

INSIGHTS

# Real World AI Use in Software Development

**How developer  
teams are using AI tools  
to impact the Software  
Development Lifecycle**

Global Developer Report 2023





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# Introduction

## “How can AI help my software development team? Is it really enterprise ready? What areas are people using Gen AI in today?”

These are some of the questions that are top of mind for software engineering leaders as they explore a rapidly changing landscape of growth and cost concerns.

At Bito, we are committed to supercharging developer productivity with AI. We believe the future of innovation lies in the hands of talented development teams. We were keen to better understand how AI is being used today and how it could help them in the future. Bito conducted research in partnership with Benchmarkit to understand the state of AI in software development. Nearly 700 companies participated in the research across company sizes, roles, company size and industries.

This report outlines the most important trends and findings. But here is what I was most interested to learn:

We found that highly effective software developer teams are leading the AI revolution, with 45% of them already broadly using AI tools in their software development process and 31% of them are seeing productivity gains of over 60%! Simply put, the best teams in the world are aggressively adopting AI and seeing considerable gains. These high-performing teams are using AI tools in three main areas: to write

code (90% of respondents), debugging (48%), and code review (42%).

The primary benefits include improved code quality (59% of respondents), accelerated learning of the codebase (54%), and developer satisfaction. AI appears to not just help with productivity or cost savings, but improving code quality and the lives of developers.


Over the next two years, more than 70% of developers expect their companies to incorporate AI software tools into their workflow. Developers anticipate that AI tools will almost double their productivity and significantly enhance the quality of their codebase. These expectations are significant!

**45%** of highly effective software teams are broadly using AI tools in their software development process and **31%** are seeing productivity gains of over **60%**!



## High-performing development teams are using AI tools in three main areas:

  
**90%**  
write code

  
**48%**  
debugging

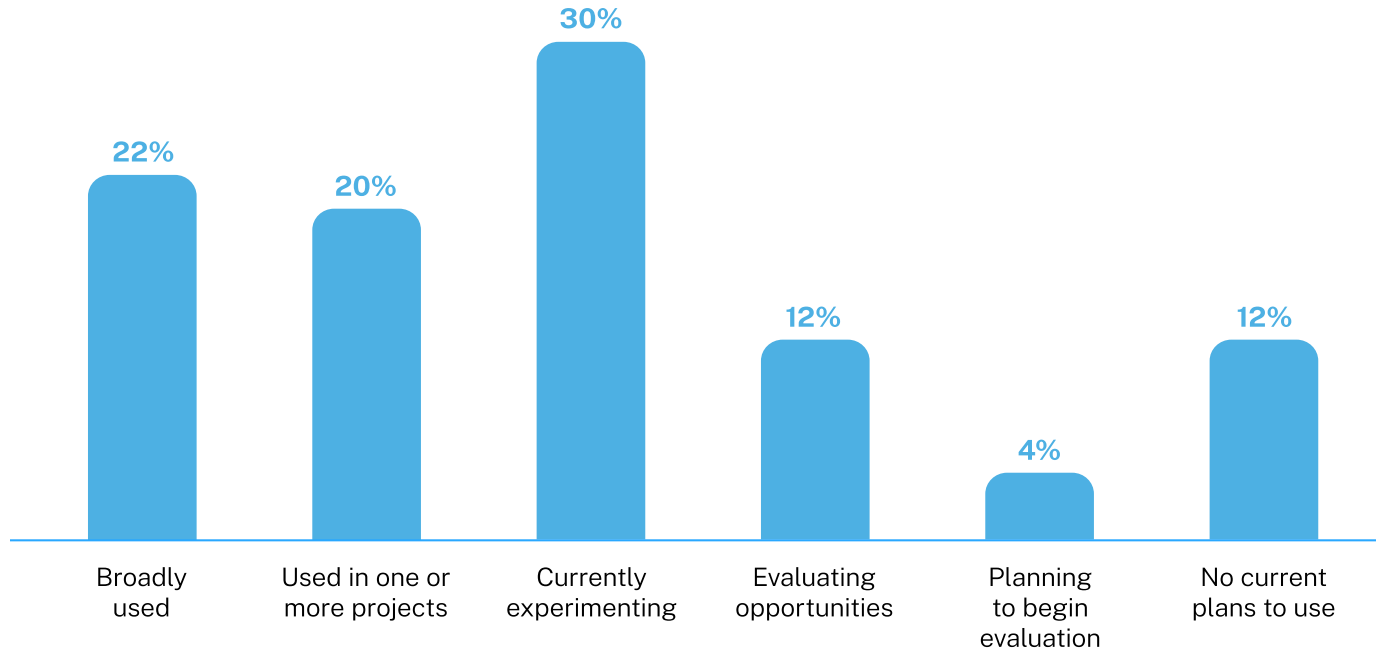
  
**42%**  
code review

Accuracy, reliability, and data privacy are the top challenges related to AI, especially for larger organizations. AI tools have come a long way in a short amount of time, but are still maturing for the enterprise.

But read on to see our more detailed findings and compare your organization against the general population and the best organizations. Hopefully, you can find some quick wins and develop a longer term roadmap including the appropriate investment in people and tools. Thanks for your interest!

– Amar Goel, Co-founder and CEO

## Adoption status of AI tools in software development



### Amar's Angle

**72%** are using AI in some way, even if just experimenting. Can you think of a technology being so widely explored or used within a year of broad launch? Game on to harness the benefits of AI.

