Microsoft

Getting Started with DevOps

Who is Tailwind Traders?

Experiencing rapid growth

Differing goals across teams

Need for better collaboration

Looking to Implement:

- DevOps methodology
- Better communication tools
- Shared tooling

TAILWIND TRADERS

Agenda

What is DevOps?

Source Control: Introduction to Git and GitHub

Using Microsoft Teams as a Collaboration Hub

Extending DevOps with Visual Studio Code

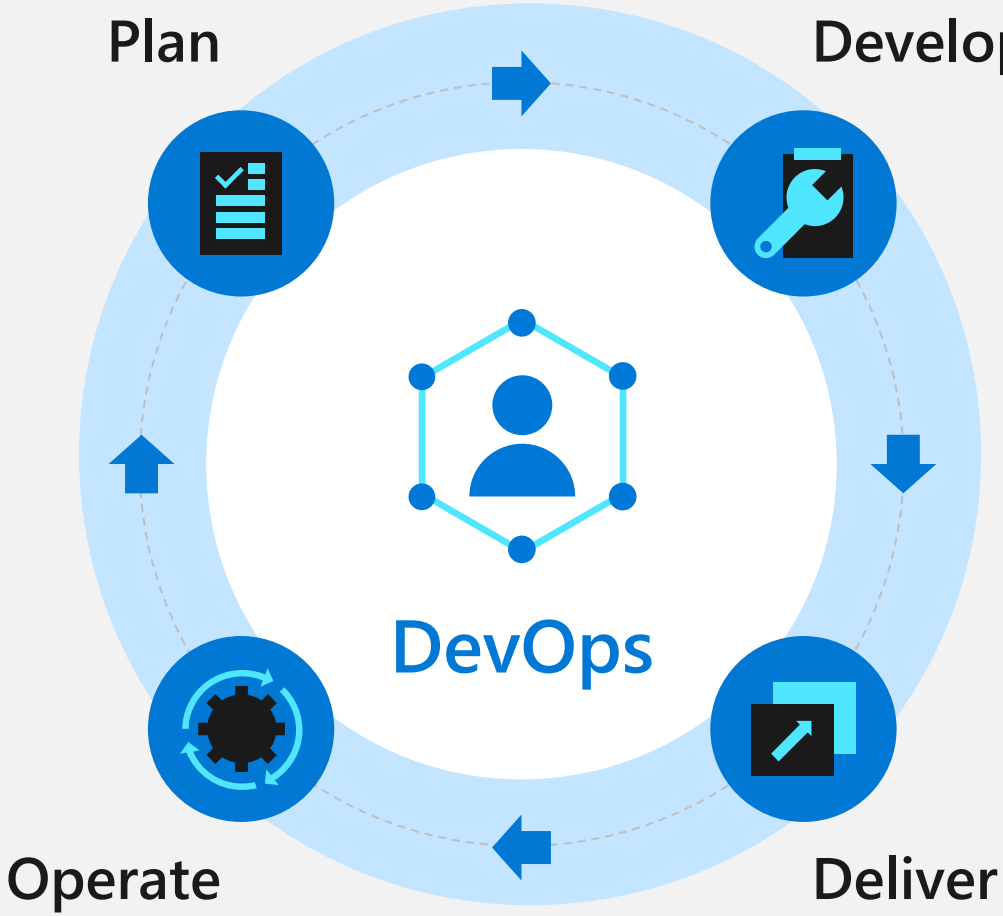
Microsoft

What is DevOps?

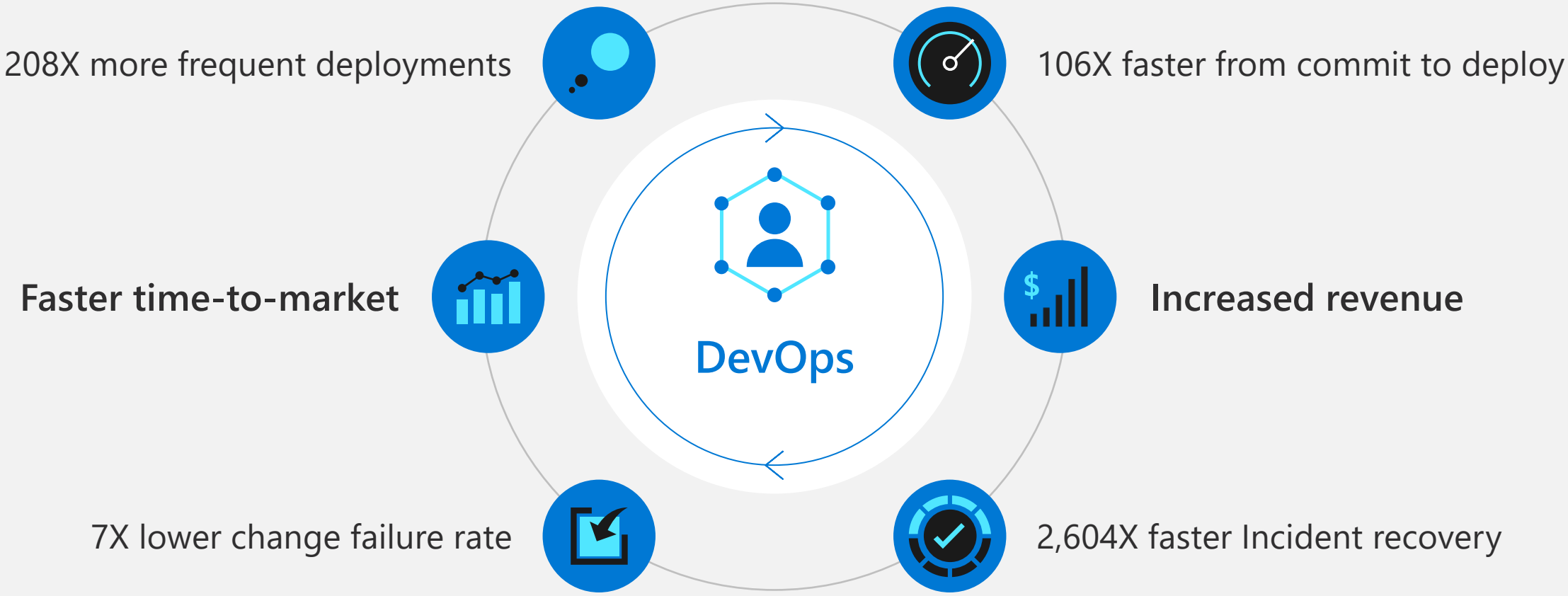
DevOps Accelerates Delivery

> DevOps is the union of **people**, **process**, and **products** to enable continuous delivery of value to your end users.
>
> — Donovan Brown

http://bit.ly/WhatIs-DevOps



High performance DevOps Companies Achieve Developer Velocity by …



Source: 2019 DORA

People

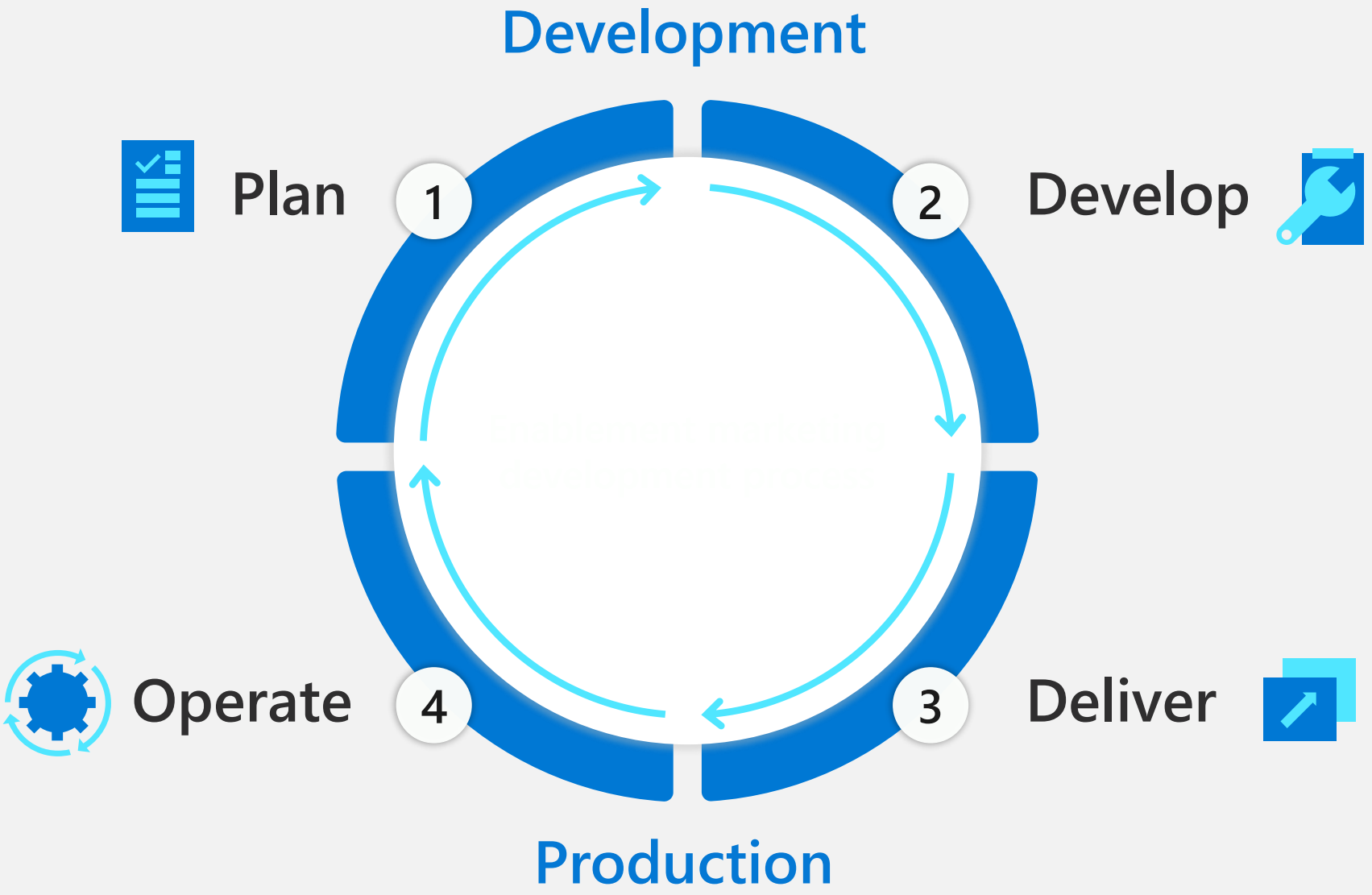
DEV

WALL OF CONFUSION

OPS

=

Process


Development
Plan
1
2
Develop
Operate
4
3
Deliver
Production

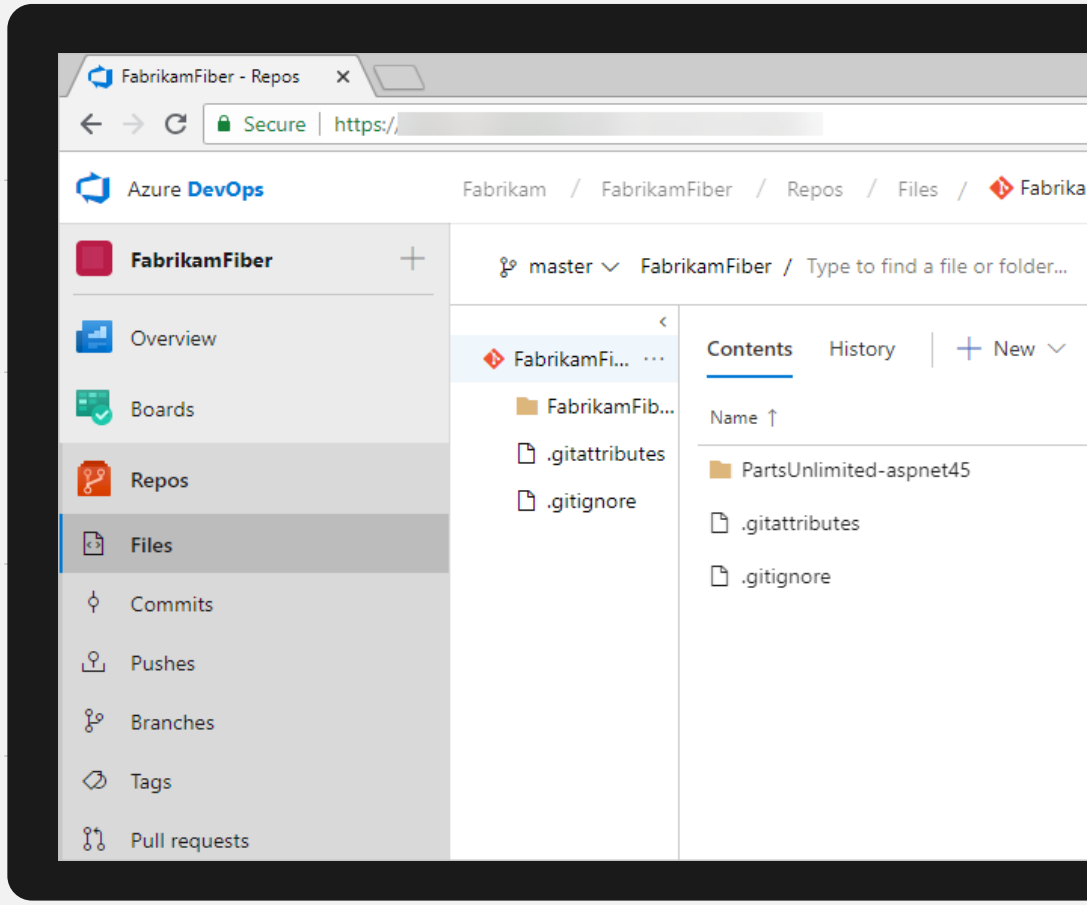
Microsoft

Source Control

Introduction to Git and GitHub

What is Source Control and why do we need it?

