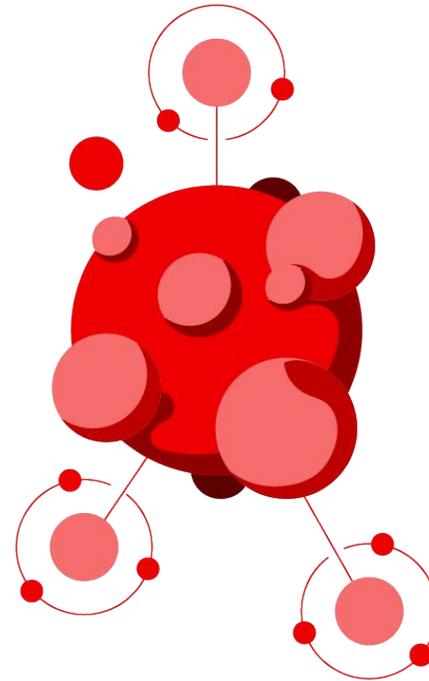




Open ^{IIIIO}Tour

Connecting people and solutions
to accelerate your business

From Zero to Hero! Pipelines combined with GitOps



About me



Robert Bohne works as a **Principal Specialist Solution Architect** at Red Hat and a Subject-Matter Expert for **OpenShift** Container Platform. With over **10 years** of **middleware operating experience** from **automation** to **monitoring** and **more than 5 years of container** know-how, Robert primarily supports large German customers with their OpenShift adoption; starting with the introduction, **24x7 operations** up to the **migration** and **modernization** of complex **applications**.

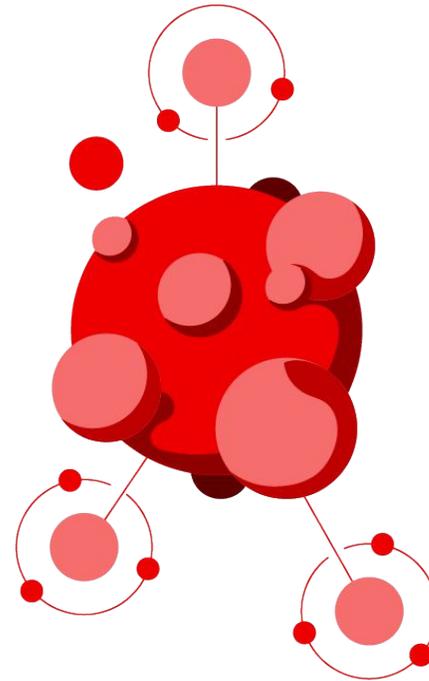
Twitter

[@RobertBohne](https://twitter.com/RobertBohne)

LinkedIn

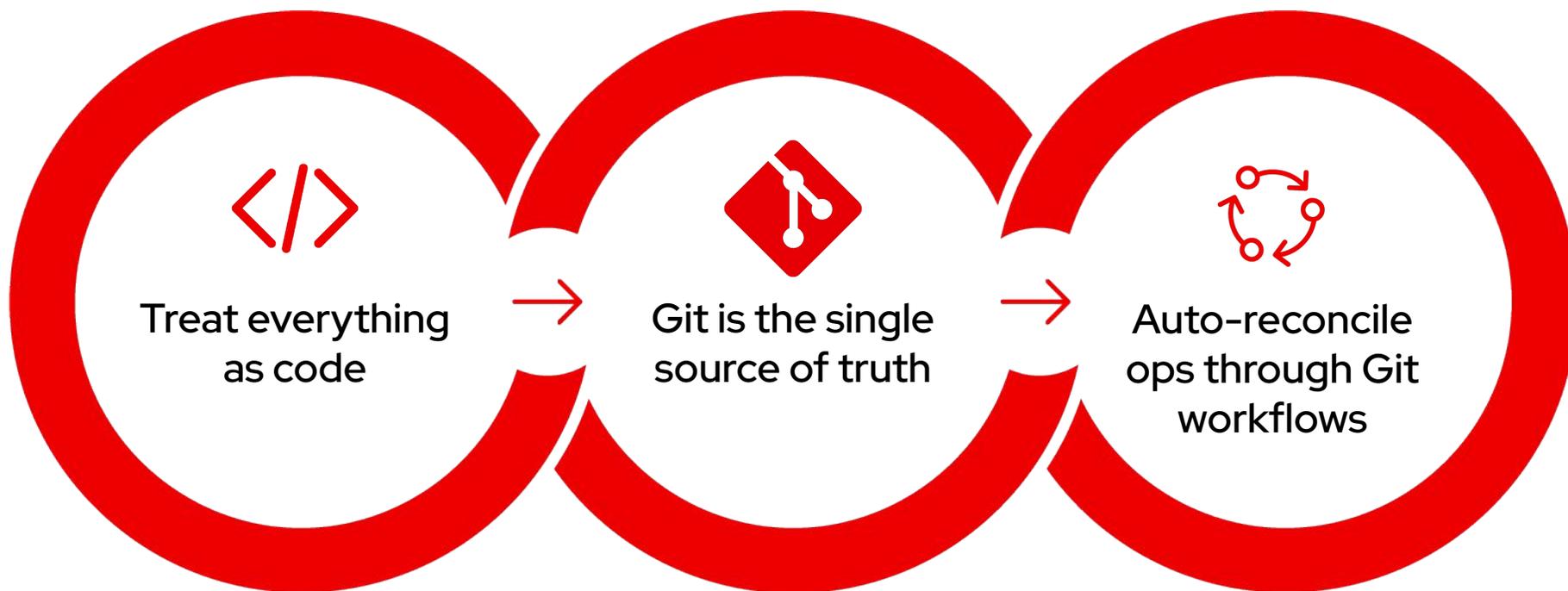
<https://www.linkedin.com/in/robertbohne/>