— **Amar Goel**  
Co-founder and CEO

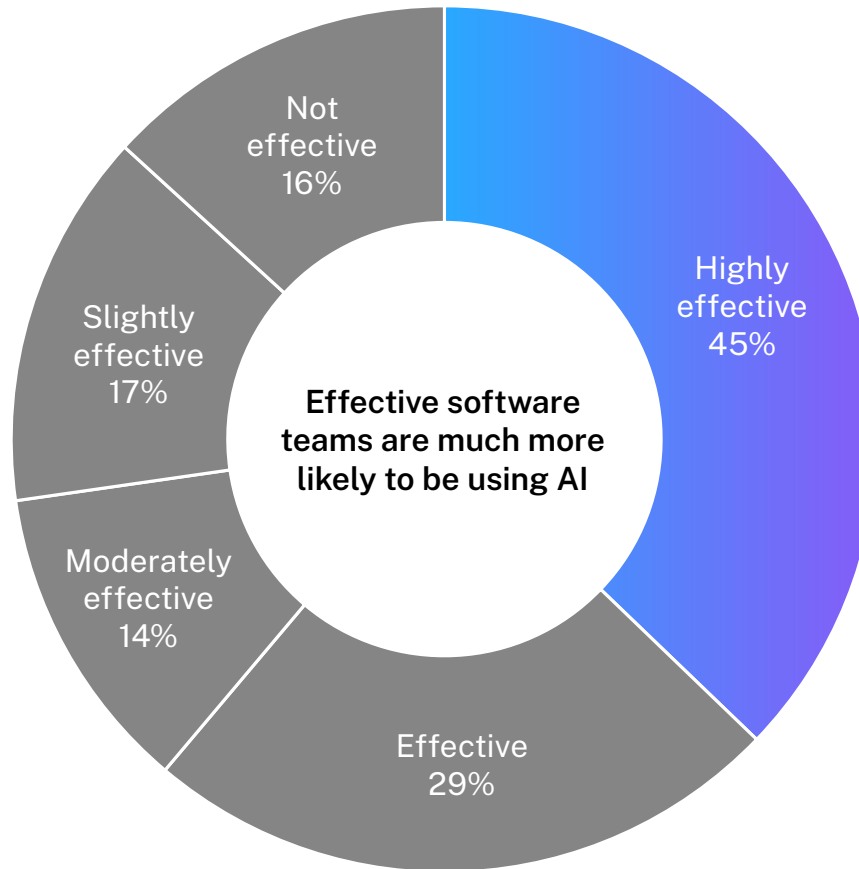
**42%** of survey participants are **already using AI in their software development processes, and 30% are currently experimenting.**

## Use of AI tools, segmented by effectiveness of software teams



### Amar's Angle

The best software teams in the world are using AI the most – hard to know if it's causation or correlation. But at a minimum, they are leaning in to make AI work for them.



**45%** of highly effective software teams\* around the world are actively using AI for software development. Ineffective teams use it at a rate of **16%** – they are barely using AI.

\*Survey respondents were asked to rate their software organization on a scale, from a highly effective team to not effective team.

# Potential uses of AI tools in software development

**Code writing, debugging, and code review** are perceived to have the most potential for AI, by those not currently using AI

**68%** Code writing

**47%** Debugging

**35%** Code review/  
PR

**27%** QA/Test

**23%** Observability/  
Monitoring



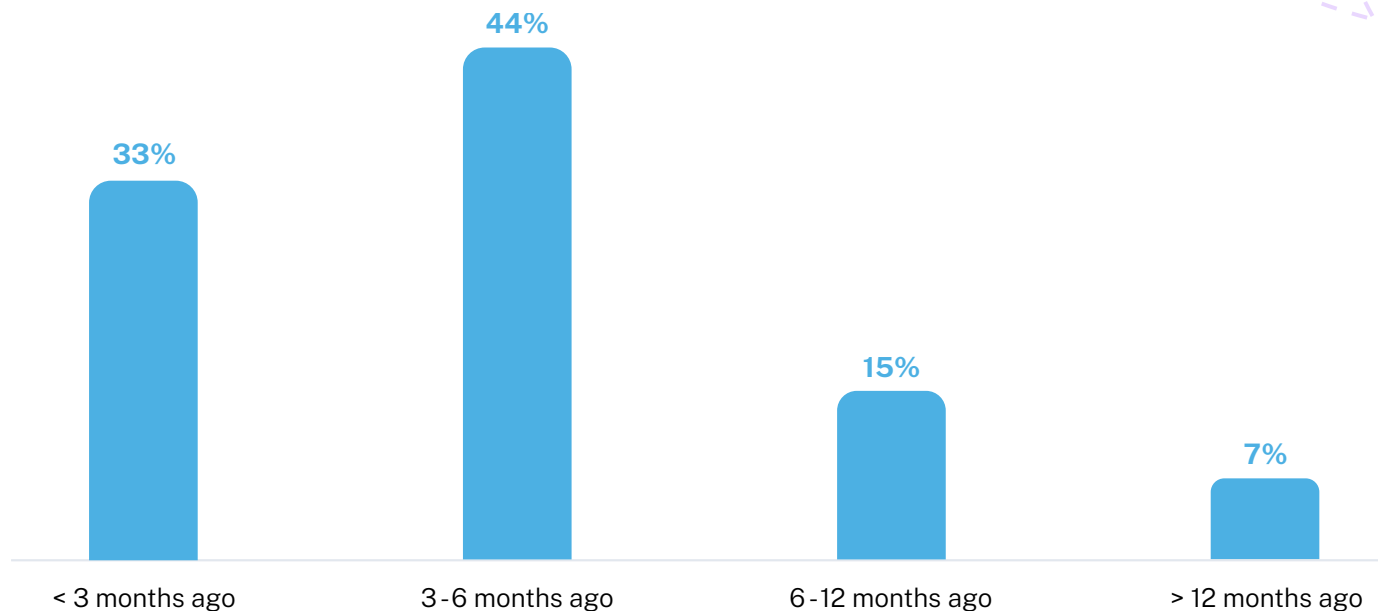
## Amar's Angle

I was surprised to see testing was not a top focus for individual developers, different from what leaders say later in our survey. 😊 As AI helps with more and more software development, the need for testing will go up dramatically.



