

Enabling AI Transformation with Intelligent Data Infrastructure

Challenges, Best Practices, and Business Outcomes from AI Leaders



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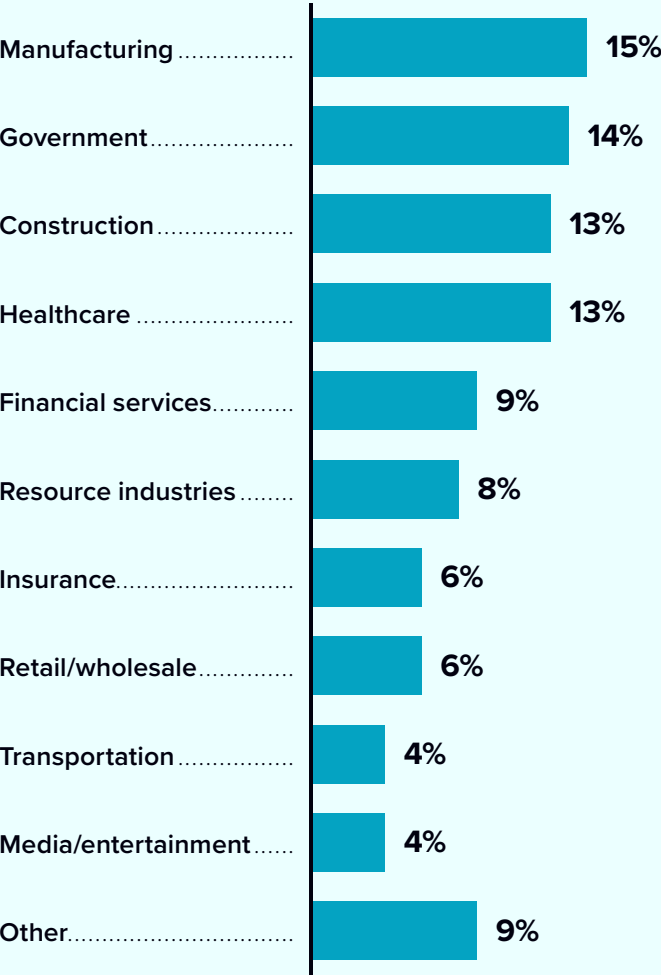
In This InfoBrief

In January, 2024 IDC conducted a global survey of senior decision makers involved in AI initiatives at their organizations.

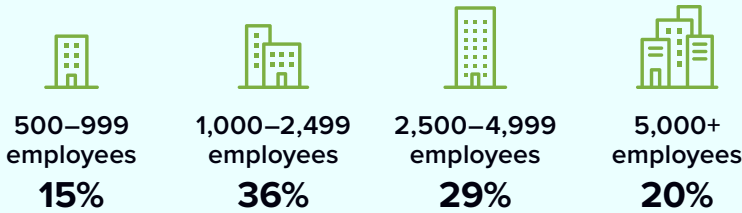
Respondents were asked a series of questions about aspects of their AI journeys, including overall goals, organizational approach, data architecture, challenges along the way, and important business outcomes they have realized through AI. This IDC InfoBrief summarizes the topline results of this survey.

Respondent Profile

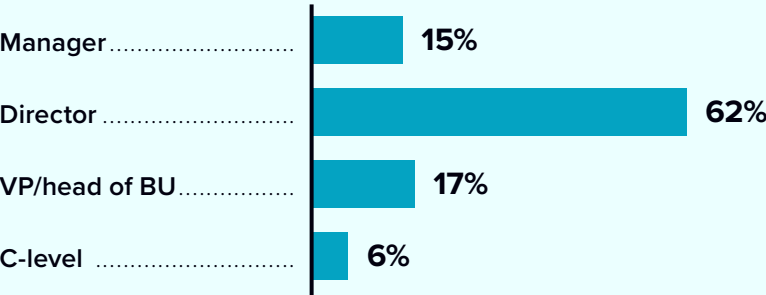
Primary Industry



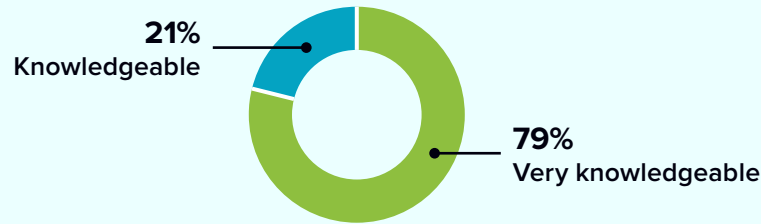
Company Size (WW Employees)



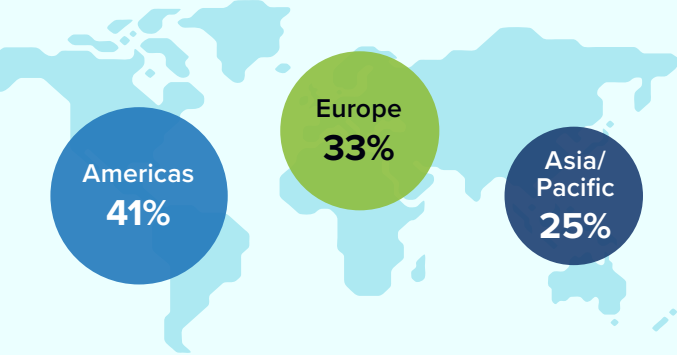
Seniority



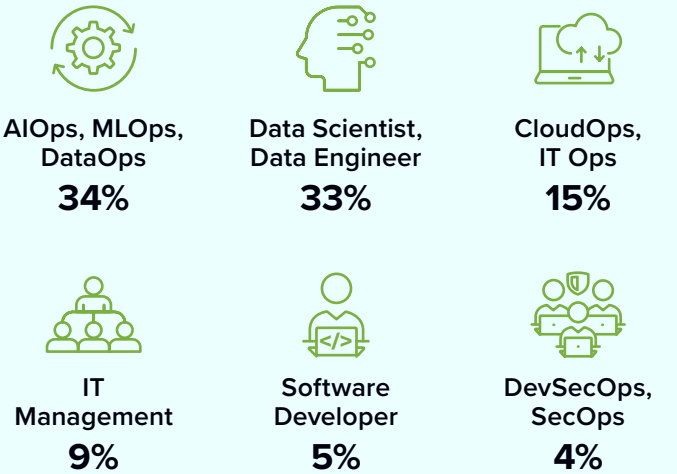
Knowledge of AI Initiatives



Region

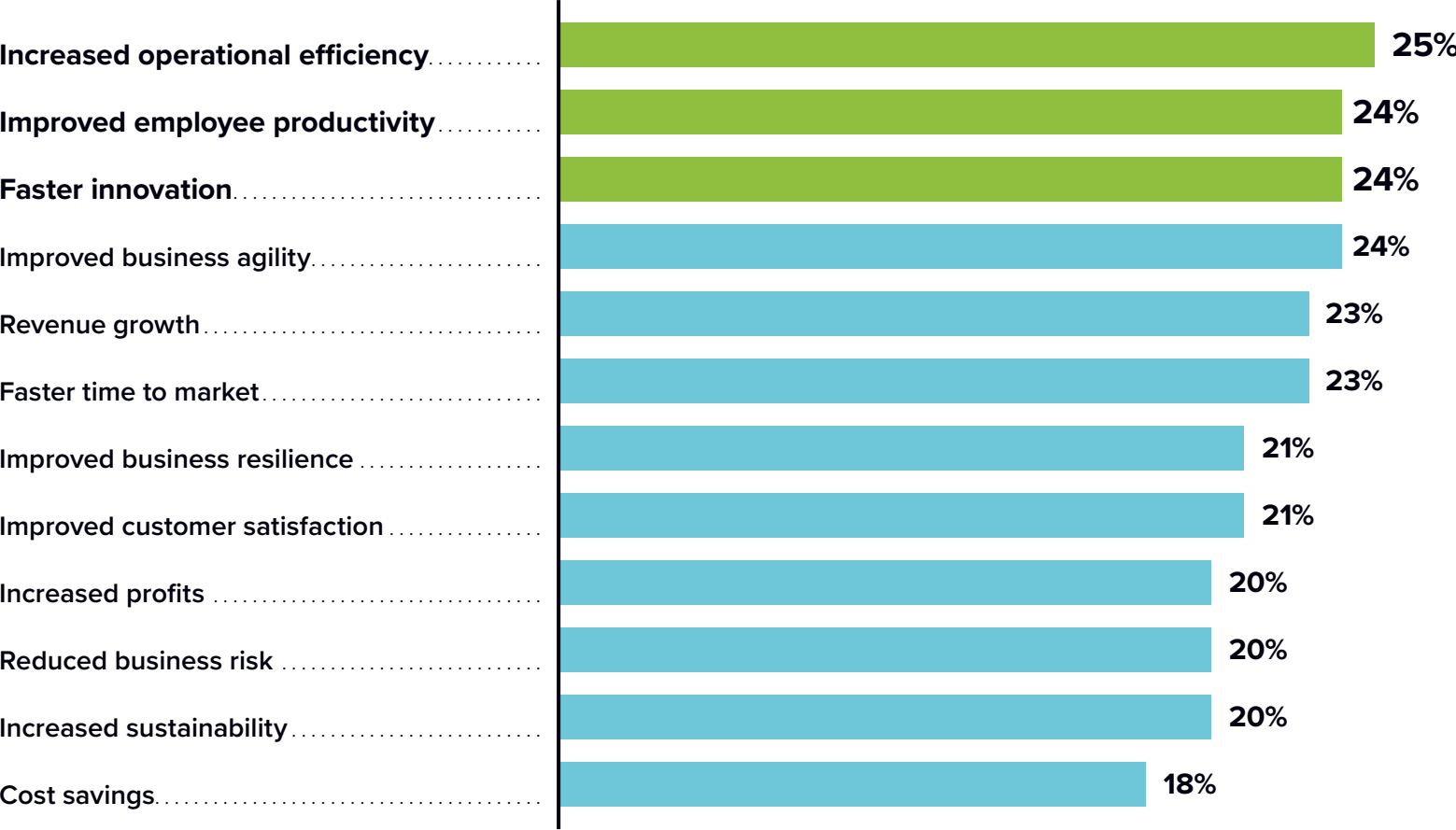


Primary Role



Business Drivers of AI

Which of the following were the **three most important business outcomes** that your organization sought to achieve from its artificial intelligence (AI) initiatives in the past 12 months?



n = 1,220; Source: IDC's AI Transformation Study, January 2024

After naming the top 3 most important business outcomes expected from AI, respondents were asked to **estimate the percentage by which they improved in these business outcomes** over the past 12-month period (results on next slide).

