

DIGITAL INNOVATIONS

AI investment should broaden beyond data centers

ROBECO
The Investment Engineers

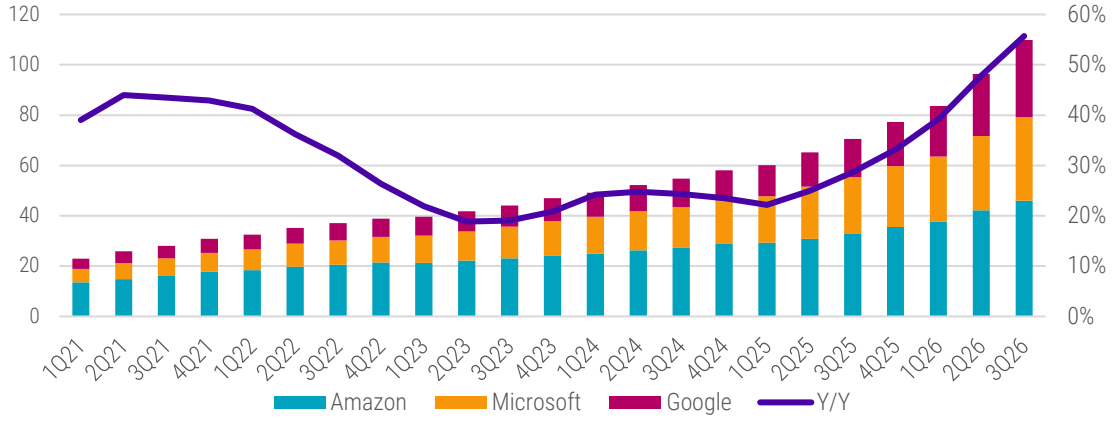
- AI performance is broadening from enablers to adopters
- Cybersecurity has emerged as the next killer-app for AI-enhanced software
- AI is also driving innovation in software, healthcare, and robotics

Two of the biggest questions in the market today are: can the pace of artificial intelligence capital investment continue, and can AI generate a positive return? The answer to both lies with another question: is AI useful?

As artificial intelligence (AI) continues to advance everywhere and all at once, a recurring worry for investors has been the expanding capital requirements for the digital infrastructure that drives the technology. Indeed, the combined capital investment of cloud computing operators around the world is expected to rise from USD 1 trillion this year to more than USD 1.6 trillion in 2027. Those investments have in turn pressured cashflows and have led to new equity issuance and an uptick in leverage.

While the sheer scale of those investments continues to be questioned, revenues and profits from cloud computing services have accelerated. In October, the three largest US cloud computing firms, Google parent Alphabet, Amazon, and Microsoft reported combined cloud revenues of USD 109.9 billion in Q3 2026, up 56% year-on-year, an acceleration from the 48% growth the trio reported in 2Q26.[1] Importantly, cloud-segment operating margins expanded nearly 400 basis points helping to drive operating profits for the group up 73% year-on-year.

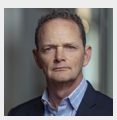
Figure 1 – US hyperscaler cloud computing revenues, USD billions



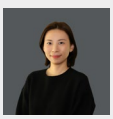
Source: Robeco, company filings, 2026.

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Daniel Ernst
Portfolio Manager



Chenyi Wu
Equity Analyst

Impressively, AI startups are also scaling revenues significantly faster than in prior technology cycles. Led by the now well-known AI model developers, Anthropic and OpenAI, data from CB Insights indicates that the top 10 AI-native startups are on pace to triple revenues in 2026 to more than USD 110 billion. Relatedly, industry analysts at Exponential View estimate that through August, the annualized run rate of global AI revenue rose 3.5-fold to USD 229 billion. While much of the market's attention over the past year has focused on AI enablers from data center power systems to memory chips, closer analysis reveals a much broader AI opportunity set.[2]

