



# The Innovative Impact of AI in Telecom: Transformative Use Cases, Adoption Trends, and 2026's Challenges



The telecommunications industry is generally relatively resistant to rapid innovation. However, when it comes to artificial intelligence (AI), the sector has already taken the right course of action and begun its digital transformation journey with a focus on harnessing the full power of this technology.

According to NVIDIA's recent report, telcos continue to expand AI investments, with 65 percent of respondents saying they will increase theirs in 2025. Industry experts prioritize those investments across areas such as third-party artificial intelligence integrations, AI infrastructure, and staff upskilling in AI expertise.

So, today, let's sort through the actual real-world benefits artificial intelligence brings to telcos and the trends dominating its implementation landscape. It might be the perfect time for your business to start its innovative journey and gain a competitive advantage that will ensure its resilience in the long run.

## How does AI work in telecommunications?

IBM surveyed **300** global telecom service providers to find out that most of them are already in the process of deploying Gen AI across multiple business areas. Those market leaders recognize AI's potential to increase efficiency, improve customer service, and even boost profitability and enhance cybersecurity.

Moreover, **NVIDIA's** annual study revealed that among **450** telecom companies across the globe, nearly **90 percent** were using AI in some form in 2024. And in 2025, there were already **97 percent** of respondents assessing or adopting AI to improve network operations and reduce costs, enhance customer experiences and employee productivity, and unlock new value streams. Such results speak loudly about the fact that the sector has begun embracing AI across diverse business lines.

Such trust shouldn't come as a surprise since AI's capability to drive optimization and innovation across the entire telecom industry is what pushes the limits and persuades business owners to embrace this technology. When the promise of using, for instance, machine learning to create partially and potentially fully autonomous networks is on the table, a lot of optimism and interest are bound to be there as well.



## AI Applications in Telcos' Service Delivery

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                 |
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|  <b>Machine Learning</b><br><p>Analyzing massive amounts of information hidden in big data to extract more actionable insights helps telcos run preventive and predictive analytics based on historical data and future forecasts. Basically, an AI-enabled RAN will be able to make intelligent predictions based on complex network data and automatically enact decisions to enhance the network's performance.</p> |  <b>Deep Learning</b><br><p>Using multilayered neural networks to simulate human-like decision-making and derive even more business insights into networks and customer data.</p>                                                                                                                                                                      |  <b>Generative AI</b><br><p>Leveraging NLP and neural networks to identify patterns and structures within available data to solve customer issues and generate more personalized original content in all formats, from text, images, and audio to video and 3D assets, and more, enhancing the overall customer and employee experience.</p> |
|  <b>IoT &amp; Digital twins</b><br><p>Identifying different customer usage patterns and testing prospective infrastructural changes in real-time through network simulations without disrupting service delivery.</p>                                                                                                                                                                                                 |  <b>Intelligent Automation</b><br><p>Leveraging NLP and neural networks to identify patterns and structures within available data to solve customer issues and generate more personalized original content in all formats, from text, images, and audio to video and 3D assets, and more, enhancing the overall customer and employee experience.</p> |  <b>5G</b><br><p>Optimizing advanced networks through predictive maintenance, while also benefiting from faster connectivity and the ability to connect more devices at once, to revolutionize how customers engage with businesses and each other.</p>                                                                                     |

Diving even deeper, edge AI tools can enable telecom providers to deliver services connected with computer vision, autonomous devices, and immersive experiences. Data processing at the edge, coupled with wireless 5G networks and generative AI, will fuel thriving innovation and growth, reversing the industry's stagnant nature.

In the intensely competitive telcos landscape, where cost-cutting measures and next-level customer experiences are imperative, advances in AI would be the catalyst everybody was waiting for to achieve groundbreaking business results. Of course, that applies only to entrepreneurs willing to take some calculated risks and embrace an agile, progressive mindset.

# AI adoption benefits and challenges telcos face

Gen AI, for instance, has gained traction recently, its implementation spreading across all types of operations and lines of telecom business. Back-office automation, customer-focused solutions, network infrastructure enhancements, and employee efficiency management — take your pick.

Even though it requires substantial upfront investments, the ROI of generative AI adoption remains too significant to ignore. According to Grand View Research, widespread AI integration will play a vital role in accelerating the growth of the global mobile virtual network operator (MVNO) market at a **CAGR of 7.7 percent** from 2023 to 2030. For instance, MVNOs in particular leverage artificial intelligence solutions to streamline operations, improve efficiency, and enhance customer experience.

| The Current Landscape of AI Adoption in Telecom                                                                                                                                                           |                                                                                                                              |                                                                                                                                                                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>54%</b> of telecom executives who assess or have deployed generative AI said they've already rolled out their first Gen AI app, with another <b>34%</b> saying they'd do so within the following year. | AI can generate up to a <b>15%</b> increase in sales and up to <b>10%</b> in capital expenditure cost savings.               | <b>84%</b> of telcos said their companies plan to offer Gen AI solutions externally to customers.                                                                             |
| <b>35%</b> of organizations plan to offer Gen AI as a platform for developers, including IT services, while <b>34%</b> stated they'll offer Gen AI compute infrastructure.                                | The global AI market is projected to grow at a CAGR of <b>36.6%</b> from 2024 to 2030, compared to <b>\$196.63B</b> in 2023. | For <b>65%</b> and <b>54%</b> of executives, respectively, employee productivity and efficiency, and customer service and support are the most prominent use cases of Gen AI. |

Source: NVIDIA, IBM, McKinsey, Grand View Research

## Major benefits of using AI in telecommunications

Telcos point out improved customer experience and optimized network operations as the top two benefits of integrating AI into their operations — based on the answers from **71 and 63 percent** of respondents surveyed, respectively.

(Frost & Sullivan)

A more extensive list of advantages will look like this:

### Advanced data analytics

Telecommunication companies strive to understand how and why customer behavior changes to avoid downtimes, plan resources strategically, and provide relevant services. Here, AI comes as a lifesaver that improves predictive analytics, drives network optimization, and powers more modern, automated data management for telcos and their partners alike. IBM's Institute for Business Value found that **80 percent** of telecom professionals believe their businesses already use AI to extract new actionable insights from existing data.