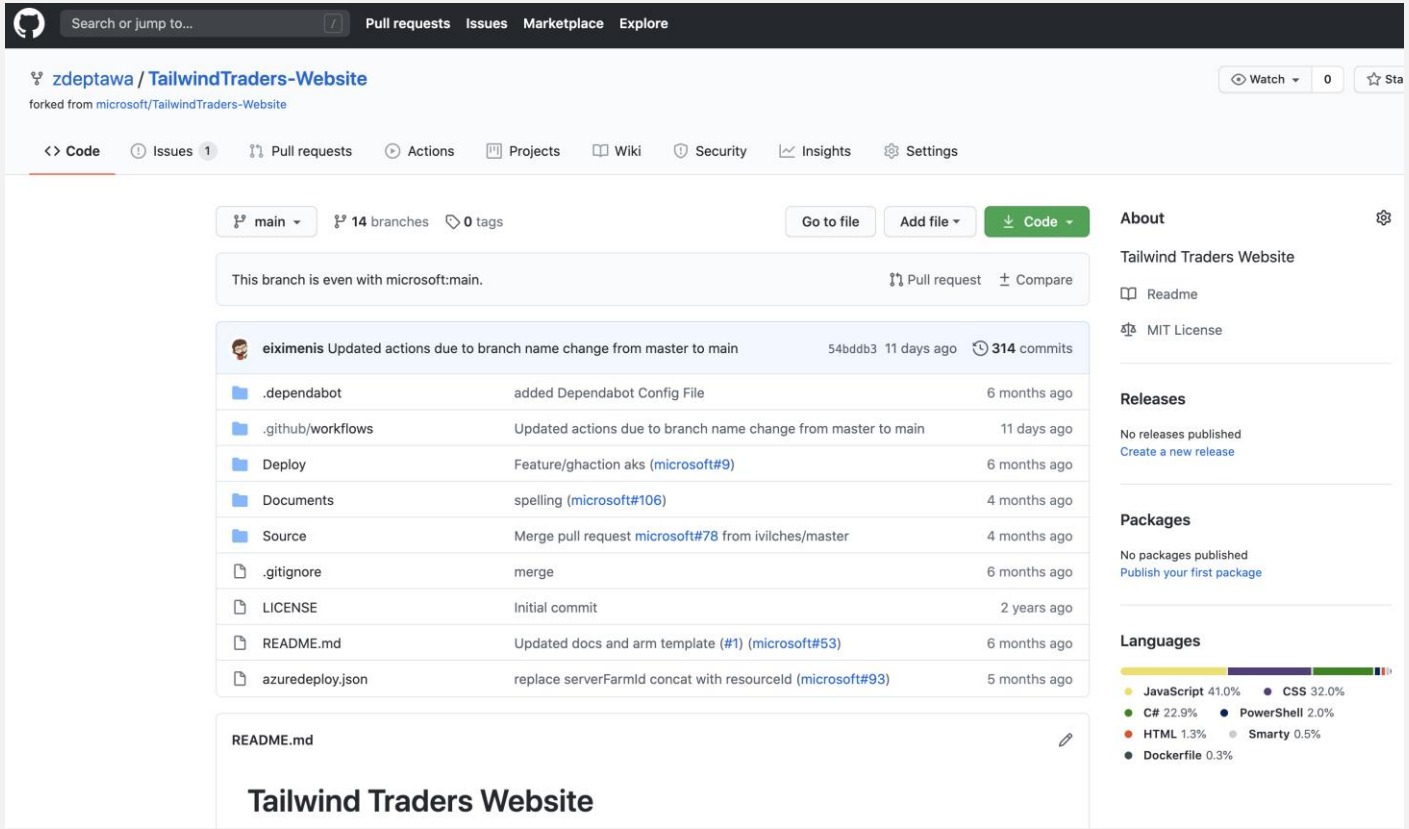
- A form of version control
- Uses concept of code repositories
- Tracks changes made within repositories
- Allows for cross-team collaboration
- GitHub



What is GitHub?

GitHub is the leader in Git repository hosting.
Some key features of GitHub:

- Expertise sharing
- Cross-team collaboration
- Improved code reuse
- Codespaces on GitHub
- GitHub Actions (CI/CD)
- Increased velocity



https://github.com

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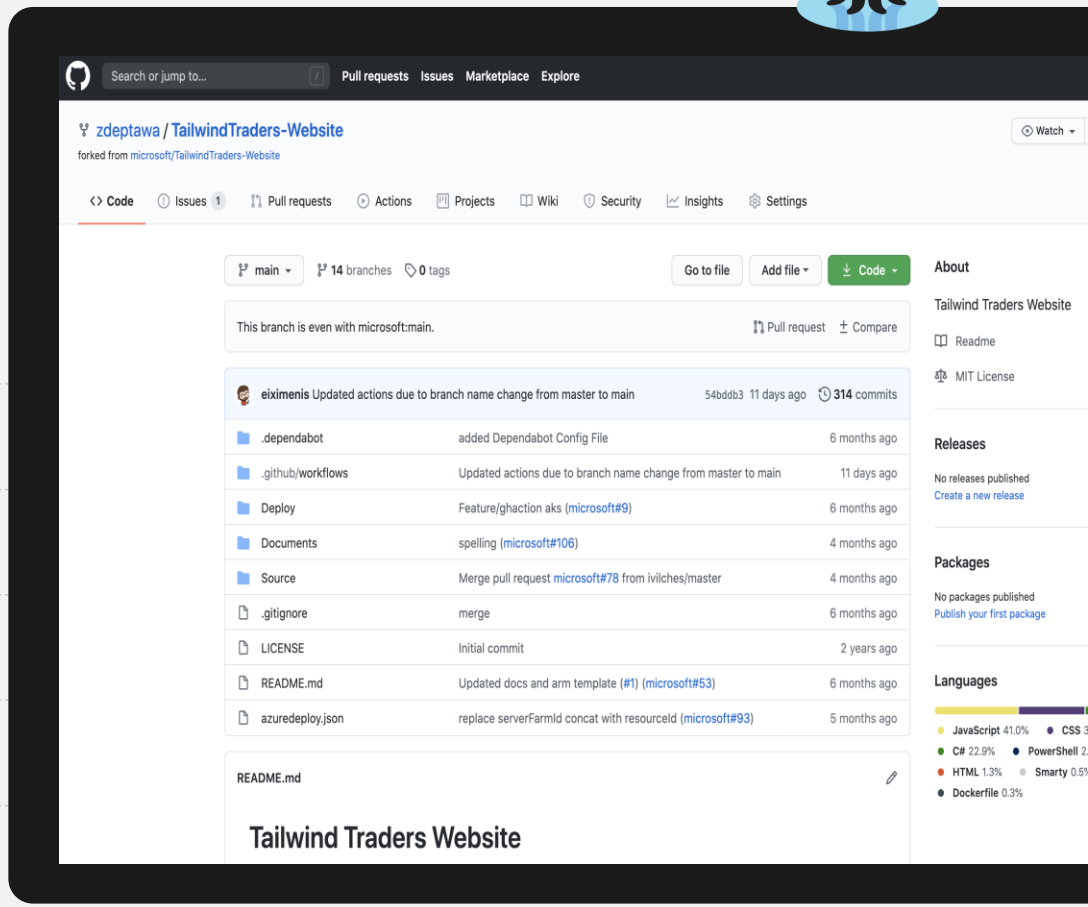


https://github.com

Microsoft

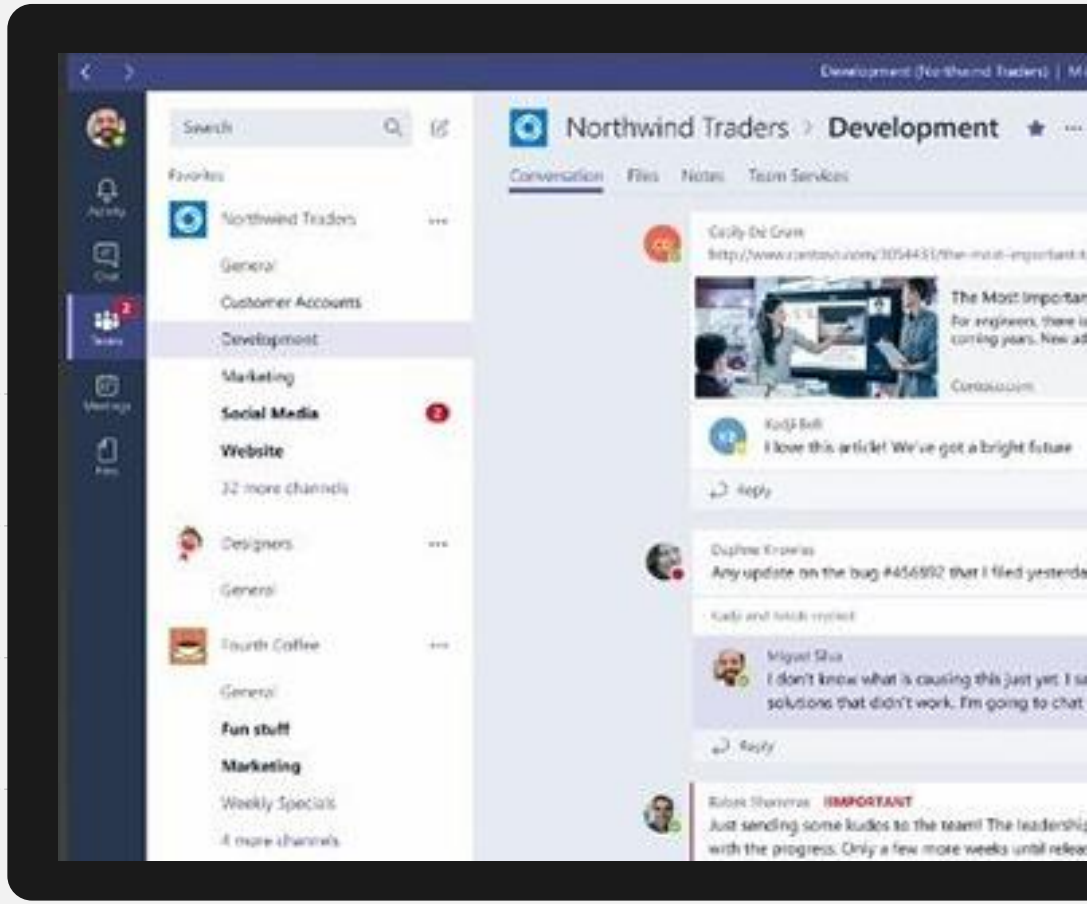
Using Microsoft Teams as a Collaboration Hub

What is Microsoft Teams?

Microsoft Teams is the hub for teamwork.

Key features of Teams

- **Chat** from anywhere
- **Meet** from anywhere
- **Call** from anywhere
- **Collaborate** from anywhere
- **Achieve** more, faster



https://aka.ms/microsoftteams

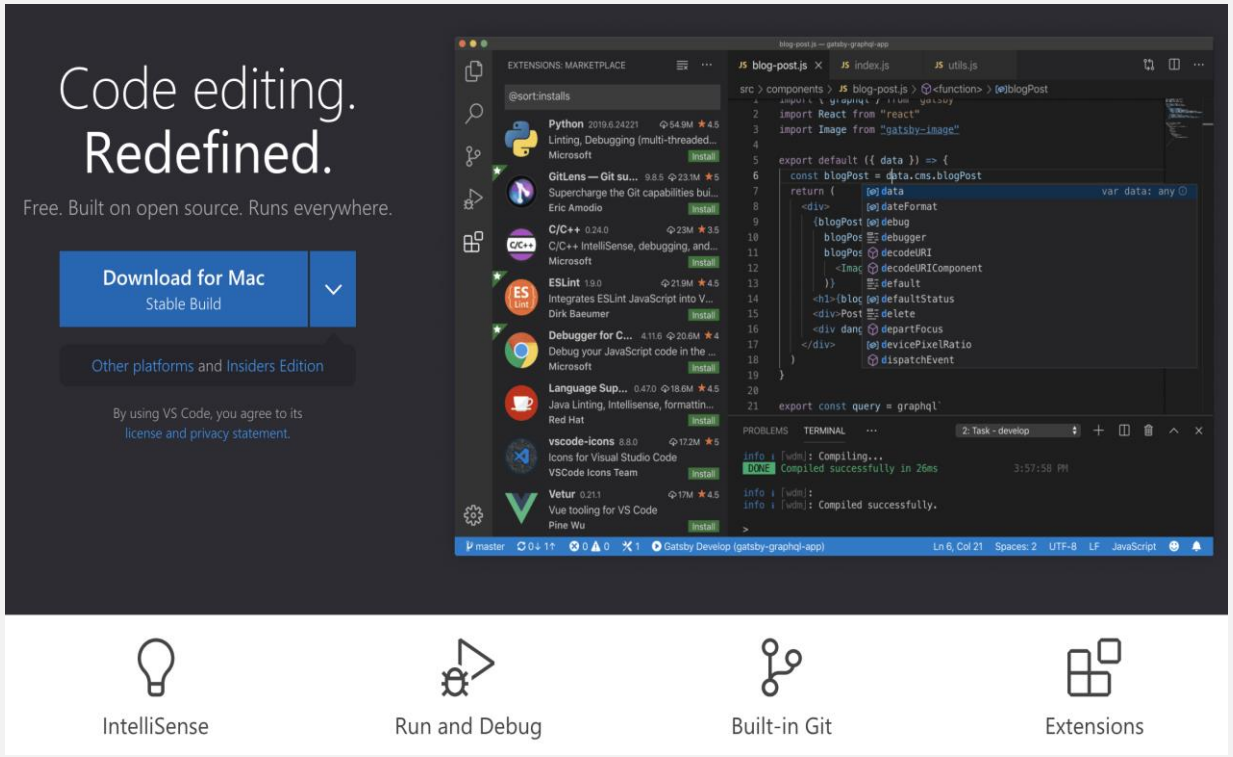
Microsoft

Extending DevOps with Visual Studio Code

What is Visual Studio Code?

Visual Studio Code is a lightweight and powerful source code editor.

- Run anywhere (Mac, Win, Lin)
- Git commands built-in
- Extensible and customizable
- IntelliSense syntax highlights
- Easily debug code
- Open Source
- Free!



https://code.visualstudio.com/

Demo

Tying it all Together

What is Visual Studio Code?

Visual Studio Code is a lightweight and powerful source code editor.