Securing AI

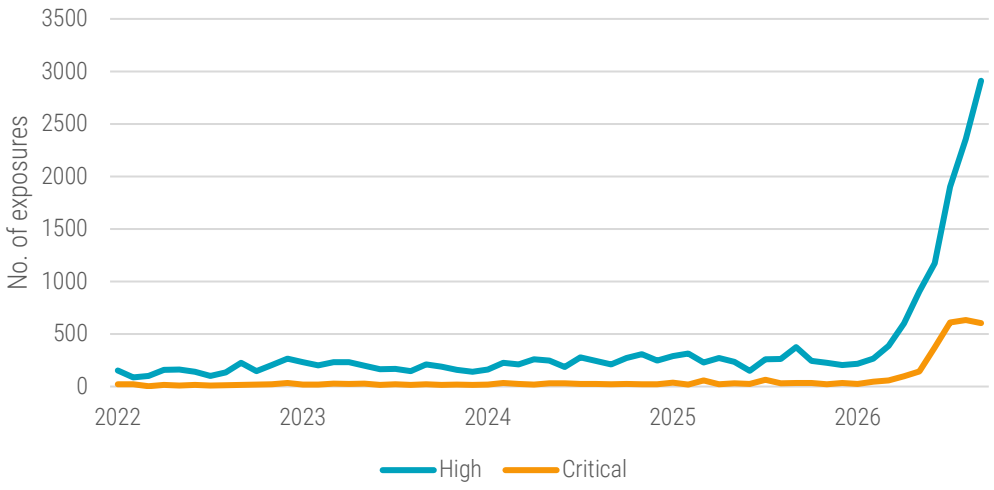
Over the last five years, the global volume of cyberattacks has surged more than 3-fold, with the average organization now facing some 2,800 attacks per week according to Check Point Research. In the last year, the number of identified critical or severe Common Vulnerability and Exposures (CVE) rose nearly 9-fold. Alarmingly, cyberattacks have increasingly targeted critical infrastructure and services including airlines, banks, government agencies, hospitals, and most recently even supermarket refrigeration systems.

To keep up with accelerating cyber risks, AI has emerged as a key tool to improve threat detection and automate response. For example, last month, security researchers at Alphabet used the firm's Gemini model to identify and create a patch for a critical security risk in PHP, the programming language employed by 70% of websites globally. AI has also emerged as a new demand driver for cybersecurity. Like adding a new employee, the introduction of AI agents broadens the potential attack surface that corporations must defend. For this reason, identity solutions have become a central component of cybersecurity given every AI agent needs authentication, permission, and an audit trail.

However, AI is a double-edged sword for cybersecurity – defenders and hackers can both leverage the tool. According to a 2025 US House Committee on Homeland Security report, one in six data breaches was already driven by AI. According to a 2026 SANS Institute survey, 78% of organizations reported, confirmed, or suspected AI-enabled attacks in the past year.

As a result, a larger, faster, and more complex threat environment provides a structural tailwind for security spending. Worldwide, information-security spending is set to reach USD 249 billion in 2026, up 12.7% year on year, and to grow to USD 373 billion by 2030 according to Gartner research.

Figure 2 – Critical and high-severity cybersecurity Common Vulnerabilities and Exposures (CVE)



Source: Robeco, Epoch AI, CVE.org, October 2026.

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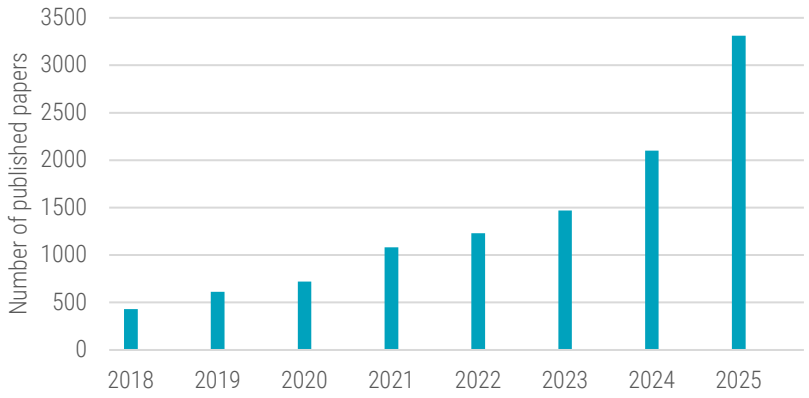
Health AI

Long before the current AI wave, healthcare was already an active proving ground for the technology. As early as 1976, researchers developed an AI system to diagnose glaucoma and recommend treatment. In 2007, shortly after the release of Nvidia's CUDA platform, scientists showed that GPUs could enhance and render three-dimensional images from computed tomography (CT) scans. Progress has since accelerated, from Google DeepMind's AlphaFold, which predicts protein structures to speed up drug discovery, to AI-assisted medical devices that monitor patients in real time.[3]

With more than USD 6.7 trillion spent annually on healthcare across OECD member nations, even marginal improvements derived from AI could have an enormous impact. In the US, healthcare spending accounts for 17.2% of GDP, nearly double the rate of its developed nation peers, and the Commonwealth Fund estimates that paperwork alone accounted for 30% of that excess. For this reason, AI voice transcription apps, such as those from Abridge and Microsoft provide some of the most compelling evidence of AI's usefulness in healthcare. According to Stanford's 2026 AI Index Report, physicians stated that AI tools enabled an 83% reduction in the time it takes to write and prepare notes for submission to Electronic Health Record (EHR) systems. According to the American Medical Association, 81% of surveyed US physicians reported using AI at work in 2026, up from 38% in 2023.

