



The Power of DevOps in the Real World

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Let's connect



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Let's connect!



Randy Pagels
DevOps Architect

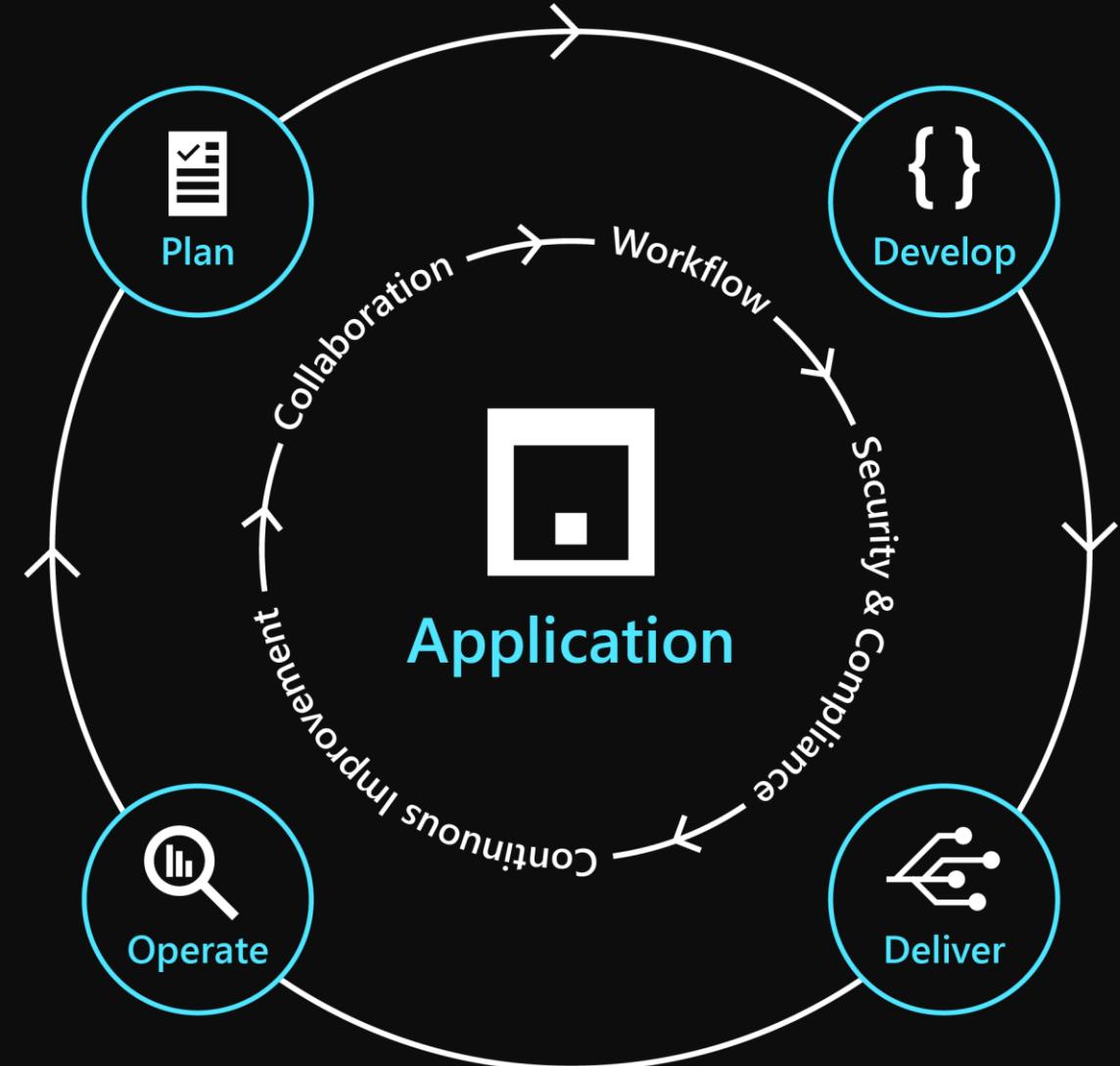
rpagels@xpirit.com

What is DevOps?

