

Intent-driven networks

**Bring your network up to speed
with your business**



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Executive summary

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While today's telecom leadership focuses on agility, distinct strategic goals, and rapid adaptation to market changes, the underlying network operations remain stuck in rigid, manual workflows. This disconnect creates a bottleneck: the business needs to move fast to capture 5G opportunities, but network operations rely on slow, manual interventions that act as a bottleneck to growth.

The solution lies in adopting intent-driven networks, which is a key step on the journey towards autonomous networks. This approach fundamentally shifts network management to mirror how you successfully lead your organization: by focusing on outcomes rather than tasks. Just as leaders set a strategic direction and trust their teams to execute, intent-driven networks allow you to define high-level business goals but also empower the network to automatically determine the best way to achieve them.

By embedding your business intent directly into the network's operations, you eliminate the friction of manual workflows. The result is an infrastructure that acts in lockstep with your financial and strategic priorities, delivering faster time-to-market and significant OPEX reductions. This transition is the key to turning your network from a static utility into a dynamic, responsive business asset that scales effortlessly with your ambition.

Align your operations with your business

Leaders in today's challenging telecom landscape know that they have to set clear goals for their organization, engage their teams to finding solutions and overcoming challenges, and nurture a culture that is quick to adapt to market changes.

This, however, often stands in stark contrast with how their networks are managed. Here, nothing gets done without direct intervention, explicit orders and manual labor – as if the 20th century never happened – often counteracting the business ambitions of the leadership. This brief shows you how "intent" is the key to bringing your network management practices up to speed with your business.

5G brings far more than just speed. It puts new, game-changing opportunities, in richer user experiences and new digital

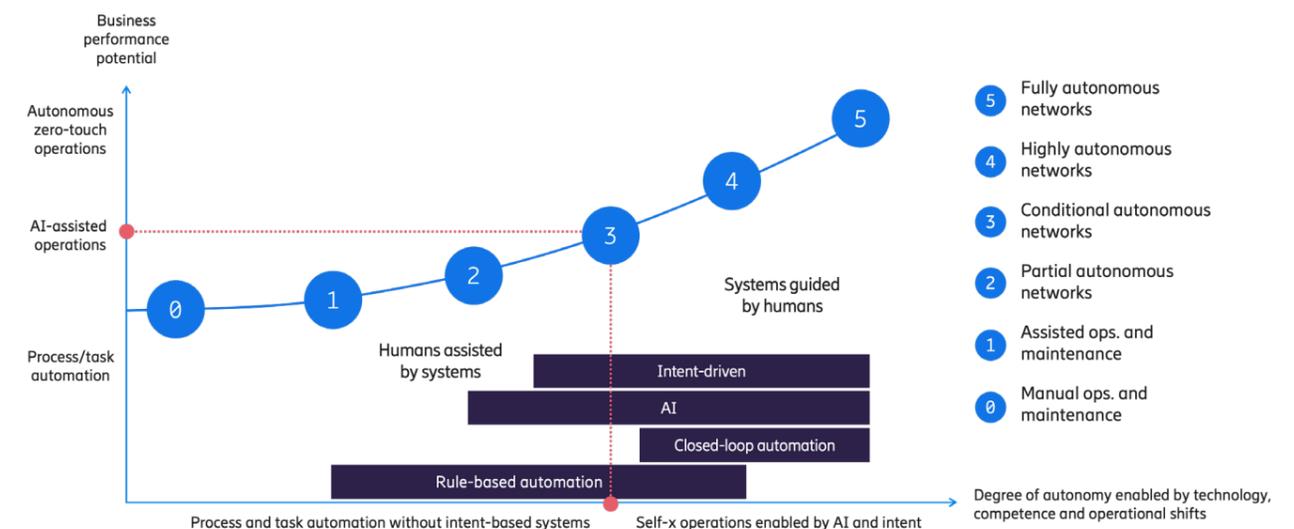
services, as well as enterprise opportunities in manufacturing, healthcare, energy, and public safety, within your reach. But capturing them also brings new customer expectations, especially from enterprises who demand reliable, low-latency, secure, and always-available services – creating tough operational challenges.