Improved Business Outcomes Due to AI

What **annual percentage change** in the past 12 months did your organization experience in each of the following categories as a direct consequence of these AI initiatives?



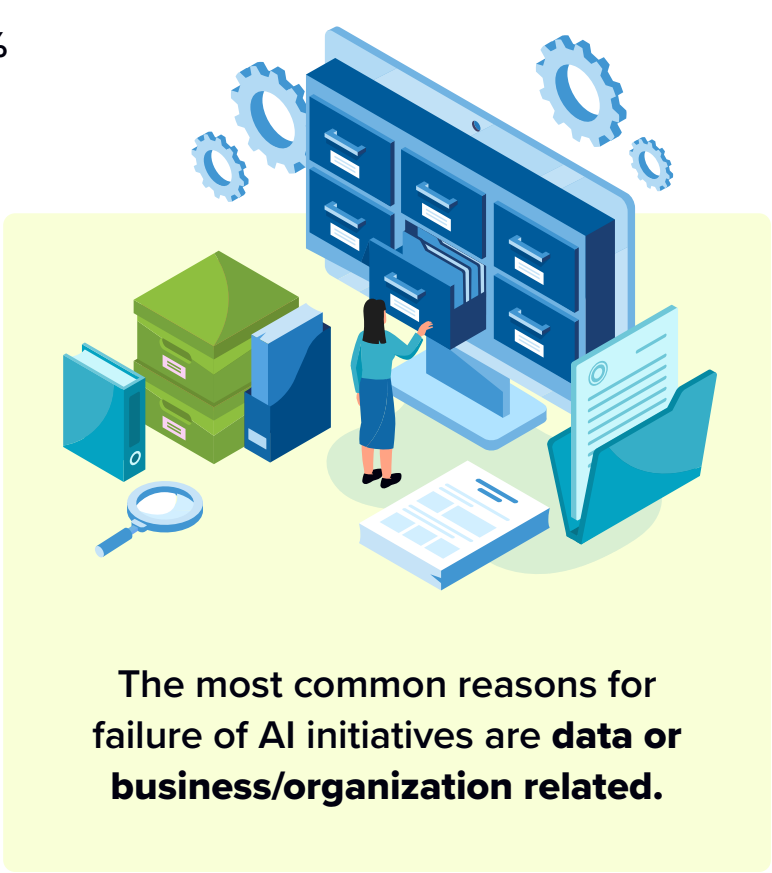
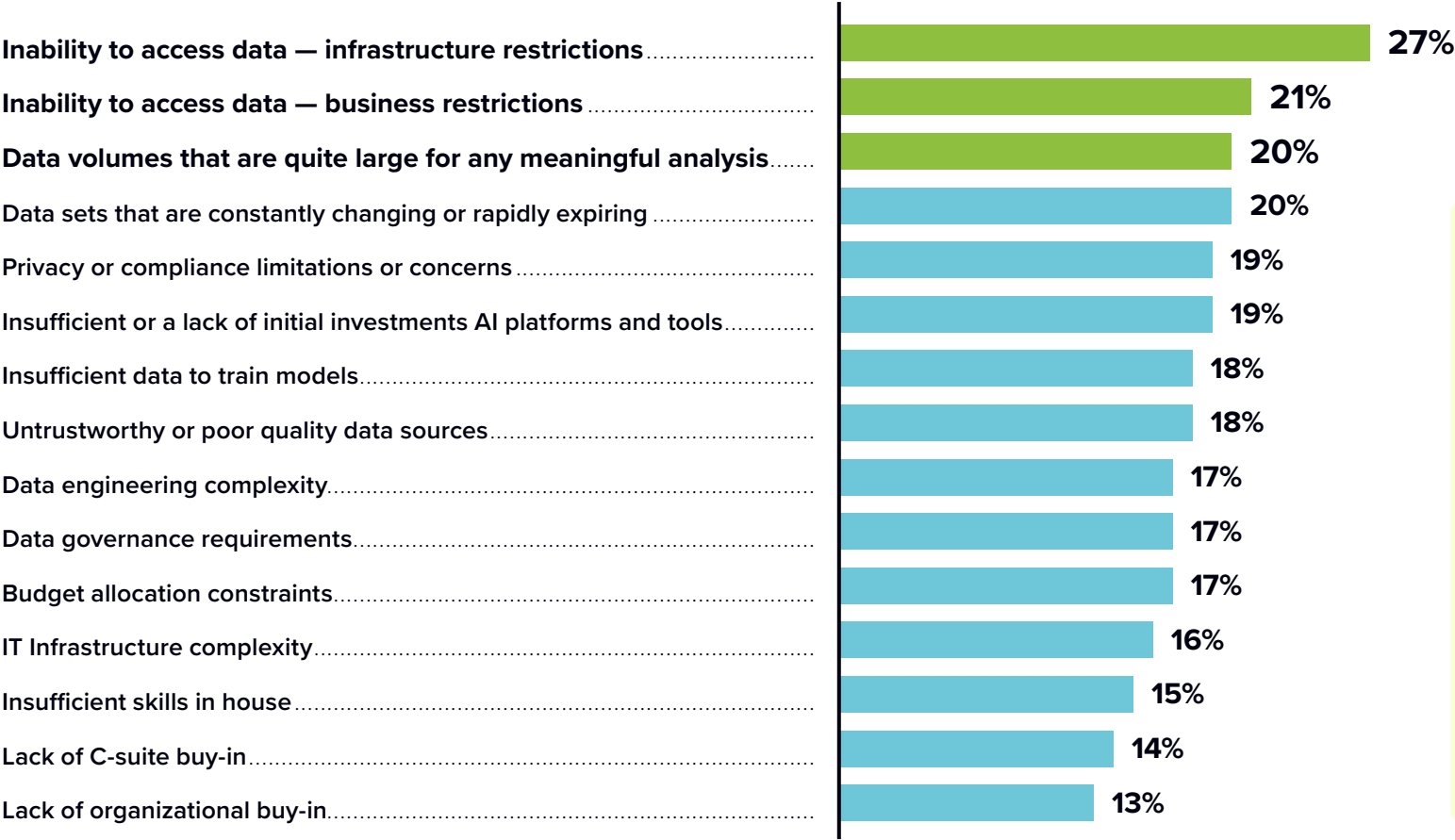
Respondents indicated a **dramatic 12-month improvement** in their three most important business outcomes.

On average, all expected business outcomes **improved by 20% or more** in the 12-month period.

n = 1,220; Source: IDC's AI Transformation Study, January 2024

Reasons for AI Initiative Failure

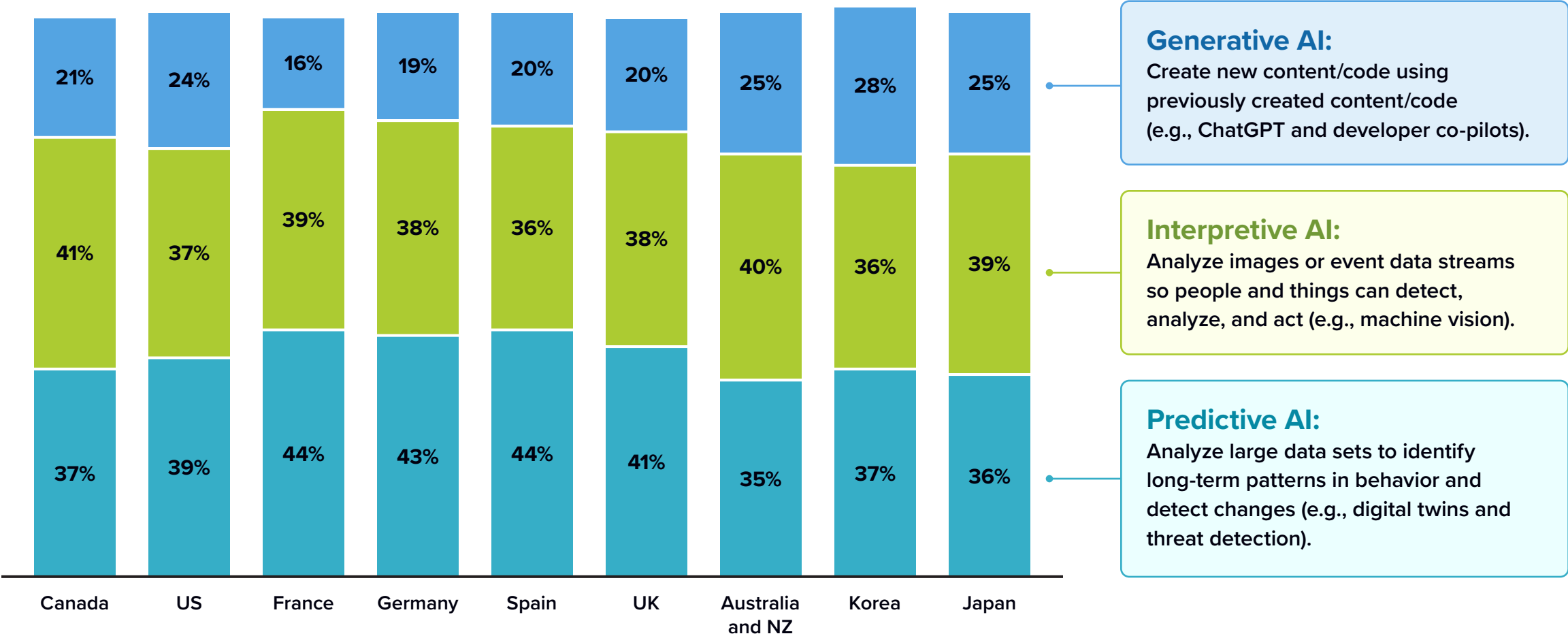
In your view, what are the **main reasons for AI initiatives failing** to meet their initial expectations or objectives?



n = 1,158; Source: IDC's AI Transformation Study, January 2024

Types of AI Deployed

What proportion of the significant AI initiatives underway use each of these types of AI?



