

# GitOps: yea or nay?



GitOps Summit 2021  
Ricardo Castro

# Agenda

- What is GitOps
- What can GitOps do for me
- GitOps CD Software Agents
- Demo
- Extras

# Story time...

**Scenario:** some random day. The sun is shining. Life is good.

**Ricardo:** I'm going to make a tricky change. There's the possibility of a system wipeout.

**Joe:** Are you sure? Let me take a look!

<Looks attentively>

**Joe:** Looks ok. Good to go!

<Click Enter>

**Ricardo:** So... Here's the thing... Remember that Kubernetes cluster? It's gone...

<CHAOS>



# Story time, Part II

**Ricardo:** Thankfully we have everything in Terraform. Let's relaunch the cluster.

**Joe:** Cool, it's up! Let' figure out what needs to be launched.

<Figuring out happens>

**Joe:** <Smirk> Fortunately we have a pipeline for everything.

<Activate Pipelines>

**Ricardo:** Pipeline Alpha-X was deactivated? Any idea why? Shall we ask team Alpha?

**Ricardo:** Also Pipeline Beta-Y was successful but the application does not work. Any idea why?

**Joe:** <Thinking> I think team Beta had some manual changes there...

<Headache continues>

# What is GitOps?

1. The entire system described declarative
2. The canonical desired system state is versioned in Git
3. Approved changes that can be automatically applied to the system
4. Software agents to ensure correctness and alert on divergence

# What can GitOps do for me?

1. Increased Productivity
2. Enhanced Developer Experience
3. Improved Stability
4. Higher Reliability
5. Consistency and Standardization
6. Stronger Security Guarantees
7. Easier Compliance and Auditing

# GitOps software agents



Declarative



Automated



Auditable



Designed for Kubernetes



Out-of-the-box integrations



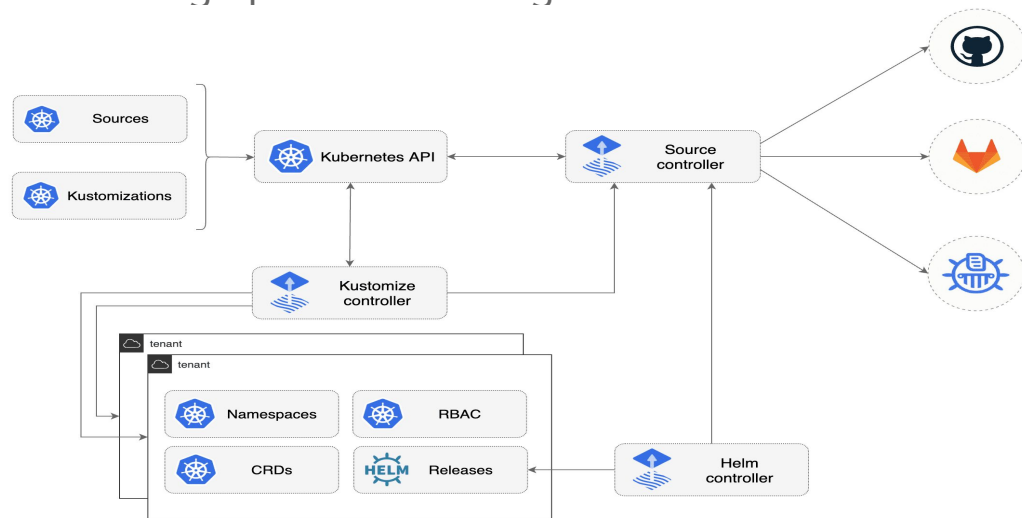
Extensible



# GitOps CD software agents



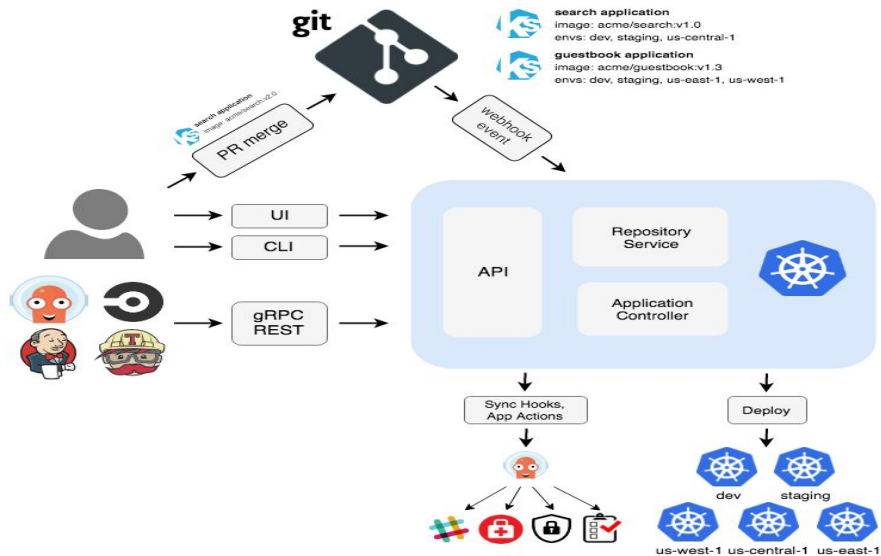
“Flux is a tool for keeping Kubernetes clusters in sync with sources of configuration (like Git repositories), and automating updates to configuration when there is new code to deploy.”