Visual Studio Code helps you:

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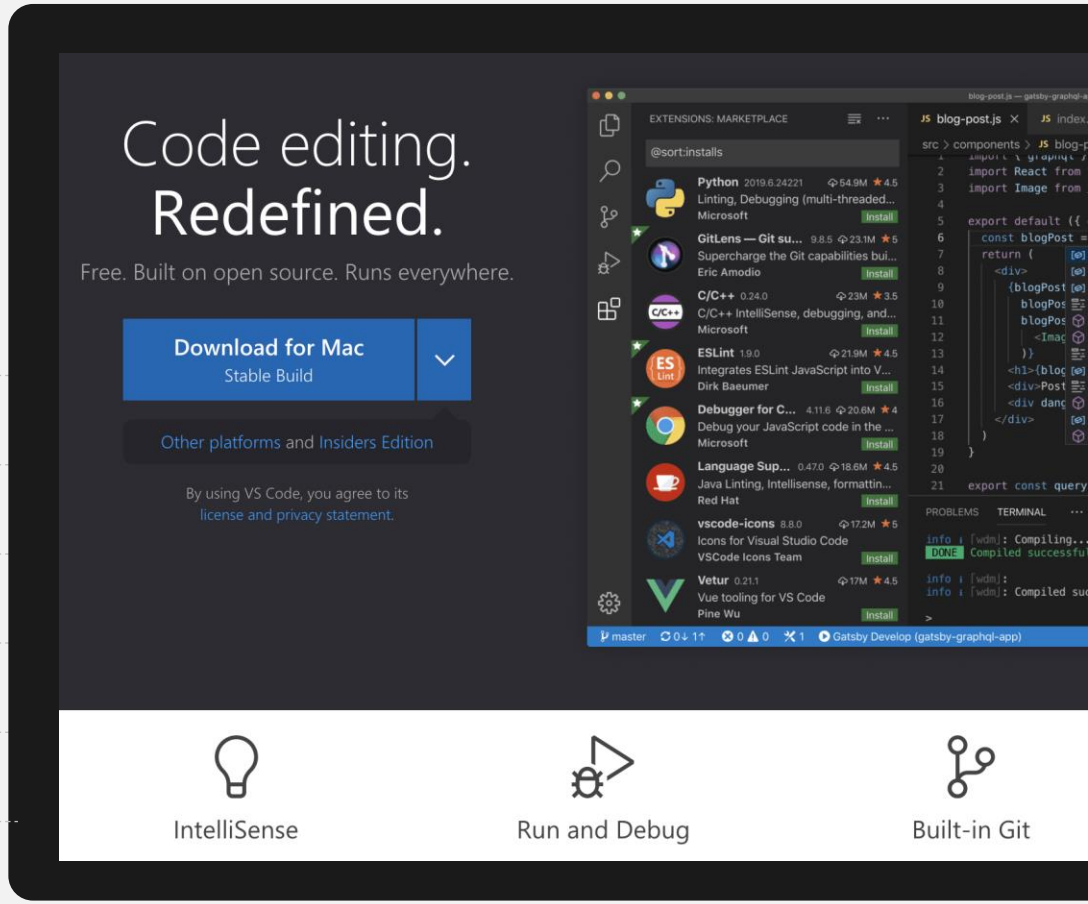


https://code.visualstudio.com/

Tailwind Traders

Needed Solving

- Rapidly growing
- Lack of collaboration
- Lack of shared tooling

The Solution

- Source control via GitHub
- Microsoft Teams collaboration hub
- Visual Studio Code for shared tooling
- Solid foundation for a DevOps strategy

Session Resources

Explore Microsoft Learn Content for the AZ-400 Certification

aka.ms/getting-started-devops

Get Certified

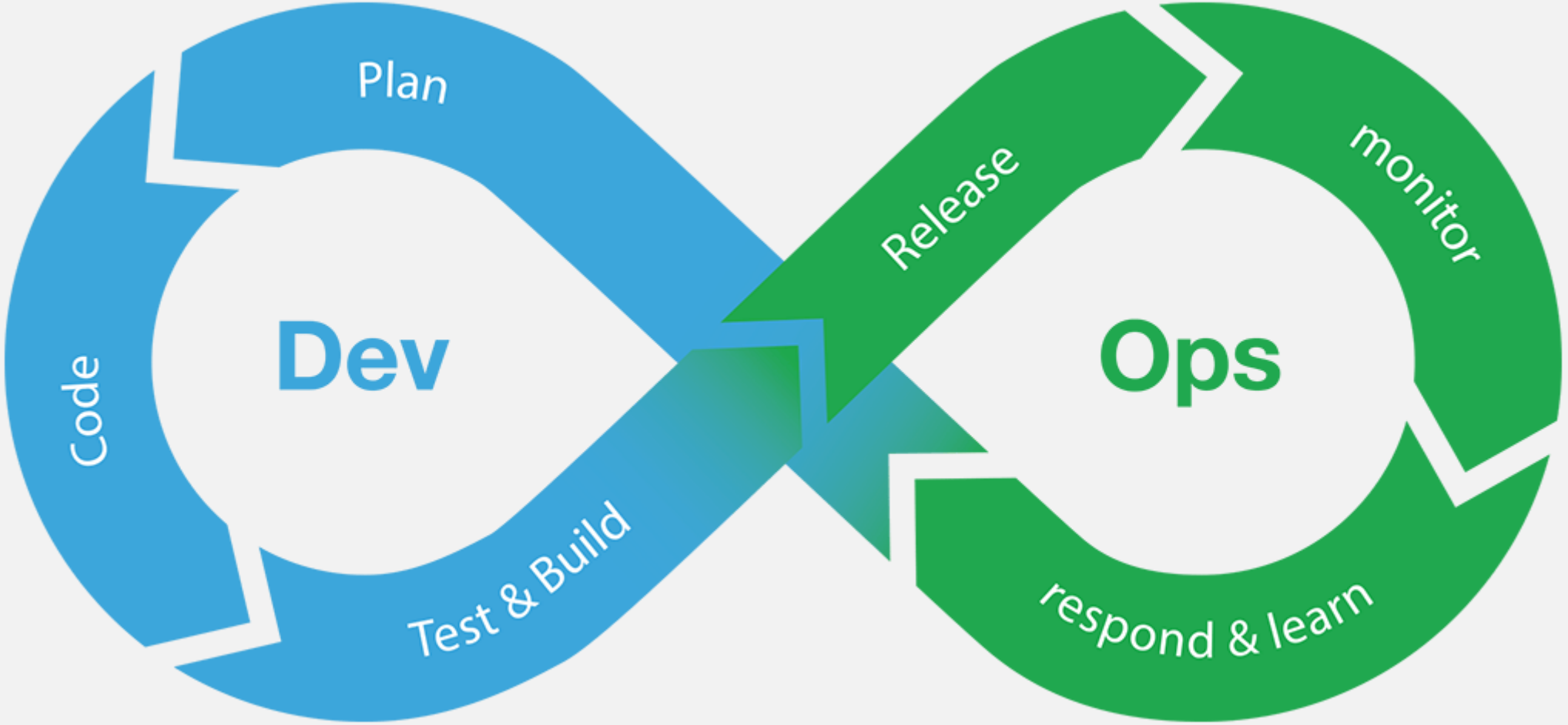
Designing and Implementing Microsoft DevOps Solutions

aka.ms/az400-cert

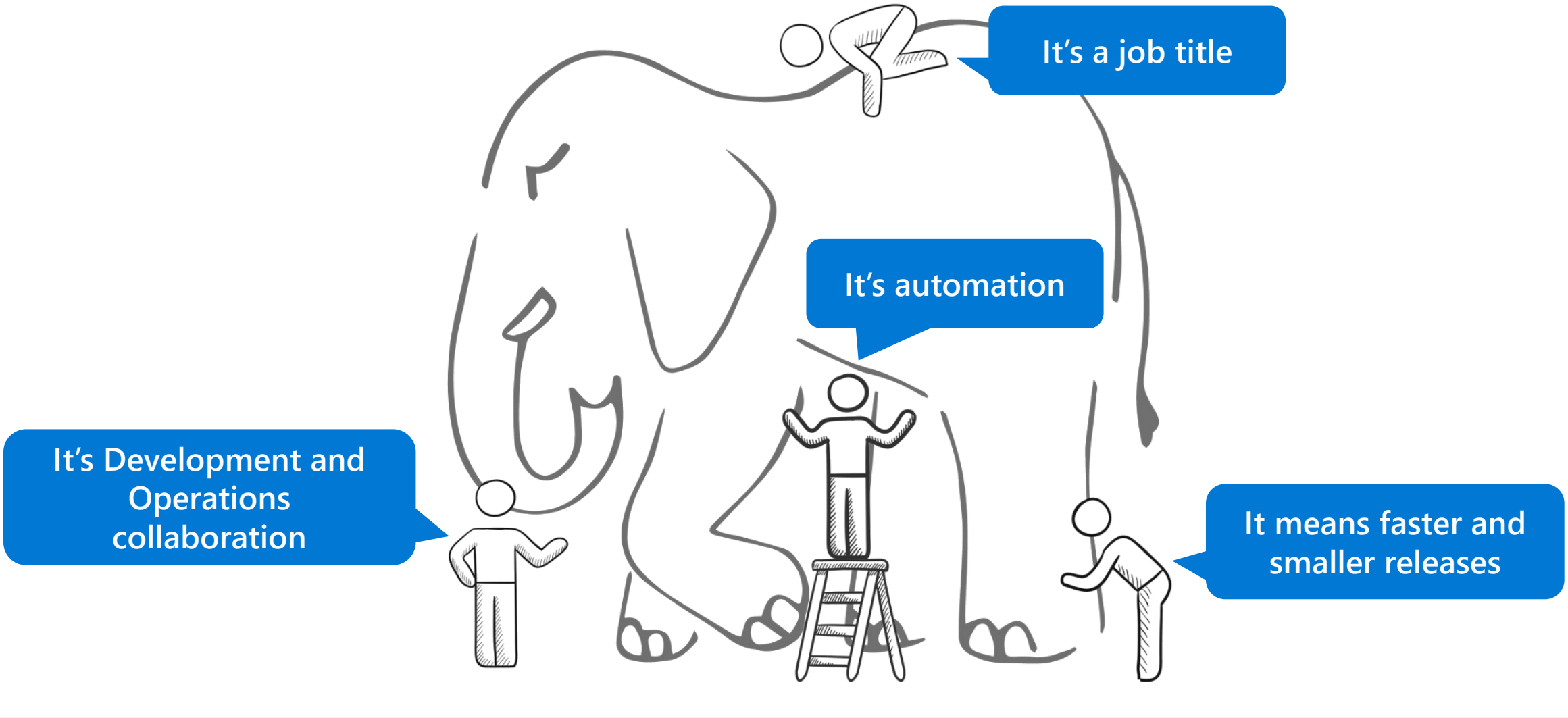
Microsoft

DevOps In Azure: Managing the Flow of Work

Tailwind Traders all in on DevOps



What is DevOps?

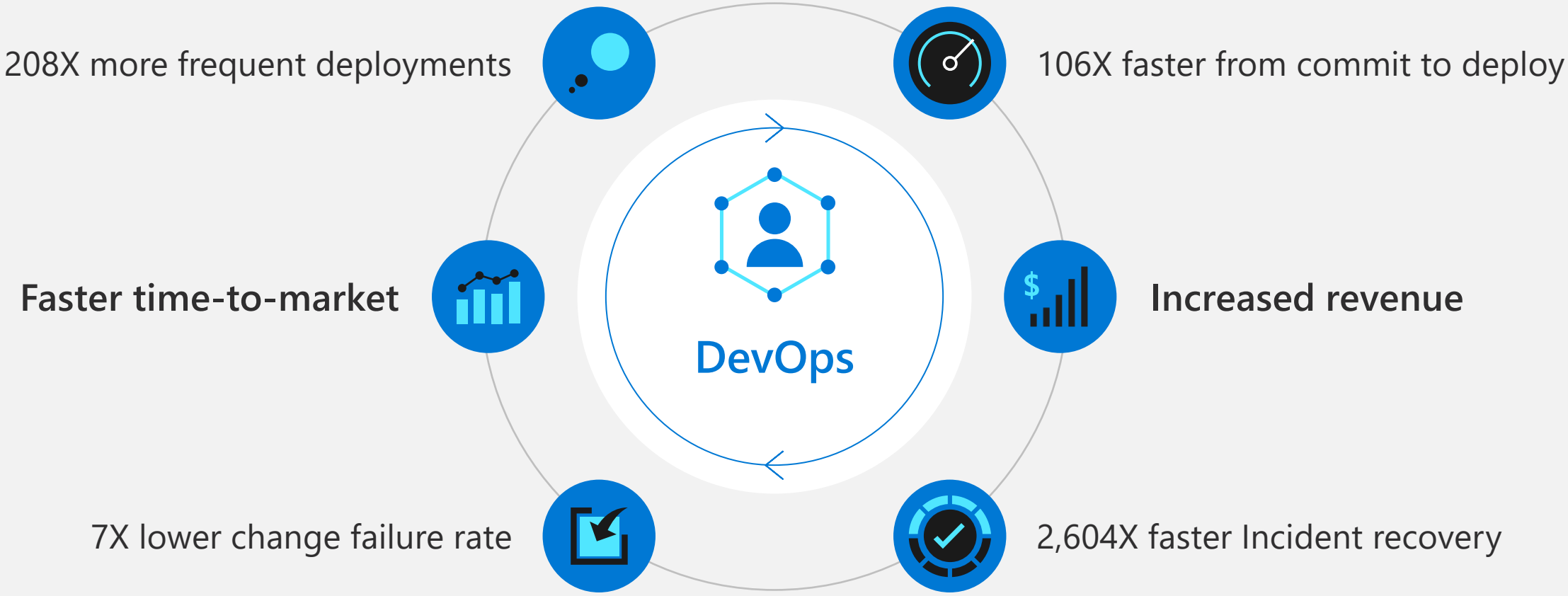


> DevOps is the union of People, Process, and Products to enable continuous delivery of value to our end users
>
> – *Donovan Brown*

Why is DevOps so Important?

