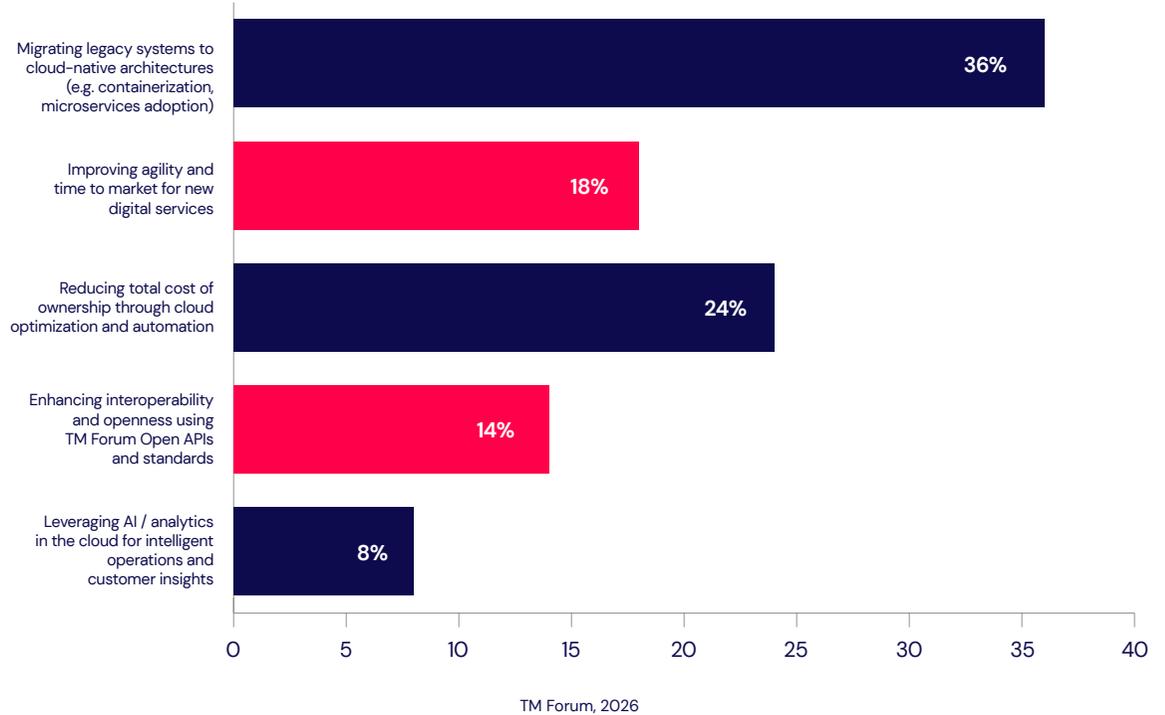
Agentic AI

Agentic AI is the hottest topic in telecoms currently, and developments are moving quickly. Our survey provides a temperature check of where telcos are in their approach to its adoption and their priorities.

Most operators are treating agentic AI as a fast-moving but still controlled evolution, with many sitting in the middle ground between exploration and early operational pilots rather than full-scale deployment.

Almost half our survey participants say they are at the stage of implementing pilot projects. That reflects a pragmatic recognition that autonomous agents have enormous potential to reshape both customer journeys and operational workflows, but that they must be tested carefully within the constraints of complex legacy stacks, fragmented data and strict governance requirements. And nearly one fifth say they are already integrating agentic AI into key business processes, suggesting that these operators see agents as a natural extension of the automation and intent expression capabilities they have been building towards.

In the context of intent-based operations, agentic AI is emerging as the execution layer that can interpret intent, act across multiple systems and close the loop without human intervention. When we consider the abstraction layer of business intent translation, in the near future the hidden complexity could well be predominantly agents running the service layer.

What best describes your current approach to the adoption of agentic AI?

