How AI-Powered Toolchains Are Transforming Software Engineering

The New Era of Developer Productivity

Modern software development teams face unprecedented challenges. Between the need to stay abreast of constantly evolving technologies, increasing security demands, and the pressure to deliver innovation faster, developers spend more than 75% of their time on non-coding tasks[1]. At the same time, as many as 58% of organizations report that development and security teams do not collaborate[2], creating bottlenecks and vulnerabilities.

To build high-performing developer teams, it's critical to optimize their experience with the right tools for the right outcomes. Essential solutions to enhance developer productivity, satisfaction, and efficiency include platform engineering, AI-assisted development tools, and streamlined security. These elements are crucial for improving the developer experience and driving innovation. AI-powered developer toolchains are addressing these pain points—transforming not just how code gets written, but the entire developer experience.

The AI-Powered Toolchain Advantage

Microsoft's developer solutions address these challenges by optimizing the developer experience through three interconnected pillars:

1. Platform Engineering: The Infrastructure Revolution

Platform engineering optimizes workflows, allowing developers to build and collaborate easily thanks to essential tools, policies and processes that streamline the development and operations (DevOps) lifecycle. This enhances efficiency and scalability, from coding to monitoring.

CI/CD with GitHub Actions and Azure Pipelines: Automate workflows for greater efficiency in app deployment.

Self-service development environments: Use Microsoft Dev Box to preconfigure workstations with tools and code repositories for specific projects, enabling faster developer onboarding and centralized management.

Centralized governance: Manage infrastructure templates and ensure security and compliance with platform engineering best practices.

The developer solutions at Microsoft provide a comprehensive platform engineering framework, empowering teams to build, deploy, and manage software applications at scale while maintaining high standards of quality and reliability.

2. AI-Assisted Development: Your 24/7 Coding Partner

GitHub Copilot is transforming development workflows by unlocking the full potential of AI-powered development across every phase of the software development lifecycle.
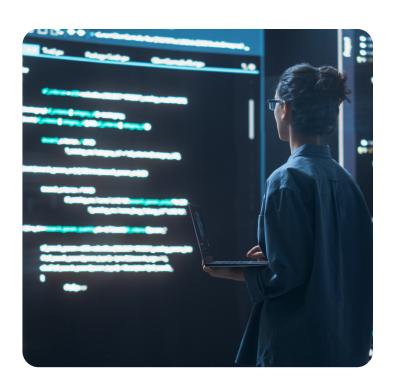
Transform developer workflows: Accelerate coding with GitHub Copilot by automating repetitive tasks such as writing comments and generating documentation.

Boost productivity: Generate accurate code snippets up to 55%[3] faster, allowing developers to focus on higher-level problem-solving.

Tailored for your team: GitHub Copilot enables personalized workflows by leveraging your organization's unique codebase, fostering seamless collaboration. Up to 94%[4] of GitHub Copilot users report better maintenance of flow state.

Generative AI is quickly amplifying the benefits of the developer experience (DevEx)—boosting developer happiness, fulfillment, and flow. Its rapid adoption by developers and businesses is driving better business outcomes, including increased profitability.

3. Shift-Left Security: Protection Built Into the Process

Integrated security features like GitHub Advanced Security enhance security by enabling developers to write more secure code, quickly address vulnerabilities in the software supply chain, and adopt responsible AI practices to build trust.

Found means fixed: Integrate security early in the development process with real-time vulnerability detection, enabling developers to fix up to 48% of issues[5] immediately. GitHub Advanced Security provides AI-generated fix suggestions for security alerts in natural language, accelerating vulnerability prevention down to just 28 minutes.[6]

Comprehensive protection: Strengthen code security with secret scanning, dependency reviews, and AI-generated code fixes for end-to-end security.

Responsible AI: Implement best practices for AI development that prioritize fairness, transparency, and accountability.

By integrating automated security into the developer workflow, developers receive continuous security feedback. This shift-left approach reduces long lists of vulnerabilities, preventing alert fatigue, and speeds up the development process.

It's Time to Unlock a Complete Toolchain

By optimizing workflows with platform engineering, reimagining the developer experience with AI, and enabling secure and responsible deployment, you unlock a complete toolchain. Equip your developers with a comprehensive, integrated toolchain that optimizes their experience.

Unified, complete toolchain
The Microsoft end-to-end toolchain (Azure, GitHub, VS Code) simplifies development from ideation to deployment.

Eliminate tech debt
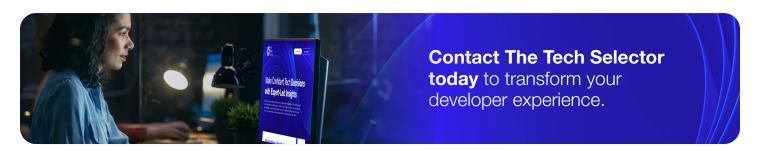The cost savings and efficiency gains from reducing context switching and consolidating tools.

Improved time-to-value
Leverage a unified toolchain to increase productivity and innovation, as developers who have time for deep work feel 50%[7] more productive.

The Future of Development Is Here

The data is clear: AI-powered toolchains are doing so much more than improving developer experience—they're redefining what's possible. The Tech Selector can help you revolutionize it all by harnessing Microsoft's powerful platform. When the complete toolchain comes together, you'll be able to achieve their goals faster and easier than ever before. Whether you're ready to deploy AI toolchains across your organization or need guidance building a roadmap, we'll help you move faster, safely and strategically.

Contact The Tech Selector today to transform your developer experience.

[1] Why you should invest in good Developer Experience today | Thoughtworks United States
[2] Stack Overflow Developer Survey 2022
[3] Research: quantifying GitHub Copilot's impact on developer productivity and happiness - The GitHub Blog
[4] GitHub Copilot Enterprise is now generally available - The GitHub Blog
[5] GitHub · Enterprise Application Security · GitHub · GitHub
[6] Found means fixed: Secure code more than three times faster with Copilot Autofix - The GitHub Blog
[7] Quantifying the impact of developer experience | Microsoft Azure Blog