



Unlock Business Transformation in a Digital-First Economy: BECOME AN ARTIFICIAL INTELLIGENCE DISRUPTOR

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Executive Summary

This InfoBrief presents the findings from a joint IDC study with Intel that looks at the state of AI adoption maturity among organizations across regions, industries, and business use cases.

Topics include:

- ✓ AI adoption maturity
- ✓ Business drivers and inhibitors for AI solutions development
- ✓ Deployment scenarios from cloud-edge

The study also provides recommended practices for tech buyers to ensure accelerated and consistent value delivery.

Key highlights:

Artificial intelligence (AI) and digital transformation (DX) have become one of IT's dynamic duos, transforming businesses worldwide. IDC predicts that direct DX investments will accelerate to a compound annual growth rate (CAGR) of 16.5% for 2022–2024, up from a CAGR of 15.4% for 2019–2024, making up 55% of all ICT investment by the end of 2024. AI spending is expected to grow to \$301 billion at a CAGR of 26.5% for 2021–2026.

AI adoption maturity is improving. A quarter of survey respondents are in Stages 4 and 5 (AI Transformer and AI Disruptor, respectively) and report they are thriving. This is an increase of ~57% since 2019.

AI Disruptors (the most advanced stage) have an enterprisewide AI strategy aligned with business goals. They have redesigned business models and create new business value. Data, skills, governance, and technology maximize efficiency. They enjoy 20% to 30% improvement in business outcomes by employing AI.

AI use cases are rapidly expanding across industries and business functions. IT automation is the number 1 use case for AI. Public cloud leads as the preferred location for building applications, and on-premises is preferred for deployment.

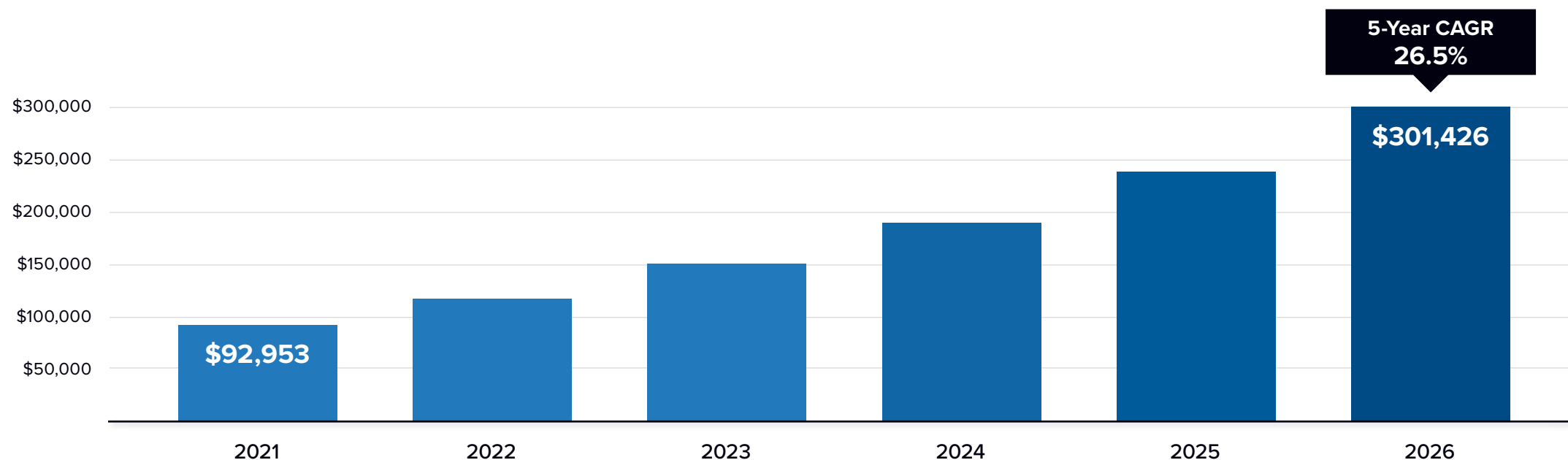
The talent gap, a lack of responsible AI tools and processes, cost, scale, and performance are the top challenges inhibiting the success of AI projects.

The top best practices to drive successful AI projects are: organizationwide AI governance, use of newer business processes, and overall methodology to measure ROI closely tied to DX key performance indicators (KPIs).

Intel is at the heart of AI disruption. Intel helps address the cost inhibitor for AI adoption. Businesses are partnering with Intel to solve their AI challenges and build their path to AI customer success.

Artificial Intelligence Spending Expected to Top \$301 Billion by 2026

Worldwide Artificial Intelligence Systems Spend



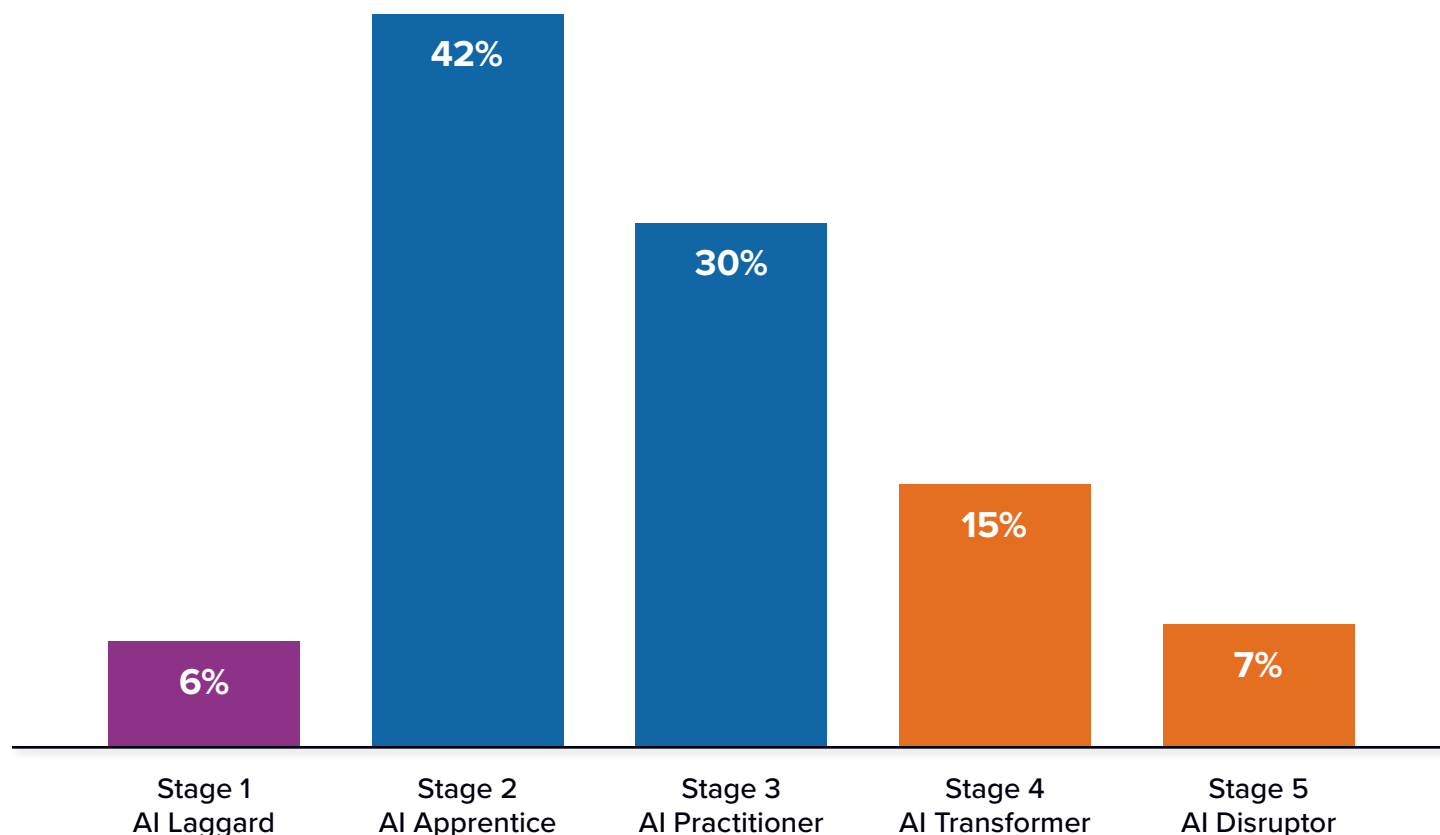
Source: IDC's Worldwide Artificial Intelligence Spending Guide, August 2022



