Octopus Deploy

Mastering Kubernetes Workflows and Deployments with the Argo Suite

Shipped 2024

Kostis Kapelonis | November 2024

Kostis Kapelonis

Developer Advocate (Octopus Deploy/Codefresh)

Argo Maintainer (Argo CD, Argo Rollouts)

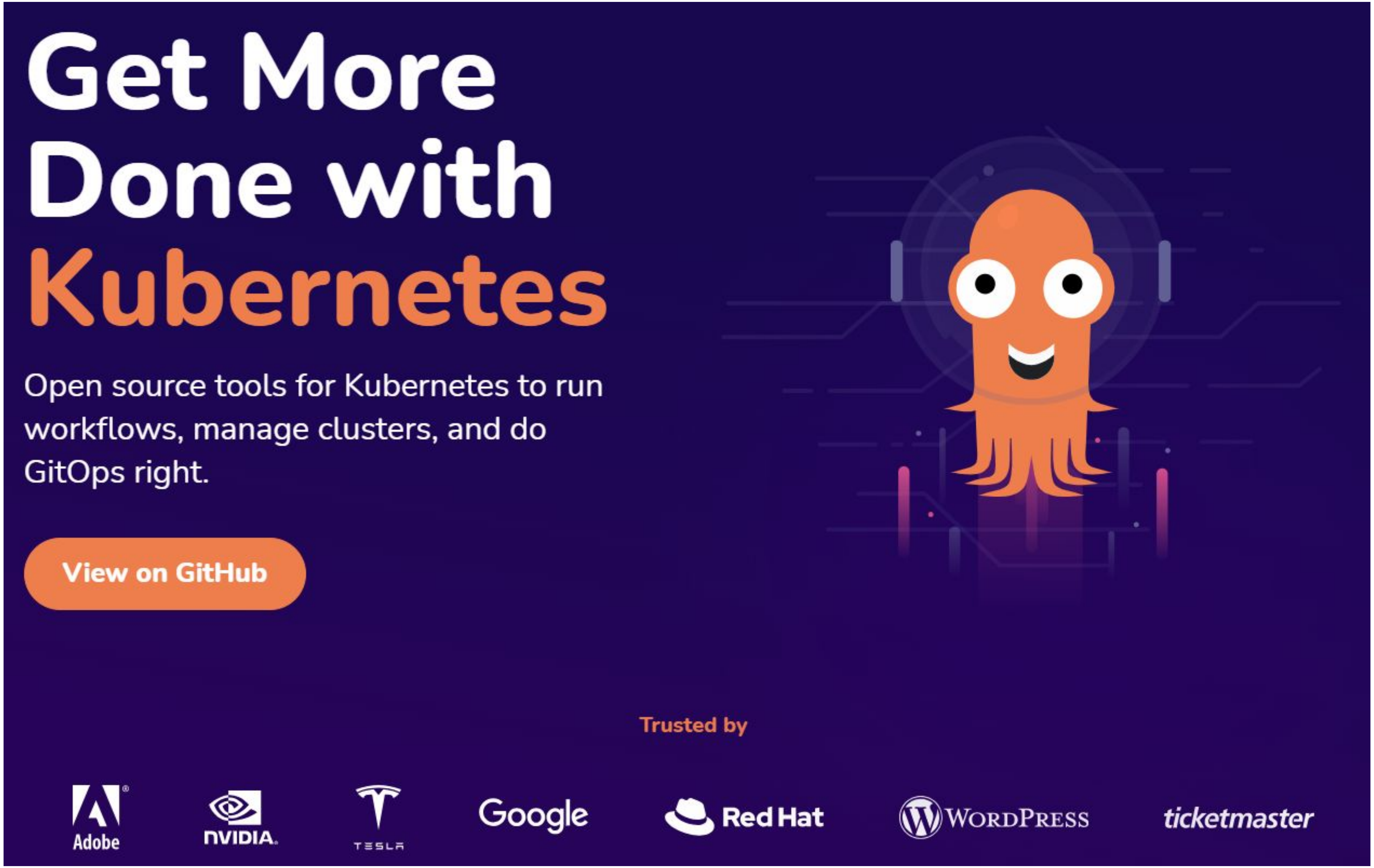
Co-author GitOps certification

http://learning.codefresh.io

Topics

1. Project Intro
2. Argo Workflows
3. Argo CD
4. Argo Rollouts
5. Argo Events
6. Use Cases

Introduction



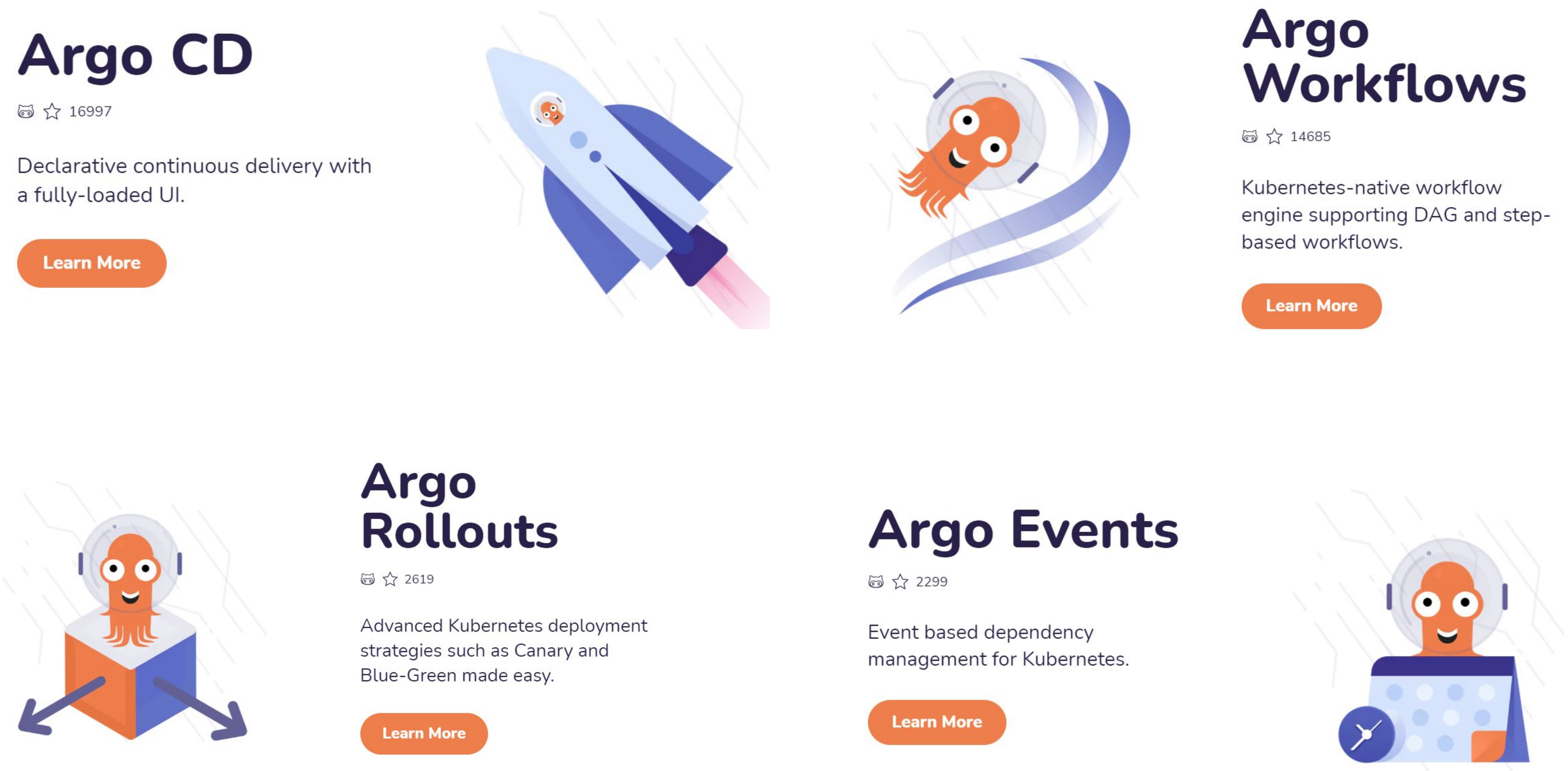
Get More Done with Kubernetes

Open source tools for Kubernetes to run workflows, manage clusters, and do GitOps right.

View on GitHub

Trusted by

https://argoproj.github.io/



Argo CD

☆ 16997

Declarative continuous delivery with a fully-loaded UI.

Argo Workflows

☆ 14685

Kubernetes-native workflow engine supporting DAG and step-based workflows.

Argo Rollouts

☆ 2619

Advanced Kubernetes deployment strategies such as Canary and Blue-Green made easy.

Argo Events

☆ 2299

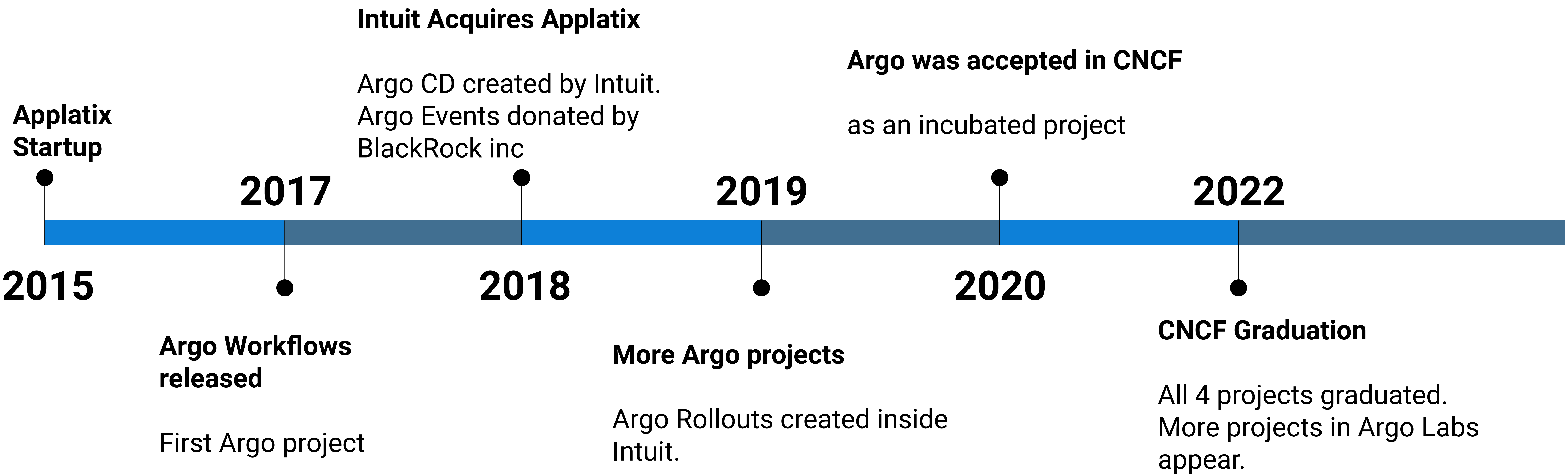
Event based dependency management for Kubernetes.

What the Argo Projects do

Argo CD	→	Deploy your App using Gitops
Argo Workflows	→	Execute a job/process
Argo Events	→	Monitor/create events
Argo Rollouts	→	Avoid downtime when deploying

All 4 projects are self-contained

- There are NO dependencies between the 4 projects
- You can use each project on its own
- There are several common integrations
- Some shared code parts (e.g. notifications, SSO)
- You get extra value by combining them
- It is possible to use all 4 of them (explained later in Use cases)



2015

Applatix Startup

2017

Argo Workflows released

First Argo project

2018

Intuit Acquires Applatix

Argo CD created by Intuit.
Argo Events donated by BlackRock inc

2019

More Argo projects

Argo Rollouts created inside Intuit.

2020

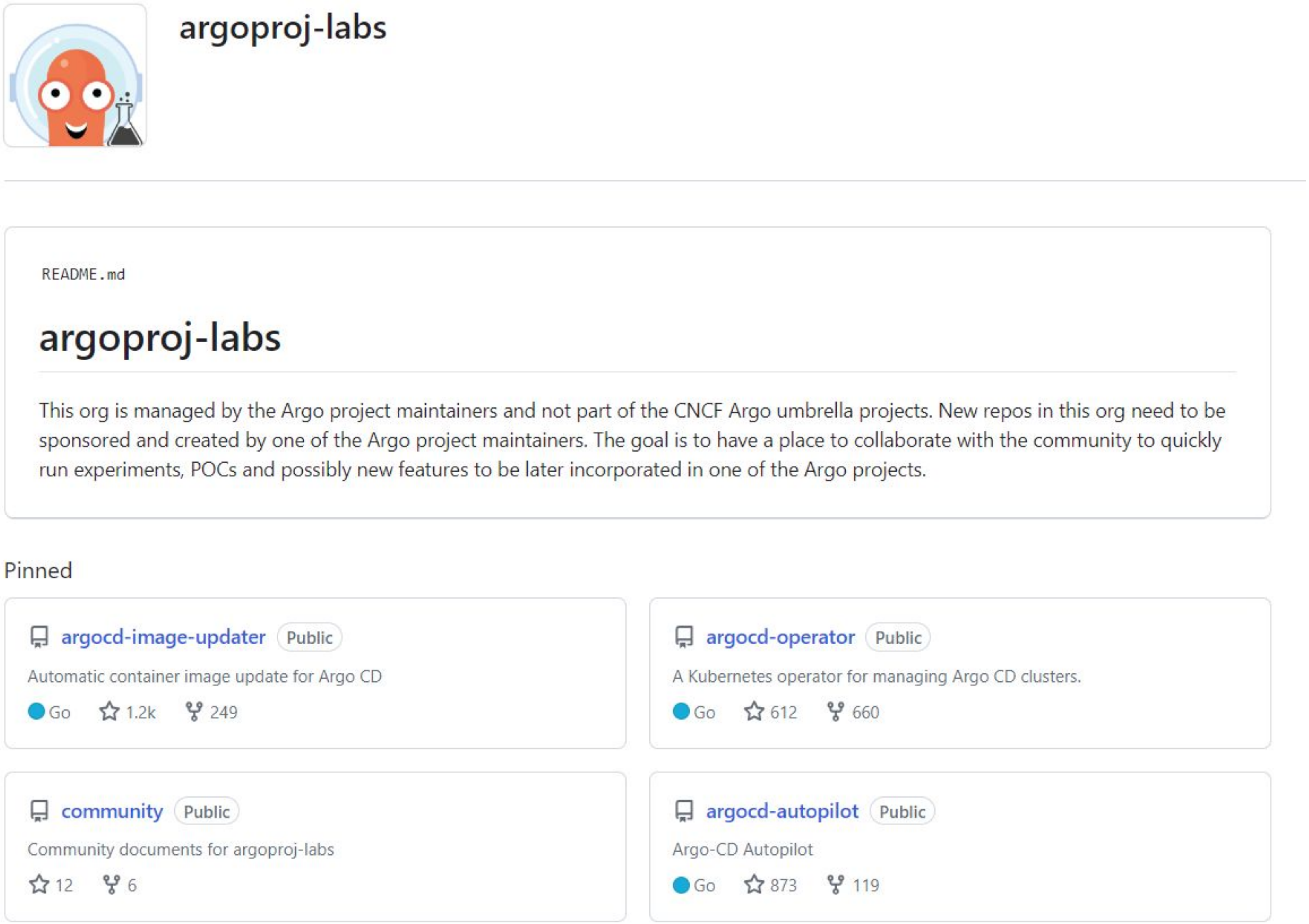
Argo was accepted in CNCF

as an incubated project

2022

CNCF Graduation

All 4 projects graduated.
More projects in Argo Labs appear.



argoproj-labs

README.md

argoproj-labs

This org is managed by the Argo project maintainers and not part of the CNCF Argo umbrella projects. New repos in this org need to be sponsored and created by one of the Argo project maintainers. The goal is to have a place to collaborate with the community to quickly run experiments, POCs and possibly new features to be later incorporated in one of the Argo projects.

Pinned

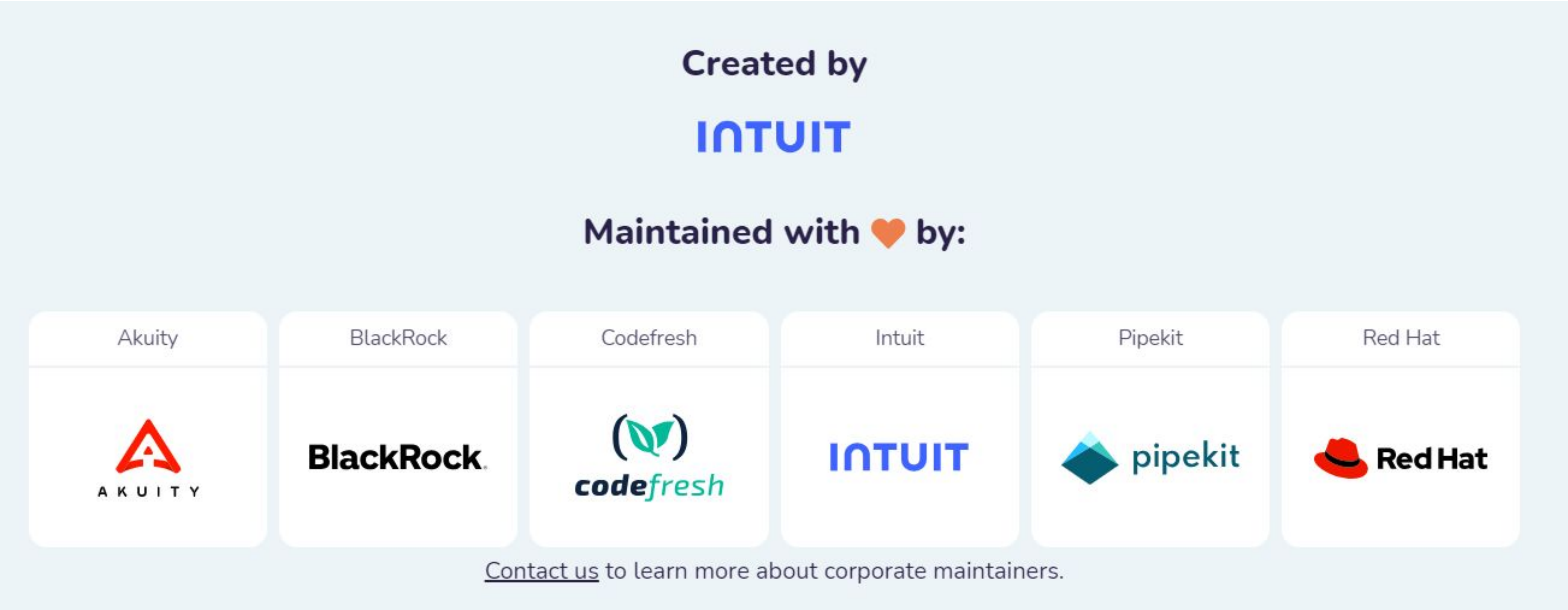
argocd-image-updater Public
Automatic container image update for Argo CD
● Go ☆ 1.2k ⑂ 249

argocd-operator Public
A Kubernetes operator for managing Argo CD clusters.
● Go ☆ 612 ⑂ 660

community Public
Community documents for argoproj-labs
☆ 12 ⑂ 6

argocd-autopilot Public
Argo-CD Autopilot
● Go ☆ 873 ⑂ 119

https://github.com/argoproj-labs



Created by

INTUIT

Maintained with ♥ by:

