Shift Left on Security with GitHub and Azure DevOps

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Let's connect

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GitHub Universe 2023

Save the Date
November 8-9

Beyond Code: Global developer event!

November 8-9, San Francisco, CA + streaming on https://www.githubuniverse.com/

On Demand
On demand sessions will help you dive deeper.

Interactive
Get hands on with the people who write the code.

100+ Speakers

85+ Sessions

3 Tracks

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The State of Security Today

Security Incidents

- **2014:** **Healthcare.gov** suffered a data breach that exposed sensitive information of around 75,000 individuals due to a misconfiguration in the website's code.
- **2016:** **Zocdoc** healthcare appointment booking platform faced a security vulnerability that allowed unauthorized access to patient data, including names, email addresses, and appointment details.
- **2017:** A vulnerability found on **Equifax** servers allows hackers to execute malicious code remotely. 143 million records, 209,000 credit card numbers.
- **2018:** Hackers breached **Marriott Hotel** systems. Compromised 500 million users and exposes data records for 327 million guests.
- **2019:** **Experian Health** experienced a data breach that exposed personal and medical information of millions of patients. The breach occurred due to an unsecured Elasticsearch database used by the company.
- **2021:** **Log4j** vulnerability discovered. Millions of servers at risk due to popularity of Logging framework. Vulnerability gives hackers complete control over some applications
- **2023:** 38TB of data accidentally exposed by **Microsoft** AI researchers on a GitHub repository, including over 30,000 internal Microsoft Teams messages – all caused by a misconfigured SAS token.

4 years

On average, vulnerabilities go undetected for four years before being identified.

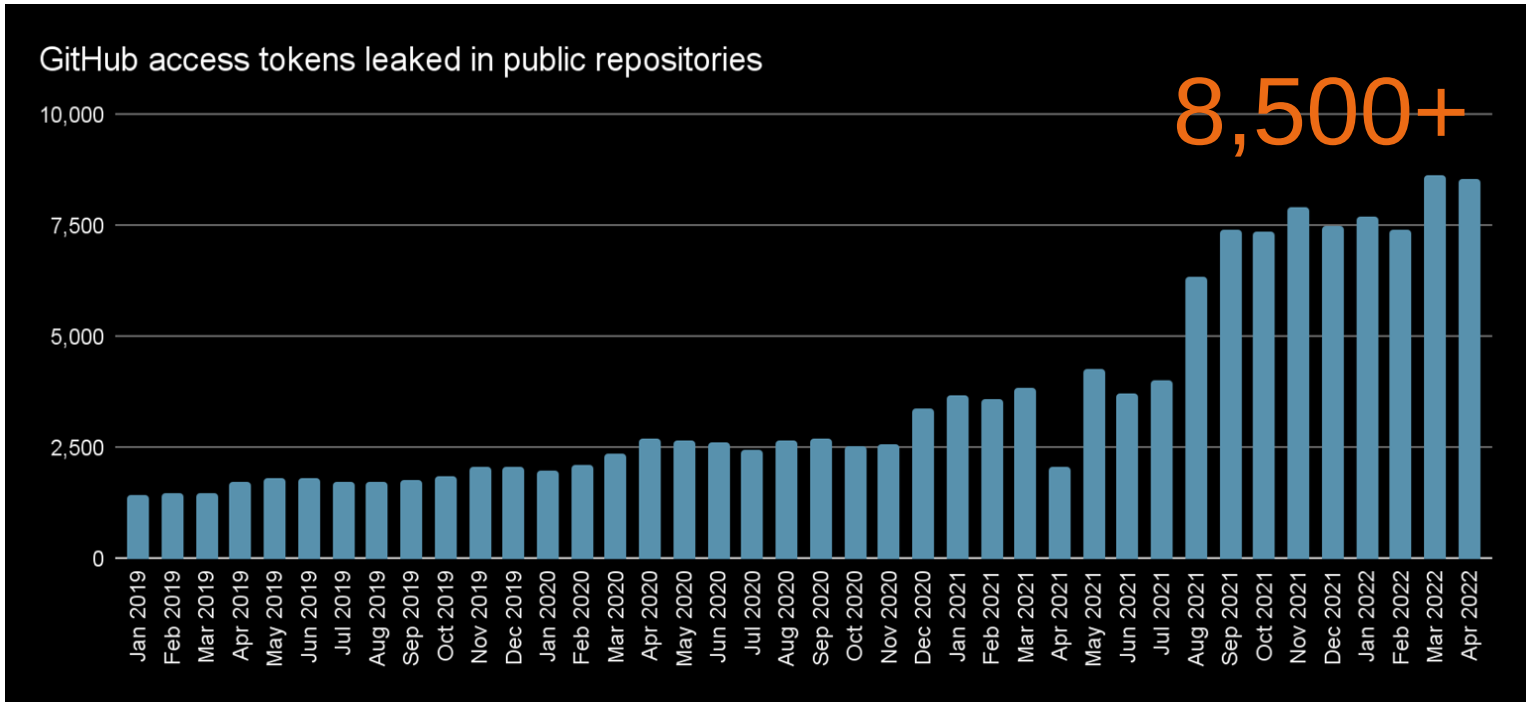
7 years

Sometimes, even longer than that:

- Log4j was vulnerable for ~7 years

Leaked Secrets

We’re seeing more credential leaks than ever

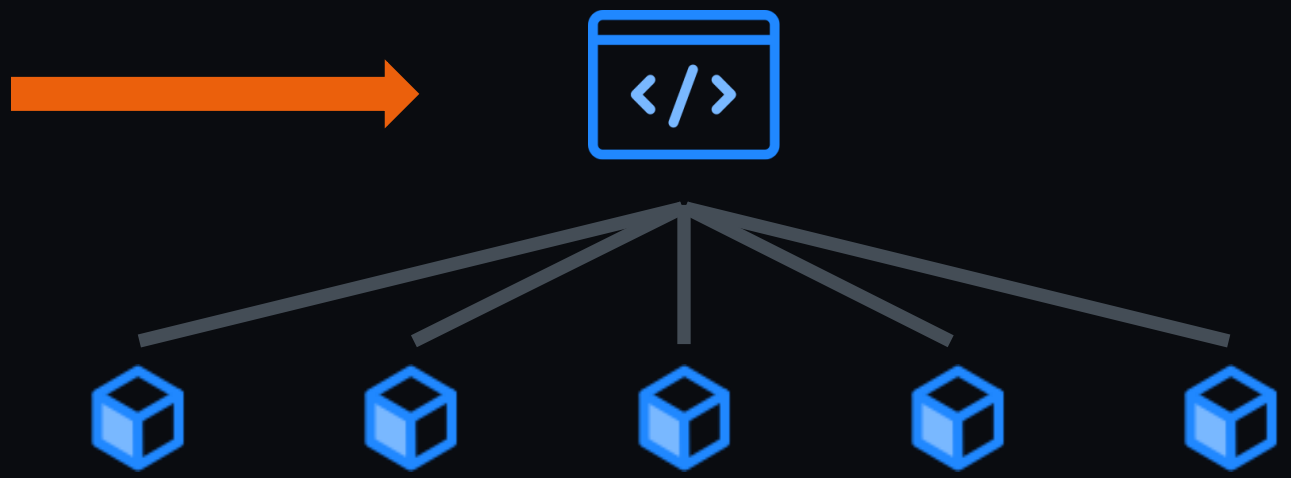


Source: GitHub data

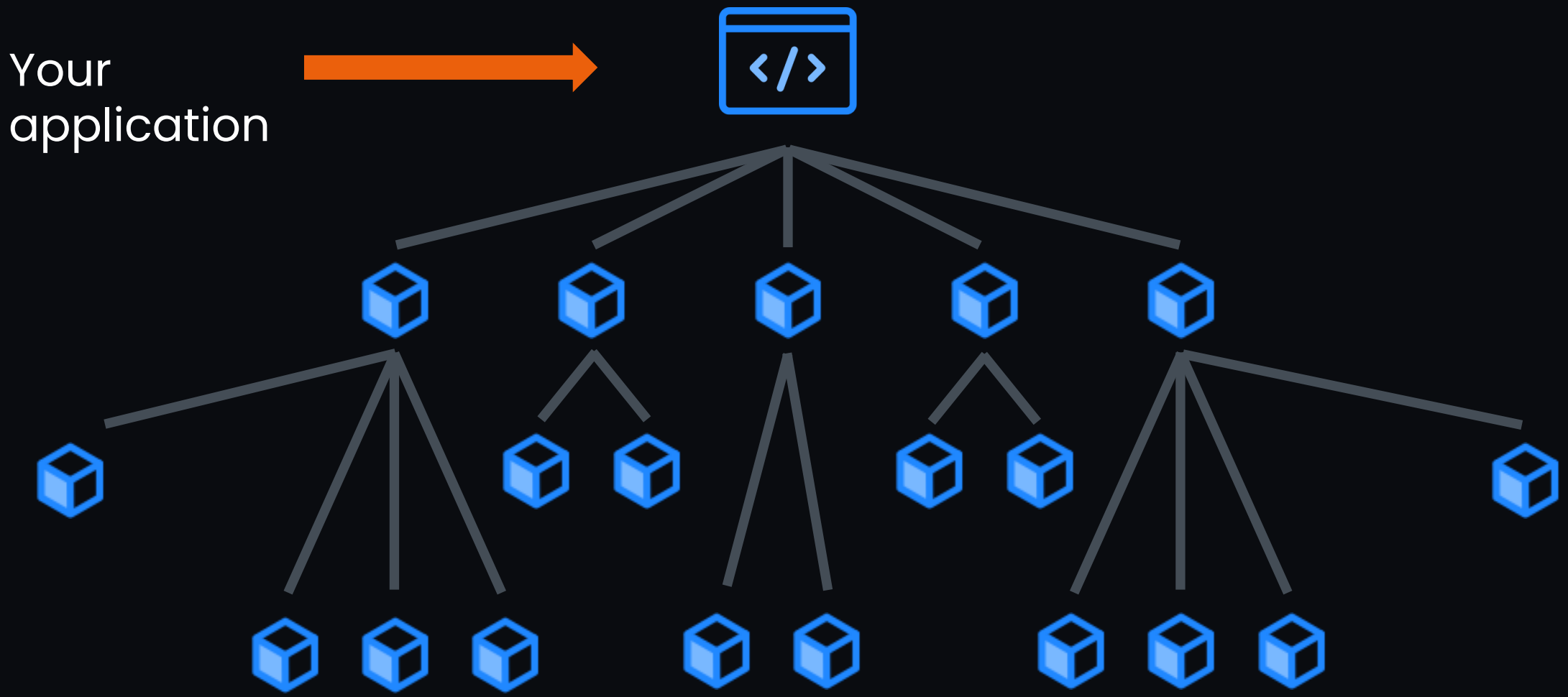
Secret Leaked exposing 38 TB of Data

80-90% of all code in distributed applications is Open Source

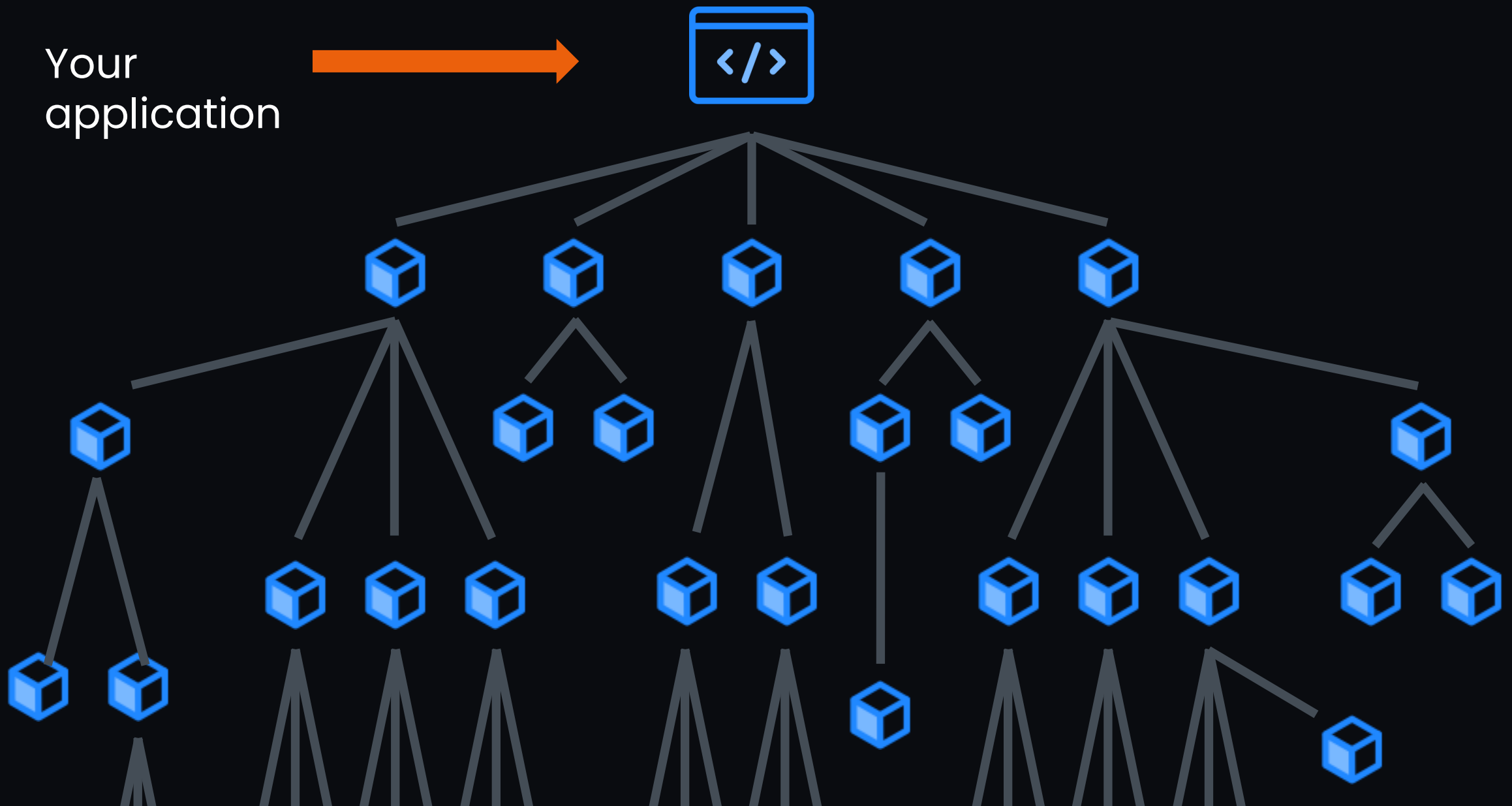
Your application

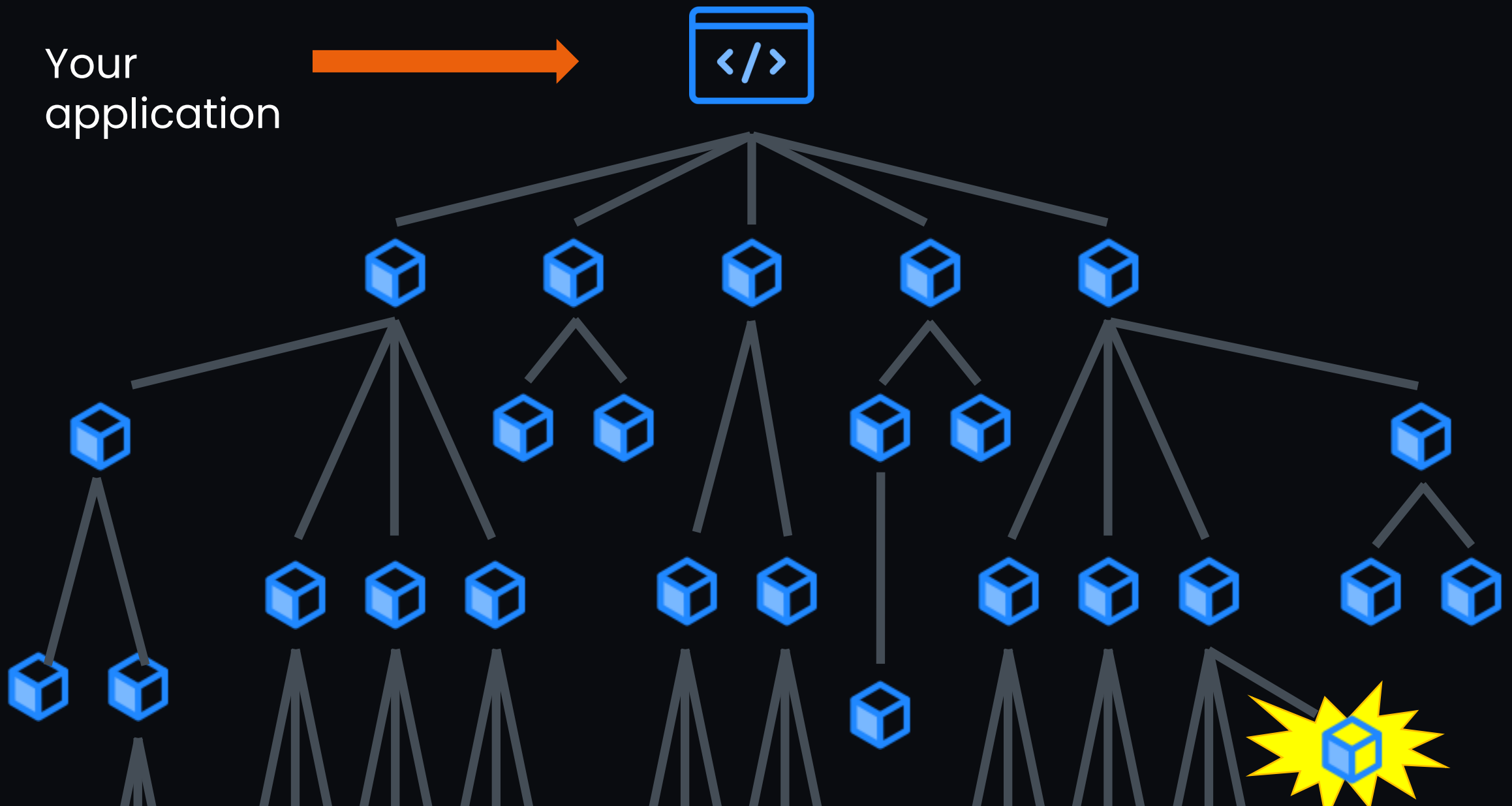


Dependency Chain starts with Top-Level Dependencies



Supply Chain of Dependencies


Your
application


Your
application


180+ days
Mean time to remediate (MTTR)
Industry norm

Mistakes happen

Some of those become a security risk!