Banking, retail, professional services, and manufacturing will exceed half of global IT spending on AI by 2026.

Worldwide AI Adoption Maturity

The Five Stages of AI Adoption Maturity



AI adoption maturity is improving:



Almost **3/4** of the respondents are in **Stages 2 and 3**.



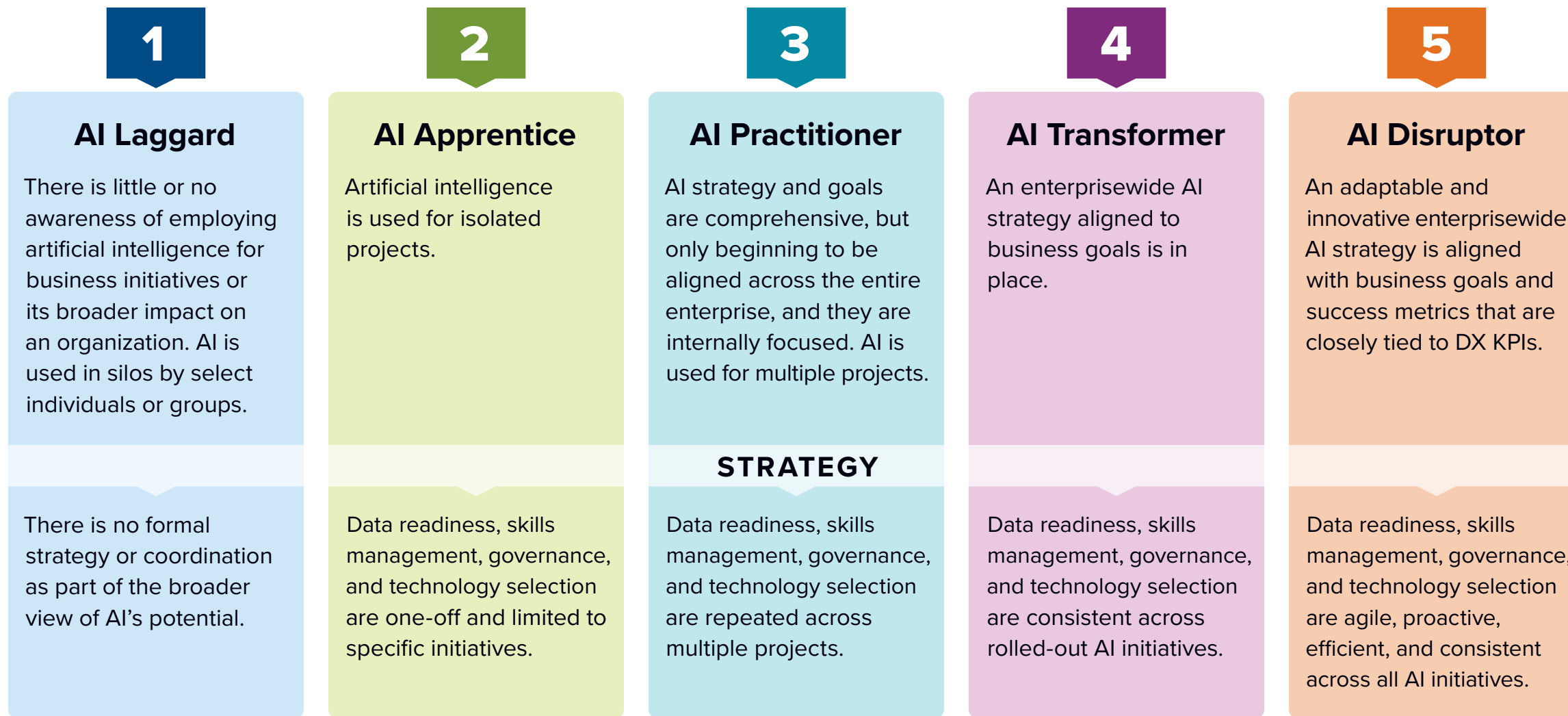
of the respondents are in **Stages 4 and 5** and are thriving, a **~57%** increase since 2019.