- Your competition is already doing this
- Increase velocity
- Reduced downtime
- Reduced human error

High performance DevOps Companies Achieve Developer Velocity by …

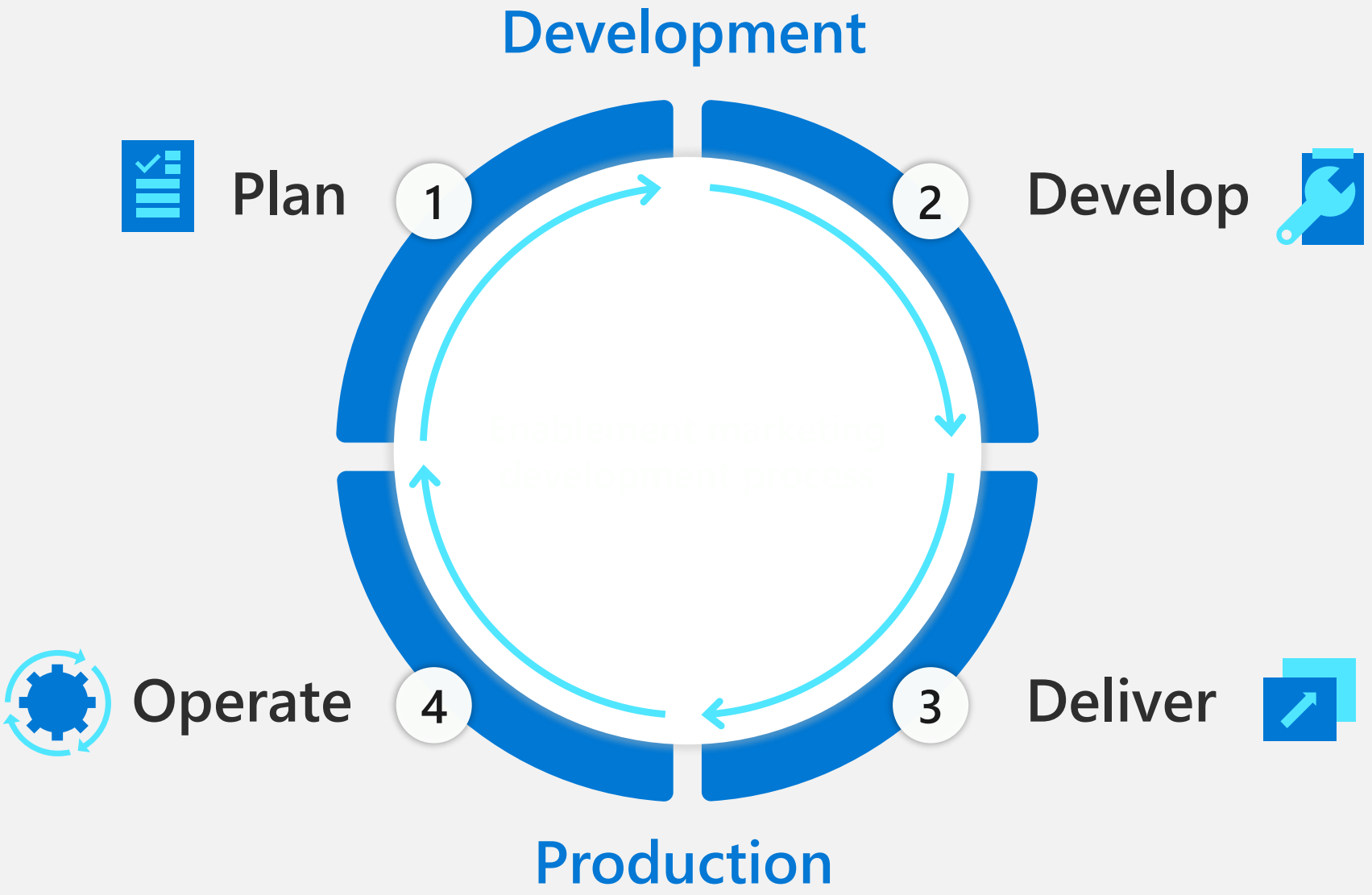


Source: 2019 DORA

DevOps: The Three Stage Conversation

1	People
2	Process
3	Products

Process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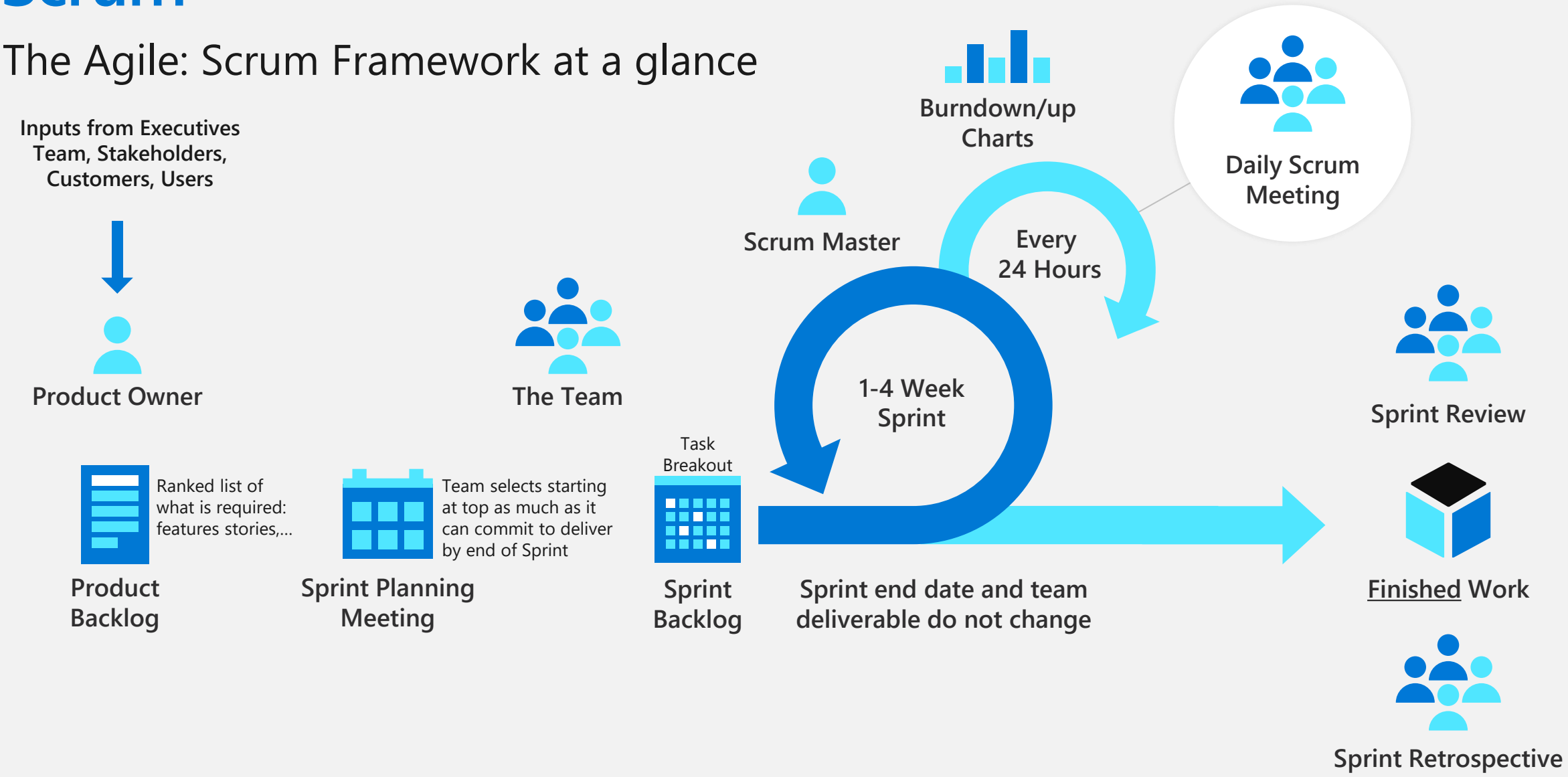
Scrum

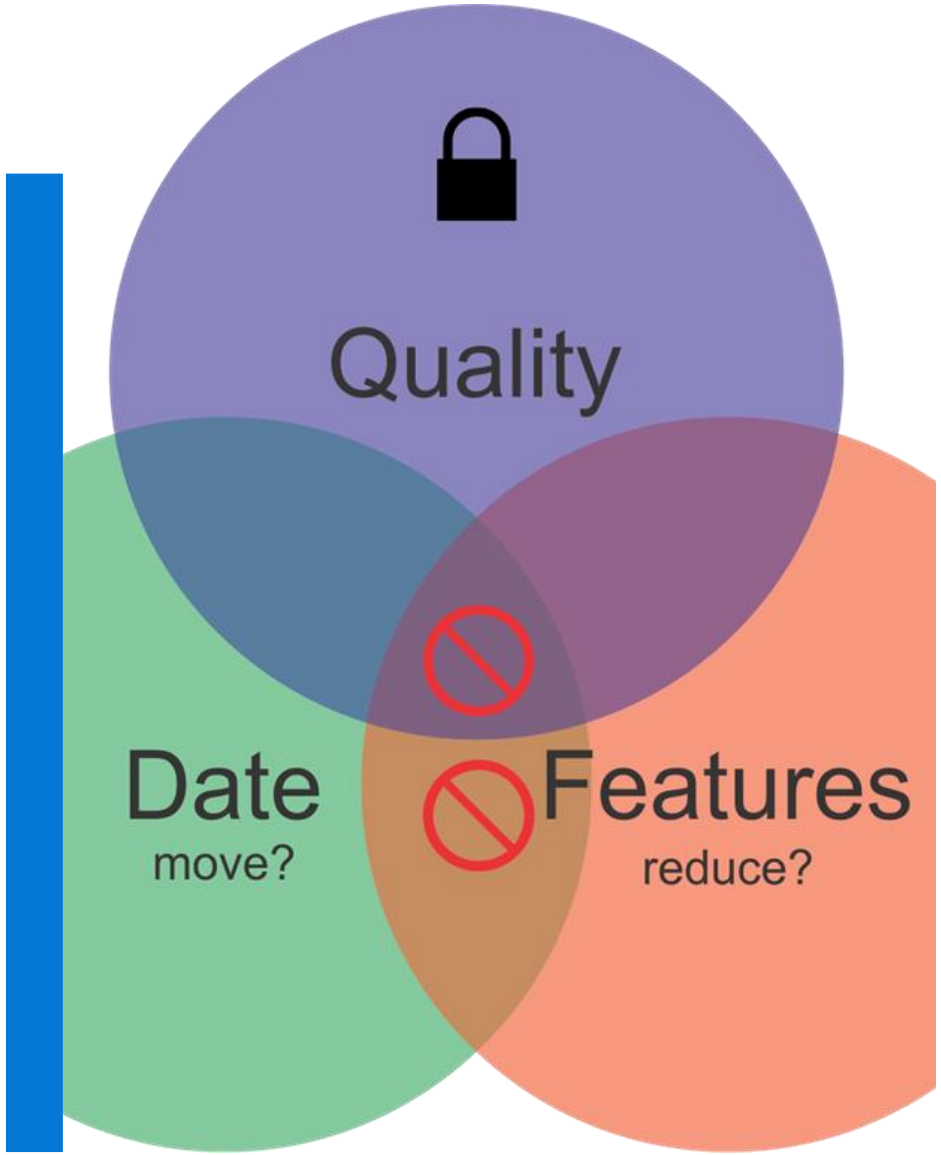
The Agile: Scrum Framework at a glance



General Principles

- Product is built incrementally
- Frequent inspection and adaption (course correction)
- Transparency (Product and Sprint backlogs are public)
- Product Owner, Development Team, Scrum Master
- Scrum Teams are self-organizing and cross-functional

