



Data & AI Trends & Predictions

2025

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As 2024 comes to a close, the time has come to look forward. Over the past year, the pace of change in data and AI has continued unabated, with breakthroughs and advancements pushing the boundaries of what these technologies can achieve. While impressive, these strides have not yet translated into widespread, transformative adoption. AI has shown exciting potential across industries, but many have yet to see its full impact in action.

2025, however, promises to mark a turning point. The challenges of scalability, usability, and alignment with real-world use-cases will persist, but this will also be the year when AI begins to integrate more seamlessly into our daily lives and workflows.

What does the year ahead hold for data and AI? What does it mean to live in an AI-augmented world? How will the skills agenda evolve in 2025 and beyond? Which technologies will move beyond research to achieve breakout success? Our data and AI predictions for 2025 aim to explore these questions and more.

AI research continues to outpace the diffusion of AI into the labor force

RESEARCH

ADOPTION

Over the past two years, AI models have reached unprecedented heights in size, performance, and computational power. This awe-inspiring progress is owed to the work conducted at frontier labs like Meta, OpenAI, Anthropic, Microsoft, and others that continue to push the boundaries of what is possible with artificial intelligence.

It should come as no surprise that [Goldman Sachs predicts that these technology giants will spend more than a trillion dollars on AI](#) in the years to come.

Accompanying this spend, there has been a surge in organizational investment in generative AI. According to [Menlo VC](#), AI spending in the enterprise increased sixfold in the past year alone.

Yet, despite these advancements and expenditures, the adoption of GenAI has been slow. Gartner predicts that by the end of 2025, [30% of GenAI projects will be abandoned](#) in the proof of concept phase. Moreover, influential economists like [Darren Acemoglu predict](#), that “Truly transformative changes won’t happen quickly, and few—if any—will likely occur within the next 10 years”.

Driving value with GenAI requires far more than state-of-the-art models. It necessitates robust infrastructure, refined business processes, effective change management, models that are aligned to business use-cases, and a culture capable of leveraging these tools at scale. In many cases, the supporting ecosystem for GenAI is vastly immature compared to the state of research today.

This is a common dynamic when new technological paradigms are introduced into the market. Electricity was discovered in the 19th century, it revolutionized industries and households—but only after decades of investment in electrification infrastructure and widespread adoption. Similarly, while 2025 will undoubtedly see more enterprises embrace GenAI, the promise of radically enhanced productivity and value generation remains a long-term challenge.

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“The most common challenge is that we often solve narrow, well-defined problems with AI and then attempt to scale it up without fully understanding the broader implications. AI is not a plug-and-play module. To truly harness its power, it must be horizontalized rather than verticalized—embedded seamlessly into work processes and systems.”

[How are Businesses Really Using AI? With Tathagat Varma, Global TechOps Leader at Walmart Global Tech](#)

Frontier labs differentiate themselves with product experience

RESEARCH TOOLS

The past few years have seen extraordinary leaps in the performance of AI models, with each iteration pushing capabilities forward. The progress has been undeniable from GPT-2 to the latest OpenAI O1 model. Yet, with each iteration, the stepwise increase in capabilities from one model to the next is becoming smaller.

As [Marc Andreessen](#) and [Ilya Sutskever](#) noted, this diminishing return on performance highlights the challenge of maintaining the same pace of progress as models grow more sophisticated. Historically, models generally became more capable due to scaling training time, compute, and data. However, scaling is becoming less and less viable. The availability of high-quality training data is finite, and the costs associated with both training and inference are increasing, creating barriers both for the developers and the consumers of models.

As these challenges grow, the differentiator among frontier labs is shifting. The focus is no longer solely on model performance but on the product experience in which these models are served. The past year has seen notable examples of how top AI labs are prioritizing user experience, feature innovation, and practical value:

- **ChatGPT:** Since its release, [OpenAI has introduced multimodality, search](#), advanced voice mode, the ability to build [custom GPTs](#), advanced coding capabilities, uploading attachments, and more.
- **Claude:** In 2024, Anthropic introduced [Artifacts, computer use](#), and many additional features.
- **Gemini:** Gemini now connects with Google Workspace products, and [NotebookLM provides a novel way to synthesize information with LLMs and voice generation](#).

