

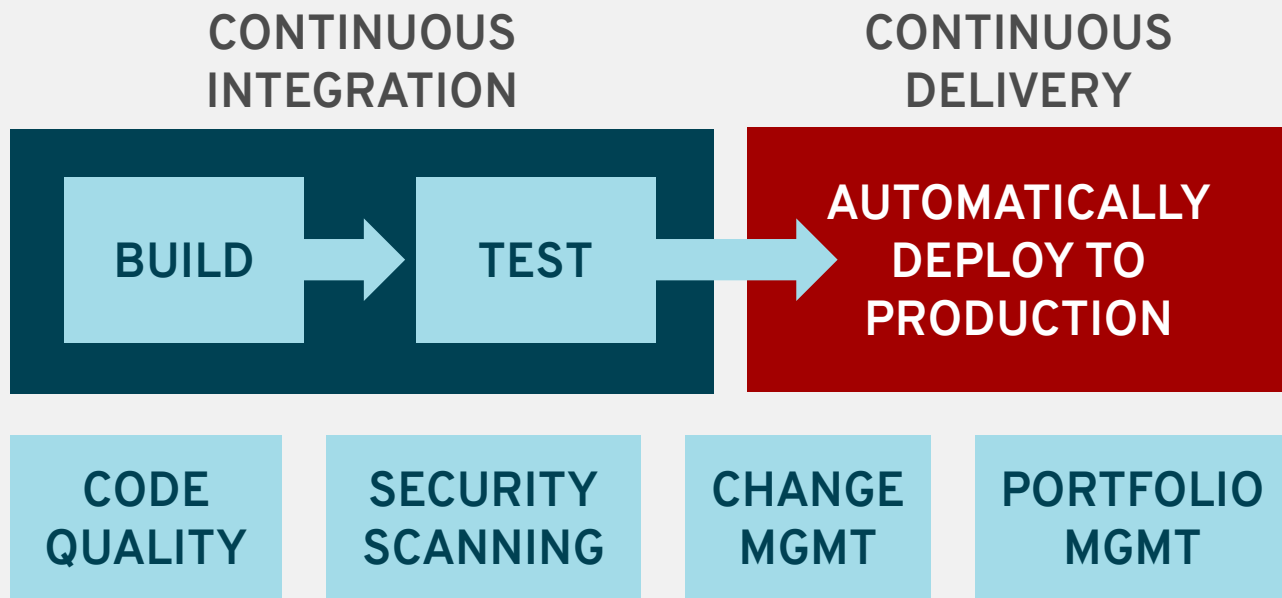


# CI/CD FOR THE ENTERPRISE: TEACHING AN OLD DOG NEW TRICKS

Open Infrastructure Summit 2019

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# THE PIPE DREAM



# THE SQUAD

## WHO WE ARE

- 22 people (managers, developers, SREs, quality engineers, BAs)
- Distributed across 3 states in the US and 3 continents

## WHAT WE DO

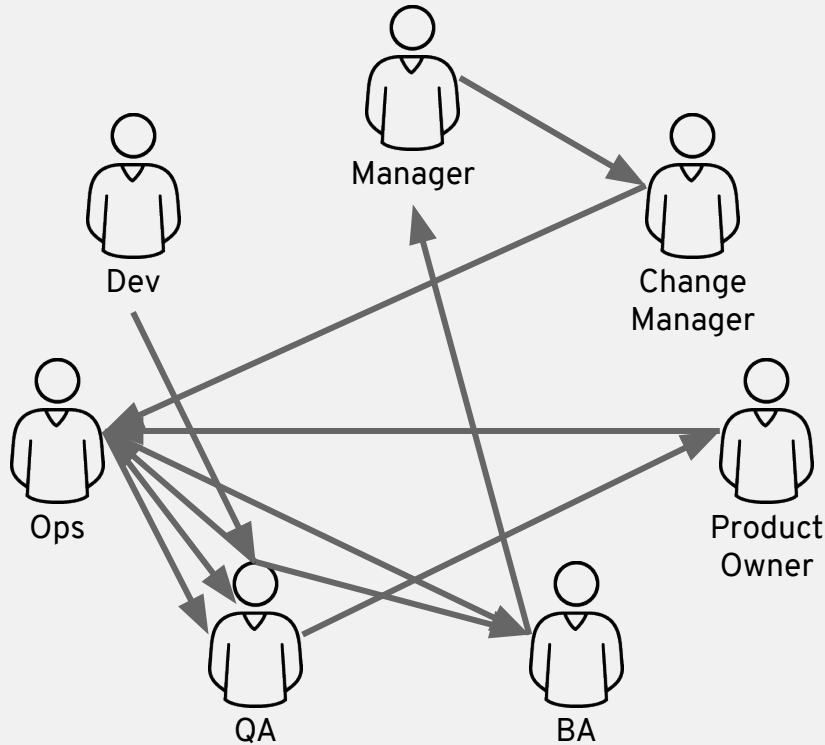
- Build and maintain applications to help Red Hat customers manage their subscriptions and access content