From Zero to Hero! **Pipelines** combined with **GitOps**



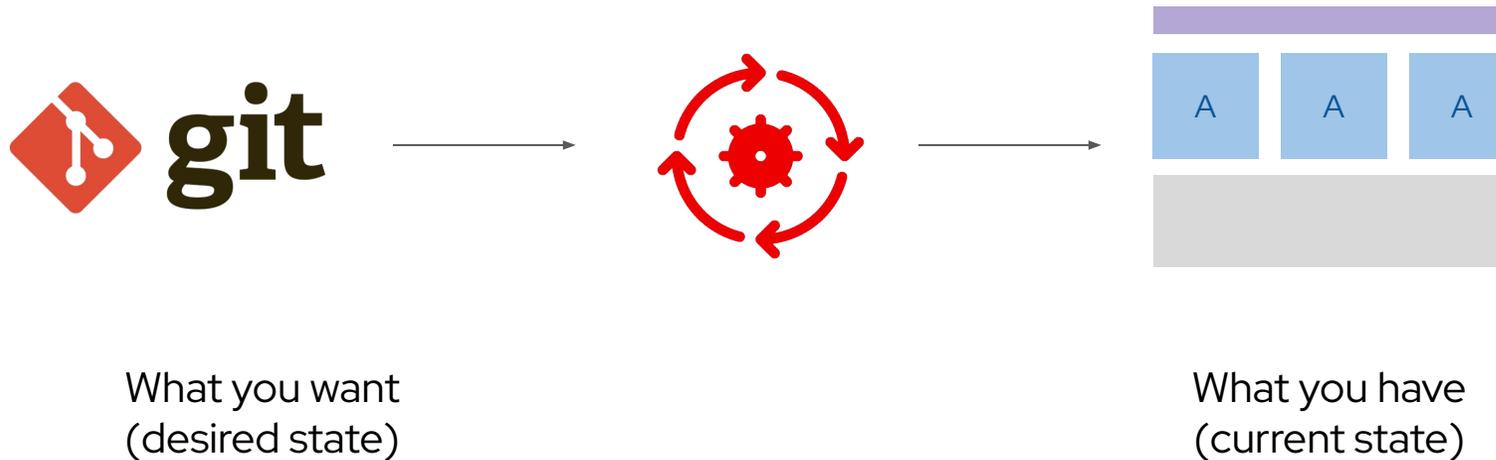
What is GitOps?

What is GitOps?



GitOps Workflow

a declarative approach to application delivery



Why GitOps?

Standard Workflow

Familiar tools and Git workflows from application development teams

Visibility and Audit

Capturing and tracing any change to clusters through Git history

Enhanced Security

Review changes beforehand, detect configuration drifts, and take action

Multi-cluster consistency

Reliably and consistently configure multiple Kubernetes clusters and deployment

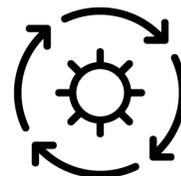
GitOps Principles



The system is described declaratively



The desired state is versioned in Git



Approved changes can be applied automatically



A controller exists to detect and act on drift

OpenShift GitOps



Multi-cluster config management



Automated Argo CD install and upgrade



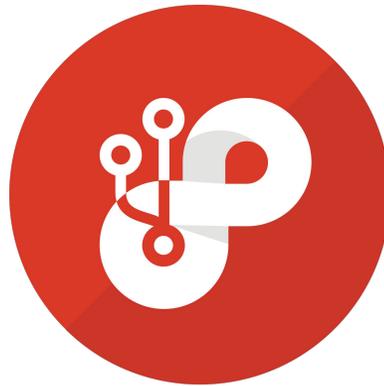
Opinionated GitOps bootstrapping



Deployments and environments insights

Hands on

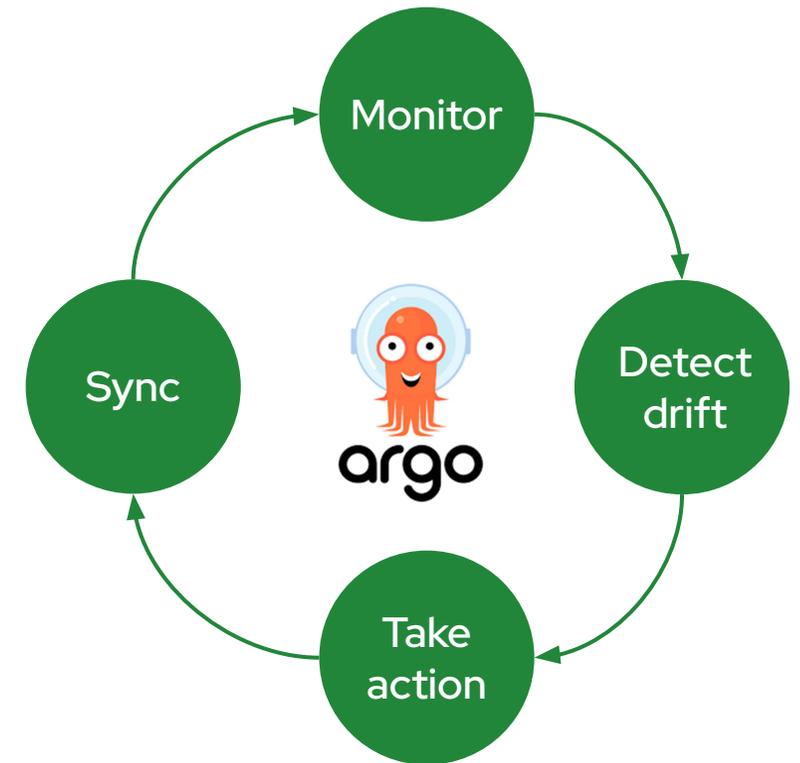
OpenShift
GitOps



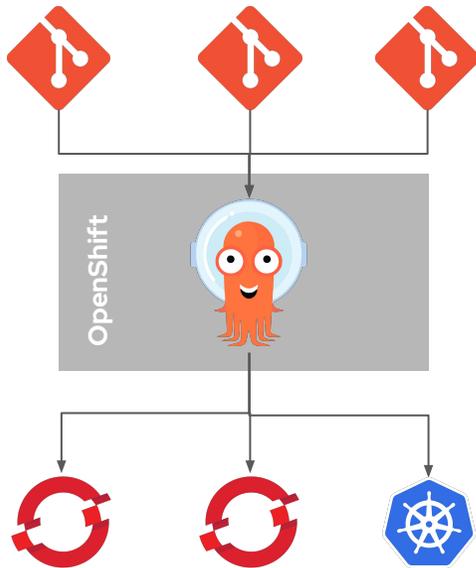
Lab guide
GitOps Demo repo

Argo CD

- Cluster and application configuration versioned in Git
- Automatically syncs configuration from Git to clusters
- Drift detection, visualization and correction
- Granular control over sync order for complex rollouts
- Rollback and roll forward to any Git commit
- Manifest templating support (Helm, Kustomize, etc)
- Visual insight into sync status and history

