

State of AI in Telecommunications: 2026 Trends

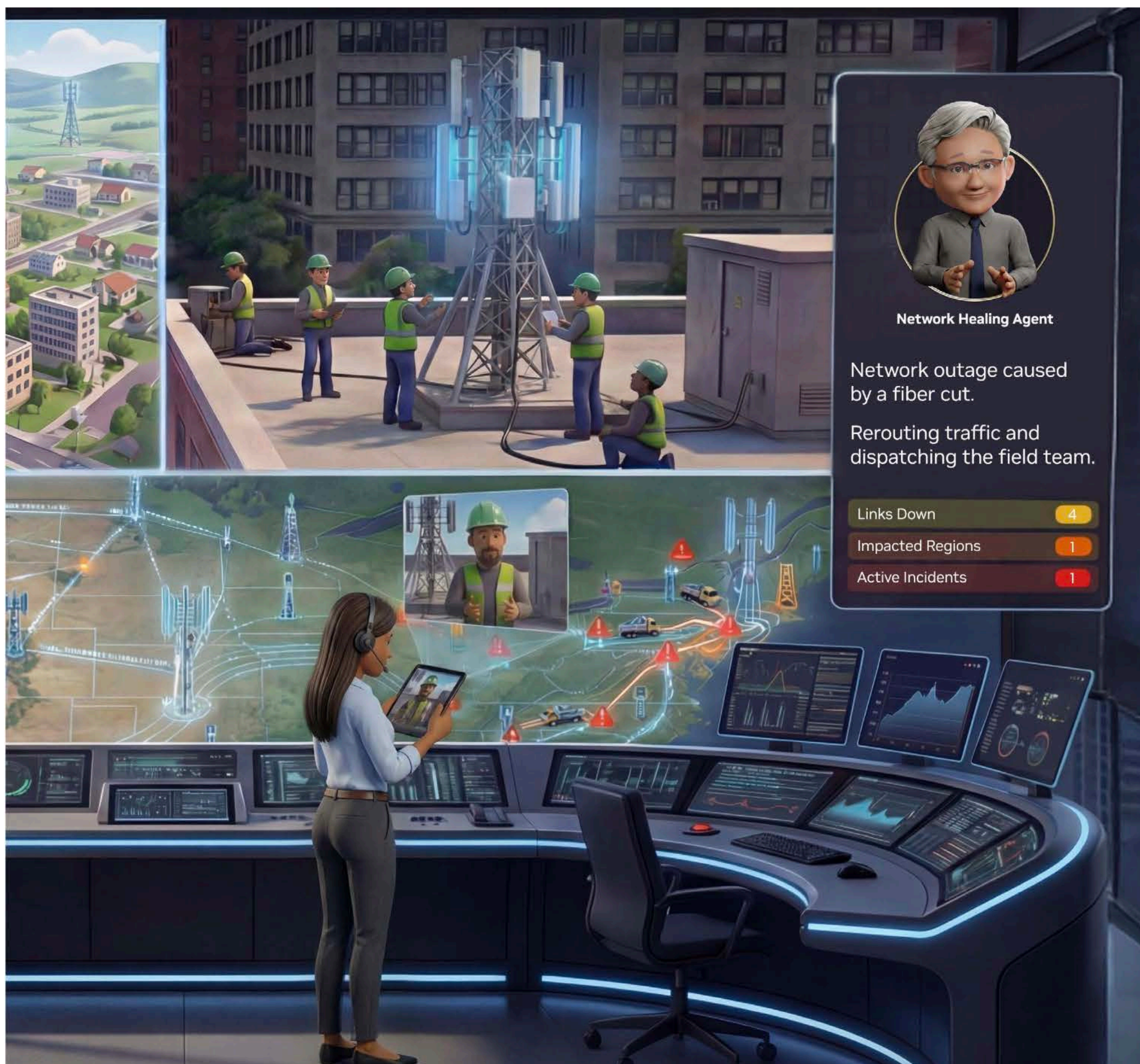


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Survey Overview

AI in Telecommunications: Key Trends for Industry Leaders

Artificial intelligence has become integral to the present and future of the telecommunications industry. The industry is seeing clear benefits from using AI to enhance productivity, optimize network operations, and improve customer experiences. In the near future, AI will be the backbone of autonomous networks, accelerating research and development for next-generation connectivity, and become the architectural foundation of those networks with 5G Advanced, AI-RAN, and 6G.

The industry's use of AI has never been higher. In our fourth annual *NVIDIA State of AI in Telecommunications* report, 66 percent of survey respondents stated that their organizations are actively using AI, up from 49 percent last year and 41 percent in 2023. Companies have moved past the pilot and assessment phase and are actively scaling proven applications, generating tangible return on investment. Survey respondents report increased revenue, reduced costs, and robust AI-powered innovation, with a particular focus on AI-native wireless networks and agentic AI.

AI is also opening new roadways for sales growth in the industry. Companies are planning on offering AI services, such as GPU as a service, AI as a platform, or AI as a service, targeting vertical industries and their large base of enterprise customers and consumers.

66%

of survey respondents said their company is actively using AI.

Executive Summary

The 2026 *NVIDIA State of AI in Telecommunications* report saw its highest response rate ever, with more than 1,000 respondents across the world. About a quarter of the survey responses were specifically from telecommunications operators, with the remainder spanning network equipment providers, system integrators, software vendors, and other ecosystem players.

Here are some of the top highlights from the survey.

AI Drives Tangible Gains for Telcos, Accelerating Investment

90%

said that AI is helping to increase annual revenue and reduce annual costs.

99%

said that AI has helped enhance employee productivity, with 26% percent claiming a major to significant improvement.

AI's impact on telecom business is clear. Companies are reporting increasing revenues and substantial cost reductions in specific areas of business. Sixty-seven percent of respondents reported that AI has delivered more than a 5 percent increase in annual revenues, while 55 percent reported more than

a 5 percent reduction in annual costs. Both ROI metrics are up significantly from last year. This momentum is driving the telecom industry to increase AI spending in 2026, with 89 percent planning to increase their AI budgets, up from 65 percent who said the same last year.

Autonomous Networks Take Priority

65%

of telecommunications operators said that network automation is being driven by AI.

59%

of telecom operators said that network automation was among the top AI use cases driving ROI.

In previous *State of AI in Telecommunications* reports, customer experiences and support were the top-ranked use cases. This year, network automation has overtaken customer experiences as the leading use case for investment, deployment, and ROI impact. This signals a bold new phase toward autonomous networks, where AI not only enhances productivity but drives the very future of network operations. Of respondents who have deployed agentic AI, 41 percent said they did so for network automation, with 52 percent believing network automation AI agents will deliver significant ROI within the next two years. Eighty-eight percent of respondents reported being between Levels 1 and 3 on TM Forum's Autonomous Network Levels spectrum. Many expect generative and agentic AI to accelerate the shift to higher levels of autonomy.

Distributed AI Computing Is on the Rise, Fueling the Path to AI-RAN

78%

said they're currently investing or planning to invest in computing at the edge of the network to support AI inference.

77%

said they expect to see deployments of AI-native wireless networks before the launch of 6G (2030).

A surge of investment in computing is reshaping telecom network architectures, empowering telcos to deploy AI inferencing closer to users. As operators build out distributed compute capacity, they're laying the groundwork for next-generation, AI-native RAN, with 28 percent using AI for wireless network research and development. Telcos are also stepping up investments in AI-native RAN and 6G, signaling a major industry intercept ahead of the traditional 6G deployment cycle. The primary motivations are driven by improving network performance and efficiency and sharing AI and RAN workloads on the same infrastructure to support AI applications and growing AI traffic. Telcos are now weaving AI into the network fabric to modernize RAN and anticipating a much faster time to deployment of this new AI-native architecture.