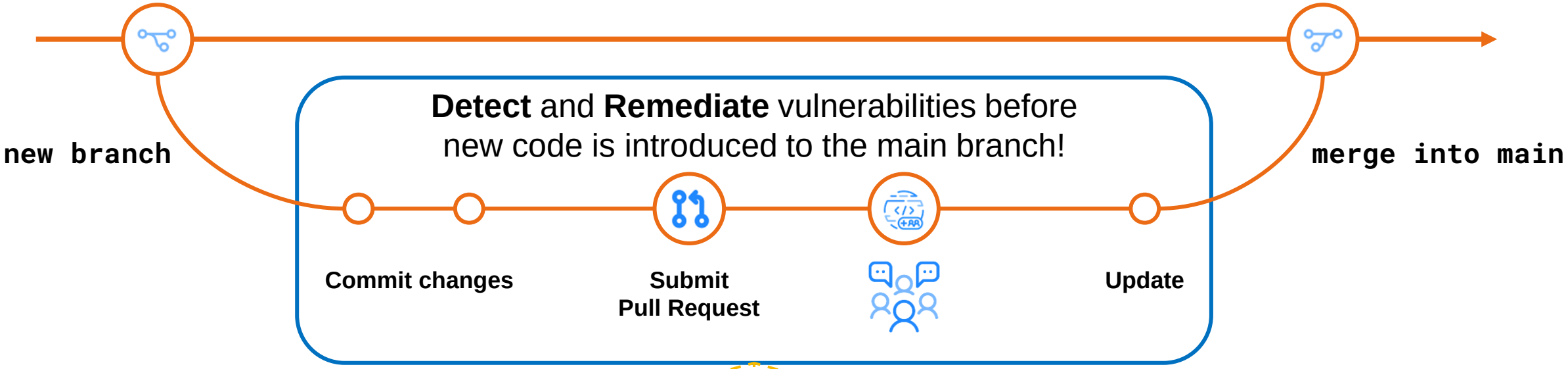
GitHub Advanced Security

GitHub believes that making this shift requires a developer-first approach to all their security products

Costs for fixing security vulnerabilities

- ✓ Adopt security practices early.
- ✓ Practiced everyday and throughout SDLC.

Developer First Security – Shift Left



Dependency Scanning and Dependabot: automatic CVE identification & remediation

GHAS

Secret Scanning: locate and invalidate exposed tokens.

- **Push Protection**: prevent unauthorized changes

GHAS

CodeQL for Code Scanning: find & warn about risky patterns in code

GitHub Advanced Security

Dependency scanning

Know your dependencies

Secret scanning

Find API tokens or other secrets exposed anywhere in your git history or issues / pull requests

Code scanning

Static analysis of every git push, integrated into the developer workflow and powered by CodeQL

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Licensing

- **GitHub**: Public Repos are Free
- **ADO**: Additional license - $49 / contributor / month
  - Contributor = active committer in the last 90 days
  - Deduplicated on the Organization level
  - Metered billing through your Azure Subscription
  - Pro-rated on a daily basis

