

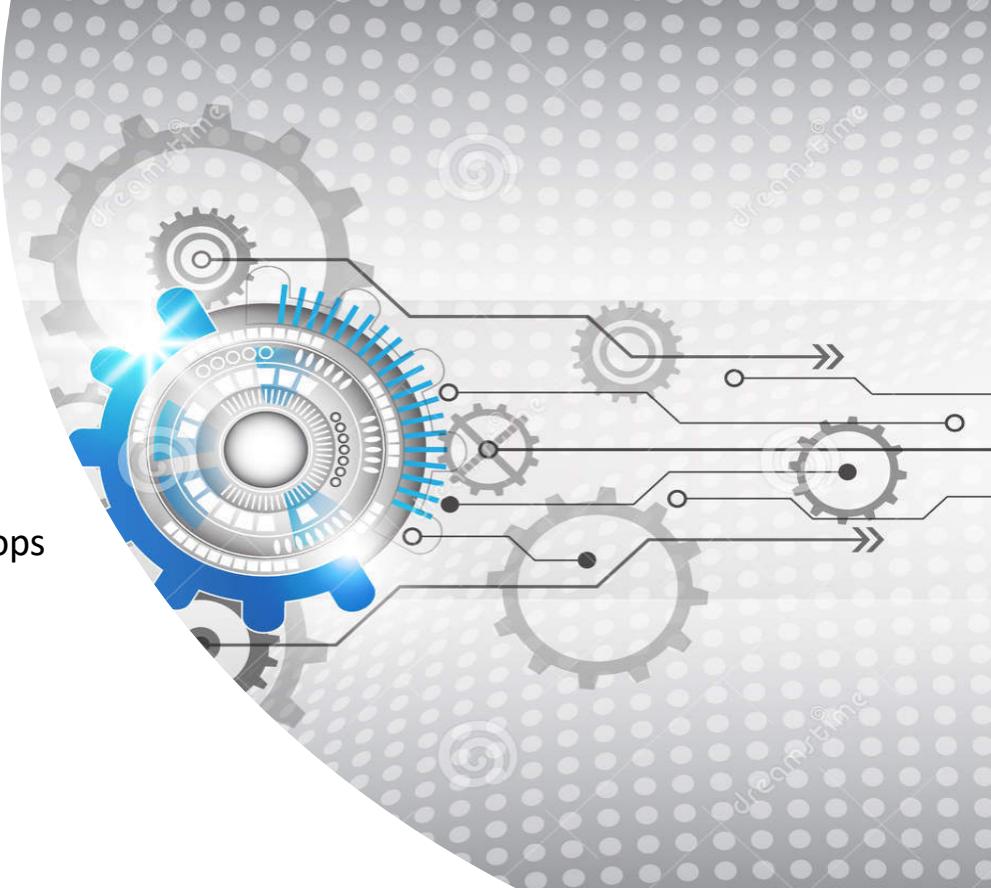
Welcome to DevOps Victoria

Continuous Integration
& Delivery



Topics Speakers

- Welcome & Introduction, Brent Reed – Founder, Tactec Inc.
- Continuous Delivery Pipeline, Clecio Varjao – Devops Team Lead, Information Branch, CSNR
- Questions



Upcoming Events & Thanks



Other DevOps related meetups to be aware of:

- Cloud Native Victoria (CNCF)
- DevOps Commons (Cross Government community group)
- (others please let me know)

Facilities **sendwithus**

Sponsor & Host



Where are we...