Akuity

BlackRock

Codefresh

Intuit

Pipekit

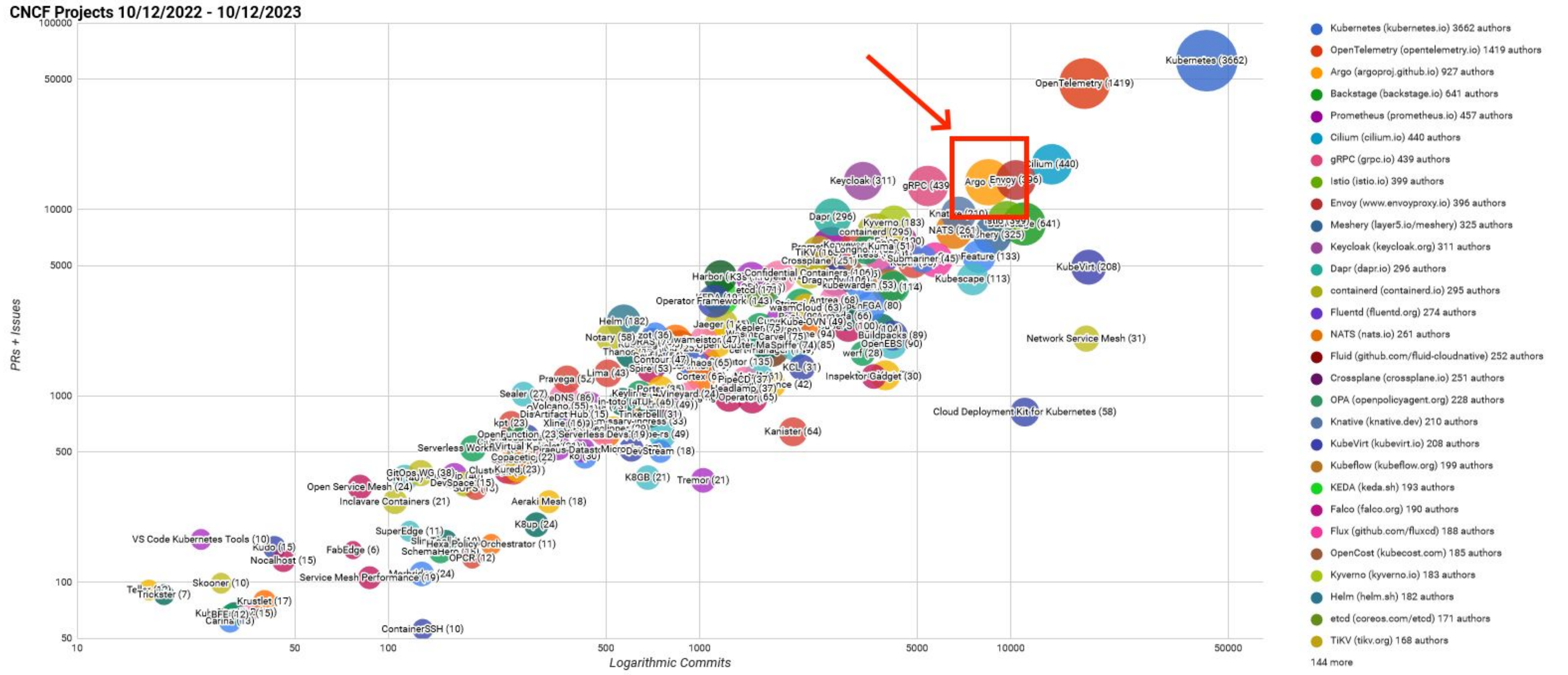
Red Hat

Contact us to learn more about corporate maintainers.

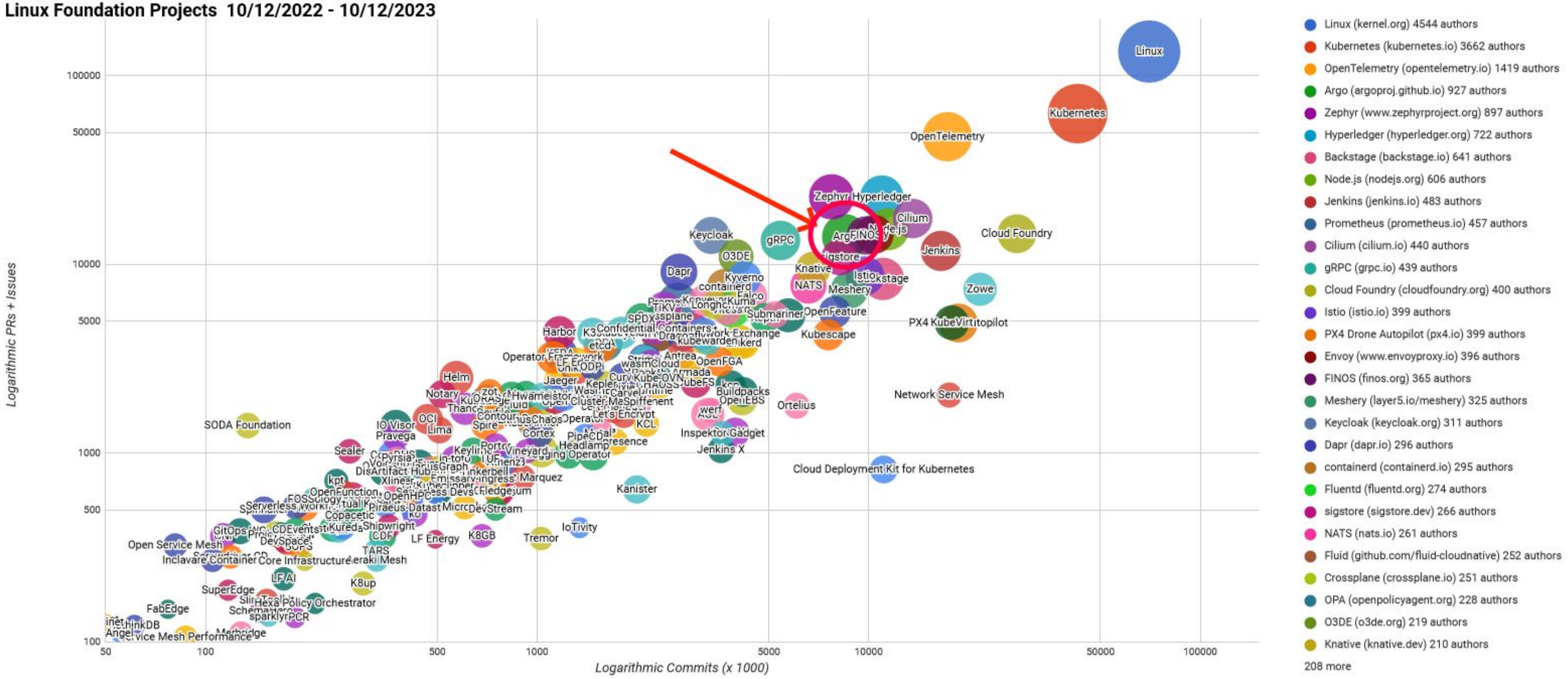
Codefresh was acquired by Octopus Deploy in 2024

Popularity

Popular/Active CNCF projects



Popular/Active Linux Foundation projects

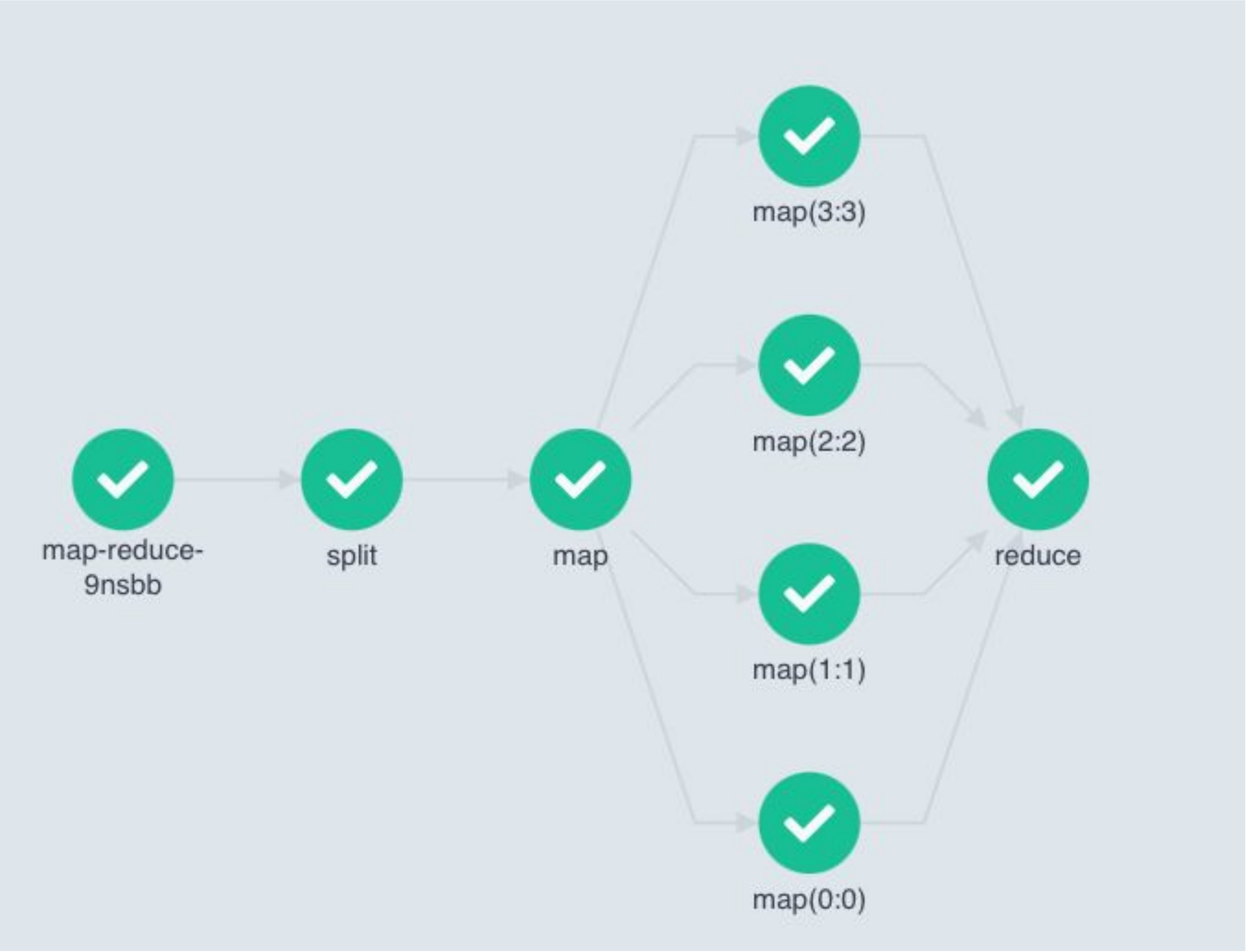


Linux Foundation Projects 10/12/2022 - 10/12/2023

Argo Workflows

Argo Workflows

- The original Argo Project
- Workflows/processes
- Kubernetes native
- Alternative to Tekton, Apache Airflow
- Can be used for CI/CD, ML, ETL, Batch jobs etc



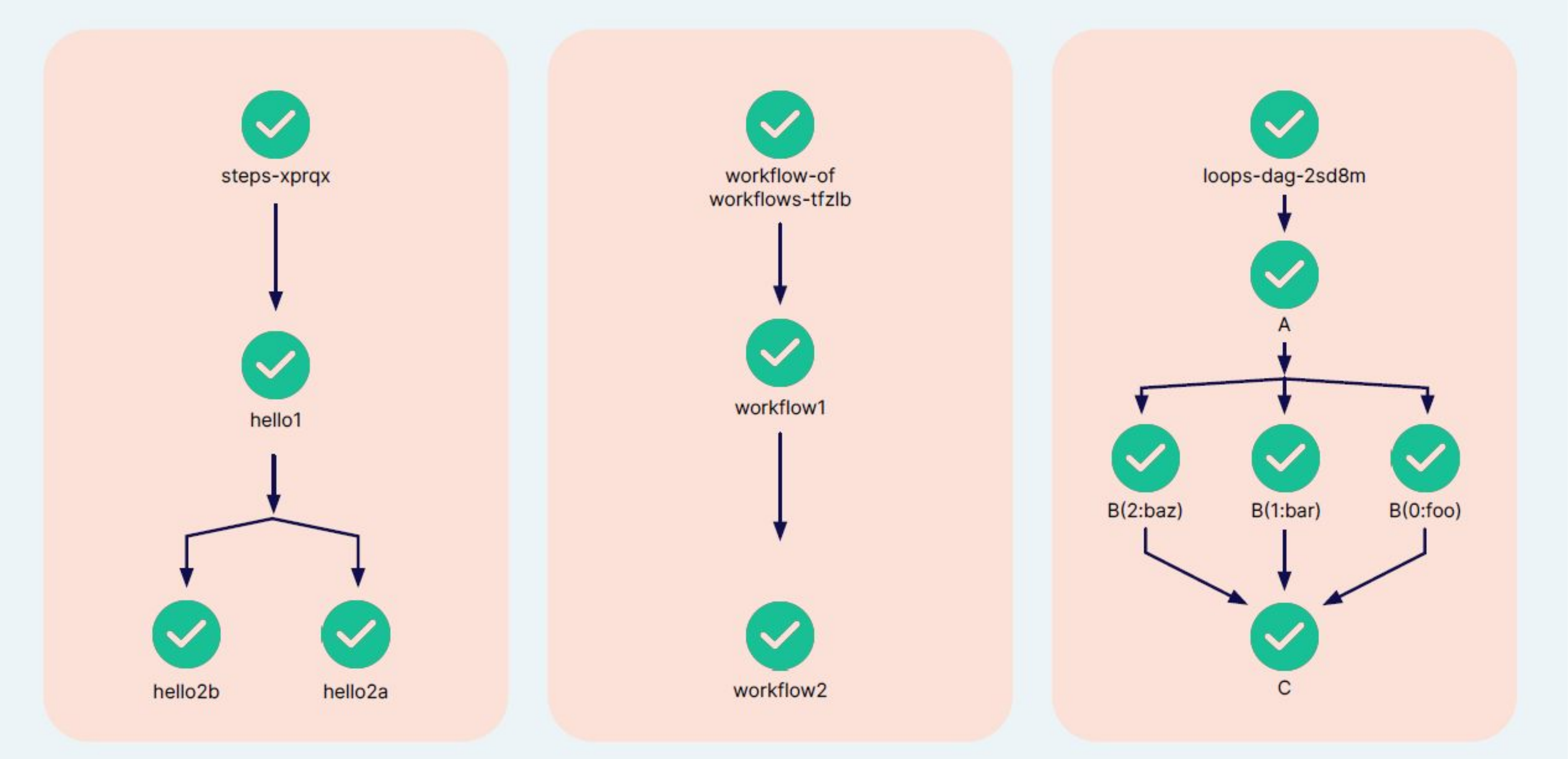
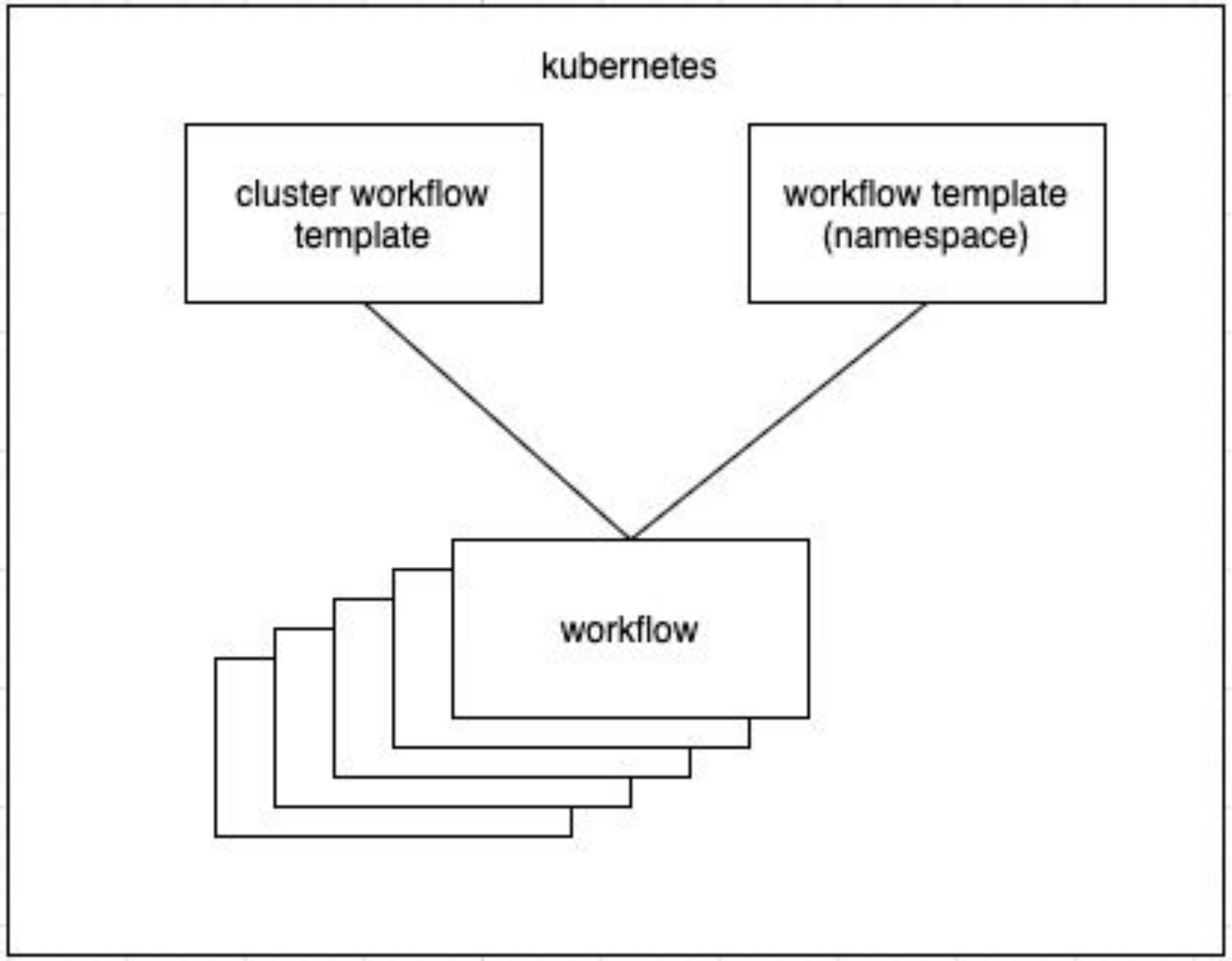
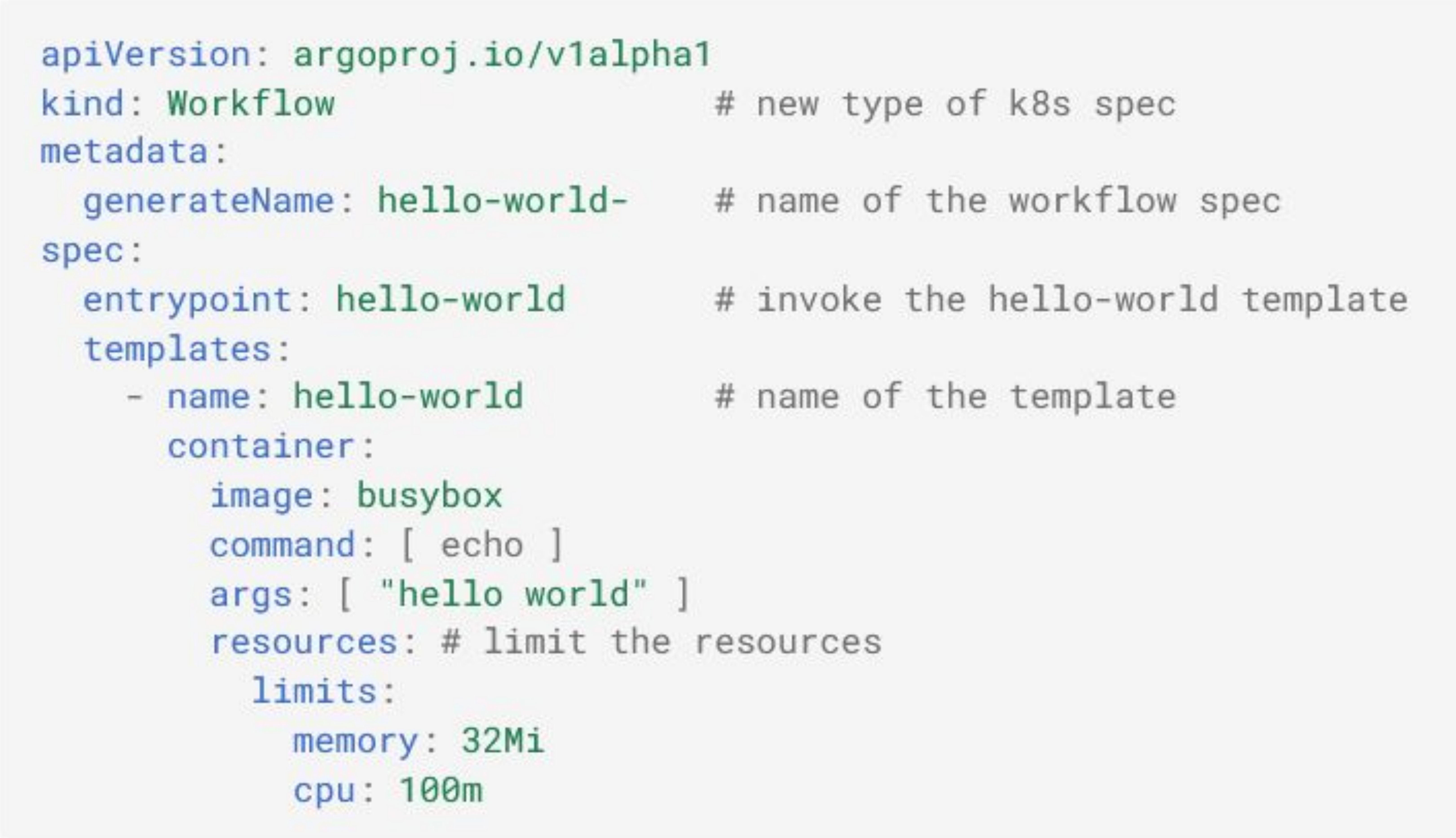