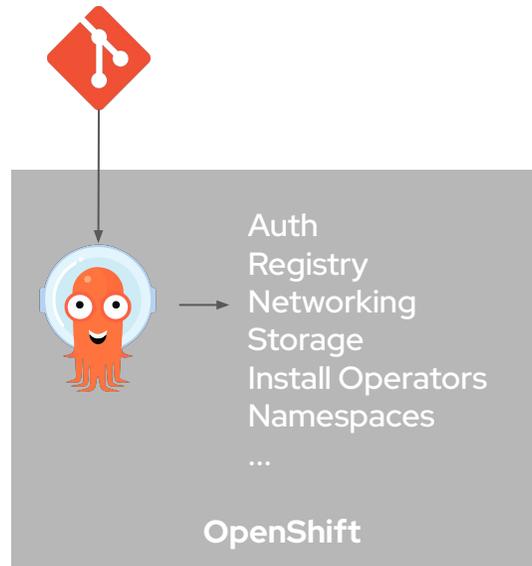


Flexible Deployment Strategies



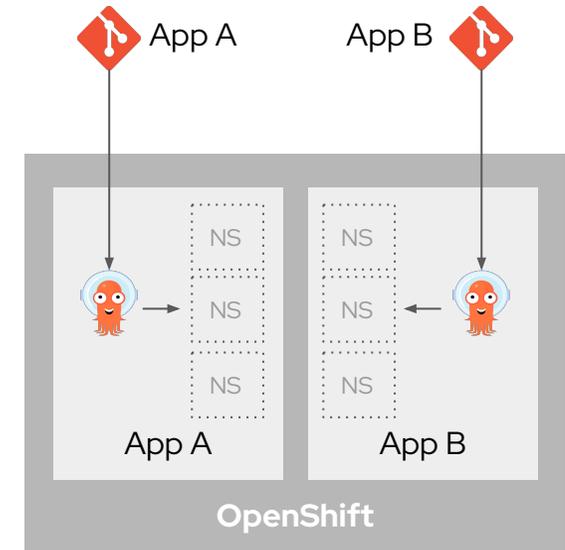
Central Hub (Push)

A central Argo CD pushes Git repository content to remote OpenShift and Kubernetes clusters



Cluster Scoped (Pull)

A cluster-scope Argo CD pulls cluster service configurations into the OpenShift cluster



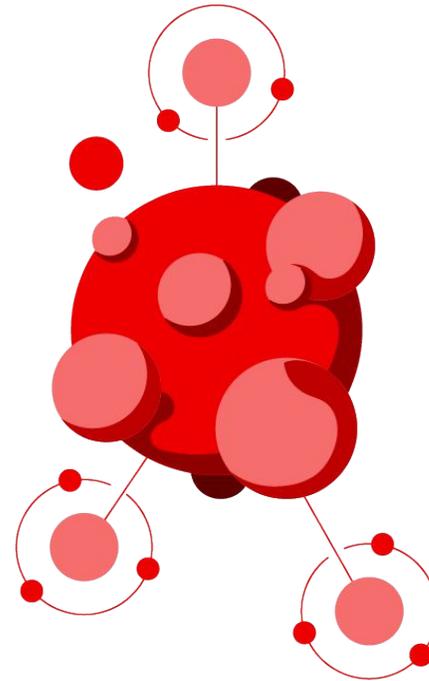
Application Scoped (Pull)

An application scoped Argo CD pulls application deployment and configurations into app namespaces

Questions?

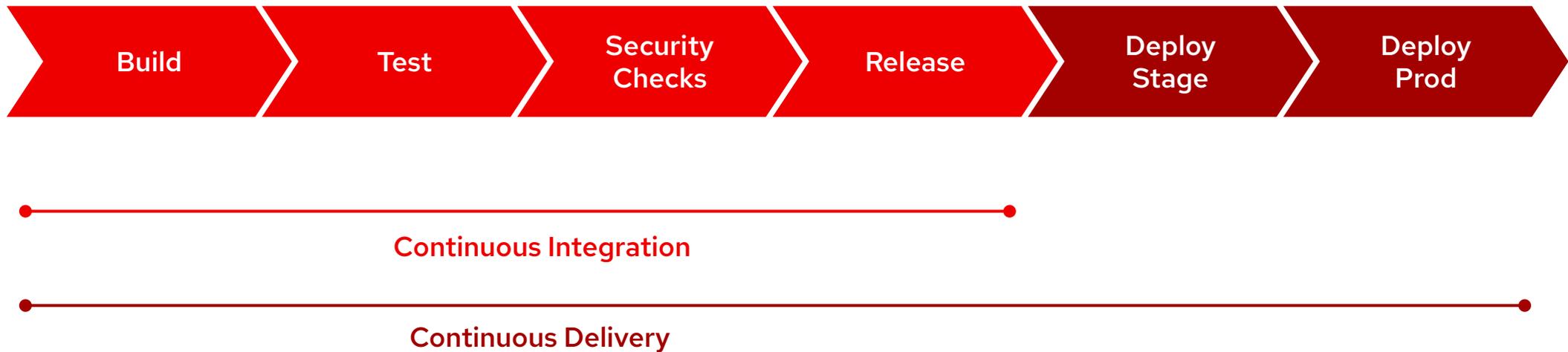


From Zero to Hero! **Pipelines** combined with **GitOps**



What is a Pipeline?