### Increased operational effectiveness

By automating routine, manual-heavy management tasks, you can easily boost your organization's operational effectiveness. For instance, AI models that help identify and resolve critical issues within your network reduce your operational expenses, save maintenance time, and improve the overall quality of services you provide. In a nutshell, AI enables you to simplify the complex management of modern telecom infrastructures.

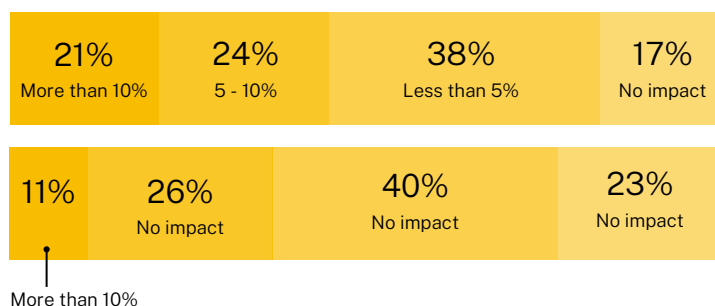
### Stronger information security

AI is both the greatest threat and the strongest defense in today's cybersecurity; we all know it. However, when integrated by professionals and managed properly, artificial intelligence security tools help telcos defend their networks against malicious attacks in real time and even anticipate them as they evolve. This way, your business can increase its trustworthiness for all stakeholders and investors involved.

### Significant sales growth

Another perk of using AI is to enforce the creation of more targeted, personalized content and PPC, continuously improving marketing campaigns. According to NVIDIA's recent study, the biggest year-over-year jumps in Gen AI usage telcos respondents reported have been within sales and legal teams. **Thirty-four percent** of them leveraged Gen AI for sales deal-flow automation and data summarization, and the other **34 percent** implemented this technology in legal document review and contract generation.

### How AI Impacts Revenue and Cost



Increases Annual Revenue

Decreases Annual Cost

### Elevated customer support

Your AI-powered call centers can leverage self-service chatbots, conversational virtual assistants, and artificial intelligence agents to boost customer engagement, provide better service delivery 24/7, and process more inquiries quicker. Large and small language models help your customer support specialists better assist clients during calls, increasing their efficiency and retaining customers through faster solutions to their problems. **IBM** found that **53 percent** of telecom respondents are already deploying or optimizing AI for customer service.

### Efficient, robust networks

Along with enhanced NOCs, you get to set up networks that will be more optimized and intelligent, able to operate semi- or fully autonomously. By employing AI to analyze network data and usage patterns, you can also establish predictive maintenance and gather valuable metrics and action items to streamline the overall infrastructure performance and ensure your networks are more efficient and sustainable, improving their quality and latency and lowering OpEx. For instance, predictive maintenance alone can prevent costly outages and potentially decrease downtime by up to **40 percent**, substantially boosting network reliability.  
*(Veritis)*

### Next-level customer experience

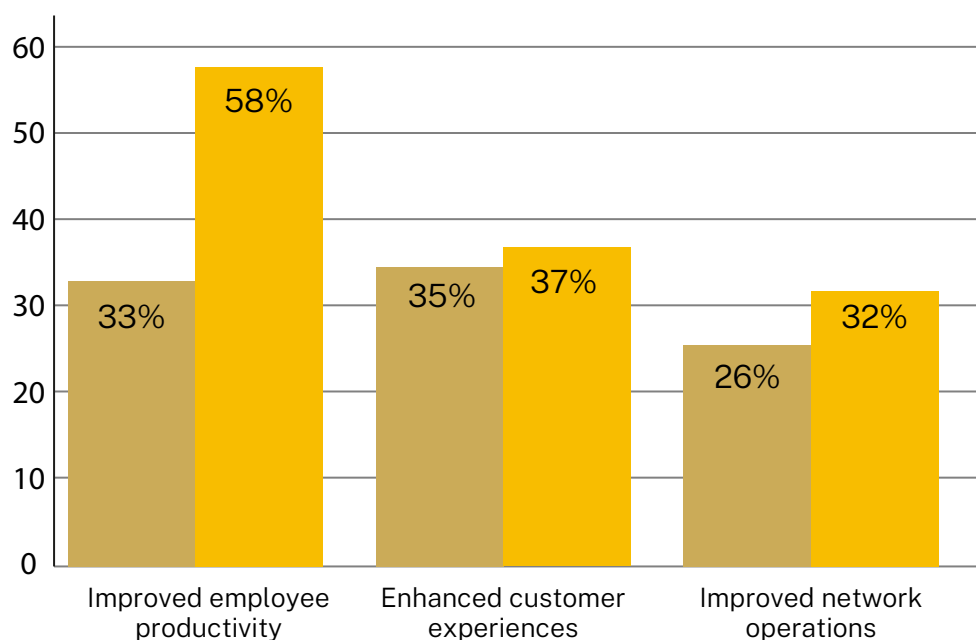
AI embedded in customer experience allows you to anticipate and meet consumers' needs by providing more personalized services and recommendations across their entire journey. AI-powered data analysis enables business owners to distinguish user behavior patterns and satisfaction metrics, subsequently optimizing customer touchpoints and uncovering opportunities to provide more tailored marketing. This approach will help you reduce churn rates and enhance customer satisfaction and loyalty. **Sixty-two percent** of modern consumers prefer using a chatbot over speaking to a human manager if it's quicker.  
*(Tidio)*

### Accelerated innovation

By having advanced automation tools that help you ensure a rapid response to dynamic market conditions, your company can utilize real-time insights and predictive analytics to remain agile and quickly adapt to changing customer demands. What's more, AI fosters the prompt deployment of new technologies and solutions, enabling you to gain a competitive edge and beat the competition.

## Top 3 Improvements Telcos Get with AI

Source: NVIDIA



## AI adoption challenges telcos face

### Not enough clear, organized data for model training

The progress of AI and ML learning depends on the availability of **comprehensive data sets** that you have to feed them. You'll need to move that data to designated locations without delays, process it quickly and accurately, exclude bias, and only then act upon the insights AI collects to improve business outcomes. All this while also tracking costs and sustainability metrics. And you'll have to go through all these steps continuously even after your AI models deliver the first results to ensure they remain accurate over time.