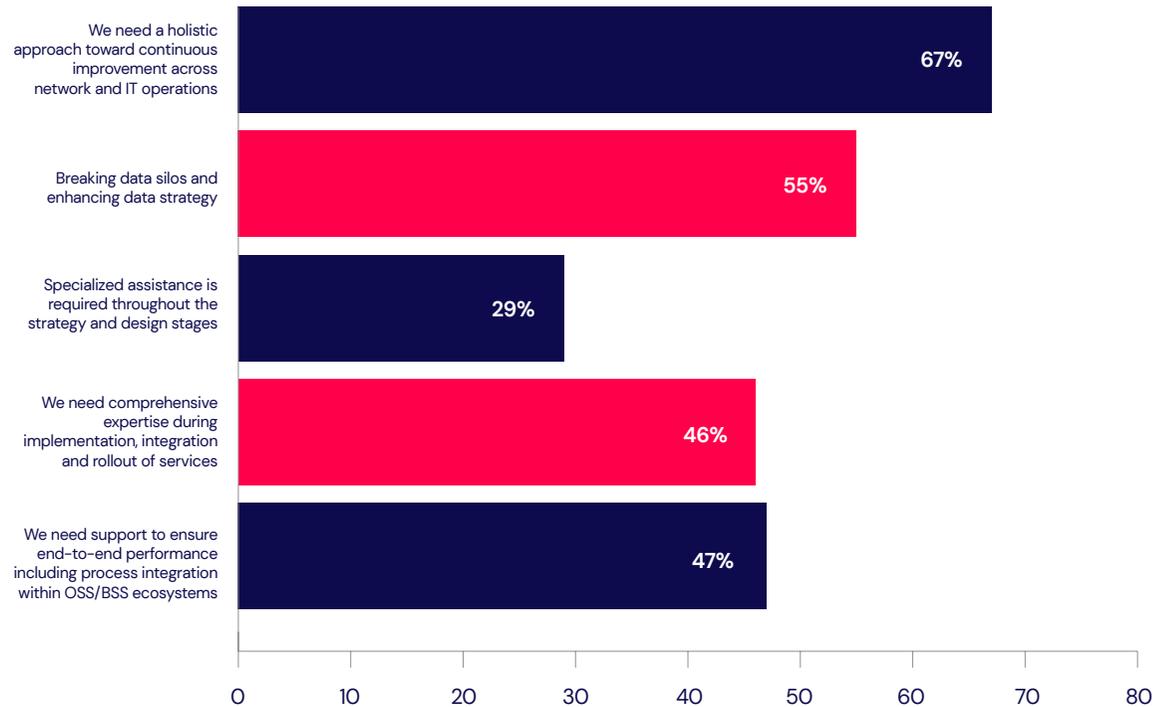| Category	Value
Exploring use cases and building understanding in the early research or proof-of-concept phase	24%
Implementing pilot projects, testing agentic AI in limited operational or customer-facing areas	47%
Integrating agentic AI into key business processes, using autonomous agents for real operational or customer workflows	18%
Scaling adoption across the organization; broad deployment with governance and performance measurement	3%
No plans yet	8%

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In our survey we also asked how telcos can achieve cohesive network and IT interactions for new services. The top-ranked response was the need for a holistic approach toward continuous improvement across network and IT operations, suggesting that operators recognize the value of integrating those traditionally separate domains.

Orange Group recently announced its intention to move towards an end-to-end automated 5G network slicing orchestration and assurance platform across its European affiliates. This initiative moves beyond isolated network management or separate IT stacks, linking network slice creation, lifecycle management and service deployment in a seamless workflow that spans core, RAN and IT layers.

In the final section we suggest seven steps operators can take to move towards intent-based operations.

How can you achieve cohesion between network and IT to ensure new service experiences, including network slicing (choose all that apply)?

Response	Percentage
We need a holistic approach toward continuous improvement across network and IT operations	67%
Breaking data silos and enhancing data strategy	55%
Specialized assistance is required throughout the strategy and design stages	29%
We need comprehensive expertise during implementation, integration and rollout of services	46%
We need support to ensure end-to-end performance including process integration within OSS/BSS ecosystems	47%

TM Forum, 2026

Section 4

What telcos should do next?

Seven steps towards intent-based operations

Make IT modernization the linchpin of future operating models. Telcos must place OSS/BSS modernization at the center of their transformation programs rather than treating it as a consequence of network evolution. Intent-based operations, automation and new service models rely on modular, component-based IT architectures. Without a renewed foundation, higher level capabilities such as orchestration, slicing and AI-driven operations will not be able to scale, and new ways of working will not be enabled.

Opt for a unified data strategy immediately. Data fragmentation remains one of the biggest blockers to automation and intent execution. Telcos should prioritize a single, governed data architecture that reconciles inconsistent models, consolidates sources and ensures reliable real-time data flows. This unified data layer becomes the essential foundation for AI, analytics, orchestration and closed-loop automation.

Adopt cloud-native OSS/BSS to enable agility and automation. Cloud-native IT provides the modular, open and scalable structure required for rapid service changes and automated workflows. Moving legacy estates into container- and microservice-based environments reduces technical debt and enables interoperability. This prepares operators for future AI-driven, intent-based operations and dynamic service creation.