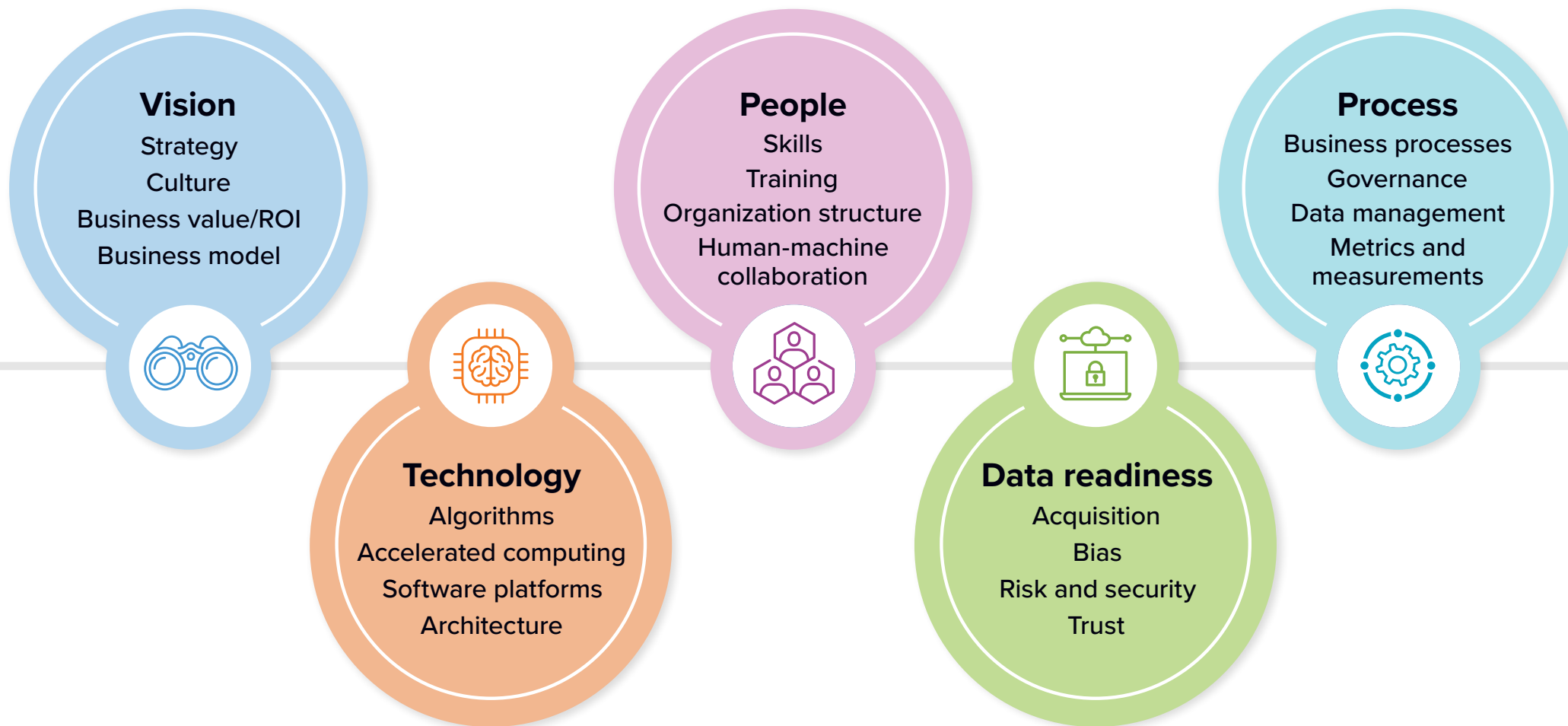
Growth in **Stages 4 and 5** is closely tied to accelerated investments. Global spend on AI in **2021 was \$93M**, compared to **\$44M in 2019**.

n = 2,022, Source: IDC's MaturityScope Benchmark: Intel Artificial Intelligence Adoption Maturity Survey, April 2022

The Five Stages of AI Adoption Maturity



Five Key Dimensions of the AI MaturityScape Framework



The Key Attributes of AI Disruptors

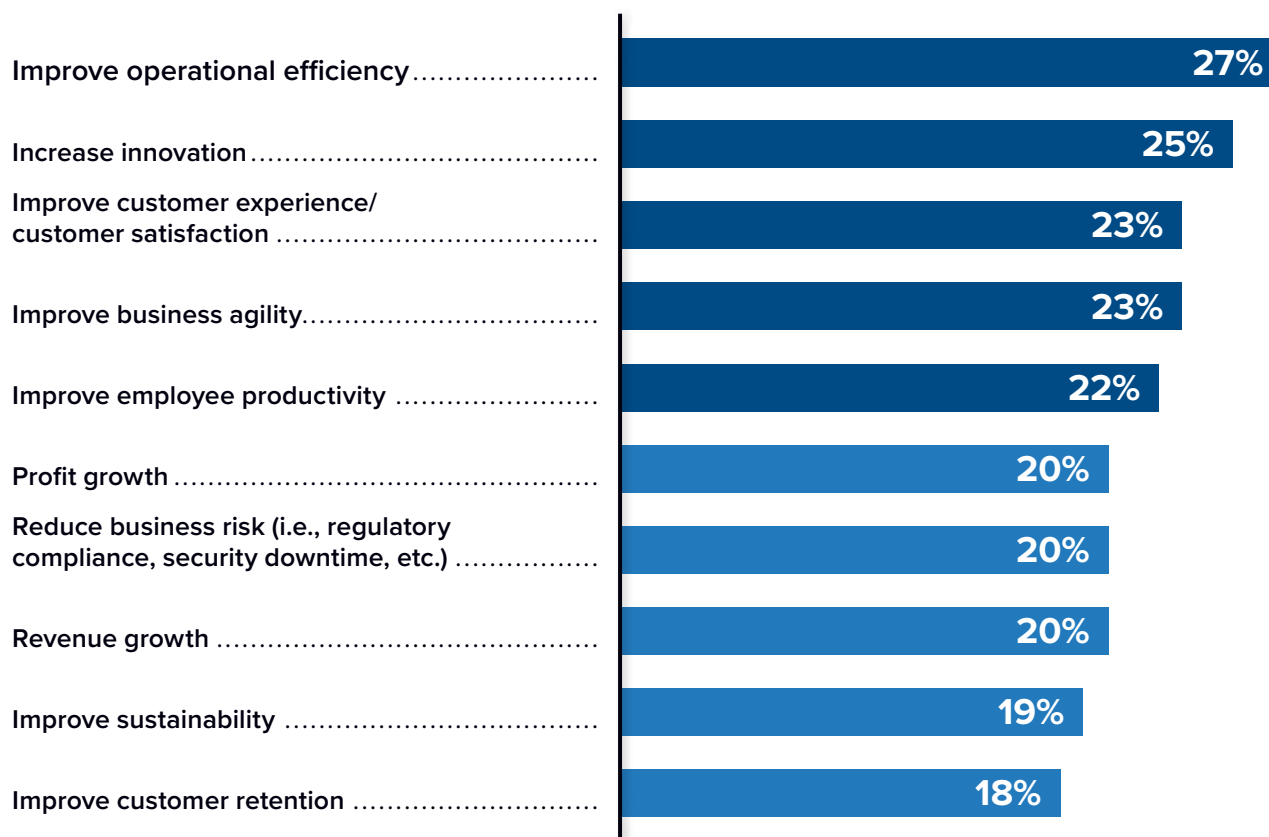
Organizations in Stage 5 have:

- ✓ An enterprisewide AI strategy aligned with business goals
- ✓ Redesigned business models that repeatedly create new business value
- ✓ Data, skills, governance, and technology usage that maximize efficiency



Business Objectives Behind AI and ML Spending

What are the primary business objectives for using AI/ML for your projects/initiatives?