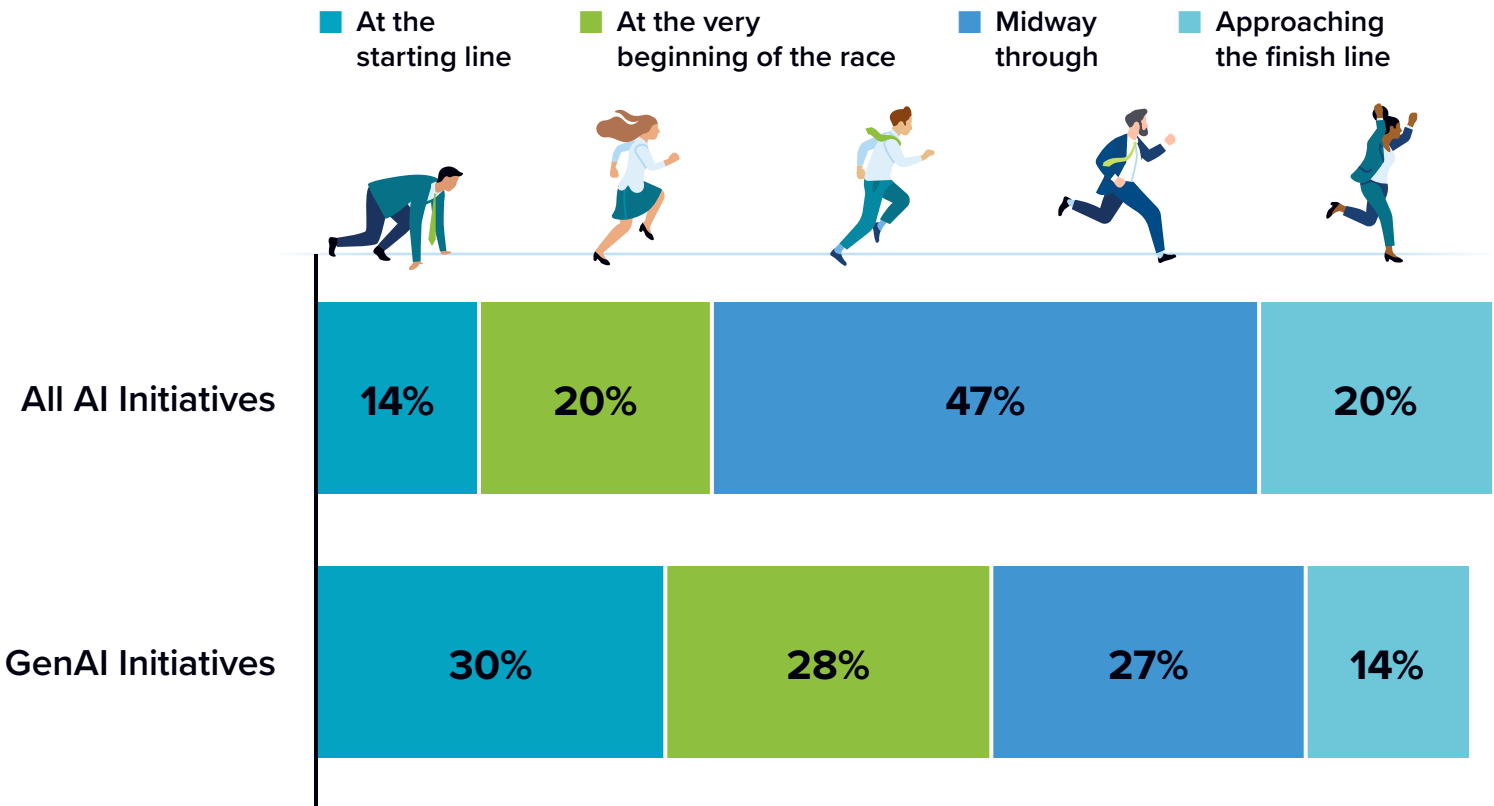
Note: Totals may not add up to 100% due to rounding. n = 102 (Canada), n = 402 (US), n = 102 (France), n = 102 (Germany), n = 100 (Spain), n = 104 (UK), n=102 (Australia and NZ), n = 105 (Korea), n = 101 (Japan); Source: IDC's *AI Transformation Study*, January 2024.

For an accessible version of the data in this figure, see [this figure's data](#) in the Appendix.

AI Preparedness

Shifting to how prepared the organization is to execute AI initiatives, how far along is the organization in having an overall AI strategy — determining how and where to invest in artificial intelligence across the enterprise?

And how far along is the organization in determining the role and potential of generative AI within the overall AI strategy?



Organizations are at **varying stages of progress** in their AI initiatives.

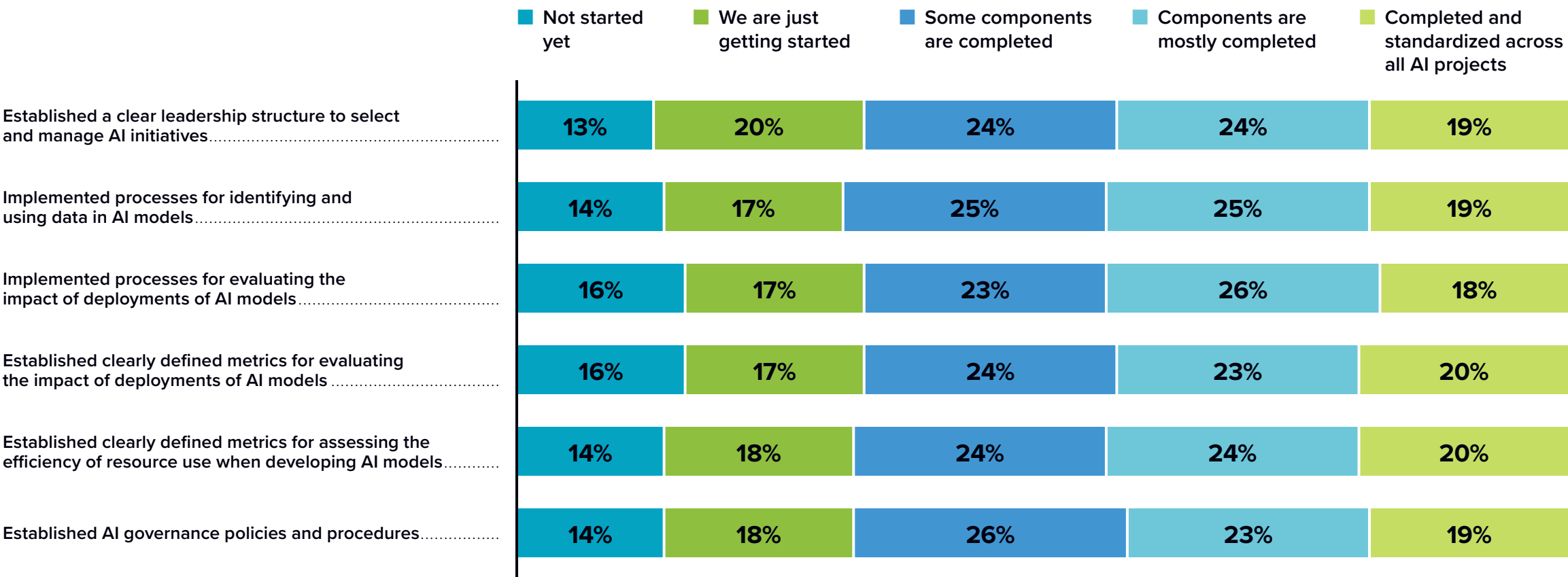
As expected, **GenAI initiatives** are in the earlier stages.

The following two slides show additional details of progress organizations reported in their AI journey.

Note: Totals may not add up to 100% due to rounding. n = 1,220; Source: IDC's AI Transformation Study, January 2024. For an accessible version of the data in this figure, see [this figure's data](#) in the Appendix.