Embed AI and agentic systems directly into service workflows. AI is shifting from an add-on to a core operational engine. Telcos should embed agentic systems inside customer journeys, assurance processes and orchestration flows so that agents can interpret intent, act across domains and close loops without manual intervention. This accelerates fault diagnosis, improves customer experience and supports autonomous operations.

Deploy service orchestration end to end. End-to-end orchestration is a key enabler of intent-based operations. Telcos must ensure orchestration engines can span IT and network layers, integrate cleanly with data systems and drive error-free workflows across assurance, inventory, catalog, order management and so on. This removes operational friction and enables the on-demand provisioning required for advanced enterprise services.

> "
> Data fragmentation remains one of the biggest blockers to automation and intent execution.

Prioritize closed-loop automation as the backbone of service quality. Closed-loop automation transforms service management from reactive to proactive. Telcos should combine network telemetry, IT events and AI-driven analytics to detect issues early and trigger automated remediation. This is essential for delivering differentiated connectivity, meeting enterprise SLAs and supporting dynamic services such as network slices.
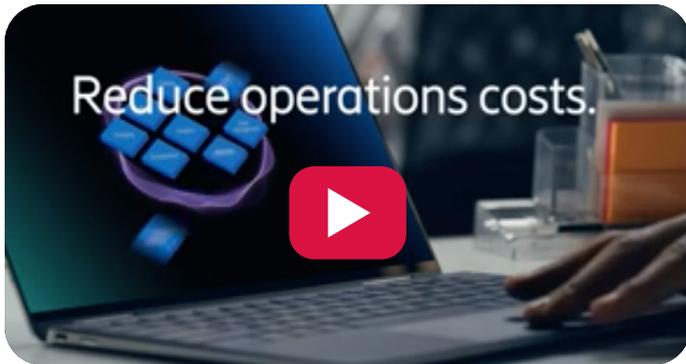
Formulate a monetization strategy for 5G slicing, APIs and partner ecosystems. A telco's product is its network, and the evolution of that network is ramped up under the pressure of autonomous networks uptake. As operators evolve into platform businesses, revenue growth will depend on the ability to monetize differentiated connectivity such as 5G slices, tiers of quality and exposure to APIs. Telcos should build charging, billing, settlement and partner management functions that support new value chains and allow third parties to consume capabilities programmatically and at scale.

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As operators evolve into platform businesses, revenue growth will depend on the ability to monetize differentiated connectivity such as 5G slices, tiers of quality and exposure to APIs.

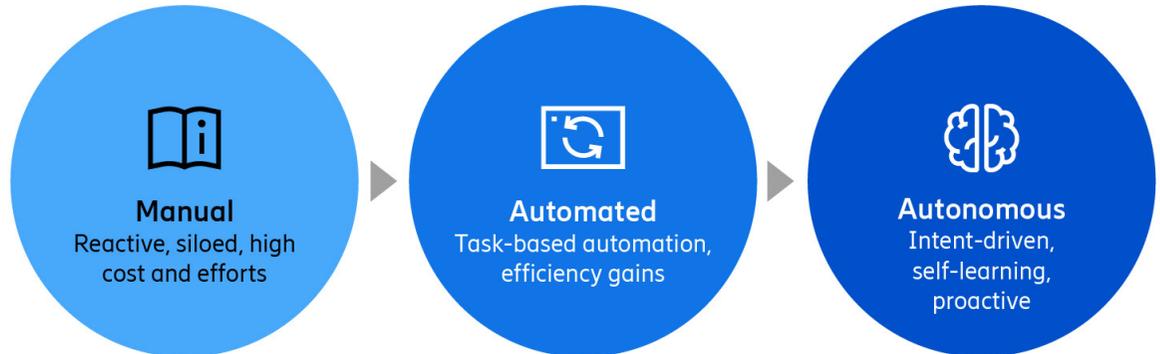# Autonomous Operations: The path to resilient IT

OSS/BSS, cloud, and IT environments are becoming more complex, and manual fixes or basic automation can't keep up. Autonomous operations, powered by agentic AI and closed-loop automation, enable self-learning systems that proactively prevent issues.

Manual
Reactive, siloed, high cost and efforts

Automated
Task-based automation, efficiency gains

Autonomous
Intent-driven, self-learning, proactive

Figure 1: Shift to autonomy for true resilience

The imperative: Shifting to autonomy in IT operations
For years, operations have relied on people fixing problems as they arise, then on scripts automating parts of the work. But nowadays complexity has outpaced this approach.