Image credit: pipekit.io

Argo Workflows entities

- **Workflow** - running instance
- **Workflow template** - definition of Workflow
- **CronWorkflows** - on a schedule
- **Cluster Workflow template** - not constrained on a single namespace

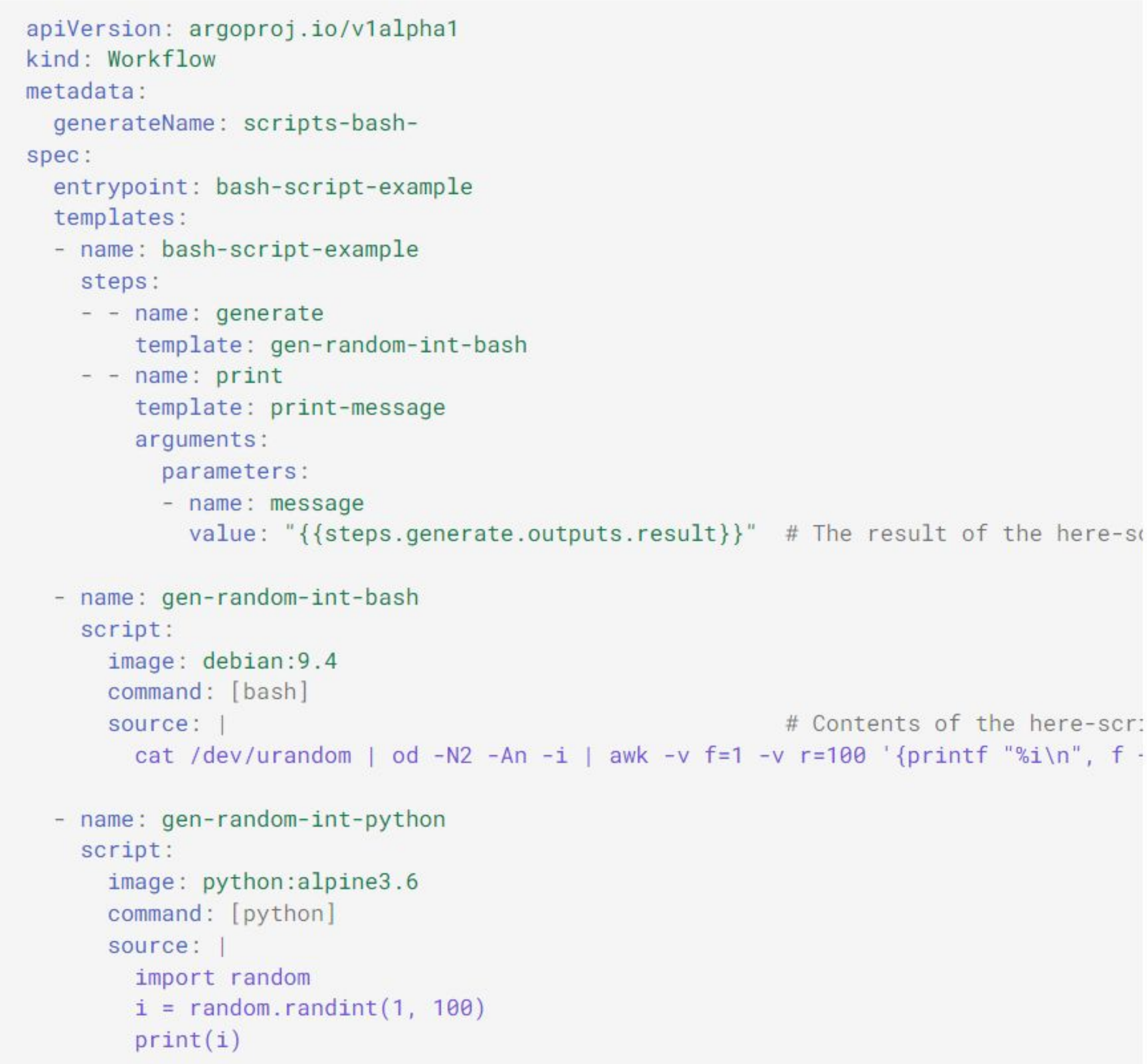




```yaml
apiVersion: argoproj.io/v1alpha1
kind: Workflow                  # new type of k8s spec
metadata:
  generateName: hello-world-    # name of the workflow spec
spec:
  entrypoint: hello-world       # invoke the hello-world template
  templates:
    - name: hello-world         # name of the template
      container:
        image: busybox
        command: [ echo ]
        args: [ "hello world" ]
        resources: # limit the resources
          limits:
            memory: 32Mi
            cpu: 100m
```

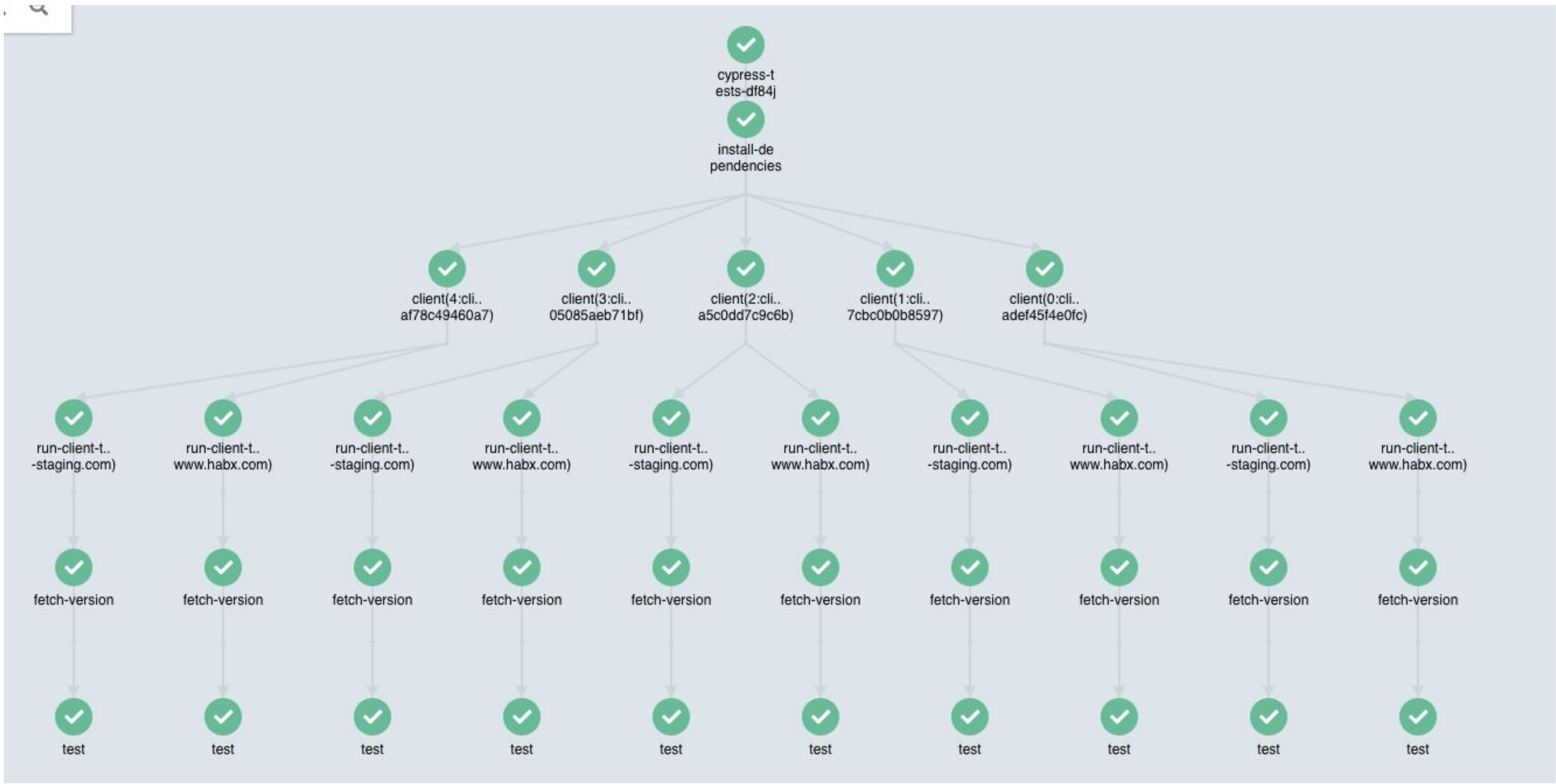
Step-per-pod

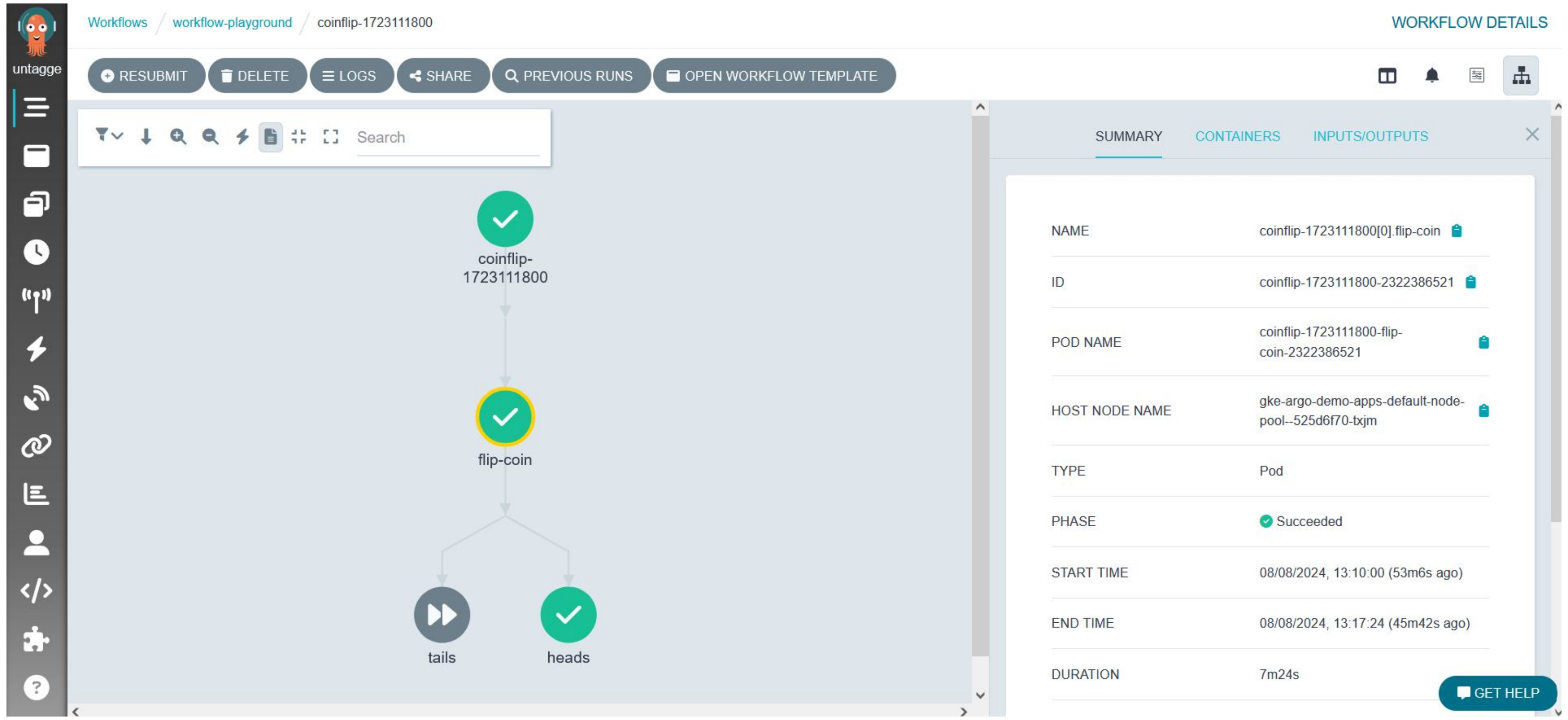
- Each step runs on a separate container/pod
- Gain all the advantages of Kubernetes auto-scaling, observability and CRD management



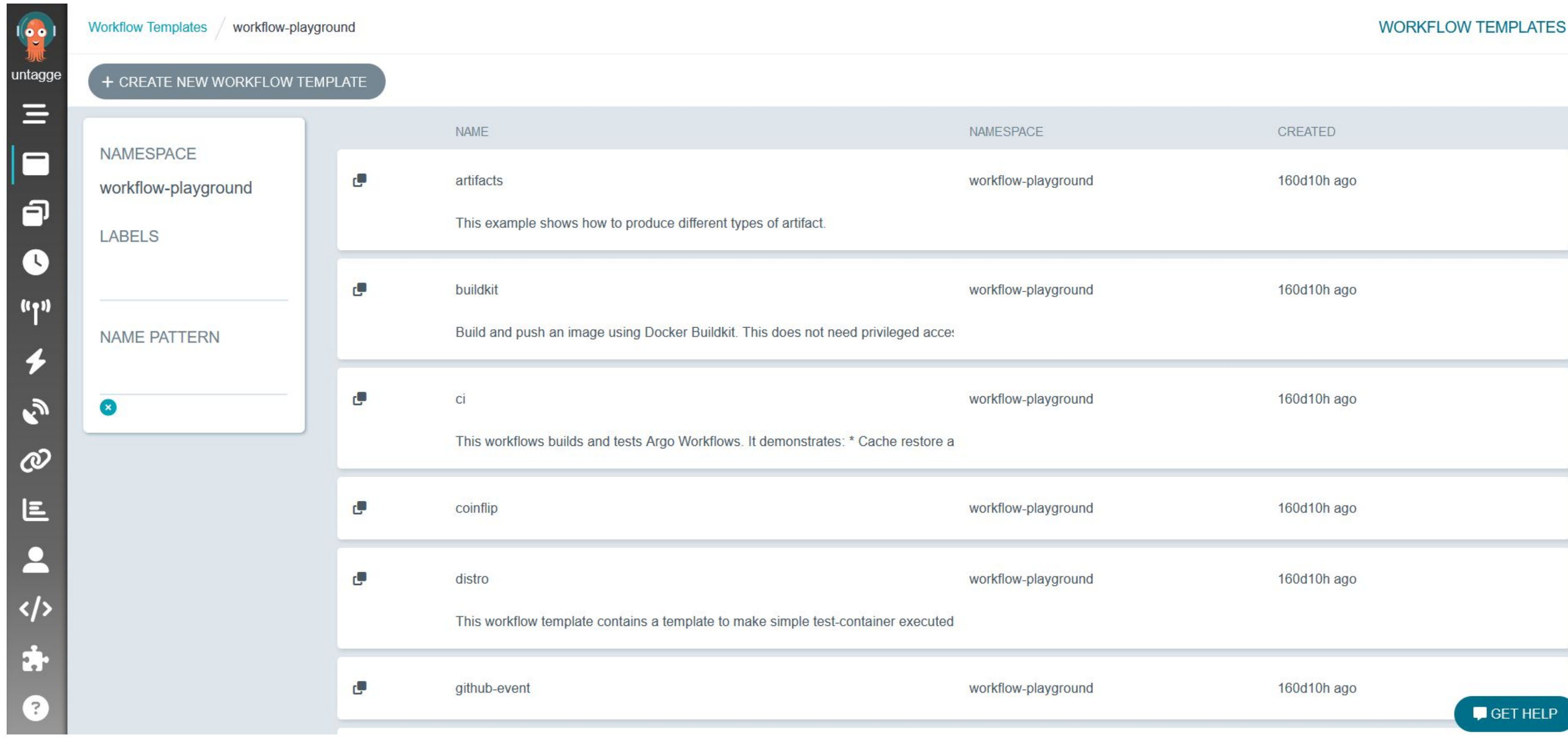
```yaml
apiVersion: argoproj.io/v1alpha1
kind: Workflow
metadata:
  generateName: scripts-bash-
spec:
  entrypoint: bash-script-example
  templates:
  - name: bash-script-example
    steps:
    - - name: generate
        template: gen-random-int-bash
    - - name: print
        template: print-message
        arguments:
          parameters:
          - name: message
            value: "{{steps.generate.outputs.result}}"  # The result of the here-s

  - name: gen-random-int-bash
    script:
      image: debian:9.4
      command: [bash]
      source: |                                         # Contents of the here-scr
        cat /dev/urandom | od -N2 -An -i | awk -v f=1 -v r=100 '{printf "%i\n", f -

  - name: gen-random-int-python
    script:
      image: python:alpine3.6
      command: [python]
      source: |
        import random
        i = random.randint(1, 100)
        print(i)
```