Continuous Integration & Continuous Delivery



Why Pipeline?

OpenShift Pipelines



Built for Kubernetes

Cloud-native pipelines taking advantage of Kubernetes execution and , operational model and concepts



Scale on-demand

Pipelines run and scale on-demand in isolated containers, with repeatable and predictable outcomes



Secure pipeline execution

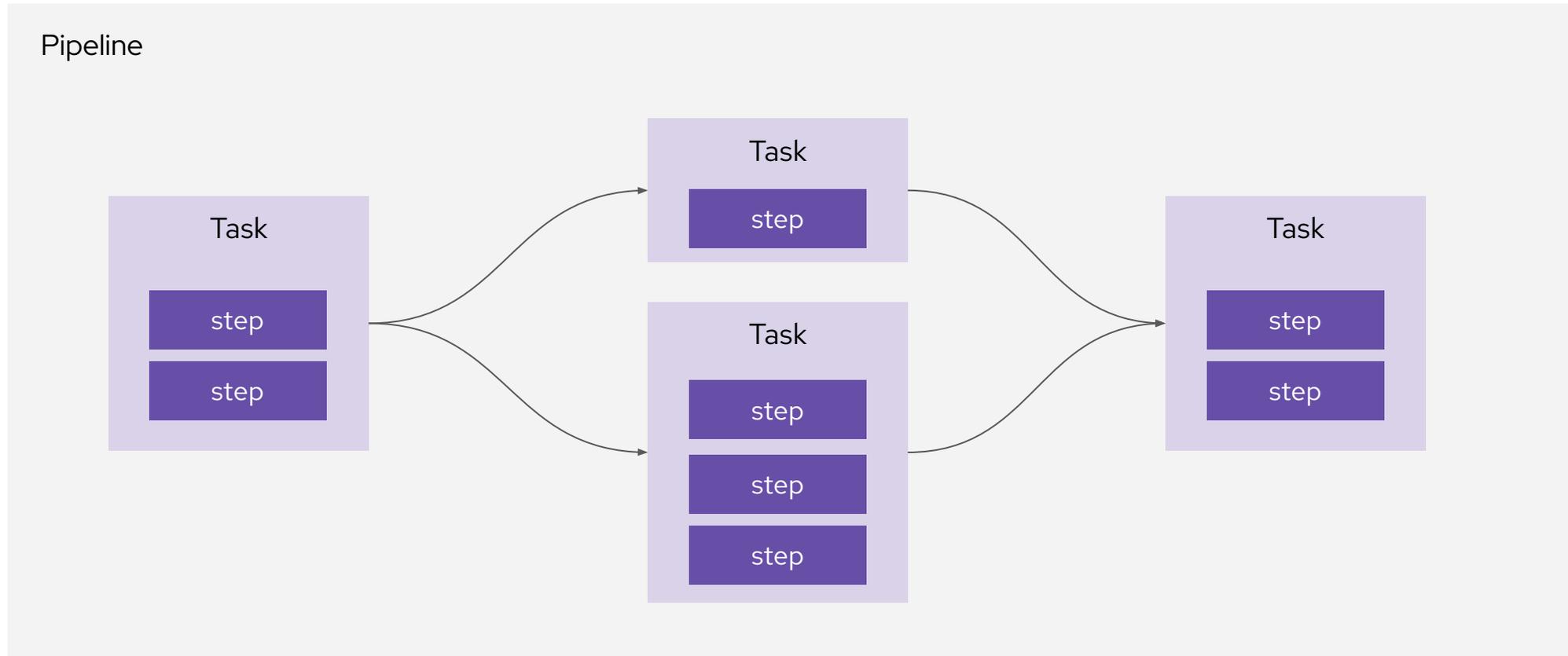
Kubernetes RBAC and security model ensures security consistently across pipelines and workloads



Flexible and powerful

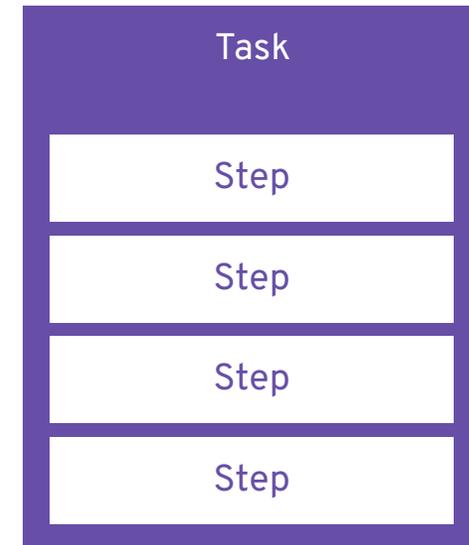
Granular control over pipeline execution details on Kubernetes, to support your exact requirements

Pipeline Concepts



Task

- Defines a unit of work to be executed
- A list of steps to run sequentially
- **Step containers run in the task pod**
- Has inputs, outputs and parameters
- Workspaces and results for sharing data
- Can run independent of pipelines