Managing differentiated services with unique performance and operational requirements push current processes to the edge. Rigid and manual workflows, inflexible policies, siloed automation, and

manual task management can't keep up with thousands of services that require real-time adaptation and optimization. Building custom solutions for every new service takes too long, delays launch, limits agility, and adds new maintenance burden that can threaten profitability.

In 5G, network operations are not only about keeping the network running – they're key to achieving business goals. To give your organization the freedom to capture the wider 5G opportunities, network management and operations

Figure 1: An intent-based approach is key to achieving autonomous networks.



needs to shift to a new, business-centric model. An Intent-based, autonomous approach helps you bring your network management and operations in line with how you run the rest of your organization.

Here, the network is managed by declaring high-level business intents – such as business goals and customer requirements – and letting the network autonomously adjust resources, policies,

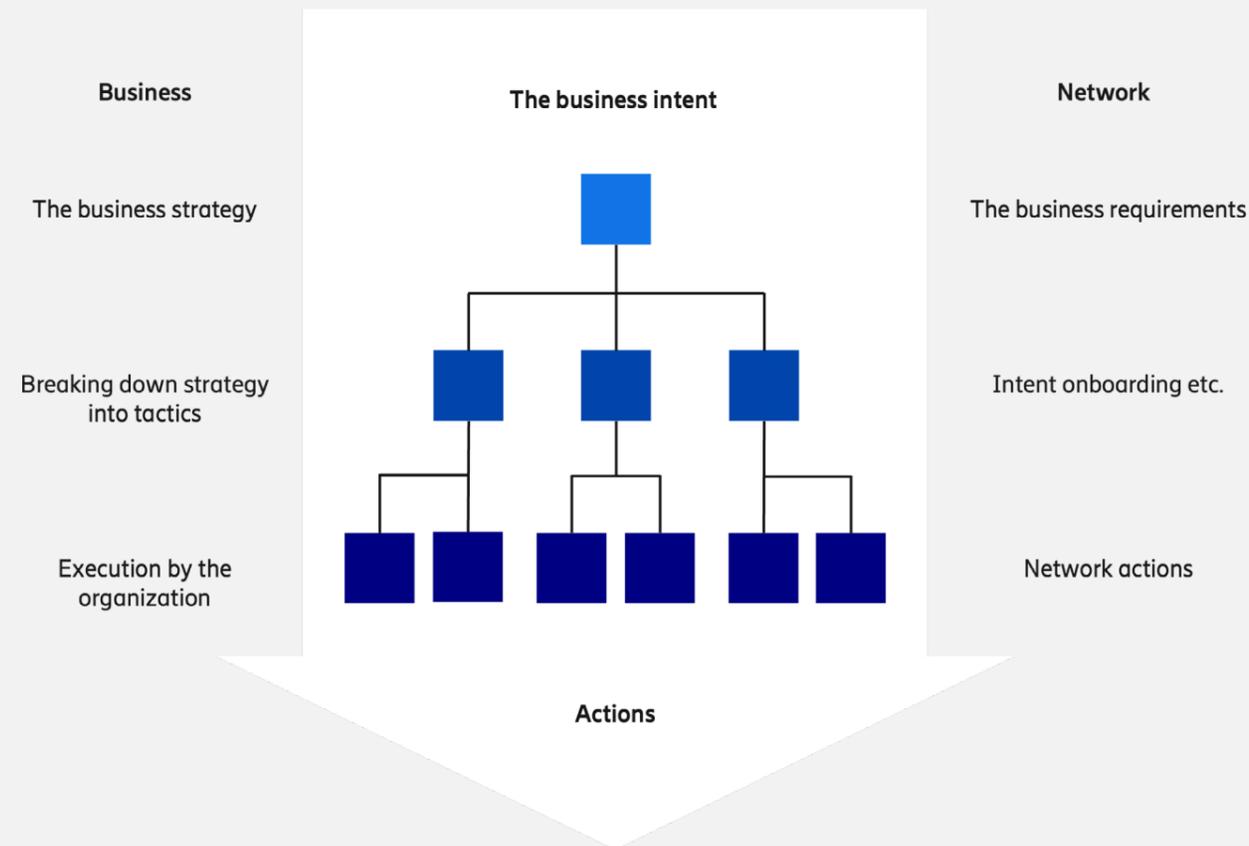
and configurations in real time to deliver on the intent. Intent-driven networks let you launch new services faster, cut operating costs, and deliver higher customer satisfaction, while supporting a growing portfolio of differentiated services.