CI/CD example

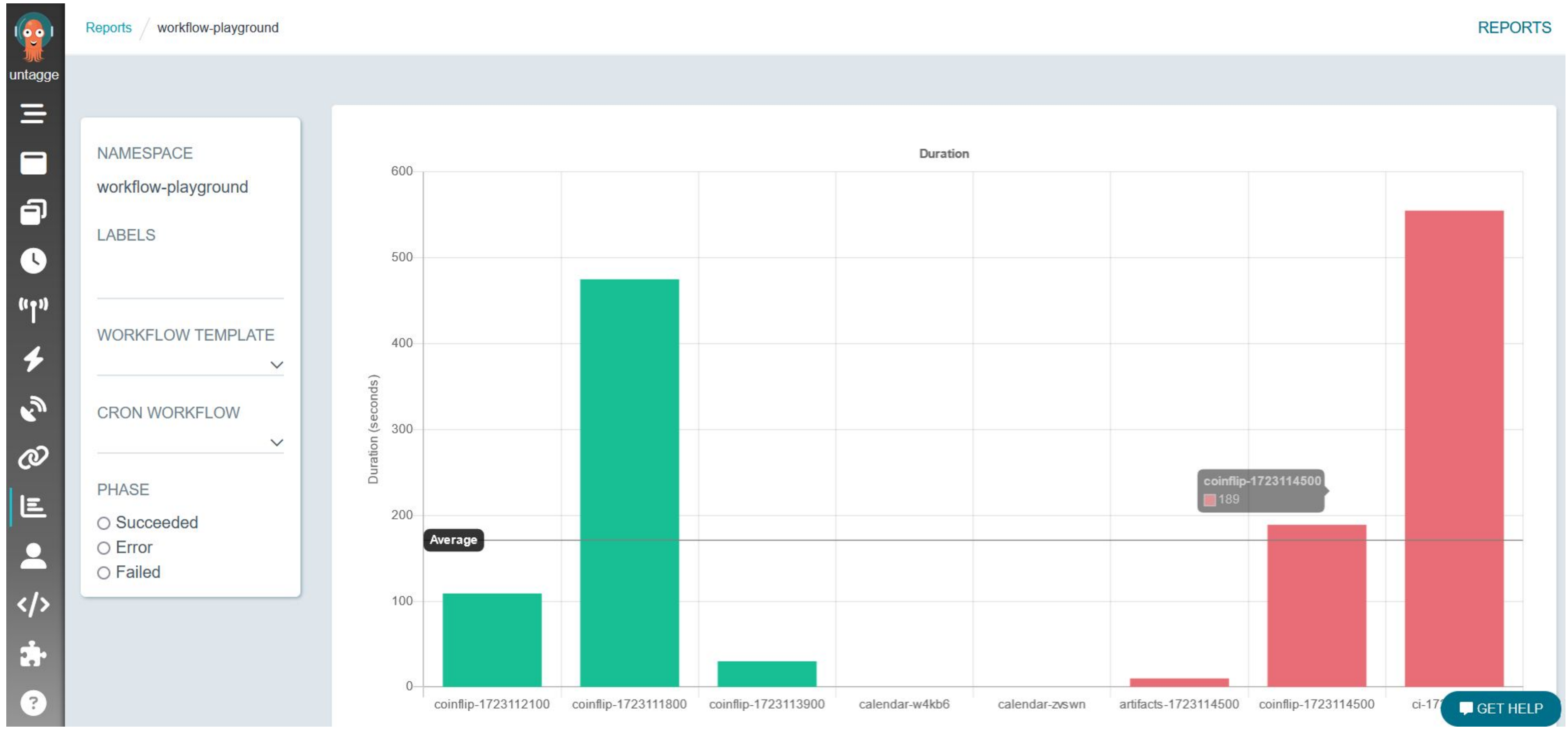


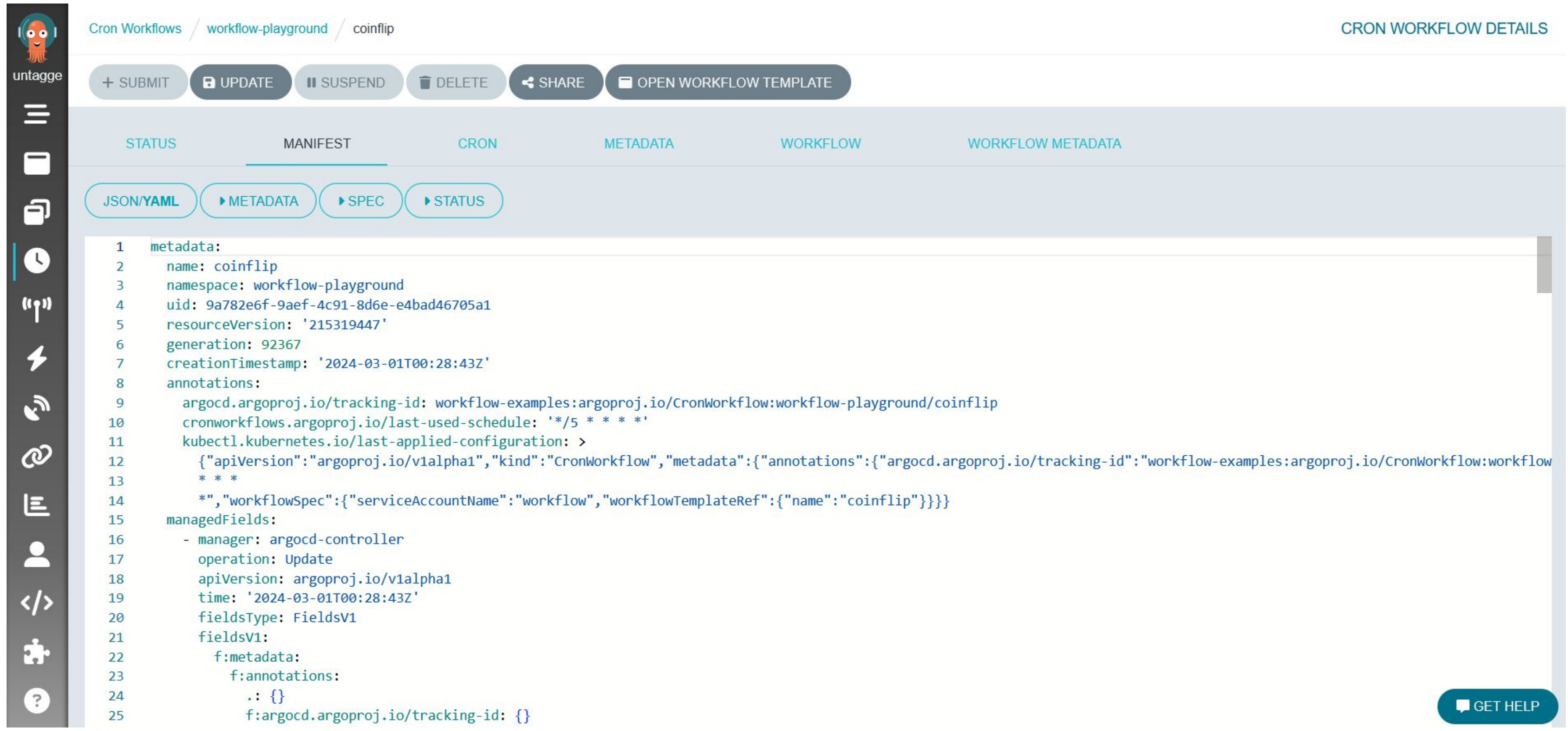


NAME	coinflip-1723111800[0].flip-coin
ID	coinflip-1723111800-2322386521
POD NAME	coinflip-1723111800-flip-coin-2322386521
HOST NODE NAME	gke-argo-demo-apps-default-node-pool--525d6f70-txjm
TYPE	Pod
PHASE	Succeeded
START TIME	08/08/2024, 13:10:00 (53m6s ago)
END TIME	08/08/2024, 13:17:24 (45m42s ago)
DURATION	7m24s



NAME	NAMESPACE	CREATED
artifacts This example shows how to produce different types of artifact.	workflow-playground	160d10h ago
buildkit Build and push an image using Docker Buildkit. This does not need privileged acce:	workflow-playground	160d10h ago
ci This workflows builds and tests Argo Workflows. It demonstrates: * Cache restore a	workflow-playground	160d10h ago
coinflip	workflow-playground	160d10h ago
distro This workflow template contains a template to make simple test-container executed	workflow-playground	160d10h ago
github-event	workflow-playground	160d10h ago

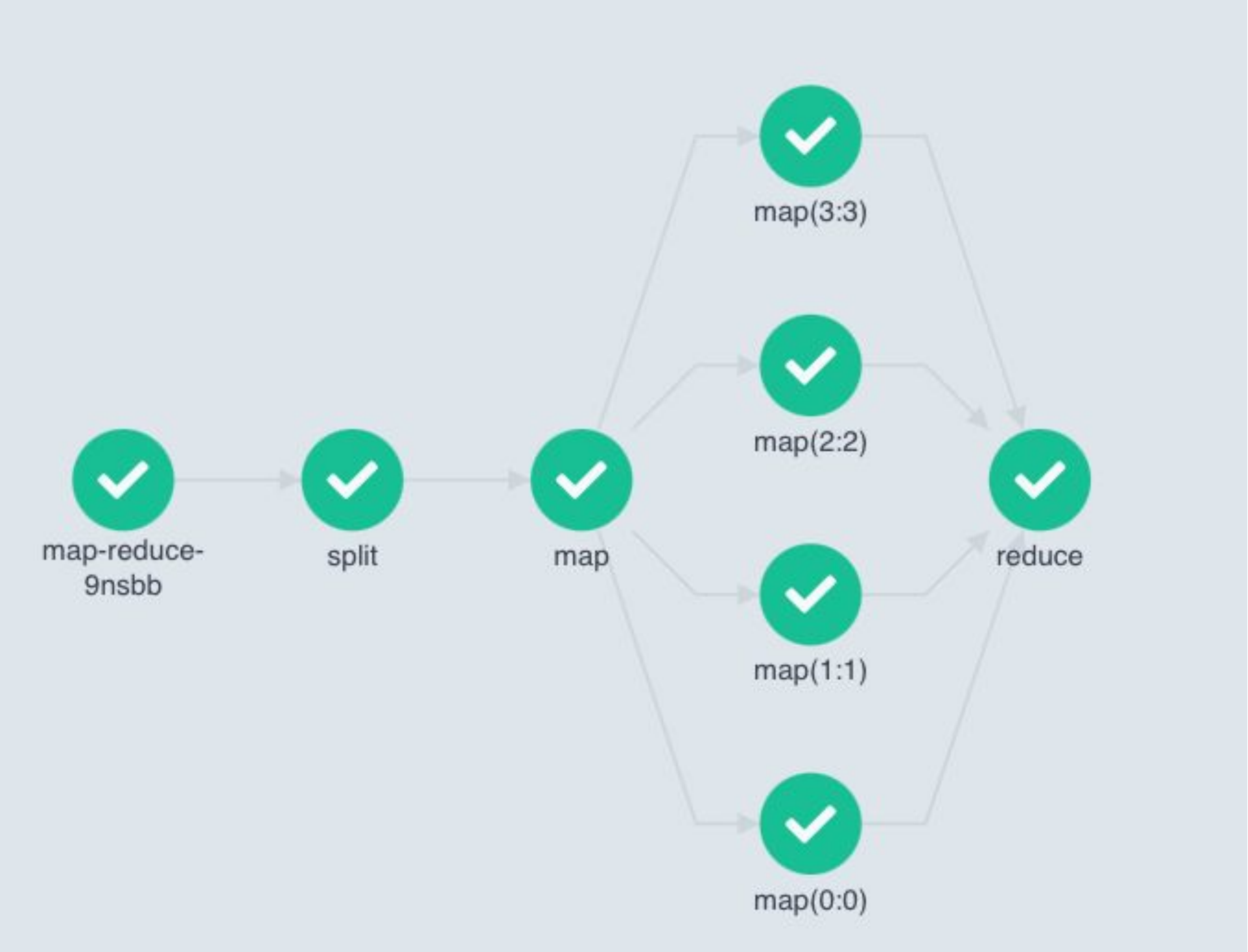




```
metadata:
  name: coinflip
  namespace: workflow-playground
  uid: 9a782e6f-9aef-4c91-8d6e-e4bad46705a1
  resourceVersion: '215319447'
  generation: 92367
  creationTimestamp: '2024-03-01T00:28:43Z'
  annotations:
    argocd.argoproj.io/tracking-id: workflow-examples:argoproj.io/CronWorkflow:workflow-playground/coinflip
    cronworkflows.argoproj.io/last-used-schedule: '*/5 * * * *'
    kubectl.kubernetes.io/last-applied-configuration: >
      {"apiVersion":"argoproj.io/v1alpha1","kind":"CronWorkflow","metadata":{"annotations":{"argocd.argoproj.io/tracking-id":"workflow-examples:argoproj.io/CronWorkflow:workflow
      * * *
      *","workflowSpec":{"serviceAccountName":"workflow","workflowTemplateRef":{"name":"coinflip"}}}}
  managedFields:
    - manager: argocd-controller
      operation: Update
      apiVersion: argoproj.io/v1alpha1
      time: '2024-03-01T00:28:43Z'
      fieldsType: FieldsV1
      fieldsV1:
        f:metadata:
          f:annotations:
            .: {}
            f:argocd.argoproj.io/tracking-id: {}
```

Argo Workflows - other features

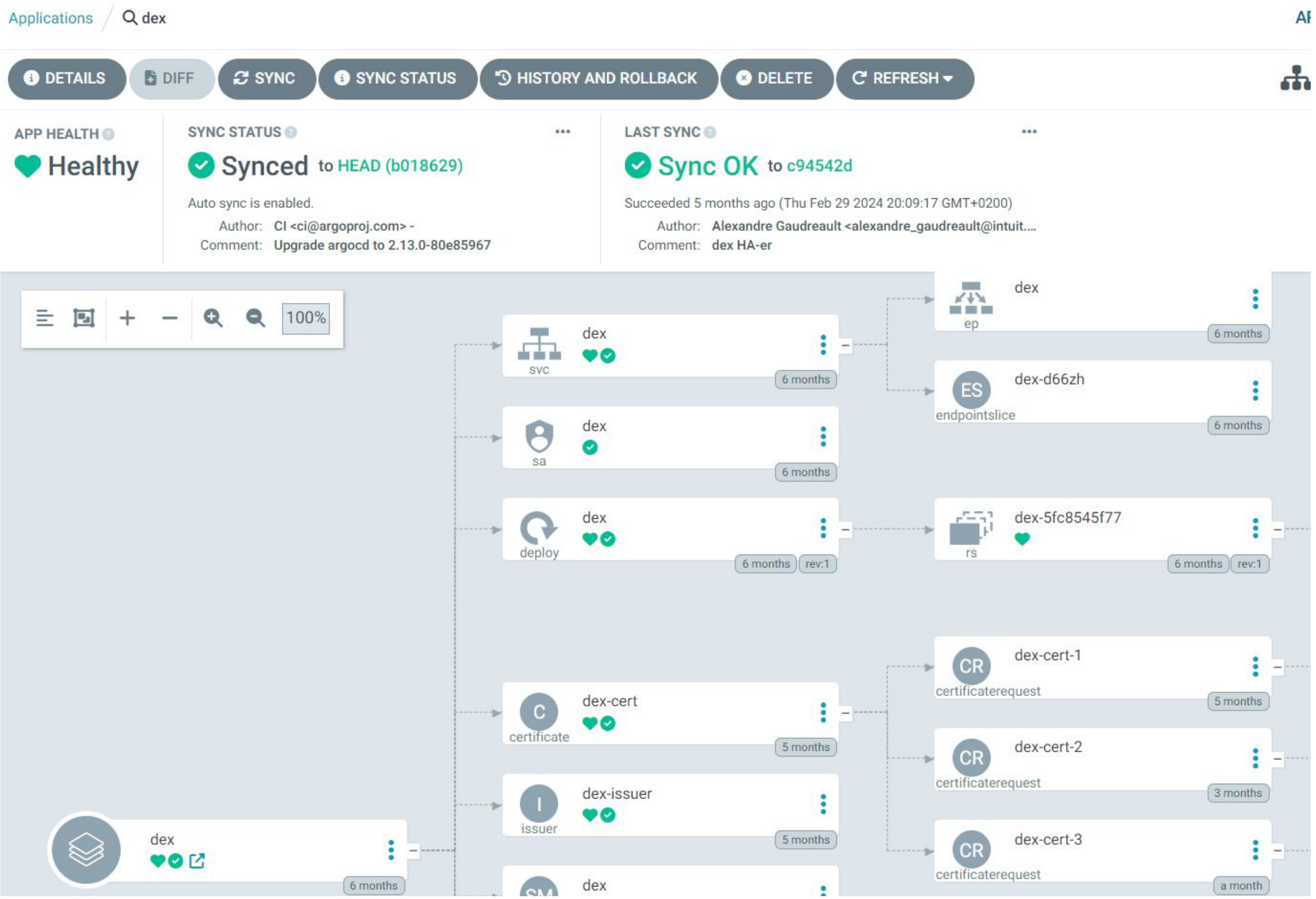
- Artifact storage/retrieval
- Workflow Archiving
- CLI/API and Analytics
- Retry mechanism/ Timeouts
- Suspend/resume
- Loops/Conditionals
- SSO/RBAC