Sales Growth Opportunities With AI Solutions

The telecommunications industry believes AI is more than just a lever for increasing efficiency and productivity or innovating new technologies in the network. AI can also be a new avenue for revenue and sales growth, tapping into new markets and customer segments. Forty-three percent of respondents cited opening new business opportunities as a top objective for their AI initiatives. The industry is in a unique position globally to be the hub for AI solutions for consumers, governments, and enterprises, especially in vertical industries such as manufacturing, finance, retail, or healthcare. As operators see clear ROI from AI in their own operations, many are now creating and executing new commercial strategies to deliver AI-powered services, platforms, and industry-specific applications.

46%

said that AI has helped improve their business by opening new revenue opportunities.

Open Source Drives AI Strategy

The industry understands the value of open source AI models, software, and tools. About nine out of 10 say it's important, with 46 percent saying it's very to extremely important. Open-source models allow companies to fine-tune their models to be deployed toward very specific solutions, such as understanding their telecommunications network or research and development. Open source helps companies develop their own AI solutions, which is the industry's preferred method according to 42 percent of respondents. Codeveloping solutions with a partner came in second at 38 percent.

89%

said that open-source models and software are important to their organization's AI strategy.

Mainstream Adoption for Generative AI and Rising Interest in Agentic AI

60%

said their company is using generative AI, up from 49% in 2024 and 43% in 2023.

48%

said their company is either using or assessing agentic AI.

Generative AI is fully established in the telecommunications industry, with adoption rising rapidly within the last two years. Organizations are now turning to the next evolution in AI with AI agents, which are already being applied to network operations, customer experiences, and internal process optimization in areas such as IT and human resources.

An In-Depth Look at the Results

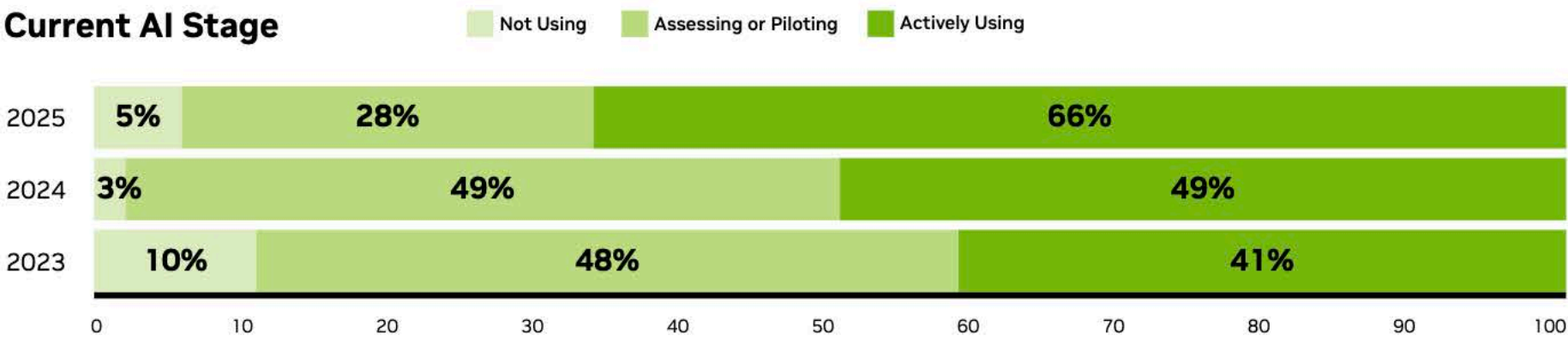
AI Adoption in Telecommunications at an All-Time High

Survey results indicate that the telecommunications industry has three clear goals in deploying AI:

- > **Improving employee productivity: 43 percent of respondents**
- > **Creating operational efficiencies and reduce operational costs: 42 percent**
- > **Opening new business opportunities and revenue possibilities: 40 percent**

The industry has moved distinctly away from the assessment and pilot phase of AI solutions into the deployment and scale phase. As mentioned above, 66 percent of respondents said that their organizations are actively using AI in their operations, up 18 percentage points from 2024. On the flip side, 28 percent of respondents reported that their organizations are assessing or piloting AI, down 21 points from the previous year. The trend is clear and seen across the rest of the NVIDIA State of AI survey reports: Companies are doubling down on proven AI use cases and scaling them across their operations.

Current AI Stage



Generative AI Is the Top AI Workload in Telecommunications

To accomplish their goals, telecom companies are turning to a variety of AI technologies and workloads. Foremost is generative AI, which was the top workload among survey respondents at 60 percent, up from 49 percent in 2024. In particular, large companies (those with over 10,000 employees) have heavy adoption of generative AI, with 80 percent of respondents from large companies reporting adoption. The next most popular AI workload was data processing and analytics at 58 percent, followed by agentic AI at 48 percent.

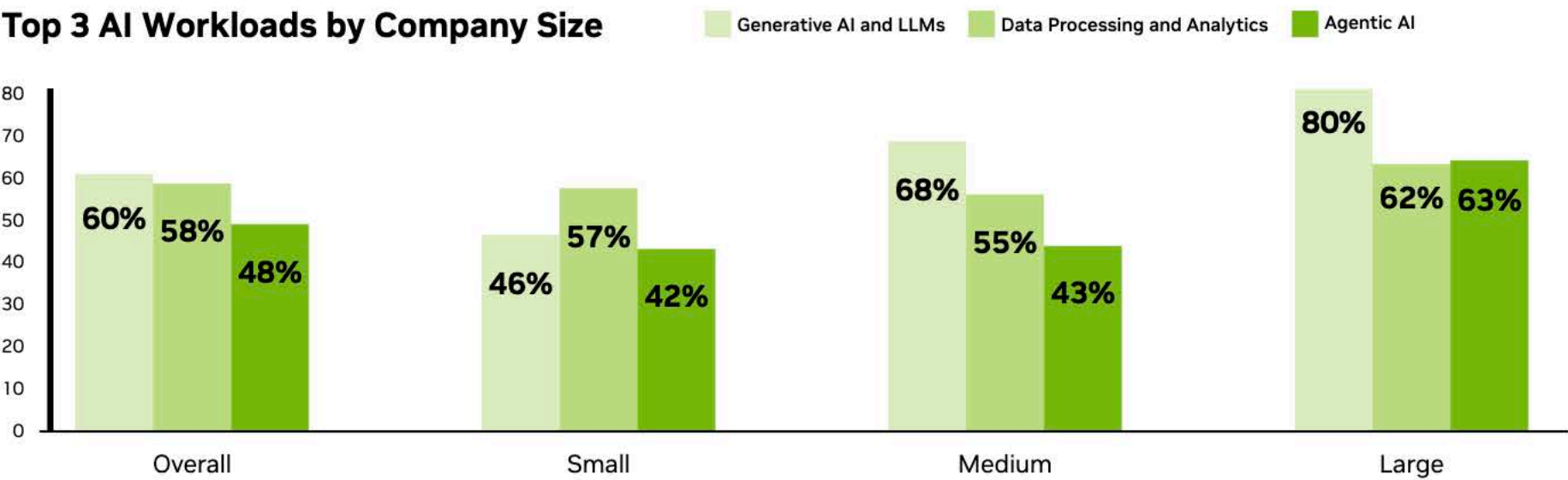
60%

said generative AI is their top AI workload.

80%

of respondents from large companies said they're using generative AI.