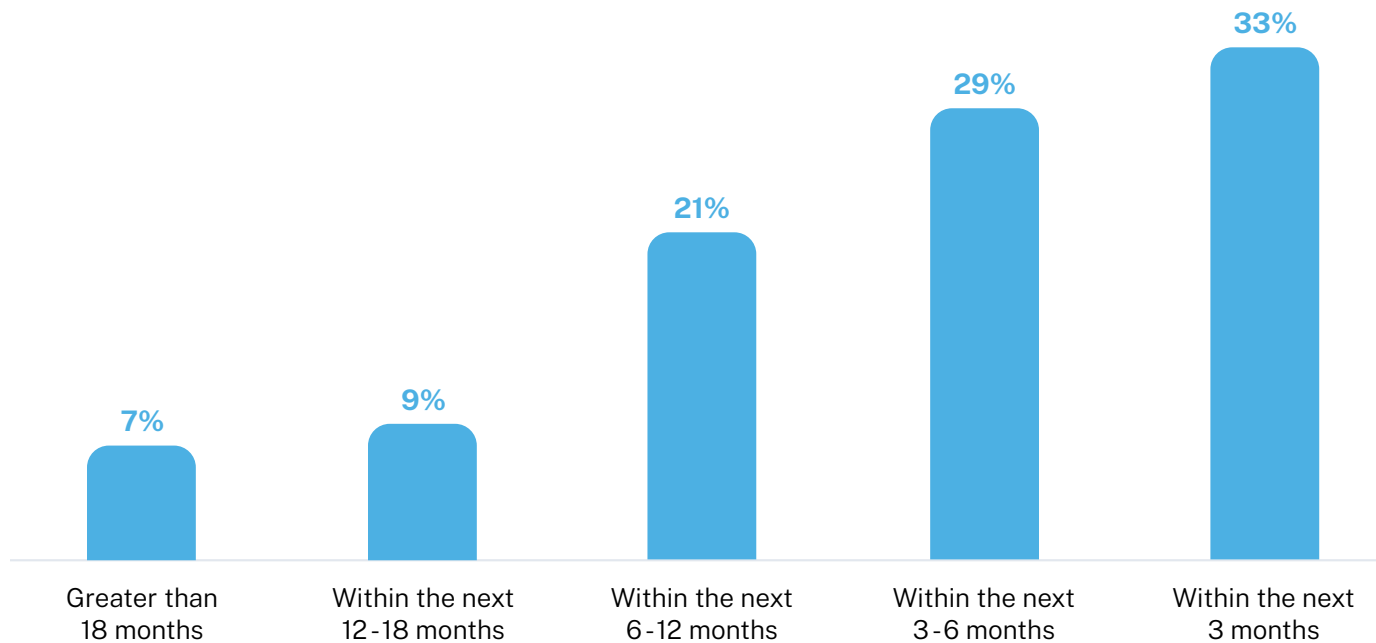


## For those using AI, when did your company start using AI tools?



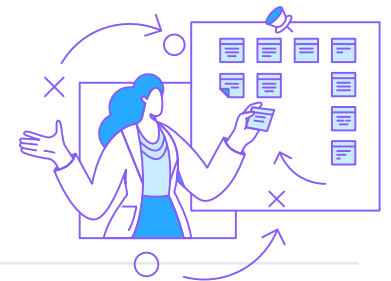
AI usage is new. Of those using AI, **77%** of companies started using AI tools within the last 6 months.

## For those not using AI, when does your company plan to start using AI?



### Amar's Angle

Wow, almost everyone will start using AI in the next 12 months. Is this real or a **crazy** hype cycle?