AI Preparedness (continued)

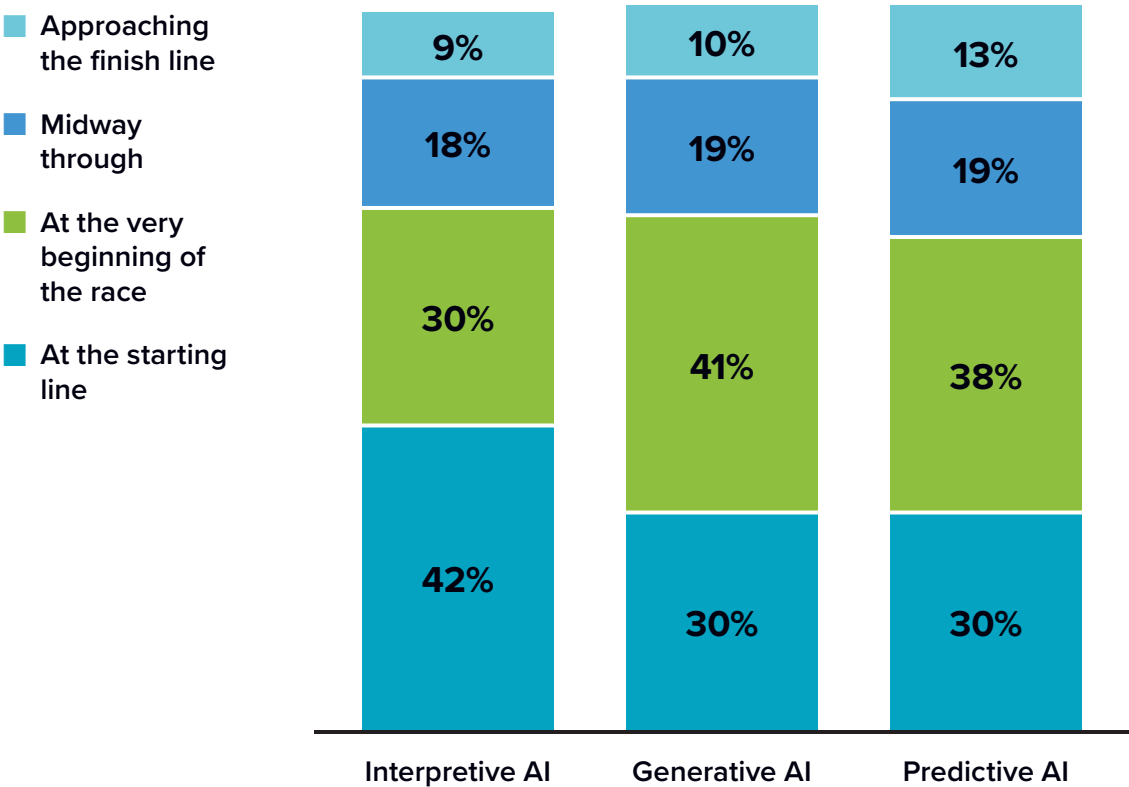
An AI strategy will have many components. How developed are each of the components that contribute to the overall AI strategy?



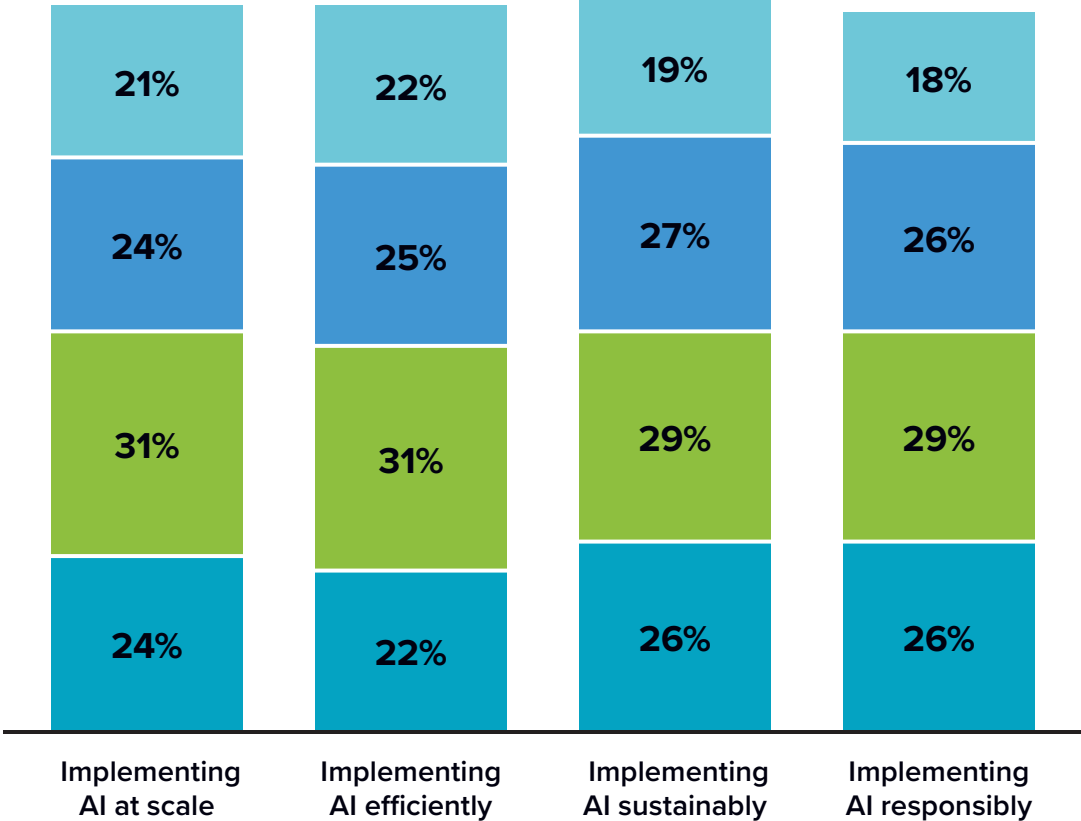
n = 1,220; Source: IDC's AI Transformation Study, January 2024. For an accessible version of the data in this figure, see [this figure's data](#) in the Appendix.

Unlocking AI Potential

How far do you feel the organization has come in unlocking the potential of the following?



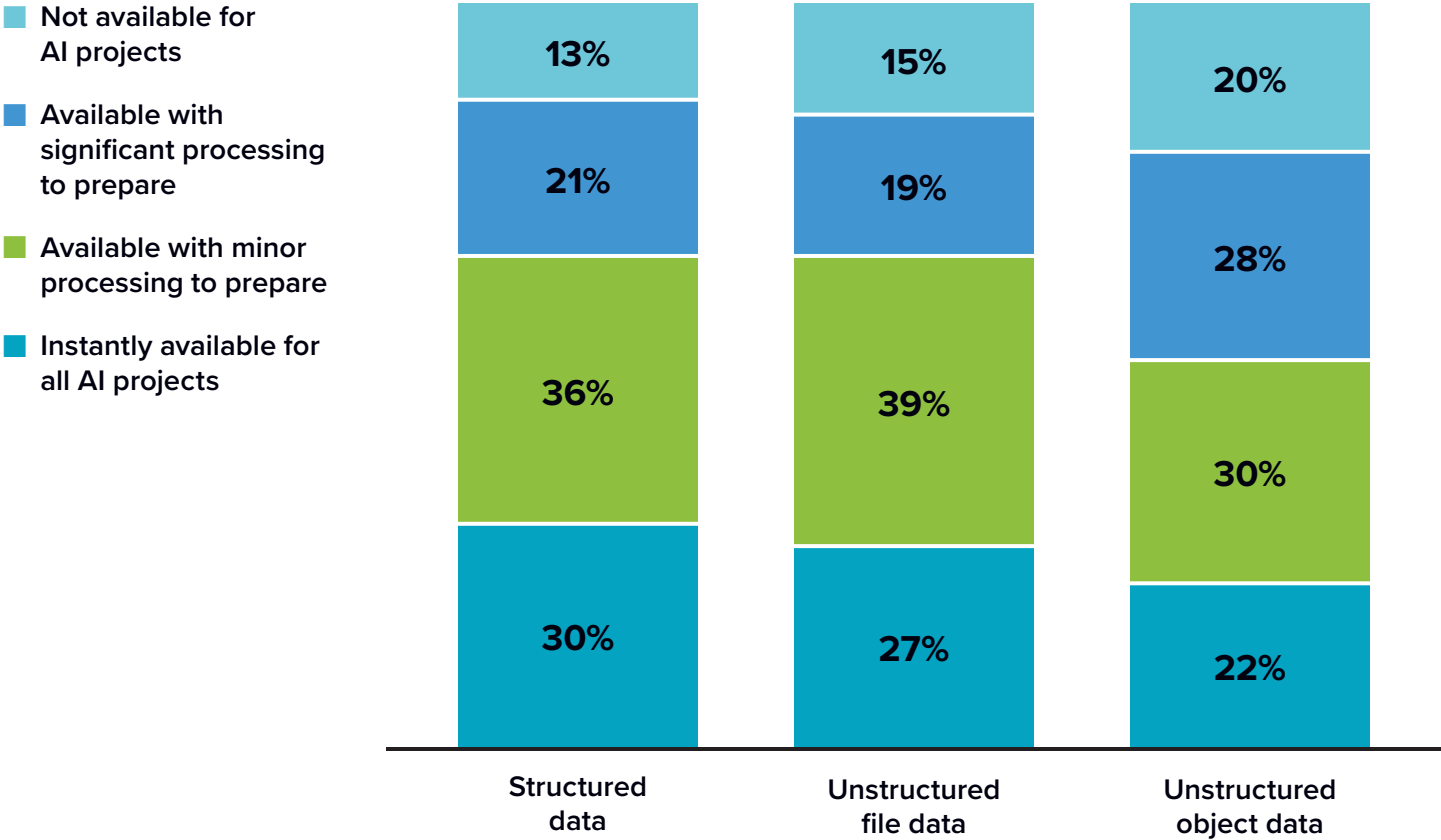
How far do you feel the organization has come in addressing each of these issues in the use of AI?



Note: Totals may not add up to 100% due to rounding. n = 1,220; Source: IDC's *AI Transformation Study*, January 2024. For an accessible version of the data in this figure, see [these figures' data](#) in the Appendix.

Data Availability for AI

How available are each of the following types of organizational data for use in projects using AI?