Top 3 AI Workloads by Company Size



In addition to those top three workloads, about half (49 percent) of respondents from telecommunications operators—including multiple-system operators (MSOs)—reported that they’re using or assessing AI-native networks, including for AI-RAN and 6G research and development. Operators, who make up over a quarter of total respondents, also reported broad usage of other AI applications, including conversational AI at 50 percent and predictive analytics at 47 percent.

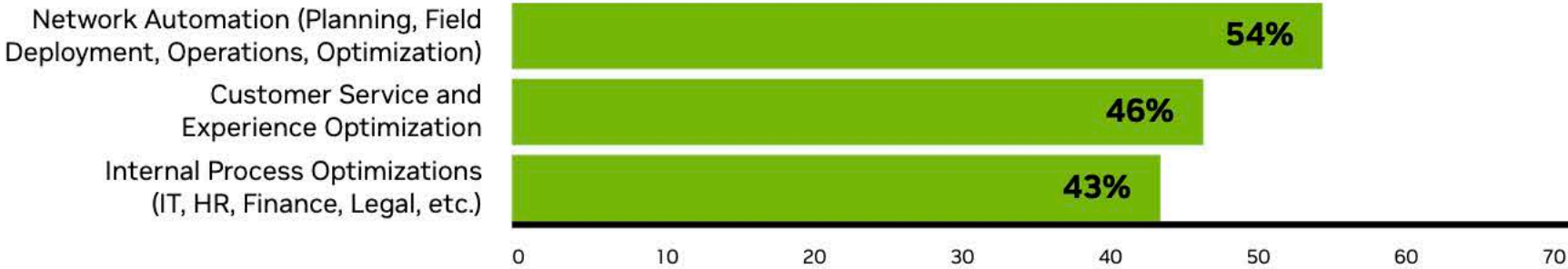
49%
of telecom operators are using or assessing AI-native networks.

In terms of specific AI use cases that help drive telecommunications business operations, 54 percent of respondents said that their organizations are using AI for network automation, including planning, deployment, operations, and optimization, up 17 points from 2024. Optimizing customer service and experiences was second among AI use cases at 46 percent, followed by back-office process optimizations (such as in IT, human resources, or finance) at 43 percent. Wireless network research and development—including 5G, AI-RAN, and 6G—came in at 28 percent of overall respondents.

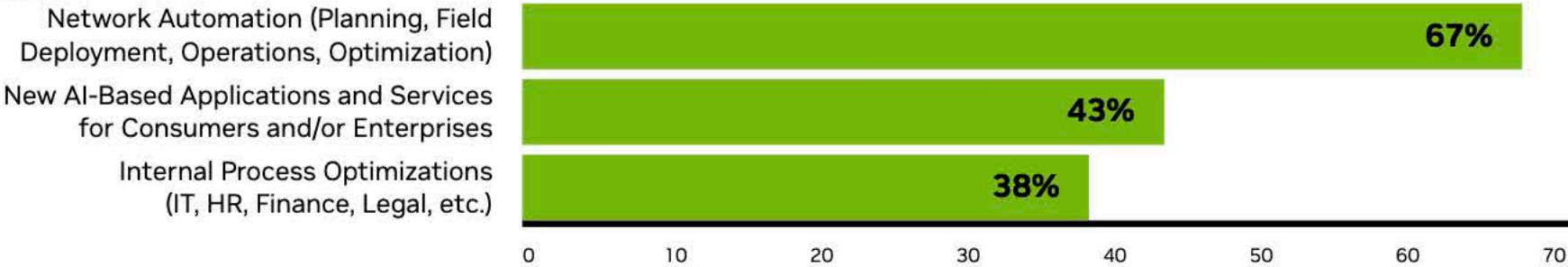
54%
said they’re using AI for network automation, up 17 points from 2024.