In short, by embedding intent into your network management, you'll turn the 5G revolution into a sustainable competitive advantage instead of an operational burden.

Intent-driven networks let you:

- Speed up service activation for customers
- Ensure the right network performance levels to deliver on customer guarantees
- Cut OPEX while growing your differentiated services portfolio

Figure 2: Intent drives both business and network actions.



Set the goals, your network executes

Just like leaders set a strategic direction – an intent – and rely on their teams to execute their plans, intent management lets you set business goals for the network and rely on automated operations to execute on them.

It enables you to focus on outcomes – like meeting service-level targets, cutting energy use, or prioritizing key customers – without anyone having to dictate the specific technical steps.

By focusing on what you want to achieve, not how to achieve it, intent management lets you adapt quickly. You'll seize new opportunities faster, resolve competing demands seamlessly, and ensure operations align with your business strategy.

Traditional methods require translating business needs into complex specifications, policies, and manual workflows. This slows innovation, especially when priorities shift. Intent management changes this. You define clear goals, and automation systems decide the best way to deliver results.

For example, you can set an intent to ensure low latency and reliability during a broadcast of a large sporting event. The network uses AI and automation to adjust operations in real time, making sure your goals are met even as conditions evolve.

Three key steps of intent management

Intent onboarding: Captures and formalizes the business goals as intents. Ensures they are clear, structured, and focus on priorities.

Intent handling: The system identifies gaps in current performance and automatically develops plans to close them.

Intent delivery: Actions are executed across the network. The system prioritizes and resolves conflicts to meet all objectives efficiently.

With this approach, you reduce time-to-market for services and keep your network performing in lockstep with your strategic goals.

Turn business priorities into action

You have set a strategic direction, but you still need to rely on your people to handle complex tradeoffs and make the “right” decisions that maximize business outcomes. Here, rules are not enough.

You need the different parts of your organization to act rationally and apply a degree of common sense when it matters. In your network, utility functions are the key to aligning operational decisions with their business priorities.

Utility functions act as mathematical tools that link every network decision to business value and quantify outcomes based on a service provider’s goals and limitations. Unlike static rules, utility functions enable the network to make smarter, context-based choices. For example, you often have to juggle service quality, energy efficiency, and premium

customer satisfaction simultaneously. Utility functions assign scores to various network states, helping you prioritize actions that benefit your business the most.

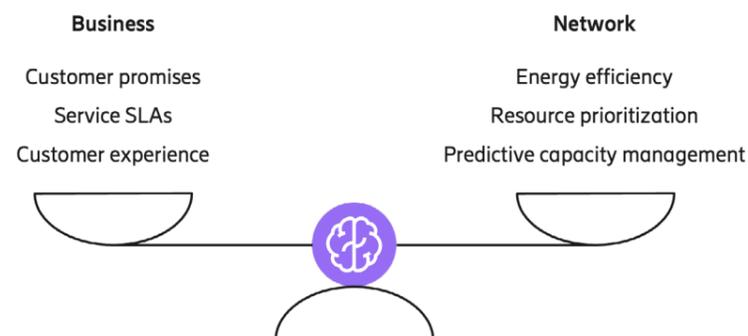
When bandwidth is tight or resources are limited, the network uses utility functions to assess options and select the path that offers the highest value. This ensures that every decision leads to outcomes aligned with your priorities.

Here’s what makes this approach powerful:

- It resolves conflicts between objectives automatically.
- It creates an auditable link between your strategy and network operations.
- It adapts quickly when your goals change by updating utility functions rather than reworking everything.

By embedding business value into your network’s decision-making, utility functions turn intent management into a dynamic system. This helps you keep optimizing customer experience, efficiency, and new revenue opportunities.

Figure 3: Utility functions balance business and network objectives automatically.



Deliver on complex customer demands

As a leader, you know that your organization is faced with a set of considerably different realities. Different segments and local markets have varying needs, and different product lines come with vastly different demands.

To be able to adapt to change and deliver on your overall business goals, the different domains of your organization need both autonomy and flexibility. There is no one-size-fits all here. Similarly, autonomous domains are key to achieving the agility needed in the network to reach your business goals at scale.