Quality is non-negotiable



Estimates

Never accept an estimate over 4 hours

- More accurate
- Enables parallel development
- Confirms alignment with DoD

Never start from a date

The Rules Apply to Everyone

No one is above the law

Even the CEO must obey the rules

Demo

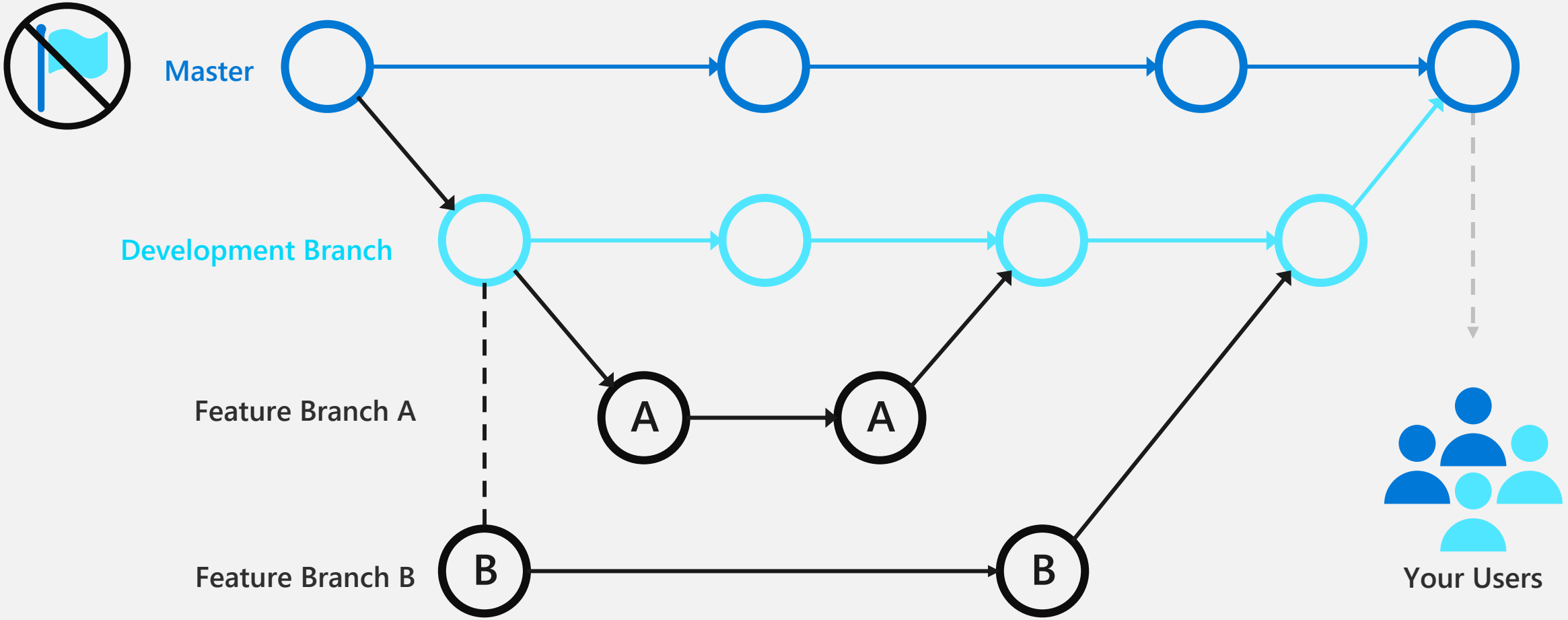
Tracking Work using Azure Boards

Branching Strategy

Choosing the right branching scheme is critical to success

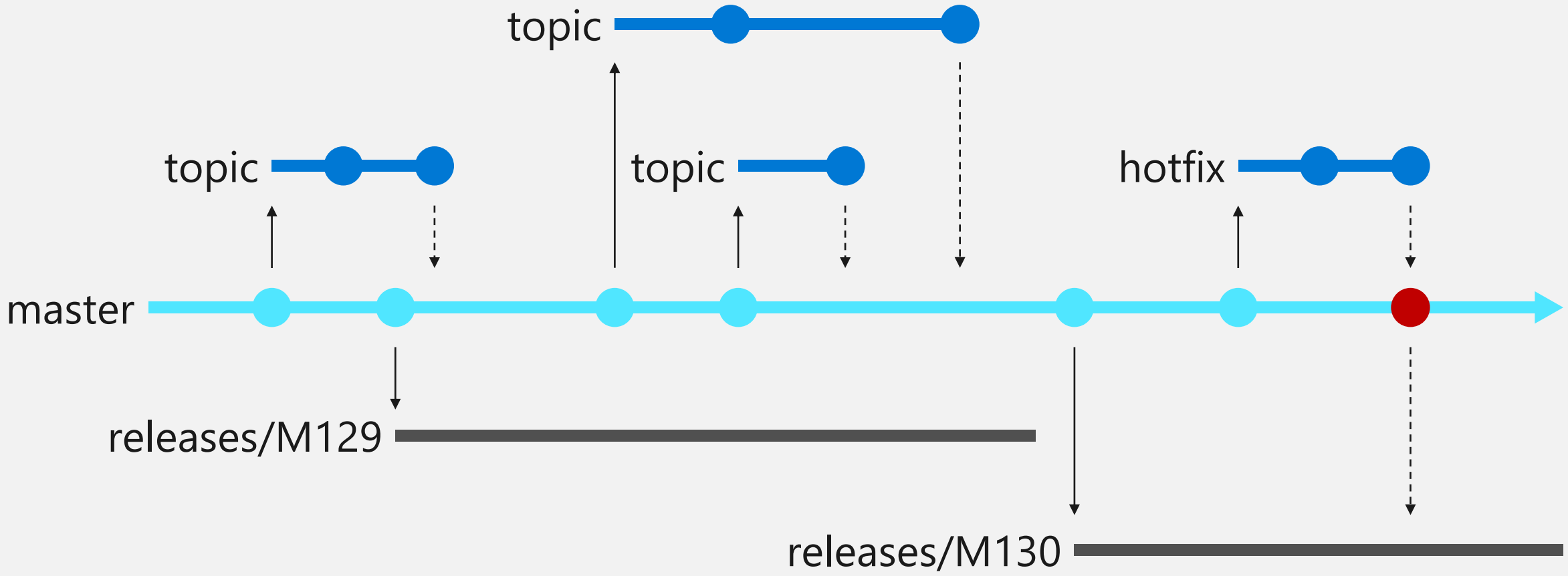
Traditional Branching Strategy

Feature Branching without flags



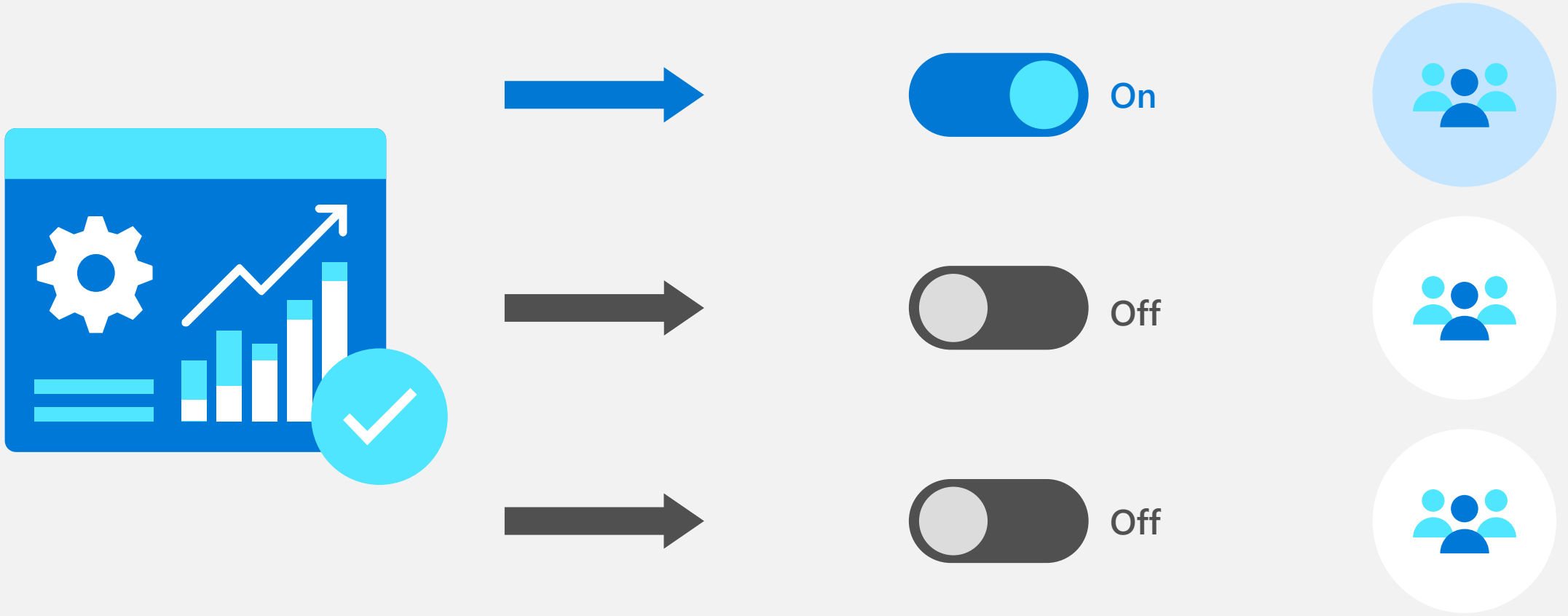
Trunk Based Development

Using trunk based development to avoid merge debt



How can that work???

Feature Flags

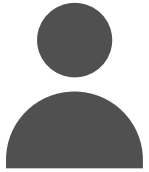


Glorified If statement

Bob

{
Key: bob@example.com",
name: "Bob Smith",
group: "beta"
}

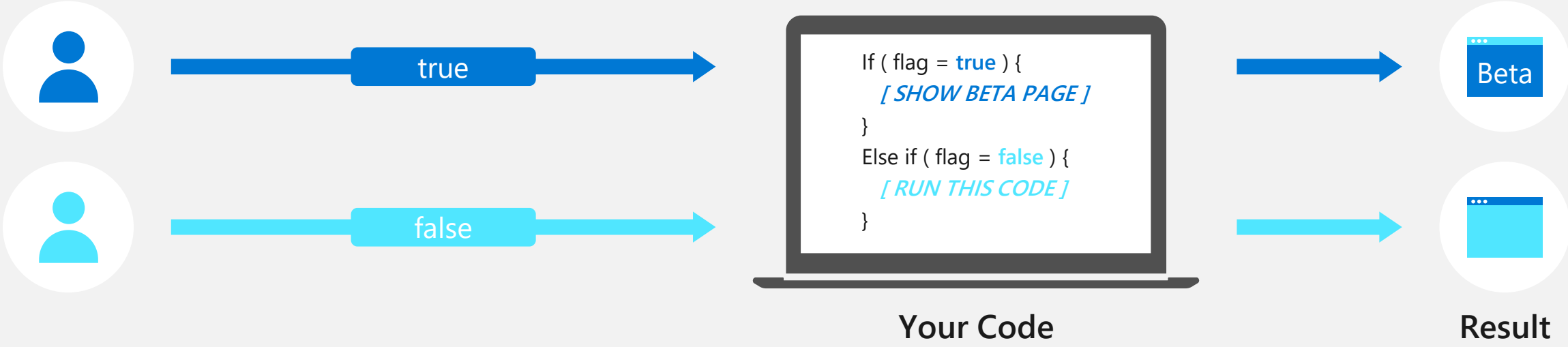
Sarah



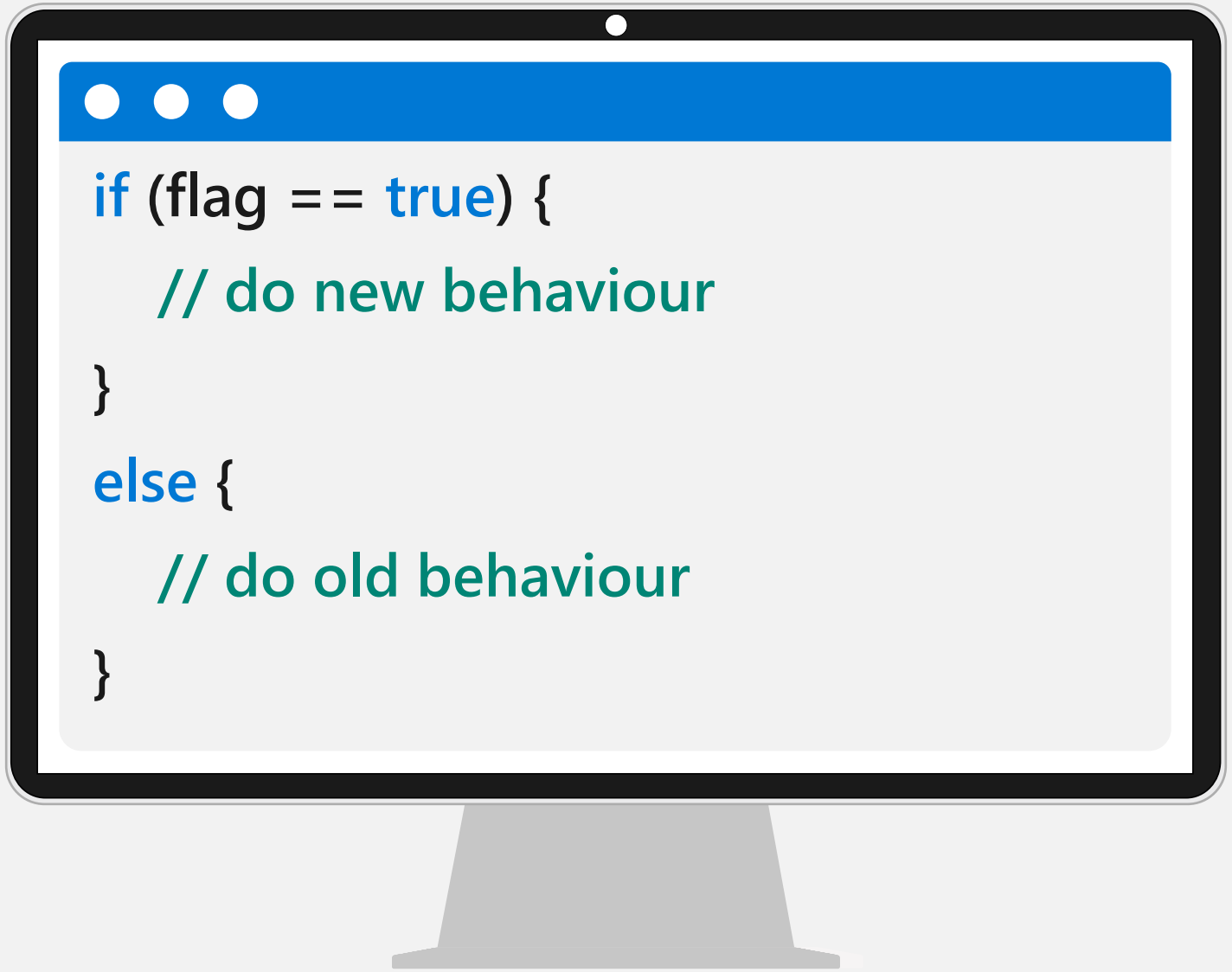
{
Key: sarah@example.com",
name: "Sarah Jones",
group: "normal"
}

"Beta Page"