Top 3 AI Use Cases by Region

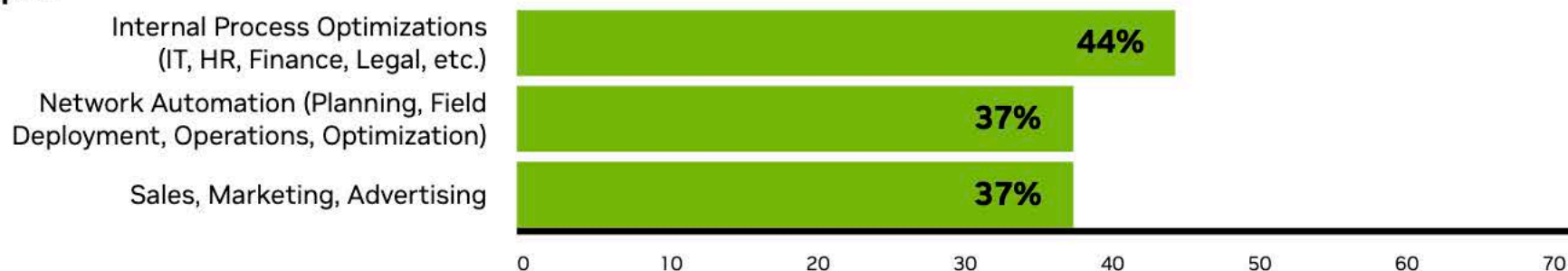
Overall



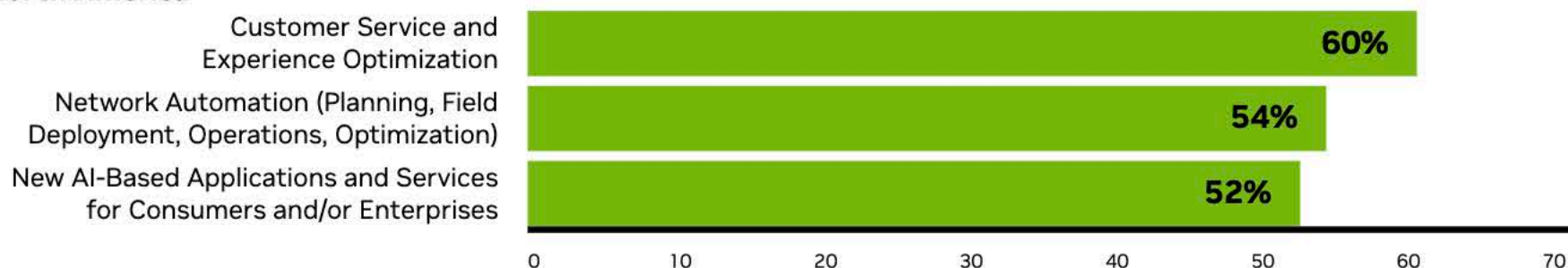
China



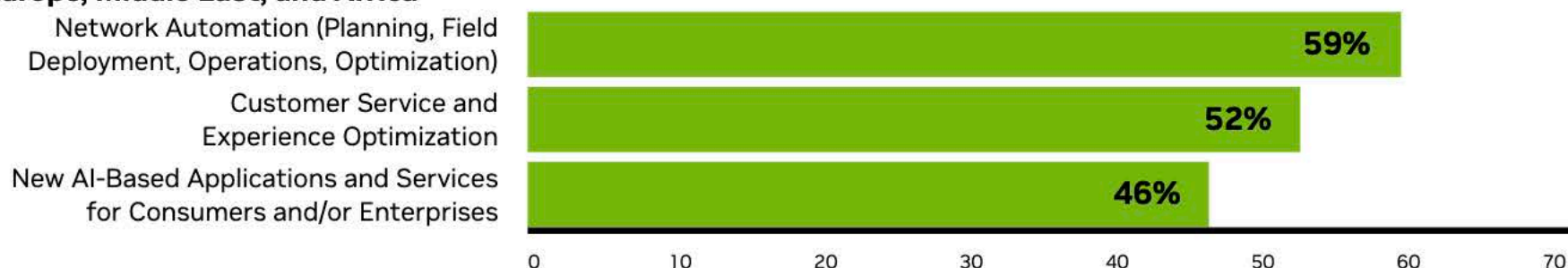
Japan



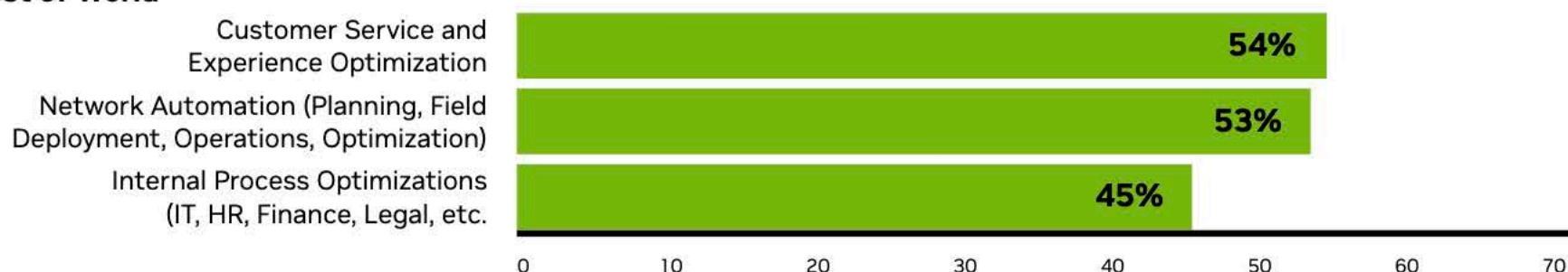
North America



Europe, Middle East, and Africa



Rest of World



Data Issues and AI Expertise Among Top Challenges

The biggest obstacles standing in the way of the telecommunication industry achieving its AI goals involve data, including privacy, sovereignty, data silos, size, and complexity. Overall, 54 percent of respondents said that data-related issues were their biggest challenge, up 34 percentage points from 2024. This sharp increase reflects the reality that, as AI moves from pilots to production, navigating the unique fragmentation, volume, and sensitivity of telecom data is a key factor in scaling AI initiatives successfully.

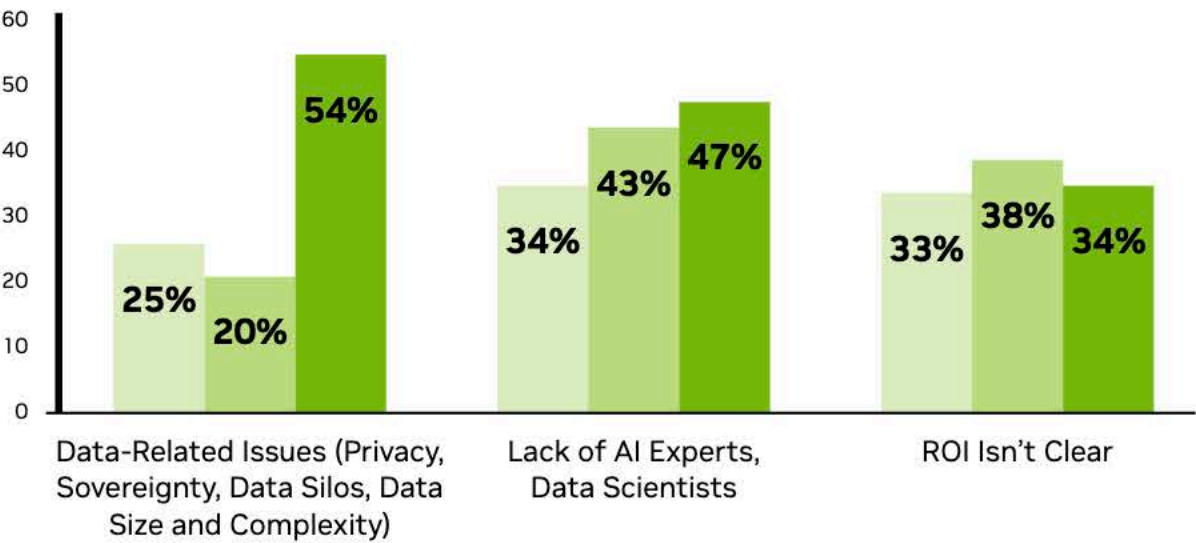
The second biggest challenge cited in the survey was having enough skilled personnel to make sense of that data, with a lack of AI experts and data scientists reported by 47 percent of respondents. Quantifying ROI was the third biggest challenge, cited by 34 percent of overall respondents, down four percentage points year over year.

54%

cited data-related issues as the biggest barrier to achieving AI goals.

Navigating the unique fragmentation, volume, and sensitivity of telecom data is key to scaling AI initiatives.

Top 3 AI Challenges

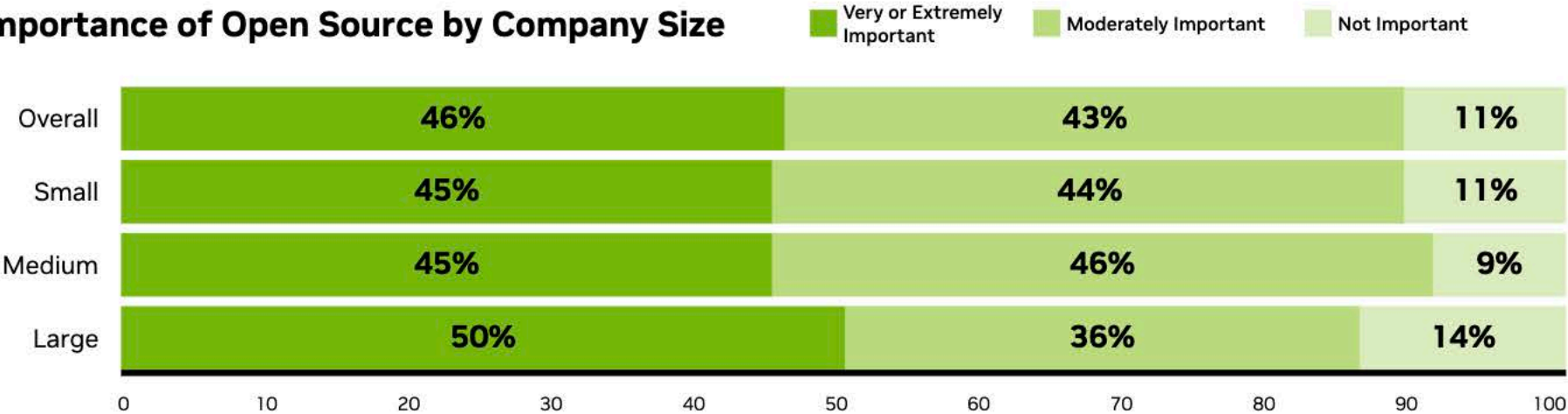


A Growing Dedication to Open Source

Open-source software and foundation models allow organizations the flexibility to build specialized AI solutions tuned on their own data. The telecommunications industry realizes the value of open source, with 89 percent of respondents stating that it's important to their company's AI strategy.

89%
said that open source is important to their company's AI strategy.

Importance of Open Source by Company Size



As AI matures and enterprises scale more specific solutions, telecommunications companies prefer to develop solutions themselves, according to 42 percent of respondents, or be directly involved in the process by codeveloping with a partner, per 38 percent. A bit more than a third at 36 percent outsource their AI development to third-party consultants, which represents a 15 percentage point increase from 2024. About a fifth of respondents at 21 percent said they don't develop their own solutions but, instead, use third-party enterprise software from independent software vendors.