AI also holds great potential to accelerate and improve the new drug development process. The average new drug costs nearly USD 3 billion to develop and the entire process can take between 10 and 15 years. With its ability to parse vast data sets and sift through existing research libraries, AI enables researchers to pinpoint promising new solutions more quickly and at a lower cost. There are now 175 AI-discovered medicines in human clinical trials, addressing a wide range of diseases from idiopathic pulmonary fibrosis (IPF) to multiple targeted cancer therapies. While none have yet achieved final approval, early-stage safety trials impressively achieved an 80% success rate. AI discovery methods also hold particular promise for rare diseases, where unravelling complex biology has historically cost too much relative to the size of the opportunity.

Figure 3 – Published papers on AI-assisted drug discovery and development



Source: RAISE Health Index, April 2026.

Physical AI

Earlier this year at the Beijing Half Marathon, a humanoid robot from Honor, a smartphone maker, completed the course in just 50 minutes and 26 seconds, nearly seven minutes faster than the human world record set by Jacob Kiplimo in March.[4] However, according to the 2026 Stanford AI Index, humanoids can only successfully complete 12% of assigned household tasks. Similarly, research conducted by Epoch AI found that most tasks requiring robots to handle, assemble, or manipulate objects remain largely confined to the lab. Epoch also notes that

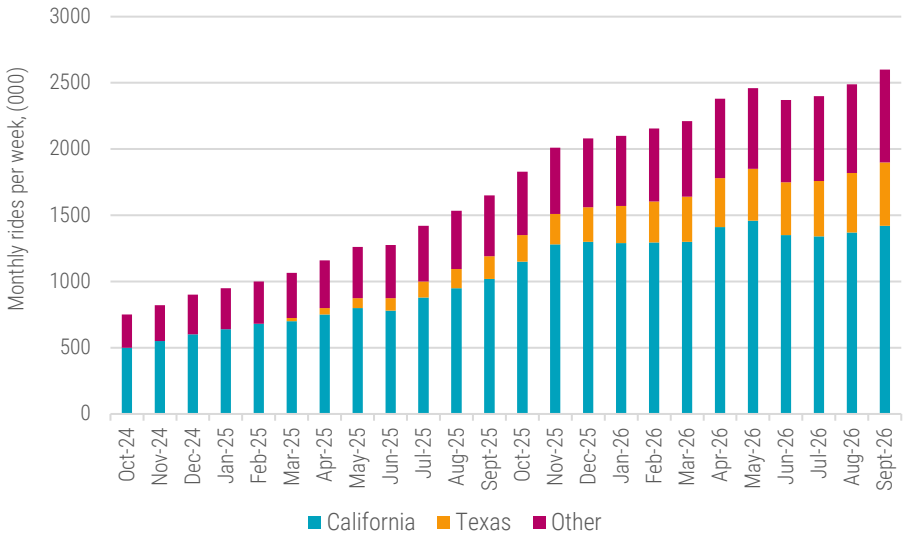
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[4] Ibid.

adapting to new environments and objects without extensive retraining – known as 'transfer' – remains the primary bottleneck for wider deployment.

Sales figures for humanoid robots also illustrate how early the market currently is. According to the International Federation of Robotics (IFR), only 5,000 full-sized humanoids were shipped in 2025. While today's robotics market is dominated by industrial machines, JP Morgan forecasts that humanoid shipments will accelerate to 1.75 million by 2030. Whether in humanoid or other form factors, AI is already transforming the industry. Where robots were previously programmed for specific tasks, AI facilitates training through simulation and on-the-job learning. These AI enhancements transform robots from rigid tools into versatile assets.

Perhaps the clearest example of physical AI in practice is on the road. Long promised and repeatedly delayed, autonomous transport is now commercially available in a growing number of cities around the world. In March 2026, Waymo announced it had passed 500,000 paid driverless rides per week, double the level of a year earlier; and recent data from other states including Arizona and Texas suggests growth continues. Impressively, in an analysis of over 25 million miles of autonomous driving, Swiss Re found that Waymo generated 88% fewer accident claims than human drivers. Others from Tesla to Chinese Baidu and Pony.ai report similar growth.[5]

Figure 4 –Waymo completed autonomous paid rides per month



Source: Robeco, company reports, public filings, October 2026.