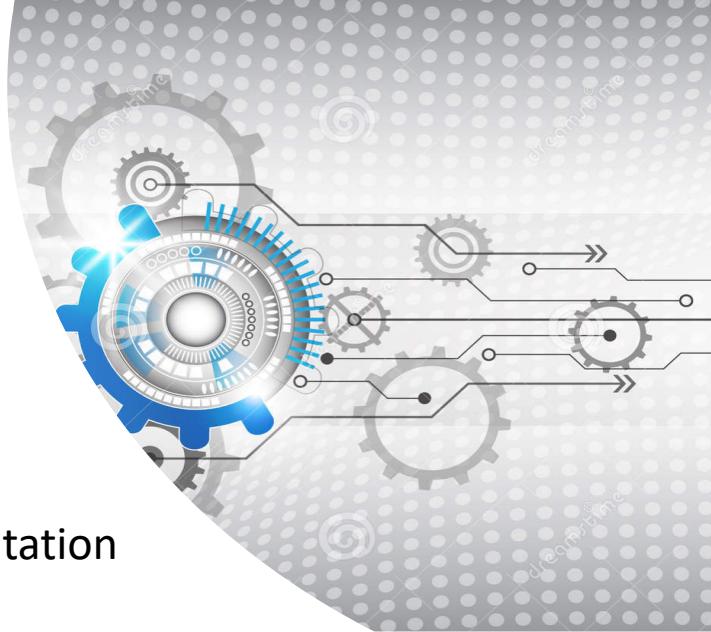
DA DevOps

The Disciplined Agile Manifesto

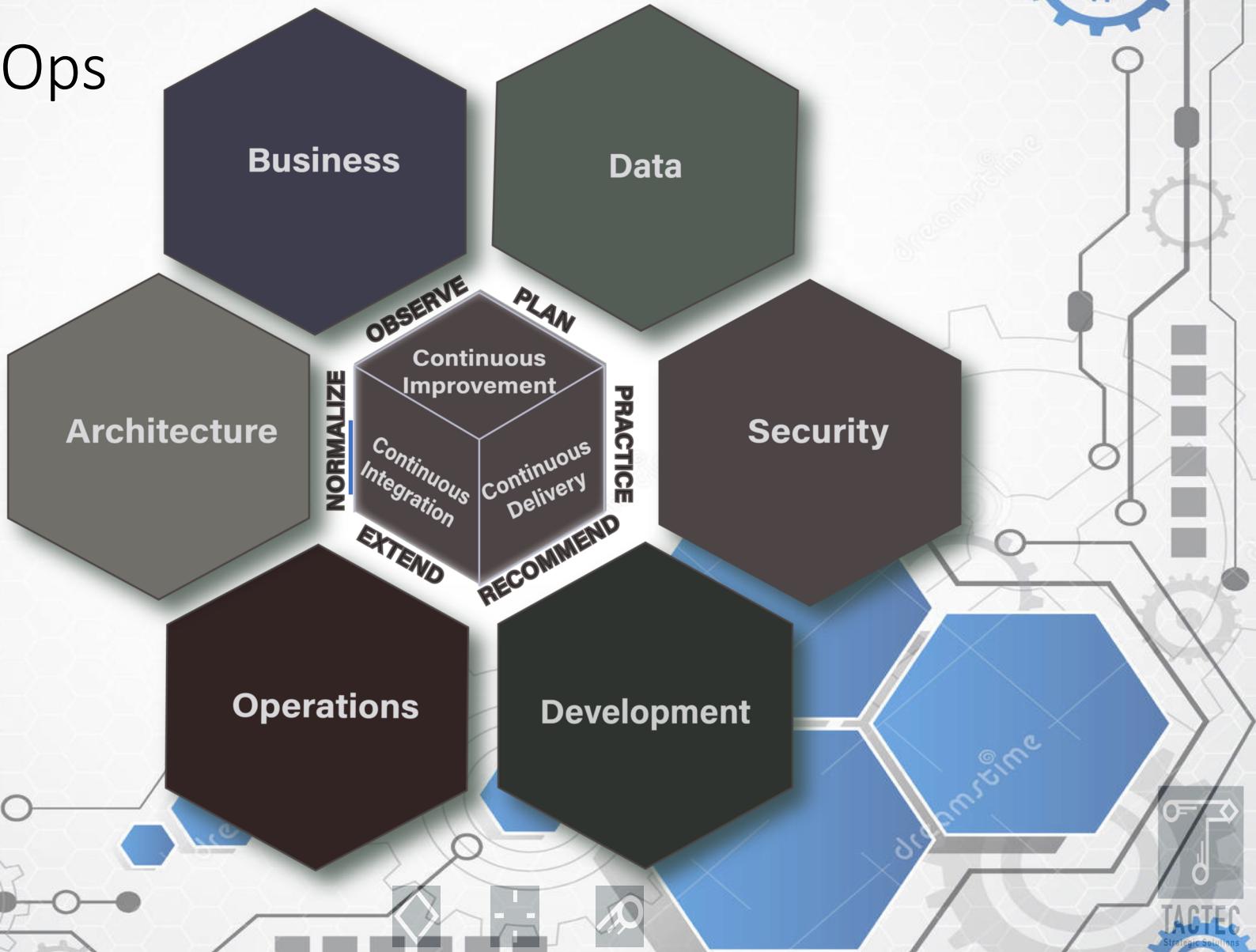
We value:

- Individuals and interactions over processes and tools
- Consumable solutions over comprehensive documentation
- Stakeholder collaboration over contract negotiation
- Responding to change over following a plan

That is, while there is value in the items on
the right, we value the items on the *left* more



eDevOps





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Continuous Delivery Pipeline, Clecio Varjao – Devops Team Lead,
Information Branch, CSNR



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Continuous Delivery Pipeline

PR-BASED PIPELINE



Agenda

- Introduction
- Continuous Delivery
 - Overview
 - Patterns
- Branching Strategies
 - GitHub Flow
 - Merging Strategies
- Lessons Learned
- What is Next?



Clécio Machado Varjão

- Bachelor in Information Systems (2005)
- Master of Science in Computer Science (2013)

LinkedIn: www.linkedin.com/in/clecio-varjao



IMB for NRM

- Over 400 applications
- Critical/Emergency Systems
- Diverse Technologies
 - Java, .Net, PHP, Python
 - Oracle, MSSQL, MySQL, PostgreSQL



PathFinder

- <https://www.pathfinder.gov.bc.ca/>
- <https://www.linkedin.com/company/bc-gov-csi-lab/>
- <https://bcdevexchange.org/>



Continuous Delivery

“Continuous Delivery is the ability to get changes of all types—including new features, configuration changes, bug fixes and experiments—into production, or into the hands of users, **safely** and **quickly** in a **sustainable** way.”

<https://continuousdelivery.com/>



We are Agile! Right?

Our highest priority is to satisfy the customer through early and **continuous delivery** of valuable software.

Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale.

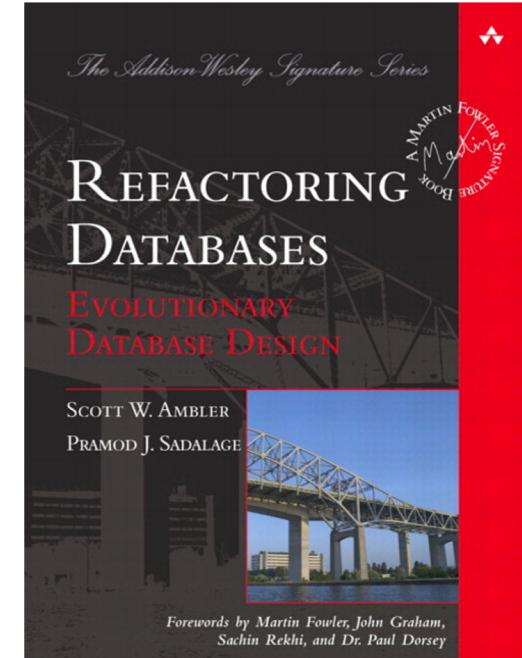
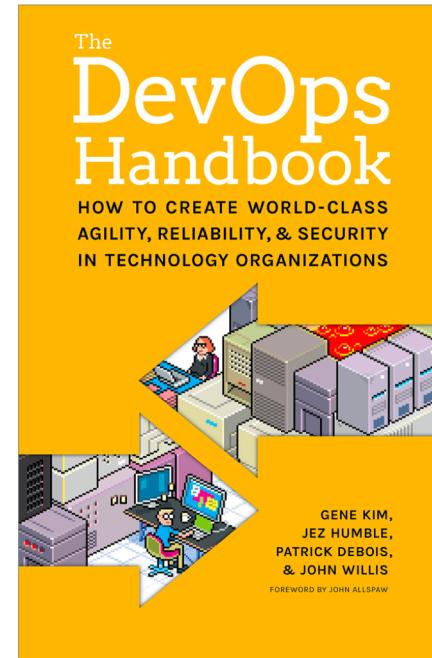
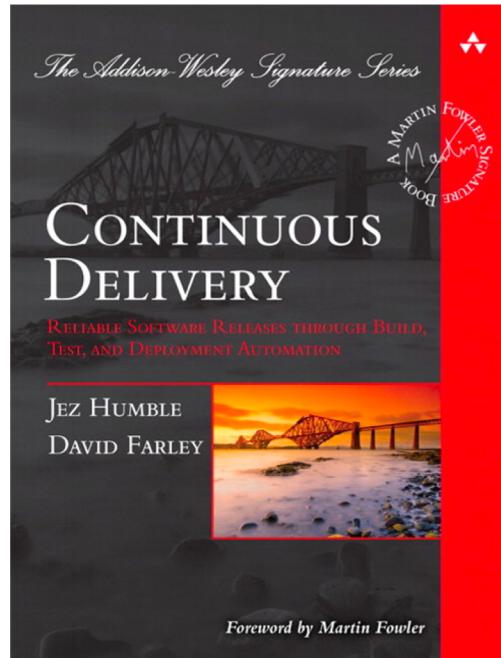
Continuous **attention to technical excellence** and **good design** enhances agility.