If group is **beta** return **true**
... if not, return **false**



No really… it's a freaking if statement



A/B Experiments

50% visitors see variation A

Variation A

23%

conversion

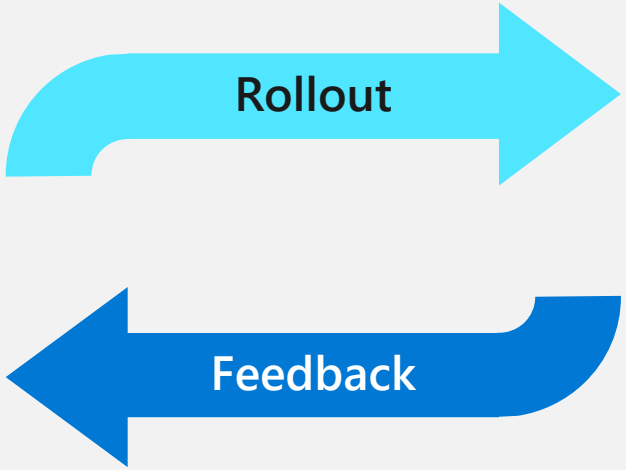
50% visitors see variation B

Variation B

11%

conversion

Safe Deployment



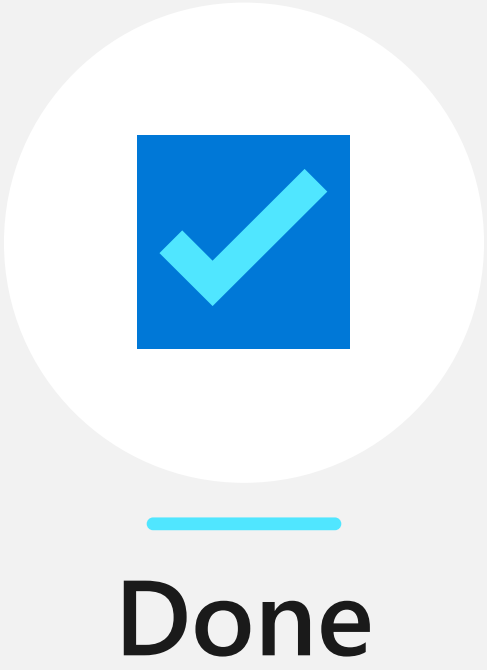
New Feature

Soft Launch

Incremental Rollout

Rollback

Set switch to off. Done

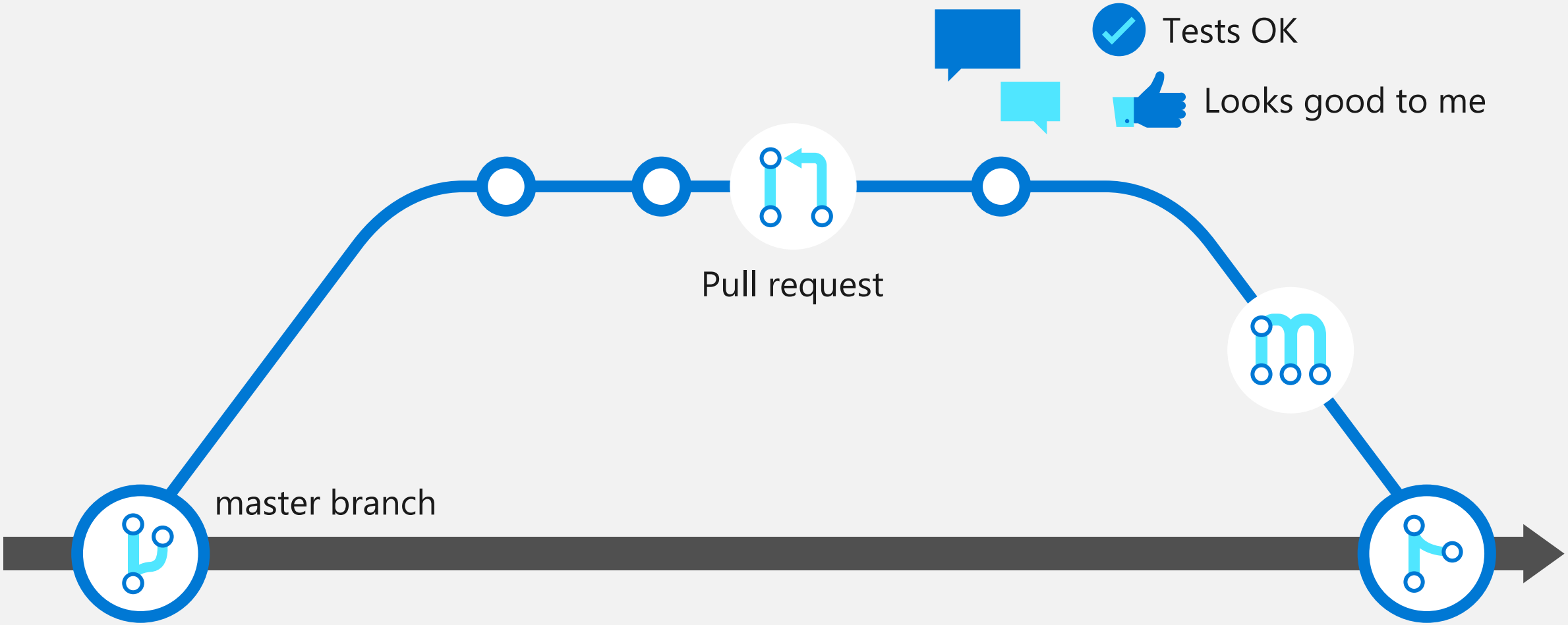


Done

Demo

Feature Flags

Maintaining Quality w/Pull Requests



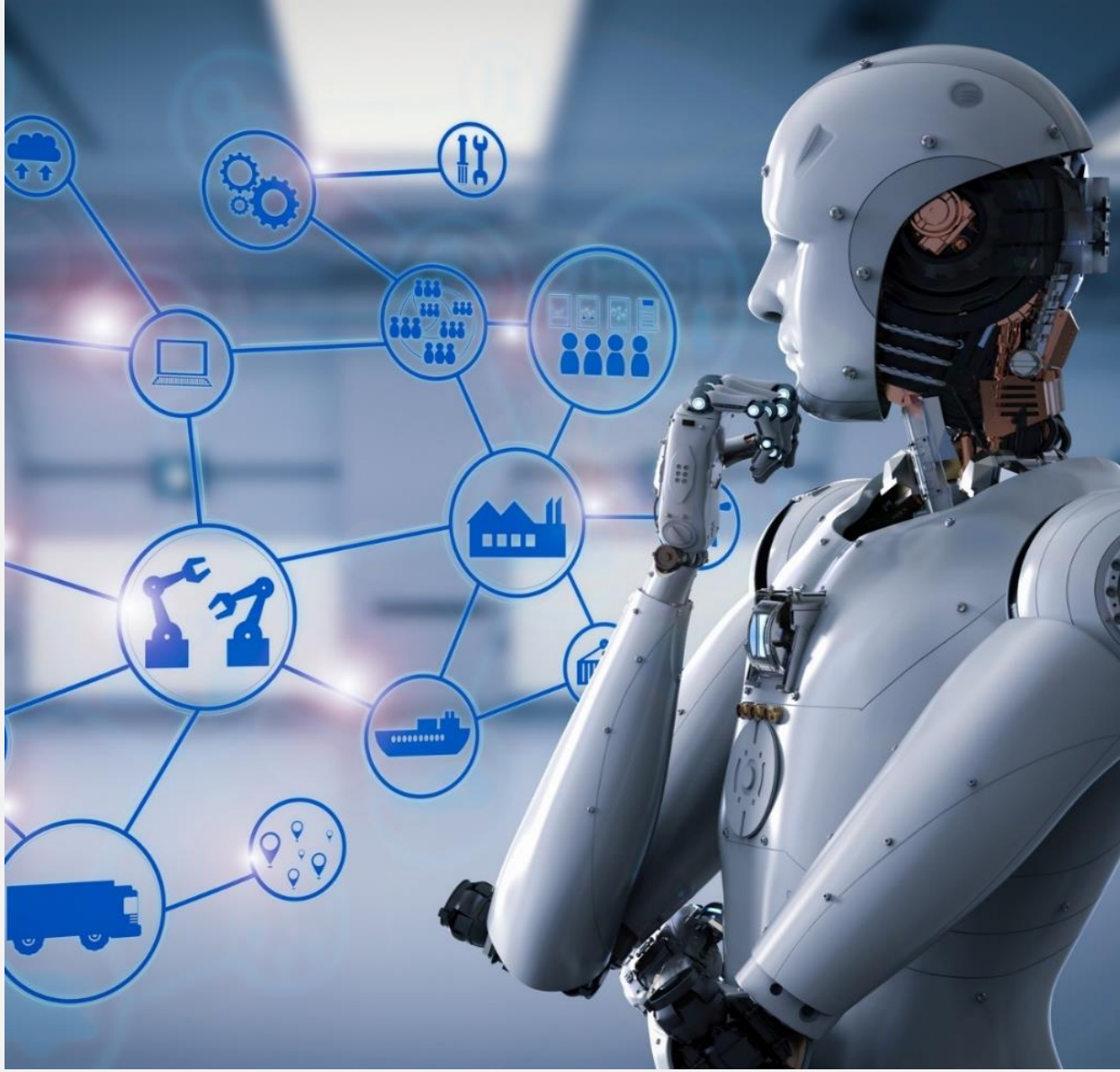
Problems with PR workflow

1. People didn’t know when PR’s were ready to review

2. People needed to see the PR changes on a live system

3. Multiple staging environments needed to see PR changes

Automation to the rescue!



Demo

Automation with GitHub Actions

Tailwind Traders is now in a good state

Microsoft

Let’s Recap

Tailwind Traders

Needed Solving

- Managing Work
- Managing Source Control Changes
- Automation to help with processes

The Solution

- Scrum and Azure Boards
- Trunk Based Development
- Feature Flags
- GitHub Actions

Microsoft

Building in Quality

DevOps Learning Path

- Getting Started with DevOps
- Managing the Flow of Work
- Building in Quality
- Delivering Change
- Operating Software in the Cloud

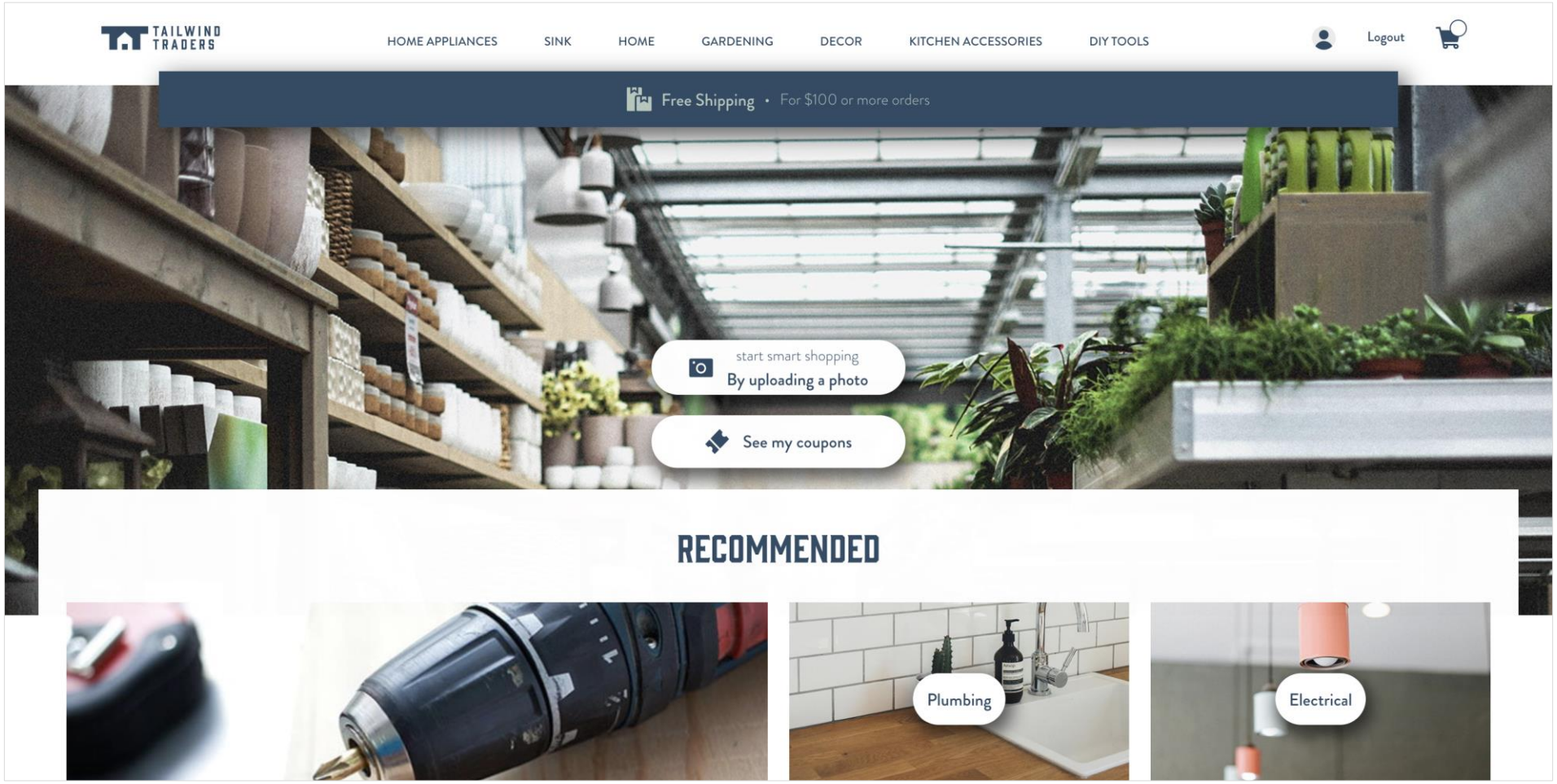
Goals for this session

Security and Secrets

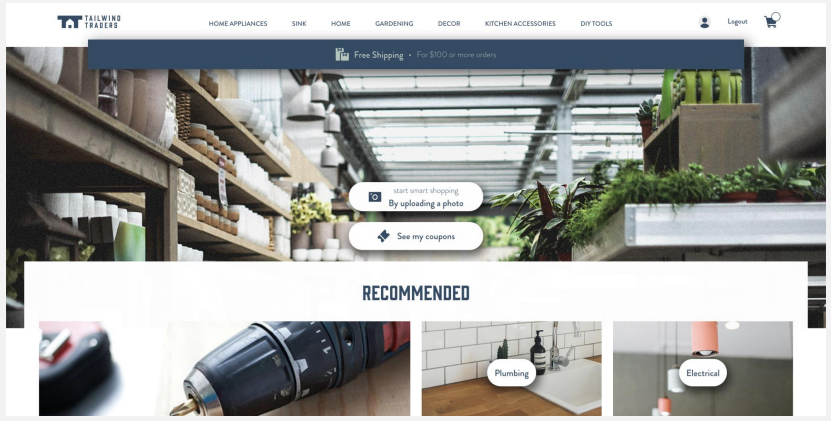
Apply Security to Containers

Build Quality and Gain Confidence

Tailwind Traders website



Tailwind Traders website



ASP.NET Core + React

Docker container on Azure App Service

Azure SQL Database

Azure Cosmos DB

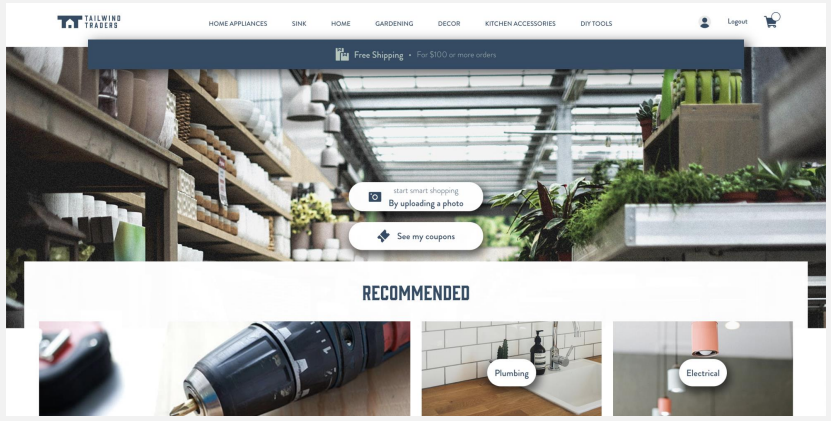
What Tailwind Traders Needs

Quality

Confidence

Security

Tailwind Traders website



ASP.NET Core + React

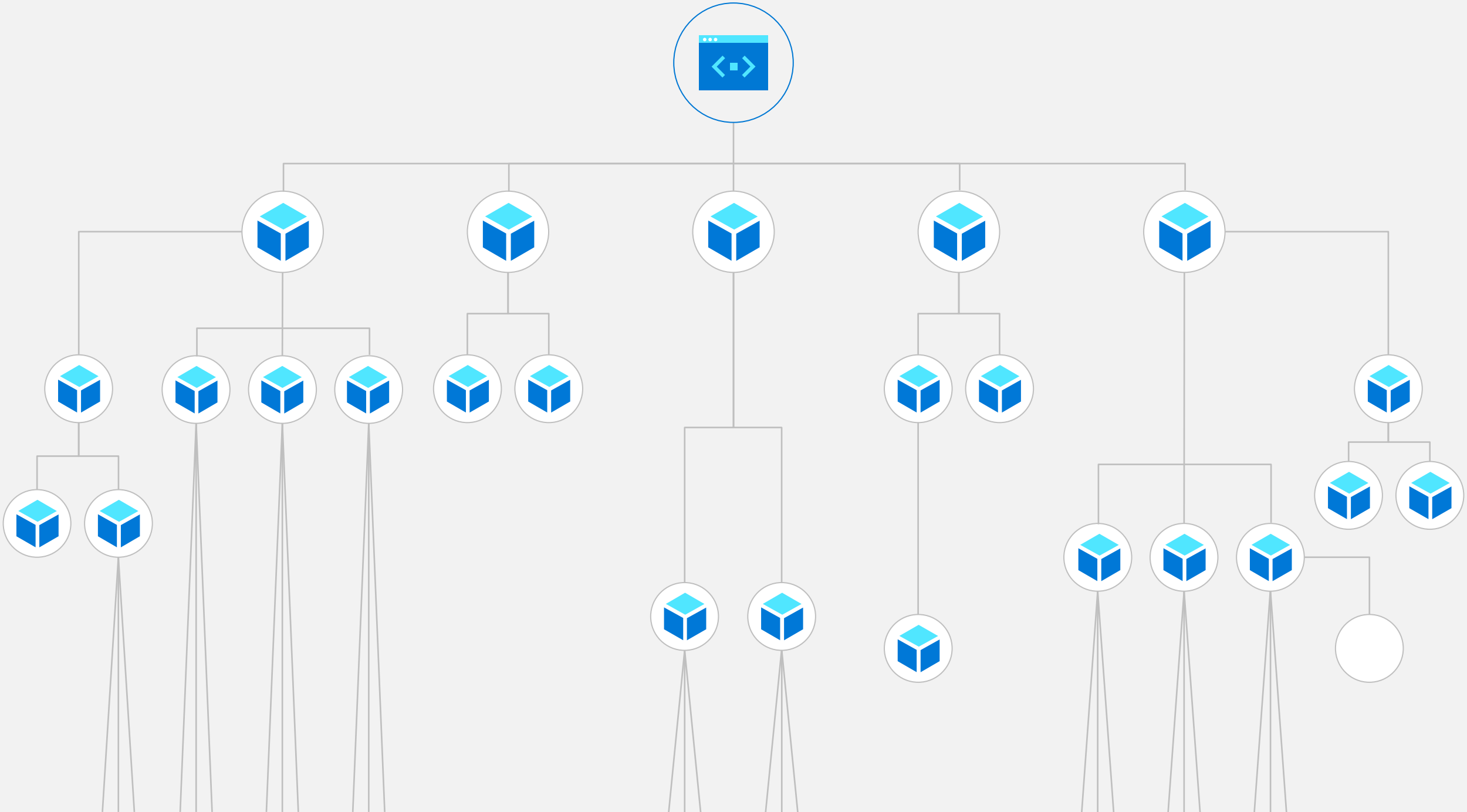
Microservices with backend APIs and Web Frontend