### Substantial investments required

Along with the difficulties that telcos' far-reaching, complex operational models bring, integrating new digital solutions comes with the need for initial investments, whether you're purchasing a license or developing AI tools **through an IT vendor**. So, before launching any full-scale AI implementation, assess your organization's funds and opt for a trial run, a pilot project you can test to identify which resources you might allocate in-house and which ones you'll need to obtain. For example, in NVIDIA's study, **21 percent** of telecom respondents stated the lack of budget as their main challenge in adopting Gen AI.

## Skills gaps

That same report also revealed that about 43 percent of respondents cited the lack of skilled AI experts — developers, data scientists, architects, and others — as a critical challenge. Embracing AI tools means dealing with revolutionary transformations across your entire company, along with many, if not all, employees having to upskill so they can leverage those tools in the most efficient way. Hence, you'll need well-designed training programs to address those gaps in experience and help your in-house staff adopt AI-driven workflows. This will empower you to avoid extensive new hirings and reduce overall labor costs for your organization.

## Lack of knowledge on which models to use

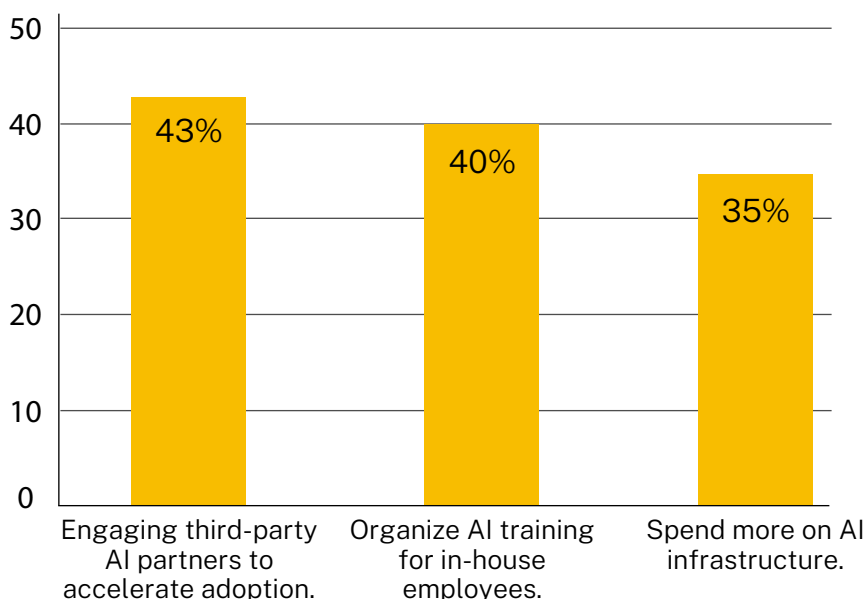
According to EY, 50 percent of telcos struggle to identify the right type of Gen AI provider. With myriads of available out-of-the-box solutions and around a dozen high-profile vendors, not to mention an ever-increasing number of AI-focused startups, it's hard to select that 'one and only.' That's why having the right tech and business partner is vital for accurate assessment of all options and charting the best path for your **enterprise digital transformation**.

## Complex integration with legacy systems

Most telecom companies still rely on pretty outdated legacy infrastructures with limited capabilities. Many of those platforms aren't even compatible with modern AI systems. Adding artificial intelligence components to such older systems will require substantial IT infrastructure modernization, including introducing new technologies and tools along the way. So, you'll have to keep in mind some initial costs for these upgrades, although they will be worth it in the long run. NVIDIA's report had 14 percent of telcos respondents citing flexibility of deployment and data residency and compliance among the most important factors of AI implementation.

### Top AI Investment Priorities

**65%** of telcos planned to increase their AI infrastructure budget in 2025.



Source: NVIDIA

## AI use cases in telecommunications

While some applications of AI for telecom businesses are still more like concepts to be fully developed in the future, others are already a tangible reality. Moreover, based on the experience of global leaders such as **AT&T**, **Vodafone**, and **SK Telecom** in running AI pilots and full-scale deployments alike, you can leverage similar solutions for your own operations starting today.

One of **McKinsey's** studies mentioned that a European telco company recently increased its conversion rates for marketing campaigns by **40 percent** and reduced costs by using Gen AI to personalize content. Meanwhile, a LATAM telecom provider boosted its call center agents' productivity by **25 percent** and improved customer experience quality by enhancing agent skills and knowledge through Gen AI's recommendations. For an industry well known for being relatively slow in innovation, such results from relatively early deployment showcase AI's enormous transformative potential.

And this is just the beginning, since staying ahead of the competition in this industry is a necessity. So, let's explore major strategic AI applications that can help your company prosper and evolve ahead of time.



## Key Insights on the State of AI in Telecommunications

### All-time high AI adoption and investment

**97%** of telecom executives are adopting or assessing AI in their operations.

**49%** said they're actively using AI in their operations

**65%** plan to increase spending on AI infrastructure in 2025.

### Better bottom lines

**83%** of survey respondents stated that AI helps increase annual revenue (21% of them said that AI accounts for a more than 10% increase in specific business areas).

**77%** agreed that AI helped them reduce annual operating costs.

### Improved customer experience (CX) as the top use case

**44%** named optimizing CXs with AI their main goal, making it a top investment priority for the 3rd year in a row, followed by investments in AI-enabled network infrastructure.

### Gen AI goes mainstream

**49%** of respondents said they've actively adopted or are assessing Gen AI use cases, with 84% of them are planning to offer Gen AI services to their customers.

### Boom of open-source AI solutions

**40%** state they plan to use open-source tools.

**43%** of respondents will continue engaging with third parties to codevelop AI platforms.

### Employee productivity boost

**58%** named optimizing CXs with AI their main goal, making it a top investment priority for the 3rd year in a row, followed by investments in AI-enabled network infrastructure.