“

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

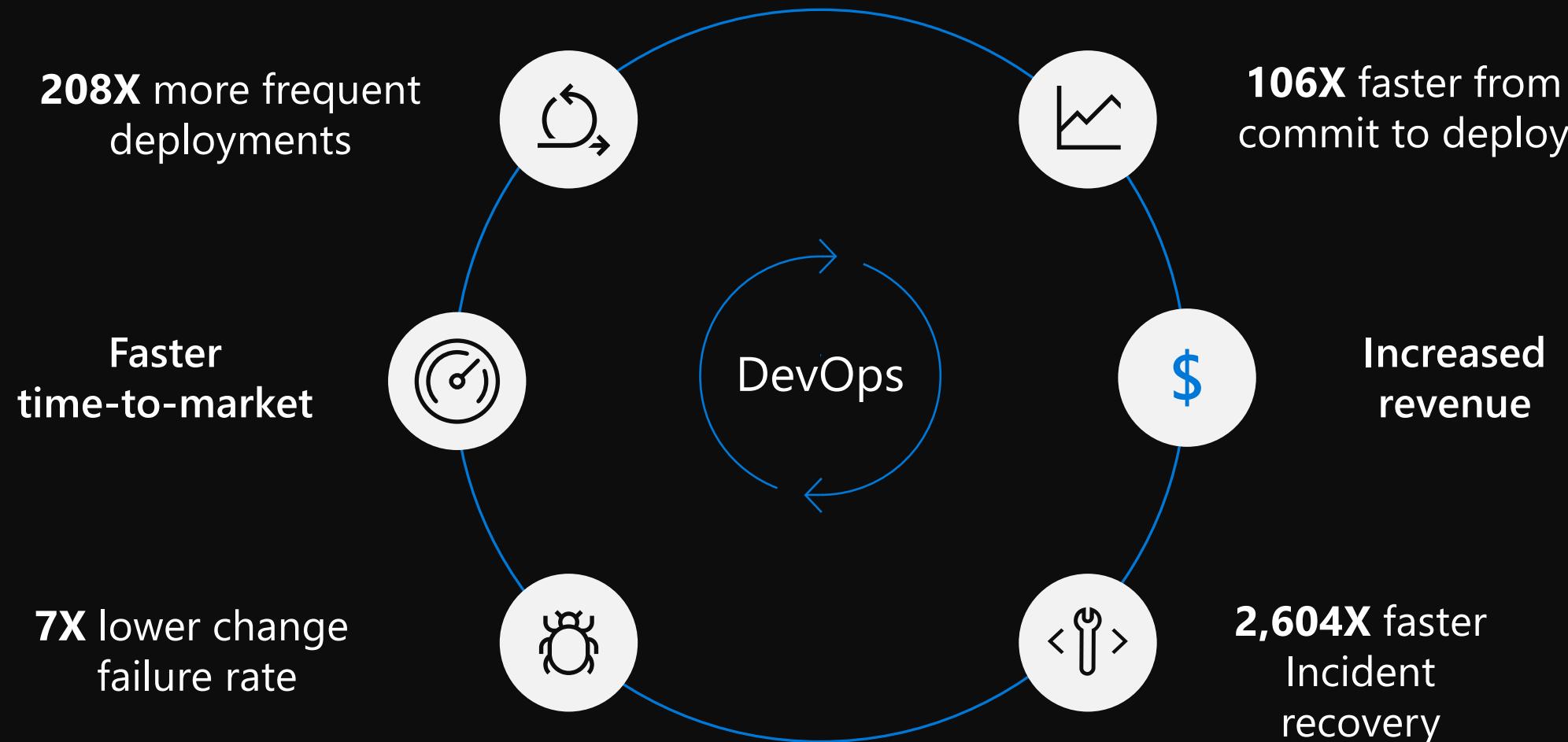
- Donovan Brown



Why is DevOps important?

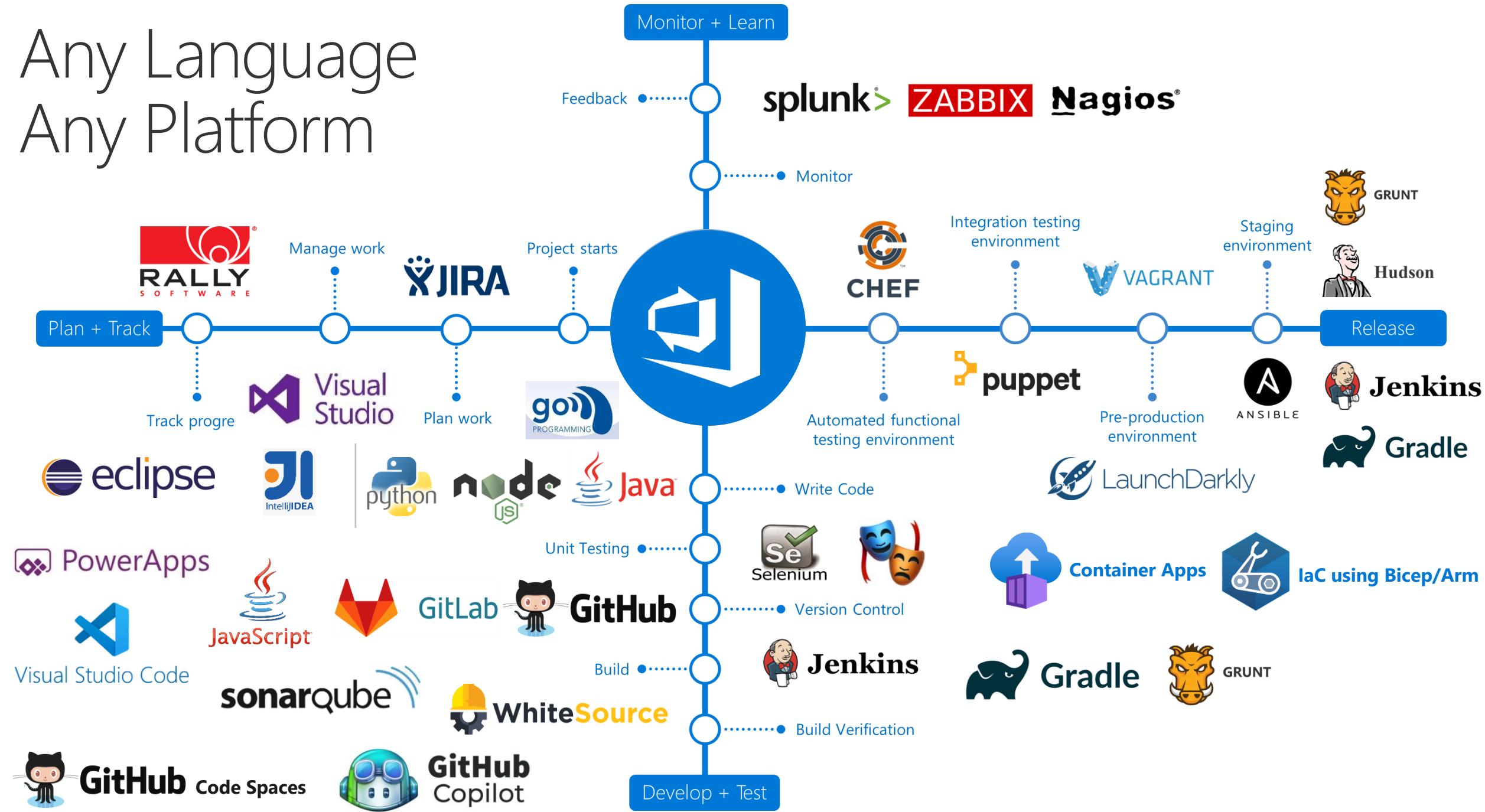
- Your competition is already doing this
- Increase velocity
- Reduce downtime
- Reduce human error

High performance DevOps companies achieve...