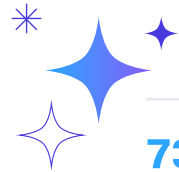


**83%** of participants plan to start using AI in software development in the next 12 months.

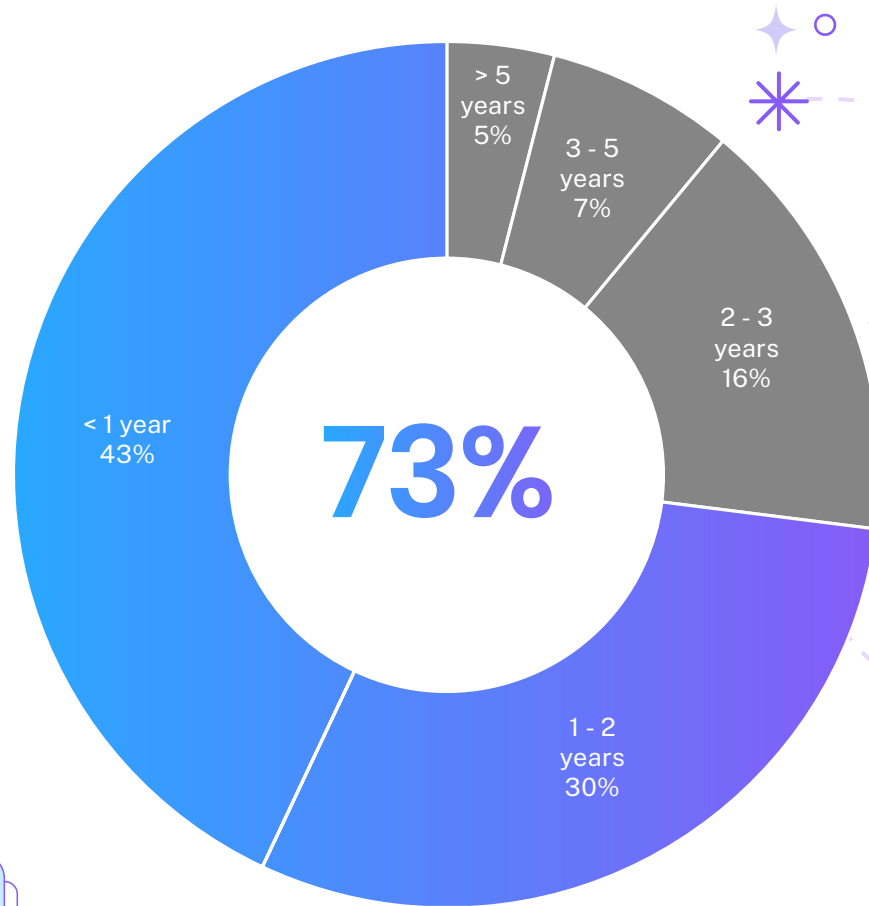




# When will AI be used by most developers in your organization?



**73%** of participants think that AI will be adopted by most developers in their organization in the next two years.



## Where in the world has AI been broadly incorporated by developers?

**30%** North America

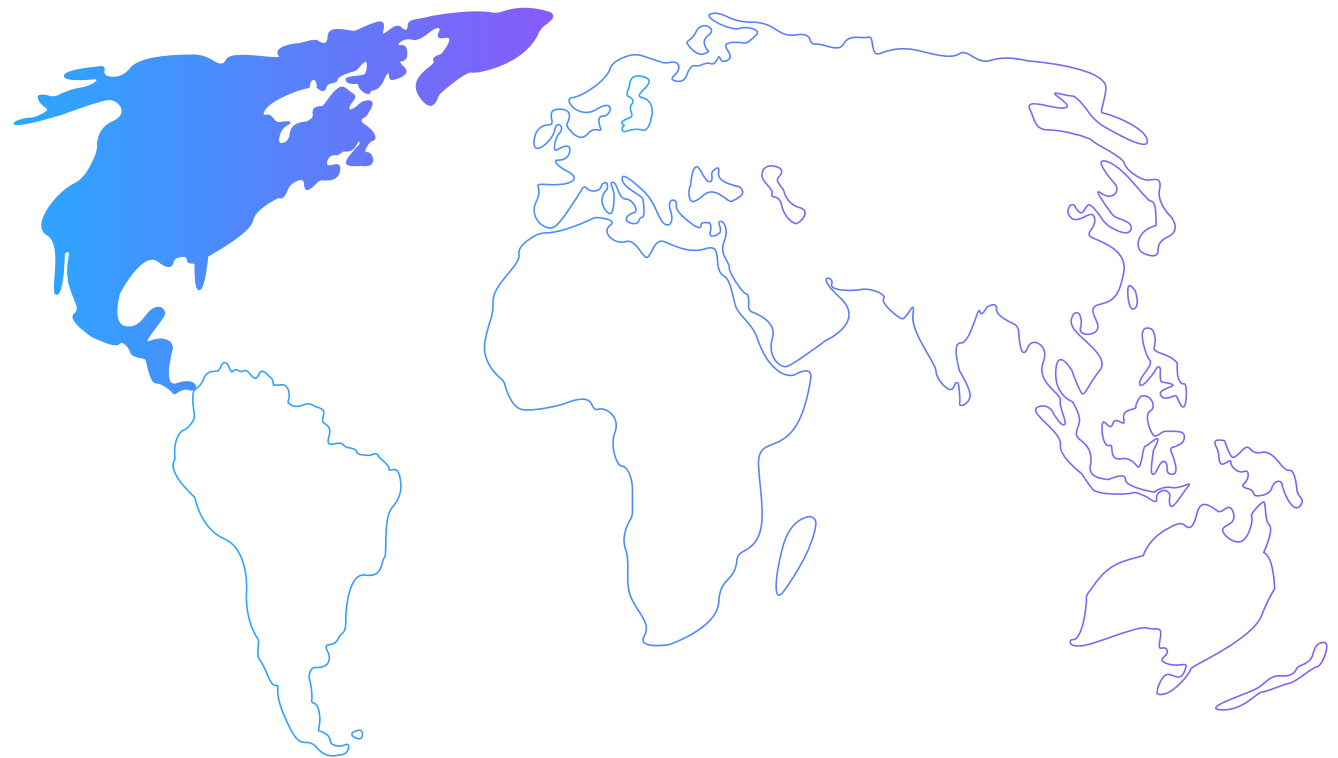
**29%** Africa/  
Middle East

**22%** Latin America

**20%** Asia Pacific

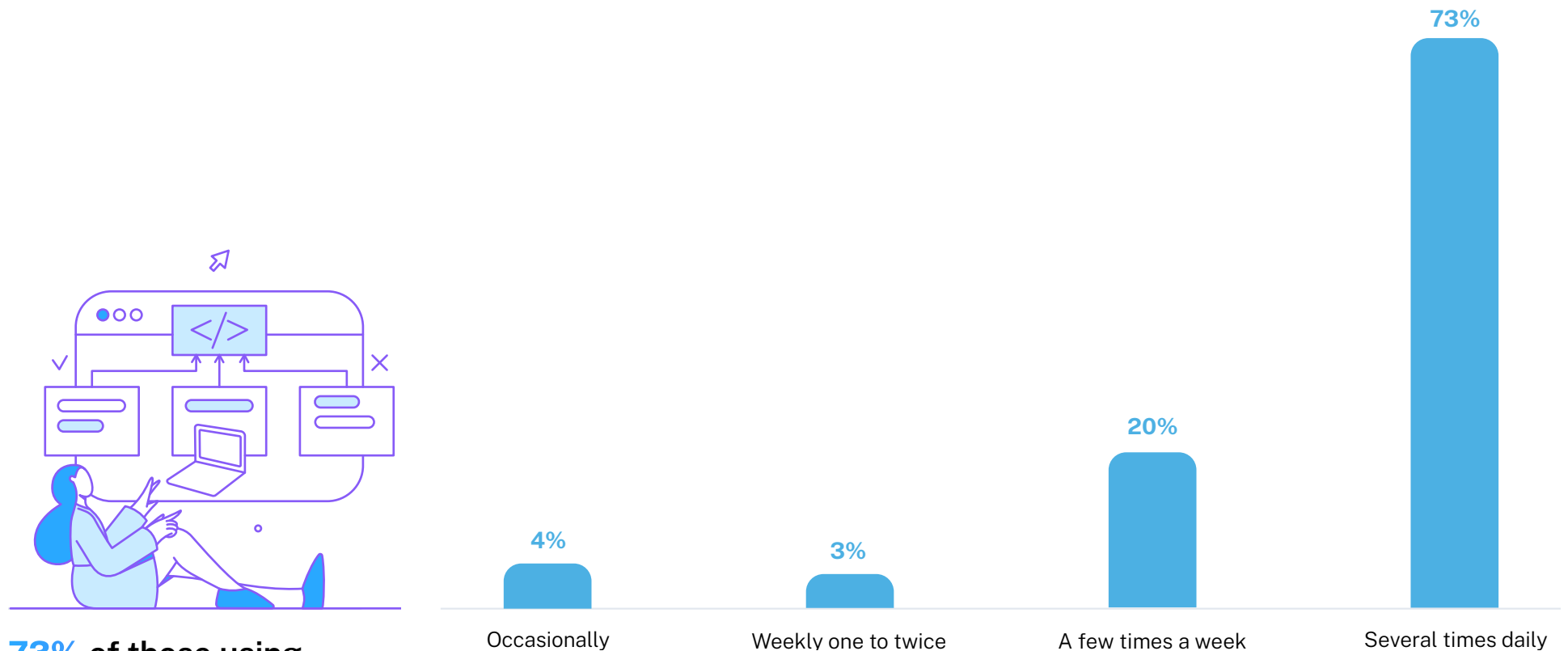
**23%** Europe

As with many tech trends, **North America** is leading in the charge, with **30%** adopting AI broadly. **Europe** is lagging.



To see how your organization compares, go to [bit.ly/BitoRank](https://bit.ly/BitoRank)

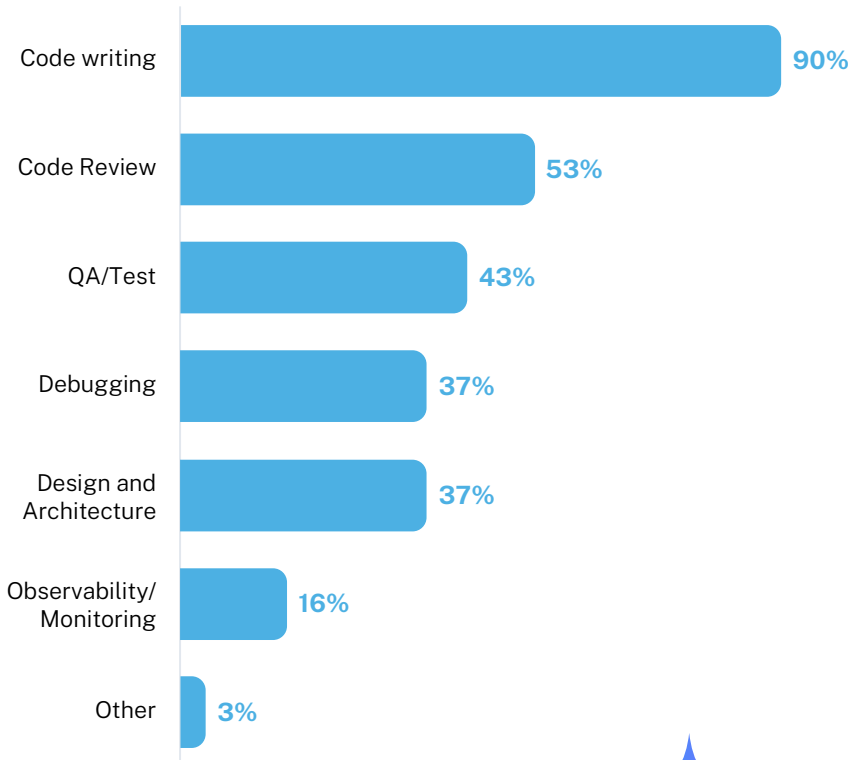
## For those using AI, how frequently is AI being used?