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Continuous Delivery



<https://continuousdelivery.com/>

<http://databaserefactoring.com/>



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Patterns and Anti-Patterns in the Software Lifecycle



By Paul Duvall



Configuration Management

Configuration Catalog

Mainline

Merge Daily

Protected Configuration

Repository

Short-Lived Branches

Single Command Environment

Single Path to Production



Continuous Integration

Commit/Push Often/Daily

Build Threshold

Continuous Feedback

Continuous Integration

Stop the Line

Independent Build

Visible Dashboards



Build and Deployment

Dependency Management

Common Language

Externalize Configuration

Fail Fast

Fast Builds

Scripted Deployment

Unified Deployment



Testing

Automated Tests:

- Unit
- Component
- Deployment
- Functional
- Capacity

Isolated Test Data

Parallel Tests

Stub Systems



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Deployment Pipeline

Deployment Pipeline
Value-Stream Map



Deploying and Releasing

Binary Integrity

Canary Release

Blue-Green Deployment

Dark Launching

Rollback Release

Self-Service Deployment



Infrastructure and Provisioning

Automated Provisioning

Behavior-Driven Monitoring

Immune System

Lockdown Environments

Production-Like Environments

Transient Environment



Data

Database Sandbox

Decouple Database

Database Upgrade

Scripted Database

Database Refactoring



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Incremental Development

Branch by Abstraction

Toggle Features



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Collaboration

Delivery Retrospective

Cross-Functional Teams

Root-Cause Analysis



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Branching Strategies

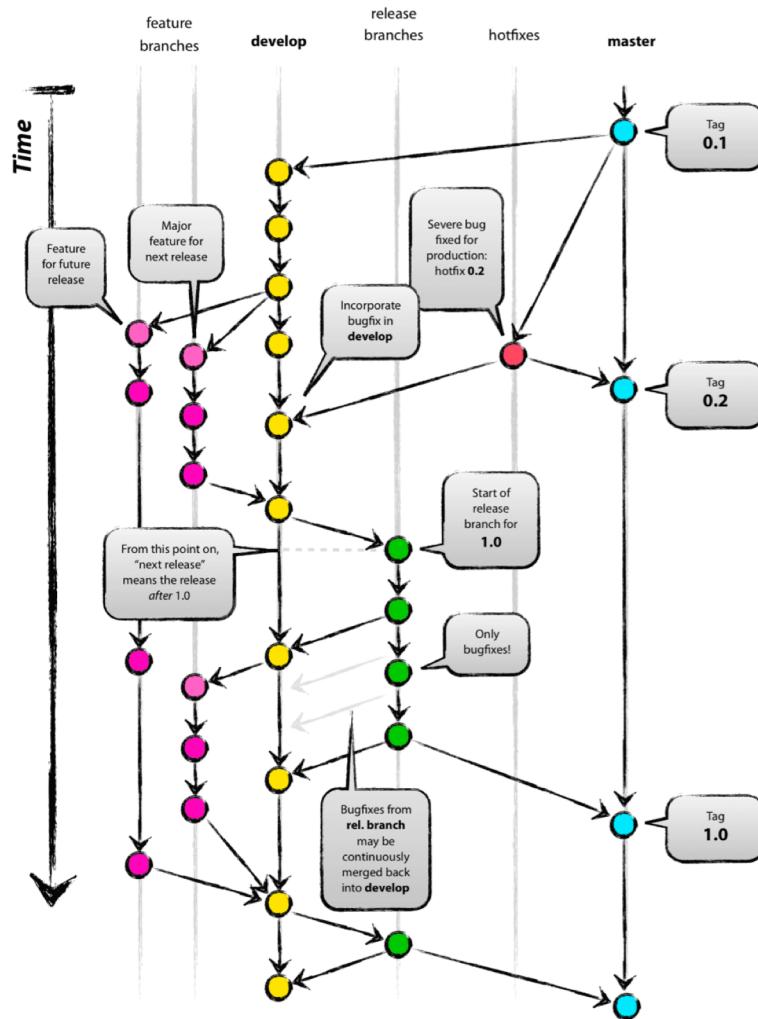
GitFlow

GitHub Flow

GitLab Flow

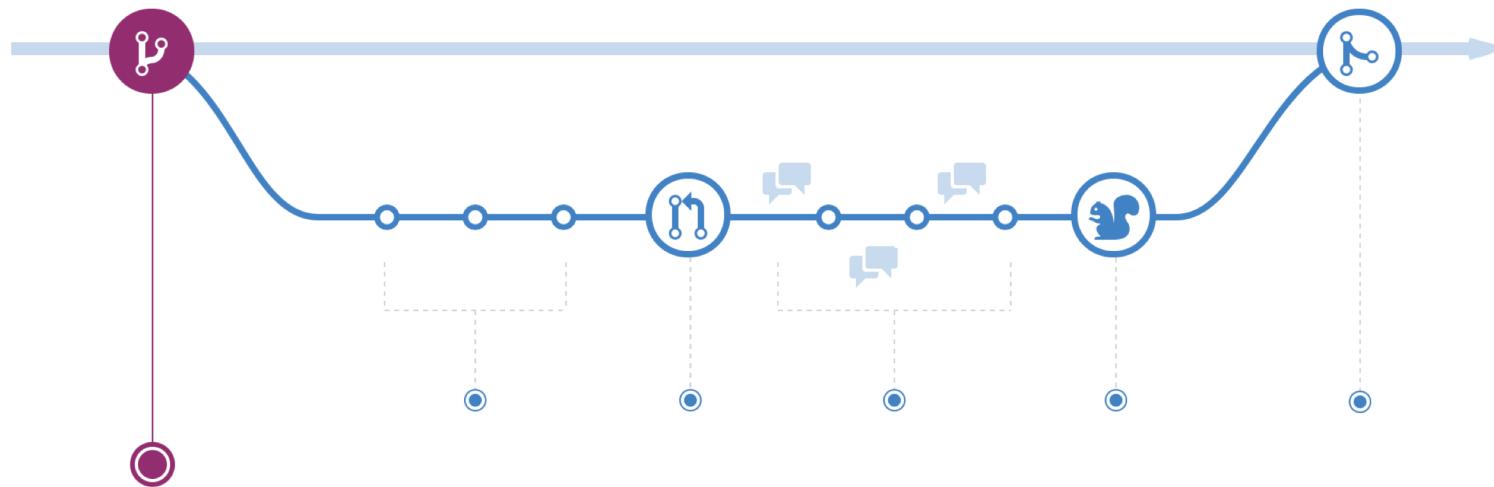
...