A clear trend emerges here: the competitive edge is no longer confined to the capabilities of the models themselves but extends to how these capabilities are packaged into user-friendly, impactful products. It should come as no surprise that AI labs have made a dedicated push to hiring seasoned product leaders, with [Mike Krieger, co-founder of Instagram, joining Anthropic as their Chief Product Officer](#) and [Kevin Weil, Former President of Product and Business at Planet Labs, joining OpenAI](#).

As we move into 2025, frontier labs will double down on product experience and not just model innovation to drive differentiation. We also wouldn't [be surprised to see hardware announcements](#) as a path to differentiation.

“A key focus for us is designing a product in which users don’t need to know what model is being used as long as it gets the job done effectively.”

[Perplexity & the Future of AI with Denis Yarats, Co-Founder and CTO at Perplexity AI](#)

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AI agents get break-out status

TOOLS

The past two years have been dominated by AI systems that generate and manipulate information. Whether it is content creation, semantic search, or coding capabilities, these systems still cannot execute many of the tasks they're asked to generate a response to. In 2025, that's about to change.

In the past year, AI systems have slowly started to tackle open-ended tasks—i.e., tasks that need to be broken up into smaller tasks. These tasks are often thought of as “**agentic workflows**,” where an AI agent breaks up these large tasks into smaller ones and executes them. We’ve seen examples such as [Replit code agent](#) and Devin tackle these tasks for code generation, where an agent can build software with a single prompt.

In 2025, AI agents are poised to achieve breakout status. These systems will evolve to become more verticalized and tailored to specific industries and use cases. For instance:

Open-ended tasks

“Build a weather application for iOS”
“Write a research report on the state of GenAI investments”
“Organize my calendar for next week”
“Fill out this spreadsheet with accurate information”

- In **software development**, agents will write, test, and debug code with increasing autonomy, reducing the overhead for developers.
- In **marketing**, agents may assist marketers with market research and building marketing strategies.
- In **customer service**, AI agents could take on end-to-end resolution of inquiries, from initial intake to follow-up actions.

At the same time, models are becoming increasingly agentic as they gain access to tools that expand their capabilities. Features like computer use, internet access, chain-of-thought, and integration with external APIs allow models to act more effectively on user requests.

Close-ended tasks

“Debug this block of code”
“Rewrite this section from this blog post”
“Synthesize my meeting notes”
“What is the Excel formula for computing averages?”

“A bank I worked with initially focused on low-hanging fruit, such as text summarization, copilots, and chat Q&A for service operations. Now, they’re advancing to agentic applications. These autonomous agents go beyond generating insights—they take actions. The bank is now productionizing agents for complex use cases like loan underwriting, tax invoice reconciliation, and more.”

[Scaling AI in the Enterprise with Abhas Ricky, Chief Strategy Officer at Cloudera](#)

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Video generation becomes mainstream (and so will the problems associated with it)

TOOLS

The past year has been a watershed moment for video generation technology. Tools like OpenAI's Sora, Meta Movie Gen, and Runway's Gen-3 have reached a quality level that has enabled creators to produce [full-fledged music videos](#). That said, Sora has yet to be released, and many of the available tools today are used by enthusiasts and hobbyists.

In 2025, video generation is set to become mainstream. We predict at least one video generation service will gain break-out status, offering capabilities accessible and useful enough for (more) widespread adoption. Enterprises, too, will begin to explore video generation, albeit cautiously.

While adoption is unlikely to skyrocket, industries such as advertising, media, and education will experiment with these tools to streamline video production, reduce costs, and create personalized content at scale.

It's important to note, though, that the rise of video generation also brings significant risks, particularly regarding deepfakes and the future of the creative industry. As these technologies become more accessible and capable, the potential for misuse—such as creating false narratives or perpetuating misinformation—grows.