**73%** of those using AI said they already use AI several times a day – it's become a daily use habit.

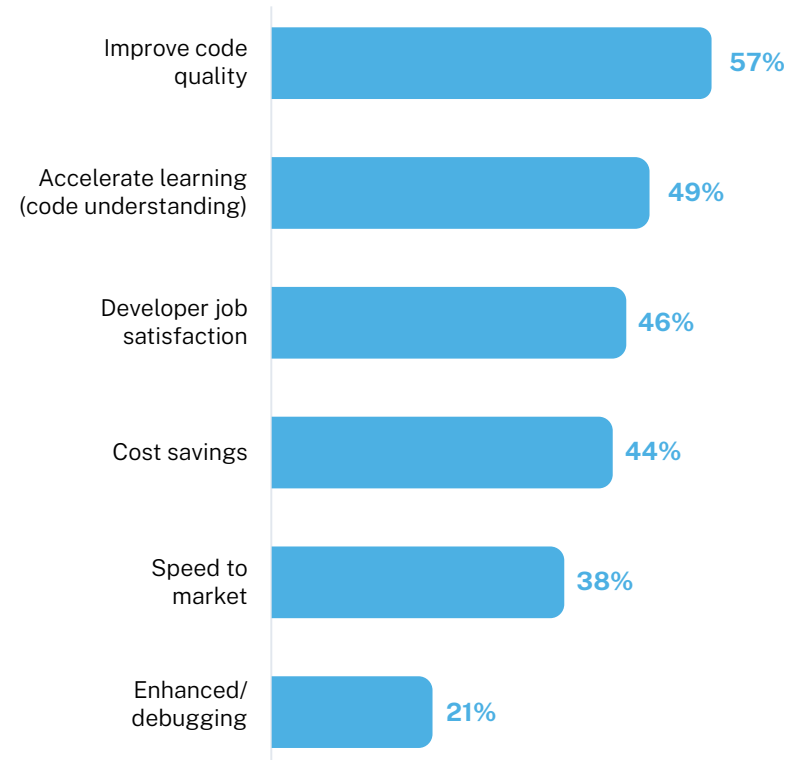
# How are engineering leaders using AI and what benefits are they seeing?

What areas are engineering leaders using AI in?



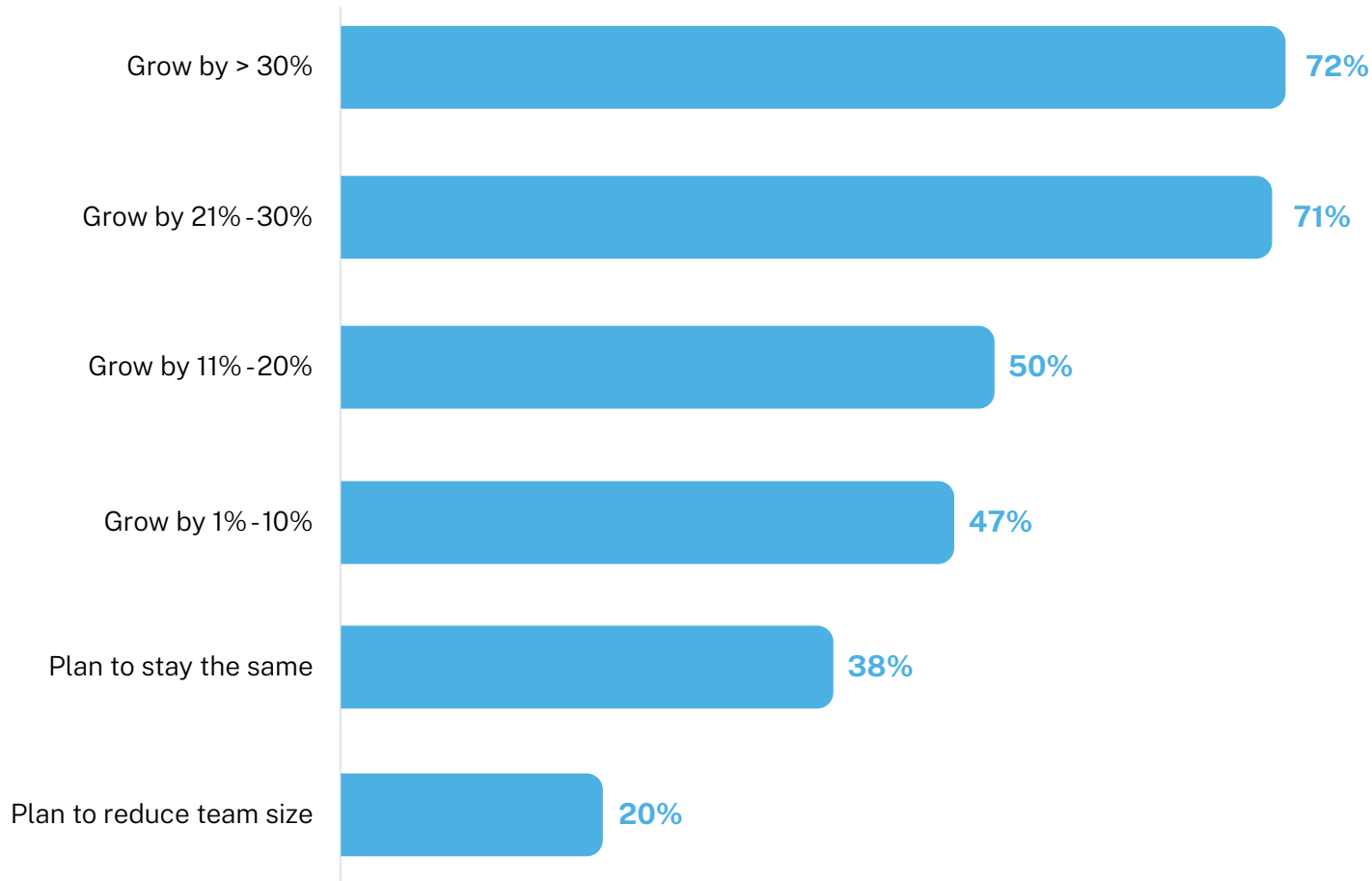
Leaders say **code writing, code review, and QA/test** are the areas they are using AI in most.