Software driving AI everywhere

Without software to direct it, technology is little more than silicon and metal wire. Yet ironically, no sector has been more challenged by AI than software. Investors have worried that AI could replace rather than augment traditional software in the same way that cloud software-as-a-service (SaaS) vendors displaced incumbent on-premise solutions. However, where those incumbent software vendors were slow to embrace the cloud, today's SaaS leaders have moved quickly to adopt AI.

The integration of AI and AI agents into software is widespread and addresses a broad spectrum of applications, from general-purpose tools to domain-specific. Microsoft's Copilot, for example, is now embedded in workflows at 85% of Fortune 500 companies, automating tasks from invoice reconciliation to summarizing meetings. AI-coding

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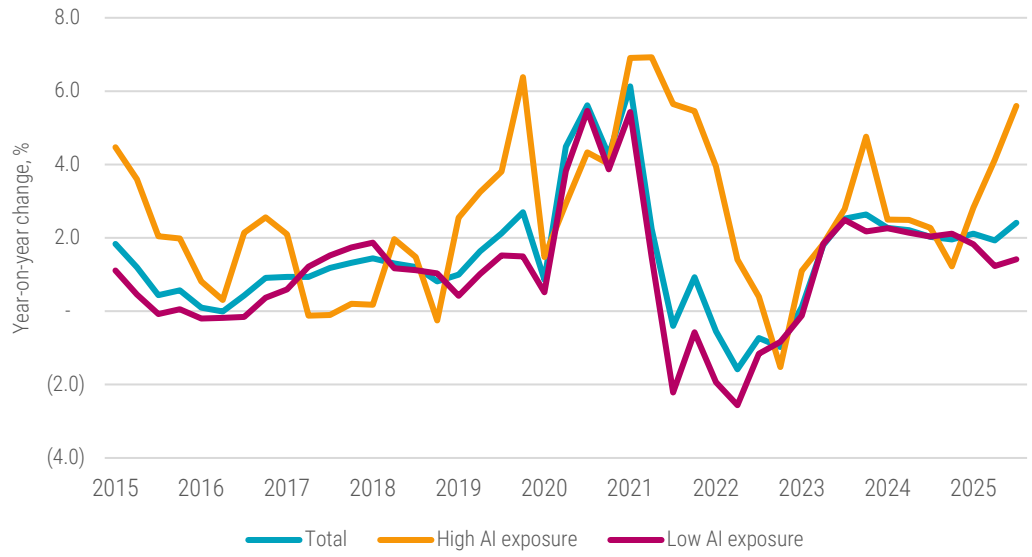
tools have helped to drive a 30% uplift in software developer productivity. ServiceNow AI agents have helped customers improve IT service times by 33% with a growing share of tickets resolved on first contact.[6]

Beyond the office, AI tools are also helping drive efficiency in the physical economy. For instance, John Deere has demonstrated its computer-vision software reduced herbicide spraying by up to 60%, and Shell deployed C3 AI's predictive maintenance software to cut unplanned equipment downtime by 20%. AI-driven weather models from Google and Microsoft have sped up forecast calculations enabling utilities to better optimize renewable energy integration and provide earlier severe storm warnings to public safety agencies.[7]

Measuring impact

The Nobel Economist Robert Solow once quipped that we can see technology everywhere, except in the productivity statistics. While the technology sector itself has so far captured the majority of AI-driven gains, there is growing evidence that the technology is driving broader impact. For instance, according to the US Federal Reserve Bank of Dallas, average annualized labor productivity growth since Q1 2024 was 3.7% for sectors with high exposure to AI compared to 1.7% for the rest of the economy. Their analysis found a similar positive correlation between AI exposure and labor productivity at the country level. At the corporate level, McKinsey's 2026 State of AI report noted that 37% of surveyed enterprises indicated that AI has positively contributed to earnings, however that figure was unchanged from the prior year.

Figure 5 – US productivity growth by sector exposure to AI



Source: Robeco, US Federal Reserve Bank of Dallas, July 2026.

In summary

Whether the pace of AI investment can continue, and whether it can make a return, ultimately depends on whether AI is useful. Although the adoption and benefits of AI have so far been concentrated in the technology sector, evidence suggests a broadening impact. Even without major breakthroughs in other fields, gains in productivity from software development to medical recordkeeping provide firm-level incentives to expand AI usage, which in turn fund continued investment in the technology. While near-term risks are real, evidence continues to suggest that the long-term AI investment cycle remains intact.

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