# WHERE WE BEGIN

- Early stages of adopting DevOps practices, but still very siloed
- IT Operations group performs majority of releases
- Good use of Configuration Management, though it was complex
- Averaged 2 releases/mo for our flagship application

# THE TERRIBLE, HORRIBLE, NO GOOD, VERY BAD RELEASE PROCESS



## PHASE

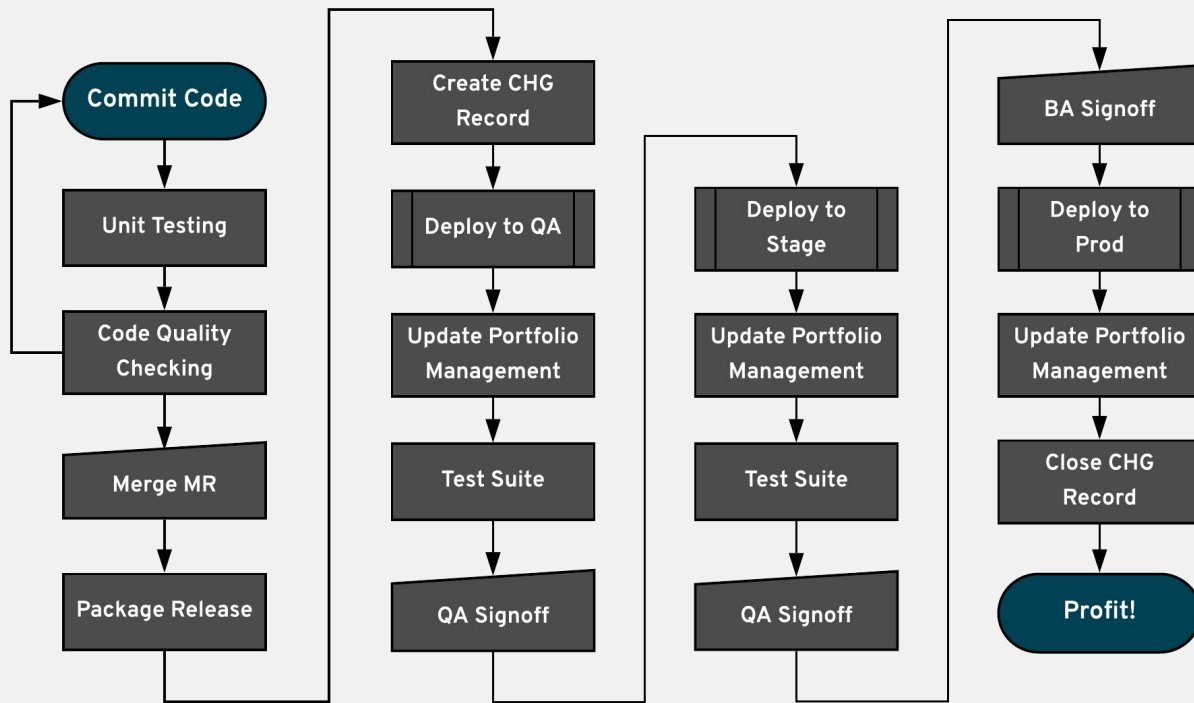
Dev

QA

Stage

Prod

# THE TERRIBLE, HORRIBLE, NO GOOD, VERY BAD RELEASE PROCESS



# OPPORTUNITIES FOR IMPROVEMENT

- Releases were a significant source of toil
- Infrequent releases led to long cycle times
- Confusing process