What are the primary benefits you are seeing in using AI?



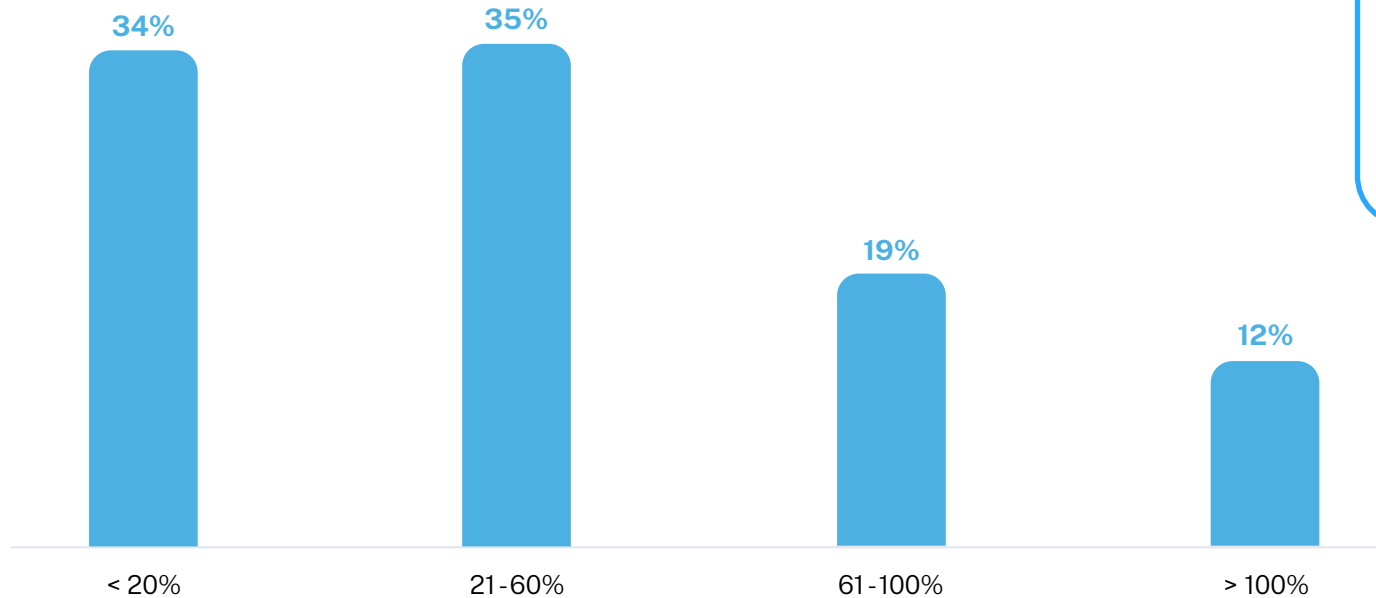
Engineering leaders rated AI's primary benefits as **improved code quality, accelerating understanding of their code base and developer job satisfaction**, as the primary benefits. Cost savings was only the 4th most important benefit.

## Percent of companies listing developer satisfaction/ reduced turnover as a primary benefit, segmented by company growth rate



For fast-growing companies, more than **70%** of them said the primary benefit of AI was increasing developer job satisfaction and reducing turnover.

## How much has AI improved productivity for highly effective\* development teams?



\*Survey respondents were asked to rate their software organization on a scale, from a highly effective team to not effective team.



### Amar's Angle

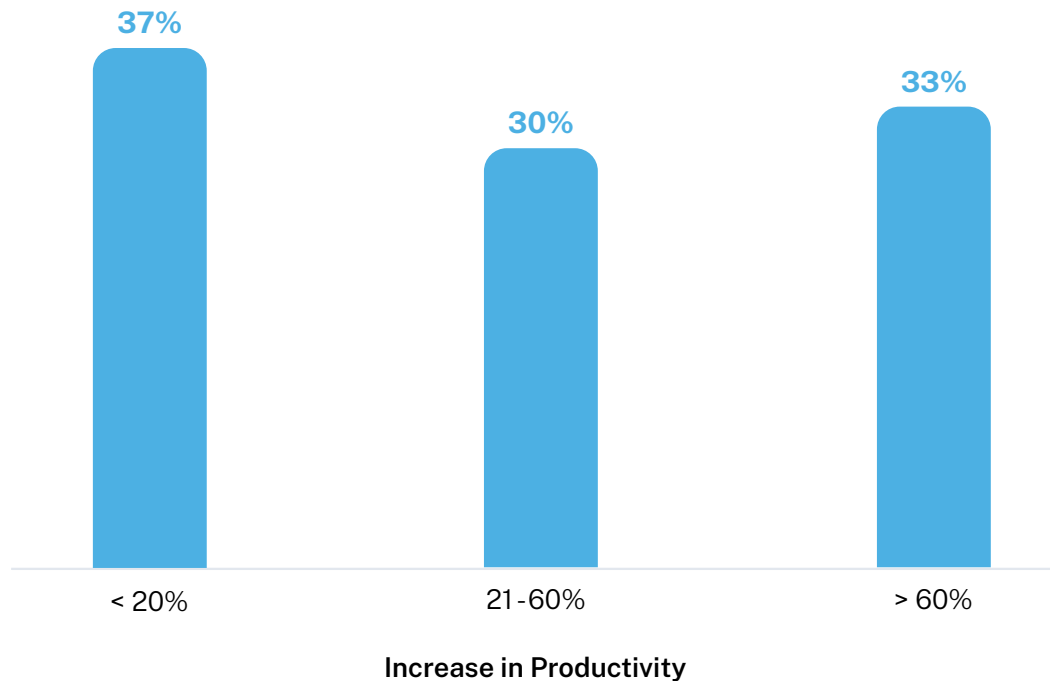
This is simply astonishing, especially so early in the AI maturity cycle.



**31%** of highly-rated software teams have **seen their productivity increase by over 60%** through the adoption of AI.

## Forecast productivity improvements via AI over the next 18 months

Across all types of teams, about **33%** anticipate an uptick in productivity >60% in the next 18 months because of AI.