An autonomous domain is a self-contained part of your network. It focuses on a specific function, set of resources, or operational scope. Each domain manages its own goals and actions while coordinating seamlessly with the rest of your network.

Think of each autonomous domain as a specialized team. It handles specific tasks and has the authority to make decisions within its expertise. For example, you might organize domains around business functions like customer experience or revenue assurance, service layers like radio access or transport, or even specific geographic areas.

As networks grow more complex and services expand, service providers need a way to manage operations that scales with ease and adapts to change. This is where the value of autonomous domains becomes clear.

The real strength of autonomous domains is their ability to make decisions locally and adapt automatically to new conditions. Each domain includes an intent management function (IMF). This interprets the goals for the domain and determines the best way to achieve them. When a domain needs help from another part of the network, it communicates clearly using standardized interfaces, avoiding manual coordination or rigid rules.

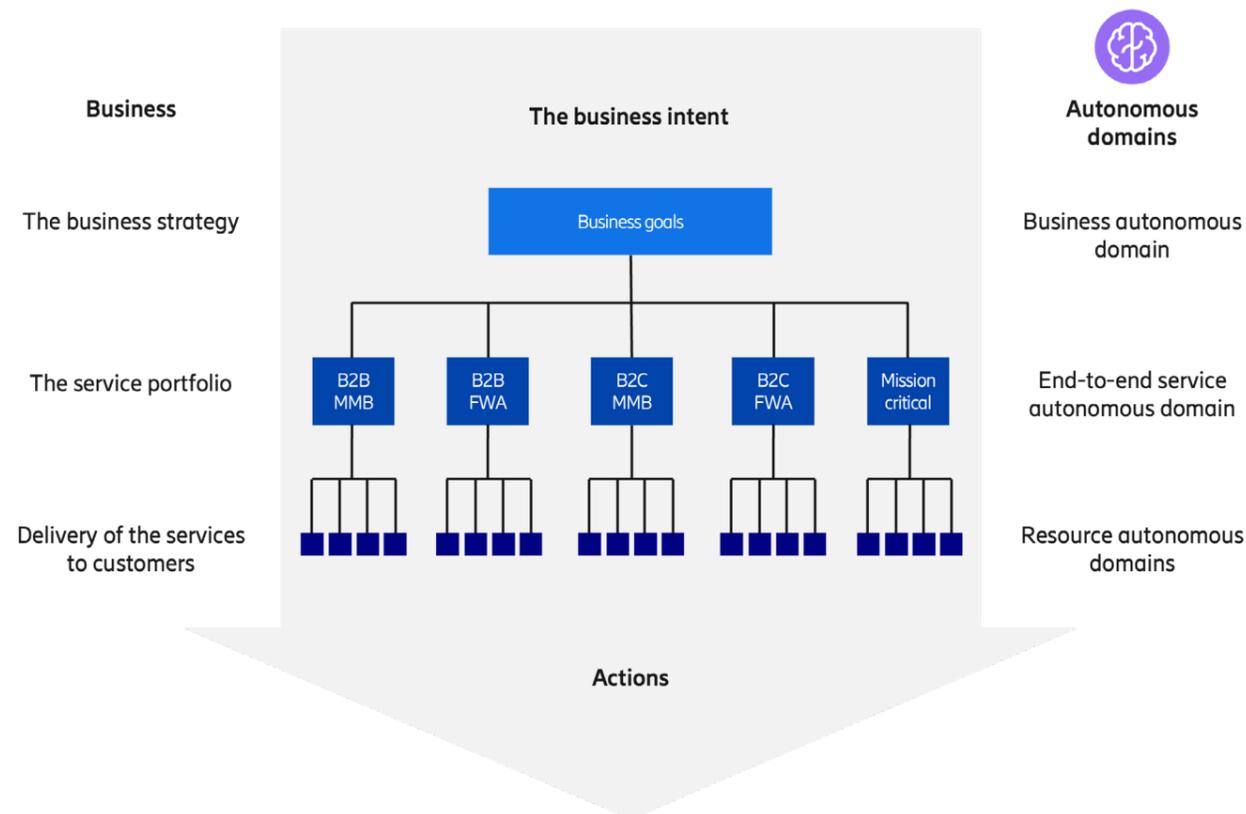
This approach offers clear strategic advantages:

- You can scale operations efficiently. Each domain evolves independently, without disrupting the entire network.
- You gain agility. New services and capabilities can be launched in one domain and quickly introduced in others.
- You resolve conflicts with ease. Domains align their objectives by sharing intents and balancing priorities using business-driven guidelines.