Argo CD

Argo CD

- Deploys applications
- Kubernetes native
- Supports Helm/Kustomize
- Health status analysis
- Multi-tenant/RBAC

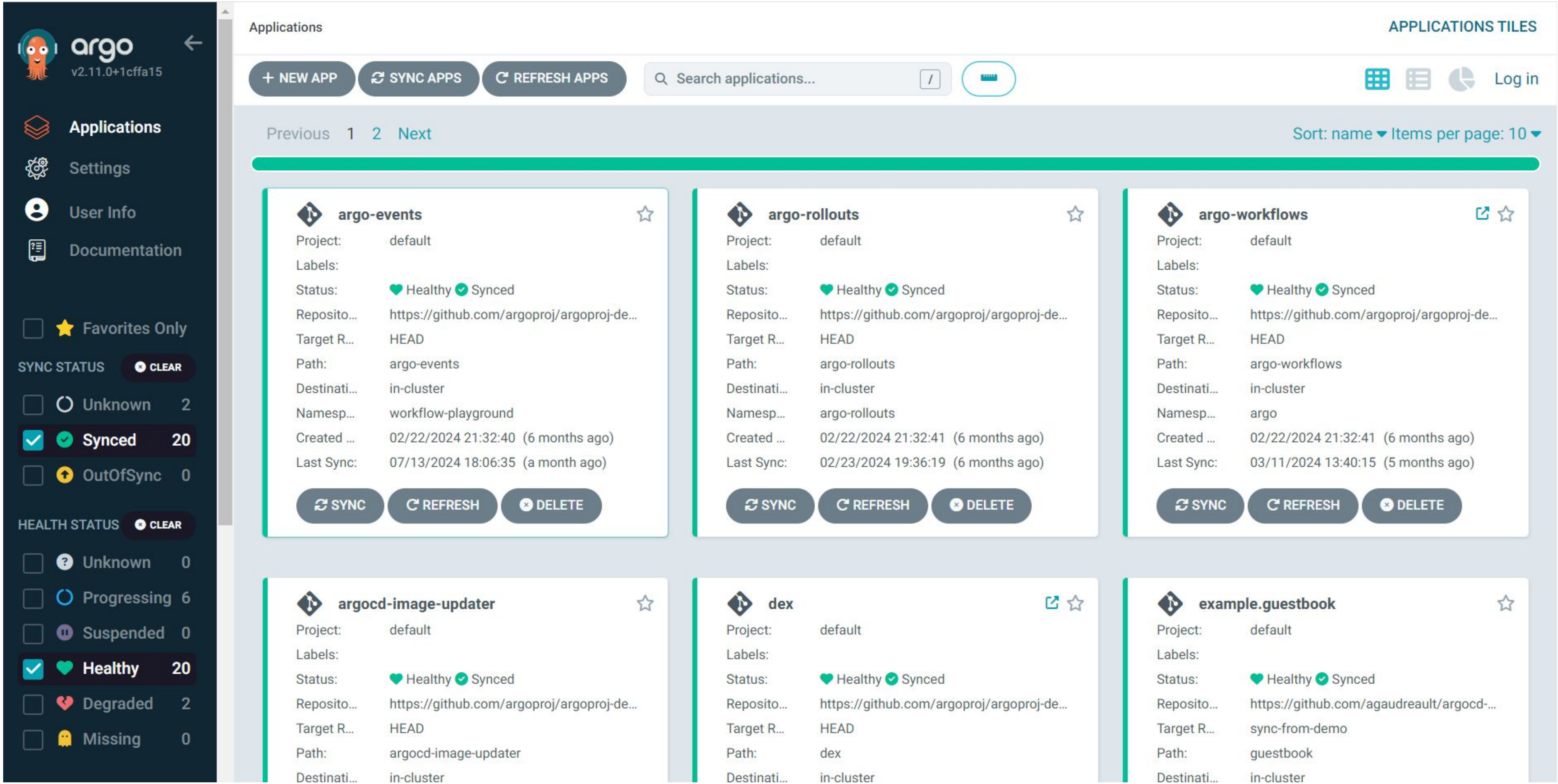


APP HEALTH
Healthy

SYNC STATUS
Synced to HEAD (b018629)
Auto sync is enabled.
Author: CI <ci@argoproj.com> -
Comment: Upgrade argocd to 2.13.0-80e85967

LAST SYNC
Sync OK to c94542d
Succeeded 5 months ago (Thu Feb 29 2024 20:09:17 GMT+0200)
Author: Alexandre Gaudreault <alexandre_gaudreault@intuit....
Comment: dex HA-er

Argo CD UI



□ Favorites Only

SYNC STATUS CLEAR

□ Unknown 2
☑ Synced 20
□ OutOfSync 0

HEALTH STATUS CLEAR

□ Unknown 0
□ Progressing 6
□ Suspended 0
☑ Healthy 20
□ Degraded 2
□ Missing 0

argo-events

Project:	default
Labels:	
Status:	Healthy Synced
Reposito...	https://github.com/argoproj/argoproj-de...
Target R...	HEAD
Path:	argo-events
Destinati...	in-cluster
Namesp...	workflow-playground
Created ...	02/22/2024 21:32:40 (6 months ago)
Last Sync:	07/13/2024 18:06:35 (a month ago)

argo-rollouts

Project:	default
Labels:	
Status:	Healthy Synced
Reposito...	https://github.com/argoproj/argoproj-de...
Target R...	HEAD
Path:	argo-rollouts
Destinati...	in-cluster
Namesp...	argo-rollouts
Created ...	02/22/2024 21:32:41 (6 months ago)
Last Sync:	02/23/2024 19:36:19 (6 months ago)

argo-workflows

Project:	default
Labels:	
Status:	Healthy Synced
Reposito...	https://github.com/argoproj/argoproj-de...
Target R...	HEAD
Path:	argo-workflows
Destinati...	in-cluster
Namesp...	argo
Created ...	02/22/2024 21:32:41 (6 months ago)
Last Sync:	03/11/2024 13:40:15 (5 months ago)

argocd-image-updater

Project:	default
Labels:	
Status:	Healthy Synced
Reposito...	https://github.com/argoproj/argoproj-de...
Target R...	HEAD
Path:	argocd-image-updater
Destinati...	in-cluster

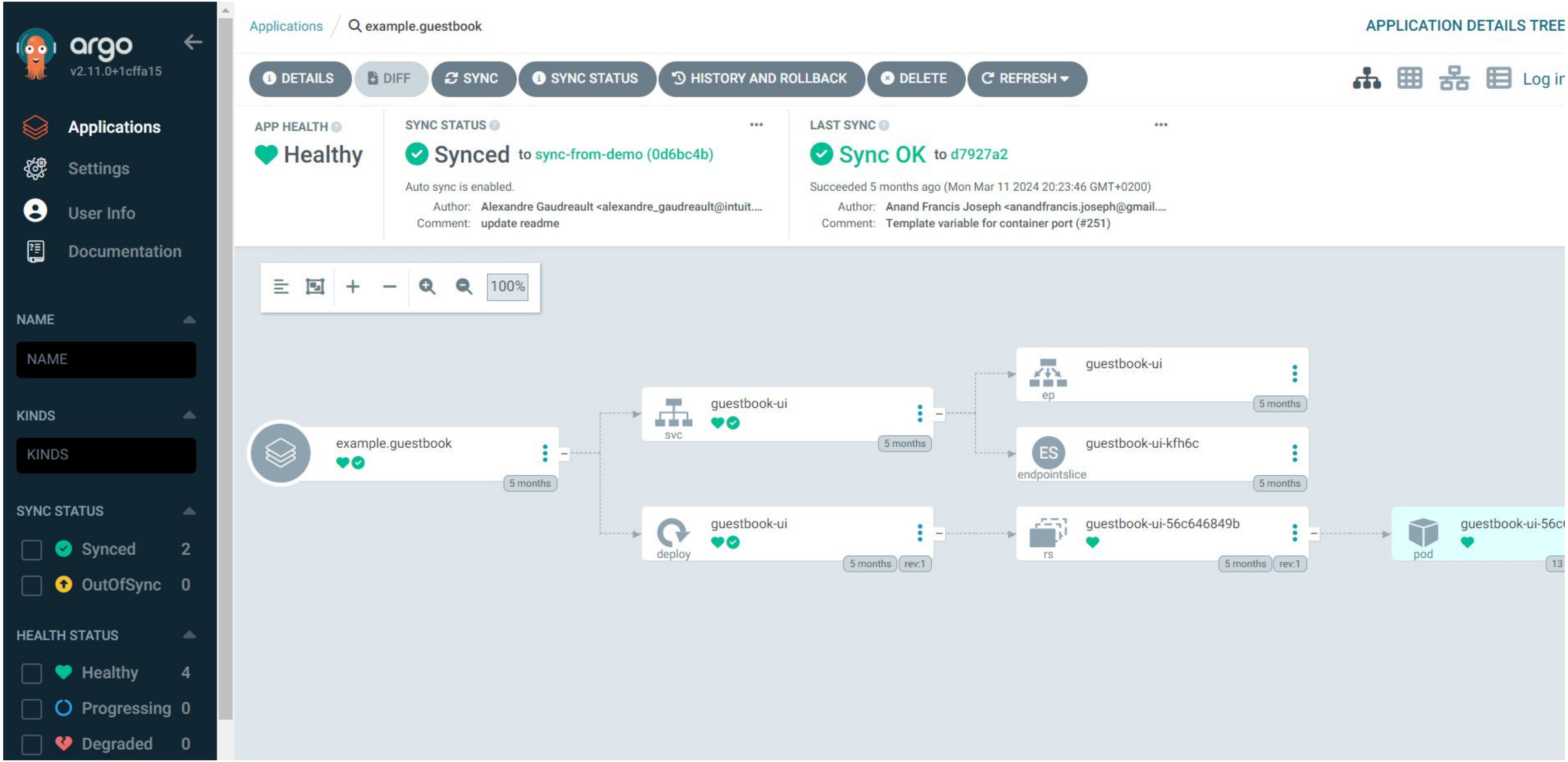
dex

Project:	default
Labels:	
Status:	Healthy Synced
Reposito...	https://github.com/argoproj/argoproj-de...
Target R...	HEAD
Path:	dex
Destinati...	in-cluster

example.guestbook

Project:	default
Labels:	
Status:	Healthy Synced
Reposito...	https://github.com/agaudreault/argocd-...
Target R...	sync-from-demo
Path:	guestbook
Destinati...	in-cluster

Argo CD UI



APP HEALTH Healthy

SYNC STATUS Synced to sync-from-demo (0d6bc4b)

Auto sync is enabled.

Author: Alexandre Gaudreault <alexandre_gaudreault@intuit....

Comment: update readme

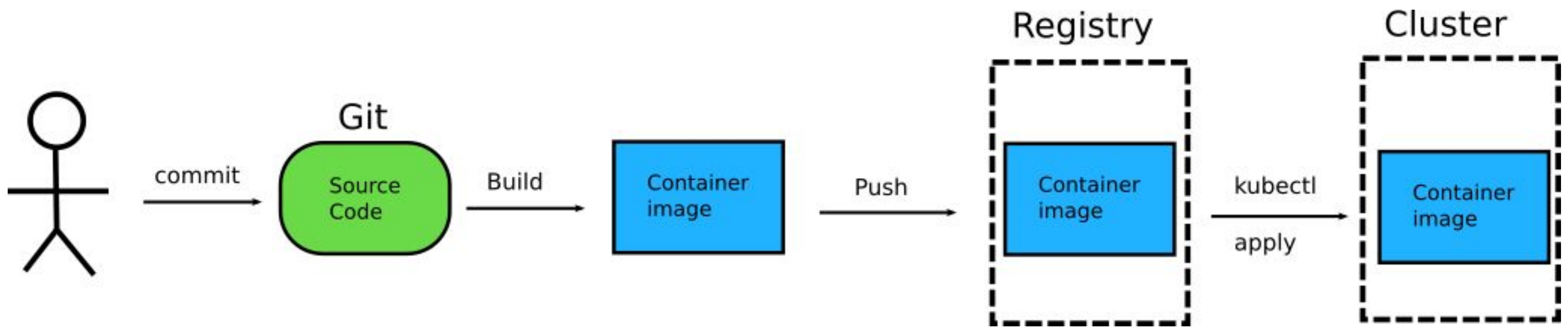
LAST SYNC Sync OK to d7927a2

Succeeded 5 months ago (Mon Mar 11 2024 20:23:46 GMT+0200)

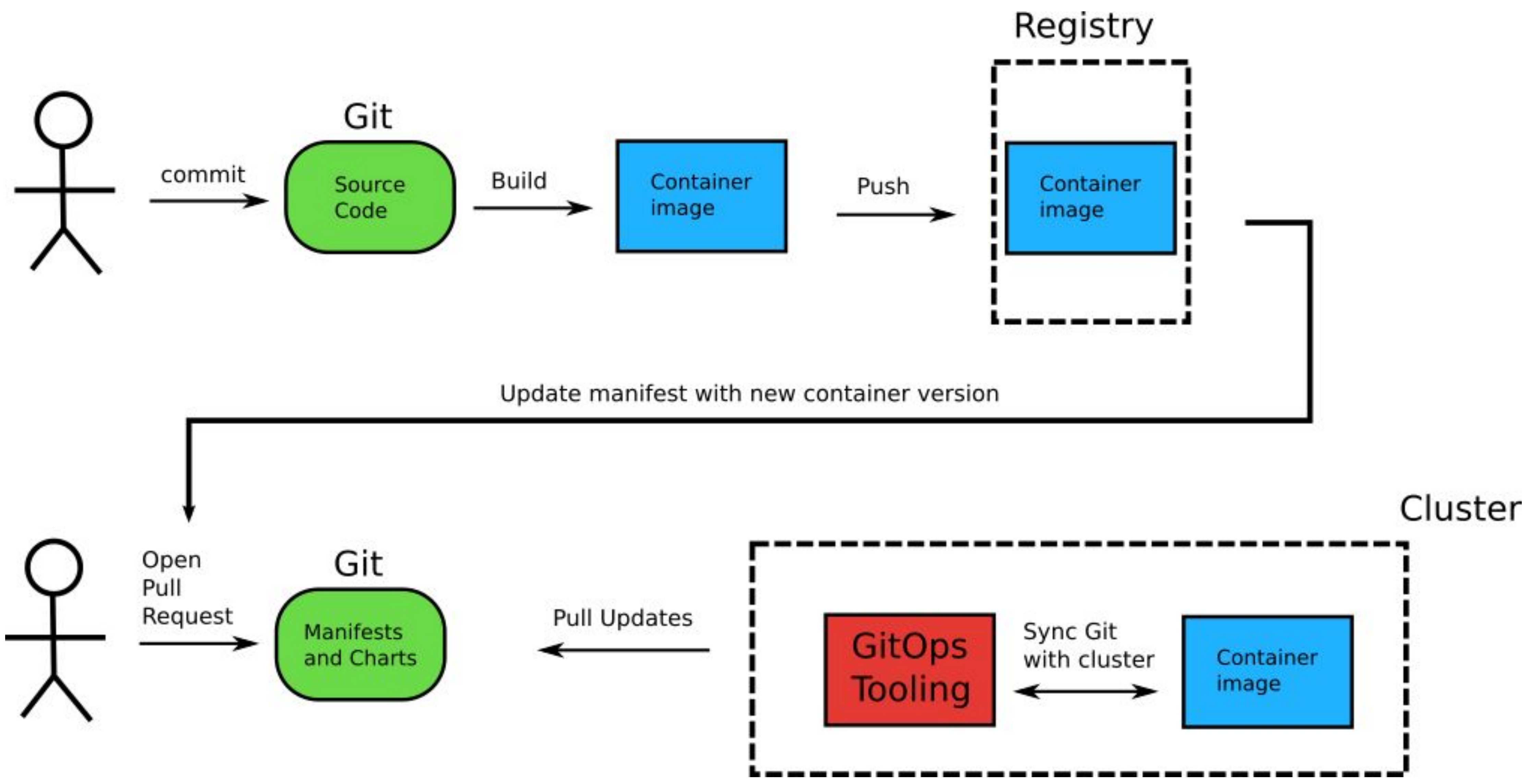
Author: Anand Francis Joseph <anandfrancis.joseph@gmail....