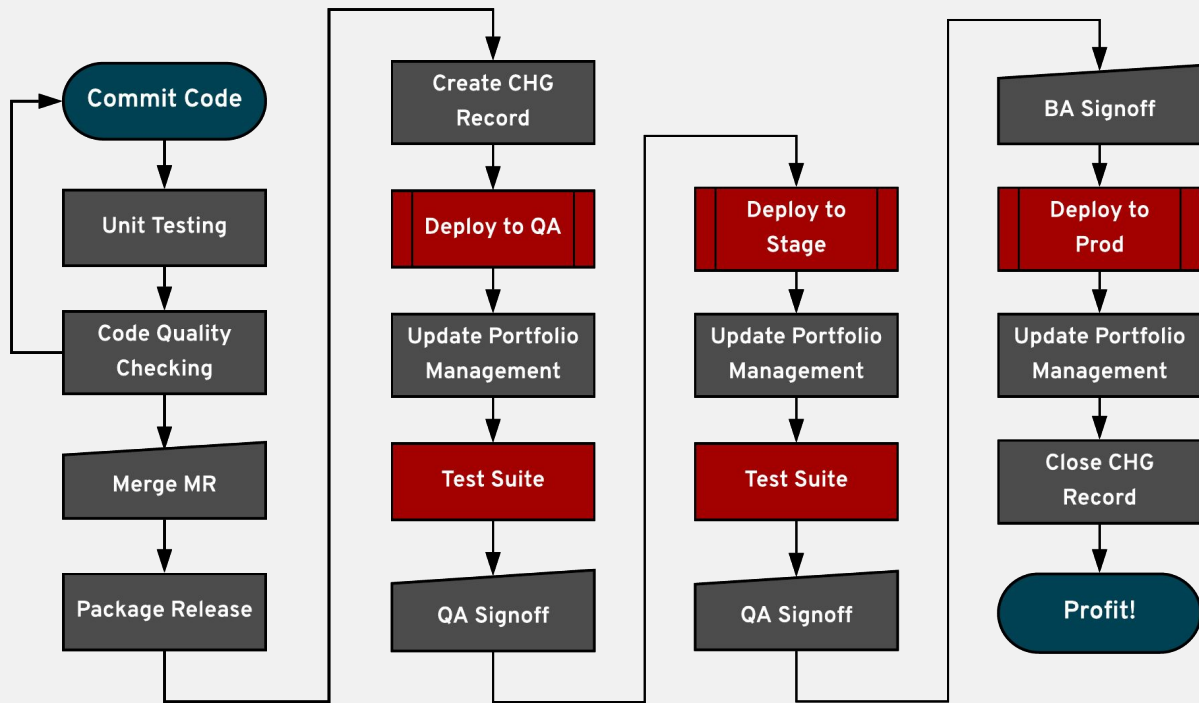
# PAAS TO THE RESCUE?

- Red Hat IT launched new PaaS offering based on OpenShift 3
- Application teams given access to their apps in production
- Automated build and release jobs “for free”





# CI/CD



# SCALING OUT

- So far we've only migrated a few low-touch apps
- Migrated our flagship app: [access.redhat.com/management](https://access.redhat.com/management)
- Started a greenfield app: [api.access.redhat.com/management](https://api.access.redhat.com/management)

# SOLVING CONSTRAINTS

# DEV-ON-DEMAND

- A single dev environment was no longer sufficient
- Moved to short-lived instances following Merge Requests
- Shifted left: code quality scans, unit tests
- Quick feedback for QEs and BAs



IT-PnT Jenkins @it-pnt-jenkins-builder commented 2 months ago

Developer



Hi there! 🙌 This MR now has an on-demand dev environment ready. It will automatically updated as new code is committed and torn down when this MR is closed or merged. You may access it at the URLs below:

<https://rhsm-web-mr-128.ext.paas.dev.redhat.com/management/>

Happy developing! 🧐

# OPERATION “GO GREEN”

- Many automated tests flickered and became unstable over time
- Manual triage required by Quality Engineers
- Conscious choice to allocate time for fixing tests instead of developing new ones

