

# Streamline your Workflow With CI, CD, Testing and Monitoring

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# Principles

- Customer-centric
- End-to-end ownership
- (almost) Everything in source control
- Automate (almost) everything
- Invest in monitoring, operations
- Iterate everywhere

# Why is automation so important?

- Saves time
- Consistency
- Higher quality
- Works on my machine
- Security
- Immutability
- If it hurts, do it more often

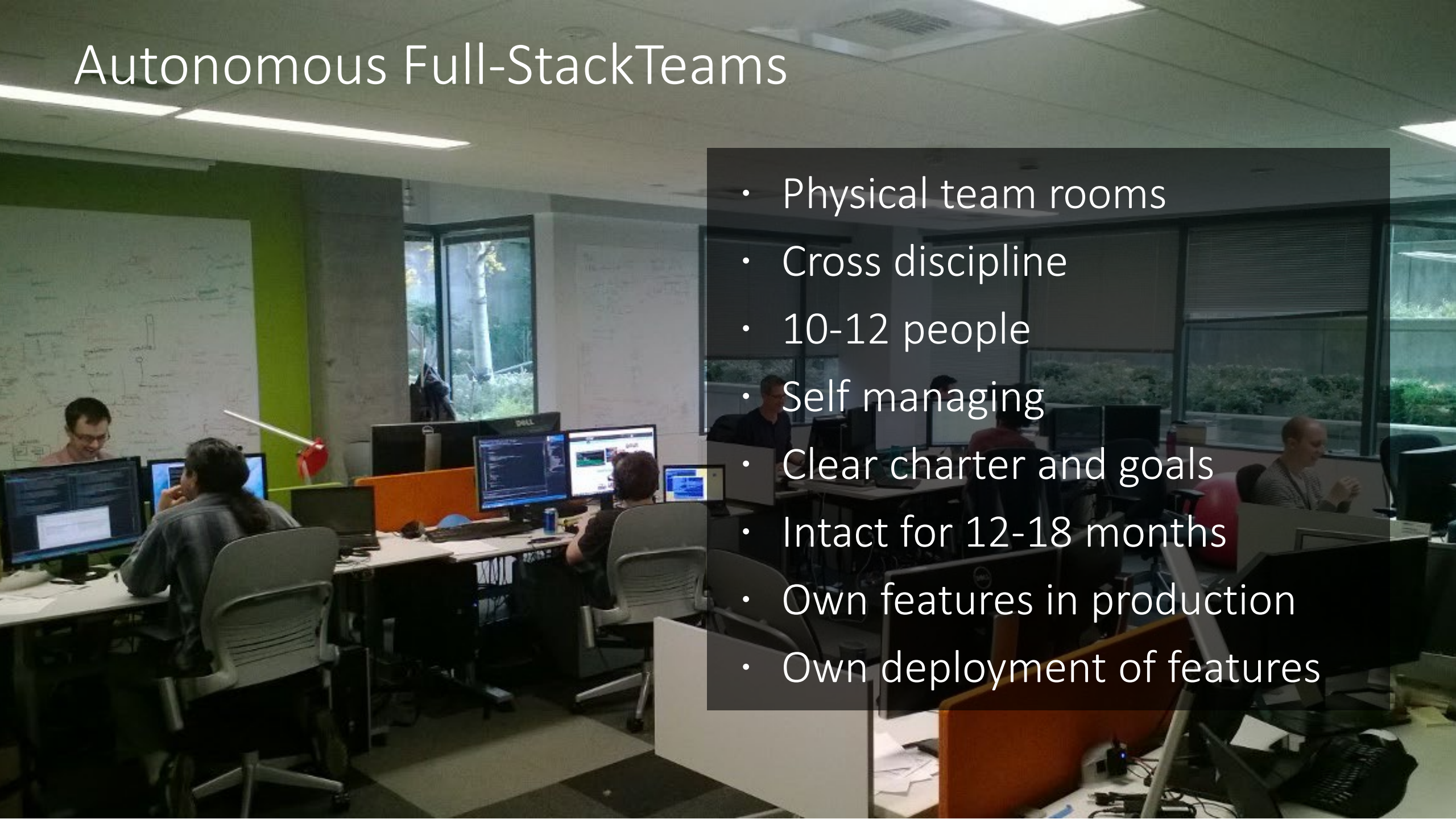
# Azure DevOps

- Deploy anywhere: Any cloud, on prem (and Azure too)
- Cloud-hosted CI, CD, Test automation, Issue Tracking, Git repos, Artifacts  
(use as many or few pieces as you'd like)
- Generous free tier for personal projects
  - 1800 build minutes/month
  - Unlimited repos
- Even more generous tier for Open Source projects
  - Free unlimited build minutes
  - 10 free parallel build jobs across Linux, Windows and Mac