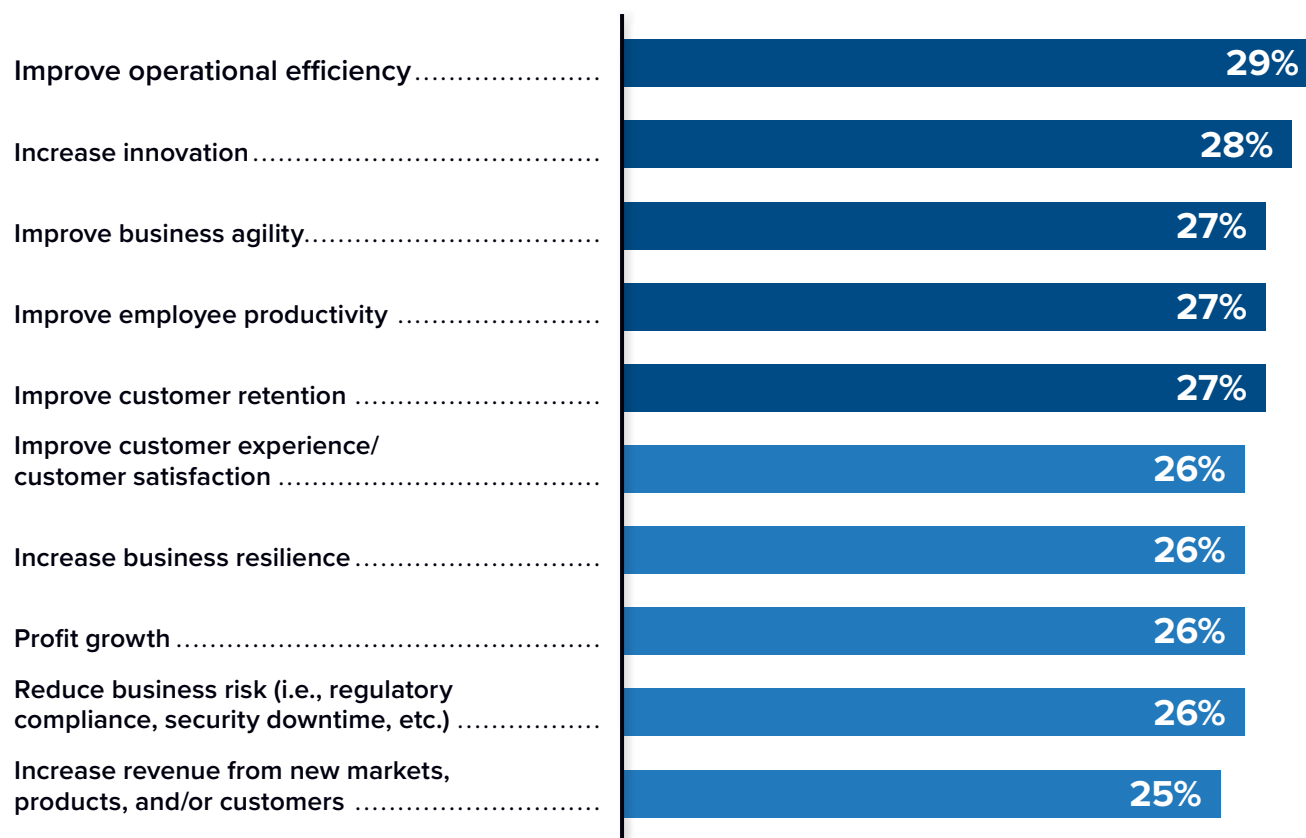
AI investments are increasingly at the forefront of enterprise DX and “digital deflation.” **Organizations are investing in technology to permanently reduce the cost of doing business, future-proof their business, and become a digital business.**

- ✓ AI systems are helping **overcome information processing constraints and accelerate innovation** with improved creative/exploratory ideas.
- ✓ While improving operational efficiency is the number 1 objective across geographies, **increasing revenue from new markets, products, and/or customers** is the top business objective for Asia/Pacific.
- ✓ **Improving sustainability** is the fastest growing and number 5 business objective for the large firms and one of the top 3 for North America and Asia/Pacific.

n = 2,022, Source: IDC's MaturityScope Benchmark: Intel Artificial Intelligence Adoption Maturity Survey, April 2022

AI Disruptors Realize Superior Business Outcomes from AI Capabilities

For each of the following, what percentage improvement due to investing in AI/ML initiatives did your organization see in 2021?



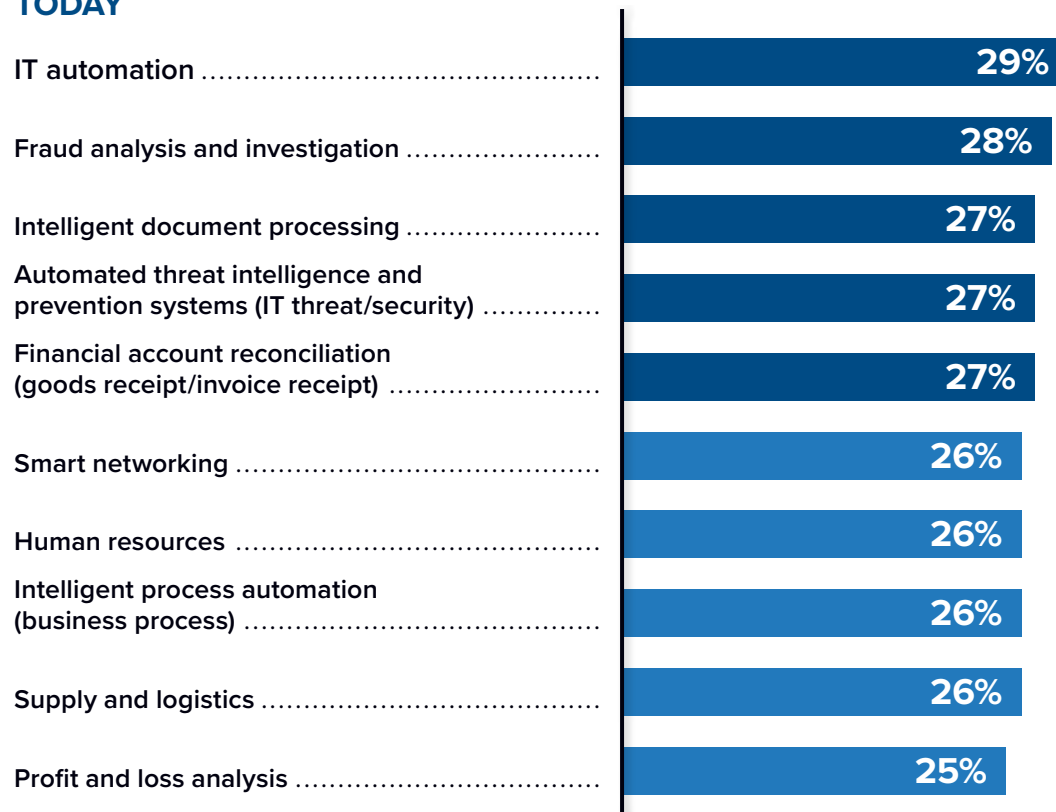
- ✓ AI Disruptors have enjoyed **20% to 30% improvement** in business outcomes by employing AI.
- ✓ AI is helping organizations **improve top-line, bottom-line, and green-line growth.**
- ✓ **Customer experience has become the new brand.** AI is helping organizations not only transform customer experiences but also empower employees and thereby transform employee experiences.