Source: 2019 Accelerate State of DevOps Report by DORA and Google Cloud DevOps & SRE

Any Language
Any Platform



DevOps in the Real World



Real World Apps Example



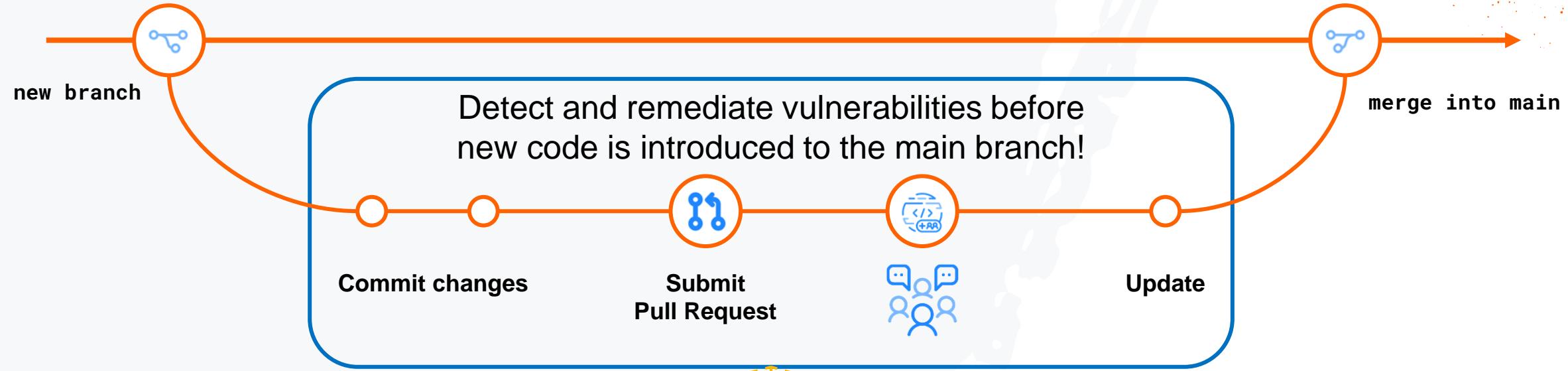
- Microservice Based
- REST APIs / API Gateways
- Asp.Net / React / Angular / JavaScript
- SQL Server DB / CosmosDB
- Secret & Key Management / Rotation
- Secure Login / MFA
- Feature Flags / Config Management
- Hosting Containers
 - AKS, ACI, App Service, Container Apps
- iOS and Android Mobile App

Real World Problems in Apps



- Not ready for real microservice deployments
- Infrastructure is painful to spin up and configure
- Microservice architecture - difficult under single url
- Database Schema changes
- Testing on Multiple devices - Mobile DevOps
- Maintaining Quality, Performance Testing, Scalability
- Connection Strings and Secret Management
- Setting up DNS, HTTPS and Certificates
- Monitoring and Logging
- Security In DevOps (DevSecOps)

Developer First Security – Shift Left



Dependency Scanning and Dependabot: automatic CVE identification & remediation

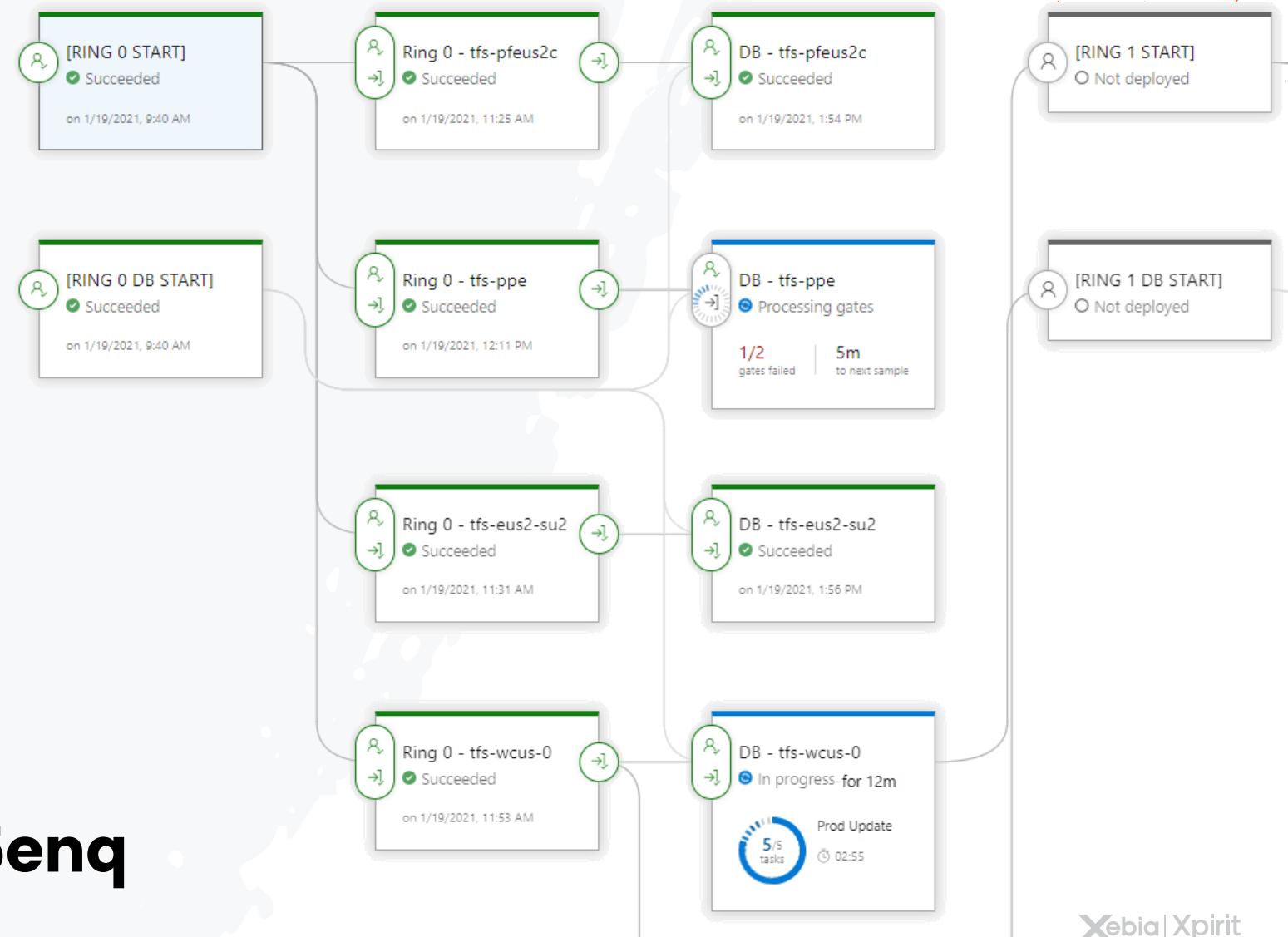
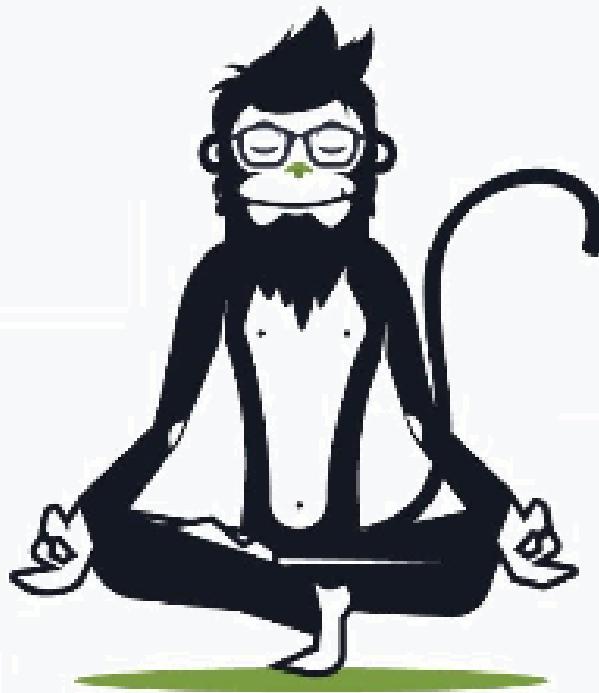
Secret Scanning: locate and invalidate exposed tokens.
• **Push Protection:** prevent unauthorized changes