# GitOps CD software agents



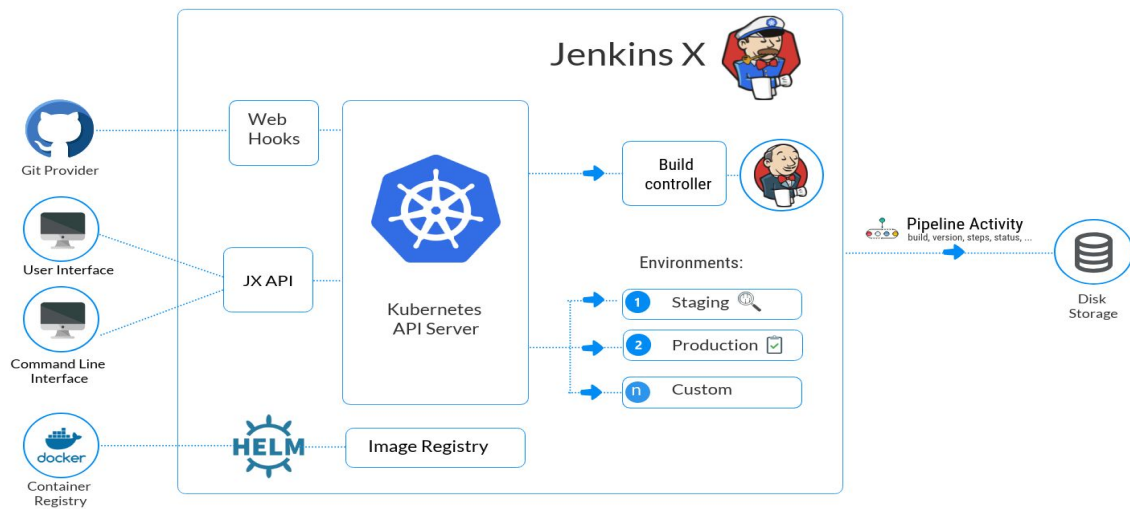
“Argo CD is a declarative, GitOps continuous delivery tool for Kubernetes.”



# GitOps CD software agents

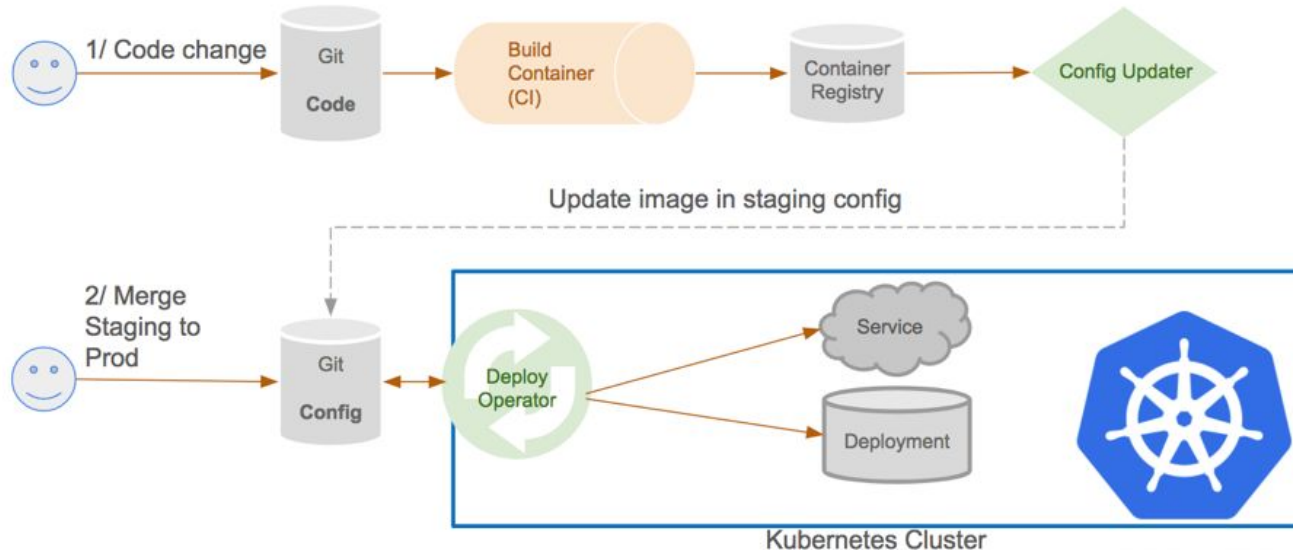


“Jenkins X provides pipeline automation, built-in GitOps, and preview environments to help teams collaborate and accelerate their software delivery at any scale.”