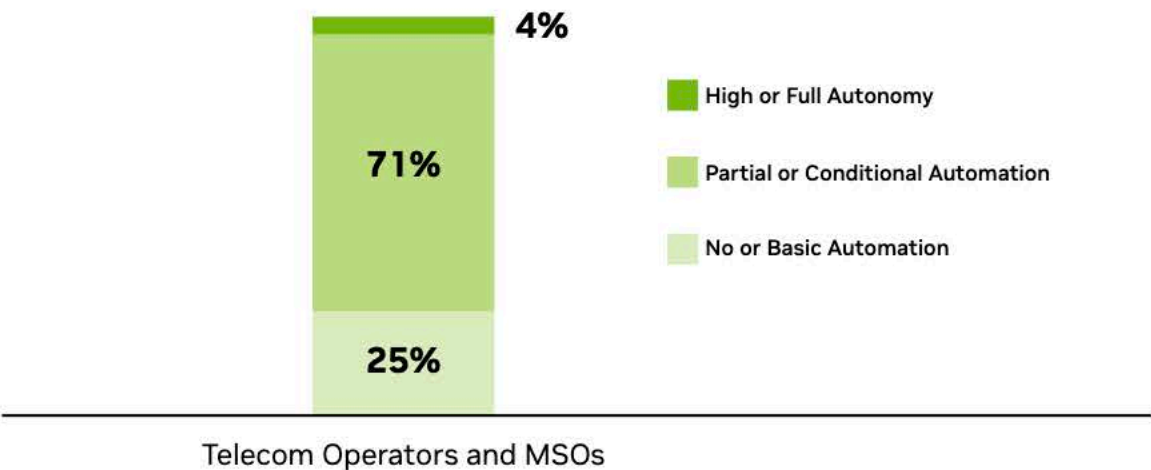
Accelerated Progress Toward Building Autonomous AI Networks

The TM Forum—a global association for the telecommunications industry—defines network automation on a scale of one to five. Level 1 is no automation, and Level 5 means a “network is fully autonomous, self-adapting, and self-healing without human intervention.” The TM Forum’s Autonomous Network Levels (ANL) serve as a maturity assessment for the industry and a roadmap for building autonomous networks.

The roadmap for building autonomous networks has plenty of room to grow, with most operators in the beginning to middle of the journey. For respondents from telecommunication operators and MSOs, 19 percent reported themselves at Level 1, 35 percent said they’re at Level 2, and 36 percent said they’re at Level 3.

Most telecom operators are in the beginning or middle stages of building autonomous networks.

Current Level of Network Automation



The biggest challenges companies face in building autonomous networks mirrors the challenges that they have with implementing AI overall: Data-related issues were cited by 27 percent of respondents, and a lack of internal skills were cited by 25 percent.

Data-related issues and a lack of internal skills were cited as the biggest challenges to building autonomous networks.

A Focus on AI-Native Wireless Networks

The next iterations of wireless networks—5G-Advanced and 6G—will be AI-native. With intelligence embedded throughout the architecture, networks can become software-defined, capable of predicting, learning and continuously self-optimizing. As AI-RAN architectures move to field deployments, AI will become integrated into the radio access network itself, using specialized models to make transformative gains in network utilization, spectral efficiency, and performance.

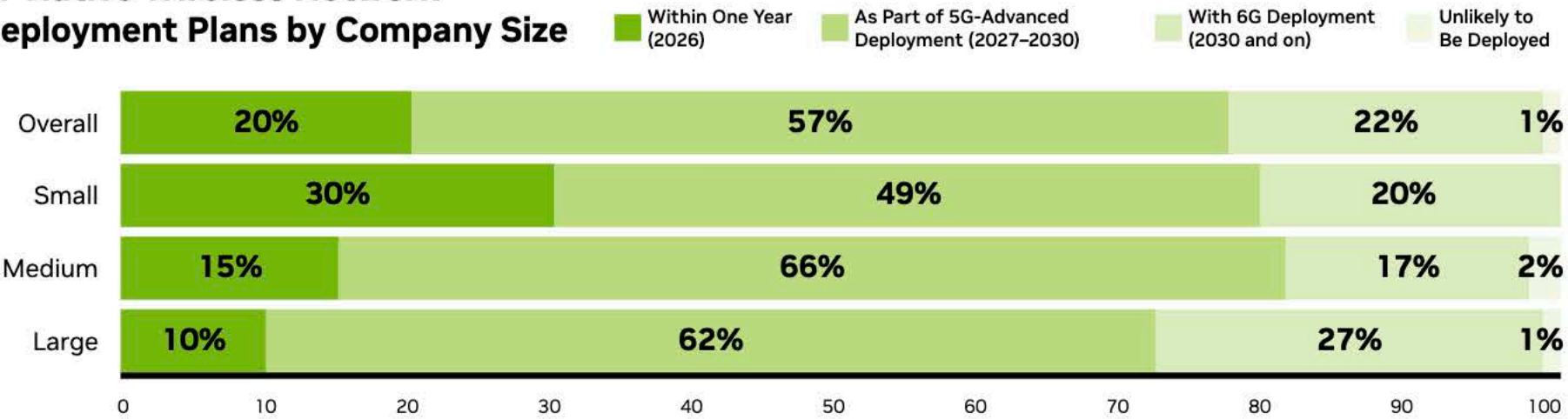
Telecommunications companies have ambitious plans for AI-native networks. Sixty-five percent of respondents whose companies are using AI for network research and development cited enhancing spectral and energy efficiency as a primary goal for investing in AI-native networks. Improving the overall performance of the radio access network was cited as another key objective. Fifty-six percent highlighted the importance of consolidating AI and RAN

workloads on shared infrastructure to improve network utilization and ROI, while 51 percent said enabling new edge AI applications and 48 percent said serving increased mobile AI traffic and inference at the network edge were key objectives.

The industry envisions the future of AI-native networks coming soon, with 77 percent saying it would be integrated before the rollout of 6G networks in 2030. Twenty percent said AI-native networks would come even sooner, within the next year. Twenty-two percent cited later, believing the rollout will come after the launch of 6G.

77%
believe AI-native networks will roll out before the launch of 6G.

**AI-Native Wireless Network
Deployment Plans by Company Size**



In terms of barriers to adoption of AI-native networks, 27 percent said a lack of available AI-native RAN solutions from traditional network equipment providers posed the greatest barrier to deployment. Another 22 percent cited difficulty quantifying ROI, and 19 percent cited lack of skilled staff to deploy, operate, and manage AI and RAN infrastructure.