GHAS

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

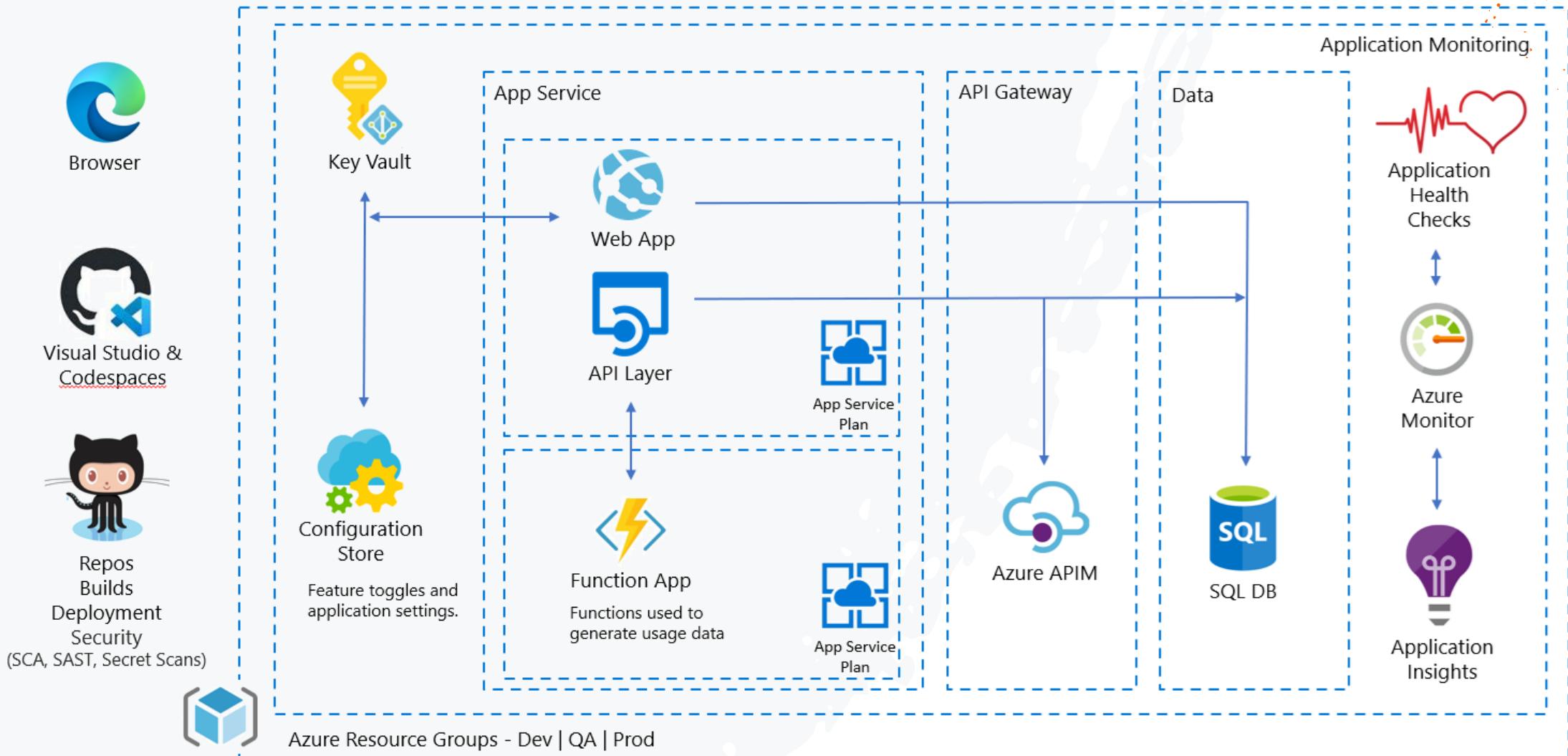
GHAS

DevOps Nirvana



<https://aka.ms/AAh5enq>

Application Architecture



Demo

DevOps Nirvana



Mercury Health Home Nutrition Exercises Privacy Metrics

Welcome to Mercury Health

The mission of Mercury Health is to help improve longevity and quality of life through healthy activity.

Think Positive! Stay Focused! Breathe! Be Awesome!