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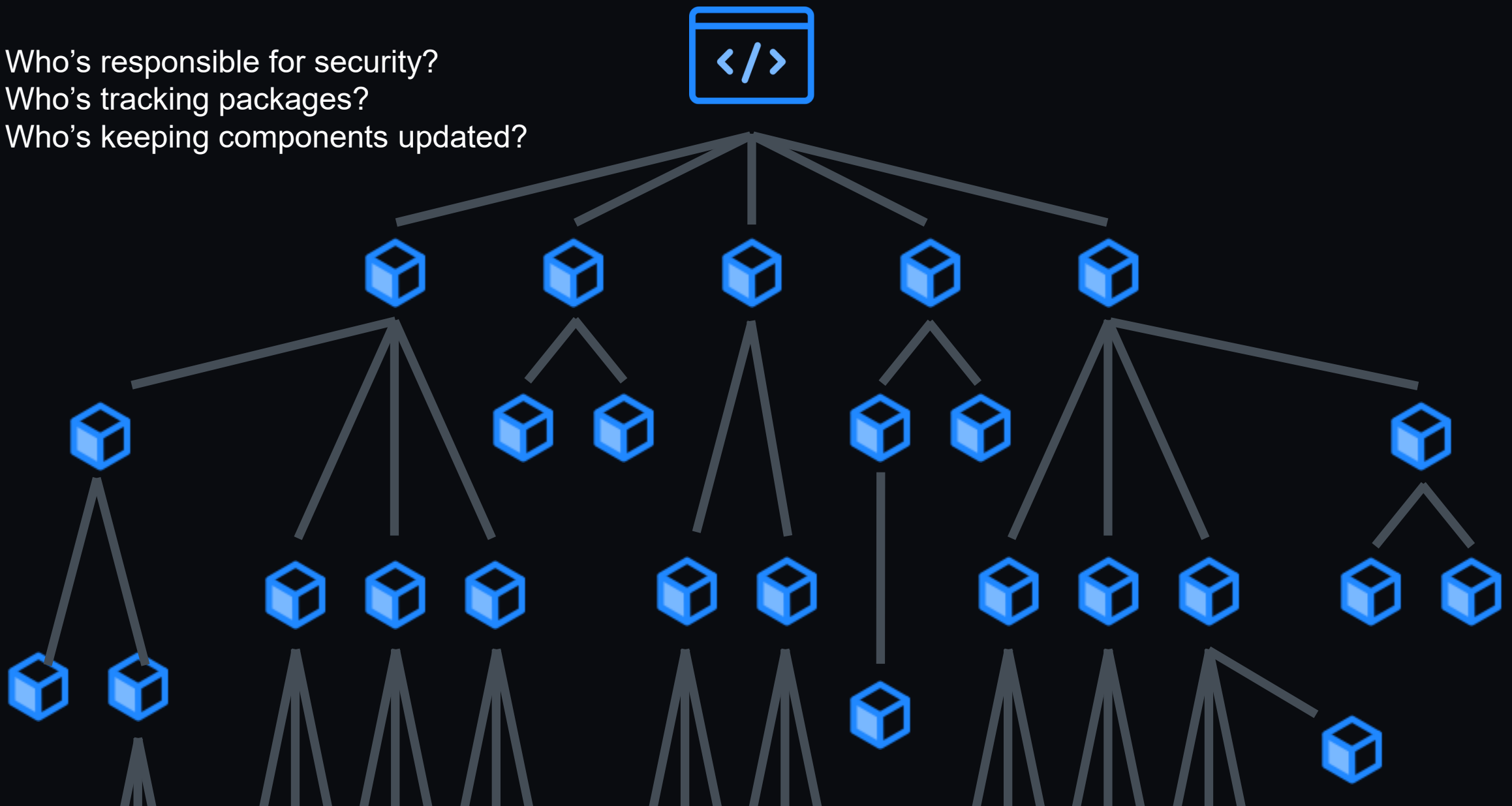
Securing your Supply Chain

Who’s responsible for security?
Who’s tracking packages?
Who’s keeping components updated?



Dependency Scanning Demo

GitHub Advanced Security

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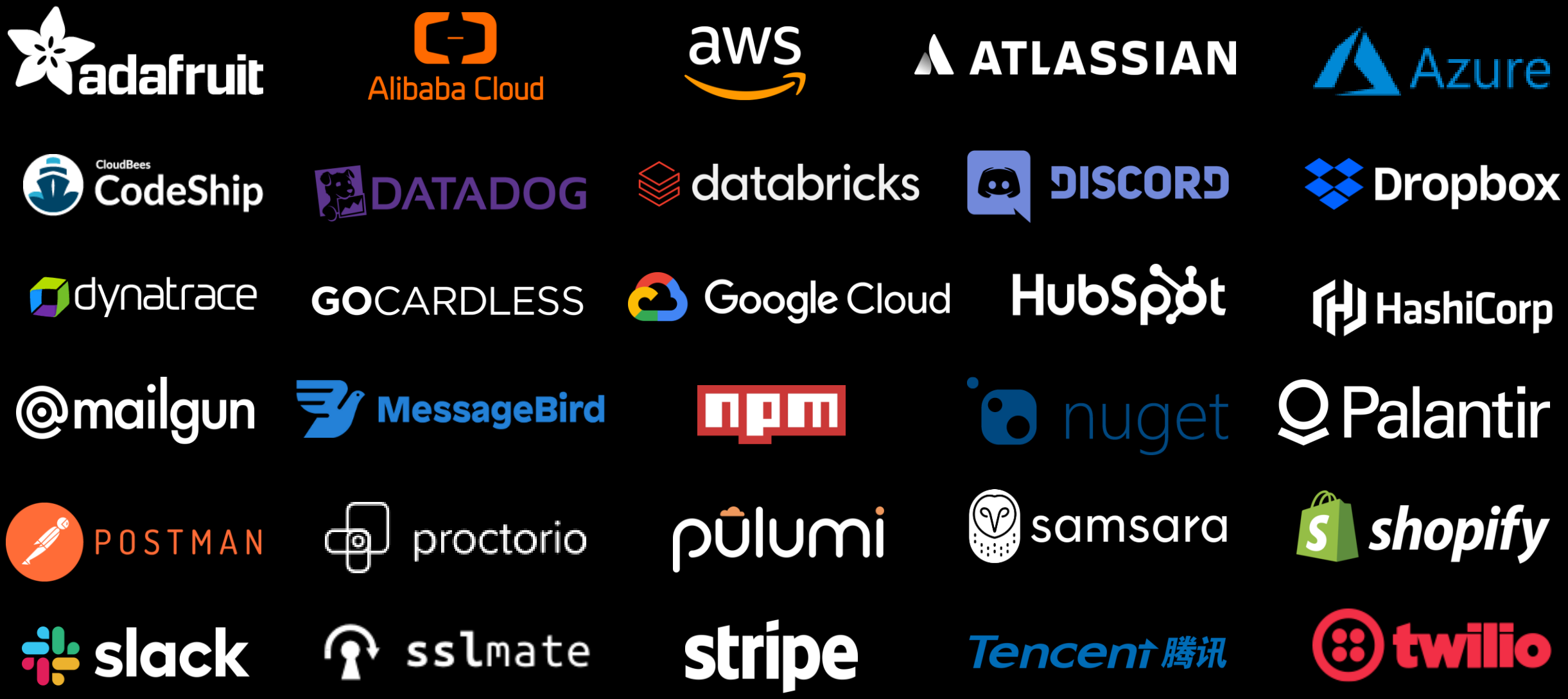
Secret Scanning Partners (60+)