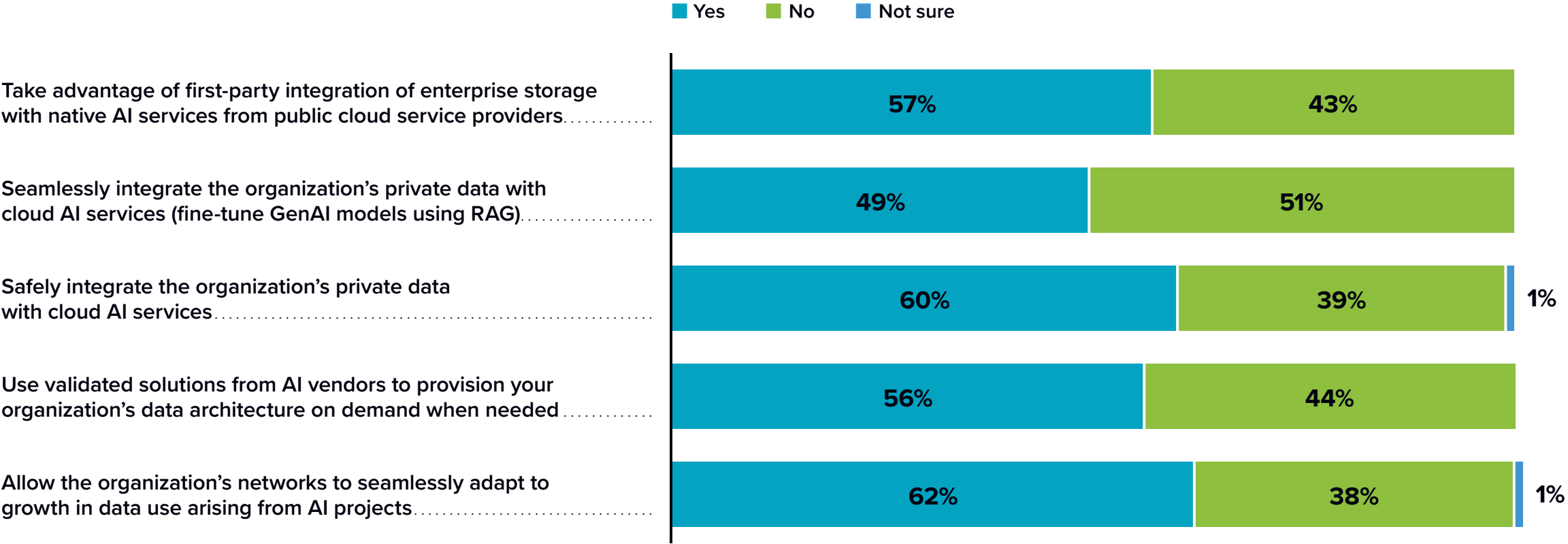


While more than half of the organizations report that data is available for AI initiatives, many also report **shortcomings to the organization's overall data architecture** that may limit its use (next slide).

n = 1,220; Source: IDC's *AI Transformation Study*, January 2024. For an accessible version of the data in this figure, see [this figure's data](#) in the Appendix.

Data Architecture Readiness for AI

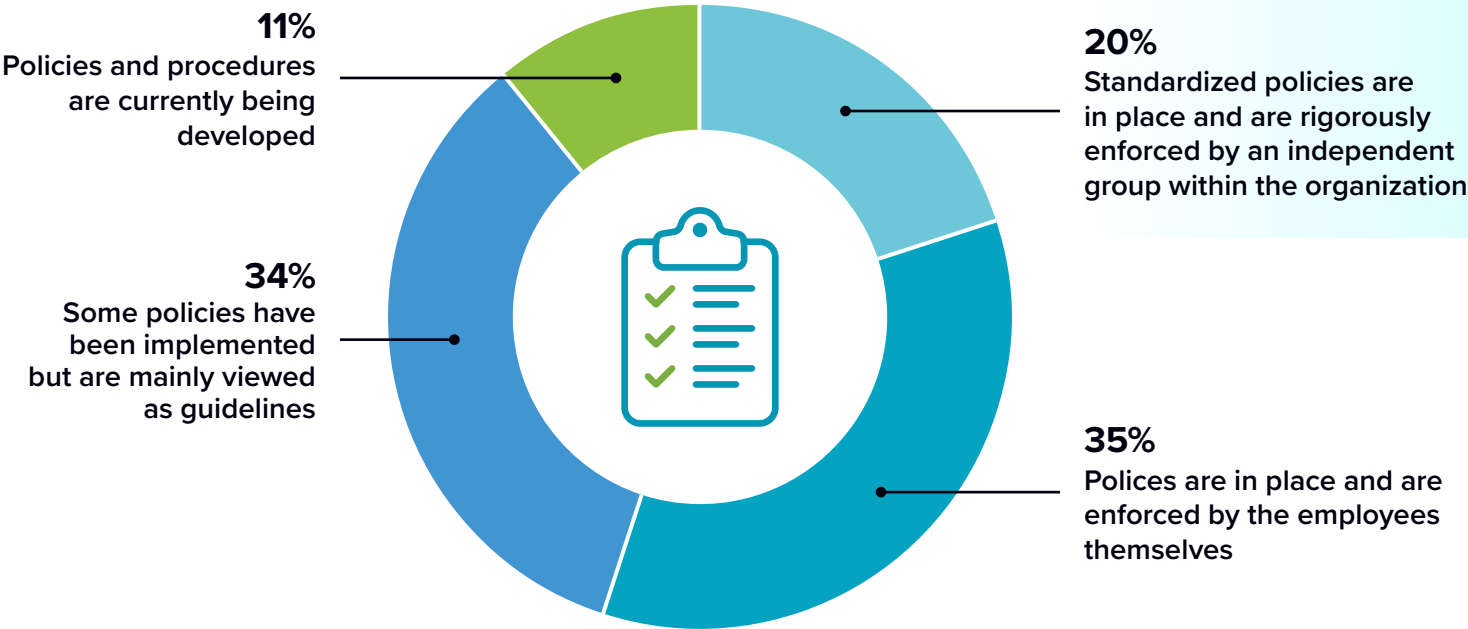
Does your organization’s current data architecture allow you to do the following?



Note: Totals may not add up to 100% due to rounding. n = 1,220; Source: IDC’s *AI Transformation Study*, January 2024. For an accessible version of the data in this figure, see [this figure's data](#) in the Appendix.

Policies in Place to Ensure AI is Used Responsibly and Safely

Overall, how would you assess where your organization’s current policies and procedures are to ensure AI is used responsibly and safely?



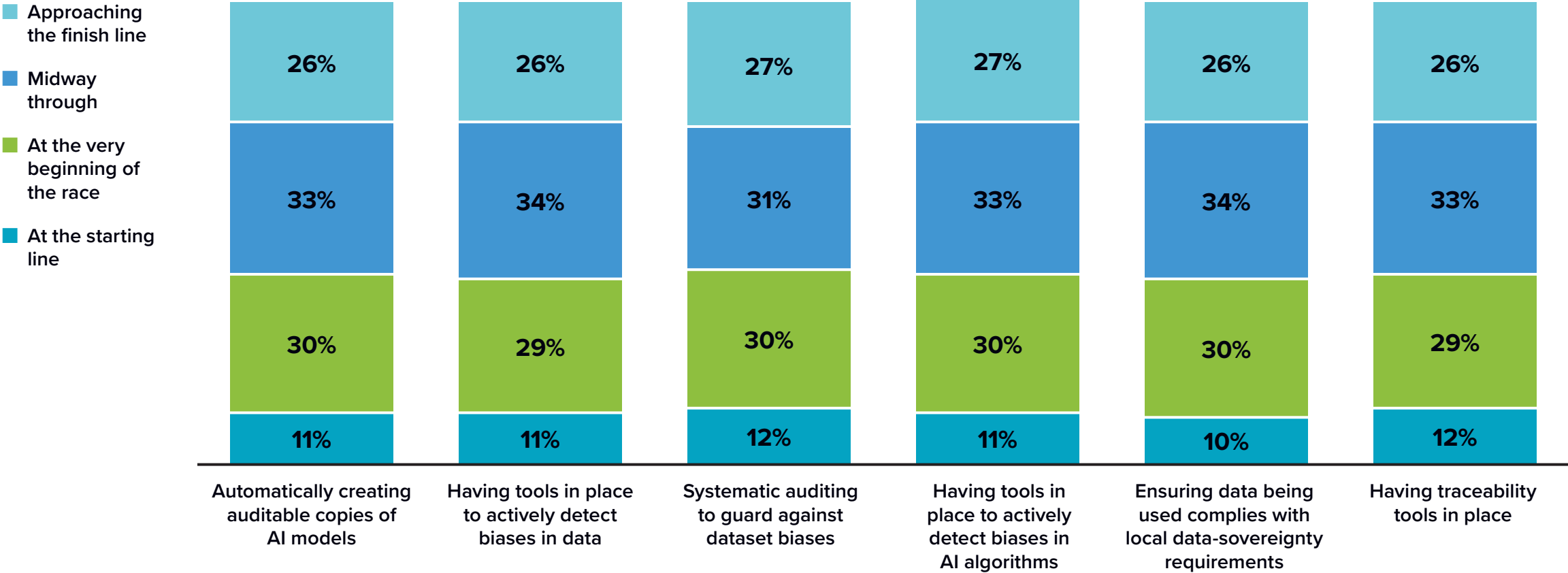
Surprisingly few organizations have standardized policies in place to ensure AI is used responsibly and safely.

The following slide reports similar progress for specific governance-related challenges.

n = 1,220; Source: IDC's AI Transformation Study, January 2024.