n = 2,022, Source: IDC's MaturityScope Benchmark: Intel Artificial Intelligence Adoption Maturity Survey, April 2022

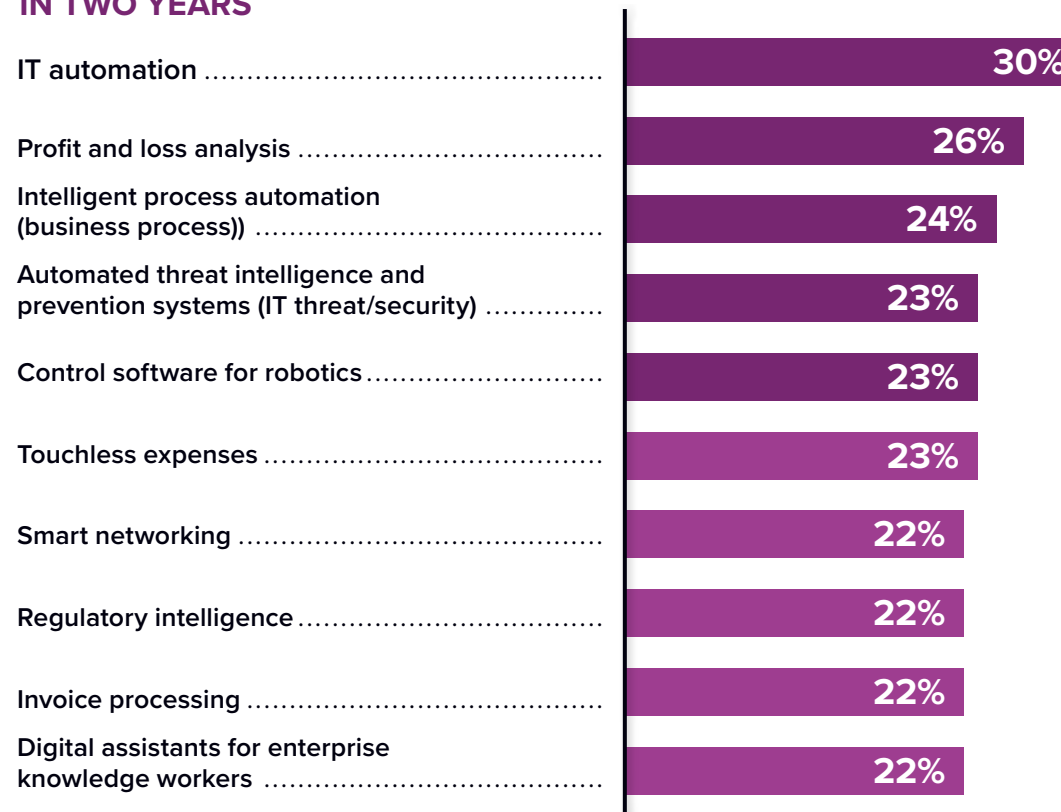
AI Use Cases Expanding Across Industries and Business Functions

What are the main use cases for AI applications/solutions your organization is currently deploying, building, or investigating today? In two years?

TODAY



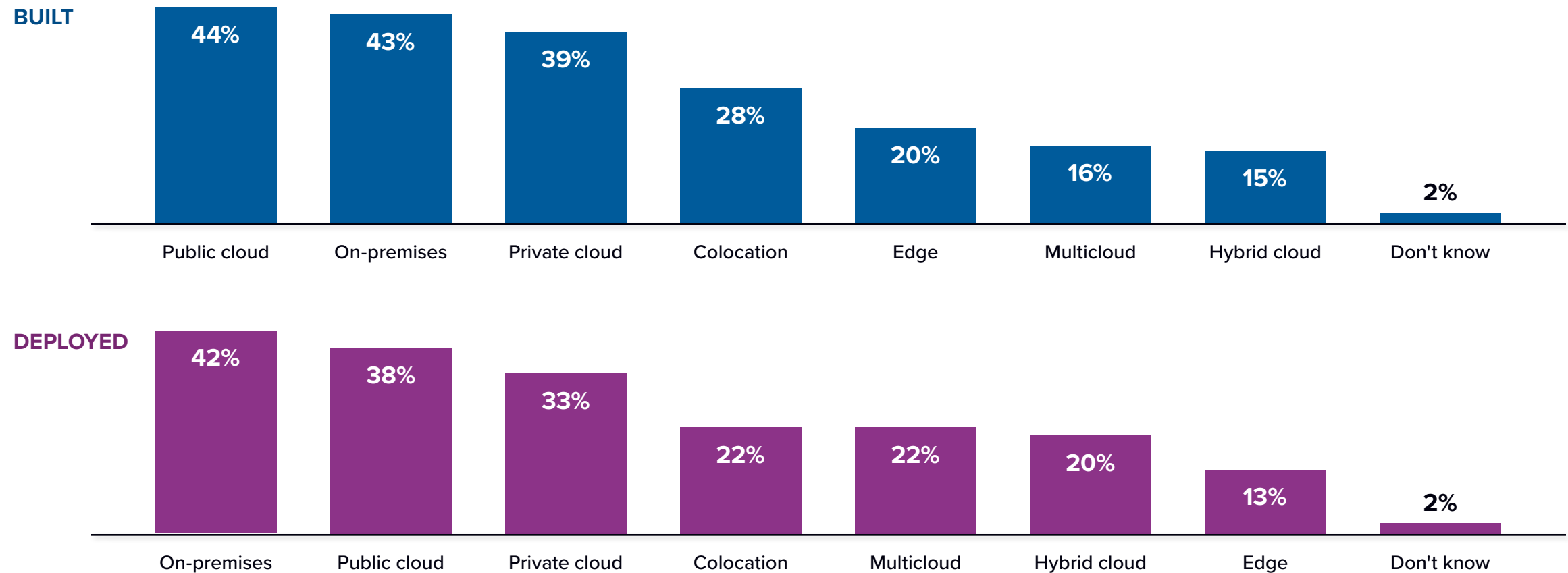
IN TWO YEARS



n = 2,022, Source: IDC's MaturityScape Benchmark: Intel Artificial Intelligence Adoption Maturity Survey, April 2022

