



AI-driven DevOps for modern software development

Discover how unifying artificial intelligence and DevOps platforms unlocks AI's true potential for innovation at scale.

Embracing AI to drive innovation

Artificial Intelligence (AI) is reshaping the world and changing how companies solve problems. In software development, many changes are already considered mainstream, with AI-powered development tools shifting how developers write, secure, and manage code. AI presents exciting opportunities for innovation and growth, yet it also introduces new challenges. Organizations are now faced with effectively harnessing AI to streamline software development and stay competitive in a rapidly evolving landscape. The path to success isn't straightforward—as both the strategies and technologies continue to develop, staying current on best practices becomes more critical than ever.

This ebook will explore how a unified, platform-based approach to AI integration can help you avoid common pitfalls and ensure your organization capitalizes on the immense potential AI offers. By examining the shift toward integrated DevOps platforms, understanding the drawbacks of piecemeal AI solutions, and exploring real-world success stories, you'll learn how to harness AI to drive innovation, streamline workflows, and stay ahead of the competition. You'll see how you can make AI a sustainable, long-term asset for your development teams, and ensure that your business is set up for success as you navigate these uncharted waters.

Industry shift toward DevOps platforms

According to Gartner®, “By 2027, 80% of organizations will incorporate a DevOps platform into their tooling to reduce complexity and streamline software delivery, up from 25% in 2023.” This consolidation is intended to streamline workflows, increase speed-to-market, reduce technical debt, and improve cost savings. Additionally, organizations are adopting ‘shift left’ principles—integrating testing, quality assurance (QA), and security earlier in the development cycle. A DevOps platform streamlines this approach by incorporating these critical processes from the outset, leading to higher quality software and reduced risk.

However, not all DevOps platforms have caught up with the AI revolution. Many companies still rely on traditional DevOps solutions that, while dependable, may not take advantage of AI’s full potential. By sticking with these traditional solutions, companies sacrifice the advanced capabilities that AI brings to the Software Development Lifecycle (SDLC), such as application modernization, performance optimization, and driving innovation through continuous improvement. Additionally, AI can help augment skill gaps and streamline onboarding processes for developers.

On the other hand, adopting AI in a fragmented way—whether by adding separate tools to your existing DevOps platform or piecing together a collection of tools from scratch—can lead to challenges like tool sprawl, increased complexity, and reduced productivity. This disjointed approach complicates workflows and also contradicts the growing trend of moving towards streamlined, integrated platforms.

Bringing AI to the modern DevOps platform

Security and scalability are two of the most critical considerations when selecting DevOps tools, and integrating AI into the platform can accelerate and enhance the benefits that DevOps solutions already provide.

AI-driven security across the SDLC

In today's threat landscape, security is non-negotiable. Software applications are increasingly targets for cyberattacks, making it essential to have a DevOps platform that integrates AI-driven security features across the entire SDLC. A unified platform can help safeguard against vulnerabilities by embedding AI-powered security measures directly into the development process. This integration helps you manage risks associated with third-party dependencies and simplifies compliance with industry standards. Piecemeal or add-on solutions, on the other hand, could increase the risk of security gaps due to fragmented workflows and difficulty managing disparate tooling. By incorporating AI-driven security features throughout the SDLC, organizations can stay ahead of emerging threats while maintaining agility.

Growing AI capabilities with your organization

A well-implemented AI solution enhances current productivity and also scales alongside your organization. This scalability helps ensure that AI remains a sustainable, long-term investment rather than a short-term fix. As your business evolves, so too should your AI capabilities within your DevOps platform, allowing you to integrate new AI-driven functionalities without disrupting existing processes. Traditional DevOps platforms and piecemeal AI solutions often struggle to scale AI effectively, leading to bottlenecks and inefficiencies over time.

Why layering on AI solutions fails to deliver

Organizations have grappled with tool sprawl for decades—a problem that persists today as new AI development tools emerge daily. Many organizations mistakenly layer AI tools onto their existing DevOps platforms or assemble tools from scratch in a fragmented way, aiming for quick wins. But this approach often creates more issues than it solves. AI thrives when it has access to comprehensive context—the information it needs to optimize workflows, automate processes, and make better decisions. When deploying AI tools in isolation, these benefits are diminished, and so are the results.

Key challenges of supplemental AI solutions:

- **Lack of integration:** Each tool operates in its own silo, with unique user interfaces, permissions, and login details.
- **Context switching:** Developers waste valuable time switching between disparate tools, leading to added cognitive load and inefficiencies.
- **Complexity:** Tracking ROI and performance across multiple platforms becomes difficult, obscuring individual tool value and reducing overall productivity.

This fragmented approach to AI deployment introduces bottlenecks instead of accelerating workflows. AI is already a novel and evolving technology, and when teams have to learn and manage multiple tools, the focus shifts from improving efficiency to simply figuring out how to use each tool. This undermines the intended benefit of AI: streamlining and simplifying workflows.