Governance Readiness for AI

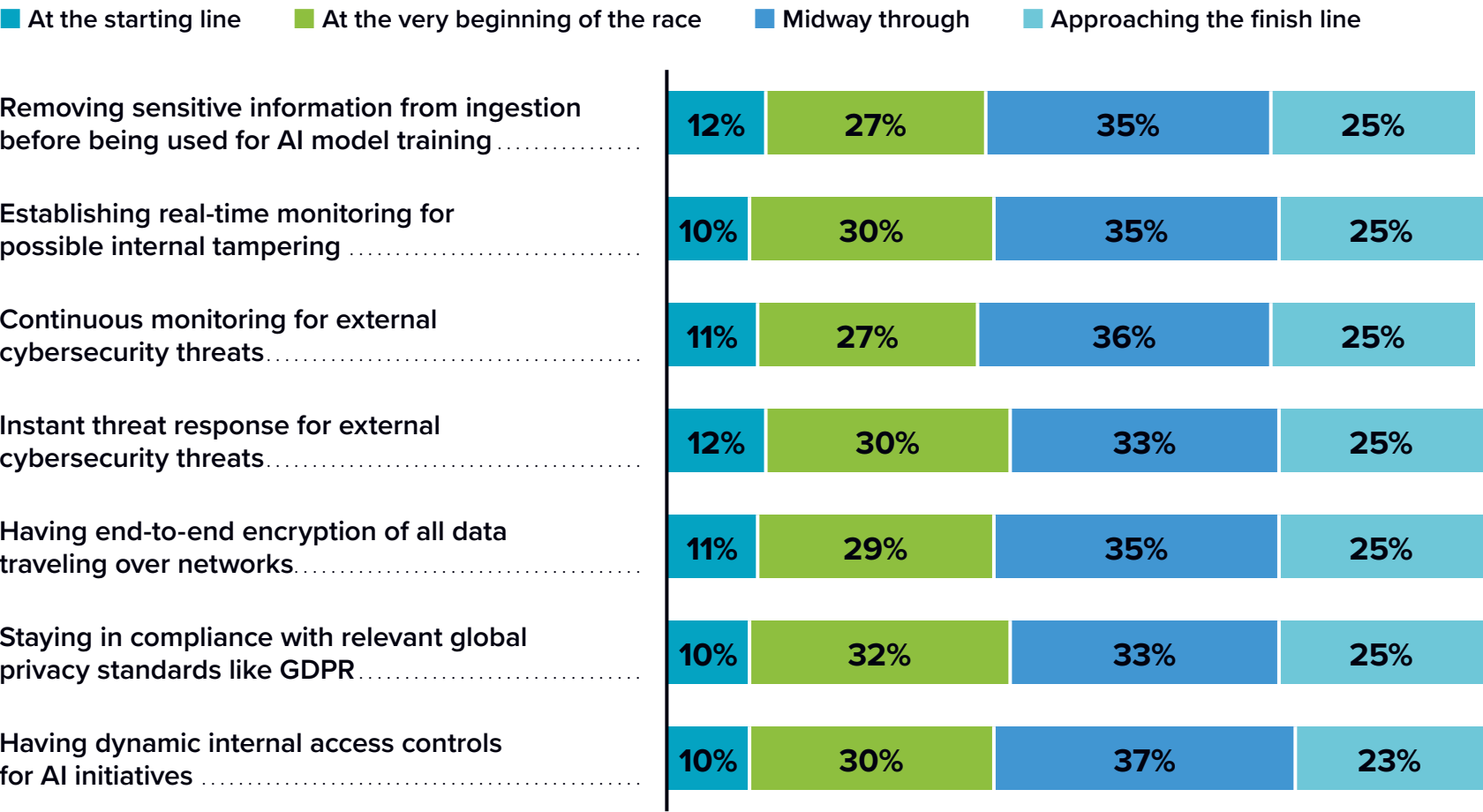
How far along do you feel the organization has come in addressing these governance challenges using AI?



Note: Totals may not add up to 100% due to rounding. n = 1,220; Source: IDC's *AI Transformation Study*, January 2024. For an accessible version of the data in this figure, see [this figure's data](#) in the Appendix.

Data and Security Challenges with AI

How far do you feel the organization has come addressing these data security and privacy challenges in using AI?

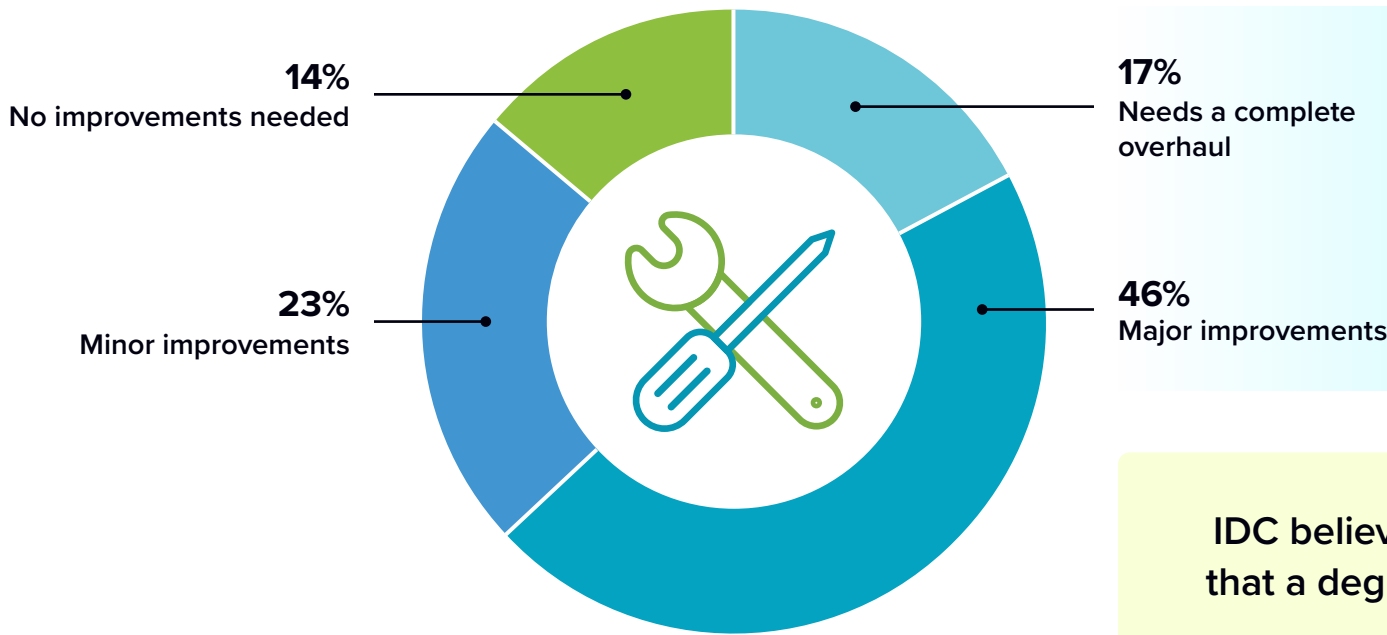


Most organizations have additional work needed to address important security and privacy challenges: **ensuring that sensitive data remains private**, that models are **not tampered with**, and that **all AI initiatives are compliant** with global privacy standards.

Note: Totals may not add up to 100% due to rounding. n = 1,220; Source: IDC's *AI Transformation Study*, January 2024. For an accessible version of the data in this figure, see [this figure's data](#) in the Appendix.

Storage Optimization for AI Must Improve

How much improvement is needed to ensure that storage is optimized and right sized across the enterprise for use in AI?



n = 1,220; Source: IDC's AI Transformation Study, January 2024.

One of the starkest takeaways of this survey is the **over 63%** of respondents who say their storage needs major improvement or a complete overall to meet the needs of AI.

IDC believes that this survey result confirms the premise that a degree of **right sizing and optimization of storage is required for AI benefits to follow.**

Depending on the organization, this right sizing will often mean a **reduction of data silos and incorporation of comprehensive hybrid, unified, and multicloud storage approaches.**

AI Team Collaboration

What is the current level of collaboration in your organization among these three functions in managing, executing, and operationalizing AI initiatives?

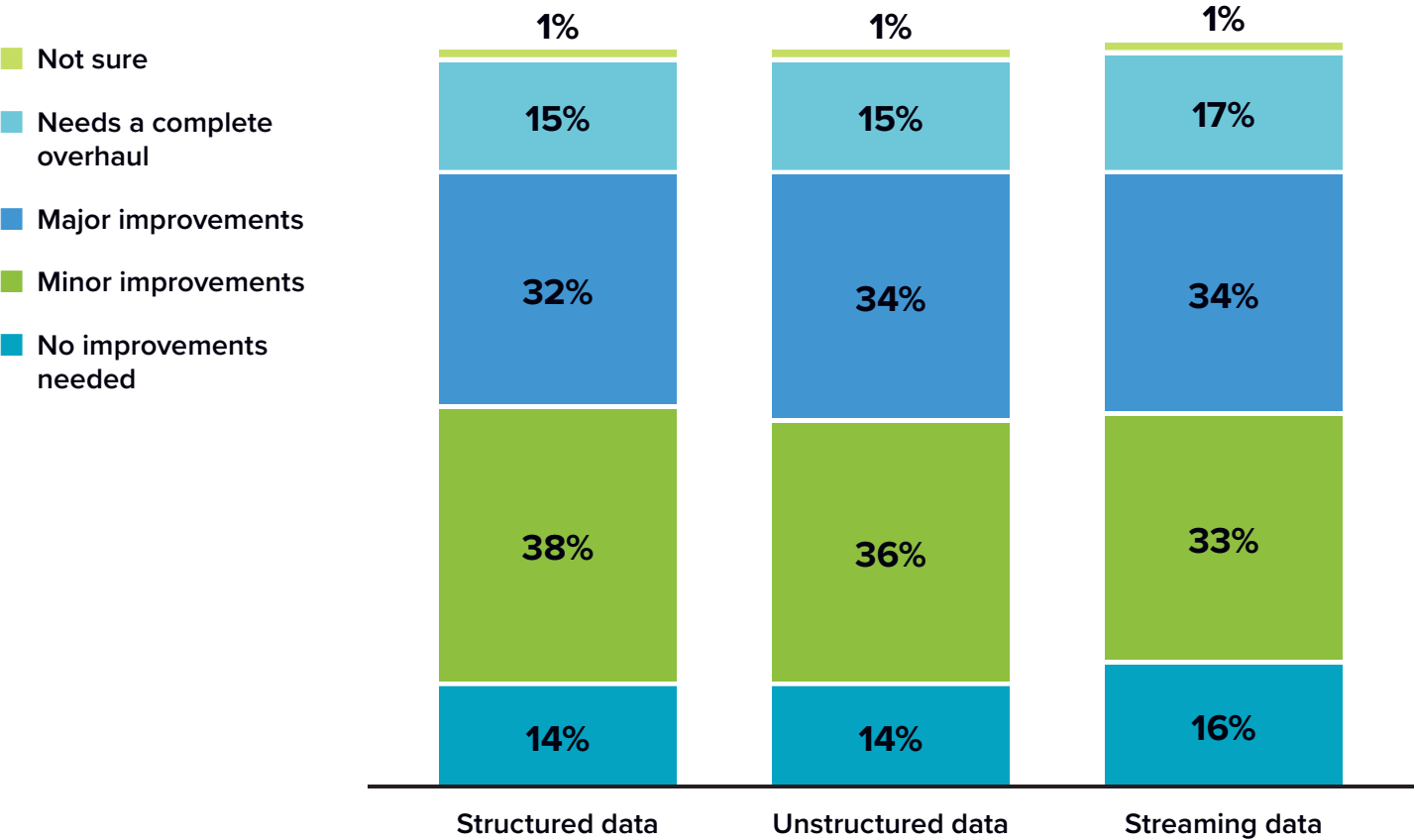


Collaboration among ITOps, data scientists, and developers has clearly begun and is another important requirement for AI success.