Tangible Impact Leads to Increased Investment

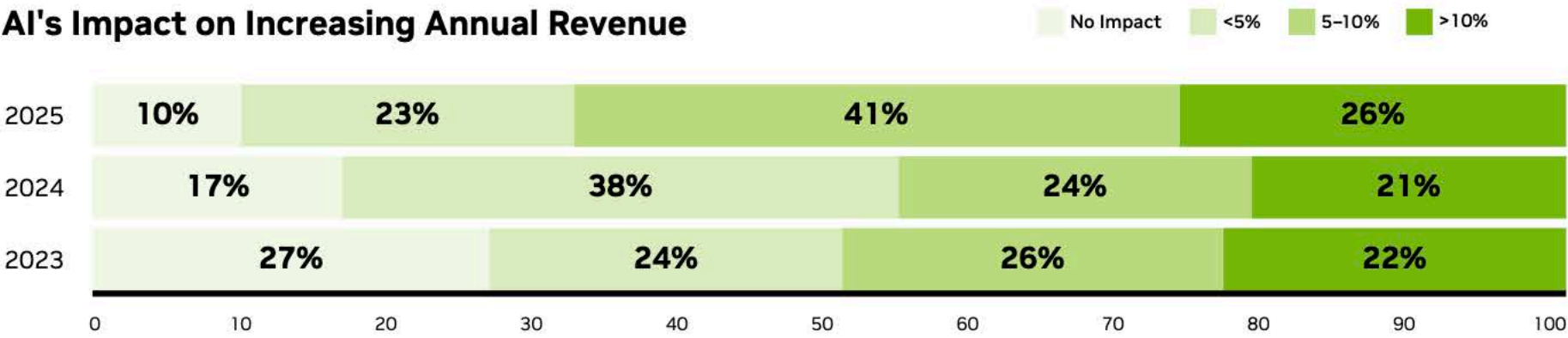
The telecommunications industry occupies a two-sided position within the global industrial landscape when it comes to AI deployment. It's both a provider of critical infrastructure and AI services to people and businesses, as well as a major consumer of AI, managing massive back-office operations and networks to make it all function smoothly. The breadth of telecom operations gives the industry ample opportunities to deploy AI to increase efficiency, accelerate business growth and productivity, and realize tangible benefits.

The consensus among survey respondents is that, indeed, AI is a benefit to the bottom line. Overall, 90 percent of respondents said that AI is helping to increase annual revenue, up from 83 percent in 2024 and 73 percent in 2023. Forty-one percent of respondents said that AI helped increase revenue between 5 and 10 percent, with another 26 percent saying revenue increased by more than 10 percent.

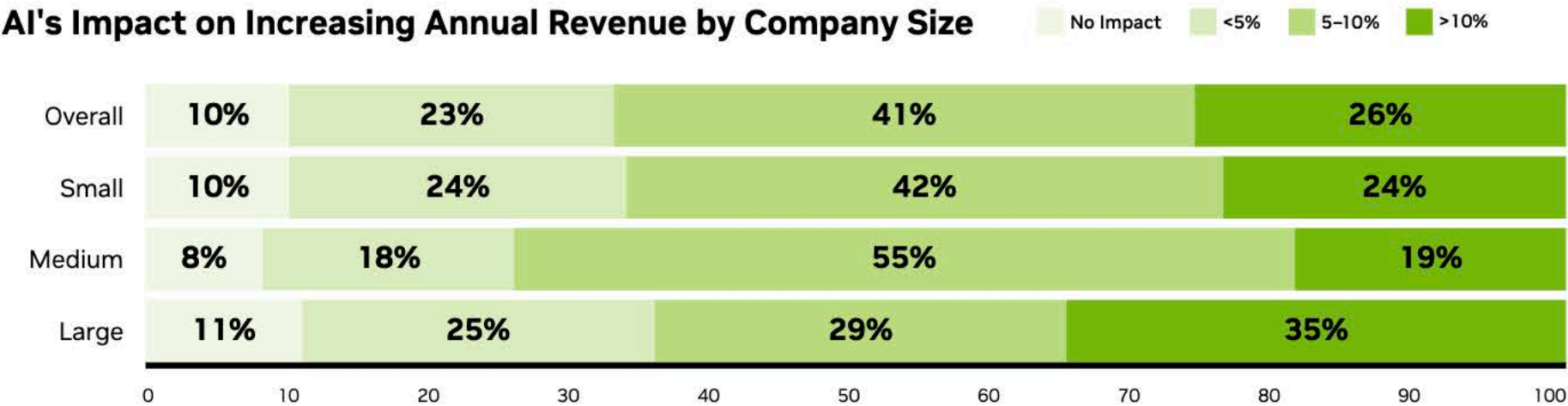
90%
said AI is helping to increase annual revenue.

Mirroring the overall survey results, 90 percent of respondents from telecom operators and MSOs said AI helped increase revenue. Forty-three percent said the benefits were between 5 and 10 percent, and 22 percent said the increase was greater than 10 percent.

AI's Impact on Increasing Annual Revenue



AI's Impact on Increasing Annual Revenue by Company Size

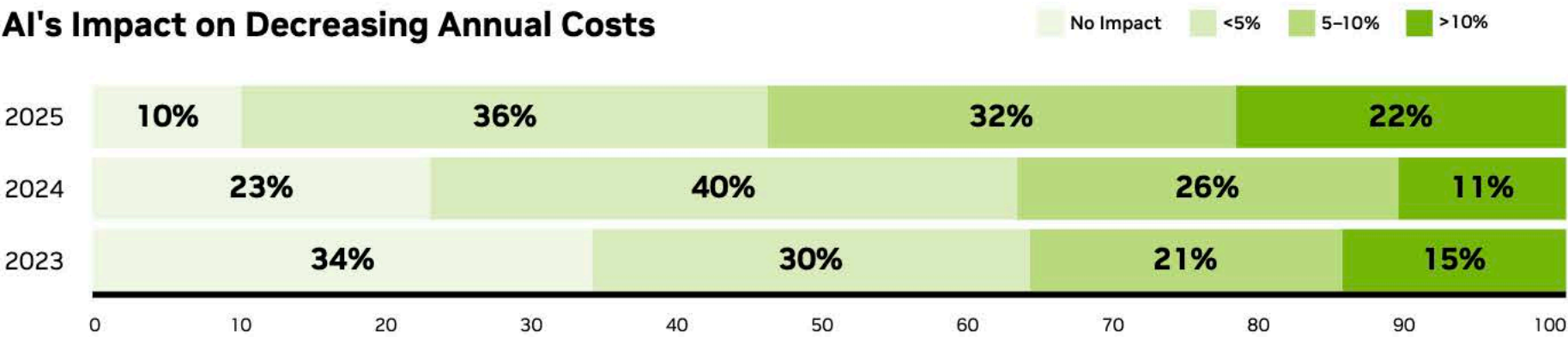


The numbers are similar when asked if AI is helping to decrease annual costs. Ninety percent of respondents agreed that AI is decreasing costs, up from 77 percent in 2024 and 66 percent in 2023. About a third of respondents at 32 percent said AI helped decrease annual costs between 5 and 10 percent, and 22 percent said costs were reduced by more than 10 percent.

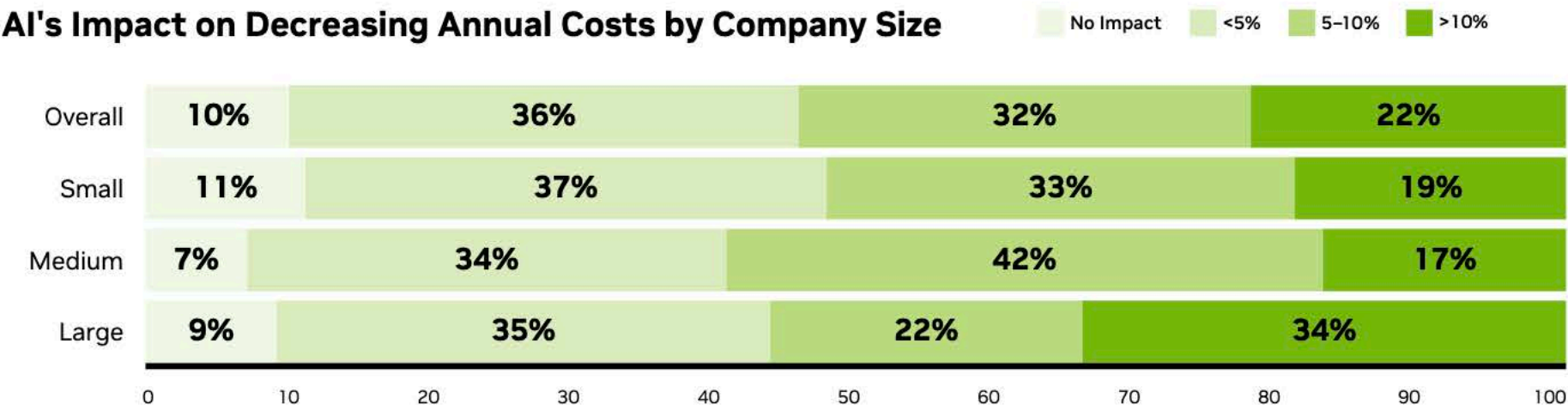
90%
also agreed that AI is helping to decrease annual costs.