Environment: **dev**

Total visits: 7 | Last visit: **Saturday, August 26, 2023 12:00 PM**
App Settings from App Configuration - Website_FontName: **Calibri**, Website_FontColor: **Black**, Website_FontSize: **14**

Exercise

Physical activity is a very important part of a healthy lifestyle. Our advanced tracking tools enable two-way auto syncing with all the popular activity trackers.

[Create Exercise](#)

Nutrition

A well crafted diet can help you accomplish your health goals. Start logging all your meals with our logging tools. We combine the power of AI to enable food and activity loggin faster and easier.

[Create Nutrition](#)

Metrics

Nutrition Metrics can help you lose weight and have more energy. The Metrics dashboard is a collection of health stats across your Nutrition and Exercise activity.

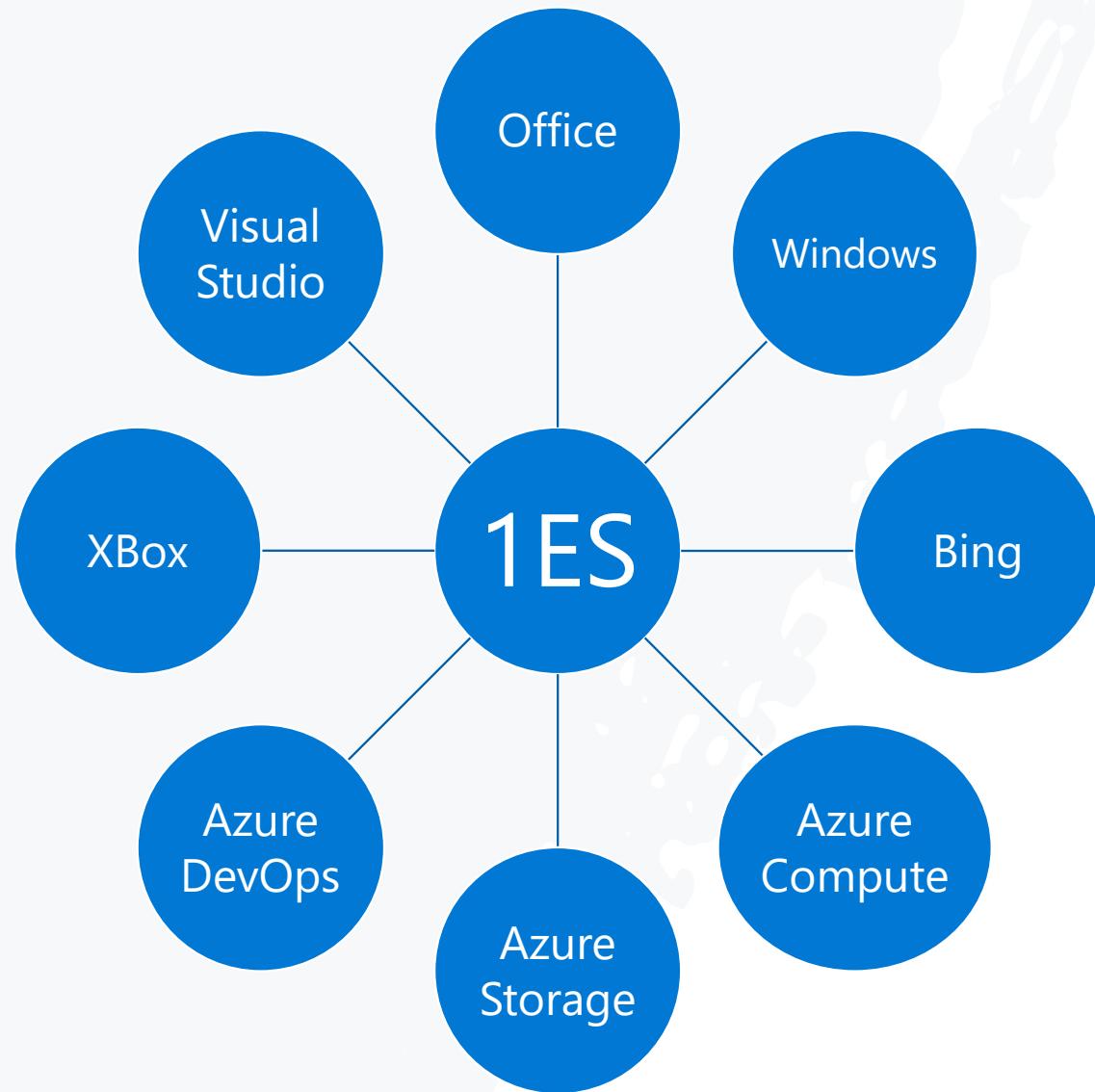
[View Metrics](#)

© Copyright 2023 |  Mercury Health is powered by .NET 6.0.19 | Build 1.3.602.21137 | Saturday, August 26, 2023 at 11:44 AM | [Privacy](#)

<https://github.com/pagelsr/mercuryhealth>

Xebia | Xpirit

One Engineering System Landscape



DevOps at Microsoft

Azure DevOps is the toolchain of choice for Microsoft engineering with over 110,000 internal users

→ <https://aka.ms/DevOpsAtMicrosoft>

182K

Monthly Engaged
Users (MEU)