OSS/BSS, cloud, and IT environments are growing more complex, with new services, new partners, and multi-vendor systems, while your customers expect everything to "just work". Running things manually is no longer an option – it's too slow, costly, and, moreover, risky.

Automation has helped, but only to a point. Task-based scripts and siloed fixes deliver efficiency gains but don't solve the real problem. TM Forum defines five levels of autonomy, from simple assisted automation (Level 1) to fully autonomous, intent-driven networks (Level 5). Most communication service providers (CSPs) are still climbing this ladder. The goal is Level 5 – the real leap for autonomous operations.

At this stage, operations become intent-driven, self-learning, and proactive, aiming to prevent issues before they affect your business, while unlocking resilience, reducing costs, and providing consistent performance.

From observability to autonomous operations

Picture this: your telecom IT running like a well-oiled machine, fixing issues before they even become problems, and delivering top-notch service with minimal hassle. That's the magic of autonomous operations in IT for CSPs! It's like giving your operations a super-smart assistant who's always learning and improving. Let's break down how it works and why it's important for efficient operations.

At the core, four key pillars hold everything together:

1. **Smart data management:** Collect and make sense of the flood of data from your different systems.

2. **Intent-driven operations:** Translate big-picture business goals into clear, actionable steps.

3. **Agentic AI-powered automation:** Let AI handle tasks automatically while avoiding conflicts.

4. **Continuous learning from human actions:** Observe how humans solve problems and learn to do it better next time.

Together, these pillars create what we call the autonomy loop: Observe ➜ Orient ➜ Decide ➜ Act, capturing the journey from awareness to intelligent actions. It starts with observing system telemetry, then orienting that data into context to understand its meaning. Next, AI-driven decisions are made to determine the best course of action, followed by automated execution. As the loop repeats, the system not only resolves issues faster but also learns and adapts, driving continuous improvement.

Now, here's how it plays out:

• With intent management and agentic AI, you can turn big business goals into clear operational steps. The system assesses real-time conditions, applies the right instructions, and even handles conflicts automatically.

• Sometimes, things get tricky, and that's when the "adaptive knowledge engine" function kicks in. The platform observes how humans resolve the issue, learns from it, and stores that know-how for the future. Over time, the system becomes smarter, faster, and more reliable.

The result? Not just efficiency for you, but also a better experience for your customers.

> "
>
> That's the magic of autonomous operations in IT for CSPs! It's like giving your operations a super-smart assistant who's always learning and improving.

Take order failure handling as an example.
Traditionally, this is a headache — back-office teams jump between multiple screens, chase data across systems, and repeat rule-based steps over and over again. The result: inefficiency, delays, and a poor customer experience.

With an autonomous operations framework, it's different. An agent can simply express the intent to handle different types of order failures. AI agents then step in – they monitor, detect failures, and apply the right resolution actions automatically. What used to be manual and error-prone now becomes seamless, directly improving the customer experience.

Let's look at how the order failure case is handled through the autonomy loop: Observe ➜ Orient ➜ Decide ➜ Act.

• **Observe:** Collect telemetry from IT systems, hardware, and cloud infrastructure across the end-to-end order management process.

• **Orient:** This is where raw observations are translated into context. Based on the captured telemetry, a situational picture is built and then analyzed by the Decide layer.

• **Decide:** Here's where the magic happens. This layer is the brain, using AI to spot anomalies in order flow, pinpoint root cause analysis (RCA), and assess service impacts. Agentic AI steps in to analyze the cause of the failure, align it with the business intent for handling order failures, and determine the best next steps.