# MODERNIZING CHANGE MANAGEMENT

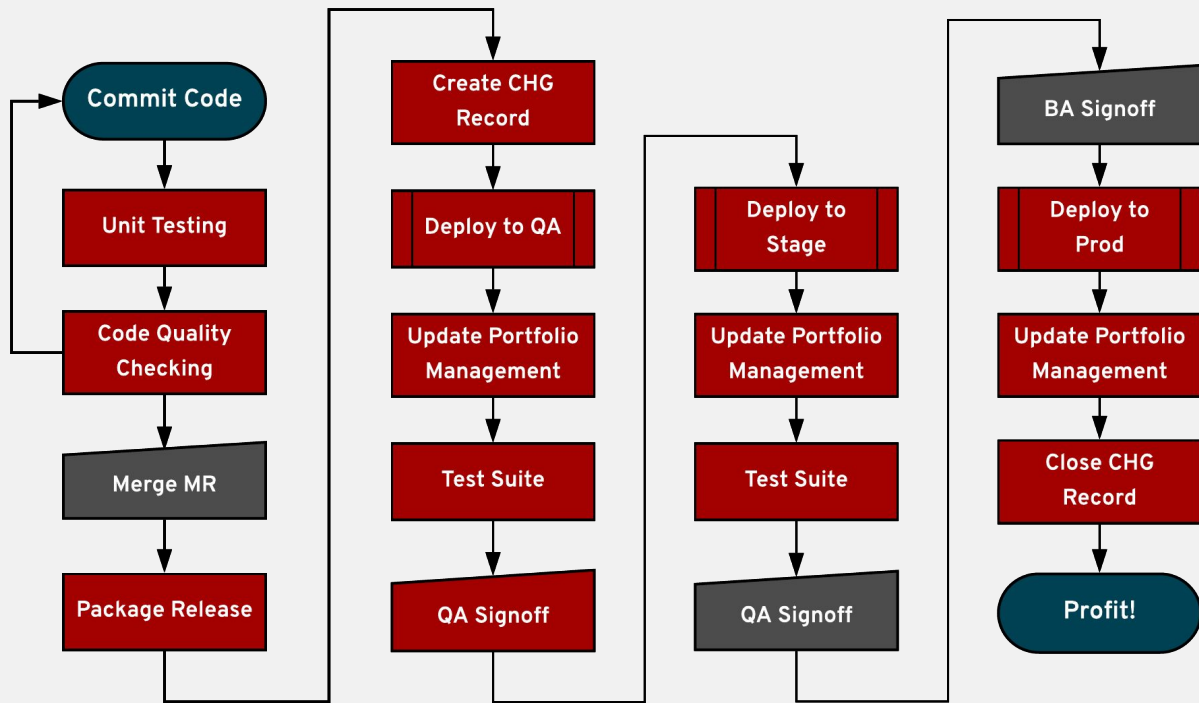
- Better risk categorization
- Removed arbitrary lead time requirement and change freezes
- Used “Standard Change” type that is pre-approved
- Used ServiceNow API to open/close changes

# USER STORIES, NOT FAKE NEWS

- Up-to-date Kanban board is important
  - WIP Limits
  - Current Status
- Integrated pipeline with Rally APIs to move stories and create milestones



