

# State of .NET

## DevOps

Markus Egger

President and Chief Software Architect

CODE Magazine & Consulting

# Kicking Things Off

## Jim Duffy

- Director of Business Development  
CODE Magazine & Consulting
- Former Developer Now Responsible for Sales & Marketing
- [jduffy@codemag.com](mailto:jduffy@codemag.com)
- International Author and Speaker
- Former Microsoft RD (Regional Director) 9 years
- Former 11 time Microsoft Most Valuable Professional (MVP)
- Twitter: @jmduffy



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## **Automotive commerce exchange**

Our secure open-exchange platform and marketplace is designed to bring never-before-seen levels of connectivity, integration and flexibility to automotive commerce. We will deliver this industry-wide innovation and collaboration through standardized APIs, an App marketplace, regular developer events and an agnostic platform delivering on workflow improvements for automotive dealers everywhere.

<https://fortellis.io/>

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- Build native, cross-platform desktop apps that are lighter than light.
- Lightweight open-source framework for building native, cross-platform desktop applications with Web UI technology.
- Photino is maintained by CODE Magazine with the help of the open-source community.
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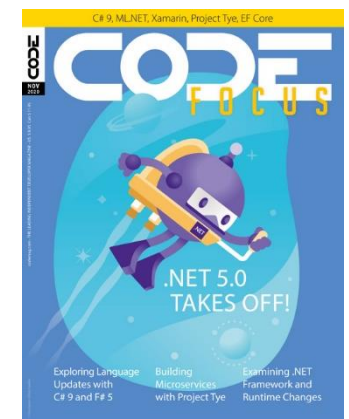
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- All registered attendees will automatically receive a free digital subscription to CODE Magazine – no need to do anything, it'll happen auto-magically
- Please share this free subscription link freely with others who couldn't make it to the live webinar

<https://bit.ly/2PBZHyV>



# About the Presenter

- **Markus Egger**
- President and Chief Software Architect  
EPS Software Corp. (dba CODE Consulting)
- Publisher – CODE Magazine
- International Author and Speaker
- Microsoft RD (Regional Director)
- Microsoft MVP 1995-2019
- [Email: markus@codemag.com](mailto:markus@codemag.com)
- Twitter: @markusegger



# About the Co-Presenter

- **Brian Randell**
- Co-author Professional ALM with Visual Studio 2013
- Co-host [devops.fm](http://devops.fm) podcast
- LinkedIn Learning author
- 17-year Microsoft MVP—Developer Technologies
- [VSLIVE Conference](#) Co-Chair
- [brianr@mcwtech.com](mailto:brianr@mcwtech.com)
- [github.com/brianrandell](https://github.com/brianrandell)
- [blog.brianrandell.com](http://blog.brianrandell.com)
- Twitter: [@brianrandell](https://twitter.com/brianrandell)



# About CODE Consulting

## “Helping People Build Better Software”

- Custom Software Development, Training, Mentoring,...
- Web, Cloud, Mobile, Desktop, Serverless, Databases,...
- User Interface and Interaction Design
- Project Rescue, Legacy Conversions (VB, VFP, Access, etc.)
- Development Team Staff Augmentation
- Microsoft Certified Partner





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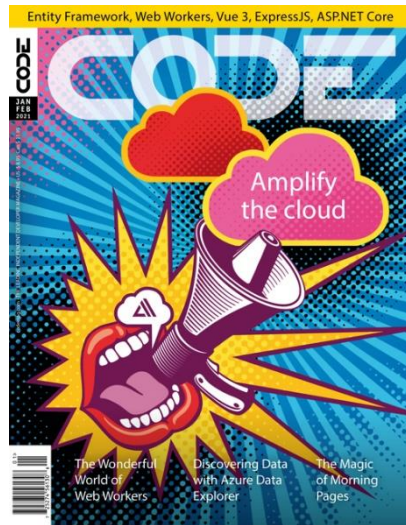
- Hour of CODE: One hour on us. Schedule a call today. Slots are limited.
- No strings. No commitment. No credit card required.
- Just help from our team of experience software developers.
- Got questions? Stuck on an issue? Platform and/or architecture decisions to make? We can help!



Contact us at [info@codemag.com](mailto:info@codemag.com) or [jduffy@codemag.com](mailto:jduffy@codemag.com)

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<https://bit.ly/2QSNvuk>

- Survey must be completed by 11:59pm ET on 4/2/2021 to be eligible!

## CODE Magazine State of .NET - DevOps

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\* Required

1. Full Name \*

2. Company Name \*

THIS SLIDE WILL BE REPEATED AT THE END AND SURVEY LINK REPEATED IN THE CHAT WINDOW!