# GitOps CD software agents

## Example GitOps Pipeline



# Demo

Flux

# Extras: secrets

- ["Sealed Secrets" for Kubernetes](#)
- [SOPS: Secrets OPerationS](#)
- [Vault Agent Sidecar Injector](#)

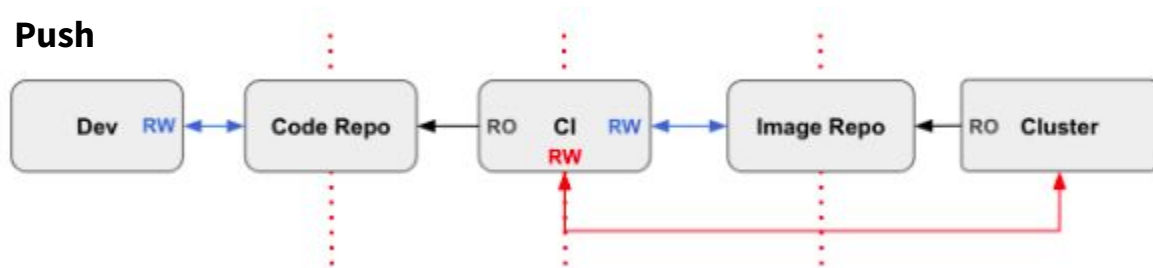
## Extras: GitOps vs IaC

“One of the main differences between IaC and GitOps is the use of immutable containers as deployable artefacts that can be converged on by a suitable orchestration tool, for example Kubernetes. Your desired state is kept in source control. This isn’t always the case with some of the infrastructure as code tools. IaC implementations vary, and sometimes the source of truth is split between a git repo, and a database, and sometimes spread between a weakly-linked union of multiple git repos.”

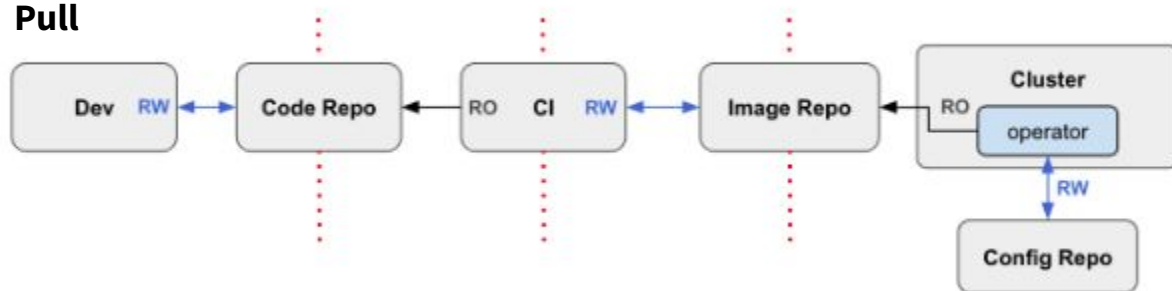
“While Infrastructure as Code tools provide a way to manage infrastructure, they don’t manage the entire Cloud Native stack. GitOps on the other hand, allows you to manage the whole platform.”

# Extras: push vs pull

## Push



## Pull





# Thank you

- Senior Site Reliability Engineer at [Farfetch](#) ([We're hiring](#))
- [DevOps Porto](#) meetup co-organizer
- [DevOpsDays Portugal](#) conference co-organizer
- Strong believer in culture and teamwork
- Open source passionate (former Mozilla contributor)
- Taekwondo amateur
- Metal lover
- Where to find me:
  - Website: <https://mccricardo.com>
  - Twitter: [@mccricardo](#)
  - LinkedIn: [Ricardo Castro](#)

# Links

- [What is GitOps](#)
- [GitOps - Operations by Pull Request](#)
- [The GitOps Pipeline - Part 2](#)
- [GitOps Part 3 - Observability](#)
- [GitOps Part 4 - Application Delivery Compliance and Secure CICD](#)
- [GitOps: High velocity CICD for Kubernetes](#)
- [Managing Helm releases the GitOps way](#)
- [Guide to GitOps](#)
- [Is GitOps the next big thing in DevOps?](#)
- [GitOps](#)
- [What is GitOps?](#)
- [Argo CD](#)
- [Flux CD](#)
- [Jenkins X](#)
- [Introducing Argo Flux - A Weaveworks-Intuit-AWS Collaboration](#)
- [GitOps: 'Git Push' All the Things](#)
- [THE BEST CI/CD TOOL FOR KUBERNETES DOESN'T EXIST](#)