Businesses Prefer Public Cloud for Building Applications But On-Premises for Deployments

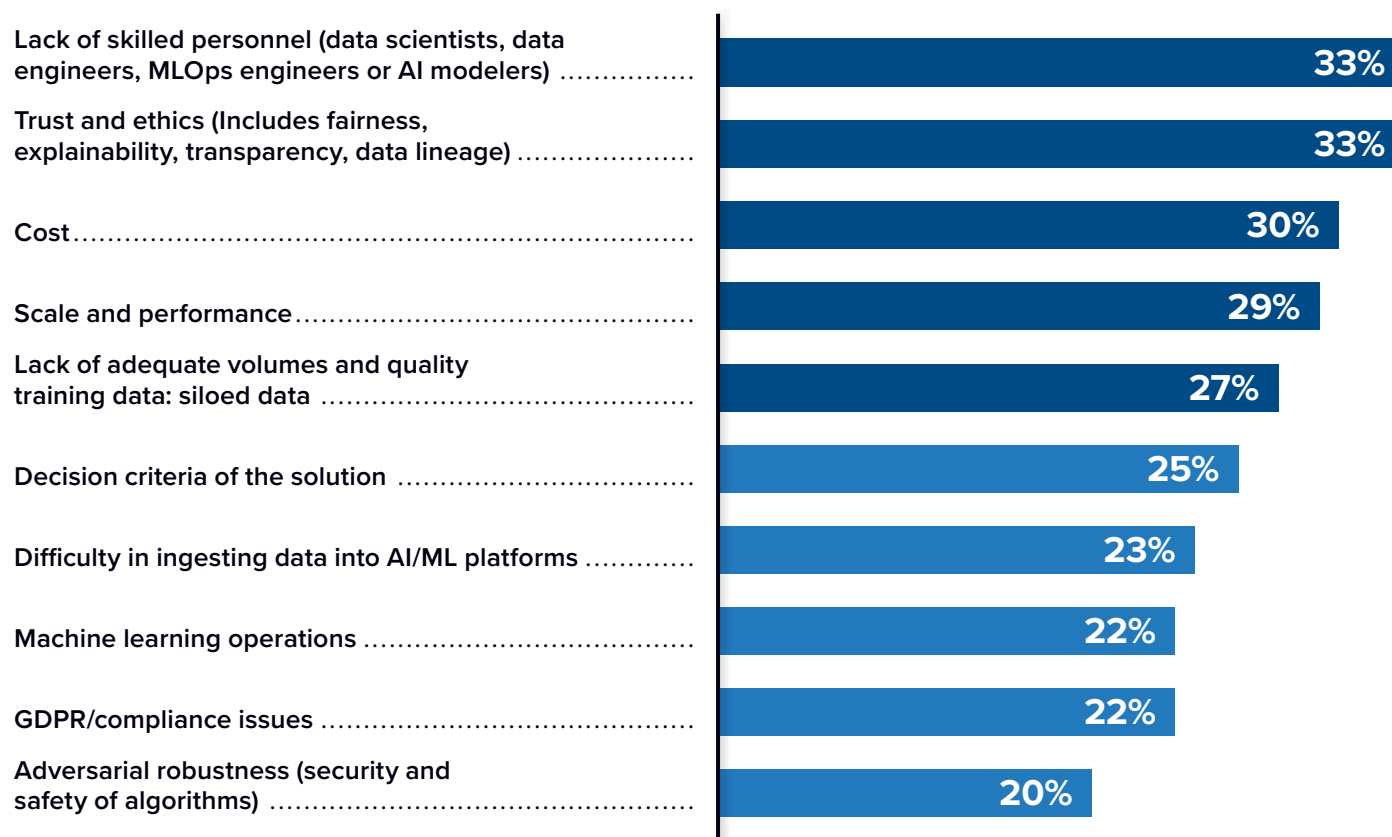
Where are your organization's AI applications/solutions built and deployed?



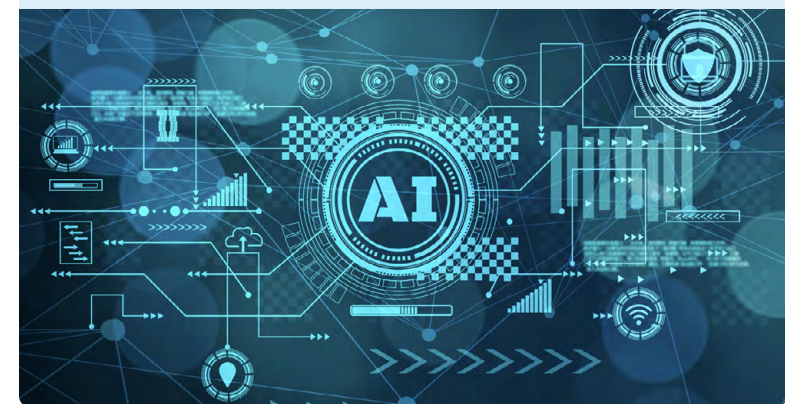
n = 2,022, Source: IDC's MaturityScope Benchmark: Intel Artificial Intelligence Adoption Maturity Survey, April 2022

Challenges Inhibiting the Success of AI Projects

What challenges and/or barriers did your organization face that created problems with the success of your AI projects?



The talent gap, responsible AI tools, cost, scale, and performance all create difficulties with AI.



n = 2,022, Source: IDC's MaturityScape Benchmark: Intel Artificial Intelligence Adoption Maturity Survey, April 2022

Best Practices for Artificial Intelligence and Machine Learning

What are your AI/ML initiatives best practices?