# Prior Webinar Recordings

- Slides & Videos:
- <https://www.codemag.com/StateOfDotNet>

## Recent Event Recordings

State of .NET - Blazor Web Development with .NET 5 - with Markus Egger

1/27/2021



State of .NET - .NET 5 In-Depth (.NET Conf Recap)

11/18/2020



State of .NET - .NET 5 (One .NET) Preview

10/28/2020



State of .NET - Cognitive Services, A.I. and Machine Learning

9/30/2020

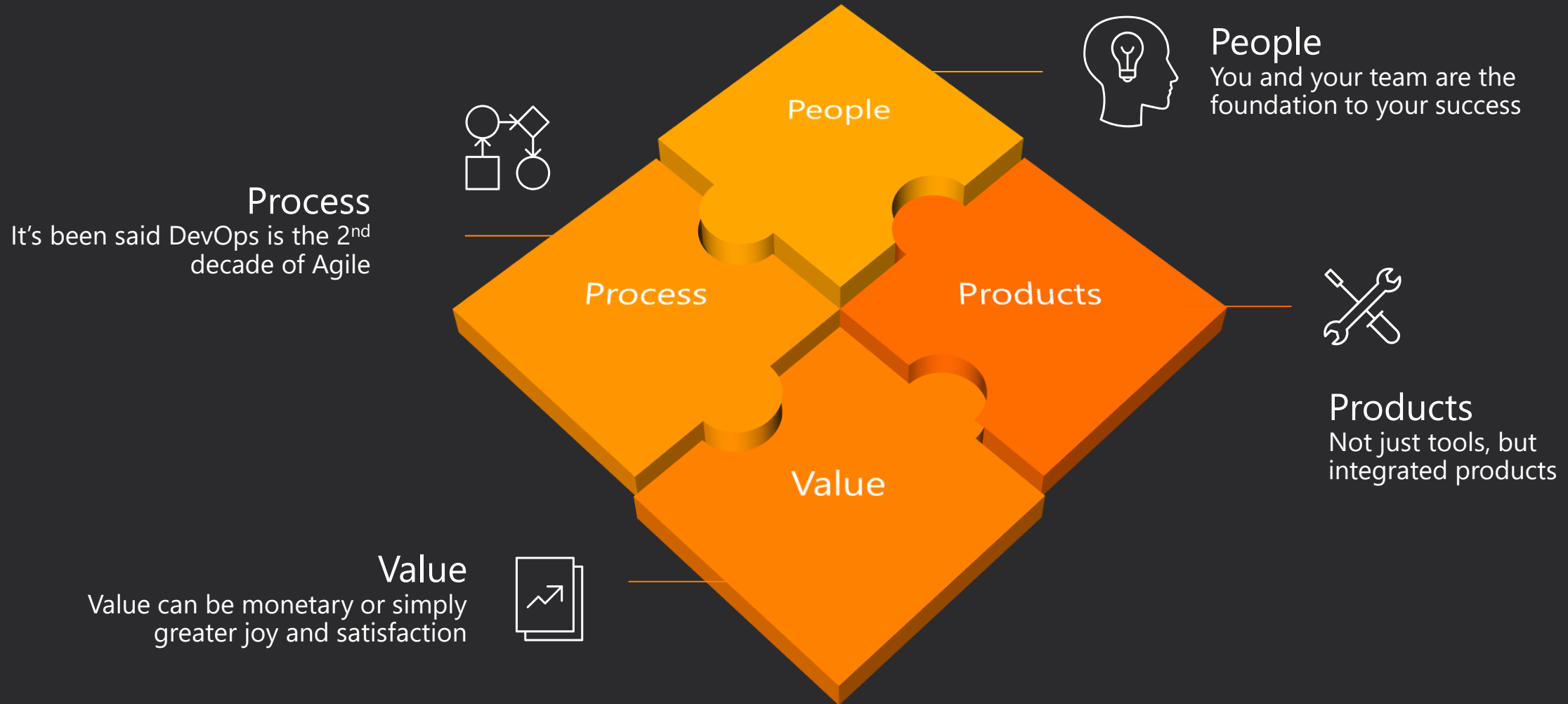


# State of DevOps



# What is DevOps?

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





# Before we talk tech, let's talk *psyche*

Yes "psyche" as in "the human soul, mind, or spirit"

# Three Ways

*from the Phoenix Project & DevOps Handbook*



# The Principles of Flow

- Limit Work in Progress (WIP)
- Reduce Batch Sizes
- Reduce the Number of Handoffs
- Embrace Lean Principals
  - “reduce hardship and drudgery in our daily work through continual learning in order to achieve the organization’s goals”<sup>1</sup>
  - Eliminate partially done work, reduce context switching, ... remove heroics

# The Principles of Feedback

- See Problems as They Occur
  - “In the technology value stream, we often get poor outcomes because of the absence of fast feedback.”<sup>1</sup>
- Swarm & Solve Problems to Build New Knowledge
- Push Quality Closer to the Source
  - Embrace developer driven testing
  - Move “QA” into the development team
  - “we need everyone in our value stream to find and fix problems in their area of control as part of our daily work”<sup>1</sup>