Secret Scanning Demo

GitHub Advanced Security

Dependency scanning

Know your dependencies

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Find API tokens or other secrets exposed anywhere in your git history or issues / pull requests

Code scanning

Static analysis of every git push, integrated into the developer workflow and powered by CodeQL

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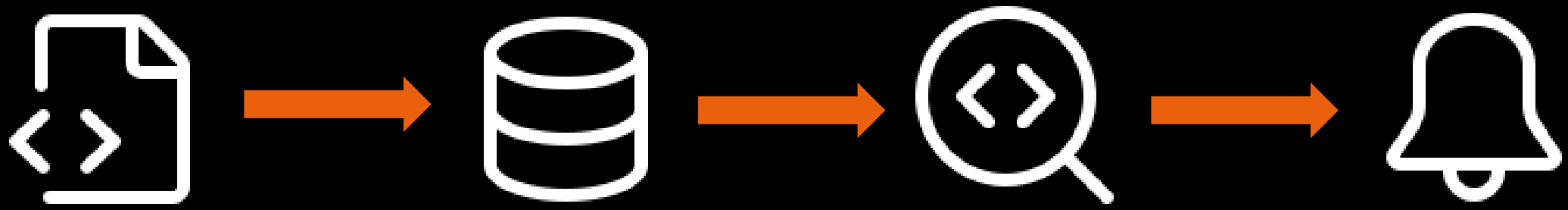
What is code scanning with CodeQL?



Combining CodeQL with the world's largest developer community gives next generation SAST performance

1,700+

open source queries
with contributions from Microsoft, Google and many others

72%

fix rate for potential vulnerabilities flagged in open source projects

15%

fix rate after 7 days

45%

fix rate after 90 days

24%

of recent JS CVEs would have been identified by a default CodeQL query

Code Scanning Demo

Similarities to GHAS

- Both have Secret Scanning & Push Protection
- Same list of supported security partners
- Both have CodeQL
- Both are tightly integrated in respective platforms
- ADO bills at $49/month per active committer
- GHAS free for public repos