Example Tasks: Maven Install, AWS CLI, Kubectl Deploy, Security Scan, etc

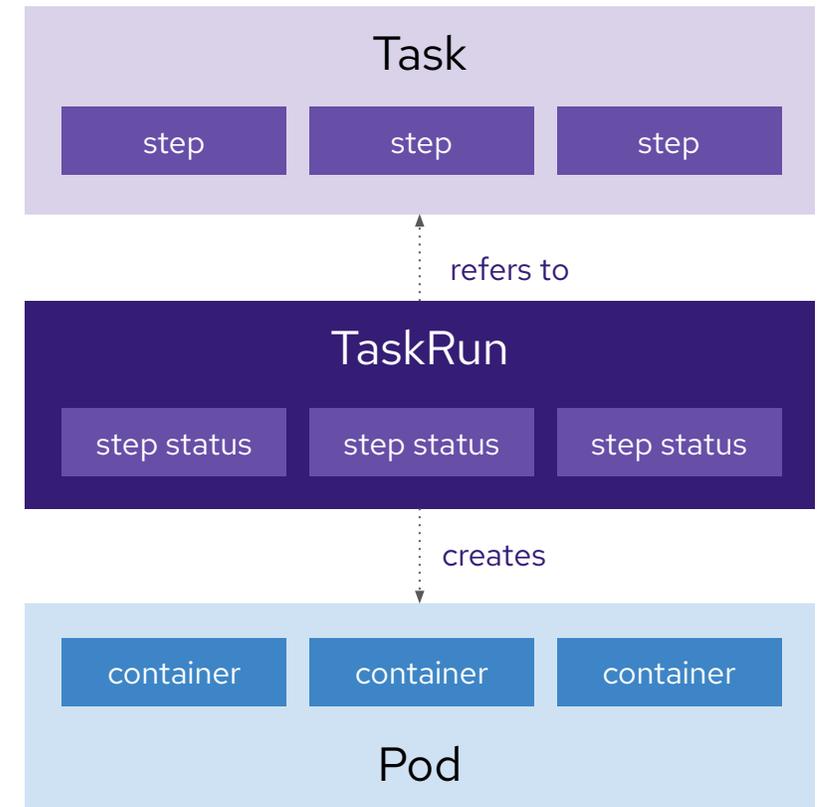
Tekton Hub

Search, discover and install Tekton Tasks

The screenshot shows the Tekton Hub (BETA) interface. At the top, there is a navigation bar with the Tekton Hub logo and a 'Login' link. Below the navigation bar, a large banner reads 'Welcome to Tekton Hub' and 'Discover, search and share reusable Tasks and Pipelines'. The main content area features a search bar and a 'Sort' dropdown menu. On the left side, there are filters for 'Refine By', 'Kind' (Task, Pipeline), 'Support Tier' (Official, Verified, Community), and 'Categories' (Build Tools, CLI, Cloud, Deploy, Image Build, Notification, Others, Test Framework). The main area displays a grid of task cards. Each card includes a star rating, a version number (v0.1), a description, and a 'Updated' timestamp. The tasks shown are: Ansible Runner (4.5 stars), ansible tower cli (2.0 stars), argocd (3.0 stars), aws cli (5.0 stars), Amazon ECR Login (4.0 stars), azure cli (1.0 stars), bentoml (0.0 stars), and Python Black (0.0 stars). Each card also has a 'cli' button and some have additional category buttons like 'ansible', 'deploy', 'aws', 'ecr', 'formatter', and 'python'.

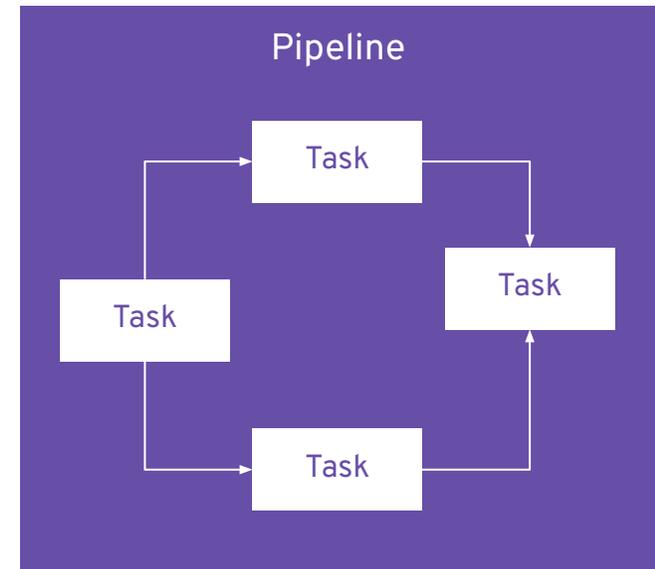
TaskRun

- Runs a Task to completion in a pod
- References or embeds a Task spec
- Provides input to Tasks
 - Parameters
 - Resources
 - Service account
 - Workspaces
- Contains execution status and metadata

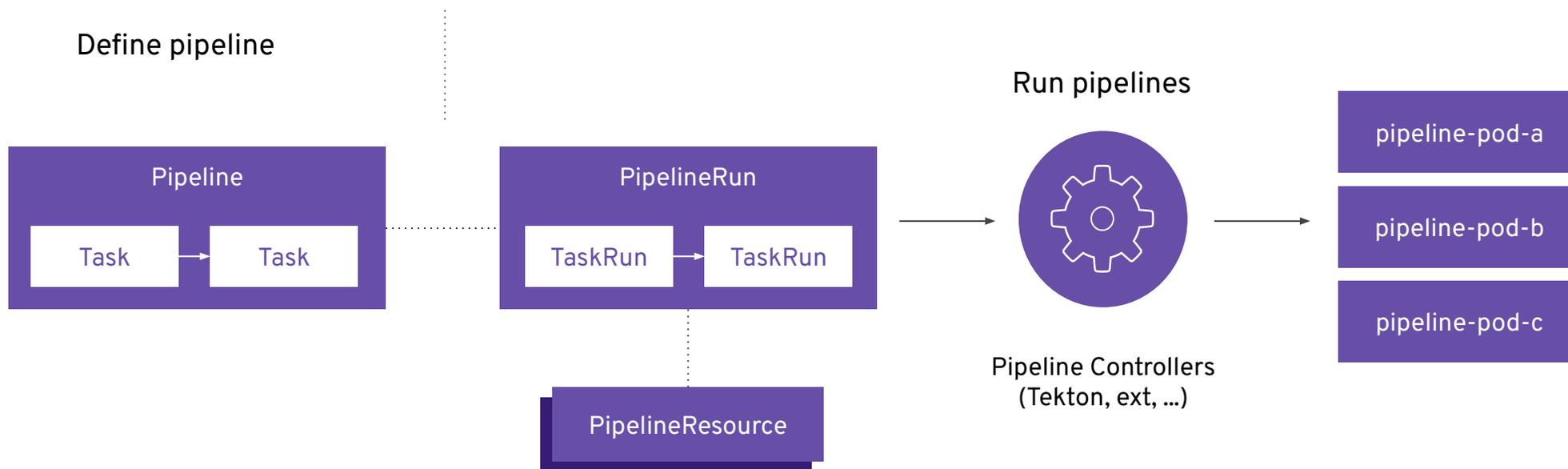


Pipeline

- Define Tasks execution order (graph)
- Inputs and parameters
- Retries tasks
- Conditional task execution
- Workspaces for sharing data between tasks
- Reusable across projects