# The Principles of Continual Learning and Experimentation

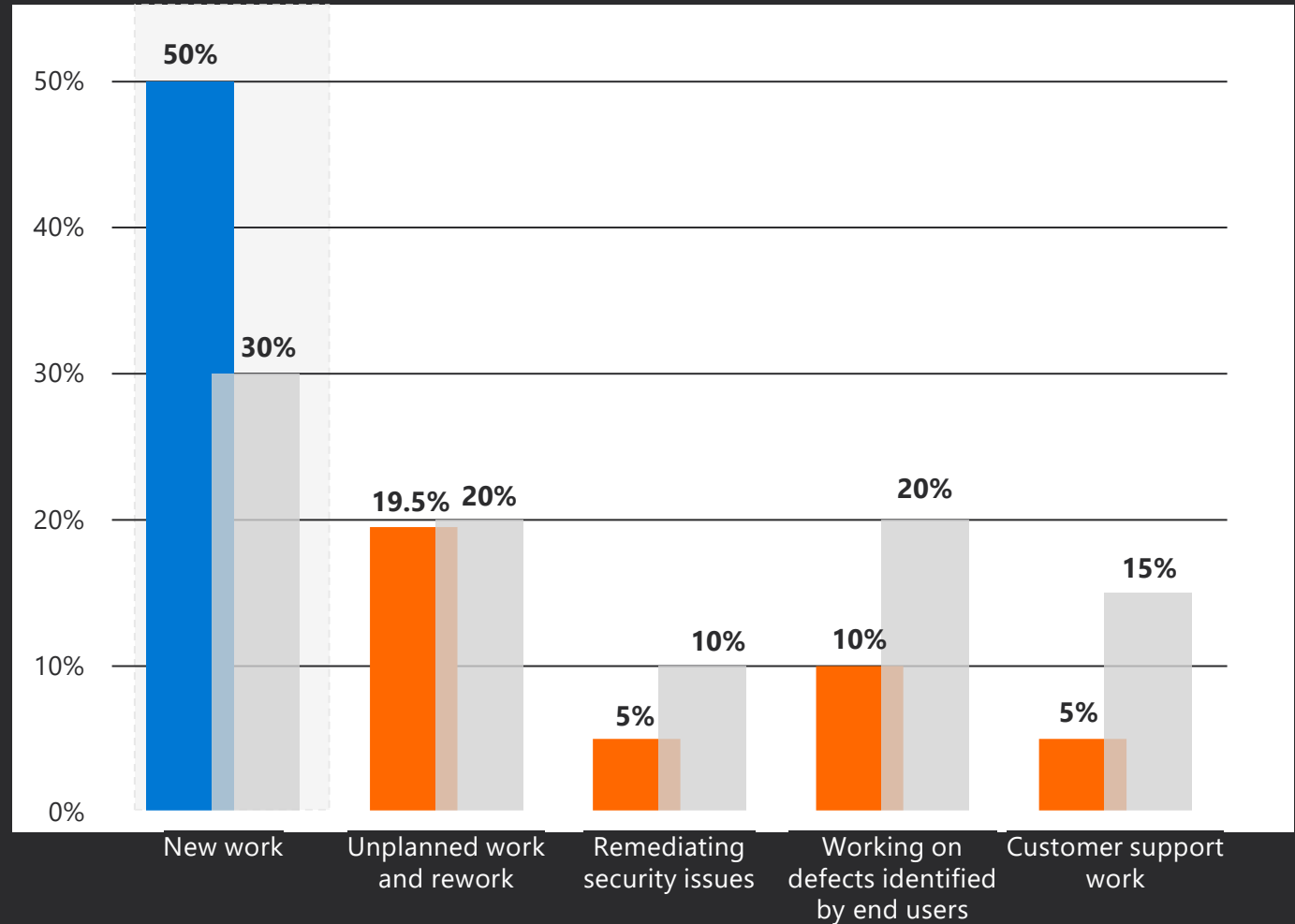
- Create a High-trust Culture
- Institutionalize the Improvement of Daily Work
- Transform Local Discoveries into Global Improvements
  - “convert individual expertise into artifacts that the rest of the organization can use”<sup>1</sup>
- Inject Resilience Patterns into Our Daily Work
  - “... seeking to always reduce deployment lead times, increase test coverage, decrease test execution times, and even by re-architecting if necessary to increase developer productivity or increase reliability.”<sup>1</sup>

# How Do We Know This Works?

# Innovation with oversight

- Top performing DevOps companies spend more time innovating and less time “keeping the lights on”.
- The result: better products, delivered faster, to happier customers by more engaged teams

### Time spent



# DevOps goals and success metrics

Increase deployment frequency

Reduce change lead-time (react faster to dynamic business needs)

Reduce change fail rate

Reduce mean-time-to-detect & repair (MTTD, MTTR)