GitFlow





GitHub Flow



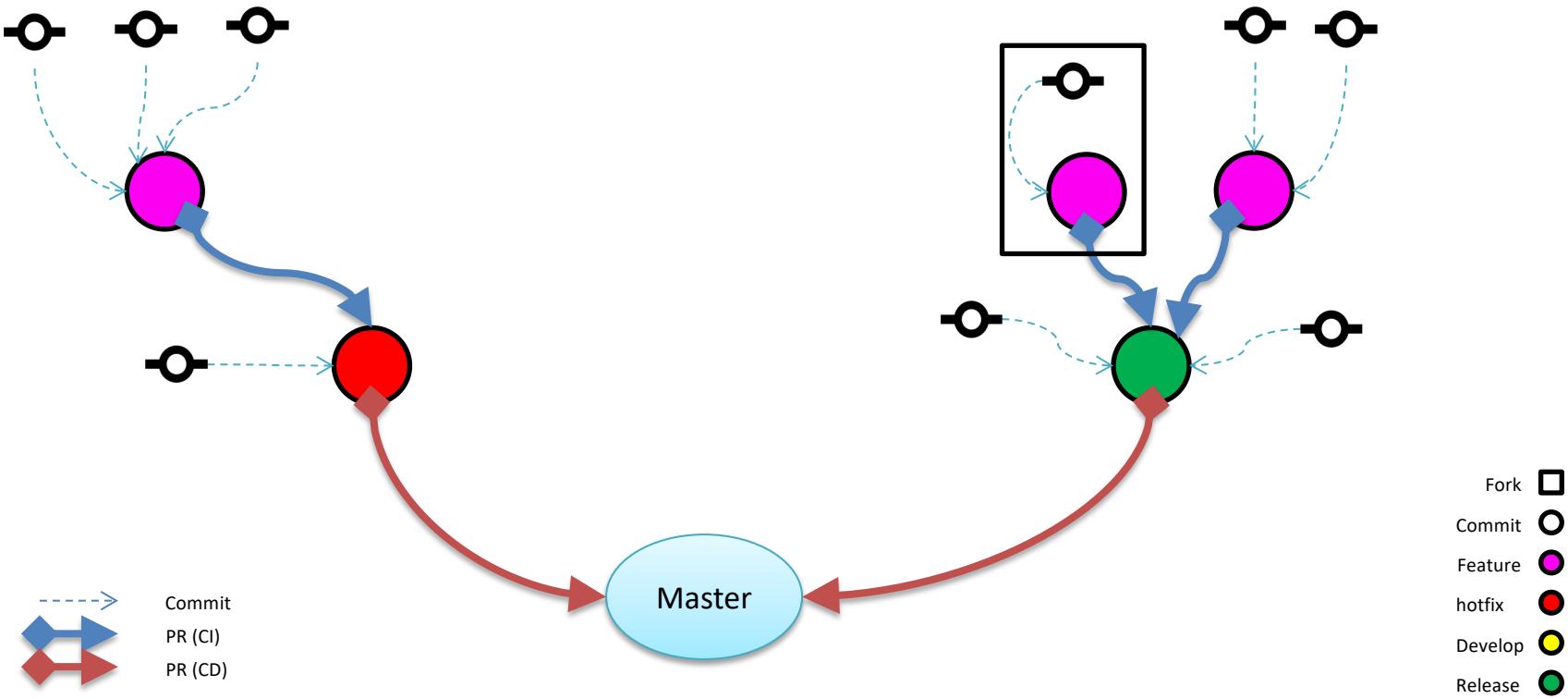
“deploy from a branch for final testing in production before merging to master.”

“Now that your changes have been verified in production, it is time to merge your code into the master branch.”



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GitHub + Jenkins + OpenShift





Merges

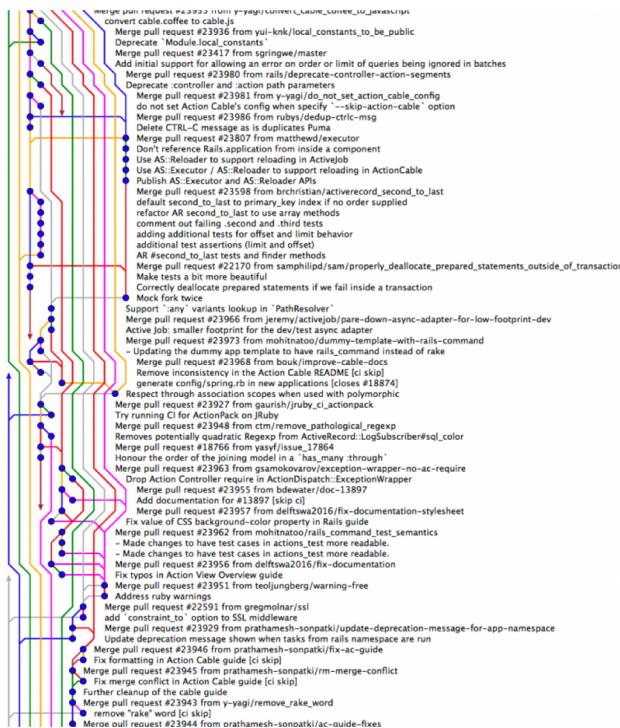
- Merge Commit
- Squash Commit
- Rebasing