Governance/assurance group(s) and associated policies exist for all the domains of AI projects and are managed and adhered to by IT, business, and compliance functions

Organizationwide usage of newer business processes, automation, and digitization to help maximize the ROI of AI projects

Organization has a methodology for measuring business value/ROI which is widely applied, and metrics are tied to our overall DX KPIs

Balance between deployment scenarios: public cloud, on-premises, edge, etc., subject to use cases

Data acquisition and data preparation are provided as a service that supports real-time provisioning of all needed resources, expertise, and tools

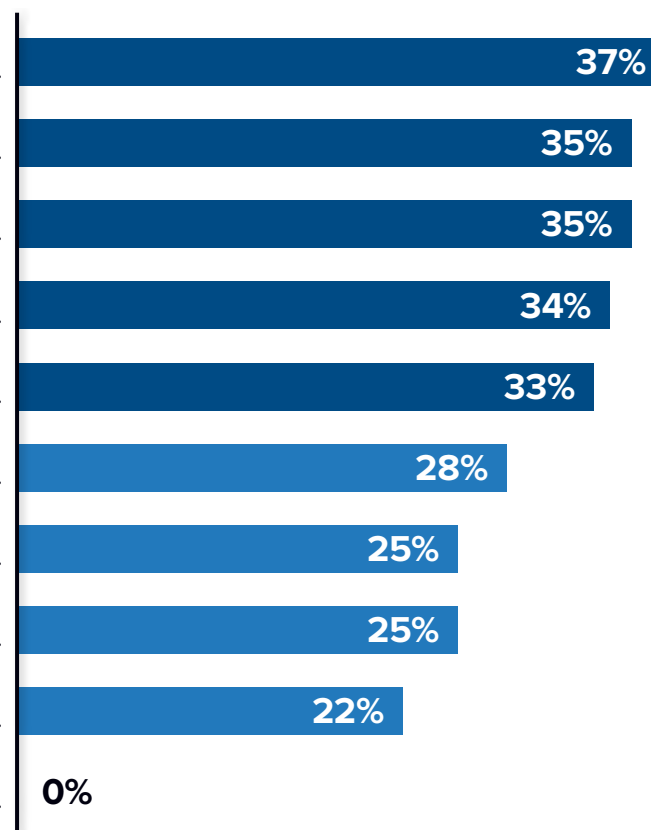
Organizationwide AI strategy

Balance between use of accelerators (GPUs/FPGAs etc.) and CPUs

Center of excellence (hub and spoke) and spoke model for AI skills distribution

Start small with clearly defined ROI for the initiative

Other



Survey respondents reported their top best practices were:

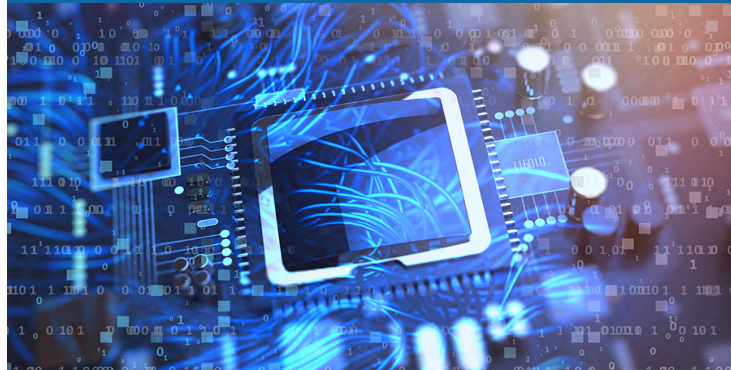
- ✓ Organizationwide AI governance
- ✓ Use of newer business processes
- ✓ Overall methodology to measure ROI closely tied to DX KPIs

n = 2,022, Source: IDC's MaturityScope Benchmark: Intel Artificial Intelligence Adoption Maturity Survey, April 2022

Why Intel for AI Solutions

Intel Is at the Heart of AI Disruption

Built-in AI accelerators and comprehensive software



Organizations worldwide are unlocking **AI-powered business transformation** with AI training and inferencing on **Intel Xeon processors**.

Majority of data infrastructure on Intel



Intel optimizations for popular AI frameworks and libraries deliver significant **performance improvements for embedded AI in Oracle, SAP, and MS SQL offerings**.

Flexibility with scale and performance



Start with Intel Xeon CPUs optimized for most of the AI end-to-end workflow. For more intensive AI needs, add the **Habana Gaudi discrete AI training accelerator or Ponte Vecchio GPUs** to expand your CPU-based foundation.

Intel Addresses the Cost Inhibitor for Scaling AI Adoption

According to IDC research, **software commonality saves you time and money:**

- ✓ **Lowers** hardware infrastructure costs
- ✓ **Reduces** IT staff time required for management and support
- ✓ **Streamlines** development with a unified pipeline

Average benefits per developer working in Intel-optimized software:

\$245,300



Customer Success Scenario: KFBIO

CHALLENGE

Ningbo Konfoong Bioinformation Co. Ltd (KFBIO) develops pathology-related solutions. KFBIO's capability in scanning traditional pathological sections into digital images allows scientists to apply deep learning (DL) techniques to assist medical diagnosis. KFBIO has developed a suite of AI-powered pathological solutions based on DL technology, including cervical cancer and Mycobacterium tuberculosis detection. While KFBIO had an effective DL solution for scanning Mycobacterium tuberculosis specimens using GPUs, their engineers needed higher performance in order to complete scanning and diagnosis faster.

SOLUTION

KFBIO collaborated with Intel AI engineers and optimized their code based on PyTorch and the detectron2 model to take advantage of Intel Xeon Scalable processor architecture enhancements, including Intel Deep Learning Boost (Intel DL Boost) technology and the processor's large memory capacity.

2nd Gen Intel Xeon Scalable processors include new Intel DL Boost technology to accelerate inferencing performance. 2nd Gen Intel Xeon Scalable processors support many terabytes of memory, enabling fast access to large datasets. Digital pathology images tend to be large, which can strain GPU memory capacity. With larger memory capacity, the scanning solution could run multiple simultaneous inferencing instances on the same configuration.

Customer Success Scenario: RINF Tech

CHALLENGE

RINF Tech specializes in cross-platform integration for checkout systems in retail, automotive, video surveillance, and business intelligence. Analyzing and understanding images faster and improving accuracy is the key to better decision making.

The company was challenged to provide rapid and accurate assessment of images to efficiently support daily operations while providing critical information in near real time and in a cost-effective manner.

SOLUTION

RINF collaborated with Intel to resolve this challenge through the combination of RINF Tech's camera at the edge and 2nd Gen Intel Xeon Scalable processors delivering competitive computing capacities.

Additionally, higher inference throughput was achieved using Intel Distribution of OpenVINO Toolkit.

Essential Guidance

We have now entered the domain of **AI-augmented work and decisions across all the functional areas** of a business, from front to back office.

AI, machine learning, and natural language processing are changing the face of brands around the globe across multiple industry sectors.