18.7M

Builds per
month

3M

Work items
created per month

7.0M

Git commits
per month

3M

Test runs
per day

5.6M

Work items
revised per month

5.2M

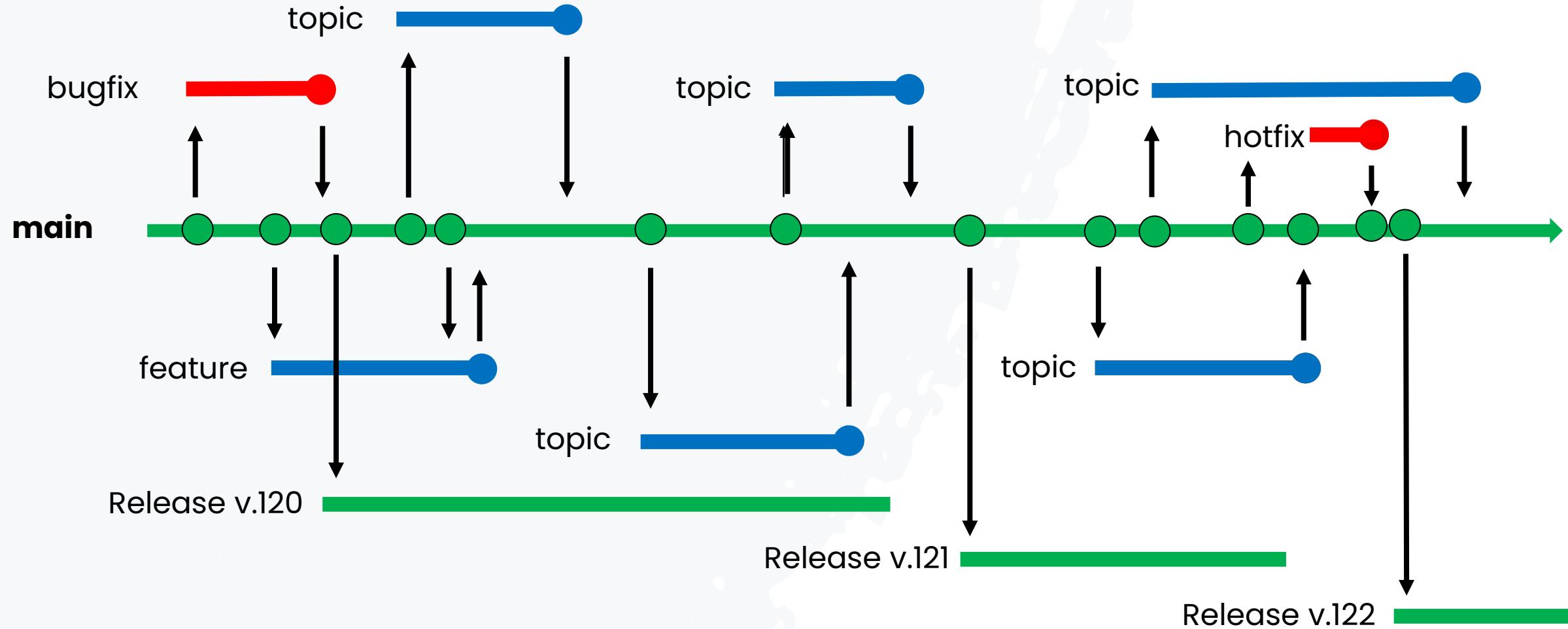
Releases per day

Data: Internal Microsoft engineering system activity, May 2023

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Release Flow

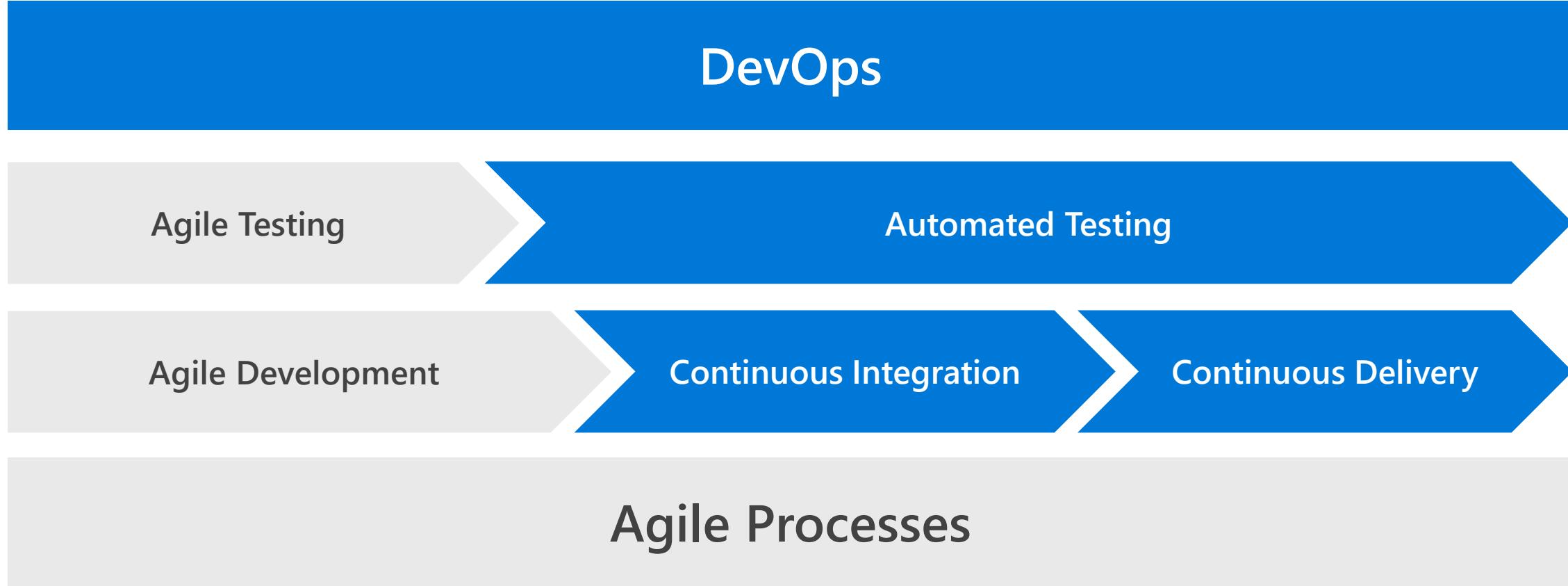
Using Trunk Based Development to avoid Merge Debt