Agility performance indicators

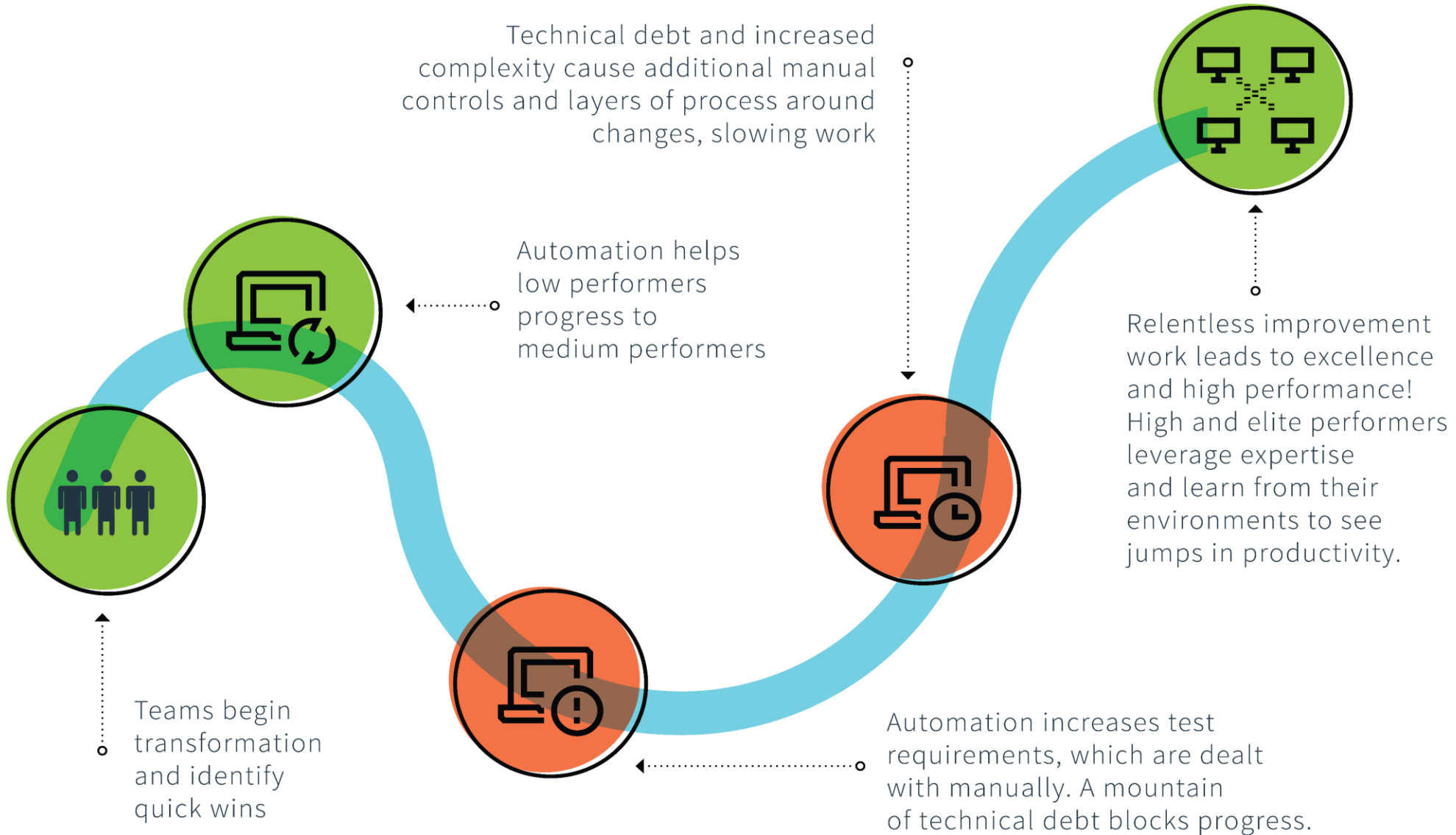
Reliability performance indicators



# DevOps is a journey, not a destination



# Progress follows a J-curve



# How Do You Start?

# Learn from Others

## 10+ Deploys Per Day

- Automated Infrastructure
- Shared Version Control
- One Step Build and Deploy
- Feature Flags / Branches
- Shared Metrics
- Communication

John Allspaw & Paul Hammond

10+ Deploys Per Day: Dev and Ops Cooperation at Flickr

<http://bri.gd/tenplusdeploy>

# What is GitHub?



**The #1 developer  
community on the  
planet**

Home to the most important and popular open-source projects on the planet





# GitHub is the largest developer platform on Earth

50M+

Developers

100M+

Private and public  
repositories

1,000s

Top open source  
communities

1B+

Contributions  
per year

3M+

Organizations

50%

Fortune 500  
companies

## The most innovative companies

stripe

Spotify

airbnb

lyft

slack

Uber

twilio

shopify

NETFLIX

## The top open source projects



docker

TensorFlow



APACHE

elasticsearch

npm

GraphQL

mongoDB

## Leading global enterprises

American Airlines

DISNEY

Nationwide

COMCAST

HSBC

Walmart

Ford

QUALCOMM

DOW JONES

## Largest DevOps ecosystem

RapidAPI

percy

GitKraken

SENTRY

ZenHub

Codecov

Jira

HOUND

HashiCorp

# Open-source vs InnerSource

- **Open-source** is a **source** code that is made freely available for possible modification and redistribution
- **InnerSource** is the use of **open-source software** development best practices and the establishment of an **open source**-like culture within organizations.
  - The organization may still develop proprietary **software**, but internally it “opens up” its development.
- GitHub is optimized for both!

# Getting Started with GitHub

- You can do a ton with just a web browser at <https://www.github.com>
- You need a free GitHub Account
- GitHub offers almost all of its features for free when used with open-source projects
- You can pay for additional features and services for inner source
- GitHub has the notion of accounts, teams, organizations, and enterprises

# Git vs. GitHub



Git is a free, open-source distributed version control system created by Linus Torvalds.