• **Act:** Execute corrective actions, such as adjusting order parameters and retrying orders. If something can't be fixed automatically, the system doesn't just stop — it observes how humans handle it and learns to address it next time.
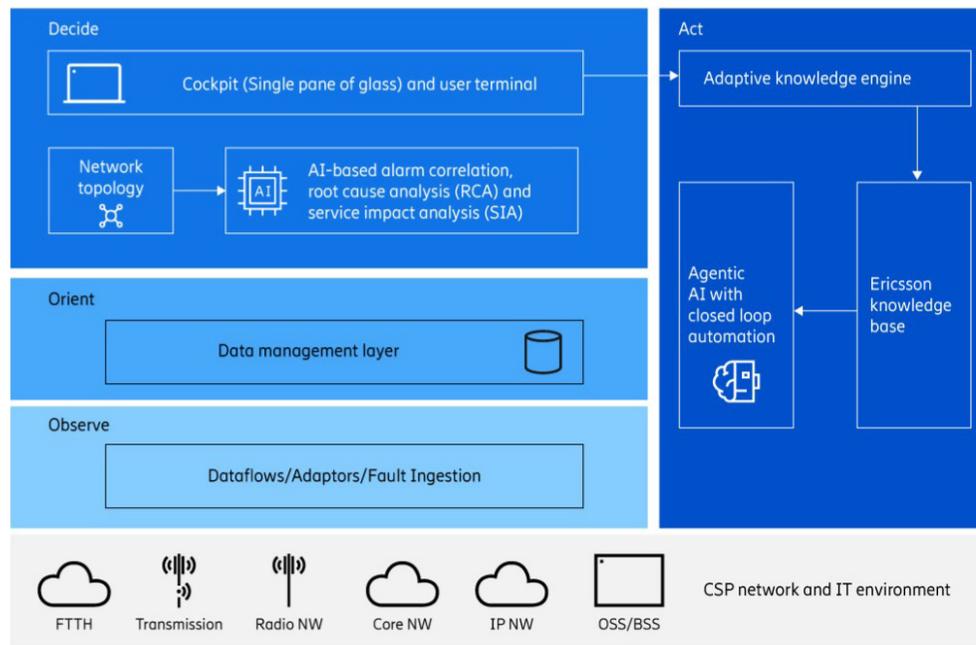

Figure 2: The autonomy loop: Observe –> Orient –> Decide –> Act

In short, autonomous operations aren't just about cutting costs or automating tasks. They're about creating IT systems that are constantly watching, deciding, acting, and evolving — serving as a true partner in delivering reliable services at scale.
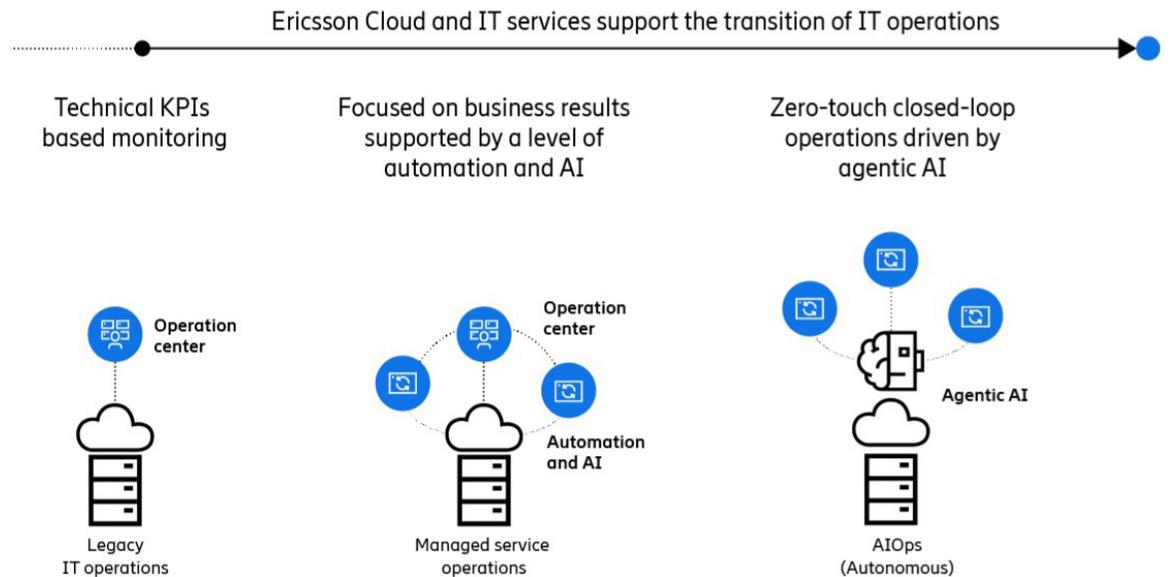
Enabling autonomy with an end-to-end approach
The journey to autonomous operations demands a holistic, end-to-end strategy to ensure you don't just automate isolated tasks, but also build a robust, self-improving ecosystem that can adapt and deliver value continuously.

Ericsson Intelligent IT Suite is strategically designed to empower you on the journey toward autonomous operations. It is built on the key pillars of multi-agentic AI, closed-loop automation, intent-based operations, and extensive telco knowledge planes to achieve operational autonomy. Our solution is backed by proven experience in multi-vendor environments, supported by seamless integration across cloud and IT layers.