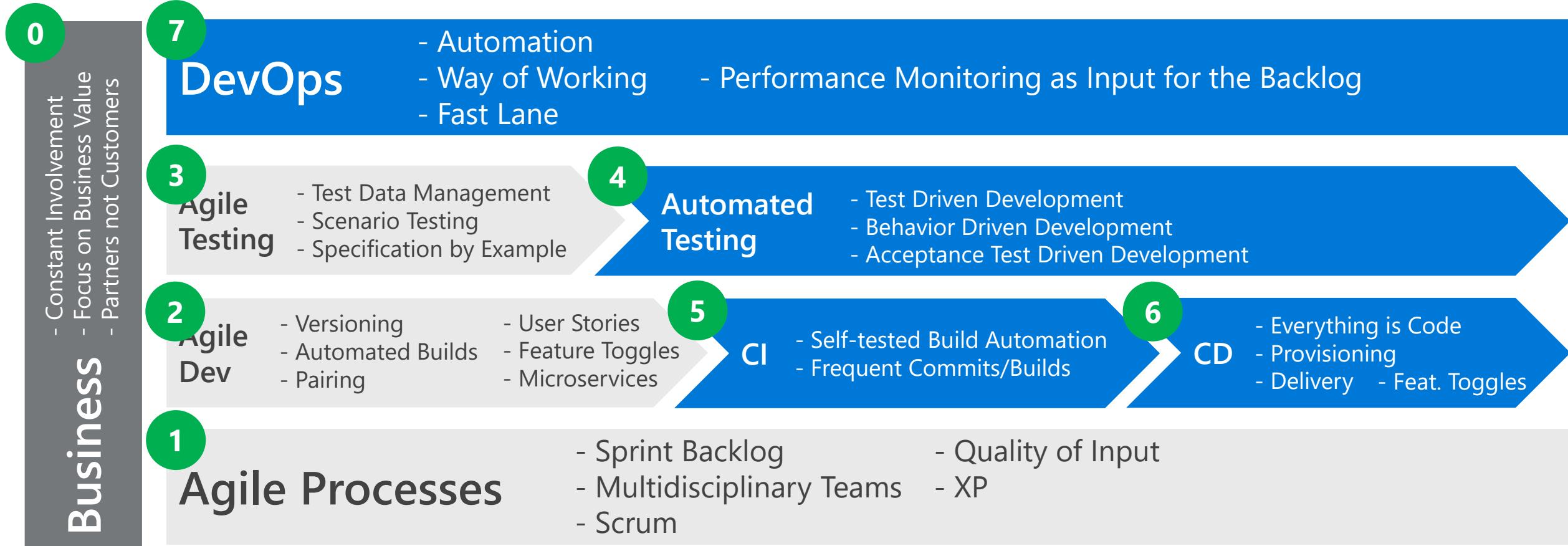
Thank you!

The DevOps Journey

Business



The DevOps Journey



Resources

Developer Velocity – <https://aka.ms/DevOps/DeveloperVelocity>

The DevOps Lab – <https://aka.ms/DevOpsLab>

Microsoft Learn – <https://aka.ms/MSLearn>

DevOps Blog – <https://aka.ms/devopsblog>



Thank you!



Screen Shots

← Deploy-Main-Single

✓ Deploy-Main-Single #138

Re-run all jobs

...

Summary

Jobs

✓ Build Application

✓ dev

✓ Deploy Infrastructure

✓ Deploy Database

✓ Deploy Application

✓ DNS and SSL Cert

✓ Playwright Testing

✓ Load Testing

✓ Approve Deployment

Run details

⌚ Usage

🖨 Workflow file

Manually triggered 35 minutes ago

PagelsR -o- b249704

Status

Success

Total duration

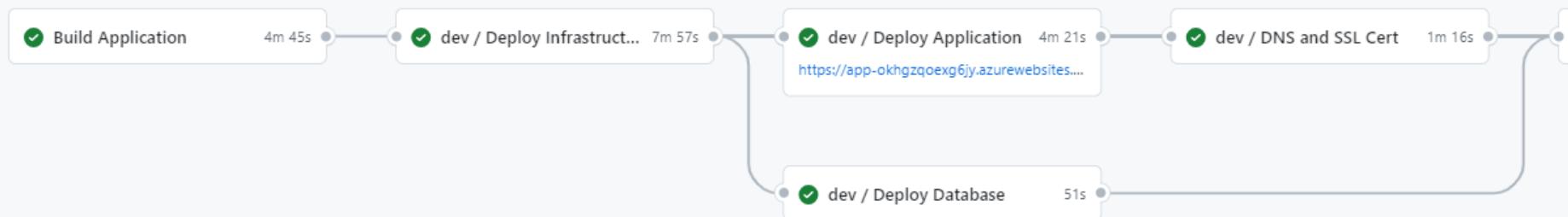
34m 25s

Artifacts

8

deploy-main-single.yml

on: workflow_dispatch



[Summary](#)

Jobs

✓ Build Application✓ dev ^✓ Deploy Infrastructure✓ Deploy Database✓ Deploy Application✓ DNS and SSL Cert✓ Playwright Testing✓ Load Testing✓ Approve Deployment

Run details

⌚ Usage⤷ Workflow file**dev / Deploy Infrastructure**

succeeded 23 minutes ago in 7m 57s

 Search logs

- > ✓ Set up job 5s
- > ✓ Login to Azure 8s
- > ✓ Ensure Resource Group Exists 25s
- > ✓ Ensure Resource Group is UnLocked 2s
- > ✓ Download Build Artifact-Infrastructure 1s
- > ✓ Install Bicep 1s
- > ✓ List soft-deleted instance of APIM 3s
- > ✓ Purge soft-deleted instance of APIM 1s
- > ✓ List soft-deleted instance of App Config 2s
- > ✓ Purge soft-deleted instance of App Config 2s
- > ✓ Infrastructure Deployment 6m 22s
- > ✓ Download Build Artifact-Database 0s
- > ✓ Deploy the database to Azure 39s
- > ✓ Azure logout 1s
- > ✓ Ensure Resource Group is Locked 2s

✓ Deploy-Main-Single #138

Summary

Jobs

✓ Build Application

✓ dev

✓ Deploy Infrastructure

✓ Deploy Database

✓ Deploy Application

✓ DNS and SSL Cert

✓ Playwright Testing

✓ Load Testing

✓ Approve Deployment

Run details

dev / Deploy Database

succeeded 25 minutes ago in 51s

- > ✓ Set up job
- > ✓ Login to Azure
- > ✓ Ensure Resource Group is UnLocked
- > ✓ Download Build Artifact-Database
- > ✓ Deploy the database to Azure
- > ✓ Deploy Database
- > ✓ Ensure Resource Group is Locked
- > ✓ Complete job