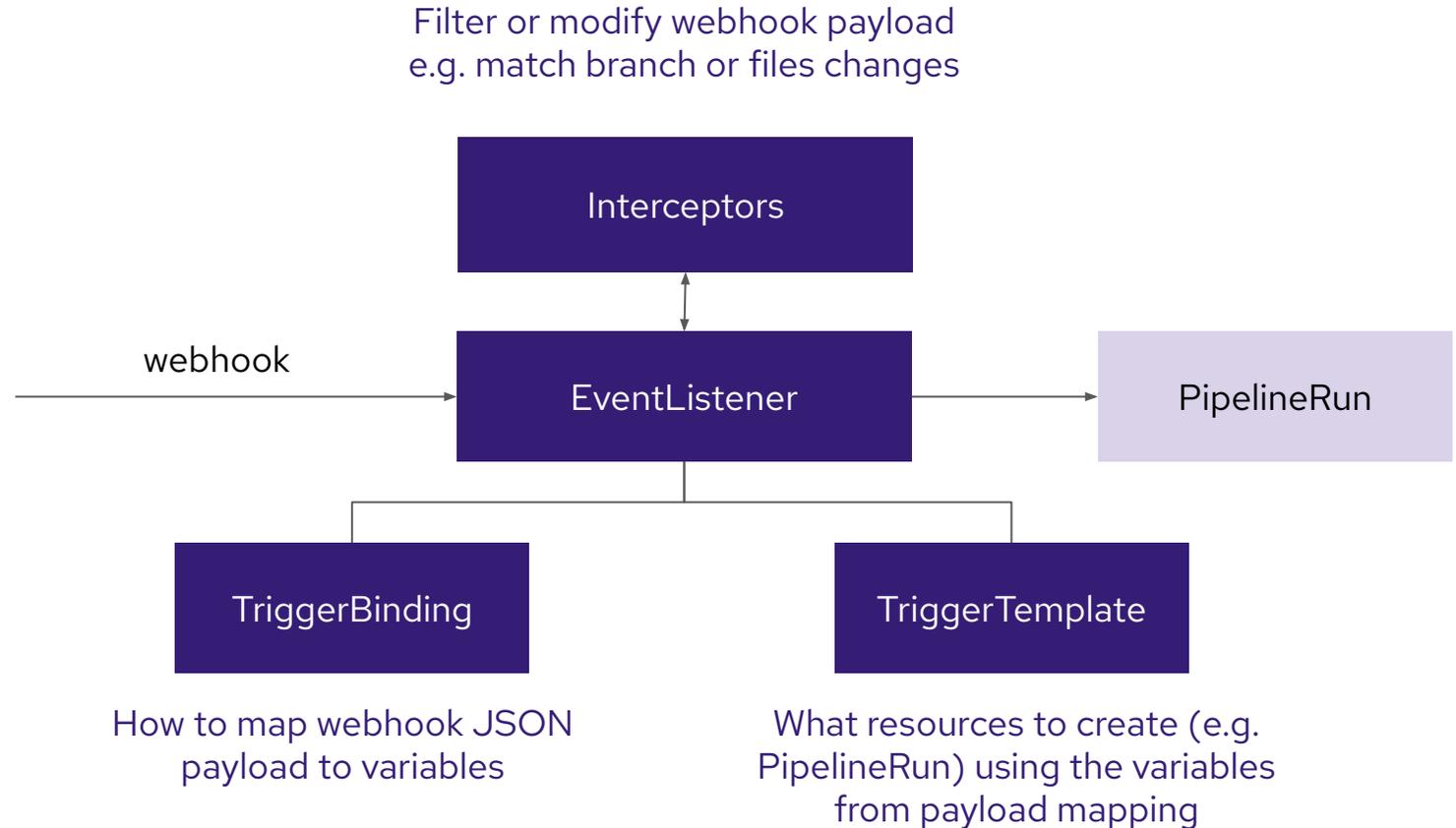


OpenShift Pipelines Architecture



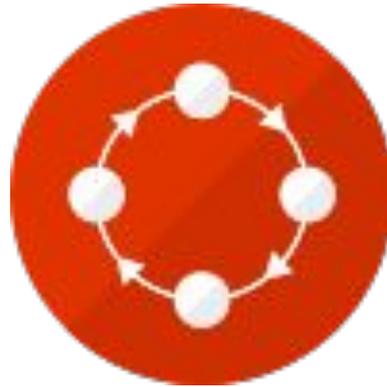
Triggers

Run pipelines based on events like HTTP webhooks on commit, pull request, etc



Hands on

OpenShift
Pipelines



Lab guide
Demo Application

Continuous Integration & Continuous Delivery



OpenShift Pipelines

Kubernetes-native on-demand delivery pipelines