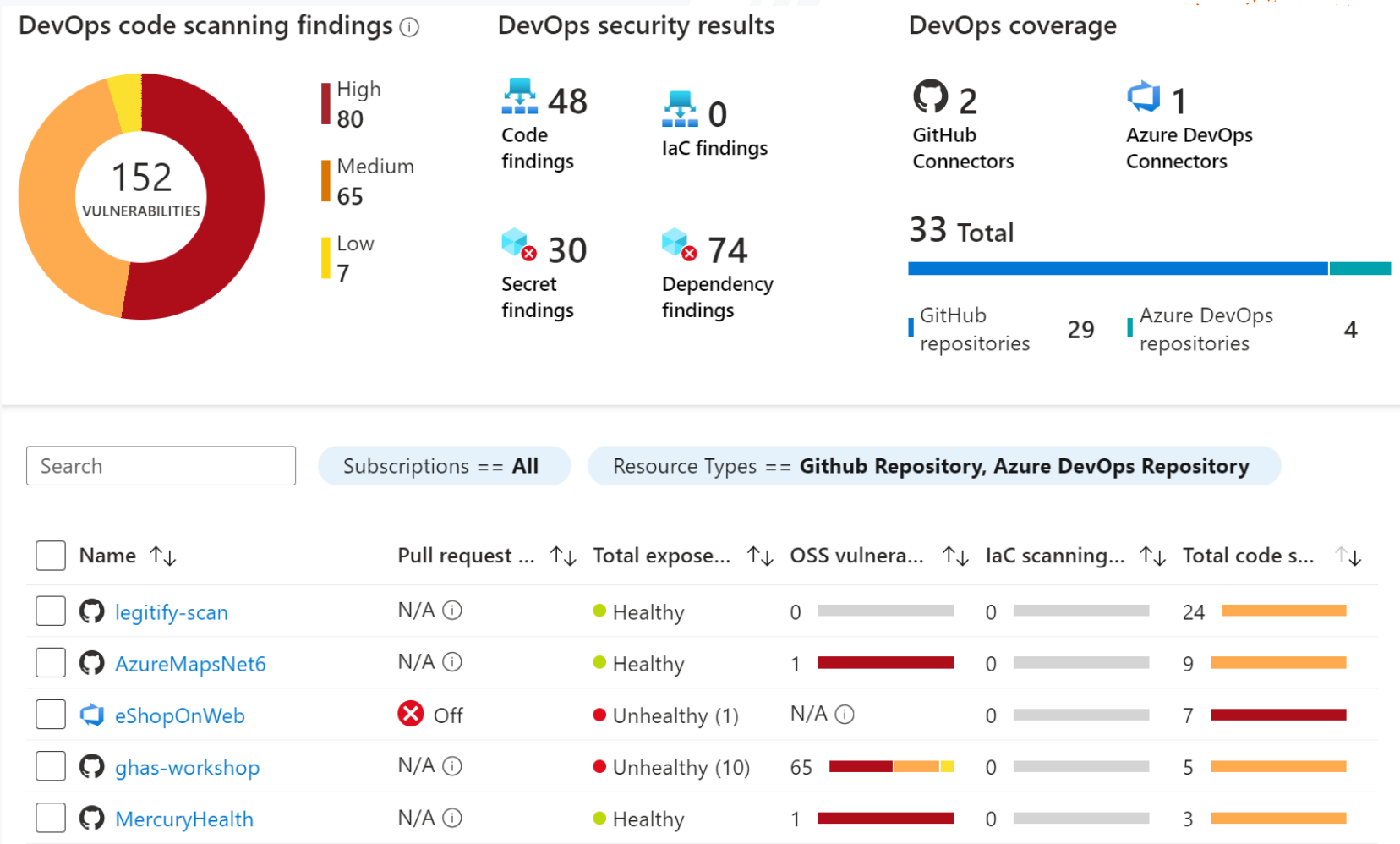
Differences to GHAS

- GHAS is always first
- Missing functionality on GHAzDo:
  - Numbers on alerts
  - PR blocking / Annotations not there yet
  - Dependabot PR’s (on roadmap no ETA)
  - No Security Overview. (Use DevOps extension by Rob Bos)
  - No pipeline failure on errors
- GitHub is more engineer centered (alerts)
- Custom secret scanning pattern
- Dependency graph visualization
- Custom CodeQL queries (ETA is early CY2024)
- GHAzDo pushes overview to Defender for DevOps

Microsoft Defender for Cloud

DevOps Security - Insights across multi-pipeline environments to prioritize remediation and apply security guardrails

- Strengthen configuration of cloud resources throughout SDLC
- Provide unified, end-to-end visibility across departments
- Prioritize remediation of critical code issues using actionable feedback



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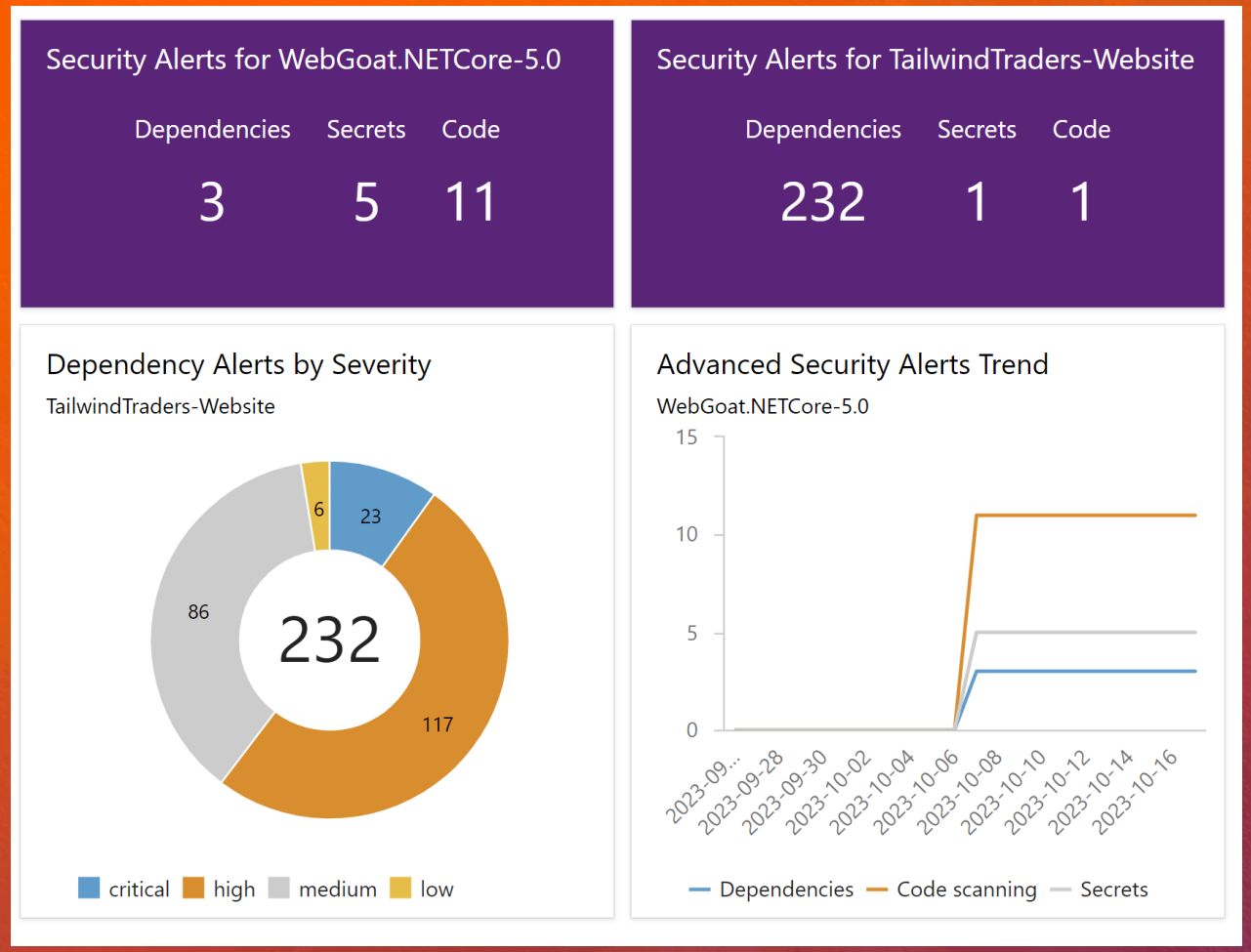
Advanced Security dashboard Widgets