# 1 Customer experience optimization

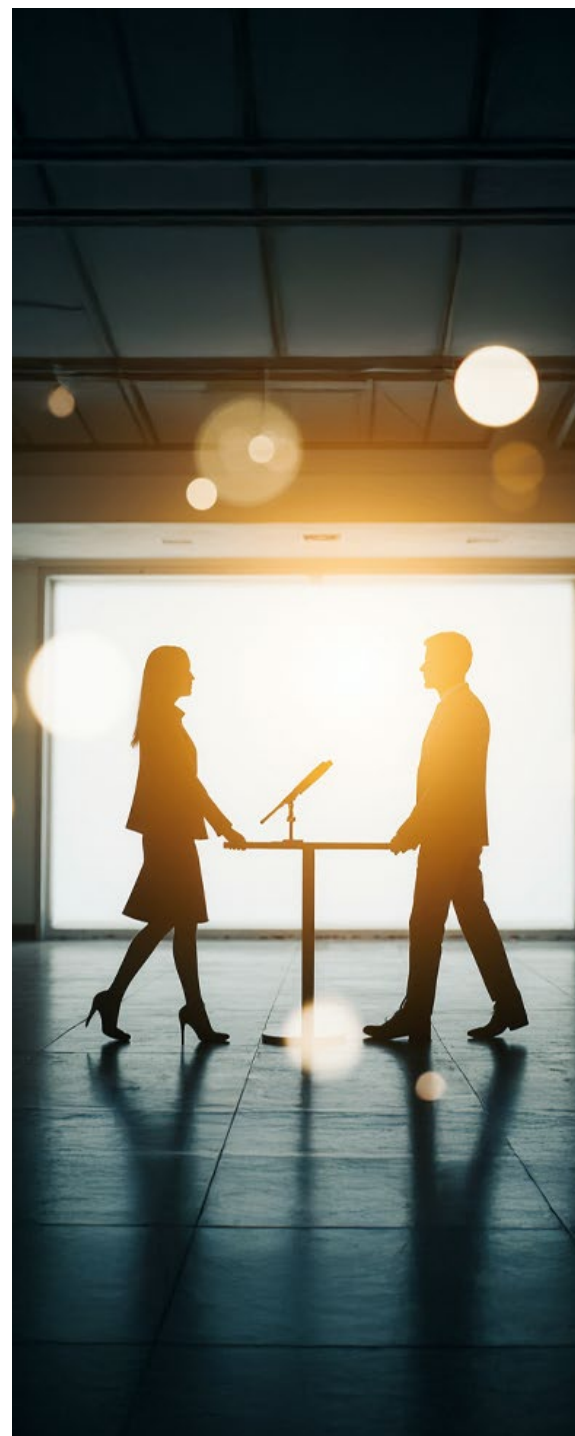
## ● Personalizing customer experiences (CX)

Leverage AI to provide your clients with up-to-date information on their accounts and tailor interactions and services based on automatically analyzed data collected for each individual. This approach will enable you to connect with and serve a more diverse customer base, unlocking new value streams and ensuring every consumer has better control over usage, costs, and timely alerts. All thanks to natural language processing (NLP) capabilities and properly trained ML models that extract valuable and actionable insights from customer preferences and market trends, forecast price fluctuations, demands, potential network failures, and more in real-time.

**Verizon**, for instance, uses a human-assisted Gen AI tool to provide clients with personalized support, creating tailored experiences and matching them with the best customer care representatives. This innovation improves customer engagement and service accuracy, reducing customer transaction time.

## ● Enhancing customer service and support delivery

By employing conversational virtual assistants, Gen AI voice assistants, and chatbots to handle low-level customer enquiries, you can utilize this technology to significantly improve CXs, increase your human agents' productivity, and enable fully digital interactions. You can also combine ML, RAG, NLP, and conversational search to summarize voice and written client interactions and speed up case processing, same as that LATAM telco did, potentially cutting associated costs by up to **80 percent**. (*McKinsey*)



## ● Automating call centers

Overburdened call centers mean only disaster and havoc for your support teams, leading to ever-increasing customer frustration and churn rate. Meanwhile, Gen AI capabilities will help your experts solve customers' problems faster through suggested replies and real-time, accurate responses generated automatically, still maintaining a human-centered approach to support delivery.

From a business standpoint, you'll get:

- predictable peak times for customers' calls
- accelerated response times
- boosted call center efficiency
- 24/7 customer support service delivery
- intelligent call routing
- improved client-vendor interactions
- higher customer loyalty
- slashed hold times
- smarter and optimized human resource distribution

For example, using **AI solutions**, you can summarize content for each type of calls your support team gets, instantly highlighting key points and outlining the best immediate follow-up actions. Such summary reports will also provide you with data analytics about increasing complaints and decreasing client engagement. Hence, you'll be able to predict the churn rate and elaborate on an action plan to improve customer experience.

**Vodafone** employs **TOBi**, an AI digital assistant that enhances customer service by completing customer transactions, helping people manage their accounts effortlessly, and answering most queries. This tool boosted Vodafone's net promoter score to 80, reduced the company's checkout time by more than **47 percent**, and increased the conversion rate by over **100 percent**.

## ● Marketing virtual assistants

Beyond AI chatbots, you can also implement a modern customer data platform (CDP) to empower your marketers with capacities to create user journey maps and adjust them in real time. Add to it the right data analytics program that has customization options, a well-set CDP will supply you with a clear understanding of both what your customers do and why they do it, as well as what they're likely to do next. It'll empower your marketing team to focus more on drafting ABM-specific offers that will drive upsells and cross-sells.

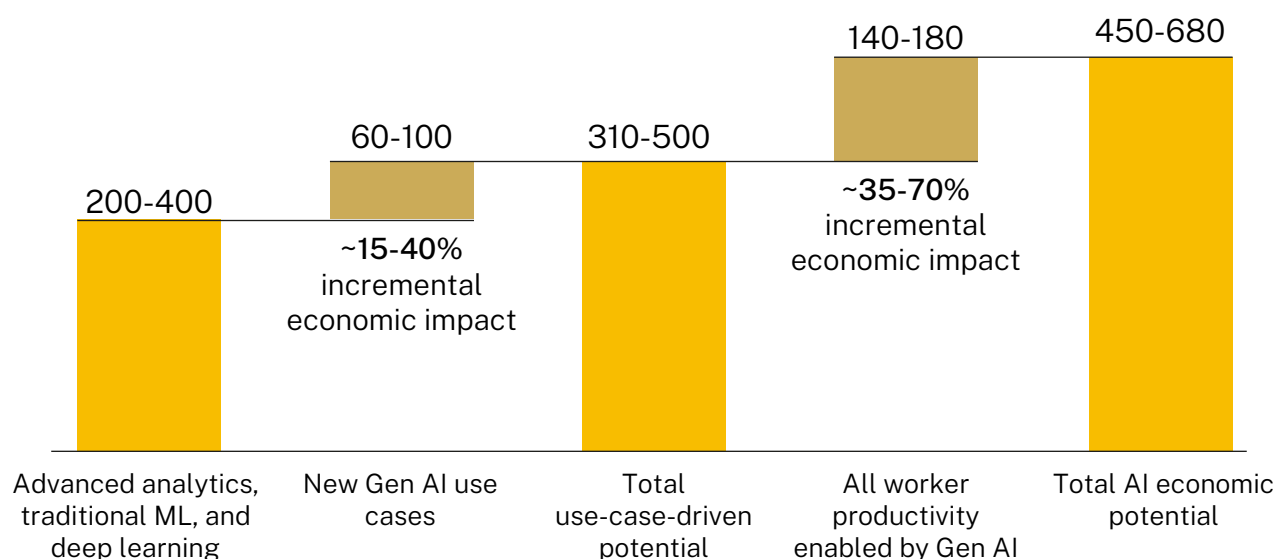
# 2 Network planning and operations (including RAN)