Moreover, we've already seen [AI become a major fault line in the movie industry](#). This raises critical questions for society: How do we balance innovation with accountability? What frameworks and safeguards can prevent the harmful exploitation of video generation? How do we protect industries from disruption?

“Jobs change because technologies change, but we still need people, and we still need creatives who have an eye and an artistic intent to create something that matters. And I think that’s where these tools allow more people to become artists.”

[AI and the Future of Art with Kent Keirsey, Founder & CEO at Invoke](#)

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Data teams start shifting left

CULTURE

Data quality and governance remain persistent challenges for organizations, often acting as roadblocks to data value creation. Many of these issues stem from a fundamental misalignment: data producers—whether software engineering teams, application developers, or others—often design systems and databases without prioritizing downstream usage by data practitioners.

As a result, data requirements, such as quality checks, governance standards, and usability, are frequently addressed as an afterthought long after the data has been collected and processed.

In 2025, we predict data organizations will start shifting left. The concept of shifting left is not new and was introduced by software engineering and security teams.

For engineering teams, shifting left meant embedding testing for security, performance, and monitoring best practices into the development process rather than something to be prioritized as an afterthought.

For data teams, shifting left will mean strengthening the interlock with data producers and embedding data governance, quality standards, and operational requirements at the data collection point. This paradigm shift will ensure data is designed to meet analytical and operational needs from the outset, reducing bottlenecks and improving overall reliability.

“In a typical data lifecycle, systems generate data, which is then ingested into a data lake or warehouse, and only afterward do users build reports based on it. Unfortunately, data quality issues often surface at this final stage—far too late in the process. Many of these problems can be avoided by shifting data quality efforts from the consumers of data to the producers of data.”

[How Data Leaders Can Make Data Governance a Priority with Saurabh Gupta, Chief Strategy & Revenue Officer at The Modern Data Company](#)

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Organizations become more disciplined with GenAI investments

CULTURE

ADOPTION

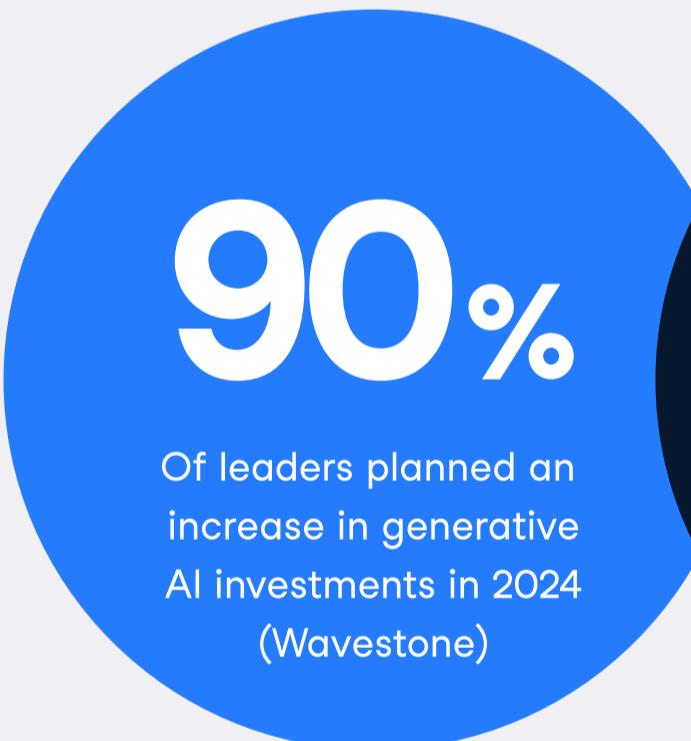
As we've seen in our first prediction, organizations have significantly increased their investments in generative AI (GenAI). However, many of these projects remain stuck in experimentation mode. While the initial excitement around GenAI has driven the rapid adoption of pilot initiatives, many organizations have yet to move beyond proof-of-concept or specific department-focused experiments.

As the hype subsides and boards start looking to justify spending, organizations will become much more disciplined in their approach to GenAI. The focus will shift toward projects with clear, measurable returns on investment.