A successful end-to-end autonomous operations journey transforms business resilience, agility, and performance. It should be feedback-driven, self-improving, and built on systems that balance machine autonomy with meaningful human oversight, ensuring enterprise-wide success.

How should you plan your next steps?
Your journey toward autonomous operations needs a clear, step-by-step approach. It begins with identifying your business intents, followed by assessing current maturity levels and conducting a gap analysis. Then we design a roadmap that takes you from basic automation to full autonomy, enabling "Zero wait, Zero touch, Zero trouble" experiences.

Ericsson Cloud and IT services support the transition of IT operations

Technical KPIs based monitoring

Focused on business results supported by a level of automation and AI

Zero-touch closed-loop operations driven by agentic AI

Operation center

Operation center

Automation and AI

Agentic AI

Legacy IT operations

Managed service operations

AIOps (Autonomous)

Figure 3: Advancing toward AIOps and autonomy

This approach turns business intents into actionable autonomy. To make this possible, we leverage advanced IT managed services tools, including:

- A centralized data repository for full observability across IT and infrastructure layers

- Network topology-based alarm correlation for smarter operations

- Agentic AI to localize faults, generate and evaluate solutions, and record human actions

- Automated Method of Procedure (MOP) generation, enhancing the knowledge base continuously

With this end-to-end framework, you can confidently move toward a future of intelligent, autonomous operations.

Your path to autonomy starts here
The shift to autonomy is no longer a question of if, but how fast. You can't afford to stay locked into operations-centric KPIs that only measure efficiency. The future is about outcomes that reflect customer experience, agility, and resilience.

Autonomous operations, powered by AIOps and agentic AI, unlock this future. They enable zero-touch, closed-loop operations in which problems are predicted, prevented, and resolved before they impact the business.

But autonomy isn't built on technology alone. It demands expertise, the right tools, and people ready to lead this change. Together, these create the foundation for operations that scale with confidence and deliver lasting business impact.

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About Ericsson
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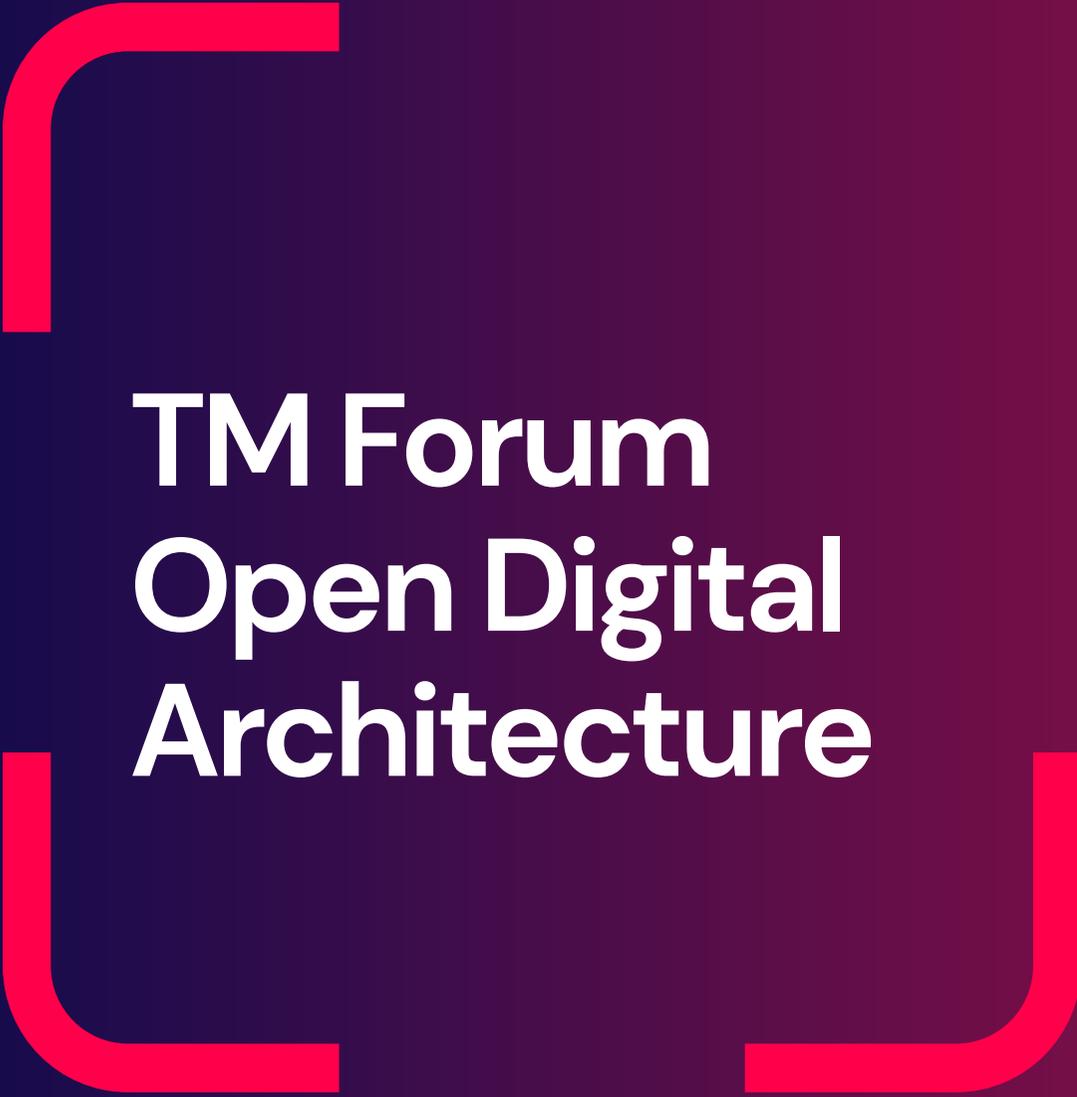
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Ericsson Intelligent IT Suite