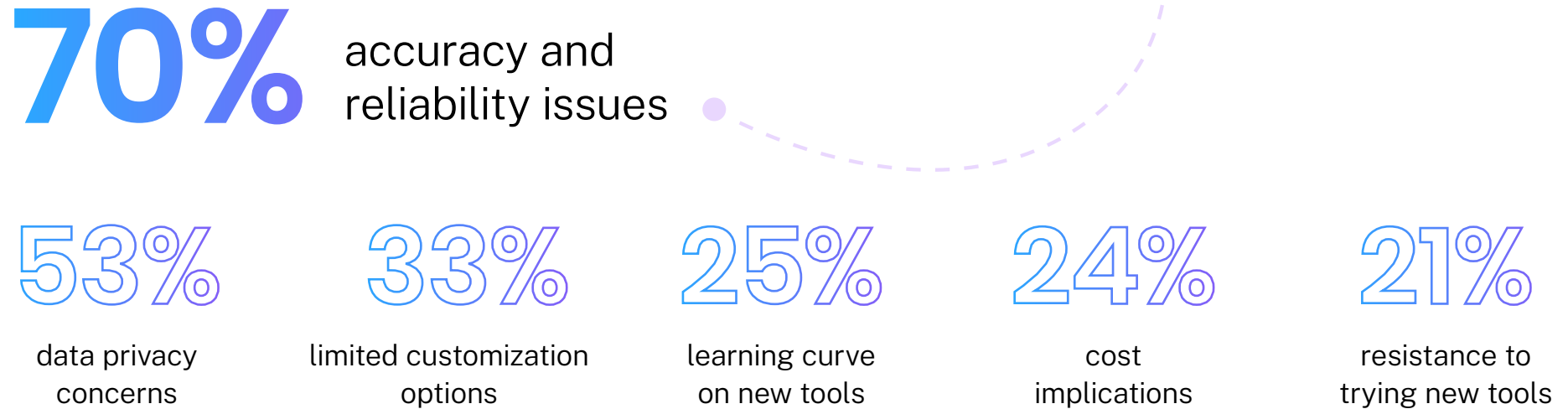


### Amar's Angle

Developers on the ground really believe the improvements can be significant. But it does take real effort to implement, and behavior changes.

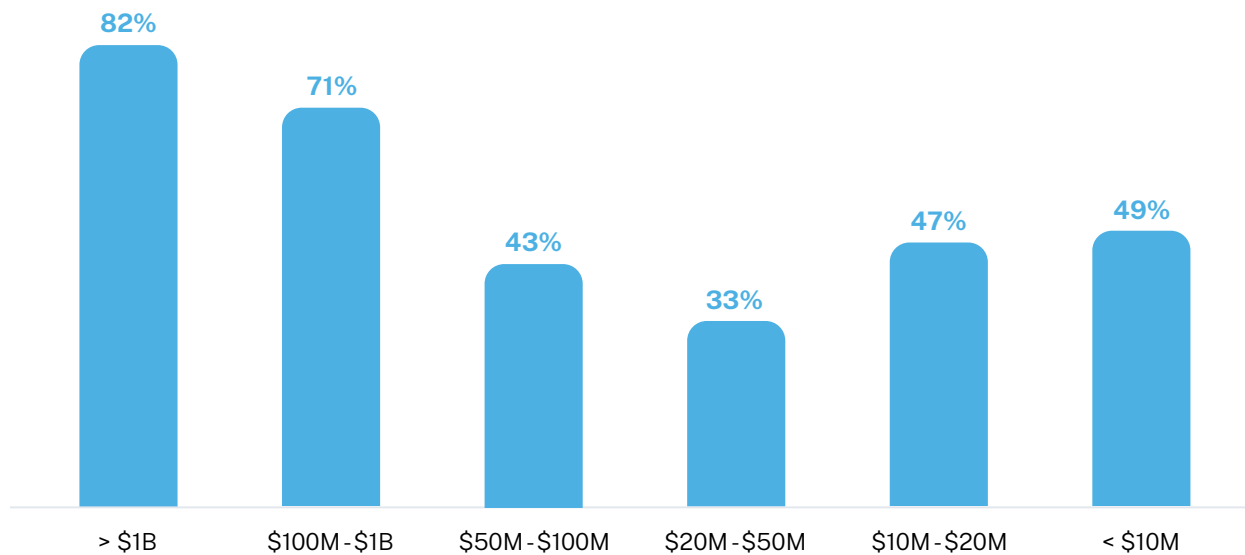


## The primary challenges of using AI tools in software development



**70%** of those using or considering AI cite challenges around accuracy and reliability. Data privacy is close behind. Usage related issues such as costs or the learning curve are far less significant.

## Data privacy as the primary challenge in using AI, segmented by company revenue

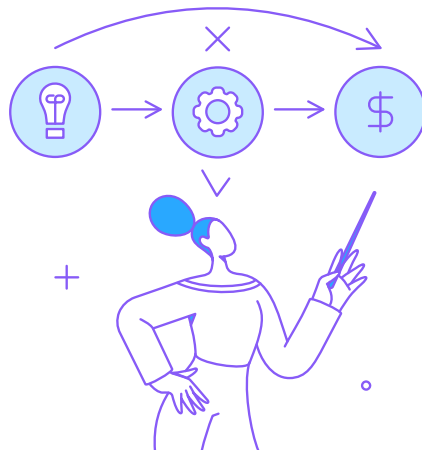


Large organizations cite **data privacy** as their primary challenge in adopting AI tools.



### Amar's Angle

Data privacy concerns are always baked into all the big, evolutionary leaps in IT (think mobile, bring your own device, cloud, etc.), especially for larger organizations. In some ways, it's not a surprise. AI will have to evolve rapidly to address these concerns.

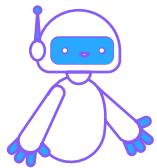


## Methodology

The survey was conducted by Bito.ai and Benchmarkit™ in September 2023 to find out how software developers are using AI now, how they foresee using it, and how it can (and does) benefit them.

Over 700 developers, engineering managers, and executives took part in the survey, which encompassed everything from SME startups with up to \$10M in revenue to businesses with over \$1 billion in revenue. The survey was global, and industry agnostic.

## Industry



**53%**  
Technology

Over half the organizations surveyed were in the tech sector – but others are in sectors as disparate as healthcare, manufacturing, education, and retail.