This shift will demand a new level of rigor, with businesses prioritizing:

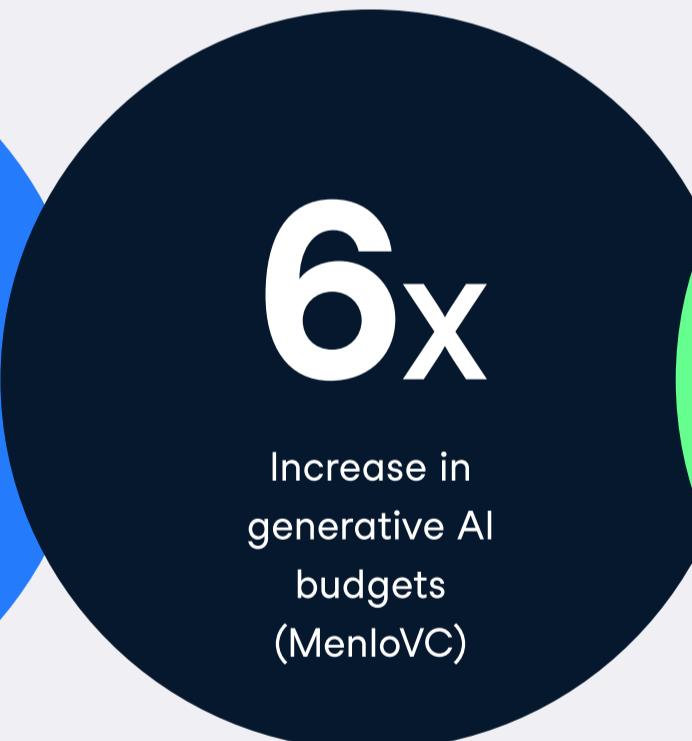
- **Robust use-case alignment:** Selecting initiatives that directly address critical business challenges or opportunities rather than pursuing innovation for its own sake.
- **Operational integration:** Selecting use cases where it's possible to re-engineer business processes and integrate AI into daily workflows.
- **Impact-driven decision making:** Selecting use cases with clear and definable metrics and KPIs.

Iterative development: Focusing on agile, phased rollouts that allow for refinement and scaling based on early results.



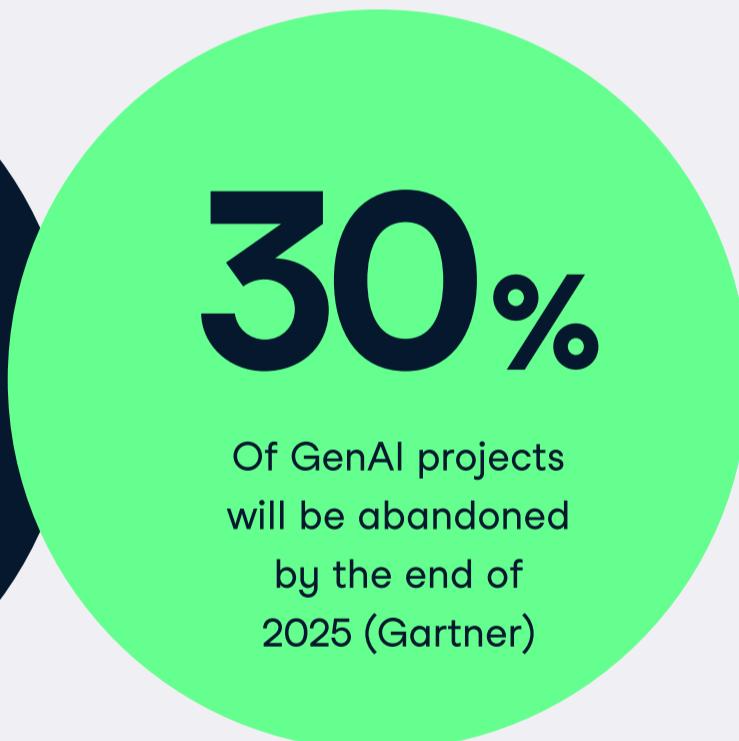
90%

Of leaders planned an increase in generative AI investments in 2024 (Wavestone)



6x

Increase in generative AI budgets (MenloVC)



30%

Of GenAI projects will be abandoned by the end of 2025 (Gartner)

"It's crucial not to get too far ahead of ourselves. The focus should be on the outcome, not the technology. Often, simple approaches that are quick to implement can deliver significant value to the business. Technical complexity doesn't always equate to higher value."