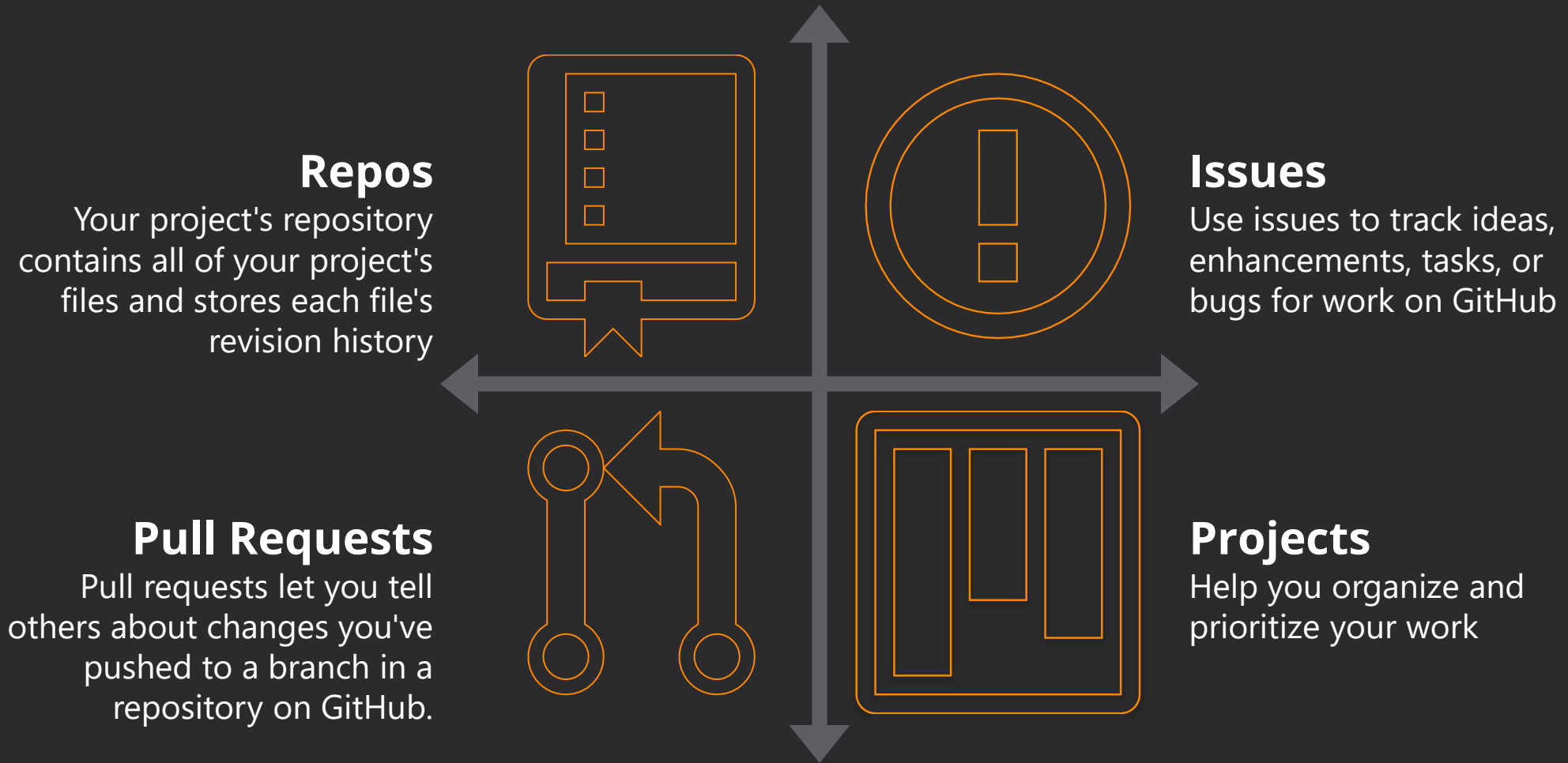
GitHub, Inc. is a subsidiary of Microsoft which provides hosting for software development and version control *using* Git.

It offers the distributed version control and source code management functionality of Git, plus its own features

# Local Tools

- Git Client (includes credential manager)
  - <https://git-scm.com>
- Posh-Git and Oh-My-Posh
  - Blog Post: <http://bri.gd/shpp19>
- GitHub Desktop
  - <https://desktop.github.com/>
- GitHub Extensions for Visual Studio
  - Install via Visual Studio Installer or via Marketplace