# IT'S BEGINNING TO LOOK A LOT LIKE CI/CD



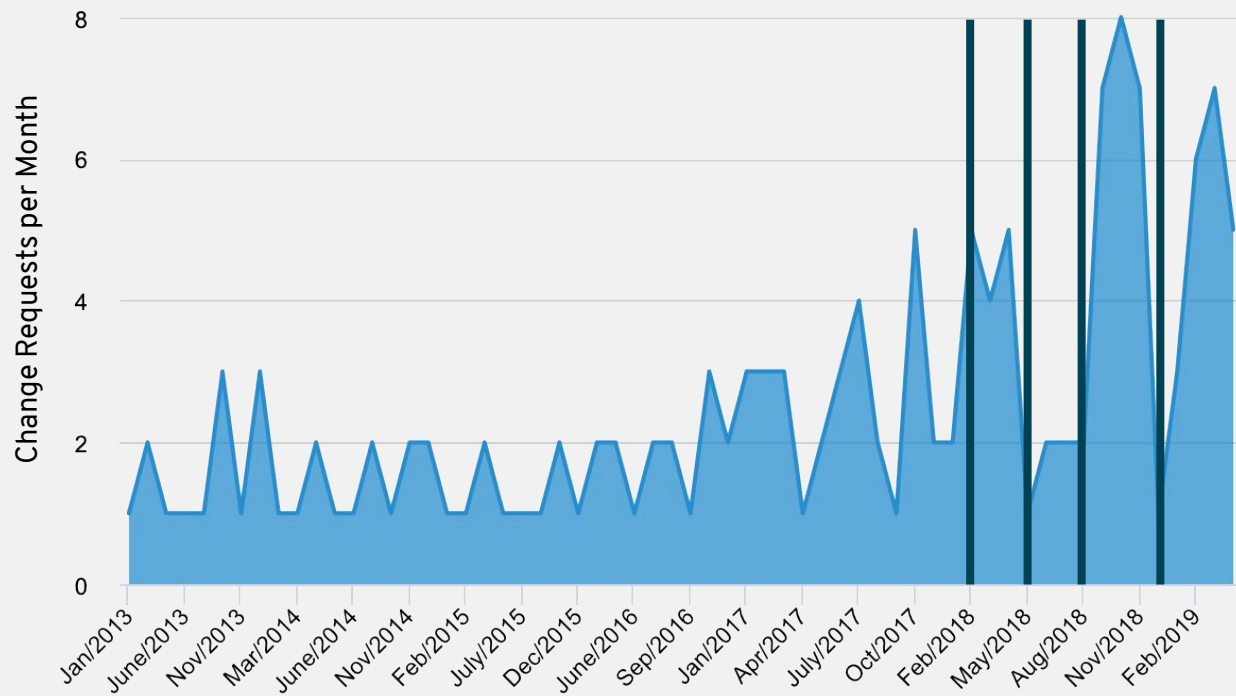
# MEASURING UP

# DELIVERY PERFORMANCE

	ELITE	HIGH	MEDIUM	LOW
Deployment Frequency	on-demand	hourly-daily	weekly-monthly	weekly-monthly
Change Lead Time	<1h	1d - 1w	1w - 1m	1m - 6m
MTTR	<1h	<1d	<1d	1w - 1m
Change Failure Rate	0-15%	0-15%	0-15%	46-60%

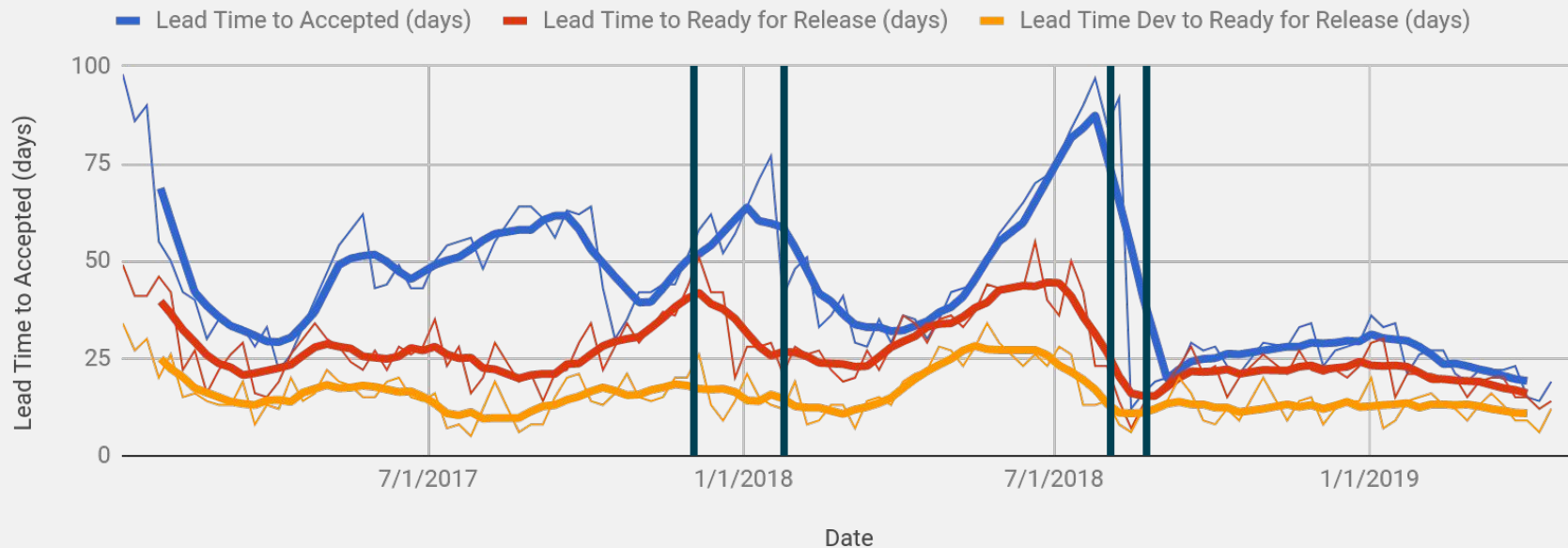
From DORA's 2018 State of DevOps report

# RHSM WEB CHANGE RATE



# LEAD TIME

**Lead Time to Accepted (days) vs. Date - Lower is better**



# THE HUMAN FACTOR

“Our release process used to feel more like filing taxes, but now it’s more like sending money with Venmo”

# THE HUMAN FACTOR

“My favorite part of our CI/CD adoption has been the freedom to experiment: having disposable merge instances for giving early feedback, feature flags that let us try things with a targeted audience and fine-tune before turning on new functionality for the entire customer base, and even the experimentation that comes with every member of the team feeling empowered to try automating some piece of our process.”

# THE HE-MAN FACTOR



“I am basically He-Man. By the power of CI/CD, I have the power\*!”

*\* To push changes to production myself when an appropriate threshold of quality and organizational preparedness, much of which is built into our pipelines, is met.*



Q+A



# THANK YOU

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