[Monetizing Data & AI with Vin Vashishta, Founder & AI Advisor at V Squared, & Tiffany Perkins-Munn, MD & Head of Data & Analytics at JPMC](#)



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A new generation of AI tools drive adoption

TOOLS

ADOPTION

While we predict organizations will become more disciplined in their GenAI investments, we also expect their options for where to invest to expand and improve. The past few years have seen unprecedented investments from venture capitalists into AI startups. According to the World Economic Forum, [VC investment in AI has totaled approximately \\$300 billion over the last five years.](#)

Though many of these startups may not survive long-term, we are beginning to see the emergence of a new generation of AI-native tools designed to tackle use cases in specific industries and verticals. While adoption will likely scale in SMBs, we expect a stepwise change in enterprise adoption in 2025.

The further maturation of the startup ecosystem is good news for enterprises. As better tools become available, organizations can accelerate the deployment of AI in their teams. This also allows functional teams to experiment further with low-investment, easy-to-use tools, paving the way for broader adoption.

Vertical-specific AI use cases			
Go-to-market	Customer support	Workflow management	Finance
<ul style="list-style-type: none"> ✓ Content creation with embedded brand guidelines ✓ Personalized sales outreach 	<ul style="list-style-type: none"> ✓ Automated triage with company context ✓ Automated resolution with brand guidelines and best practices 	<ul style="list-style-type: none"> ✓ Scalable task automation and workflow optimization 	<ul style="list-style-type: none"> ✓ Automated financial reporting with a detailed company knowledge bank

“Today, the focus is on experimentation and truly understanding where new tools excel and where they fall short. The ecosystem is evolving rapidly. Every C-suite is calling for AI adoption, relying on leaders within individual teams and departments to educate themselves and develop strategies for leveraging this technology effectively within their organizations.”

[Data & AI Trends in 2024, with Tom Tunguz, General Partner at Theory Ventures](#)

The lines between different data roles begin to blur

CULTURE

SKILLS

Year to date, it's clear that the "killer app" for GenAI is code generation. [According to Menlo VC](#), code generation is the number one use case for GenAI in the enterprise. While AI-assisted coding is allowing developers and data practitioners to be more effective in their roles, it's also dramatically lowering the barrier to entry for anyone to work with code.

This trend will continue to reshape the skillset for "coding practitioners." Whether they are software engineers or data practitioners, pure coding syntax knowledge will take a backseat, making way for higher-value skills like problem-solving, system integration, and effectively leveraging AI tools.

Focusing specifically on data teams, we predict the lines between traditional data roles will blur. Business users, empowered by AI-assisted coding tools, will increasingly handle analytical tasks that once required specialized expertise. Meanwhile, data practitioners will take on higher-order projects that demand more business acumen and advanced engineering skills, further changing the boundaries of these roles.

While it remains uncertain exactly how roles will look once the cards are fully shuffled, one thing is clear: the data team's remit will evolve in 2025 and beyond.

"A strong trend we see in modern data teams is the decline of traditional data engineering roles, replaced by full-stack data professionals who blend software engineering and data expertise. This shift is especially evident in AI, where controlling the entire pipeline is critical. Even small changes at any pipeline stage can significantly affect model performance, making it essential to have an end-to-end view and control over deployment."

[Harnessing the Power of Now With Real-Time Analytics with Zuzanna Stamirowska & Hélène Stanway](#)

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Business acumen and data storytelling become just as important as technical ones for data teams

CULTURE

SKILLS

As we discussed earlier, the lines between traditional data roles are blurring. That blurring highlights another important trend: the rising importance of business acumen, data storytelling, and product sense as core skills for data teams. One common failure pattern for organizations is the lack of interlock between data teams and business teams. Examples of these patterns are problems being “thrown to the other side of the fence,” where business teams ask for solutions without proper requirement setting, and data teams delivering solutions that lack a deep understanding of the business problem.