Comment: Template variable for container port (#251)

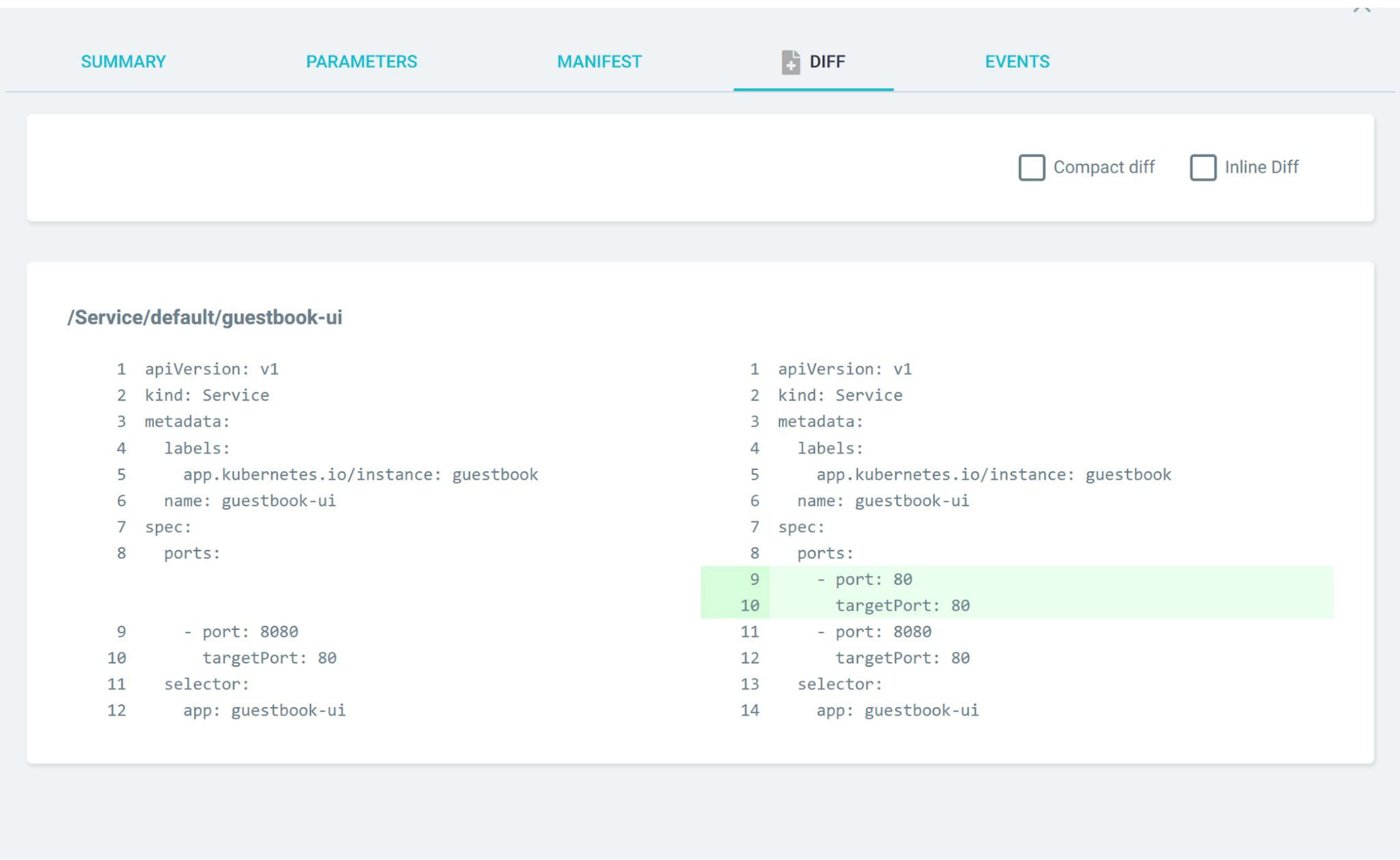
Abusing CI as CD



With Argo CD



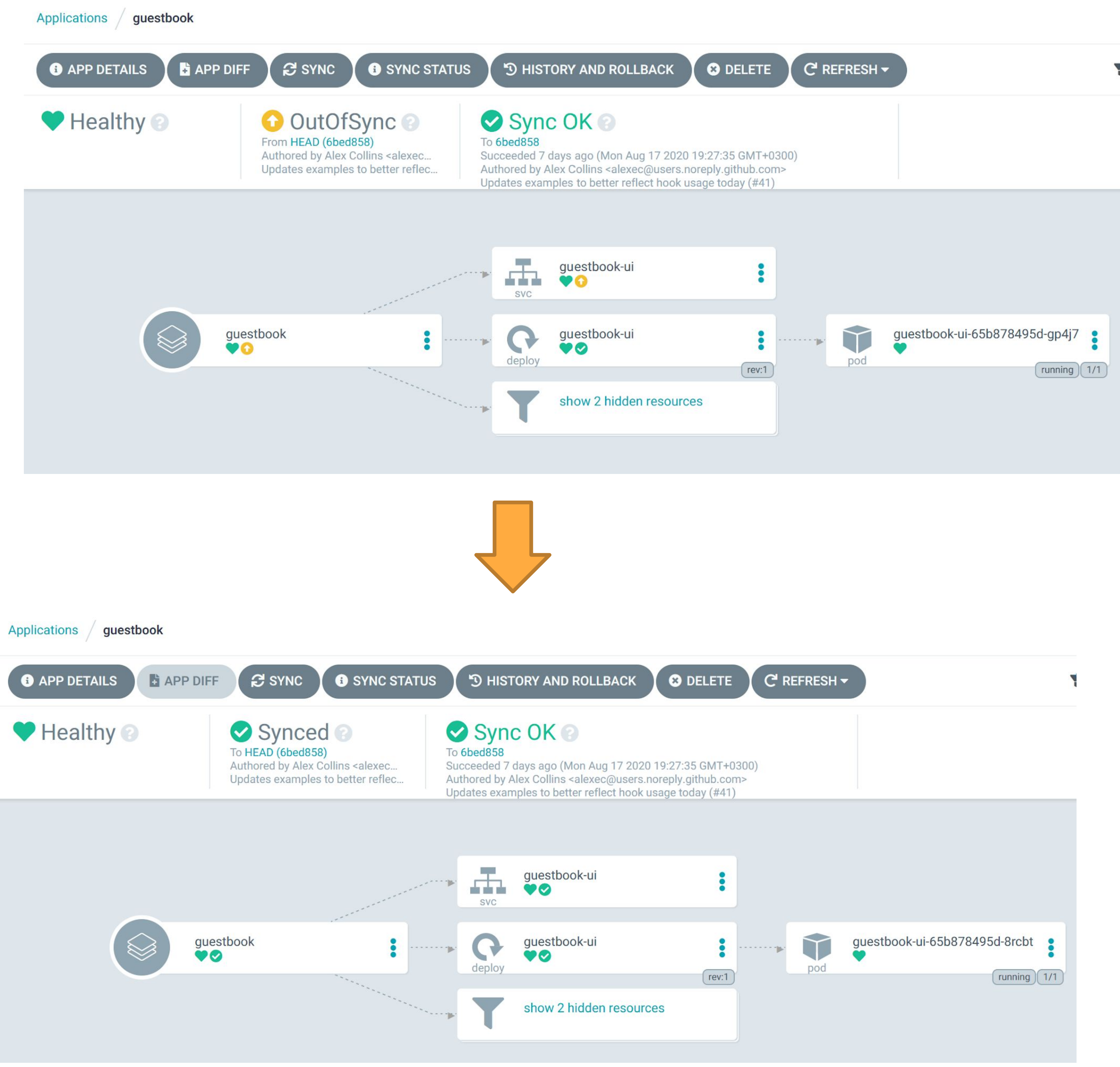
Avoid Configuration Drift



□ Compact diff □ Inline Diff

/Service/default/guestbook-ui

```
apiVersion: v1                              apiVersion: v1
kind: Service                               kind: Service
metadata:                                   metadata:
  labels:                                     labels:
    app.kubernetes.io/instance: guestbook       app.kubernetes.io/instance: guestbook
  name: guestbook-ui                          name: guestbook-ui
spec:                                       spec:
  ports:                                      ports:
                                                - port: 80
                                                  targetPort: 80
    - port: 8080                                - port: 8080
      targetPort: 80                              targetPort: 80
  selector:                                   selector:
    app: guestbook-ui                           app: guestbook-ui
```



Healthy

OutOfSync
From HEAD (6bed858)
Authored by Alex Collins <alexec...
Updates examples to better reflec...

Sync OK
To 6bed858
Succeeded 7 days ago (Mon Aug 17 2020 19:27:35 GMT+0300)
Authored by Alex Collins <alexec@users.noreply.github.com>
Updates examples to better reflect hook usage today (#41)

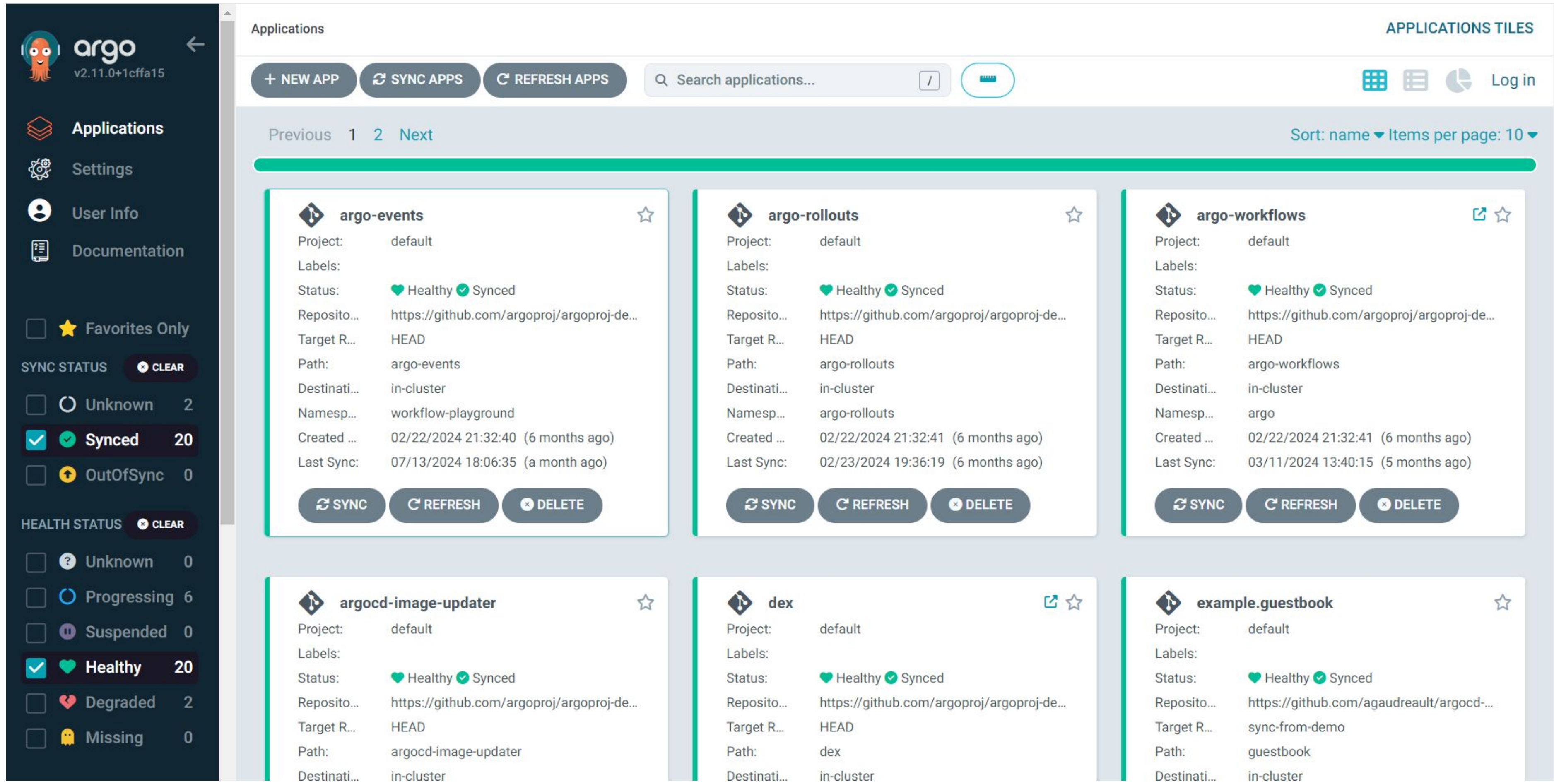
Healthy

Synced
To HEAD (6bed858)
Authored by Alex Collins <alexec...
Updates examples to better reflec...

Sync OK
To 6bed858
Succeeded 7 days ago (Mon Aug 17 2020 19:27:35 GMT+0300)
Authored by Alex Collins <alexec@users.noreply.github.com>
Updates examples to better reflect hook usage today (#41)

Argo CD entities

- **Application**- Link between a cluster and Git repo
- **Project** - RBAC for Applications
- **ApplicationSet**- Generator/grouping for applications



□ Favorites Only

SYNC STATUS CLEAR

□	Unknown	2
☑	Synced	20
□	OutOfSync	0

HEALTH STATUS CLEAR

□	Unknown	0
□	Progressing	6
□	Suspended	0
☑	Healthy	20
□	Degraded	2
□	Missing	0

argo-events

Project:	default
Labels:	
Status:	Healthy Synced
Reposito...	https://github.com/argoproj/argoproj-de...
Target R...	HEAD
Path:	argo-events
Destinati...	in-cluster
Namesp...	workflow-playground
Created ...	02/22/2024 21:32:40 (6 months ago)
Last Sync:	07/13/2024 18:06:35 (a month ago)

argo-rollouts

Project:	default
Labels:	
Status:	Healthy Synced
Reposito...	https://github.com/argoproj/argoproj-de...
Target R...	HEAD
Path:	argo-rollouts
Destinati...	in-cluster
Namesp...	argo-rollouts
Created ...	02/22/2024 21:32:41 (6 months ago)
Last Sync:	02/23/2024 19:36:19 (6 months ago)

argo-workflows

Project:	default
Labels:	
Status:	Healthy Synced
Reposito...	https://github.com/argoproj/argoproj-de...
Target R...	HEAD
Path:	argo-workflows
Destinati...	in-cluster
Namesp...	argo
Created ...	02/22/2024 21:32:41 (6 months ago)
Last Sync:	03/11/2024 13:40:15 (5 months ago)

argocd-image-updater

Project:	default
Labels:	
Status:	Healthy Synced
Reposito...	https://github.com/argoproj/argoproj-de...
Target R...	HEAD
Path:	argocd-image-updater
Destinati...	in-cluster

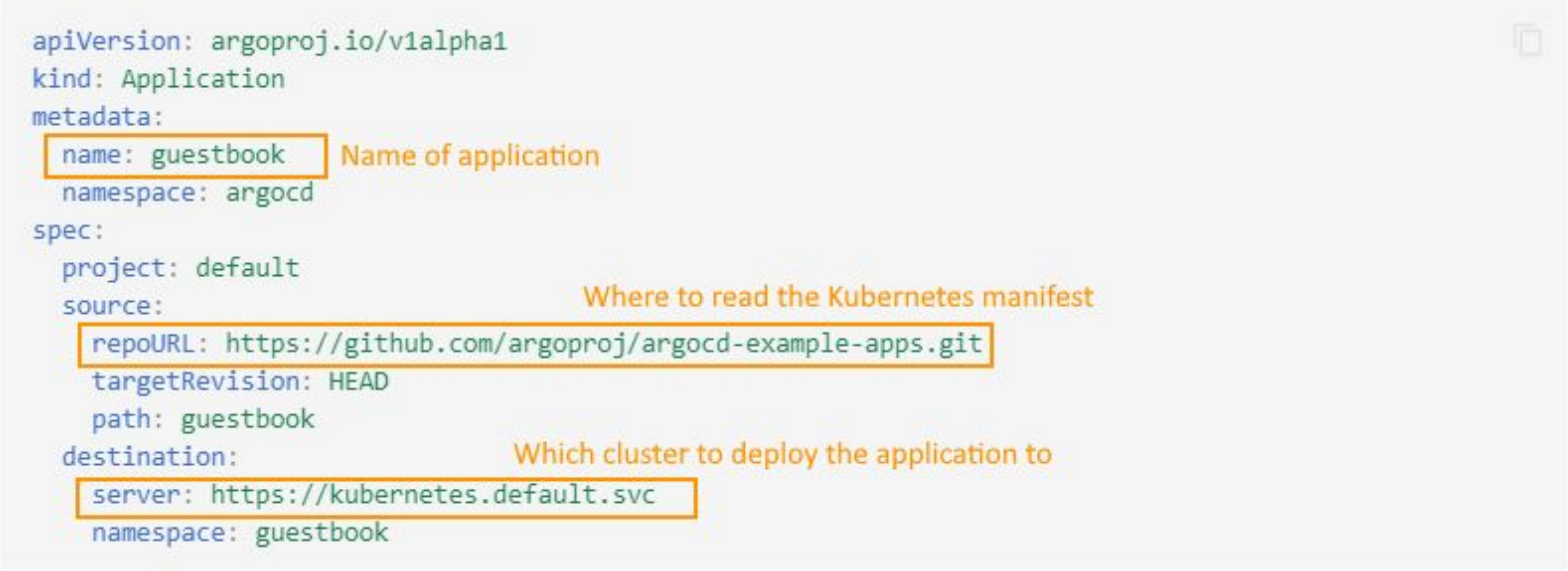
dex

Project:	default
Labels:	
Status:	Healthy Synced
Reposito...	https://github.com/argoproj/argoproj-de...
Target R...	HEAD
Path:	dex
Destinati...	in-cluster

example.guestbook

Project:	default
Labels:	
Status:	Healthy Synced
Reposito...	https://github.com/agaudreault/argocd-...
Target R...	sync-from-demo
Path:	guestbook
Destinati...	in-cluster

Sync manifests to Cluster

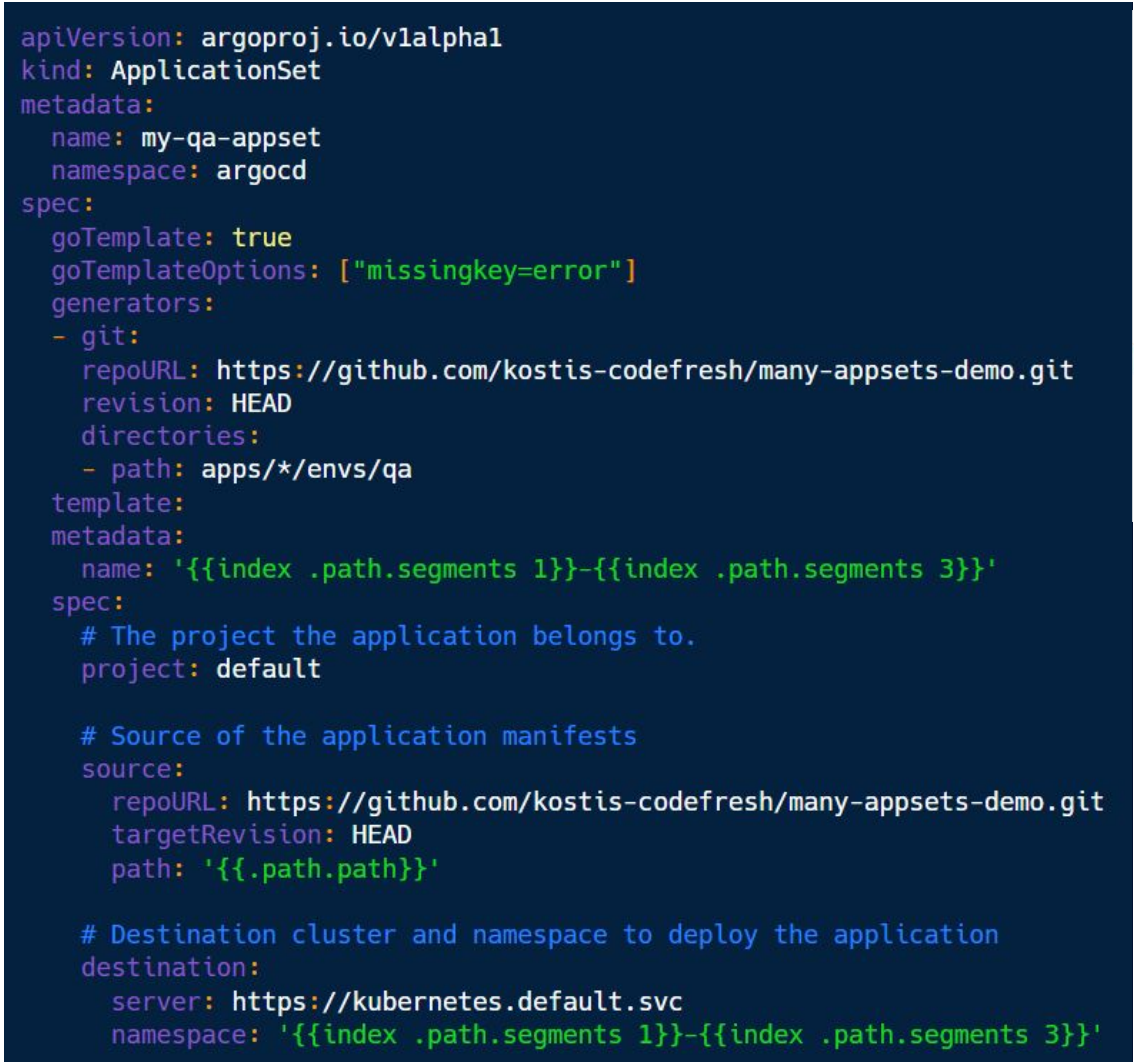


```yaml
apiVersion: argoproj.io/v1alpha1
kind: Application
metadata:
  name: guestbook
  namespace: argocd
spec:
  project: default
  source:
    repoURL: https://github.com/argoproj/argocd-example-apps.git
    targetRevision: HEAD
    path: guestbook
  destination:
    server: https://kubernetes.default.svc
    namespace: guestbook
```