A DevOps platform with AI built in solves these issues by providing a consistent experience across all domains. With centralized AI, teams can learn once and apply this understanding universally, unlocking productivity gains without the complexity of managing multiple systems. By choosing an AI-driven platform, organizations can eliminate bottlenecks, simplify workflows, and maximize the value AI brings to development processes.

The future of DevOps with AI-powered platforms

Ultimately, the future of DevOps lies in end-to-end, enterprise-grade platforms that:

- **Are built with AI at their core**, providing advanced capabilities across the entire SDLC.
- Provide tooling that helps you meet **stringent security and compliance requirements**, protecting your organization from emerging threats.
- Offer **flexibility and scalability**, allowing seamless integration with both internal and third-party applications and building with you as you grow.

By adopting an AI-driven DevOps platform, organizations can unlock new levels of efficiency, innovation, and security. This approach addresses current needs and also positions companies to stay in the lead as technology evolves.

Realizing value with an AI-powered DevOps platform

When it comes to achieving results like faster time-to-market or improved productivity, the integration of AI tools must be seamless across the SDLC. Adopting a platform-based AI approach helps ensure that developers and organizations can fully capitalize on the time and efficiency savings that AI offers, without introducing bottlenecks or security risks.

- **Avoiding context switching:** In a unified platform, AI is built directly into the tools developers use every day—like their code editors (IDEs) where they write code, and the DevOps platforms where their code is stored. By integrating AI into these familiar environments, developers can use AI features without leaving their main workflow. This means they don't have to switch between different tools, which reduces mental effort and helps them stay focused and work more efficiently.
- Fragmented tools, on the other hand, often require developers to jump between separate applications to utilize AI capabilities. This constant context switching both increases cognitive load and leads to lost productivity.
- **Maintaining security:** A unified platform enables organizations to benefit from AI capabilities that are native to the system and governed by comprehensive terms and responsible AI policies. This integration reduces the risks associated with using multiple, disconnected AI tools. Every additional integration can introduce potential vulnerabilities—more logins and credentials to manage, concerns about data residency and data in transit, and the need for additional legal audits. Security gaps often arise when multiple tools operate in isolation without proper oversight. By consolidating AI functionalities within a single, unified platform, organizations simplify their security posture and minimize risks, and make it simpler and safer to manage and protect development processes.
- **Centralized guidance and rollout:** A platform-based approach streamlines the adoption process by providing clear guidance and guardrails. Instead of managing isolated tools with varied policies and governance, organizations can enforce consistent AI usage standards. This reduces the complexity of rollout and ensures AI is used effectively across the board.

Developers are ready—enterprises need to catch up

Developers are already adopting AI in their daily workflows, but enterprises are lagging behind in adoption due to concerns about complexity, security, and governance. GitHub has extensive experience both in developing AI tools like GitHub Copilot and in helping enterprises realize their value. [Our research](#) indicates that 90% of developers report feeling more fulfilled in their jobs when using GitHub Copilot, and 95% enjoy coding more when assisted by AI. However, many organizations lack the policies and strategies needed to support this level of AI adoption across teams.

By adopting a unified AI-powered development platform, organizations can bridge this gap and enable enterprise-wide adoption of AI tools. This approach allows you to leverage AI to secure software earlier in the process, improve developer productivity, and accelerate time to market. By standardizing AI usage across the SDLC, organizations can realize the full benefits of AI integration, including enhanced innovation and streamlined workflows.

What is GitHub Copilot?

GitHub Copilot is the world's most widely adopted AI developer tool, designed for organizations that innovate ahead of the curve through software that disrupts the status quo.

- **Backed by leaders in AI:** Developed in collaboration with industry-leading AI researchers.
- **Contextualized coding assistance:** Provides intelligent coding support across the developer workflow.
- **Boosts productivity by up to 55%:** Helps developers write code faster and more efficiently.
- **Accelerates software development pace:** Speeds up the development process from idea to deployment.
- **Enhances developer experience:** Improves satisfaction and engagement among development teams.

A plan for maximizing ROI

To maximize your ROI, it's essential to strategically repurpose the time you save through AI integration. A modern developer organization requires a clear plan for how to leverage these efficiency gains. With a unified AI platform, this becomes easier to manage:

- 1. Focus on high-value work:** With AI handling repetitive tasks, developers can dedicate more time to high-impact activities like system design, innovation, and collaboration. A unified platform streamlines these workflows, making it easier to redirect developer time to strategic initiatives.
- 2. Encourage best-practice AI usage:** Internal governance and policy frameworks should provide clear guidelines for how developers can best use AI tools. For example, organizations can use training sessions to guide developers toward specific business objectives, such as shortening feedback loops in test-driven development or improving security practices.
- 3. Support continuous improvement:** A platform-based approach improves the initial adoption of AI and facilitates ongoing monitoring and adjustment. Centralizing AI tools allows organizations to track the performance of AI-driven processes and ensure that time saved is continually reinvested in areas that drive business value.

Since its launch, more than 77,000 organizations have adopted GitHub Copilot. Our [research with Accenture](#) revealed that developers using GitHub Copilot saw:

- Up to **55% increase** in coding speed.
- A **15% improvement** in pull request merge rates, indicating higher code quality.
- An **84% increase** in successful builds, reducing errors and improving overall development flow.