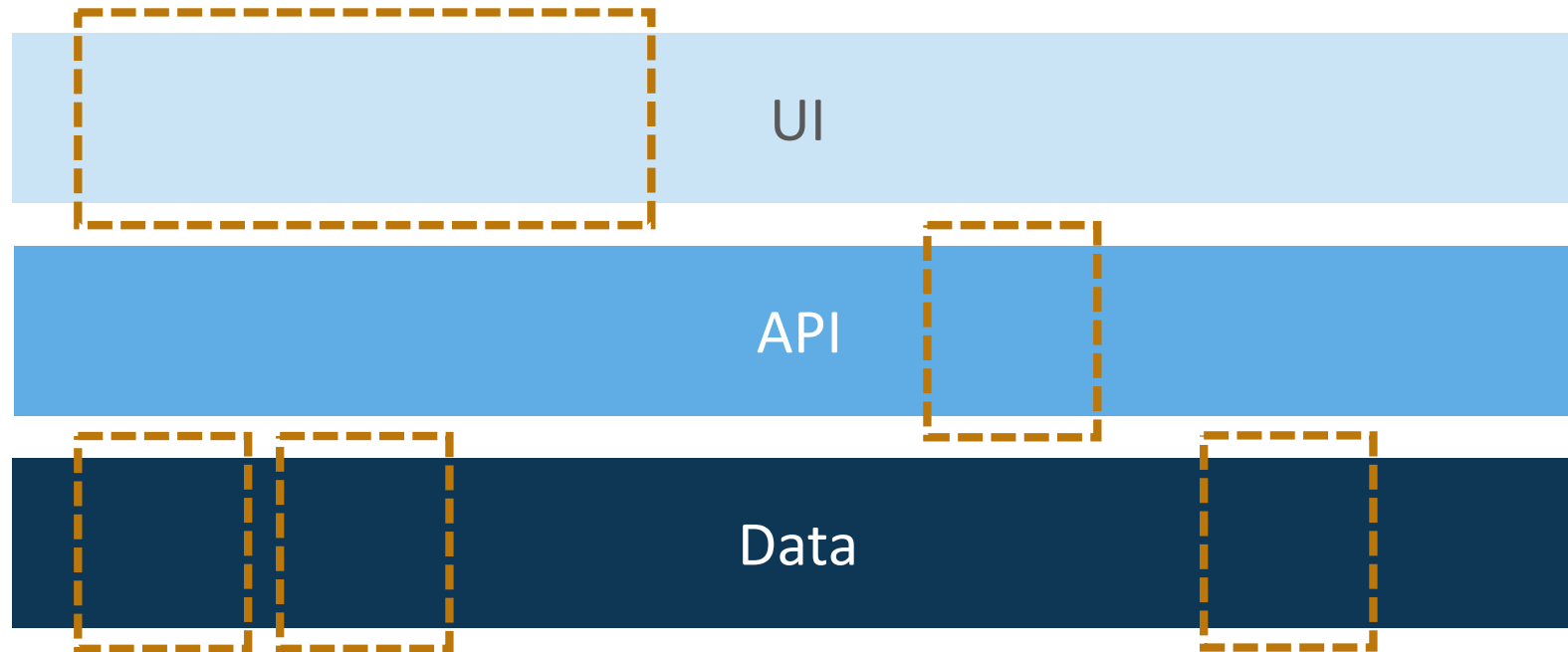
DEMO

# Autonomous Full-Stack Teams

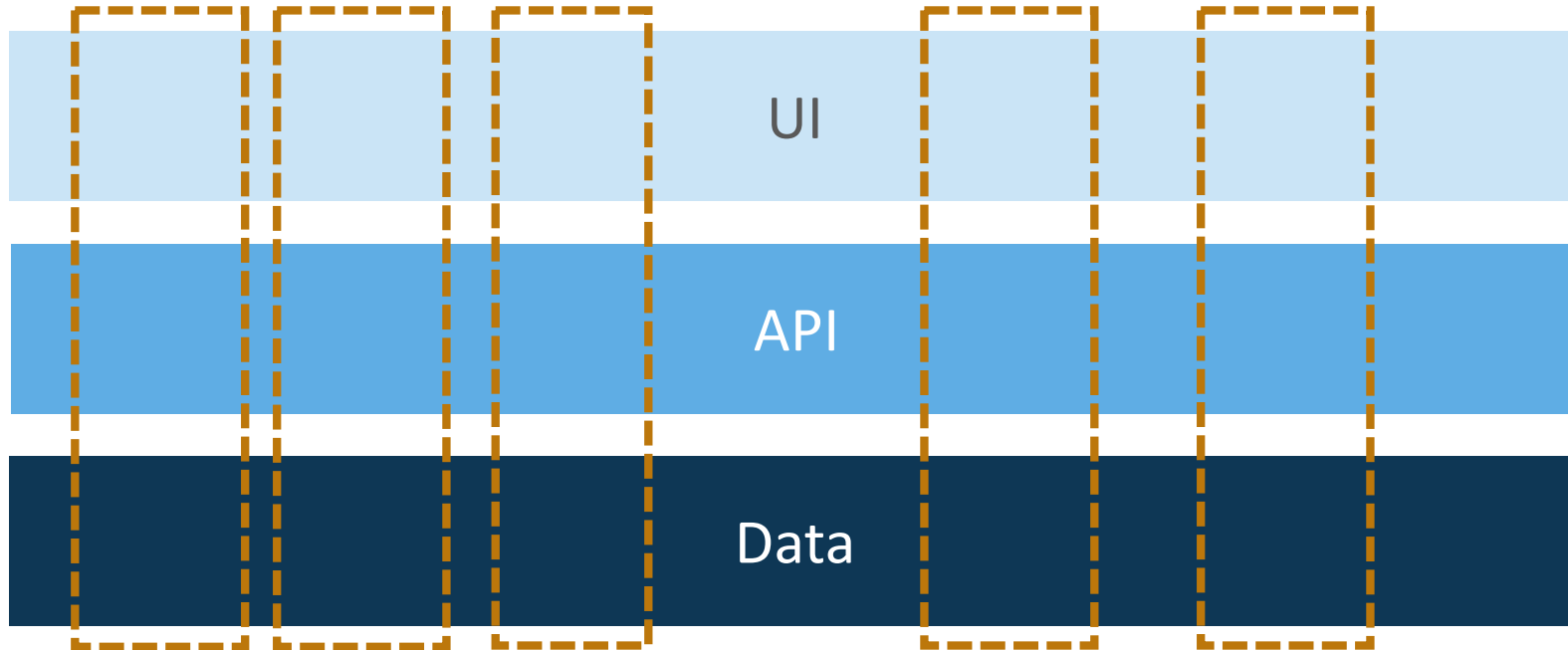
- Physical team rooms
- Cross discipline
- 10-12 people
- Self managing
- Clear charter and goals
- Intact for 12-18 months
- Own features in production
- Own deployment of features



# Instead of Horizontal...



# We strive for Vertical





# Deployment and Release Management

# Pull Requests

PR's are point of code review

L0+L1 Tests performed before merge

Security tested before commit

## Result:

Shift-left testing to pre-merge

1/5 Pull requests fail

Makes CI build failures rare

1/100 CI builds fail

Accelerates the inner and outer loops

The screenshot shows a Visual Studio Online (VSO) Pull Request page for PR 260803, titled "Added keyboard shortcuts to Queries pivot page #1081972". The page is in the "Code" view, showing the pull request details, policies, status, work items, reviewers, and labels. The pull request is marked as "COMPLETED" and was merged on 23/09/2017 11:45. The description of the pull request is "Added keyboard shortcuts to Queries pivot page" and "Bug 1081972: Add shortcuts to query directory page". The pull request was created by Karthik Balasubramanian and was approved by Matthew Manela. The pull request was merged by Karthik Balasubramanian. The pull request is now closed and the source branch has been deleted.

**Pull Request Details:**

- PR Number:** 260803
- Status:** COMPLETED
- Title:** Added keyboard shortcuts to Queries pivot page #1081972
- Author:** Karthik Balasubramanian
- Merged By:** Karthik Balasubramanian
- Merge Date:** 23/09/2017 11:45
- Description:** Added keyboard shortcuts to Queries pivot page. Bug 1081972: Add shortcuts to query directory page.

**Policies:**

- Required:**
  - 1 reviewer approved
  - Build succeeded
  - CredScan Validation succeeded
- Optional:**
  - All comments resolved
  - Artifact Services Integration tests not run
  - Packaging & Signing build not run
  - Tfs.SelfHost Set 1 not run
  - Tfs.SelfHost Set 2 not run

**Status:**

- Tfs.SelfTest - VSO.PR not queued
- TfsOnPrem.SelfTest - VSO.PR not queued
- Tfs.Deploy - VSO.PR not queued
- TfsOnPrem.SelfHost - VSO.PR not queued

**Work Items:**

- 1081972 Add shortcuts to query direct...