# Core GitHub Services for Developers





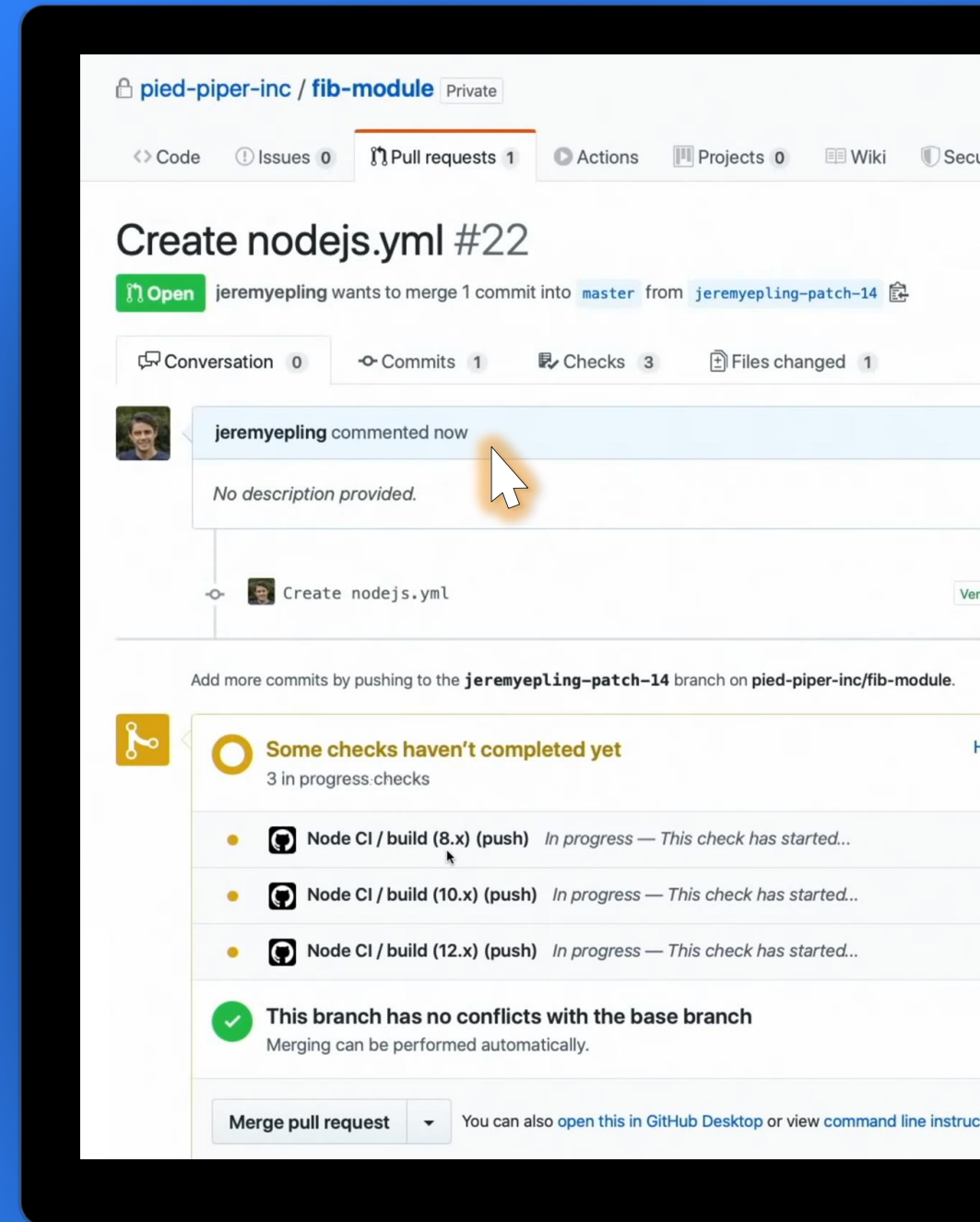
# GitHub Actions

Automate anything on GitHub,  
including enterprise-grade CI/CD

Natively integrated into GitHub UI  
and workflows

Marketplace of 3,400+ actions

Fully managed (with pay-as-you-go  
pricing) or self-hosted runners





# GitHub Actions

**125m+**

jobs per month

**#1**

overall CI on GitHub

**7,000+**

Actions in GitHub Marketplace







- Fully integrated with GitHub
- Respond to any GitHub event
- Community-powered workflows
- Any platform, any language, any cloud



- Linux, macOS, Windows, and containers
- Matrix builds
- Streaming, searchable, linkable logs
- Built-in secret store
- Easy to write, easy to share

# Automate any workflow


Deploy to any cloud, create tickets in Jira, publish a package to npm, and more

Use the millions of open source libraries available on GitHub to create your own actions.

Write Actions in JavaScript or create a container Action—both can interact with the full GitHub API & any other public API.


### Node.js

Build and test a Node.js project with npm.




[Set up this workflow](#)

```
npm install
npm run build --if-present
npm test
```

 actions/starter-workflows JavaScript ●


### Python package

Create and test a Python package on multiple Python versions.



[Set up this workflow](#)

```
python -m pip install --upgrade pip
pip install -r requirements.txt
pip install pytest
```

 actions/starter-workflows Python

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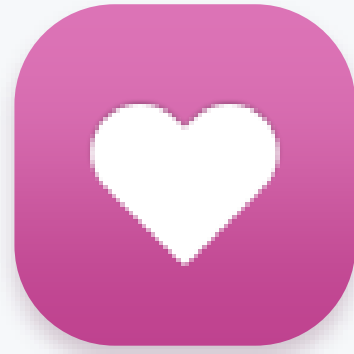
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```

 actions/starter-workflows Python




# Simple, pay as you go pricing

 Free minutes in each plan to get started



Free for public repositories



Private repository minutes 	
Free	2,000
Pro and Team	3,000
Enterprise	50,000

Extra minutes 	
Linux	\$0.008/min
Windows	\$0.016/min
macOS	\$0.08/min



Run on your own hardware for free  
with self-hosted runners







Use Actions for  
Build Automation & Deployment  
(Continuous Integration &  
Continuous Deployment)

Build Automation is NOT ...



# Build Automation is ...

Collecting

Assembling

Validating

Auditing

# It helps you answer the tough questions

Do the bits create a product?

Are you on schedule?