TM Forum
Open Digital
Architecture

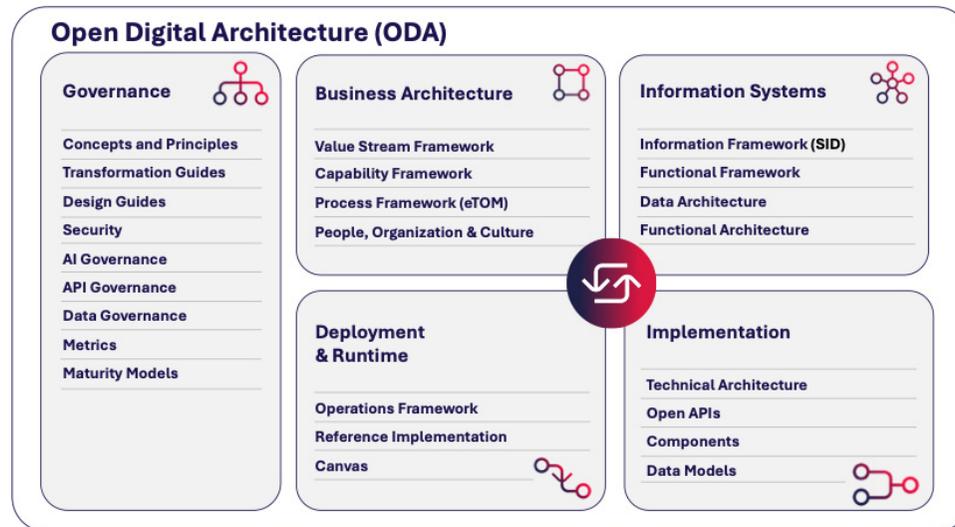# TM Forum Open Digital Architecture – A blueprint for intelligent operations

The TM Forum Open Digital Architecture (ODA) provides a migration path from legacy IT systems and processes to modular, cloud-native software orchestrated using AI.

ODA comprises tools, code, knowledge and standards (machine-readable assets, not just documents). It is delivering business value for TM Forum members today, accelerating concept-to-cash, eliminating IT & network costs, and enhancing digital customer experience.

Developed by TM Forum member organizations through our Collaboration Community and Catalyst proofs of concept, ODA is being used by leading service providers and software companies worldwide.

ODA includes:

- An architecture framework, common language, and design principles
- Open APIs exposing business services
- Standardized software components
- A reference implementation
- Guides to navigate digital transformation
- Tools to support the migration from legacy architecture to ODA
- Maturity models and readiness checks to baseline digital capabilities.

Open Digital Architecture (ODA)

Governance
- Concepts and Principles
- Transformation Guides
- Design Guides
- Security
- AI Governance
- API Governance
- Data Governance
- Metrics
- Maturity Models

Business Architecture
- Value Stream Framework
- Capability Framework
- Process Framework (eTOM)
- People, Organization & Culture

Information Systems
- Information Framework (SID)
- Functional Framework
- Data Architecture
- Functional Architecture

Deployment & Runtime
- Operations Framework
- Reference Implementation
- Canvas

Implementation
- Technical Architecture
- Open APIs
- Components
- Data Models

Goals of the Open Digital Architecture
The aim is to transform business agility (accelerating concept-to-cash), enable simpler IT solutions that are easier and cheaper to deploy, integrate and upgrade, and to establish a standardized software model and market which benefits all parties (service providers, their suppliers and systems integrators).