Looking specifically at operators and MSOs, the numbers are similar, with 94 percent saying that AI helped decrease annual costs, 36 percent saying the decrease was between 5 and 10 percent, and 25 percent saying the decrease was greater than 10 percent.

AI's Impact on Decreasing Annual Costs



AI's Impact on Decreasing Annual Costs by Company Size



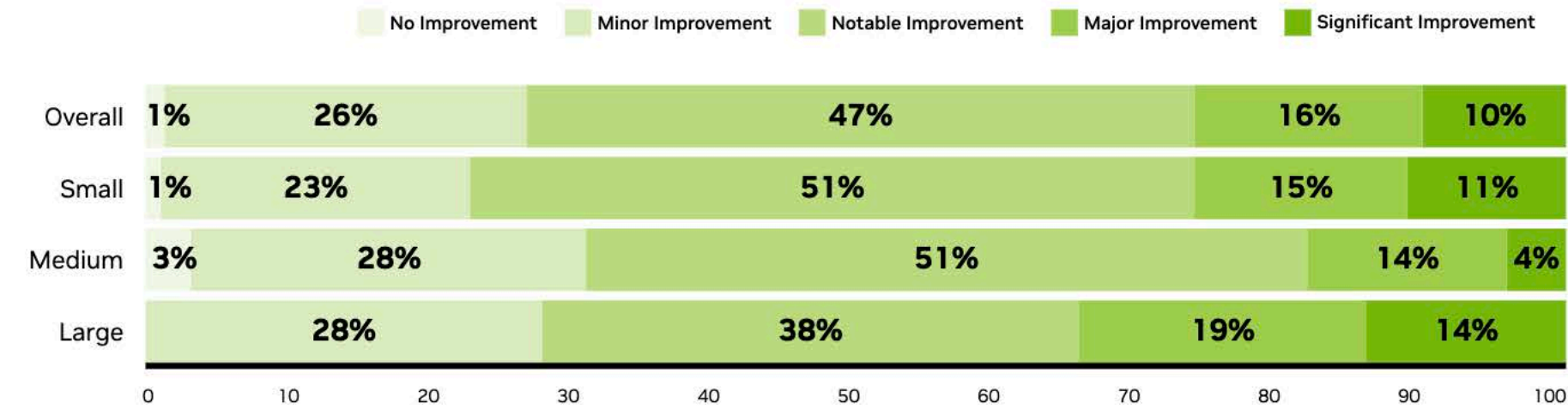
Universal Boost in Employee Productivity

As stated previously, telecommunications companies' biggest goal in deploying AI solutions is improving employee productivity. That goal has been achieved, with near-universal success.

Overall, 99 percent said that AI has driven productivity gains in the industry. Ten percent of respondents reported a significant impact, with employees able to accomplish things that weren't possible before AI. Another 16 percent said they'd seen major productivity gains that helped employees complete more tasks with higher quality in less time, freeing them up for higher-order tasks. Forty-seven percent reported notable productivity improvement (more tasks in less time with higher quality, leaving time to perform higher order tasks), while 26 percent noted minor improvements (completed more tasks in same time).

99% said that AI has boosted productivity in the industry.

AI's Impact on Enhanced Employee Productivity by Company Size



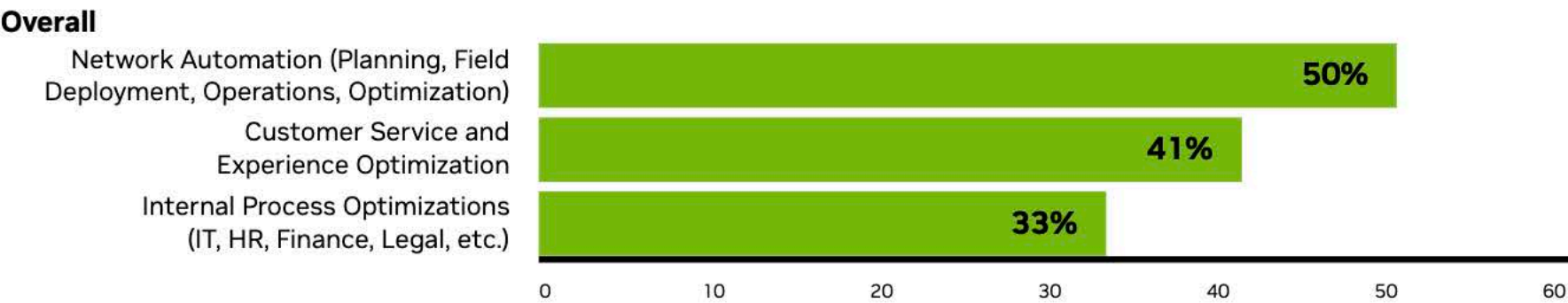
Return on Investment From Front and Back of the House

AI is improving the bottom line in telecommunications across three core domains: network infrastructure, customer care, and back-office operations.

The top overall ROI use case cited by respondents was network automation at 50 percent, followed by customer service and experience optimization at 41 percent, and internal process optimization at 33 percent. The diversity of responses speaks to how broadly AI is being used in telecommunications, from marketers using generative AI to create content to network engineers leveraging AI agents to correlate insights and troubleshoot in real time.

50% said network automation is their top ROI use case for AI.

Top 3 AI ROI Use Cases



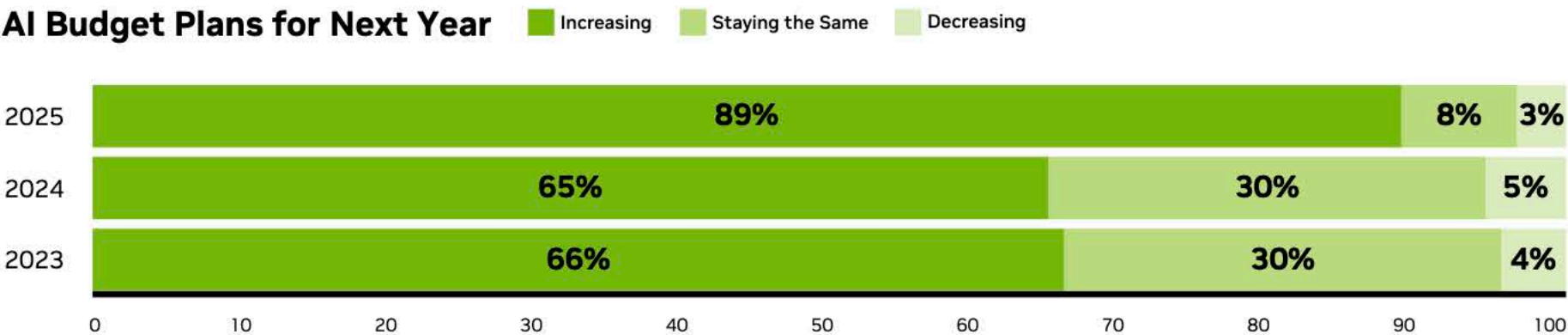
Increasing AI Budgets Across the Industry

The multi-year State of AI survey data shows AI's positive impact on revenue growth and cost reduction. Understandably, this corresponds with a drastic increase in respondents saying that their companies will increase their AI budget in the next year. Overall, 89 percent of respondents said their AI budget will increase in the next 12 months, up from 65 percent in last year's survey. On the flip side, only 8 percent said that their budget will stay the same, down from 30 percent last year.