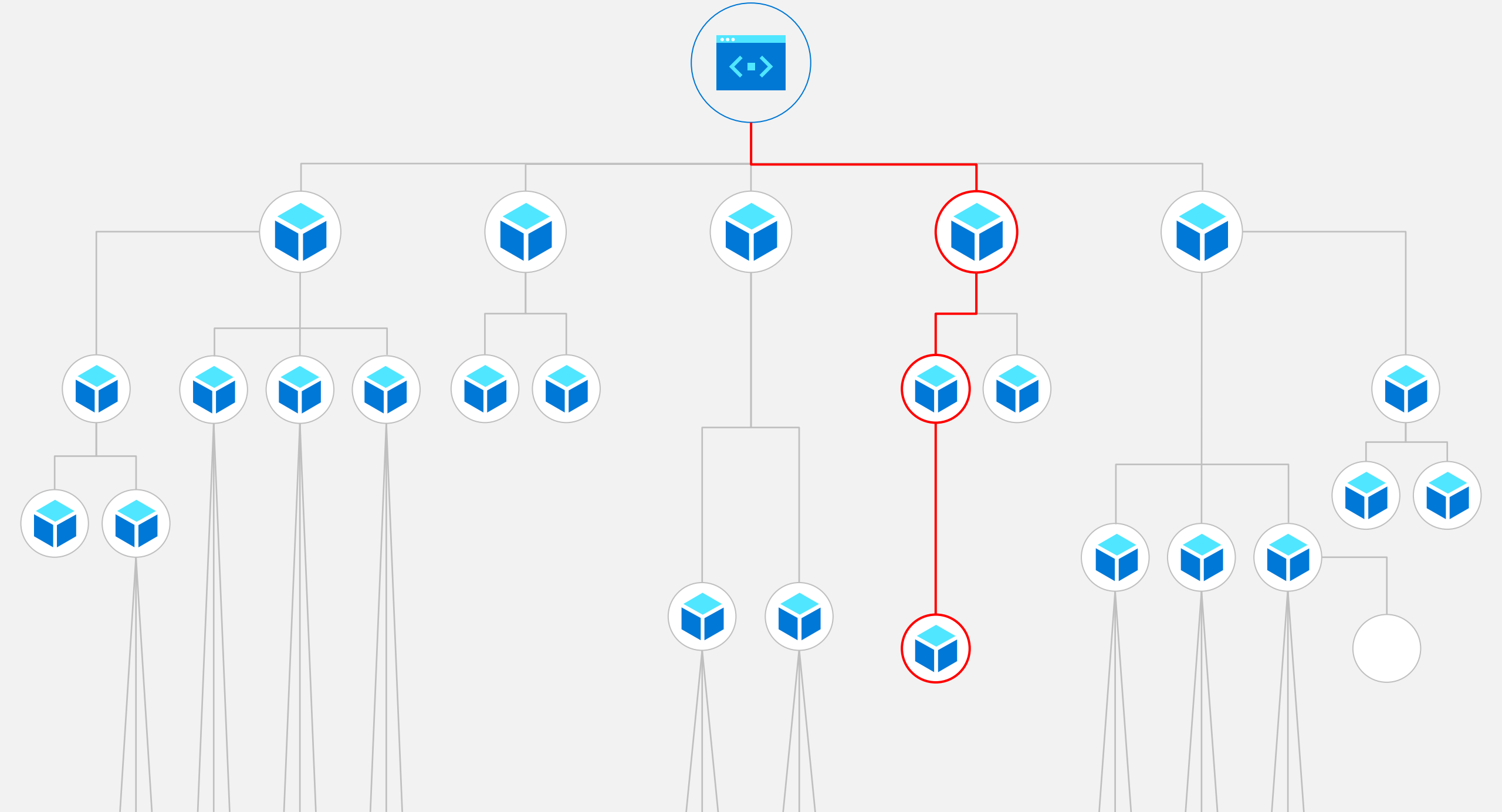
Azure SQL Database

Azure Cosmos DB

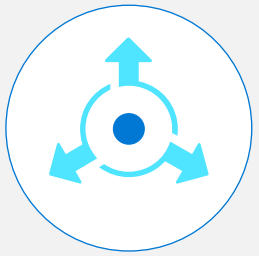
Microsoft

Security and Vulnerability Management





Community-powered security & compliance



Dependency Insights

- Real-time inventory
- License compliance
- Vulnerability alerting

Vulnerability Management

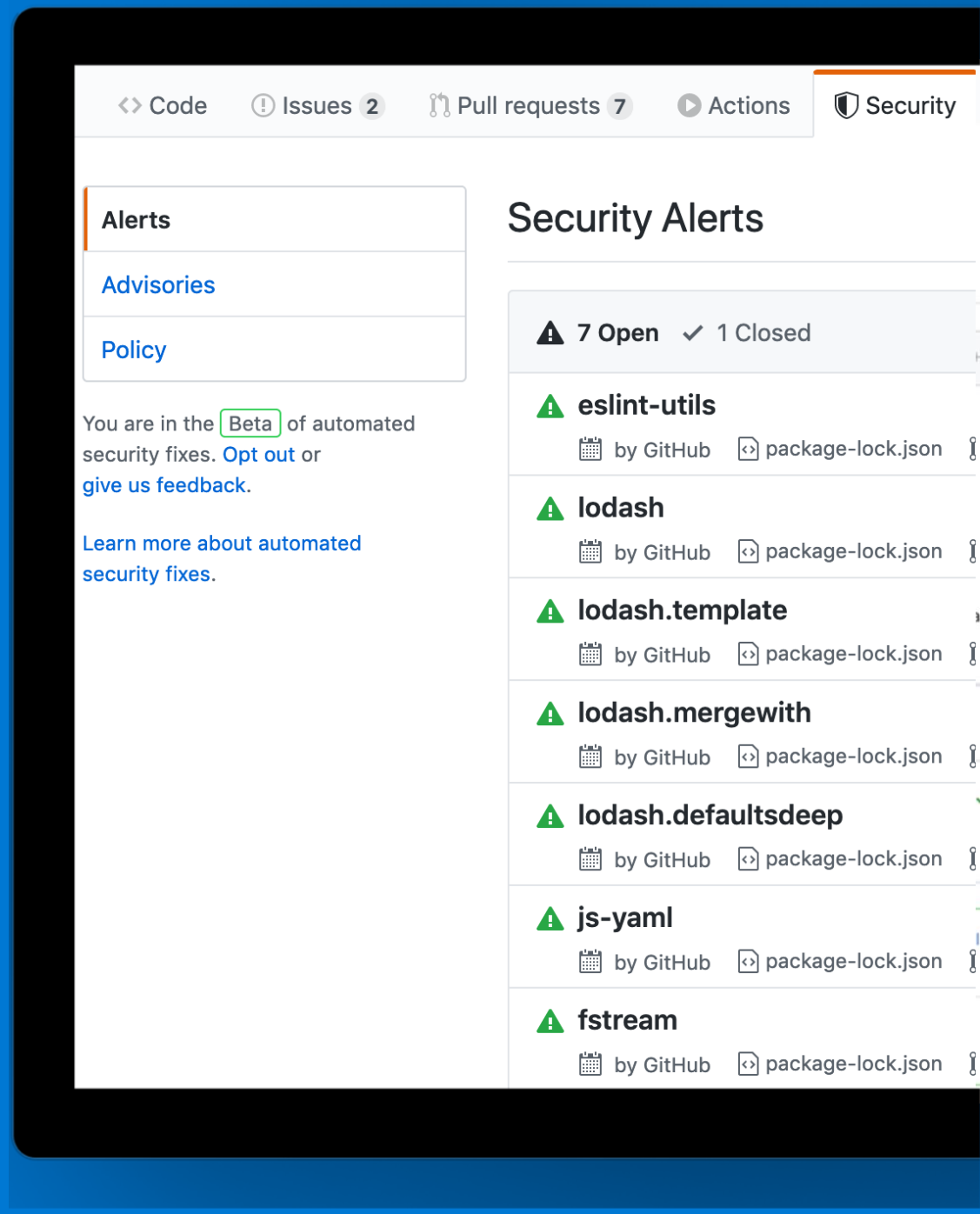
- Code scanning
- Secret scanning
- Largest vulnerability database
- Automated security updates

CodeQL

- World’s most advanced code analysis
- Vulnerability hunting tool
- Community of top security experts

Vulnerability Management

Over 62 million security alerts sent across GitHub.



Code Scanning

Find and fix vulnerabilities fast

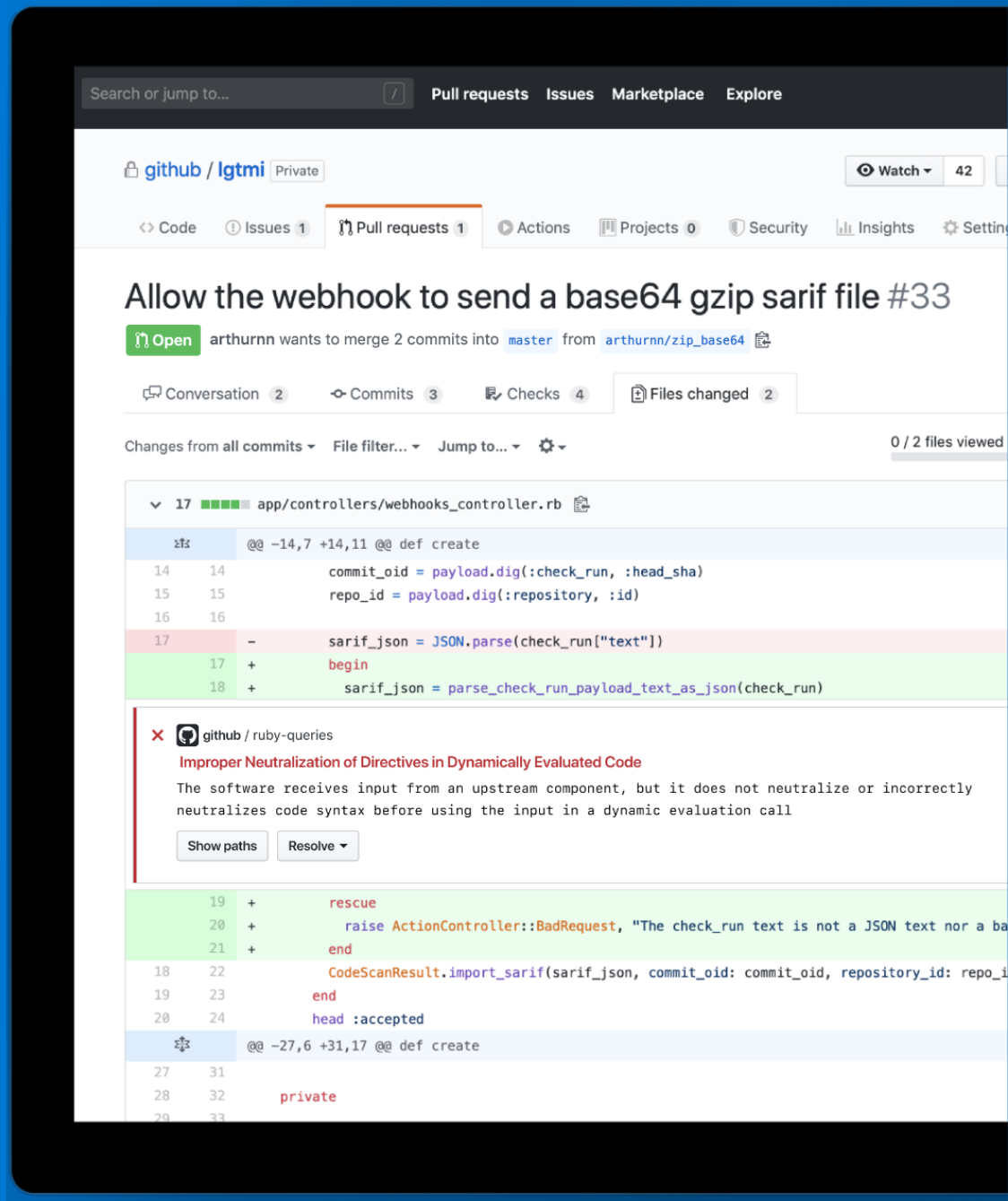
Find and fix vulnerabilities before they are merged into the code base with automated CodeQL scans

Community of top security experts

Community-driven query set powers every project with a world-class security team.