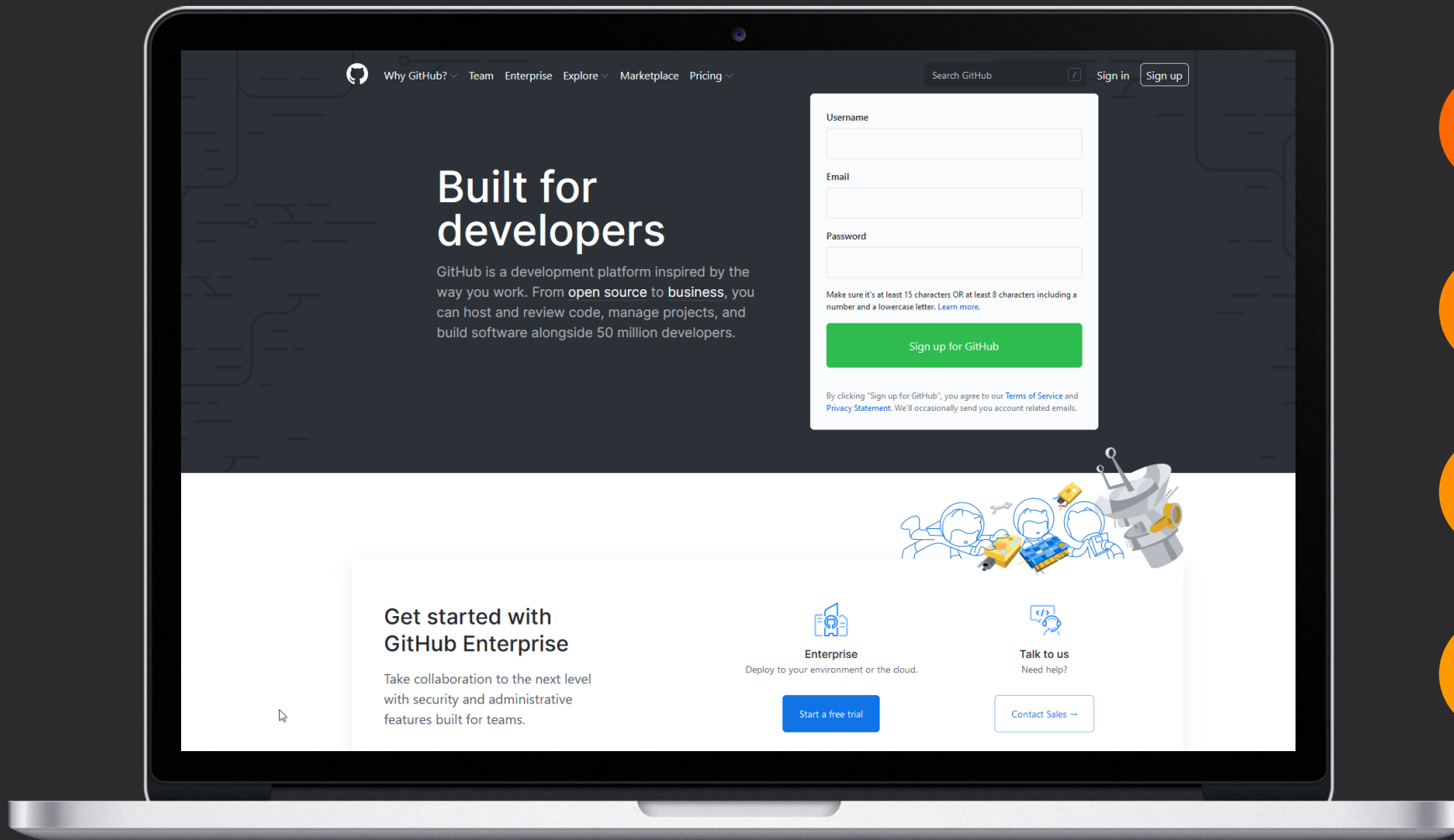
Is the product high quality?

Build automation's value is in making it trivial to take the pulse of your project

# Basic Build Automation Workflow

- You need something to build
- GitHub Actions needs to be able to find your code
- You need to define the workflow
- You need a runner that supports your tasks
  - Windows, macOS, and Linux are all supported

# Demo Time



## Issues

What should you work on?



## Repos

Protect your hard work and play well with others



## Actions

Automate your workflow from CI to CD



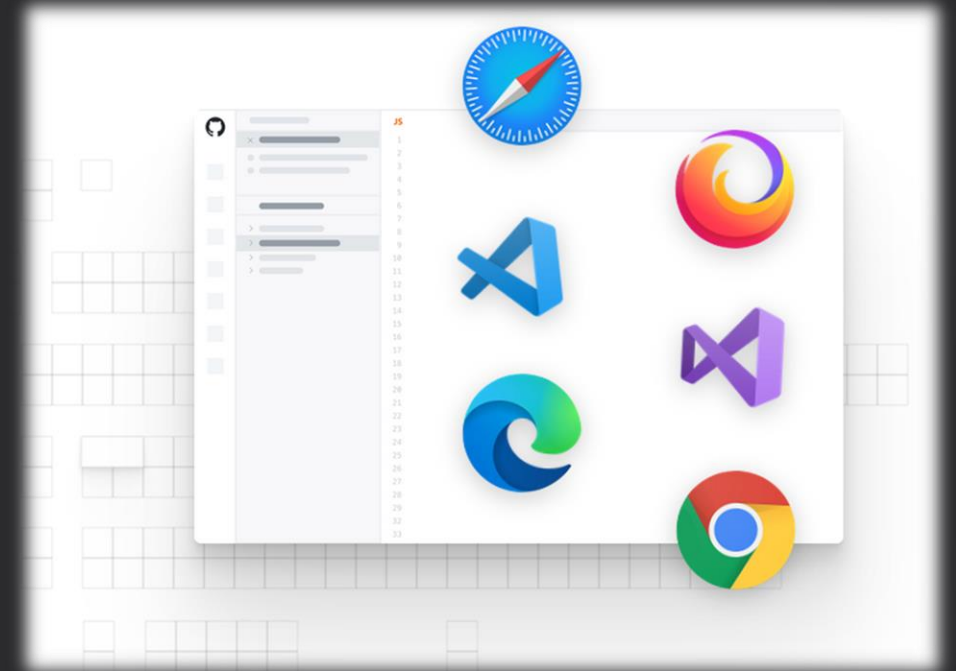
## More

Security, Codespaces, and more

One More Thing ...