- When it comes to telecom networks, AI's primary function is optimizing performance and technology configurations, reducing capital expenditures, and unlocking new revenue opportunities. Thanks to its ability to mine unstructured data, AI helps telcos improve inventory and network planning and management. By analyzing and structuring raw information on network components from available documents, AI will enable you to assess compatibility, maintenance requirements, and other aspects more accurately, improving operational planning and accelerating network mapping.

- **Monitoring and management:** With the expert combination of cloud and edge computing, ML, AI, and data science, you'll be able to leverage deep historical data on every aspect of your network performance, avoiding failures, providing quick remediations, and minimizing downtime. This allows for creating self-organizing networks (SON) able to configure, optimize, and heal with minimal to no human supervision.
- **Planning and design:** AI models employed during various phases of network planning and implementation (capacity planning, network mapping, and radio frequency (RF) map generation) help your architects design more effective networks and eliminate inefficiencies that might lead to disruptions. A combination of AI with digital twins will offer you detailed, accurate modeling of how networks would act in pre-defined real-life scenarios, allowing for more informed decisions regarding where to put network components and how to manage them most efficiently.
- **Traffic forecasting:** Analyzing network data and predicting usage patterns in real-time, **telecom AI** can allocate additional resources, reassess capacities, or reroute traffic to prevent bottlenecks and keep your networks operating smoothly even during traffic spikes. Similarly, for mobile field, AI can program RANs that experience less-than-expected traffic to enter low-power mode or turn off altogether, establishing a more efficient 5G network.
- **Performance enhancement:** AI-driven optimization of network management and operations reinforces connectivity and ensures more reliable, faster services thanks to in-depth root-cause analysis and precise recommendations on how to adjust, for instance, frequency, antenna placement, energy consumption, tower height, and more.

## Gen AI's potential to unlock value beyond that offered by 'traditional' AI and advanced analytics

Gen AI's forecasted impact on the global telecom industry, \$ billion



Source: McKinsey & Company

## 3 IT and administrative support

- **Transform Insights** predicts that the robotic process automation (RPA) market will surpass **\$13 billion by 2030** — that's more than a \$12 billion increase compared to 2020. When it comes to telecom in-office operators, AI-fueled RPA solutions are one of the handiest tools you can give them, thanks to their capabilities to take over mundane, manual tasks that usually consume a huge chunk of human employees' time on a daily basis.

**McKinsey** even reported that small and large telecom operators alike have been primarily focusing on Gen AI implementation for customer service and IT operations optimization since 2023, with areas such as marketing and sales and support functions following suit.

- **IT operations:** Gen AI-driven software development life cycle accelerates migrations, testing, and deployment, reducing the ever-mounting technical debt and streamlining all workflows, from documenting, reporting, and code generation to QA scanning and change release. McKinsey discovered that software engineers can complete their tasks up to twice as fast using Gen AI assistants.
- **Administration:** Automation reduces process management costs and boosts employee productivity with generative chatbots and copilots. For example, you can employ this tech to shorten procurement analysis and negotiation strategy insights retrieval from weeks to hours or automate internal content generation.
- **HR and recruitment:** AI-assisted software platforms enable semi- and fully automated **CV screening and standardization**, employee onboarding, billing, performance review, and much more. This frees your human agents for high-priority tasks that require creative, problem-solving, or strategic planning skills while reducing recruiting costs.
- **Back-office operations:** Intelligent automation streamlines these operations, reducing the risk of human errors and speeding up processes. Same as one of our **telecom customers**, you can harness AI to optimize inventory management, customer and supplier billing, and invoicing. Thus, cutting overhead costs, accelerating the speed of critical processes, and driving higher ROI through more CapEx investments.
- **Ticket classification:** AI systems efficiently predict and categorize help-desk tickets, enabling automated management of internal requests and ensuring timely and accurate issue resolution.

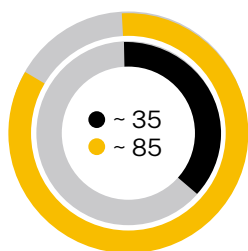
## 4 Network planning and operations (including RAN)

- Experts apply artificial intelligence to track entity behavior (including IoT or SIM cards interactions), automatically identifying suspicious signals from network devices and abnormal amounts of data transmitted without authorization. Also, telcos can improve targeted incident response and data recovery by using AI to segment users based on factors like data usage, communication patterns, device type, and app subscriptions.

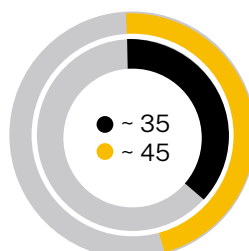
- **Cybersecurity:** AI-assisted 24/7 threat monitoring detects abnormal patterns in network traffic and helps you defend your cellular networks against sophisticated hacks, such as DDoS, malware, and phishing, jamming the attacks.
- **Root cause analysis:** Artificial intelligence tools will also pinpoint the source of problems and threats within your networks and across multiple layers of digital infrastructures.
- **In-field protection:** Automated IoT security systems can instantly pick up signs of physical intrusion events, hazardous accidents, and general safety issues across your sites and properties. Moreover, they help technicians forego some local on-site restrictions and reduce the need for in-field visits.
- **Network security:** AI fosters self-learning systems that update threat databases, adjust to firewall settings, and block suspicious IP addresses in real-time. You can leverage these tools to improve deep packet inspection and automate data protection and loss prevention, URL filtering, and log analysis.
- **Compliance and risk mitigation:** Intelligent automation is a proven way to ensure contract compliance and minimize risks associated with regulatory and contractual violations. AI checkers will help you verify adherence and highlight potential discrepancies or breaches in minutes, simply by screening and analyzing contractual terms and historical data.