Integrated with developer workflow

Integrate security results directly into the developer workflow for a frictionless experience and faster development



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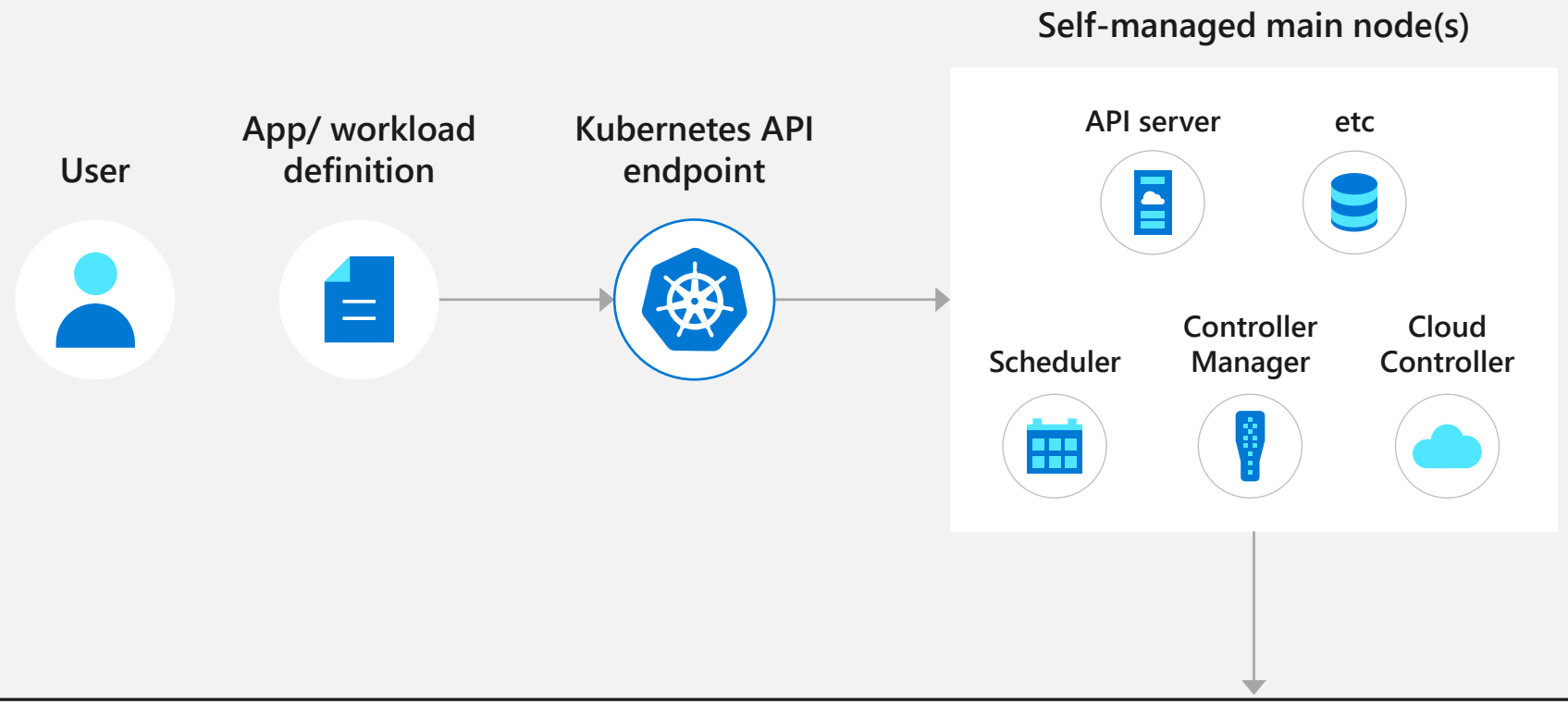
Demo – Azure Security and GitHub Secret Scanning

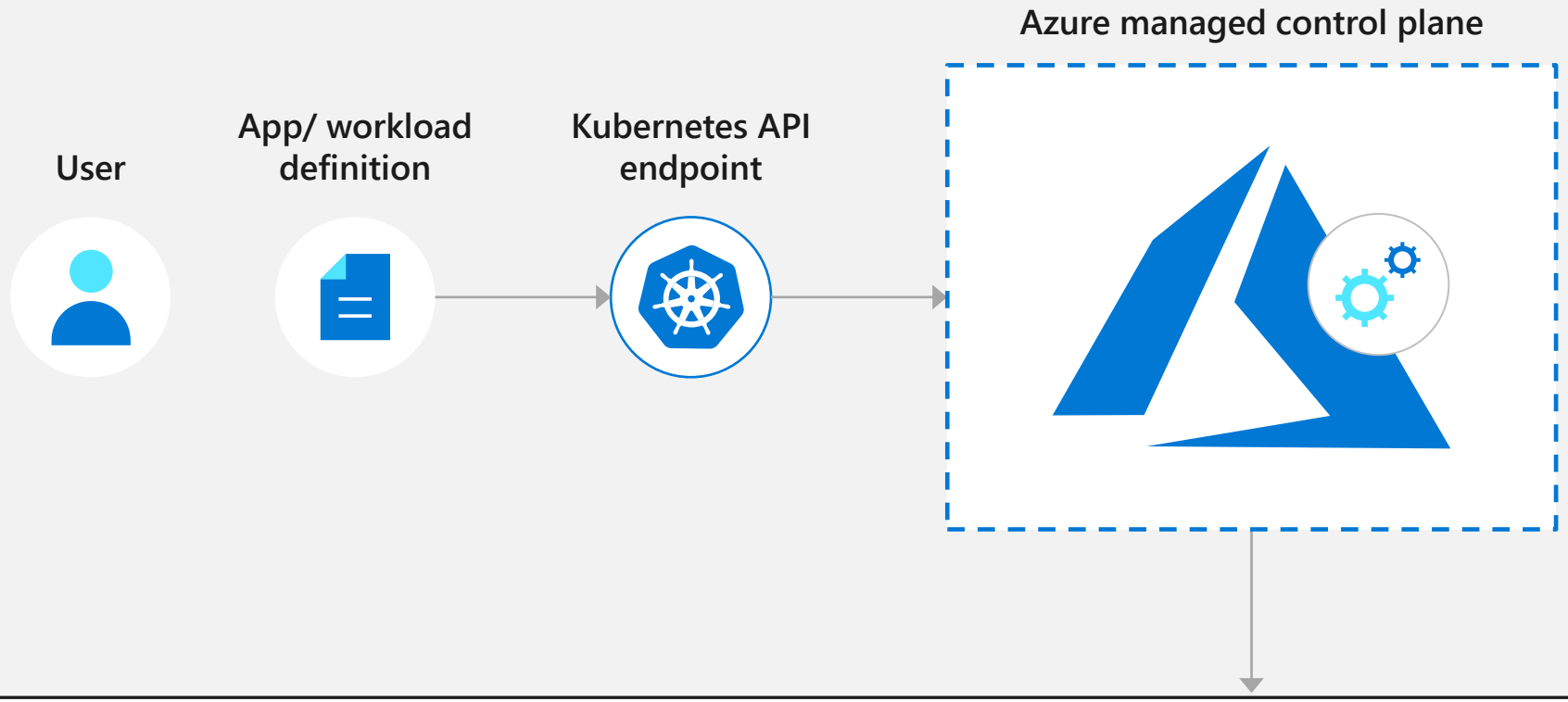
Microsoft

Container Security

Kubernetes Architecture



Kubernetes Architecture



Refresher on container layers

Container Layer

Read / Write

91e49dfb1179

d7b1189bf667

c220123c8472

d31af33eb855

a7183fb762a8

f61792ba8979

From: Alpine:3.8

Image layers

Read only

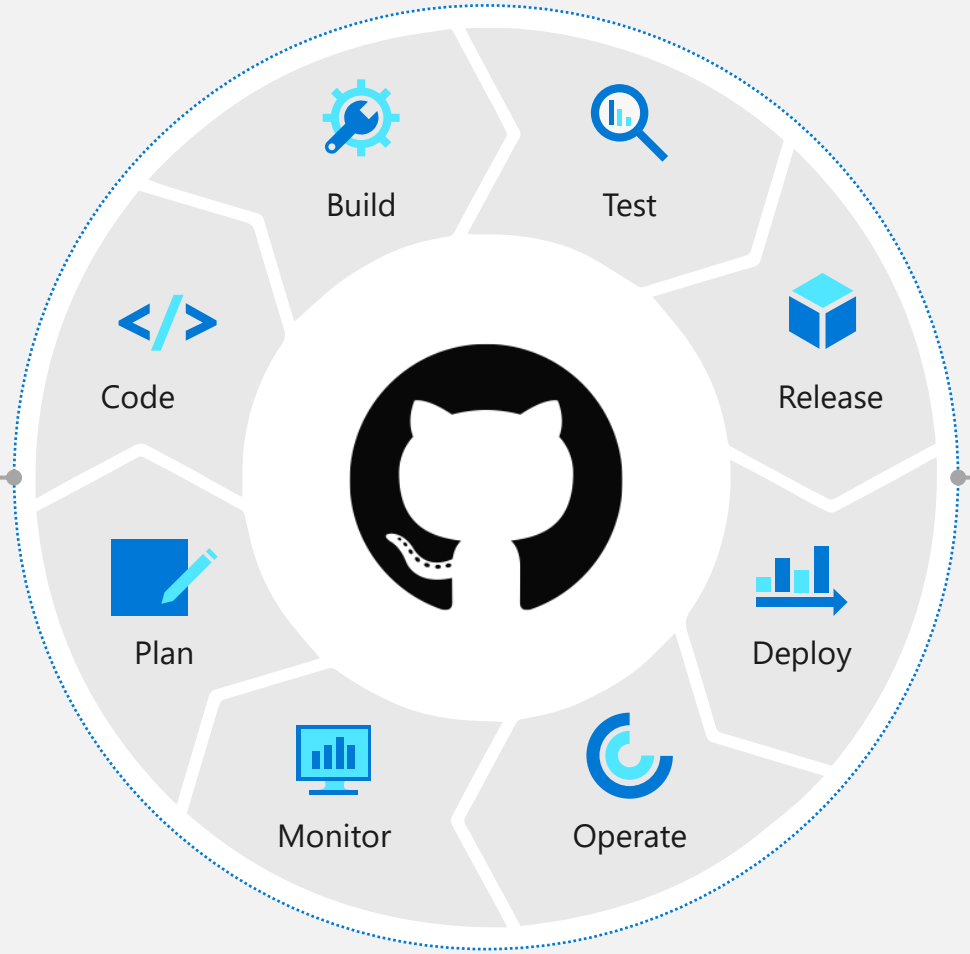
Microsoft

Demo – Building Secure Containers

End-to-end, code-to-cloud DevOps

Home for all developers
Home for the world's code

- Elastic, to any scale
- Fully managed
- Packages always the latest
- Supports all OS for CI/CD
- Largest ecosystem
- Community-led automation



Deploy anywhere, including your own data centers

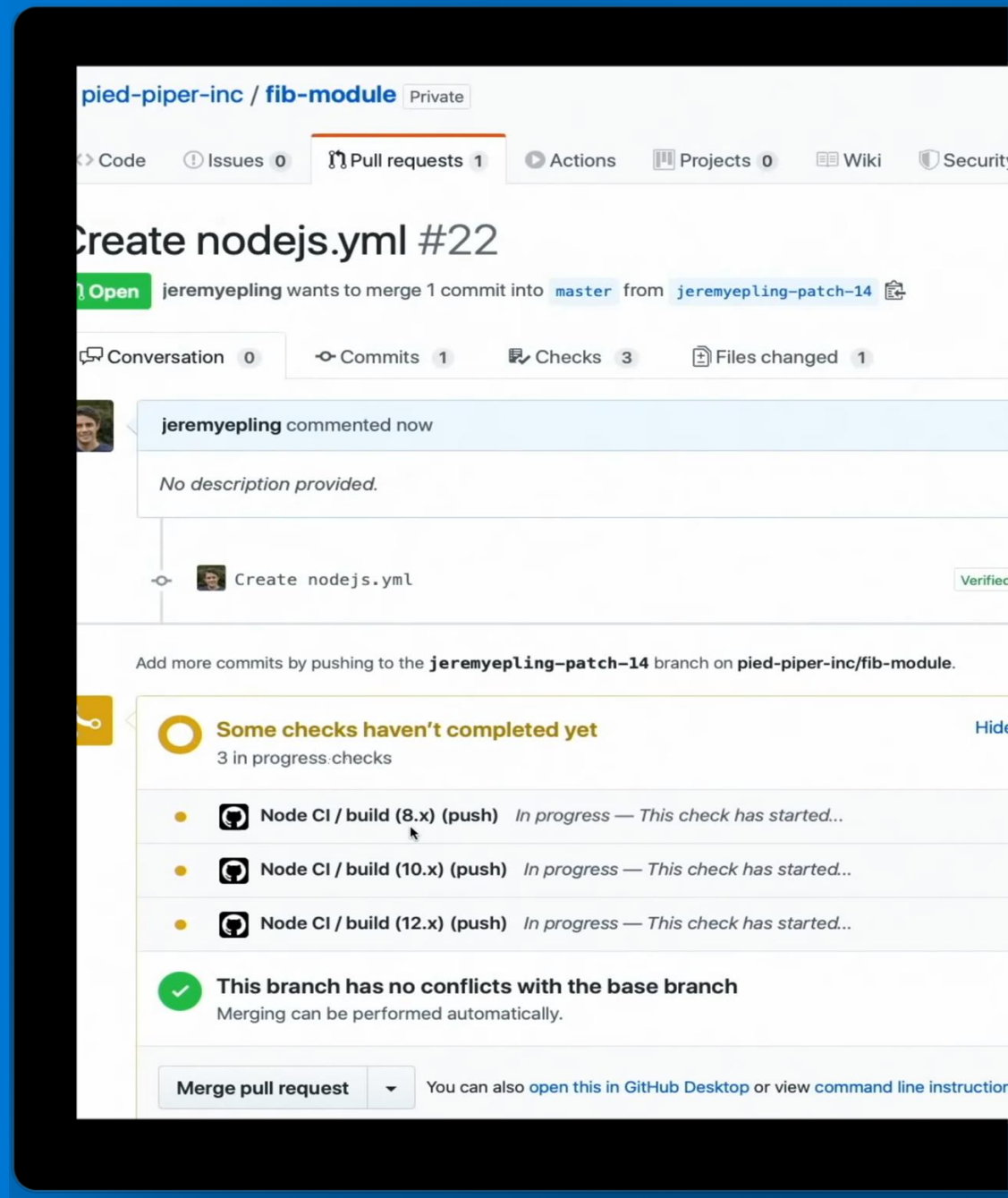
- On-prem
- Azure
- AWS
- Google Cloud Platform

GitHub Actions

Automate

Build, test and deploy with confidence

Customizable



Microsoft

Demo – Gaining DevOps Confidence with Containers, IaC, and Azure Policy

What did we learn?

- Code Scanning and Dependency Alerts
- Build More Secure Containers
- Gain DevOps Confidence

Microsoft Azure

Invent with purpose.