By adopting autonomous domains and implementing them according to your governance structure, you lay the groundwork for true end-to-end automation. You simplify operations, reduce complexity, and ensure every part of your network works together efficiently. This means you’re better equipped to respond quickly to market changes, deliver standout services, and continuously improve performance across the board.

Align actions with priorities

Figure 4: Autonomous domains evolve independently, but align to deliver on overarching business goals.



You already know that your business is made up of much more than can be deciphered from the most elaborate organizational chart or the most well-formulated processes or workflows.

You need to “look under the hood” of your organization to fully understand how the pieces fit and work together as part of a broader system. With all the pieces in place, it’s time to look at how your autonomous network, driven by intent, can function as a whole.

The journey from high-level business objectives to automated network actions is the core of intent-driven, autonomous operations. This approach ensures every decision aligns with a service provider’s strategic goals. It also equips the organization with the agility and scalability needed to adapt and grow.

It starts with clearly defining business intents. For example, you might aim to optimize network capacity during peak traffic hours in urban areas for a large-scale. Or, you may strive to enhance cybersecurity measures for mission-critical communication systems across an industrial IoT environment. These intents are formalized and integrated into the system. This ensures your requirements, constraints, and priorities are unambiguous and actionable.

Once in the system, each intent is processed by the relevant autonomous

domain – whether it’s the radio access network, transport, or a specific business function. Intent management functions (IMFs) in these domains analyze your network’s real-time status. They use AI-driven insights to monitor outcomes and detect deviations, such as a latency spike or increased energy use. When conflicting intents arise, IMFs formulate solutions. They pull from a library of predefined actions and leverage utility functions to ensure actions align with business value.

Utility functions are critical in prioritizing competing objectives, like balancing service quality, cost, and resource use. For instance, if two services compete for bandwidth, the utility function helps decide which service to prioritize based on its business importance.

After defining a solution, the intent delivery process takes over. It coordinates necessary actions across the network. This might involve reallocating resources, adjusting service parameters, or collaborating with other autonomous domains. Throughout, the system maintains a closed feedback loop, adapting in real time as conditions change or new intents emerge.

Picture this: You launch a new enterprise service with strict latency and reliability targets. Your business intent is captured and onboarded. The autonomous domains interpret and break down the intent into actionable steps. Utility functions prioritize resources based on your business goals. Finally, the network self-adjusts to meet the promised service levels. If a sudden surge in demand puts your resources at risk, the system dynamically reallocates them. Every action always reflects your overarching priorities.

Use cases and business scenarios

By embedding your business objectives into network operations, you can create new services, optimize resources, and improve customer experiences – all while cutting operational costs.

This kind of value of intent-driven, autonomous operations becomes clear when applied to scenarios that matter to you and your customers.

Take SLA-driven service assurance for enterprise customers as an example. Imagine supporting a live broadcast at a large sporting event, where latency and reliability are critical. With intent-driven operations, you can define these needs as intents. The network monitors and adapts in real time to maintain performance. If something goes wrong – like a latency spike during a critical part of the event – the system reallocates resources or adjusts configurations on its own, ensuring uninterrupted operations without manual intervention.

Energy optimization presents another opportunity to add value. As sustainability becomes a priority, you can set intents to lower energy consumption in your

radio access networks. The system will balance this goal with service quality and customer commitments. For example, it can intelligently reduce power usage during low-demand periods while protecting essential services. You save on operational costs while contributing to environmental goals.

Zero-touch provisioning for enterprise services shows how autonomous systems simplify complex tasks. When onboarding a new enterprise, you can capture their requirements for bandwidth, security, and coverage as intents. The system interprets these intents, breaks them into tasks, and handles the setup across the network. The result? Fast, accurate service activation with minimal effort and a smooth experience for your customers.

These use cases aren't theoretical. Leading communications service providers are using intent-driven solutions today –

like network slicing, dynamic bandwidth management, and closed-loop assurance. The common thread across these examples is the ability to translate business goals into automated actions. This approach enables them to differentiate their offerings, respond quickly to market demands, and build lasting customer trust.



