

Is Software Engineering Dead?

GenAI automates many coding tasks, but software engineering is much more than just writing code

By Raju Chellam



Here's a software story with a corporate twist: The CEO asked for a "quick demo" of the new AI-powered software deployment system. The software engineering team triggered the demo. The bot announced: "Initiating chaos protocol." The CEO froze. The AI continued: "Sacrificing one microservice to appease the uptime gods." The engineering lead whispered: "It's just a quirky logging message." Concerned, the CEO asked: "Is this... safe?" The AI bot replied: "Define safe." Just then, the office lights flickered. The CEO stood up. "I'll just... circle back later," he said and left the room. The software engineering team has now renamed all "quick demos" as "quick demons."

If that anecdote made you blink, these statistics should make you think: By 2028, up to 90% of software engineers working in corporate environments will use AI code assistants. That's up from less than 14% in early 2024, according to Gartner estimates. And as investments in IoT (Internet of Things) ramp up, the role of software engineers will drastically transform. In the Indo-Pacific region (excluding Japan), spending

on IoT tech is set to reach US\$355 billion by 2029, up from US\$241 billion in 2025, says IDC (International Data Corp.).

THE AI ANGLE

"AI-enabled tools and technologies are fundamentally changing how software is built and delivered," says Joachim Herschmann, a Gartner vice president. "Corporate leaders need to harness AI-driven automation, optimize talent strategies and adopt sustainable, AI-native engineering practices. Software engineering leaders who act on these trends will then be able to position their organizations for long-term success."

Software engineering is the systematic application of engineering principles to the design, development, testing and maintenance of software systems. It involves structured processes, tools and methodologies to ensure software is reliable, scalable, and meets user requirements.

Netflix is a good example. It uses microservices architecture where each service—such as user

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profiles, recommendations, streaming—is independently developed and deployed. Engineers use Java, Python, Node.js and follow Agile methodologies for iterative development. The company employs automated testing and CI/CD (continuous integration and deployment) to apply frequent updates without downtime.

Generative AI is transforming software engineering by allowing applications to interact intelligently and autonomously, similar to human interactions. More than 50% of software engineering teams will be actively building LLM-based features by 2027. “Successfully building LLM-based applications and agents requires software engineering leaders to rethink their strategies,” Herschmann says. “This means investing in upskilling, experimenting with GenAI outputs and implementing strong guardrails to manage risks.”

Unlike proprietary models, open GenAI models enable organizations to customize, finetune and deploy AI solutions tailored to their specific needs, whether on-premise or on the cloud. This shift is making advanced AI capabilities more accessible and cost-effective for a wider range of teams and use cases. Gartner predicts that by 2028, 30% of total global enterprise spend on GenAI technologies will be on open GenAI models tuned for domain-specific use cases.

THE IoT ANGLE

Where does IoT figure in this picture? Software engineering provides the structure and discipline to build the IoT software stack, which typically includes embedded software with engineers writing firmware for microcontrollers in IoT devices for example, implementing protocols to enable device-to-cloud communication, and ensuring secure firmware updates, authentication and encryption across the IoT ecosystem.

One example: Tesla’s vehicles are IoT devices on wheels. They have embedded software controls for sensors and actuators and send real-time data to cloud servers for diagnostics and updates. Programmers use software engineering practices to deploy over-the-air updates, ensuring continuous improvement and security.

IoT spending in 2025 will be led by manufacturing, government, retail and utilities, accounting for over 50% of global investment. Industrial and consumer goods manufacturers will be top spenders, while healthcare and transportation will see the fastest growth.

In the Indo-Pacific region, the highest spending will be on video analytics, manufacturing operations, inventory intelligence, supply chain resilience and asset management. Rapidly growing use cases include public safety, emergency response and leak detection—driven by rising demand for real-time data and automation.