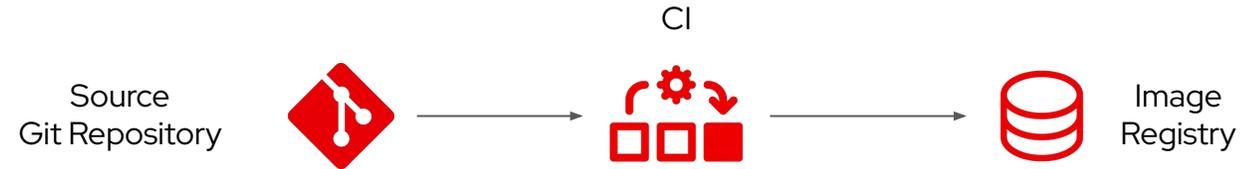
OpenShift GitOps

Declarative GitOps for multi-cluster continuous delivery

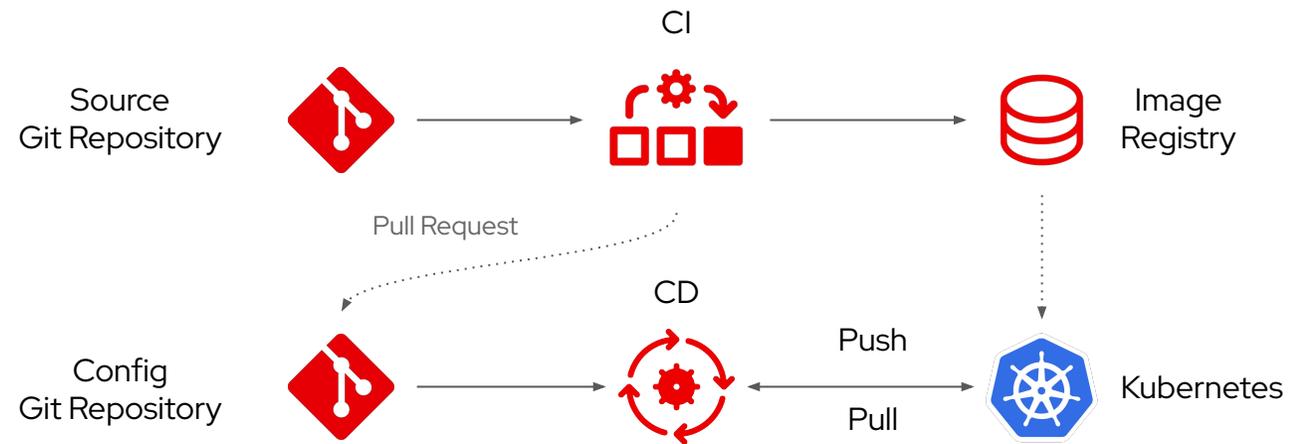
Ecosystem Integrations



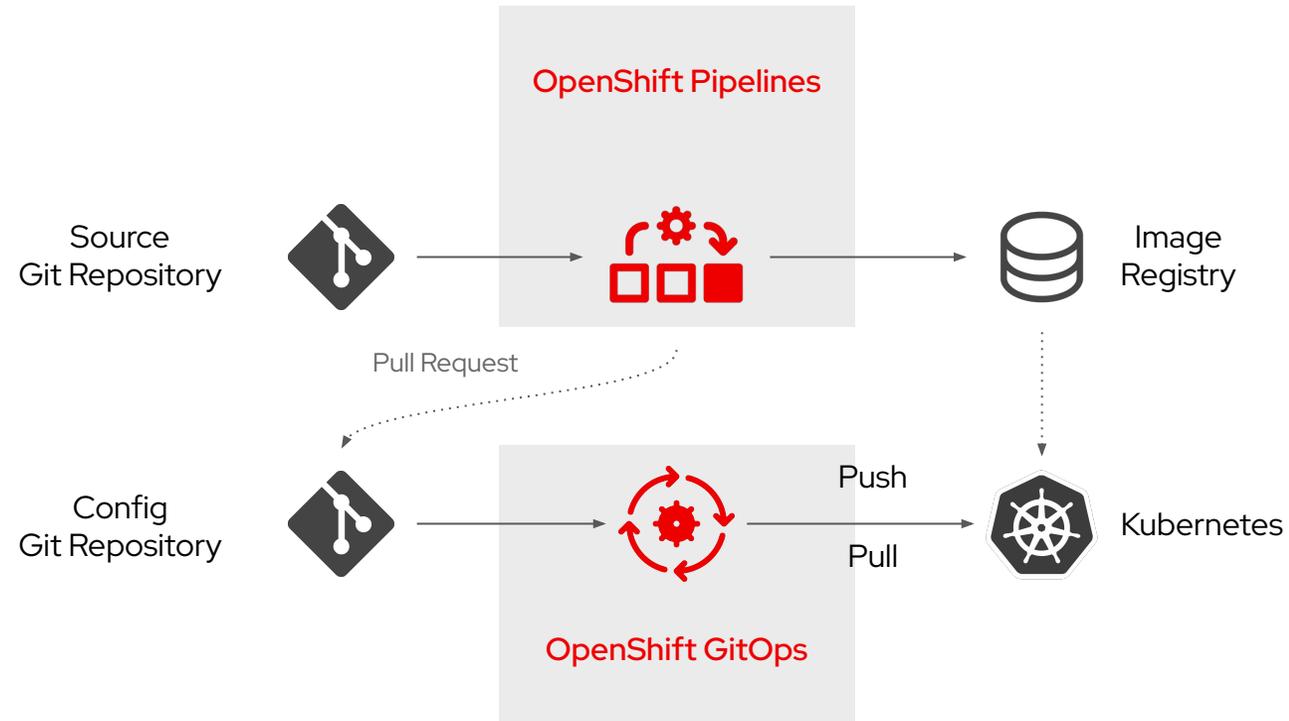
Application Delivery Model



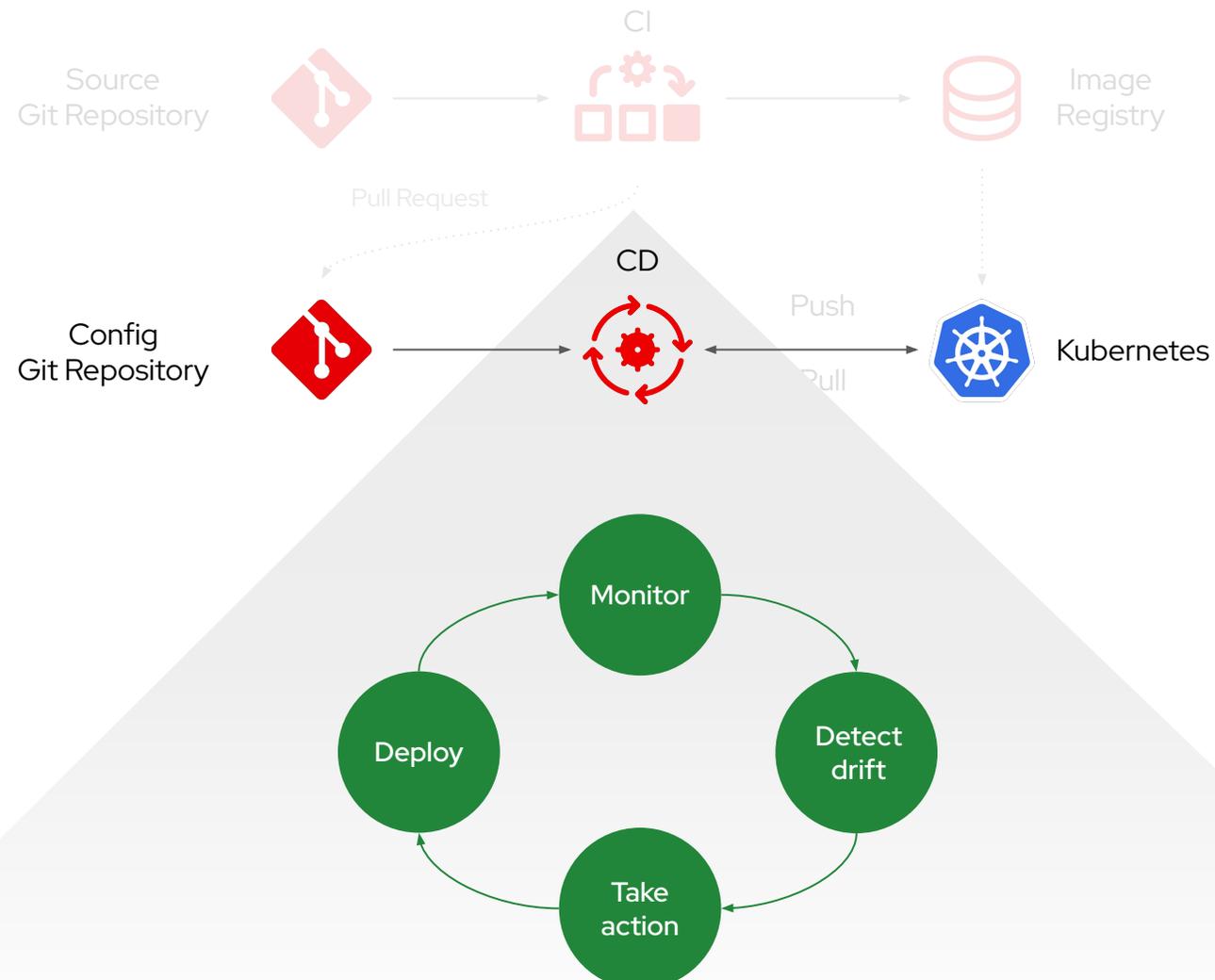
Application Delivery Model



Application Delivery Model