This real-world data demonstrates how a platform-based approach optimizes AI usage and delivers significant business value. With GitHub Copilot, companies see improvements in productivity and benefit from better code quality and higher developer satisfaction.

AI is a powerful enabler of productivity and security when well-integrated. The future of software development lies in unified platforms that deliver sustainable, long-term results—and GitHub Copilot is a step ahead.

AI in action

Otto Group, EY, and Carlsberg have leveraged GitHub's AI-powered developer platform to accelerate their software development efforts, using AI to speed up coding, automate crucial tasks, and mitigate security risks.

Otto Group: Driving innovation and security with AI

[Otto Group](#), a leader in retail and services, embraced AI with GitHub Copilot and Copilot Autofix to automate critical parts of their development workflow. With Copilot Autofix, Otto Group's developers no longer spend time on repetitive security tasks like identifying vulnerabilities and implementing fixes. Instead, as Mario Landgraf, community manager for Security at Otto Group, explains:

"Copilot Autofix takes care of cumbersome security tasks, ensuring our existing and new code is always as secure as possible."

The tool automatically flags vulnerabilities and recommends code changes, helping teams resolve issues without disrupting their focus.

This approach allows Otto Group to improve the security of their software while freeing up developers to focus on more strategic, innovation-driven work. With Copilot Autofix working seamlessly in the background, developers keep security front and center without the manual overhead traditionally associated with vulnerability management.

EY: Accelerating productivity with AI-powered development

[EY](#), a global professional services company, leveraged AI to supercharge their development processes. With GitHub Copilot, developers write code faster, automate routine tasks, and receive high-quality suggestions in real-time.

"GitHub Copilot is turbocharging developer workflows," says Mark Luquire, EY's director and global head of Platform Adoption. "It's clear embedding generative AI across developer environments will transform how organizations deliver and drive value and ultimately achieve more."

By embedding AI into their daily operations, EY significantly improved developer satisfaction and efficiency. EY expanded the use of GitHub Copilot across its entire development team, with developers reporting that AI-powered suggestions increase their coding efficiency. Copilot helps automate tedious tasks like writing unit tests, allowing developers to spend more time on strategic development.

Carlsberg: Enhancing developer focus with AI

[Carlsberg](#), a world-famous brewing and beverage company, transformed its software development processes by embracing AI through GitHub Copilot. By integrating the AI-powered coding assistant, Carlsberg's developers write code faster and more efficiently, reducing context switching and enhancing productivity.

"GitHub Copilot helps us eliminate context switching and keeps developers in the zone," says Peter Birkholm-Buch, head of Software Engineering at Carlsberg. "That translates into developers being more efficient and writing code faster."

The seamless integration of AI into their development workflow allows Carlsberg's developers to focus on strategic, innovation-driven tasks rather than routine coding. Adopting GitHub Copilot accelerated their software development efforts and improved overall developer satisfaction.

How GitHub's platform helps realize the value of AI

An AI-powered DevOps platform is essential for accelerating innovation, simplifying workflows, and maximizing security.

- **Trusted developer platform:** GitHub is the world's most widely adopted AI-powered developer platform. It includes AI-powered tools like GitHub Copilot to help you streamline each phase of the SDLC. GitHub brings together development, security, and collaboration in one place, reducing the complexity that comes from managing multiple tools.
- **Accelerate time-to-market:** GitHub's AI capabilities have been shown to increase developer productivity by up to 55%, enabling teams to ship products and features faster while focusing on innovation over repetitive tasks.

- **Collaboration built-in:** Designed for developers, by developers, GitHub fosters real-time collaboration and integrates with both internal and third-party tools, helping ensure teams can work faster and smarter together.
- **Enterprise-grade security:** With built-in security features such as automated code scanning, vulnerability detection, and AI-powered fixes, GitHub helps secure your business without compromising on development speed.
- **Scalability and flexibility:** Whether your organization is growing or integrating new tools, GitHub's platform is designed to scale to meet the needs of businesses large and small.

By adopting the GitHub platform, your organization can keep pace with technological advancements in AI and ensure you're well positioned to lead in efficiency, security, and innovation. GitHub is more than just a collection of tools—it's a strategic investment in the future of your business.

Whether your goal is to accelerate delivery, enhance collaboration, or protect your software, GitHub is your trusted partner to help you thrive in today's competitive landscape. The future is AI-powered, and with GitHub, your teams will be ready.

Putting it all together

Artificial Intelligence is transforming software development, redefining how companies write, secure, and manage code. To win with AI and stay competitive, organizations should adopt a unified, platform-based approach. By integrating AI across the entire development cycle and avoiding fragmented solutions, you can streamline workflows, enhance security, and scale your AI capabilities.

By embracing a unified approach, you're not just keeping pace with change—you're leading it.

Trusted by 90% of the Fortune 100, GitHub helps DevOps teams of every size collaborate securely—and deliver better customer experiences, faster.

To learn more about GitHub or to start your free GitHub Enterprise trial, visit <https://github.com/enterprise>.