Marketplace: https://marketplace.visualstudio.com/items?itemName=RobBos.GHAzDoWidget
Repo: https://github.com/rajbos/ghazDo-widget/



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OpenAI Innovation

OpenAI Innovation

GitHub Copilot

Your AI pair programmer

- AI powered, context aware, code suggestions
- Understands dozens of languages
- Adapts to the edits you make, matching your coding style

77%

Spend less time searching

74%

Focus on more satisfying work

88%

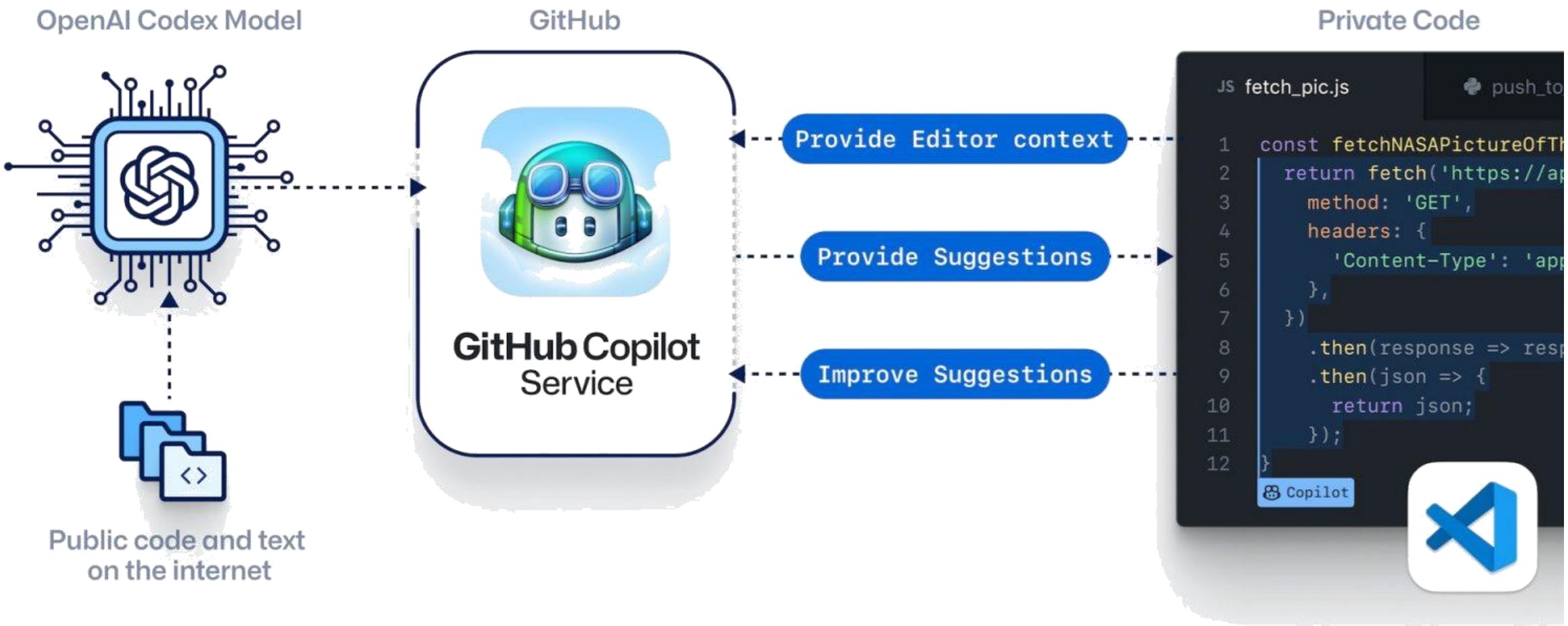
Feel more productive

72%

Are faster with repetitive tasks

https://github.com/Azure-Samples/azure-search-openai-demo

Copilot Architecture



Resources

Slide Deck: https://github.com/PagelsR/Talks

Webinar on Nov 2nd at 11am EDT

- 30-minute webinar recording: Embed security checks in your Azure DevOps Pipelines
- **https://lnkd.in/erF--7jZ**

Secure at every step

- https://resources.github.com/learn/pathways/security

GHAzDO

- **Blog:** https://devopsjournal.io/blog/2023/05/23/GitHub-Advanced-Security-Azure-DevOps
- **Bootcamp:** https://xpirit.com/github-advanced-security-for-azure-devops/

GHAS dashboard widgets for GHAzDO

- https://marketplace.visualstudio.com/items?itemName=RobBos.GHAzDoWidget

GitHub Advisory Database

- https://github.com/advisories

Code Scanning

- https://codeql.github.com/

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GHAzDO Bootcamp
Sign up for GitHub Advanced Security for Azure DevOps Today!!!
https://xpirit.com/github-advanced-security-for-azure-devops/
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Slides: https://github.com/PagelsR/Talks

Thank you!

https://xpir.it/ghazdo

https://www.linkedin.com/in/randy-pagels/

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