Application Delivery Model

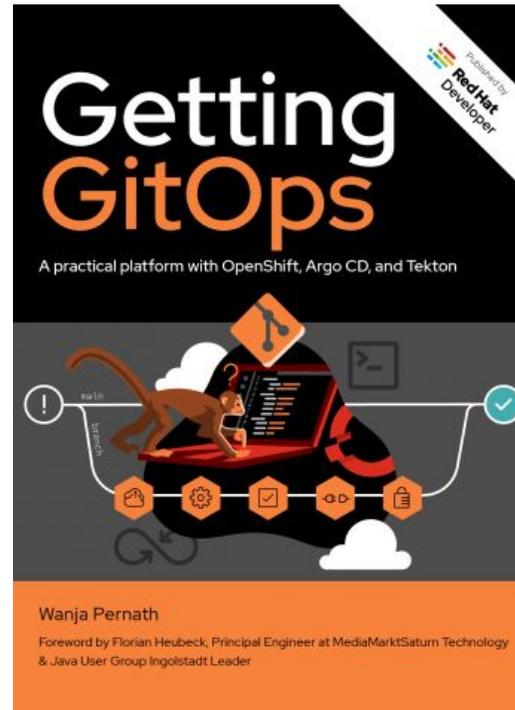
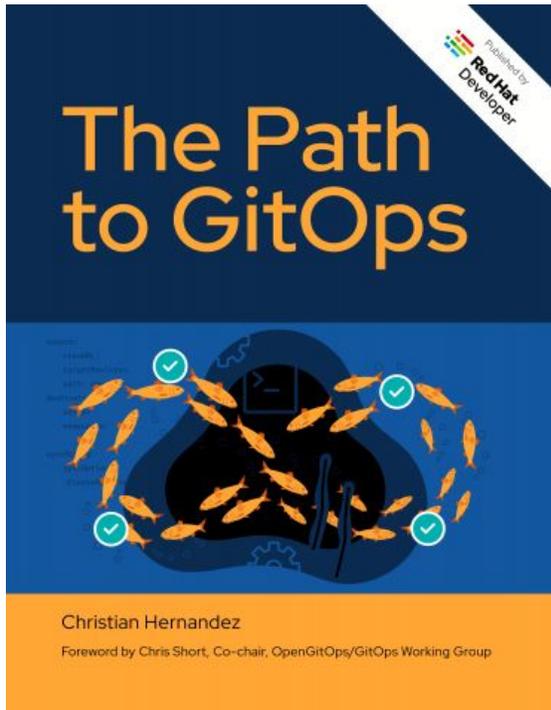


Questions?





Books



What we discussed today



- ▶ OpenShift GitOps
 - Git is the single source of truth
- ▶ OpenShift Pipelines
 - From Source code to deployment and more
- ▶ Application Delivery Model
 - Combined both together

Thank you