The quest to drive more ROI from AI investments and the democratization of coding skills will shift the data practitioner skillset in 2025. Data analysts and scientists will increasingly be seen as “business engineers”—experts in understanding the business context and using data and AI to address critical challenges.

With coding workflows being augmented with AI, data practitioners will focus more on:

- **Business use cases:** Identifying and prioritizing high-value opportunities where data and AI can drive tangible results.
- **Data storytelling:** Communicating insights in ways that resonate with decision-makers and drive action.
- **Product sense:** Designing solutions that align closely with business needs and user requirements.

“As AI becomes more embedded into the data function, data scientists spend more time on strategic projects and are no longer just insight creators. This is why, now more than ever, it’s important for data teams to have a product mindset, business acumen, and data storytelling skills.”

[Data Science and Business Intelligence in 2025: How will AI Transform the Data Team? With Anushka Anand, Director of Product Management at Salesloft](#)

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The data & AI skills gap continues to be a major priority

CULTURE

SKILLS

Many of today's predictions share a common center of gravity: skills. Whether it's driving adoption, redefining roles, or identifying better use cases, the ability to use data and AI effectively hinges on developing the right skill sets.

- 1. Adoption:** Organizations need skilled data and AI practitioners to embed these technologies into workflows and processes.
- 2. The blurring of roles:** As traditional data and AI roles blur, teams must acquire new skills to meet the current challenges.
- 3. Use-case prioritization:** Identifying and implementing high-value use cases requires understanding the art of the possible and impossible in AI.

According to our [State of Data & AI Literacy 2024 report](#), 62% of organizations claim to have an AI literacy skill gap. This gap extends beyond basic literacy to include highly sought-after technical AI skills. MenloVC for example, predicts [a 2-3x salary premium for skilled AI developers](#).

Expect organizations to prioritize data, AI, and tech skills transformation in 2025 and beyond. This will include upskilling existing teams, recruiting specialized talent, and fostering a culture of continuous learning.

By addressing the skills gap head-on, businesses can ensure they are well-positioned to not lag behind in the years to come.

"If we picture a maturity curve, data sits at one end and AI at the other, with a significant gap in between. Organizations aim to make leaps up this curve, but bridging the gap requires widespread upskilling—not just at the executive level but across the entire organization. This journey demands a clear framework and roadmap, outlining key milestones and actionable steps to achieve them."

[Aligning AI with Enterprise Strategy with Leon Gordon, CEO at Onyx Data](#)

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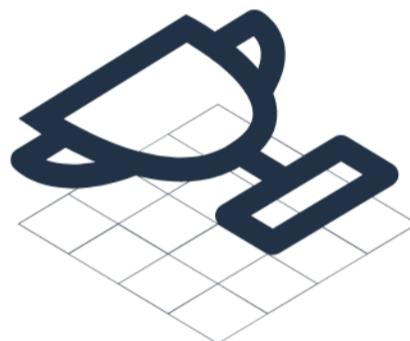
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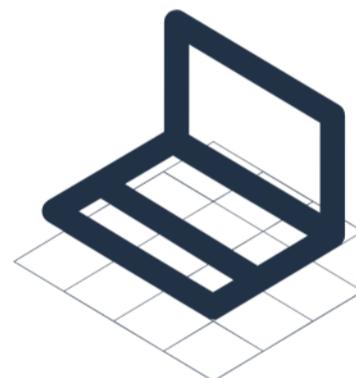
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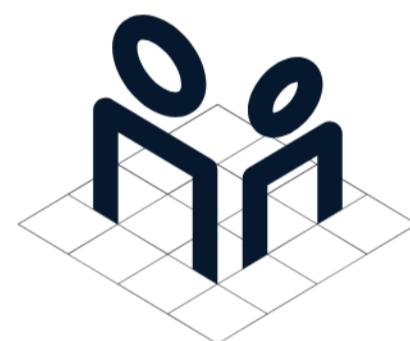
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