# GitHub Codespaces (preview)

- Your instant development environment, in the cloud
- Use from your browser or from VS Code locally
- You can have codespace for any public repository, or for any private repository owned by you
  - You can have more than one
  - During preview, it's free
  - At GA, it will bill hourly

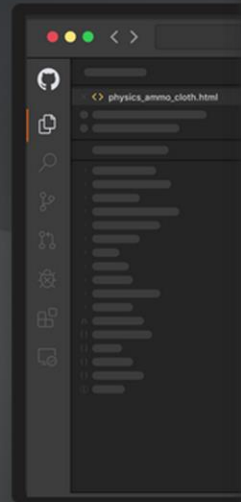






## Develop from anywhere, anytime

With your development in the cloud, you can contribute code from any device.



- Functionality & features are changing daily in preview
- GitHub says ...

“For the best experience with Codespaces, we recommend using a Chromium-based browser, like Google Chrome or Microsoft Edge”



Sign up for Codespaces Preview today

<https://github.com/codespaces>

Read More at

<http://bri.gd/ghcodespacesdocs>

# Other Announcements

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- Hour of CODE: One hour on us. Schedule a call today. Slots are limited.
- No strings. No commitment. No credit card required.
- Just help from our team of experience software developers.
- Got questions? Stuck on an issue? Platform and/or architecture decisions to make? We can help!



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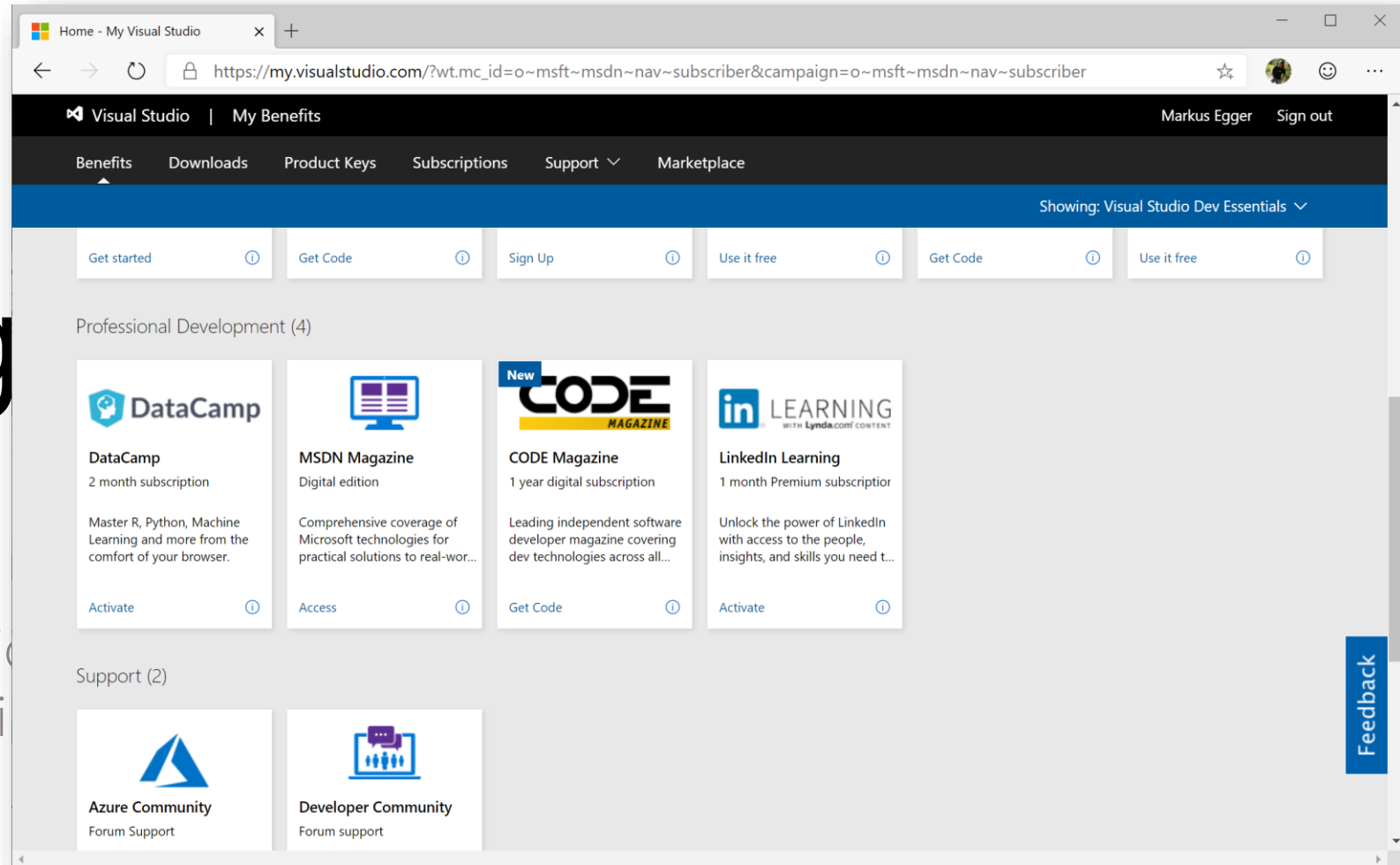
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Topic: Costs and Benefits of .NET Application  
Migration to the CloudState of DevOps

April 14, 2021

Register Today!

<https://bit.ly/3uciO1F>

Topic: State of Azure

April 28, 2021

Register Today!

<https://bit.ly/3frlVhX>

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SUN	MON	TUE	WED	THU	FRI	SAT
				1	2	3
4 Easter	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22 Earth Day	23	24
25	26	27	28	29	30	



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<https://fortellis.io/>

# Q&A

Contact us with questions!

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