Note: Totals may not add up to 100% due to rounding. n = 1,220; Source: IDC's *AI Transformation Study*, January 2024. For an accessible version of the data in this figure, see [this figure's data](#) in the Appendix.

Data Management for AI Must Improve

Overall, how much improvement is needed so that IT Ops teams can better manage and optimize these types of data for use in AI?



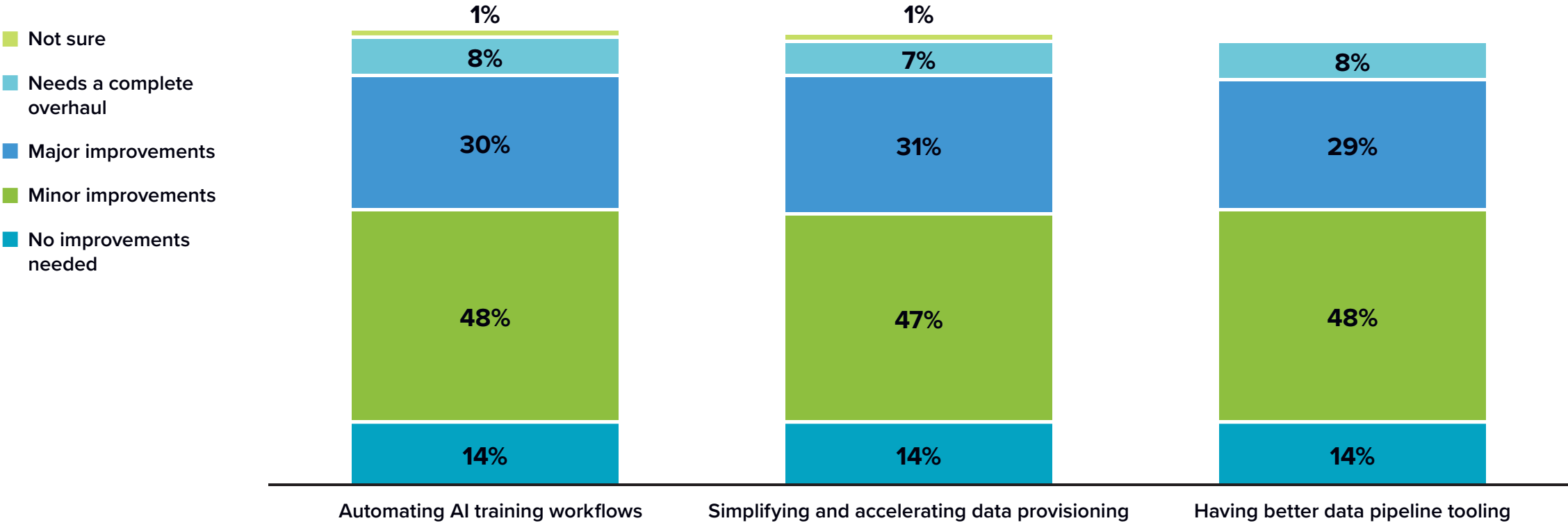
The next three slides illustrate that key AI stakeholders have important unmet needs they must meet in order to achieve AI success.

Improvements are needed to better optimize data, improve productivity, and enable the development of AI-enabled enterprise applications.

Note: Totals may not add up to 100% due to rounding. n = 1,220; Source: IDC's *AI Transformation Study*, January 2024. For an accessible version of the data in this figure, see [this figure's data](#) in the Appendix.

Improvements Needed to Maximize Data Science Productivity for AI

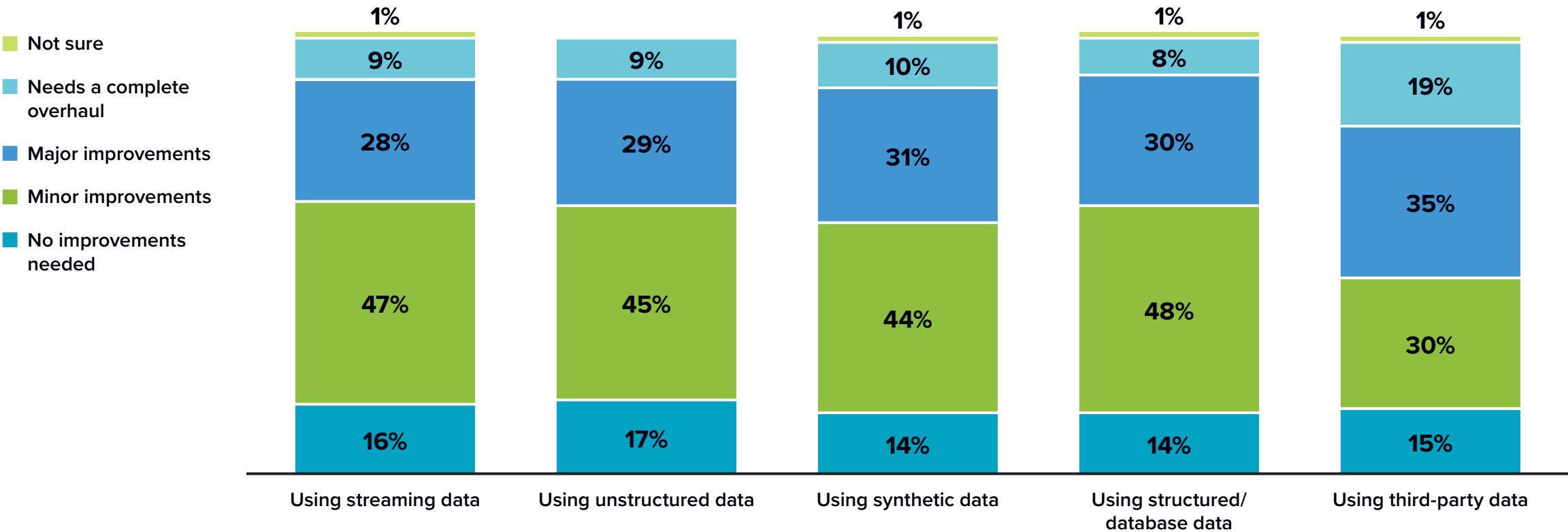
How much improvement is needed in each of these areas to ensure that data scientists and engineers maximize their productivity and time to value in using AI?



Note: Totals may not add up to 100% due to rounding. n = 1,220; Source: IDC's *AI Transformation Study*, January 2024. For an accessible version of the data in this figure, see [this figure's data](#) in the Appendix.

Improvements Needed to Ensure Developers Can Leverage Data for Applications with Embedded AI

How much improvement is needed to ensure that developers can effectively leverage these types of data for applications with embedded AI?



Note: Totals may not add up to 100% due to rounding. n = 1,220; Source: IDC's *AI Transformation Study*, January 2024. For an accessible version of the data in this figure, see [this figure's data](#) in the Appendix.

Key Takeaways

- ✔ Despite indicating a range of maturity on the AI adoption journey, these global respondents cited **dramatic improvements in an array of business outcomes tied directly to traditional and GenAI initiatives.**
- ✔ Improvements ranged from increased revenue or profits, reduced operational costs, reduced business risk, increased efficiencies, increased innovation, increased business resilience, and increased sustainability. Of the 12 most important AI-related business outcomes cited by these organizations, **respondents reported improvement in all of them by an average of 20% or more over a 12-month period.** These results are nothing short of astounding.
- ✔ **Progression on the AI journey is not simple or uncomplicated, however.** It is measured along several dimensions, including infrastructure (data architecture and storage preparedness), policy (standardization and governance), and stakeholder enablement and collaboration (notably among ITOps, data scientist, and developer personas).
- ✔ **This study confirms without question that AI benefits are real, pervasive, and substantial** and that organizations on the AI path to realize these benefits now and in the future will need to tackle the necessary infrastructure, organization, and policy challenges that AI success demands. With this success comes the potential for unprecedented transformation.

Appendix: Supplemental Data

The tables in this appendix provide accessible versions of the data for the complex figures in this document. Click “Return to original figure” below the tables to get back to the original data figure.

TYPES OF AI DEPLOYED

	Canada	US	France	Germany	Spain	UK	Australia and NZ	Korea	Japan
Generative AI	21%	24%	16%	19%	20%	20%	25%	28%	25%
Interpretive AI	41%	37%	39%	38%	36%	38%	40%	36%	39%
Predictive AI	37%	39%	44%	43%	44%	41%	35%	37%	36%

Note: Totals may not add up to 100% due to rounding. n = 102 (Canada), n = 402 (US), n = 102 France, n = 102 (Germany), n = 100 (Spain), n = 104 (UK), n = 102 (Australia and NZ), n = 105 (Korea), n = 101 (Japan); Source: IDC’s *AI Transformation Study*, January 2024.