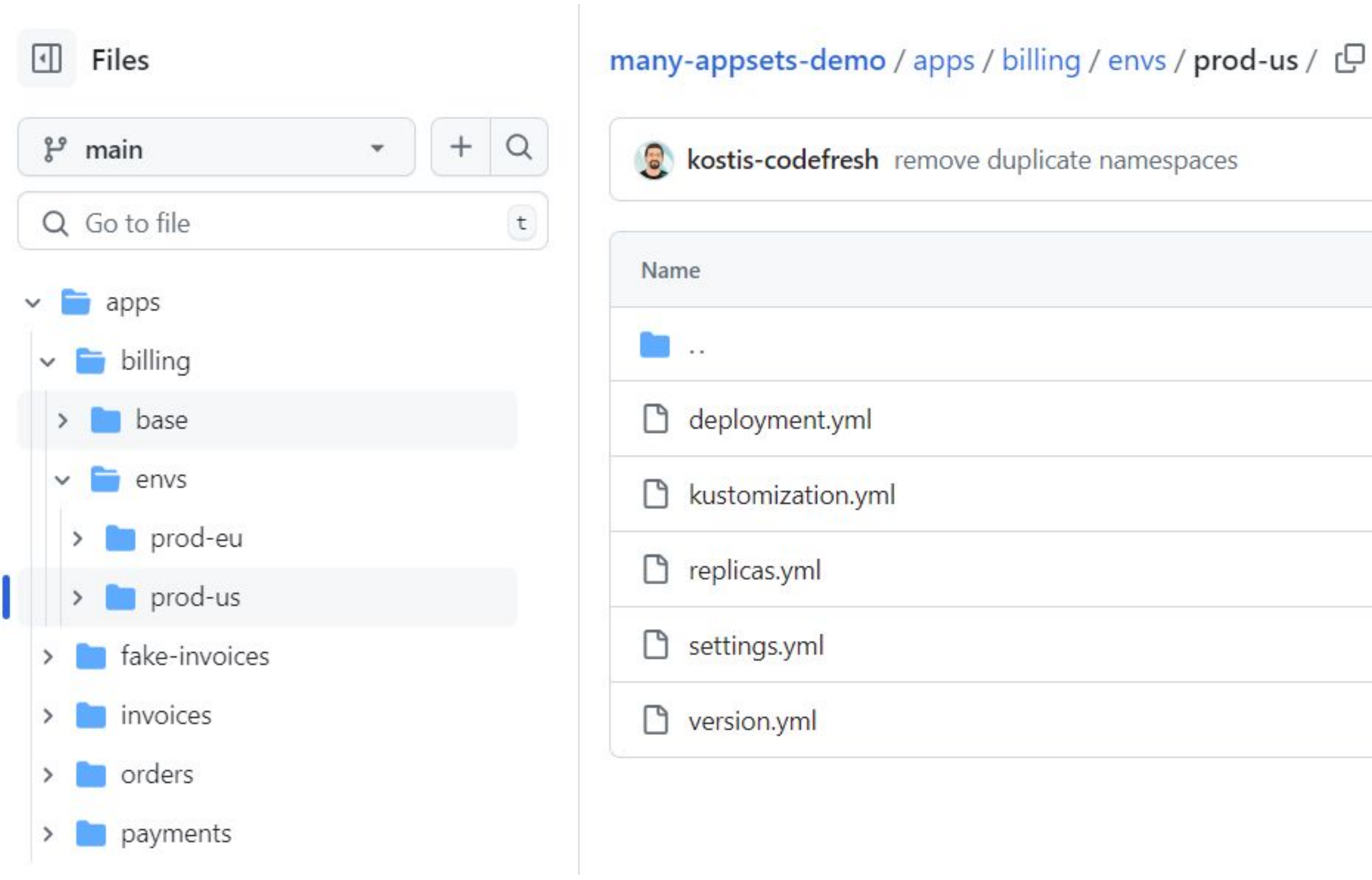
Name of application

Where to read the Kubernetes manifest

Which cluster to deploy the application to



```yaml
apiVersion: argoproj.io/v1alpha1
kind: ApplicationSet
metadata:
  name: my-qa-appset
  namespace: argocd
spec:
  goTemplate: true
  goTemplateOptions: ["missingkey=error"]
  generators:
  - git:
    repoURL: https://github.com/kostis-codefresh/many-appsets-demo.git
    revision: HEAD
    directories:
    - path: apps/*/envs/qa
  template:
  metadata:
    name: '{{index .path.segments 1}}-{{index .path.segments 3}}'
  spec:
    # The project the application belongs to.
    project: default

    # Source of the application manifests
    source:
      repoURL: https://github.com/kostis-codefresh/many-appsets-demo.git
      targetRevision: HEAD
      path: '{{.path.path}}'

    # Destination cluster and namespace to deploy the application
    destination:
      server: https://kubernetes.default.svc
      namespace: '{{index .path.segments 1}}-{{index .path.segments 3}}'
```



```
apps
  billing
    base
    envs
      prod-eu
      prod-us
  fake-invoices
  invoices
  orders
  payments
```

many-appsets-demo / apps / billing / envs / prod-us /

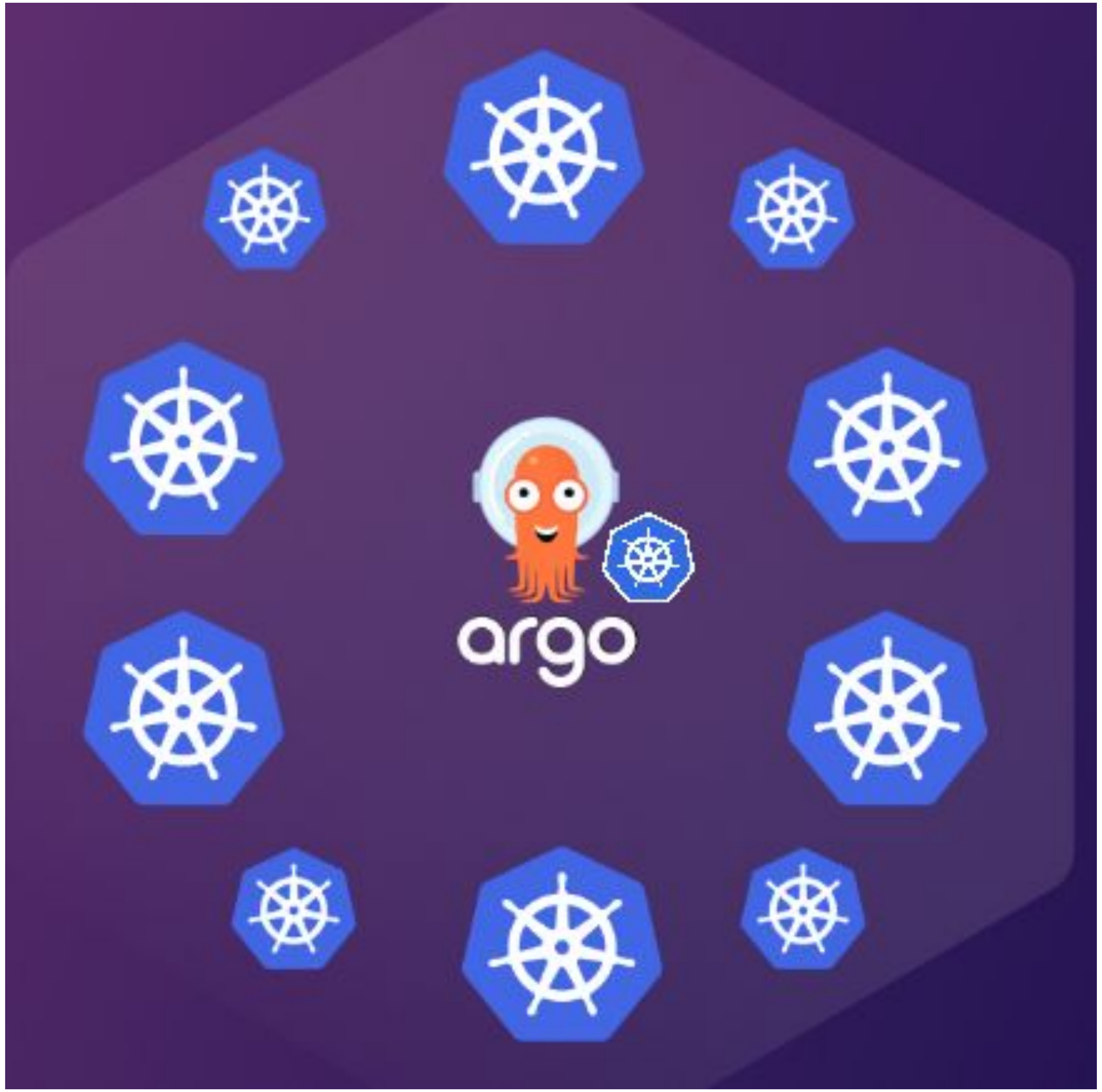
kostis-codefresh remove duplicate namespaces

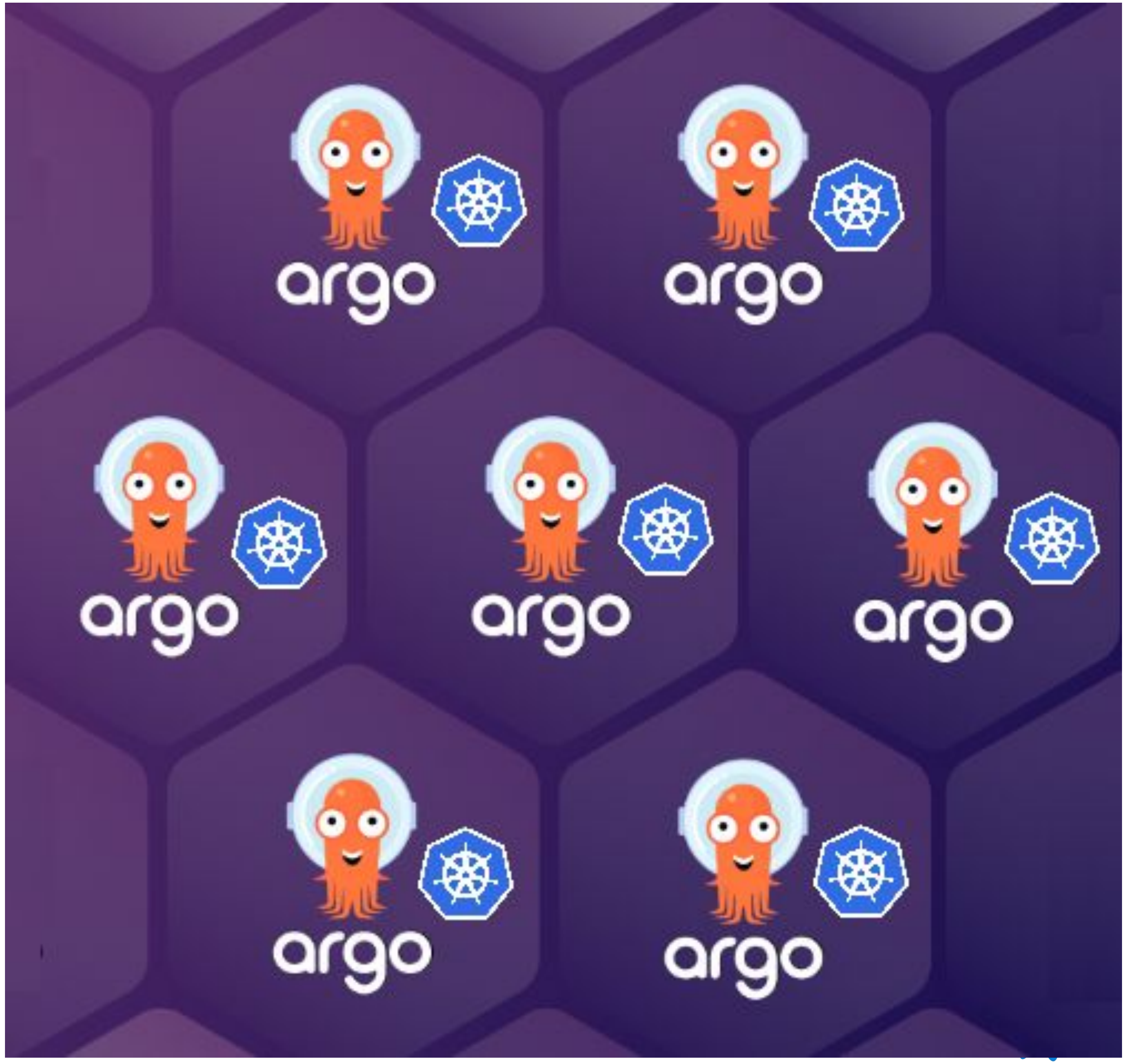
Name
..
deployment.yml
kustomization.yml
replicas.yml
settings.yml
version.yml

Generate applications from Git folders

Cluster bootstrapping

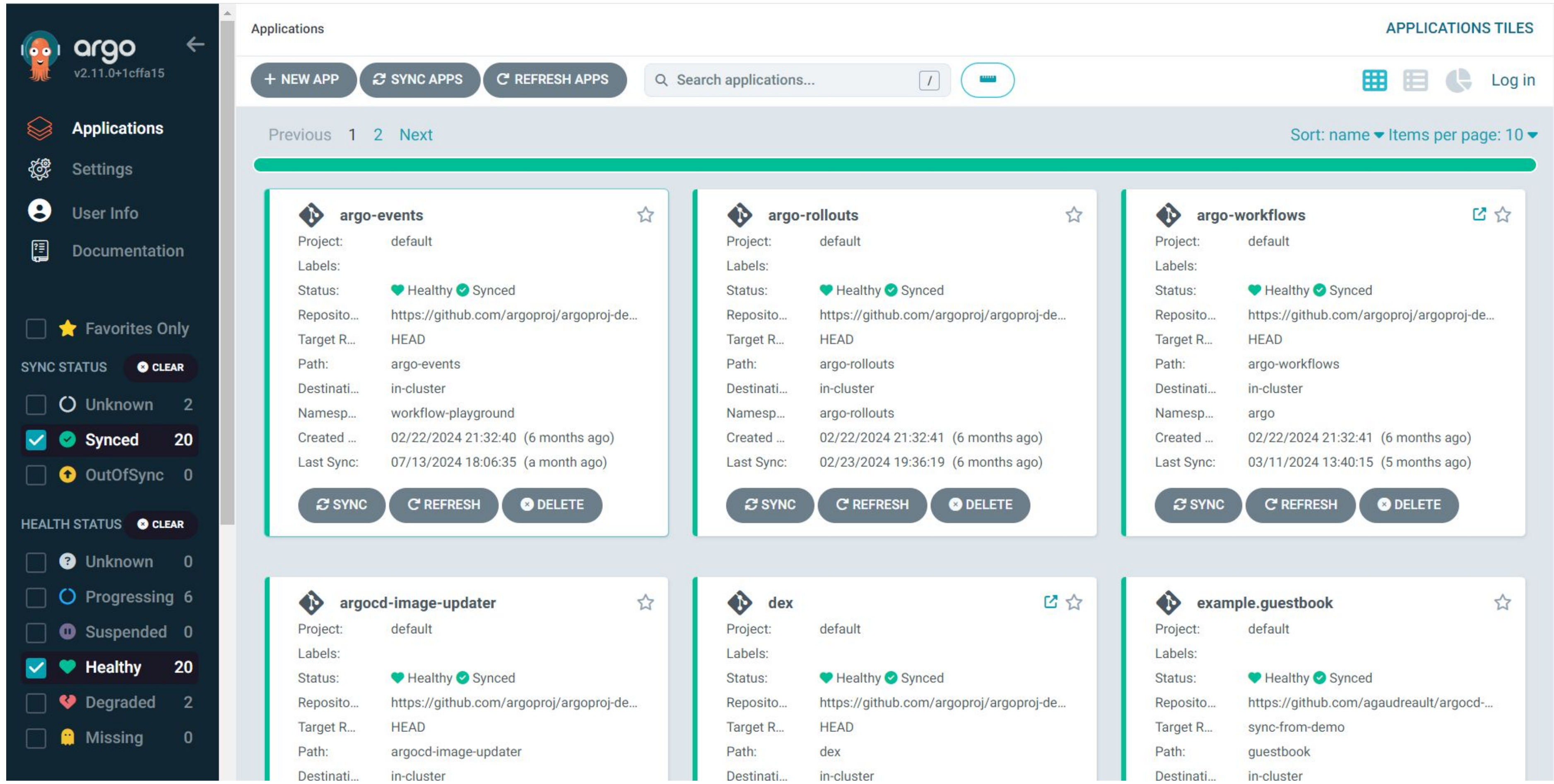
Argo CD topologies





Argo CD other features

- Sync policies
- Sync waves/phases/windows
- Git webhooks
- CLI/API
- SSO/RBAC
- Plugins
- Notifications



□ ★ Favorites Only

SYNC STATUS CLEAR

□ Unknown	2
☑ Synced	20
□ OutOfSync	0

HEALTH STATUS CLEAR

□ Unknown	0
□ Progressing	6
□ Suspended	0
☑ Healthy	20
□ Degraded	2
□ Missing	0

argo-events

Project:	default
Labels:	
Status:	Healthy Synced
Reposito...	https://github.com/argoproj/argoproj-de...
Target R...	HEAD
Path:	argo-events
Destinati...	in-cluster
Namesp...	workflow-playground
Created ...	02/22/2024 21:32:40 (6 months ago)
Last Sync:	07/13/2024 18:06:35 (a month ago)

argo-rollouts

Project:	default
Labels:	
Status:	Healthy Synced
Reposito...	https://github.com/argoproj/argoproj-de...
Target R...	HEAD
Path:	argo-rollouts
Destinati...	in-cluster
Namesp...	argo-rollouts
Created ...	02/22/2024 21:32:41 (6 months ago)
Last Sync:	02/23/2024 19:36:19 (6 months ago)

argo-workflows

Project:	default
Labels:	
Status:	Healthy Synced
Reposito...	https://github.com/argoproj/argoproj-de...
Target R...	HEAD
Path:	argo-workflows
Destinati...	in-cluster
Namesp...	argo
Created ...	02/22/2024 21:32:41 (6 months ago)
Last Sync:	03/11/2024 13:40:15 (5 months ago)

argocd-image-updater

Project:	default
Labels:	
Status:	Healthy Synced
Reposito...	https://github.com/argoproj/argoproj-de...
Target R...	HEAD
Path:	argocd-image-updater
Destinati...	in-cluster