**9%**  
Financial Services



**5%**  
Healthcare



**7%**  
Education



**5%**  
Media/Communications



**7%**  
Manufacturing



**4%**  
Retail

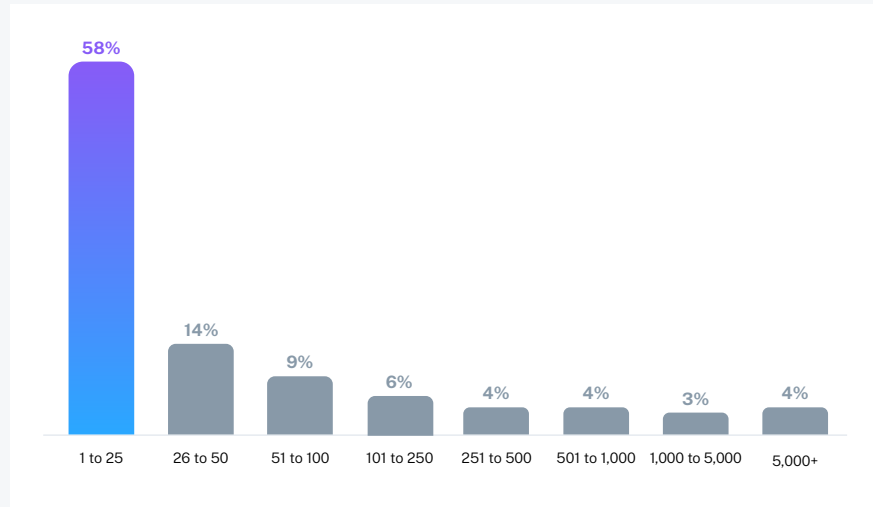


### Amar's Angle

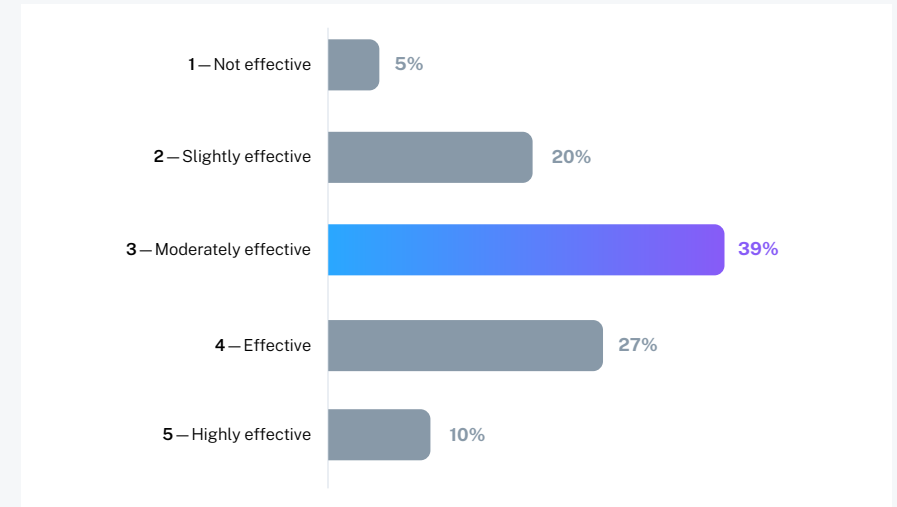
We wanted to take the pulse of a diverse array of businesses in a broad array of sectors to get the widest possible feel for AI use in global enterprises. The results tell me that AI has broad applicability beyond just tech.

To see how your organization compares, go to [bit.ly/BitoRank](https://bit.ly/BitoRank)

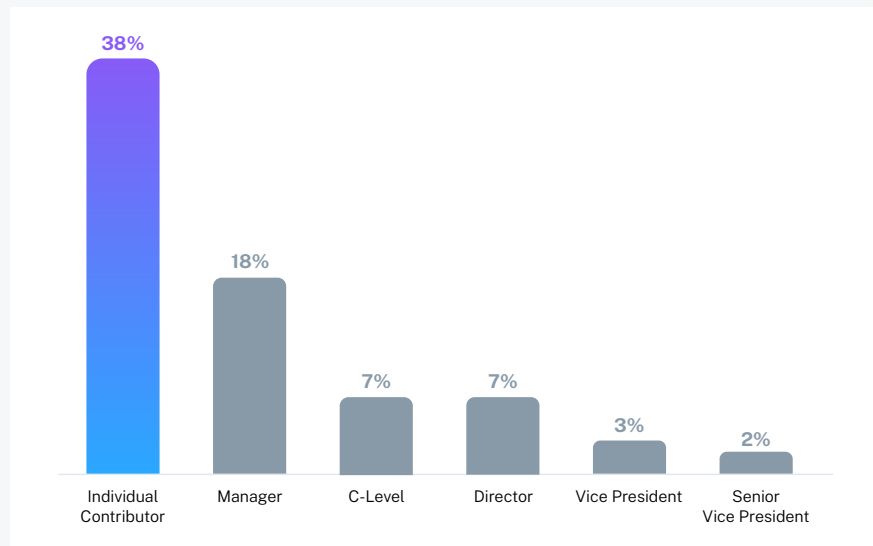
## Number of software developers



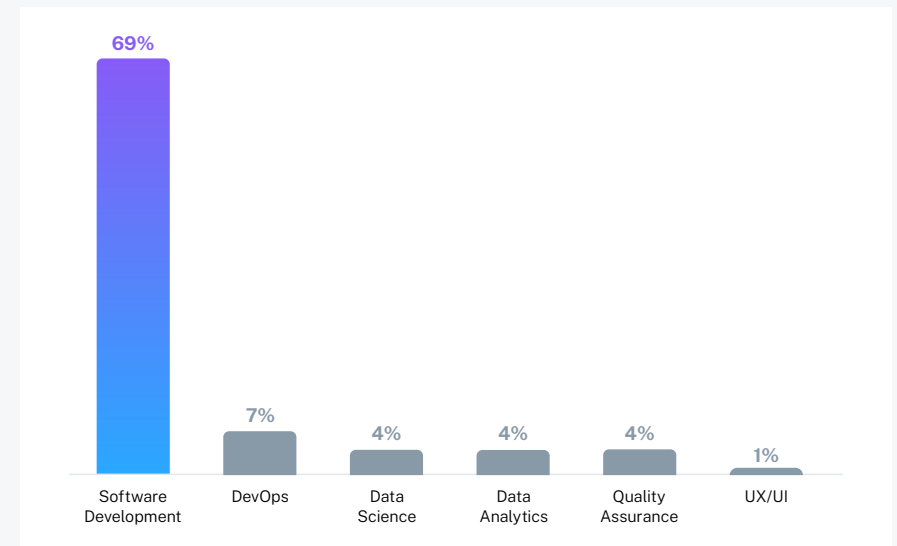
## How would you rate your software development organization's effectiveness?



## Job Level



## Department





## About Bito

Thank you for taking the time to read the survey. If you'd like to learn more about the insights we've discovered and how Bito can help make your development team more productive and successful, please visit [bito.ai](https://bito.ai) or reach out at [LetsGo@bito.ai](mailto:LetsGo@bito.ai).

Bito is on a mission to drive innovation by leveraging AI to help developers supercharge their software development process. With Bito, developers can dramatically accelerate their impact with faster output, fewer bugs, and more time spent on critical thinking rather than menial work. With over 100,000 active users that perform over 1 million AI queries per week, Bito helps its users increase their productivity by 31%. Developers from companies like Apple, Airbnb, NVIDIA, Salesforce, among others use Bito every day. Bito is backed by Eniac Ventures and angel investors including the CTOs of LinkedIn, Paypal, and Etsy.