## Gen AI in Today's Telco Industry

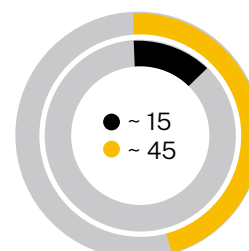
### Impact by business domain



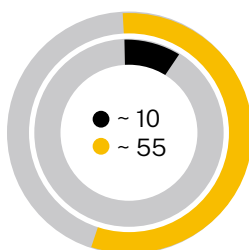
- Customer-centric chatbots
- Call-routing tools
- AI agent copilots
- Bespoke invoicing



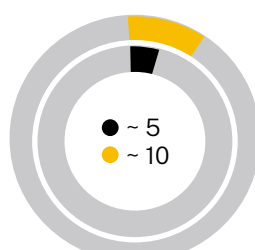
- Content generation
- Hyperpersonalization
- Store personnel's copilots
- Customer sentiment analysis and synthesis



- Inventory mapping
- Network optimization via customer sentiment analysis and self-healing



- Software development copilots
- Synthetic data generation
- Code migration
- IT support chatbots
- AIOps



- Procurement optimization
- Workplace productivity boost
- Internal knowledge management
- Content generation
- HR management

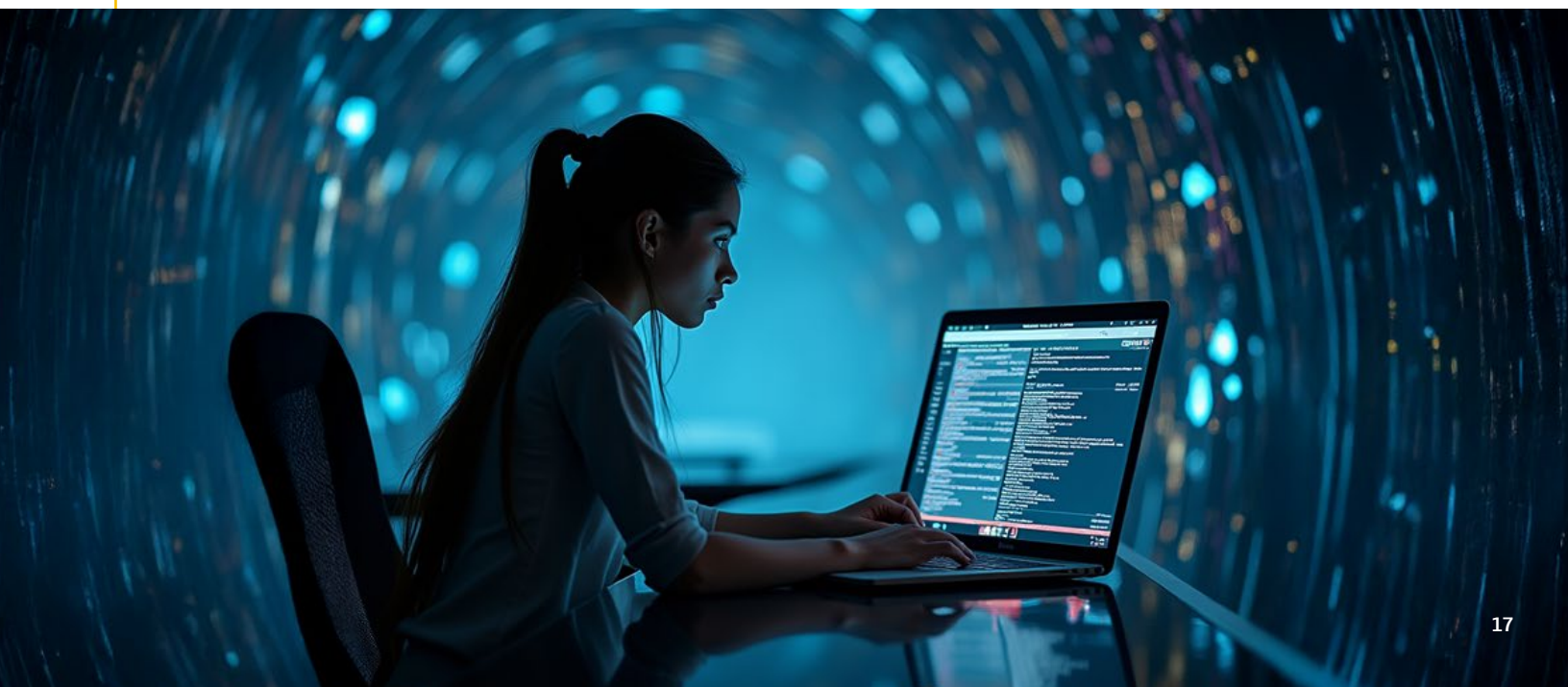
- Share of total impact, %
- Share of surveyed business leaders focused on domain, %

Source: McKinsey

## 5 IT and administrative support

Handling transactions and payments securely and diligently is still one of the most important functions and a long-standing challenge for telcos. In this case, AI is always a double-edged sword, and there is no point denying this simple fact. It can both propel your business to stay ahead of bad actors and bring new threats to the table. Still, when managed properly and implemented by **information security experts**, artificial intelligence tools become invaluable for ensuring your financial operations stay resilient.

- **Fraud prevention:** ML algorithms can automatically detect unusual user activity patterns based on a multitude of pre-established factors, instantly catching potential fraudulent attempts in real time. They also continuously monitor across networks and datasets to identify bots, enabling adaptive MFA and preventing hackers from accessing sensitive business data and unauthorized access attempts.
- **Billing anomalies tracking:** Copilots are great instruments you can use for detecting billing anomalies — from discrepancies in statements and subscription and mobile money fraud to invoicing irregularities and first bill churn fraud — ensuring accuracy and transparency in all billing experiences.
- **Proactive defense:** AI works nonstop to find holes in your defense infrastructure. And once you know about them, you can quickly fix those issues, reinforcing encryption protocols, updating data management practices, and introducing disaster-recovery plans to safeguard your information assets.
- **Fraudulent content analysis:** Deep learning models can help you pinpoint AI-generated deceptive content pieces (texts, phishing emails, deepfake videos, voice cloning, and images) aiming to scam your customers or employees. This will help you minimize financial losses and possible reputational damage while ensuring your telecom business adheres to applicable compliance standards.