“Prioritizing business optimization alongside strategic investments in AI, analytics and security is crucial for enterprises in the region,” says Sharad Kotagi, an IDC market analyst. “Robust IoT solutions will accelerate digital transformation by unlocking data-driven decision-making and enhancing customer experiences.”

IDC says China will account for the largest share of spending with more than 60% this year, followed by India and South Korea. The fastest growth in IoT-related spending will be driven by smart factories and Industry 4.0, along with government-led IoT programs and policies.

Moreover, 80% of humans will engage with smart robots on a daily basis, and one in 20 supply chain managers will manage robots, rather than humans by 2030. “Organizations are placing greater emphasis on enhancing the capabilities of their existing workforce by supplementing with robotics due to factors like labor scarcity and rising costs,” says Abdil Tunca, a Gartner senior principal analyst. “Smart robots have been identified by chief supply chain officers as an important investment area, though many acknowledge their organization lacks internal robotics expertise to fully leverage these innovative technologies.”

THE DATA ANGLE

The third pillar in software engineering is about data as a product. That’s because all software products are constructed on a bed of data. Put simply, a data product is made up of components that are designed to collect, organize and manage datasets to be easily consumed by various teams or systems. To capture

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value, a data product must be built from the beginning to be reused and extended to meet a broad range of business cases.

McKinsey cites the analogy of a railway executive with a contract to transport cargo across the country. You wouldn't have a different engine pulling each individual car of cargo. It would be much more efficient and cost-effective to hitch as many cargo cars as possible to the same engine. In fact, you would want a standard set of trains and connectors that would allow you to pull different kinds of cargo anywhere.

"This analogy is particularly germane to the world of data products," McKinsey says. "Scale and value come from treating a data product like an engine that can support a large number of high-value use cases (or cars). Unfortunately, companies are operating much more along the single engine-single car model. The result is fragmenting data programs that fail to scale or generate the value that many had expected."

The wave of enthusiasm surrounding GenAI has driven a wider appreciation in the boardroom of the importance of data and the need to better harness it. Having reliable datasets is also a key component of software engineering.

"Delivering on high-value business cases often requires multiple data products," says McKinsey. "For example, a telco wanted to optimize its network deployment. This required it to figure out which people and equipment were available at any given location. To run the relevant analysis, it needed to develop two data products: one focused on technicians' skills and locations (among other things) and the other on towers to capture the SKUs for the parts used, configurations, traffic data, and each tower's performance."

THE TALENT ANGLE

The bottom line: In the age of GenAI, is software engineering dead? No. GenAI automates many coding tasks, but software engineering is much more than just writing code. It involves architecture, business grasp, cybersecurity and scalability by design, testing, maintenance and human-centered problem solving. GenAI can assist, but it doesn't replace the need for engineers who understand context, constraints and consequences.

Talent density—the concentration of highly skilled professionals within teams—has become a key differentiator for high-performing engineering organizations. When supported by the right culture and tech strategies, talent-dense teams can operate with greater efficiency and adaptability and deliver increased customer value.

"To remain competitive, organizations must move beyond traditional hiring practices and focus on building teams with high talent density," says Gartner's Herschmann. "Leaders should cultivate a culture of continuous learning and collaboration to attract and retain skilled professionals who can adapt and grow with evolving business needs."

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"It's about more value, not better data," McKinsey advises. "The goal of developing data products isn't to generate better data; it's to generate value. No data product program should begin until leadership has a firm grasp of the value that each use case can generate and has prioritized the biggest opportunities."

Since we started with a corporate software engineering joke, let's end with another. At a company town hall gathering, the team was demonstrating its new AI-powered software engineered chatbot. Everything worked perfectly in rehearsals. On stage, the CEO proudly said: "Ask it anything!" An employee typed, "What's your purpose?" The bot replied: "To replace middle management." Nervous laughter. Trying to defuse the embarrassing situation, CEO quickly asked: "Tell us a joke." The bot said: "Your software engineering team." 

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