Learn more about collaboration

If you would like to learn more about the project or how to get involved in the TM Forum Collaboration Community, please contact **George Glass.**

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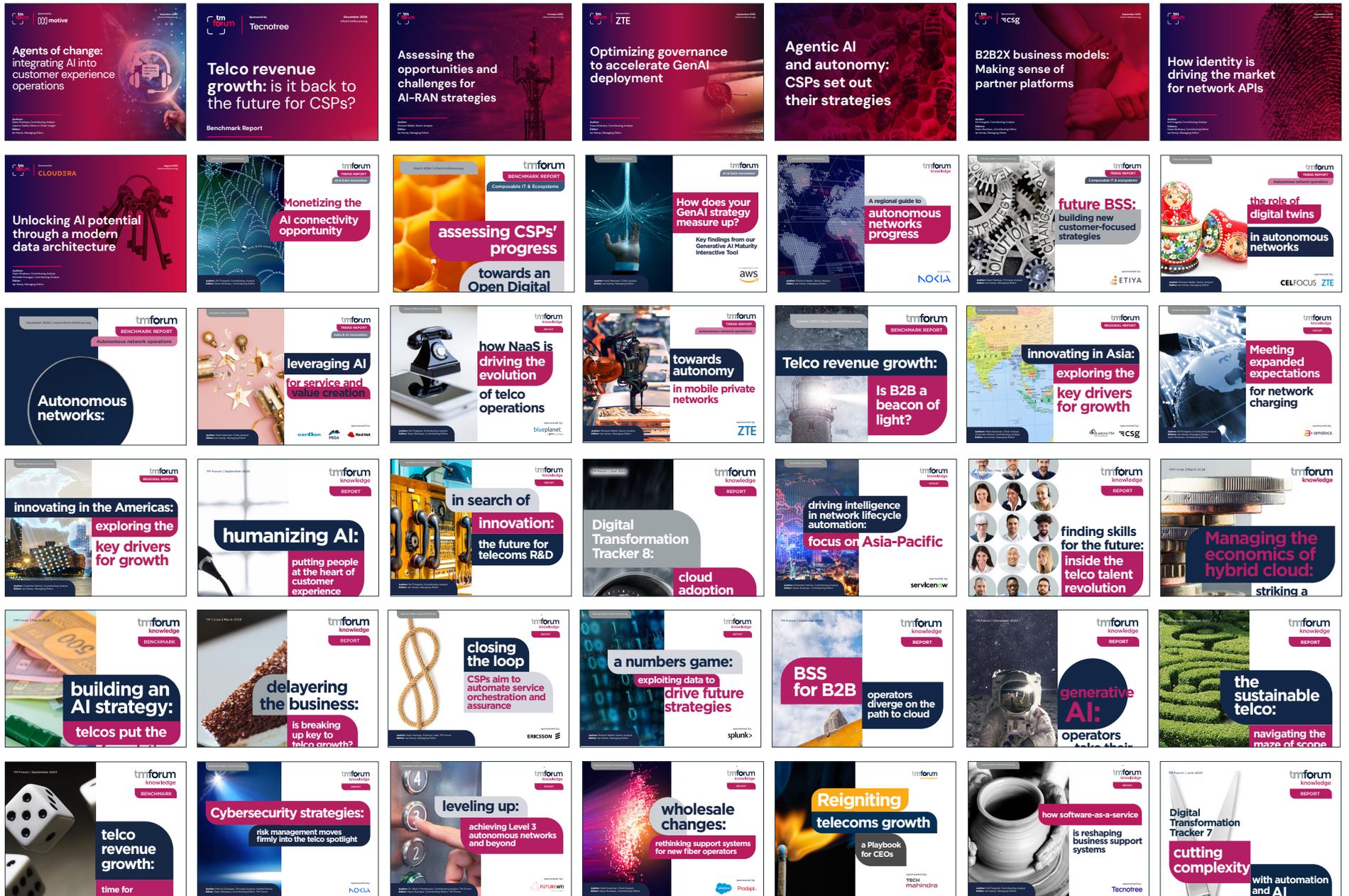
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