Summary

Jobs

✓ Build Application

✓ dev

✓ Deploy Infrastructure

✓ Deploy Database

✓ Deploy Application

✓ DNS and SSL Cert

✓ Playwright Testing

✓ Load Testing

✓ Approve Deployment

Run details

⌚ Usage

📄 Workflow file

dev / Deploy Application

succeeded 22 minutes ago in 4m 21s

🔍 Search logs

- > ✓ Set up job
- > ✓ DEBUG ONLY Display Output Variables
- > ✓ Login to Azure
- > ✓ Ensure Resource Group is UnLocked
- > ✓ Download Build Artifacts-Website Application
- > ✓ Deploy Website Application
- > ✓ Download Build Artifacts-Function Application
- > ✓ Deploy Function Application
- > ✓ Generate Temporary API Key For App Insights
- > ✓ Annotate Deployment
- > ✓ Remove Temporary API Key For App Insights
- > ✓ Ensure Resource Group is Locked
- > ✓ Perform a Health Check on App Service (check for 60 min max!)

✓ Deploy-Main-Single #138

Summary

Jobs

✓ Build Application

✓ dev

✓ Deploy Infrastructure

✓ Deploy Database

✓ Deploy Application

✓ DNS and SSL Cert

✓ Playwright Testing

✓ Load Testing

✓ Approve Deployment

Run details

⌚ Usage

⤷ Workflow file

dev / Playwright Testing

succeeded 15 minutes ago in 6m 12s

🔍 Search logs

- > ✓ Set up job
- > ✓ Run actions/checkout@v3
- > ✓ Run actions/setup-node@v3
- > ✓ Install dependencies
- > ✓ Install Playwright browsers and dependencies
- > ✓ Run Playwright tests
- > ✓ Upload Playwright Report Files
- > ✓ Upload Playwright Screenshot Files
- > ✓ Publish HTML report to GitHub Pages
- > ✓ Post Run actions/setup-node@v3
- > ✓ Post Run actions/checkout@v3
- > ✓ Complete job

rg-MercuryHealth-deveastus2 | Deployments

Resource group

Search



Refresh

Cancel

Redeploy

Delete

View template

Events

Filter by deployment name or resources in the deployment...

Settings

Deployments

Security

Deployment stacks

Policies

Properties

Locks

Cost Management

Cost analysis

Cost alerts (preview)

Budgets

Advisor recommendations

Monitoring

Insights (preview)

Alerts

<input type="checkbox"/>	Deployment name	Status	Last modified	Duration
<input type="checkbox"/>	Failure-Anomalies-Alert-Rule-De...	✓ Succeeded	9/13/2023, 4:52:12 PM	1 second, 427
<input type="checkbox"/>	addRoleAssignments	✓ Succeeded	9/13/2023, 4:46:26 PM	4 seconds, 48
<input type="checkbox"/>	configSettings	✓ Succeeded	9/13/2023, 4:46:15 PM	27 seconds, 8
<input type="checkbox"/>	appcs-c2xw5a2tks7hy	✓ Succeeded	9/13/2023, 4:45:31 PM	35 seconds, 1
<input type="checkbox"/>	webappdeploy	✓ Succeeded	9/13/2023, 4:44:41 PM	47 seconds, 3
<input type="checkbox"/>	apim-c2xw5a2tks7hy	✓ Succeeded	9/13/2023, 4:44:48 PM	2 minutes, 25
<input type="checkbox"/>	functionappdeploy	✓ Succeeded	9/13/2023, 4:43:05 PM	42 seconds, 2
<input type="checkbox"/>	loadtests-c2xw5a2tks7hy	✓ Succeeded	9/13/2023, 4:42:10 PM	22 seconds, 3
<input type="checkbox"/>	appinsightsdeploy	✓ Succeeded	9/13/2023, 4:42:12 PM	25 seconds, 1
<input type="checkbox"/>	dashboard-c2xw5a2tks7hy	✓ Succeeded	9/13/2023, 4:41:50 PM	3 seconds, 13
<input type="checkbox"/>	sqldbdeploy	✓ Succeeded	9/13/2023, 4:43:43 PM	1 minute, 55 s
<input type="checkbox"/>	kv-c2xw5a2tks7hy	✓ Succeeded	9/13/2023, 4:42:10 PM	22 seconds, 6
<input type="checkbox"/>	main-1	✓ Succeeded	9/13/2023, 4:46:39 PM	4 minutes, 53

«[+ Create](#) [Manage view](#) [Delete resource group](#) [Refresh](#) [Export to CSV](#) [Open query](#) | [Assign tags](#) [Move](#)[Overview](#)[Activity log](#)[Access control \(IAM\)](#)[Tags](#)[Resource visualizer](#)[Events](#)[Settings](#)[Deployments](#)[Security](#)[Deployment stacks](#)[Policies](#)[Properties](#)[Locks](#)[Cost Management](#)[Cost analysis](#)[Cost alerts \(preview\)](#)[Budgets](#)[Advisor recommendations](#)[Essentials](#)[Resources](#) [Recommendations](#)[Type equals all](#) [X](#)[Location equals all](#) [X](#)[+ Add filter](#)Showing 1 to 22 of 22 records. Show hidden types ⓘ[No grouping](#)

<input type="checkbox"/> Name ↑↓	Type ↑↓	Location ↑↓
ag--okhgzqoexg6jy	Action group	Global
apim-okhgzqoexg6jy	API Management service	East US
app-okhgzqoexg6jy	App Service	East US
dev (app-okhgzqoexg6jy/dev)	App Service (Slot)	East US
appcs-okhgzqoexg6jy	App Configuration	East US
appi-okhgzqoexg6jy	Application Insights	East US
Application Insights Smart Detection	Action group	Global
appw-okhgzqoexg6jy	Log Analytics workspace	East US
dashboard-okhgzqoexg6jy	Shared dashboard	East US
Failure Anomalies - appi-okhgzqoexg6jy	Smart detector alert rule	Global
func-okhgzqoexg6jy	Function App	East US
funcplan-okhgzqoexg6jy	App Service plan	East US