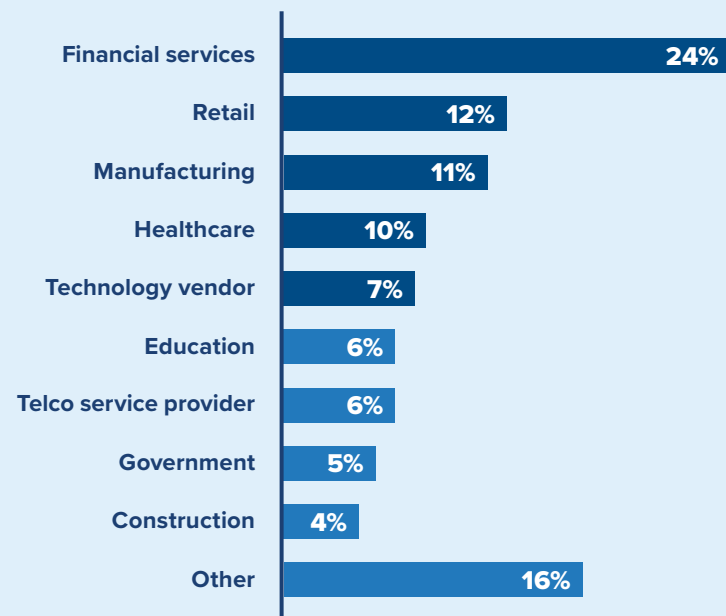
AI Disruptors drive better customer engagements and have accelerated rates of innovation, higher competitiveness, higher margins, and superior employee experiences.

Organizations worldwide must evaluate their vision and transform their people, processes, technology, business models, and data readiness to unleash the power of AI and thrive in the digital era. IDC's recommendations are:

- ✔ Partner with a **trusted and innovative technology supplier** to address the AI inhibitors.
- ✔ Cocreate and accelerate your **time to value and competitive advantage**.
- ✔ Look for **hardware-software optimization** to maximize your ROI.
- ✔ Adopt AI **responsibly**.
- ✔ Tightly align your **AI success metrics with digital transformation KPIs**.

Survey Demographics

BUSINESS SECTOR

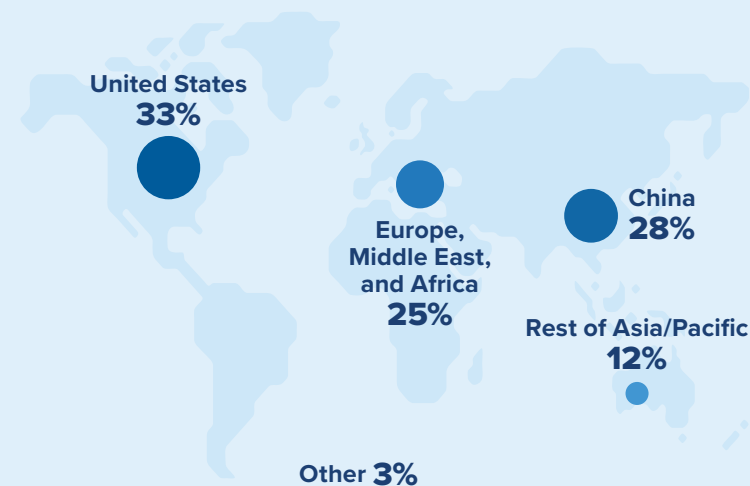


COMPANY SIZE

(by number of employees worldwide)

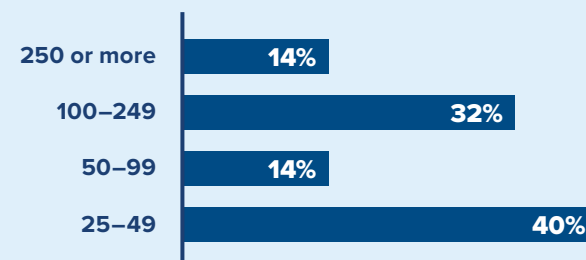


REGION



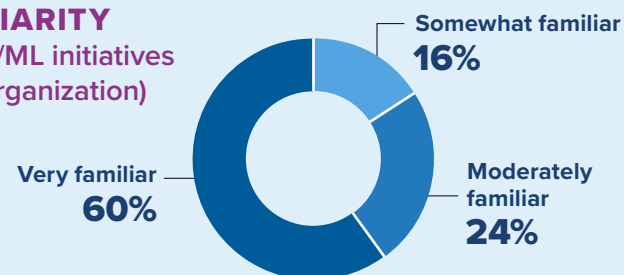
IT STAFF

(by number of employees worldwide)

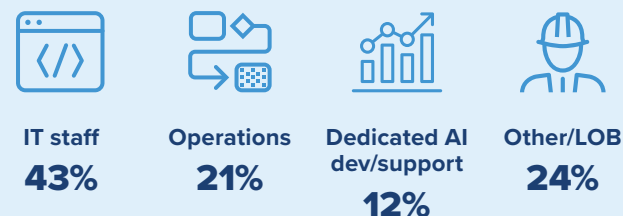


FAMILIARITY

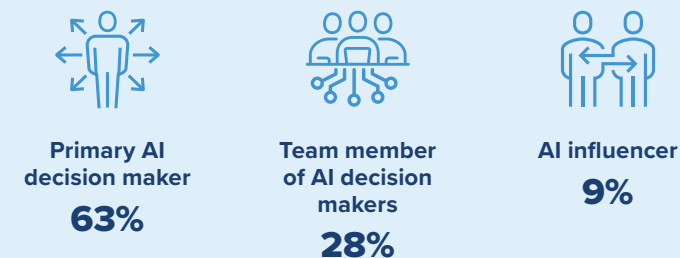
(with AI/ML initiatives in the organization)



JOB FUNCTION



IT DECISION-MAKING AUTHORITY



n = 2,022, Source: IDC's MaturityScope Benchmark: Intel Artificial Intelligence Adoption Maturity Survey, April 2022

About the Analyst



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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 the rapidly evolving AI and machine learning innovations and ecosystem. 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](#)

Message from the Sponsor

Taking just one AI project from concept to production at scale has been a challenge. For years, AI models required specialized skills, a disparate set of tools and software, and niche technologies to turn data into business results. Operationalizing and waterfalling AI for an entire organization across each stage of the end-to-end pipeline, from data analytics to modeling to integration with applications, on premises and in the cloud, requires additional expense for talent, MLOps, and compute and/or power consumption.

At Intel, we are on a shared mission to empower data scientists, developers, and application engineers to use AI to free people from the routine and mundane and focus on accelerating discoveries and enriching business and consumer services.

Intel 4th Generation Scalable processors have the most built-in accelerators, optimizations for the most popular AI frameworks and packages, helpful tools from data ingest to deployment, and a partner ecosystem to scale fast.

[Learn more about scaling artificial intelligence faster with Intel.](#)

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