## 6 5G monetization

Almost an ideal use case for AI in telecom is related to the continuing expansion of enterprise 5G tech, which increases the need to improve capacity and coverage and raises the cost of base station equipment. Not to mention, there is also a lack of skilled professionals to deploy and maintain these systems. The demand for high-speed mobile networks won't go anywhere anytime soon, and business is always about revenue, so here is how you can boost it.

- **Network slicing:** AI systems manage service-level agreements for each slice and can help you separate end-to-end slicing requirements into different features for ultra-reliable low-latency communications, multi-domain networks (5G + edge computing + cloud computing), massive machine-type communications, and enhanced mobile broadband. Those features include speed, security clearance, bandwidth, levels of maintenance, and more.
- **Network maintenance:** AI can forecast network adjustments automation schedule to reduce latency and boost user experience, protecting data traffic and optimizing bandwidth in both 5G and 6G applications.
- **Base station profitability:** Artificial algorithms will enable you to maximize the life of each asset by making faster and more strategic decisions related to base stations' placement and power consumption optimization at peak efficiency.

### Top AI Use Cases Today



Source: NVIDIA

## 7 Improved resource and asset management

- Ensuring an exceptional user experience is a must for telecom operators. Meaning, you have to deliver exceptional network services, anytime, anywhere. To achieve this, you need timely insights into any anomalies and possible outages before they occur.

- Predictive maintenance**

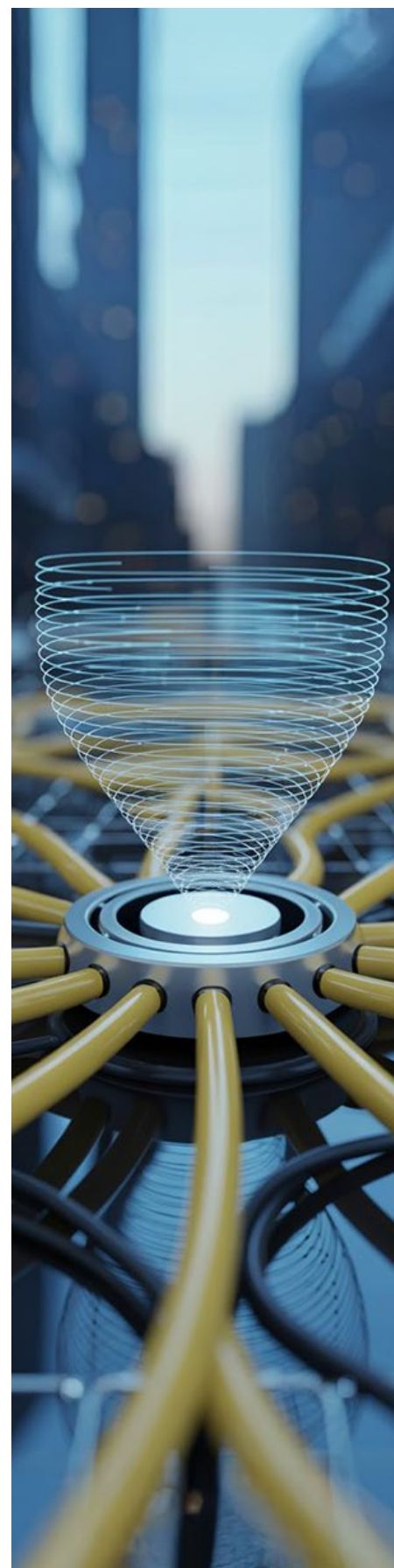
You can incorporate predictive AI models and automation to foster self-healing networks and forecast equipment failure. This approach enables you to extend the lifespan of all the equipment and the overall infrastructure, fixing potential issues proactively and responding swiftly to avoid downtime and reduce maintenance costs.

The mechanism is like this: AI tools analyze the big data collected from all IoT devices embedded in your network in real time and set realistic baseline performance metrics. ML algorithms then process those metrics and compare them to historical equipment performance data to detect deviations before any service disruptions occur. You get immediately notified and supplied with actionable reports and maintenance plans. A whole team of other technologies helps in the process, too, such as Data contextualization, 3D modelling, reality capture, computer vision, and deep neural networks.

AI-fueled predictive maintenance is all about monitoring the health of your network components and commercial equipment (base stations, antennas, switches, routers, and others) to increase operational efficiency and improve spending plans through more comprehensive decision-making. **Deloitte** once stated that predictive maintenance could potentially increase labor productivity by **5-20 percent** and reduce facility downtime by **5-15 percent**.

- Future-focused fault management**

Once network operators use AI models to detect anomalies, faults, and malfunctions, they can train those models to reduce future occurrences of the same abnormalities. Operators will gain an invaluable capacity to make more informed decisions before taking any action by comparing the real-world impact of various parameters on business outcomes. Pragmatic and data-driven AI systems can even suggest more unconventional action plans to enhance productivity, optimization, and profitability.





## Nokia

**Case:** Network optimization and management

**Example:** AI predicts anomalies in the network and helps optimize its performance in real time.

**Technologies:** ML, predictive analytics

**Results:** Improved reliability, better user experience, reduced downtime, and seamless connectivity.



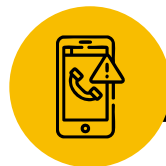
## Verizon

**Case:** Predictive maintenance

**Example:** AI analyzes network infrastructure data to predict potential failures in advance.

**Technologies:** IoT, ML

**Results:** Extended equipment lifespan, minimized service disruptions, improved operational efficiency, and lower maintenance costs.



## AT&T

**Case:** Fraud detection

**Example:** AI analyzes call patterns to detect fraudulent activities (unauthorized account access, SIM-swapping fraud, etc.).

**Technologies:** ML

**Results:** Stronger network security that safeguards customer data and reduces financial losses.



## Vodafone

**Case:** Customer service

**Example:** TOBi chatbot handles instant customer support, troubleshooting, inquiries processing, and common requests without human intervention.

**Technologies:** NLP, AI chatbots

**Results:** 24/7 support, increased customer satisfaction, reduced operational costs, and smarter human resource management.