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AI PREPAREDNESS

	All AI Initiatives	GenAI Initiatives
At the starting line	14%	30%
At the very beginning of the race	20%	28%
Midway through	47%	27%
Approaching the finish line	20%	14%

Note: Totals may not add up to 100% due to rounding. n = 1,220; Source: IDC’s *AI Transformation Study*, January 2024.

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AI PREPAREDNESS (CONTINUED)

	Not started on yet	We are just getting started	Some components are complete	Components are mostly completed	Completed and standardized across all AI projects
A clear leadership structure to select and manage AI initiatives	13%	20%	24%	24%	19%
Implemented processes for identifying and using data in AI models	14%	17%	25%	25%	19%
Implemented processes for evaluating the impact of deployments of AI models	16%	17%	23%	26%	18%
Established clearly defined metrics for evaluating the impact of deployment of AI models	16%	17%	24%	23%	20%
Established clearly defined metrics for assessing the efficiency of resource use when developing AI models	14%	18%	24%	24%	20%
Established AI governance policies and procedures	14%	18%	26%	23%	19%

n = 1,220; Source: IDC’s *AI Transformation Study*, January 2024.

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Appendix: Supplemental Data (continued)

UNLOCKING AI POTENTIAL

	At the starting line	At the very beginning of the race	Midway through	Approaching the finish line
Interpretive AI	42%	30%	18%	9%
Generative AI	30%	41%	19%	10%
Predictive AI	30%	38%	19%	13%
Implementing AI at scale	24%	31%	24%	21%
Implementing AI efficiently	22%	31%	25%	22%
Implementing AI sustainably	26%	29%	27%	19%
Implementing AI responsibly	26%	29%	26%	18%

Note: Totals may not add up to 100% due to rounding. n = 1,220; Source: IDC's *AI Transformation Study*, January 2024.

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DATA AVAILABILITY FOR AI

	Structured data	Unstructured file data	Unstructured object data
Instantly available for all AI projects	30%	27%	22%
Available with minor processing to prepare	36%	39%	30%
Available with significant processing to prepare	21%	19%	28%
Not available to AI projects	13%	15%	20%

n = 1,220; Source: IDC's *AI Transformation Study*, January 2024.

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DATA ARCHITECTURE READINESS FOR AI

	Yes	No	Not Sure
Take advantage of first-party integration of enterprise storage with native AI services from public cloud service providers	57%	43%	0%
Seamlessly integrate the organization's private data with Cloud AI services (fine tune GenAI models using RAG)	49%	50%	0%
Safely integrate the organization's private data with Cloud AI services	60%	39%	1%
Use validated solutions from AI vendors to provision your organization's data architecture on-demand when needed	56%	44%	0%
Allow the organization's networks to seamlessly adapt to growth in data use arising from AI projects	62%	38%	1%

Note: Totals may not add up to 100% due to rounding. n = 1,220; Source: IDC's *AI Transformation Study*, January 2024.

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Appendix: Supplemental Data (continued)

GOVERNANCE READINESS FOR AI

	At the starting line	At the very beginning of the race	Midway through	Approaching the finish line
Automatically creating auditable copies of AI models	11%	30%	33%	26%
Having tools in place to actively detect biases in data	11%	29%	34%	26%
Systematic auditing to guard against dataset biases	12%	30%	31%	27%
Having tools in place to actively detect biases in AI algorithms	11%	30%	33%	27%
Ensuring data being used complies with local data-sovereignty requirements	10%	30%	34%	26%
Having traceability tools in place	12%	29%	33%	26%

Note: Totals may not add up to 100% due to rounding. n = 1,220; Source: IDC's *AI Transformation Study*, January 2024.

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AI TEAM COLLABORATION

	Limited collaboration	Good collaboration	Excellent collaboration	Perfectly aligned collaboration
ITOps teams and application developers	16%	35%	34%	15%
ITOps teams and data scientists/engineers	17%	35%	34%	13%
Data scientists/engineers and application developers	18%	34%	35%	13%

Note: Totals may not add up to 100% due to rounding. n = 1,220; Source: IDC's *AI Transformation Study*, January 2024.

[Return to original figure](#)

DATA AND SECURITY CHALLENGES WITH AI

	At the starting line	At the very beginning of the race	Midway through	Approaching the finish line
Removing sensitive information from ingestion before being used for AI model training	12%	27%	35%	25%
Establishing real-time monitoring for possible internal tampering	10%	30%	35%	25%
Continuous monitoring for external cybersecurity threats	11%	27%	36%	25%
Instant threat response for external cybersecurity threats	12%	30%	33%	25%
Having end-to-end encryption of all data traveling over networks	11%	29%	35%	25%
Staying in compliance with relevant global privacy standards like GDPR	10%	32%	33%	25%
Having dynamic internal access controls for AI initiatives	10%	30%	37%	23%

Note: Totals may not add up to 100% due to rounding. n = 1,220; Source: IDC's *AI Transformation Study*, January 2024.

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Appendix: Supplemental Data (continued)

DATA MANAGEMENT FOR AI MUST IMPROVE

	Structured data	Unstructured file data	Unstructured object data
No improvements needed	14%	14%	17%
Minor improvements	38%	36%	34%
Major improvements	32%	34%	33%
Needs a complete overhaul	15%	15%	16%
Not Sure	1%	1%	1%

Note: Totals may not add up to 100% due to rounding. n = 1,220; Source: IDC's *AI Transformation Study*, January 2024.

[Return to original figure](#)

IMPROVEMENTS NEEDED TO MAXIMIZE DATA SCIENCE PRODUCTIVITY FOR AI

	Automating AI training workflows	Simplifying and accelerating data provisioning	Having better data pipeline tooling
No improvements needed	14%	14%	14%
Minor improvements	48%	47%	48%
Major improvements	30%	31%	29%
Needs a complete overhaul	8%	7%	8%
Not Sure	1%	1%	0%

Note: Totals may not add up to 100% due to rounding. n = 1,220; Source: IDC's *AI Transformation Study*, January 2024.

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IMPROVEMENTS NEEDED TO ENSURE DEVELOPERS CAN LEVERAGE DATA FOR APPLICATIONS WITH EMBEDDED AI

	Using streaming data	Using unstructured data	Using synthetic data	Using structured/database data	Using 3rd party data
No improvements needed	16%	17%	14%	14%	15%
Minor improvements	47%	45%	44%	48%	30%
Major improvements	28%	29%	31%	30%	35%
Needs a complete overhaul	9%	9%	10%	8%	19%
Not Sure	1%	0%	1%	1%	1%

Note: Totals may not add up to 100% due to rounding. n = 1,220; Source: IDC's *AI Transformation Study*, January 2024.

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About the IDC Analysts



Ashish Nadkarni
Group Vice President, Infrastructure Systems,
Platforms and Technologies Group, IDC

Ashish Nadkarni is group vice president within IDC’s Worldwide Infrastructure Practice. He leads a team of analysts who engage in delivering qualitative and quantitative research on computing, storage, and data management infrastructure platforms and technologies via syndicated research programs (subscription services), data products (IDC Trackers), and custom engagements. Ashish’s vision for his team is to take a holistic, forwarding-looking, and long-term view on emerging and established infrastructure-related areas in the datacenter, in the cloud, and at the edge. His core research starts with an objective assessment of heterogeneous, accelerated, fog, edge, and quantum computing architectures; silicon, memory, and data persistence technologies; composable and disaggregated systems; rackscale design; software-defined infrastructure; modern operating system environments; and physical, virtual, and cloud computing software. It is complemented by research on current and next-gen applications and workloads, vertical and industry-specific use cases, emerging storage and server form factors and deployment models, and upcoming IT vendors. Ashish also takes a keen interest in tracking the ongoing influence of open and open-source communities such as OpenStack and Open Compute Project on infrastructure.

[More about Ashish Nadkarni](#)



Ritu Jyoti
Group Vice President, Worldwide Artificial
Intelligence and Automation Research Practice,
Global AI Research Lead, IDC

Ritu Jyoti is group vice president, covering worldwide artificial intelligence and automation research with IDC’s Software Market Research and Advisory Practice. Ritu is responsible for leading the development of IDC’s thought leadership for AI research and managing the research team. Her research focuses on the state of enterprise AI efforts and global market trends for rapidly evolving AI and machine learning innovations and ecosystems. She also leads insightful research that addresses the needs of AI technology vendors and provides actionable guidance on how to crisply articulate their value proposition, differentiate, and thrive in the digital era.

[More about Ritu Jyoti](#)

About the IDC Analysts (continued)



Dave Pearson
Research Vice President, Infrastructure Systems,
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Dave Pearson is research vice president for the Storage and Converged Systems practice within IDC’s worldwide infrastructure research organization. He also oversees IDC Canada’s Infrastructure Solutions research practice. Dave manages a team of analysts that cover both research domains. On the worldwide infrastructure research side, he and his team are responsible for IDC’s storage, integrated, hyperconverged, and composable systems and platforms. This includes storage for performance-intensive use cases such as high-performance computing, artificial intelligence, and analytics. It also includes cloud-enabled infrastructure and infrastructure used for cloud deployments. On the Canadian side, he and his team are responsible for research on computing, storage, networking, and security, as well as contributing to edge, cloud, cognitive, and infrastructure software research.

[More about Dave Pearson](#)

Message from the Sponsor



NetApp is the intelligent data infrastructure company. We create silo-free infrastructure, then harness observability and AI to enable best data management actions everywhere so that customers can achieve their dynamic business priorities.

As the only enterprise-grade storage service natively embedded in the world's largest clouds, our data storage powers any data across the biggest hyperscalers. Our data services ensure active data management through superior data security, protection, governance, and sustainability. And our CloudOps solutions enable adaptive operations across infrastructure, applications, and teams.

NetApp makes data infrastructure intelligent by combining unified data storage, integrated data services, and CloudOps solutions to turn a world of disruption into opportunities for every customer.

Learn more about NetApp executive perspectives on AI and GenAI.

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