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Squash Commits



- 144364759 [Anna] Adds Api endpoint for campaign h... [features](#) [origin/features/144364759-add-chc-api-endpoint](#)
- Anna Chan on Wed, Jul 5, 2017, 7:38 AM
- Merge pull request #58 from craiglyons/bugs/147993769-async-import [origin/bugs/147993769-async-import](#)
- Craig Lyons on Tue, Jul 4, 2017, 8:27 AM
- 147993769 Convert CustomerListImportService to genserver for async processing, persist results & show.. [origin/bugs/147993769-async-import](#)
- Craig Lyons on Wed, Jun 28, 2017, 11:23 PM
- Merge pull request #57 from craiglyons/features/146972733-accept-multiple-phone-numbers [origin/features/146972733-accept-multiple-phone-numbers](#)
- Craig Lyons on Mon, Jul 3, 2017, 8:31 AM
- Handle multiple phone numbers per import 146972733 [origin/features/146972733-accept-multiple-phone-numbers](#)
- Craig Lyons on Sun, Jun 25, 2017, 4:02 PM
- Merge pull request #56 from craiglyons/features/147701521-separate-name-fields_fixbase [origin/features/147701521-separate-name-fields_fixbase](#)
- Craig Lyons on Sun, Jun 25, 2017, 10:56 AM
- Change customer/name to customer/first_name and last_name 147701521 [origin/features/147701521-separate-name-fields_fixbase](#)
- Craig Lyons on Fri, Jun 23, 2017, 10:52 AM
- Merge pull request #54 from craiglyons/features/145657313-accept-variable-columns [origin/features/145657313-accept-variable-columns](#)
- Craig Lyons on Sun, Jun 25, 2017, 10:21 AM
- Handle mixed col order - Move spend validation to model - Check f... [origin/features/145657313-accept-variable-columns](#)
- Craig Lyons on Wed, Jun 21, 2017, 8:28 AM
- Merge pull request #53 from craiglyons/features/146367581-warn-and-reject-duplicate-ids [origin/features/146367581-warn-and-reject-duplicate-ids](#)
- Craig Lyons on Sun, Jun 25, 2017, 7:13 AM
- Store imported IDs in agent, skip import on dupe 146367581 [origin/features/146367581-warn-and-reject-duplicate-ids](#)
- Craig Lyons on Sat, Jun 17, 2017, 9:08 AM
- Merge pull request #52 from craiglyons/features/146995535-import-invalid-customers-anuwave [origin/features/146995535-import-invalid-customers-anuwave](#)



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“I want clean history, but that really means (a) clean and (b) history.”

Linus Torvalds



History

“You must never EVER destroy other peoples history.”

“ [it] is about other peoples history, not about other peoples code. If they sent stuff to you as an emailed patch, and you applied it with "git am -s", then it's their code, but it's your history.”



Clean

- “Keep your own history readable”
- “Don't expose your crap”



Lessons Learned

- Keep OpenShift Configuration updated
- Create Base Images:
 - pip install
 - npm install
 - yum install
 - yum update
- Location, Location, Location
 - Isolate components in self-contained directories; or
 - Group components in multiple repositories
- Be careful with default values



Lessons Learned

- RH Jenkins is (Very) Tightly Coupled with OpenShift
- OpenShift Pipeline does not support Multi-Branch
- Leverage OpenShift Secrets/ConfigMaps
- Less is More: Less CPU/Memory = More Pods
- Testing is Slow: Parallelize them!
- Protect/Sequence your pods with Init Containers
- Jenkins build history takes a lot of disk space
- Clear Workspace Checkouts



What is next?

- Better reusing base images (faster builds)
- Metrics: Where to store them?
 - Storing in Jenkins takes significant disks pace
- Faster Functional Tests
- Faster Unit Tests
- Parallel Stages
- Decouple Database: Review database migrations
- Jenkins build not properly resuming on shutdown
- Rollback