**Reviewers:**

- WIT IQ via Matthew Manela
- Matthew Manela Approved
- Modern WIT
- WIT PI

**Labels:**

- Add label

**Comments:**

- Karthik Balasubramanian completed the pull request with a squash merge on 23/09/2017 11:45.
- 600e7b9b Merged PR 260803: Added keyboard shortcuts to Queries pivot page #1081972...
- Matthew Manela 22/09/2017: I approved but make sure it works after XHR navigate since we hit issues with that before.
- Karthik Balasubramanian 23/09/2017: @Matthew Manela current implementation works always because it does full page navigation. But we want to make use of XHR navigate. I have a question to Nick, how to navigate between hubs.
- Matthew Manela 23/09/2017: I think we can just use hub navigation service and do it. Just look how the menu code does it. Shouldnt be hard.
- Matthew Manela 23/09/2017: And we should use XHR
- Approved by Matthew Manela 22/09/2017
- Matthew Manela joined as a reviewer 22/09/2017
- Karthik Balasubramanian pushed 1 commit creating update 6 22/09/2017
- 24170224 Reverting method override Karthik Balasubra... 22/09/2017 15:14

# Tests Against the Pull Request

✓ Build VSO.PR\_20180516.119

✓ Phase 1

✓ Job

✓ Initialize Job

✓ Pre-job: Kill orphan processes

✓ Get sources

✓ ChangeImpactAnalysis

✓ Init

✓ Pre-Scorch

✓ Verify Docker Image Exists

⊖ Docker Pull Image

✓ Build with L0 L1

⊖ Validate Build

✓ Check for Warnings

⊖ Ensure REST Clients up to date


⊖ Run L0 Tests


⊖ Check for Test Warnings


✓ Publish L0 Test Results


⊖ Delete Container If Exists

VSO.PR / Build VSO.PR\_20180516.119

 Edit build definition

 Queue new build...

 Download all logs as zip

 Retain indefinitely

 Release

**Build succeeded**



Build VSO.PR\_20180516.119

Ran for 25 minutes (VSTSP0Pool), completed 72 seconds ago

[Summary](#) [Timeline](#) [Artifacts](#) [Code coverage\\*](#) [Tests](#) [WhiteSource Bolt Build Report](#)

## Build details

Definition [VSO.PR](#)  
Source [344574](#)  
Source version [Commit 72b476c5](#)  
Requested by Microsoft.VisualStudio.Services.TFS on behalf of Deborshi Saha  
Queue name [VSTSP0Pool](#)  
Queued Wednesday, May 16, 2018 1:33 PM  
Started Wednesday, May 16, 2018 1:33 PM  
Finished Wednesday, May 16, 2018 1:58 PM  
Retained state Retained by release

## Issues



Phase 1

✗ EXEC (0, 0)  
EXEC(0,0): Error Message:  
✗ EXEC (0, 0)  
EXEC(0,0): Error message: Exception of type 'System.OutOfMemoryException' was thrown.

## Associated changes

[830bf04](#) Authored by debsaha  
Adding Public access moniker to get sps location url for pageContext

## Test Results

 Reduce duration by running only impacted tests: [Enable Test Impact Analysis](#) 

### Completed Runs

Total tests



78104  
(+78104)

■ Passed (78104)  
■ Failed (0)  
■ Others (0)

Failed tests

0  
(+0)

■ New (0)  
■ Existing (0)

Pass percentage

100%  
(+100%)

Run duration

20m 7s  
(+20m 7s)

Not Reported

295

[Detailed report >](#)

## Code Coverage

No build code coverage data available.

Feedback in minutes, before acceptance of PR

# Feature Flags

- All code is deployed, but feature flags control exposure
  - Reduces integration debt
- Flags provide runtime control down to individual user
- Users can be added or removed with no redeployment
- Mechanism for progressive experimentation & refinement
- Enables dark launch

# Monitoring

- Developers are responsible for telemetry
- Collect data broadly (exclude toxic/regulated data)
- Build dashboards that reliably give you a snapshot of your application's health
- If you need to ssh into production to troubleshoot a bug, now you have two bugs

# How to get started

- Set goals, define your team
- Centralize source control, commit to the simplest branching strategy that will work
- Create a CI that performs your core build/packaging; add hooks for testing (placeholder test to start if you don't have any)
- Over time:
  - Expand scope of the pipelines (deployment, etc.)
  - Add tests
  - Add telemetry