The path to high autonomy

Achieving autonomy in network operations is not just about technology – it's about transforming how you work. With the right tools, processes, and people, you can unlock new efficiencies and growth opportunities.

Technology

At the heart of autonomous networks are powerful AI-driven platforms. These systems interpret your business goals, manage priorities, and orchestrate actions across domains. They use real-time analytics and machine learning to monitor network performance and respond to changes instantly. Open, standardized interfaces – like those from TM Forum and 3GPP – enable smooth integration between vendors and autonomous systems. As you advance, explainable AI and strong security frameworks will help you build trust and ensure compliance.

Processes

Moving to intent-driven operations means shifting from manual workflows to automated, dynamic processes. Rigid silos are replaced by cross-functional collaboration, where your business goals guide every action. Routine tasks are automated, so your team can focus on strategy and exception handling. Continuous feedback loops ensure the system gets smarter over time, improving your efficiency and responsiveness.

People

Automation doesn't replace people – it empowers them. Your leadership can drive this transformation by fostering innovation and adaptability. Your team will need to develop skills in AI, data analytics, and intent modeling, along with the ability to translate business needs into actions. Clear communication, training, and support are critical to ensuring your workforce embraces these changes and maximizes the benefits.

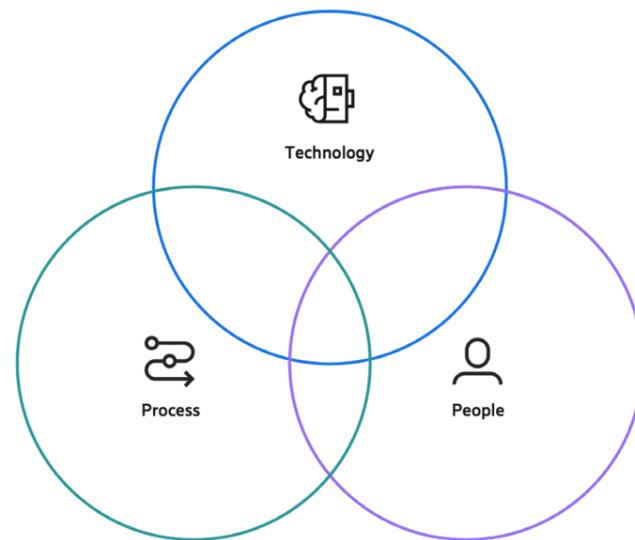


Figure 5: The right combination of tools, processes and people is key to achieving network autonomy.

Conclusion and recommendations

To navigate the rapidly changing telecommunications landscape, and tap into the emerging business opportunities, communications service providers need to transform how they operate their networks.

This means bringing your network management practices up to speed, so they can support, not slow down, your business. Only then can you reap the full rewards from a new era of telecom business.

By connecting network operations directly to your business goals with intent management, guiding decisions with utility functions, and using modular autonomous domains, you can gain unmatched agility, efficiency, and innovation.

This transformation isn't just about new technology. It's about rethinking how you create and deliver value. Turning your business goals into automated, optimized actions will set you apart in a competitive market. If you act decisively, you can open new revenue streams, deliver exceptional customer experiences, and achieve sustainable growth.

Strategic recommendations for CSP leadership:

- Focus on quick wins: Identify areas like RAN optimization, enterprise service provisioning, or energy management where intent-driven autonomy can deliver immediate results. Launch pilot projects to show success and build momentum.
- Adopt AI platforms, data and standards: Invest in platforms that support intent management, utility-based decisions, and smooth integration across vendors. Use industry standards to ensure interoperability and protect your investments for the future.
- Transform your processes: Replace manual, siloed workflows with dynamic, automated ones. Tie operational execution directly to your business goals. Encourage collaboration across functions and set up feedback loops that make your systems smarter over time.

- Empower your team: Help your people build new skills in AI, data analytics, and intent modeling. Back your teams with training, clear communication, and support. Lead the culture change toward adaptability and trust in automation.
- Build trust in automation: Choose explainable AI, strong security measures, and transparent governance frameworks. Keep automated decisions auditable and clearly aligned with both your business goals and compliance requirements.

Act now. By embracing intent-driven, autonomous operations, you won't just meet current market demands – you'll position yourself for long-term success and leadership in the digital economy.