More than half of respondents (54 percent) said that AI budgets would increase up to 10 percent from this year's levels. Another third (35 percent) said that budgets would increase substantially, more than 10 percent in the next 12 months.

89%
said their AI budget will increase in the next year.

AI Budget Plans for Next Year



Where will that investment go? Respondents spread their answers across the full AI lifecycle, from identifying new AI use cases, upskilling existing staff, and expanding access to AI infrastructure. Overall, the top two investment priorities cited by respondents were related to adopting and accelerating AI: Engaging third-party partners to help speed up AI adoption came in at 38 percent, and optimizing AI workflows and production cycles was second at 37 percent.

The top two investment priorities centered around adopting and accelerating AI.

A Promising Start for Agentic AI

A new question in the 2026 NVIDIA State of AI surveys evaluates the use of agentic AI in organizational operations. AI agents are advanced AI systems designed to autonomously reason, plan, and execute complex tasks based on high-level goals.

As stated previously, 48 percent of respondents in the total survey said that their organization is either using or assessing agentic AI. Overall, 23 percent of respondents from the whole survey sample said that AI agents have already been deployed within their company, with the rest still in the assessment and pilot phase. For respondents who are still assessing, 15 percent said AI agents would be deployed in the next year, while 10 percent said it would be two or more years.

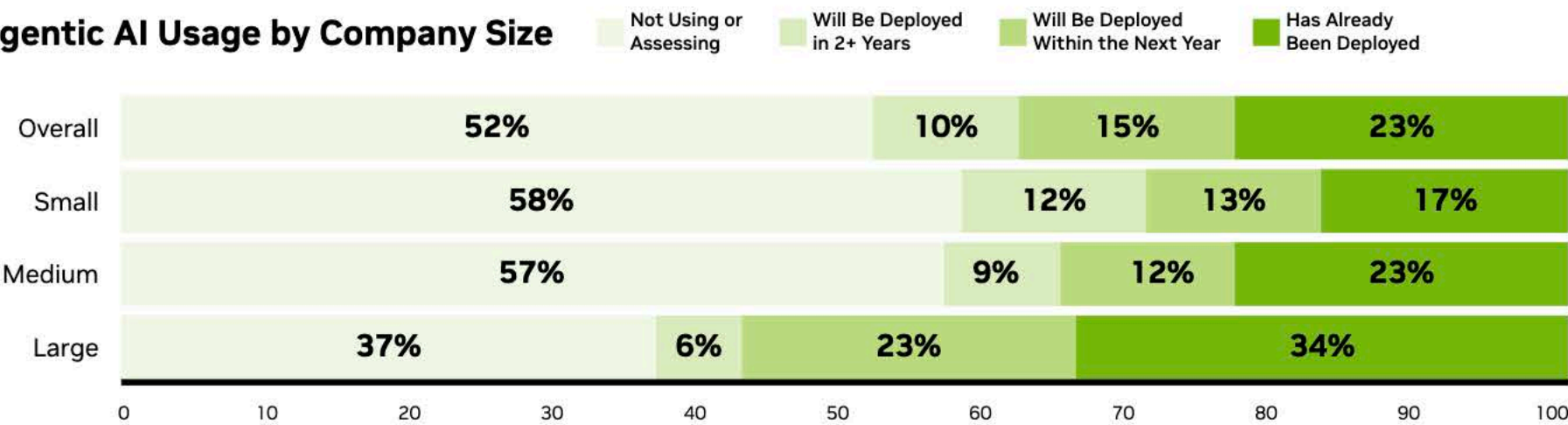
48%

said their company is using or assessing agentic AI.

23%

reported that AI agents have already been deployed within their company.

Agentic AI Usage by Company Size



Targeting Network Automation With Agentic AI

For respondents who said their companies are either using or assessing AI agents, the top use case, cited by 41 percent, was network automation, including planning, field deployment, operations, and optimization. Fifty-three percent of respondents from telecom operators and MSOs using or assessing AI agents said they were using agents for network automation.

The second highest use case cited was customer service and experience automation at 35 percent, with internal process optimization third at 28 percent.

Among respondents using or assessing agentic AI, 37 percent cited data-related issues as the top challenge. Lack of internal skills and experts, along with performance and reliability issues, were also noted as top challenges at 29 percent each.

41%

reported that network automation was their top use case for agentic AI.

The Importance of Inference

AI inference is the process where a trained AI model generates new outputs by reasoning and making predictions on new data, classifying inputs and applying learned knowledge in real time. Inference differs from model training as it's an ongoing process and cost. Every time a model is queried, inference takes place.

Inference is a multi-faceted aspect of AI, balancing accuracy and speed with model and infrastructure performance, power usage, and the cost efficiency of the entire system. When asked about the most important factors for their organizations when running inference, 45 percent of respondents said that cost efficiency and total cost of ownership were the most important factors to consider. Another 45 percent said that a top factor to consider was the flexibility of where to deploy models, whether in the cloud or on premises. Thirty-nine percent stated that latency, accuracy, and throughput were also some of their top factors to consider for inference.

Telecommunications companies are showing healthy optimism around hosting AI inference at the edge of the network, reflecting the same economic and infrastructure drivers influencing AI deployment decisions overall. A significant majority of respondents are either already investing or planning to do so in the near term. Forty percent said they're currently investing in compute at the edge for inference, while another 38 percent said that, while they're not currently investing, they plan to do so in the near future. Among operators and MSOs, 49 percent said they're currently investing at the edge, with another 37 percent in the planning stages.

In terms of where organizations are running their AI workloads and inference, 55 percent said that they run hybrid architectures, utilizing both cloud and on-premises systems. This number is in line with other industries, with hybrid growing significantly in each industry. Another 31 percent run their AI workloads in the cloud, with 14 percent saying they are on premises only.

Looking Forward

Strong generative AI adoption is leading transformation, and the telecommunications industry is seeing early traction with integrating agentic AI, not just for network operations, but also for customer experiences and employee-facing operations. The rise of agentic AI in the industry will be a critical innovation to watch in all three areas.

The future is an exciting time for the telecommunications industry. AI is driving a new wave of innovation, opening a clear path toward delivering new AI services, moving from automated to autonomous networks, and building AI-native wireless networks that will form the foundation of 6G. Shaping a future of abundant growth, AI is creating new revenue channels in diverse markets, while doing the heavy lifting of reducing costs within the industry.

**45%**

said that cost efficiency and TCO were the top factors to consider when running inference.

**40%**

indicated they're already investing in compute at the edge of the network.

Methodology

Fielded from September to November 2025, this survey garnered responses from 1,038 respondents. It included a 60/40 split between management (including executives) and AI practitioners, including engineers, network operators, architects, cloud ops, and IT. The survey also included a range of industry segments, including internet service providers, independent software vendors, network equipment providers, telecommunications consulting services, telecommunications operators (including multiple system operators), and telecommunications system integrators. Telecom operators made up 27 percent of overall respondents.

Respondents came from companies of varying sizes, with approximately half reporting annual revenue of over \$1 billion and over 1,000 employees. The online survey responses were sourced from NVIDIA's distribution lists and through social media globally and in China and Japan through a third-party agency.

Ready to Get Started?

To learn more about how telecom companies are using AI:
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