## Ericsson

**Case:** Data traffic management

**Example:** AI network solutions optimize data traffic flow and adjust bandwidth allocation in real time.

**Technologies:** ML, predictive analytics

**Results:** Optimal network performance, reduced congestion, and enhanced customer experience.



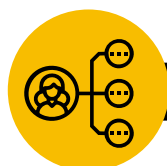
## Orange

**Case:** Customer experience personalization

**Technologies:** ML, data analysis

**Example:** AI analyzes customer behavior and preferences, providing more personalized services and content recommendations.

**Results:** Higher customer loyalty and revenue thanks to targeted promotions and better user engagement.



## Comcast

**Case:** Voice-enabled intelligent assistants

**Technologies:** NLP, voice recognition

**Example:** Xfinity Assistant lets users navigate the network's services and troubleshoot issues via voice commands.

**Results:** Reduced need for customer support calls and user experience boosted through intuitive voice control.



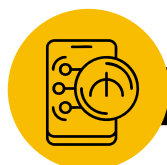
## Huawei

**Case:** 5G network slicing

**Technologies:** ML, network function virtualization

**Example:** AI enables dynamic network slicing to allocate bandwidth resources based on actual customer needs and application requirements.

**Results:** Better network efficiency that maximizes 5G performance and enables tailored service offerings.



## T-Mobile

**Case:** Churn prediction and management

**Technologies:** ML, predictive modeling

**Example:** AI analyzes customer usage patterns to detect early signs of churn, launching into action proactive retention strategies.

**Results:** Lower churn rate, retained revenue, and increased customer satisfaction.



## Telefonica

**Case:** Billing and revenue

**Technologies:** ML, data analysis

**Example:** AI monitors billing processes, preventing revenue leakage and guaranteeing accurate customer invoicing.

**Results:** Higher billing accuracy, fewer human errors, reduced revenue loss, and enhanced customer trust.



## Netflix

**Case:** Content management

**Technologies:** ML, content delivery networks

**Example:** AI optimizes streaming quality and bandwidth capacity, adjusting to network conditions and user device capabilities in real-time.

**Results:** **Optimized network resource management**, improved viewing experiences, and reduced buffering.



## Telefonica

**Case:** Energy efficiency

**Technologies:** ML, IoT

**Example:** AI monitors and optimizes energy consumption across the entire network infrastructure to reduce the carbon footprint.

**Results:** Reduced operational costs and environmental impact.



## SK Telecom

**Case:** Service quality monitoring

**Technologies:** ML, data analysis

**Example:** AI monitors and analyzes service quality to ensure optimal voice and data service delivery.

**Results:** Proactive issue resolution, minimized service disruptions, **continuous quality improvement**, and better customer experience.



## Palo Alto Networks

**Case:** Cybersecurity

**Technologies:** ML, anomaly detection

**Example:** AI cybersecurity solutions detect and mitigate threats in real time.

**Results:** Strengthened network and **information security** and enhanced regulatory compliance.



## BT Group

**Case:** Marketing and consumer insights

**Technologies:** ML, big data analytics

**Example:** AI tracks consumer behavior and market/industry trends to improve business strategies and product offerings.

**Results:** **Data-driven decision-making**, competitive edge and resilience, and new business opportunities unlocked.

## AI use cases in telecommunications

If you strive to make your telecom operations, equipment, and processes more autonomous and sustainable, AI-fueled automation is the most efficient approach to achieve just that. From network management optimization and customer retention to predictive maintenance and infrastructure security, technologies such as edge computing, 5G, natural language processing, and machine and deep learning will enable your operators to consistently meet customers' demands and innovate infrastructures proactively.

It's that secret sauce that will enable your company to stay ahead of the tough competition rampaging through the telecom industry and unlock new revenue streams.

Of course, there is a mixture of optimism and cautiousness when it comes to the opportunities and challenges AI poses. Yet, the inclination toward wider adoption still prevails as 77 percent of NVIDIA's survey respondents stated that AI will boost competitive advantage for their companies. Most industry leaders are ready to differentiate their service offerings, making them more accessible for wider audiences, and foster agile business growth, even though they might have to learn from their own mistakes at the beginning of their digitalization journeys. Yes, the 'fail fast' concept still works.

Generative and agentic AI's pivotal potential to introduce entirely new use cases and applications in the near future is enormous thanks to its ability to learn from extensive amounts of data fed to it and perform almost like human agents. That might be that hidden passage to fueling your company's elevating transformations, improving efficiency and customer experience, and stimulating revenue growth and innovation faster than your competitors.

Despite reasonable cybersecurity concerns, TEAM, as experts in **ethical and responsible AI development**, believes that with proper engineering methodologies and proven information security frameworks, advanced artificial intelligence solutions will propel the telecom, media, and entertainment industry into a new evolutionary era. Just imagine those levels of unparalleled connectivity and personalized customer experiences that drive higher retention and engagement for billions of users globally!

The journey won't be easy, but what we all need now is for the adoption of artificial intelligence to mature in telecommunications and board mindsets to culturally shift into more future-focused ones. Then, the benefits will become even more measurable, tangible. The industry just needs to prioritize investments in the right AI technologies and solutions, cooperating with trusted IT vendors that can ensure secure, stable, and ethically correct deliverables.

It's about time your company joins the ranks of giants like **Nokia, Orange, Verizon, Vodafone**, and **AT&T**, don't you think?



## C-Level's Foundational Steps for a Successful AI Journey

**1**

### Business-driven roadmap

Outline your AI strategy before implementing any solutions to determine what to build, buy, or fine-tune in-house.

**2**

### Talent capacity

Ensure you have the right specialists under your roof by upskilling in-house employees or engaging external experts to innovate with AI.

**3**

### Scalable operating model

Orchestrate AI integration efforts enterprise-wide, across all verticals and use cases, repurposing and tuning solutions for various departments.

**4**

### Tech reusability blueprint

Implement technologies that are built for speed and innovation, focusing on frameworks for their reusability and excellence.

**5**

### High-quality data

To train your AI properly, gather every insight, especially unstructured data, that is easily accessible and managed, ensuring responsible and accountable use of it.

**6**

### Precise change management

Ensure that all executives are onboard to lead and scale the adoption of AI, oversee changes, and outline further necessary adjustments.

Overcome the limits of what's possible with TEAM's industry-tailored AI solutions designed to meet your unique business needs.



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