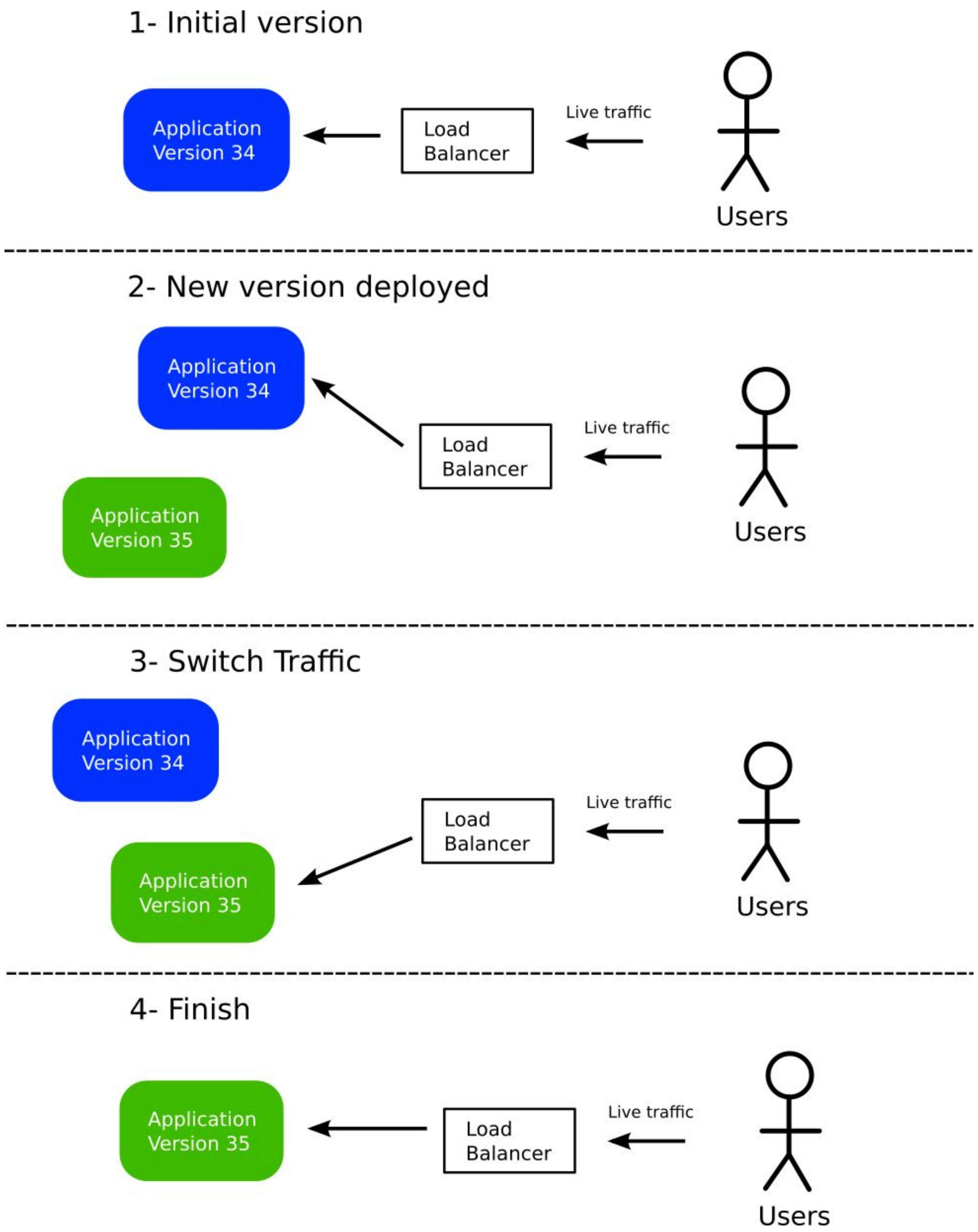
dex

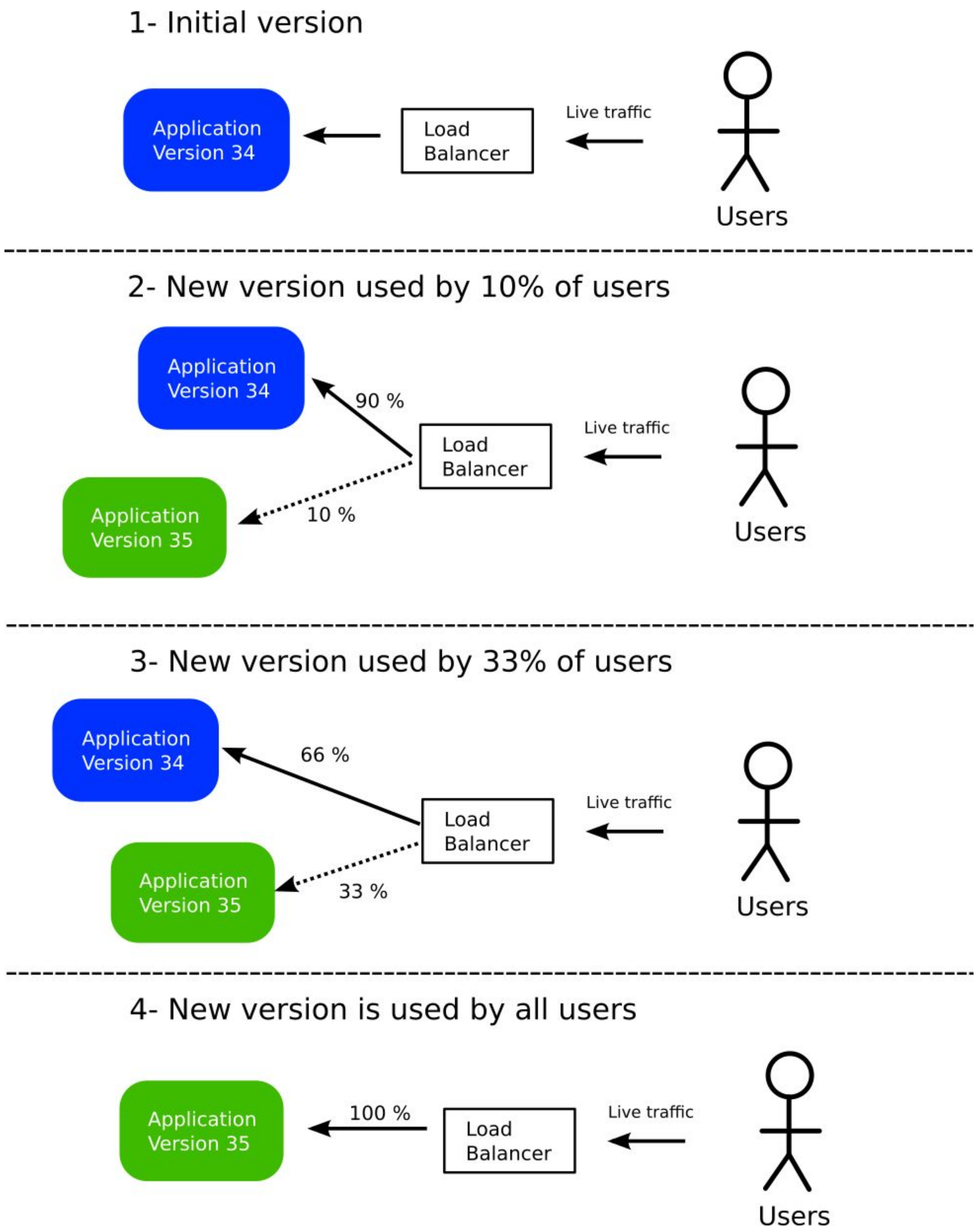
Project:	default
Labels:	
Status:	Healthy Synced
Reposito...	https://github.com/argoproj/argoproj-de...
Target R...	HEAD
Path:	dex
Destinati...	in-cluster

example.guestbook

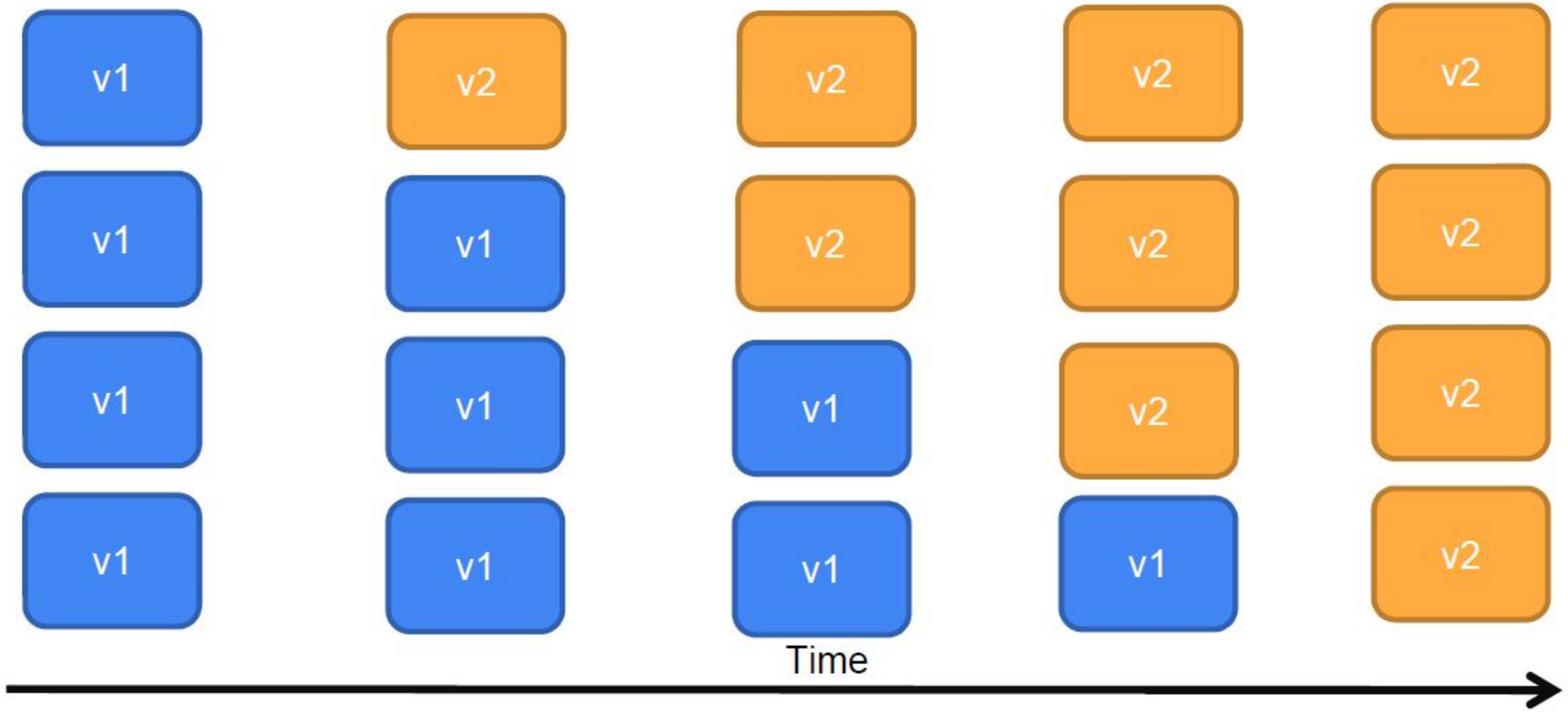
Project:	default
Labels:	
Status:	Healthy Synced
Reposito...	https://github.com/agaudreault/argocd-...
Target R...	sync-from-demo
Path:	guestbook
Destinati...	in-cluster

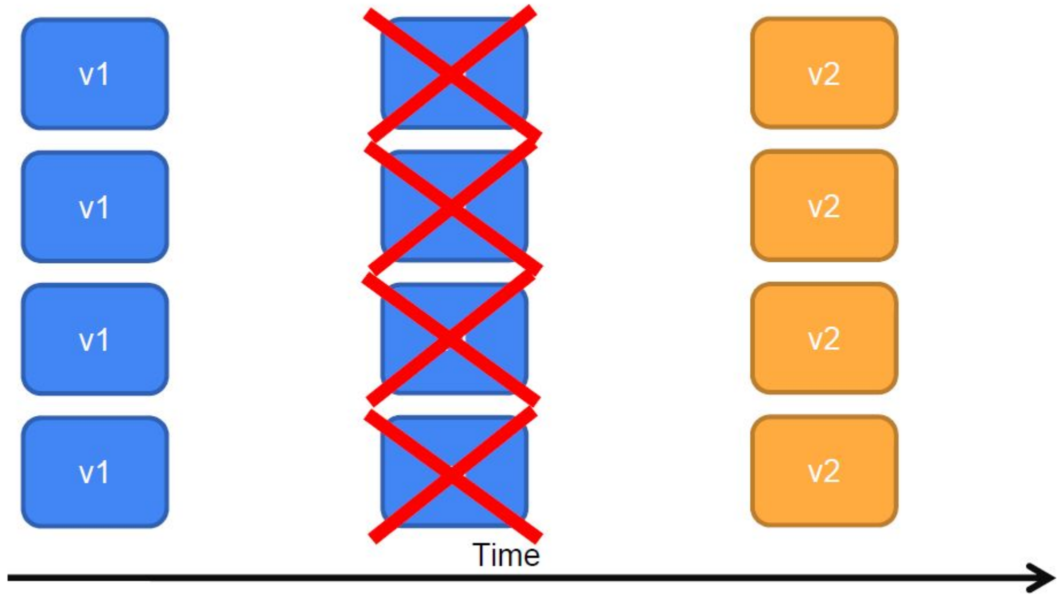
Argo Rollouts


1- Initial version
Application Version 34
Load Balancer
Live traffic
Users
2- New version deployed
Application Version 34
Application Version 35
Load Balancer
Live traffic
Users
3- Switch Traffic
Application Version 34
Application Version 35
Load Balancer
Live traffic
Users
4- Finish
Application Version 35
Load Balancer
Live traffic
Users


1- Initial version
Application Version 34
Load Balancer
Live traffic
Users
2- New version used by 10% of users
Application Version 34
90 %
Application Version 35
10 %
Load Balancer
Live traffic
Users
3- New version used by 33% of users
Application Version 34
66 %
Application Version 35
33 %
Load Balancer
Live traffic
Users
4- New version is used by all users
Application Version 35
100 %
Load Balancer
Live traffic
Users

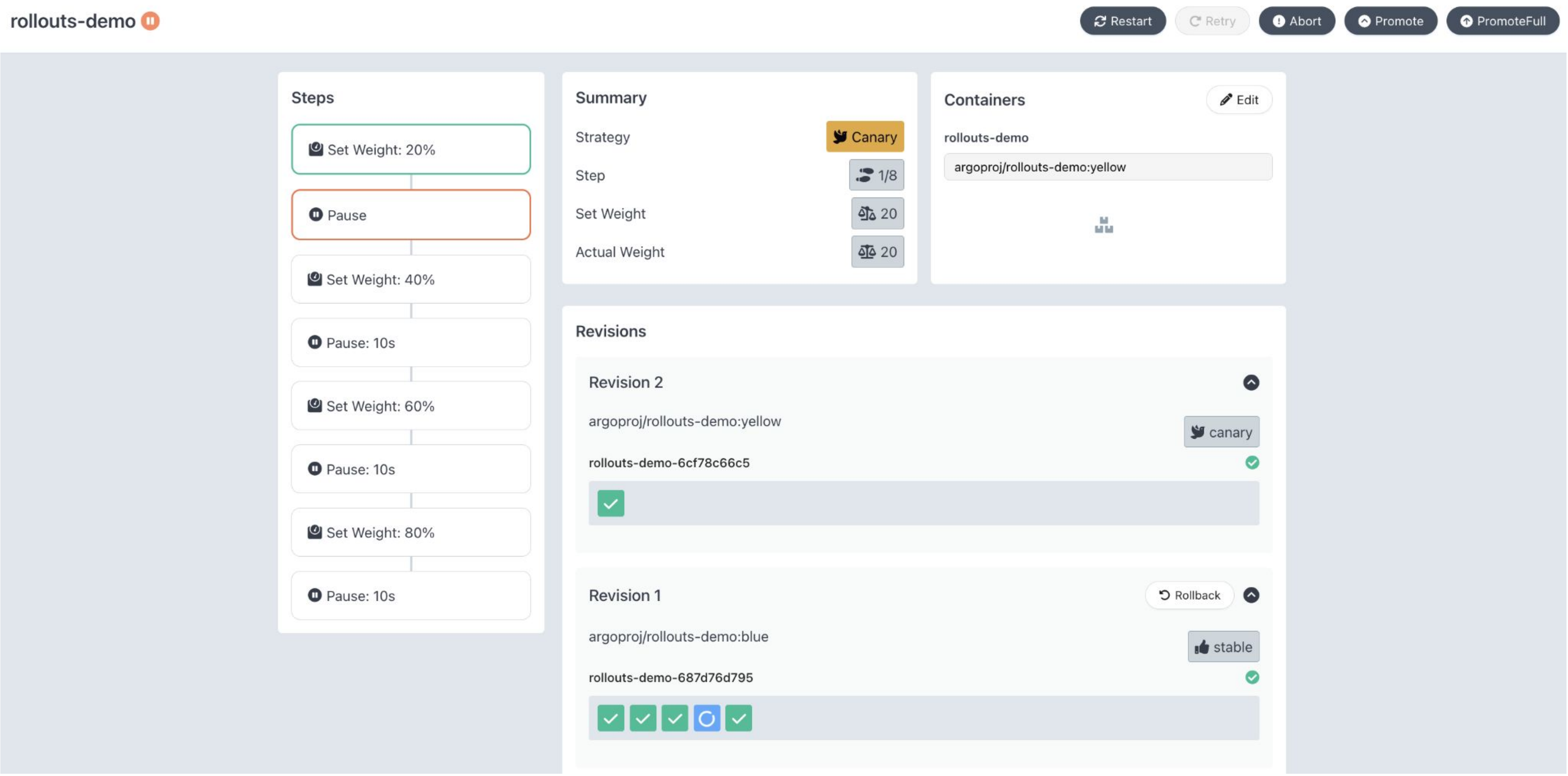
Default Kubernetes deployments





Argo Rollouts

- Rollouts (new CRD)
- Extends Deployment
- Blue/Green/Canaries
- Minimal dashboard
- Pre/Post checks



rollouts-demo

Steps

- Set Weight: 20%
- Pause
- Set Weight: 40%
- Pause: 10s
- Set Weight: 60%
- Pause: 10s
- Set Weight: 80%
- Pause: 10s

Summary

Strategy	Canary
Step	1/8
Set Weight	20
Actual Weight	20

Containers

rollouts-demo

argoproj/rollouts-demo:yellow

Revisions

Revision 2

argoproj/rollouts-demo:yellow — canary

rollouts-demo-6cf78c66c5

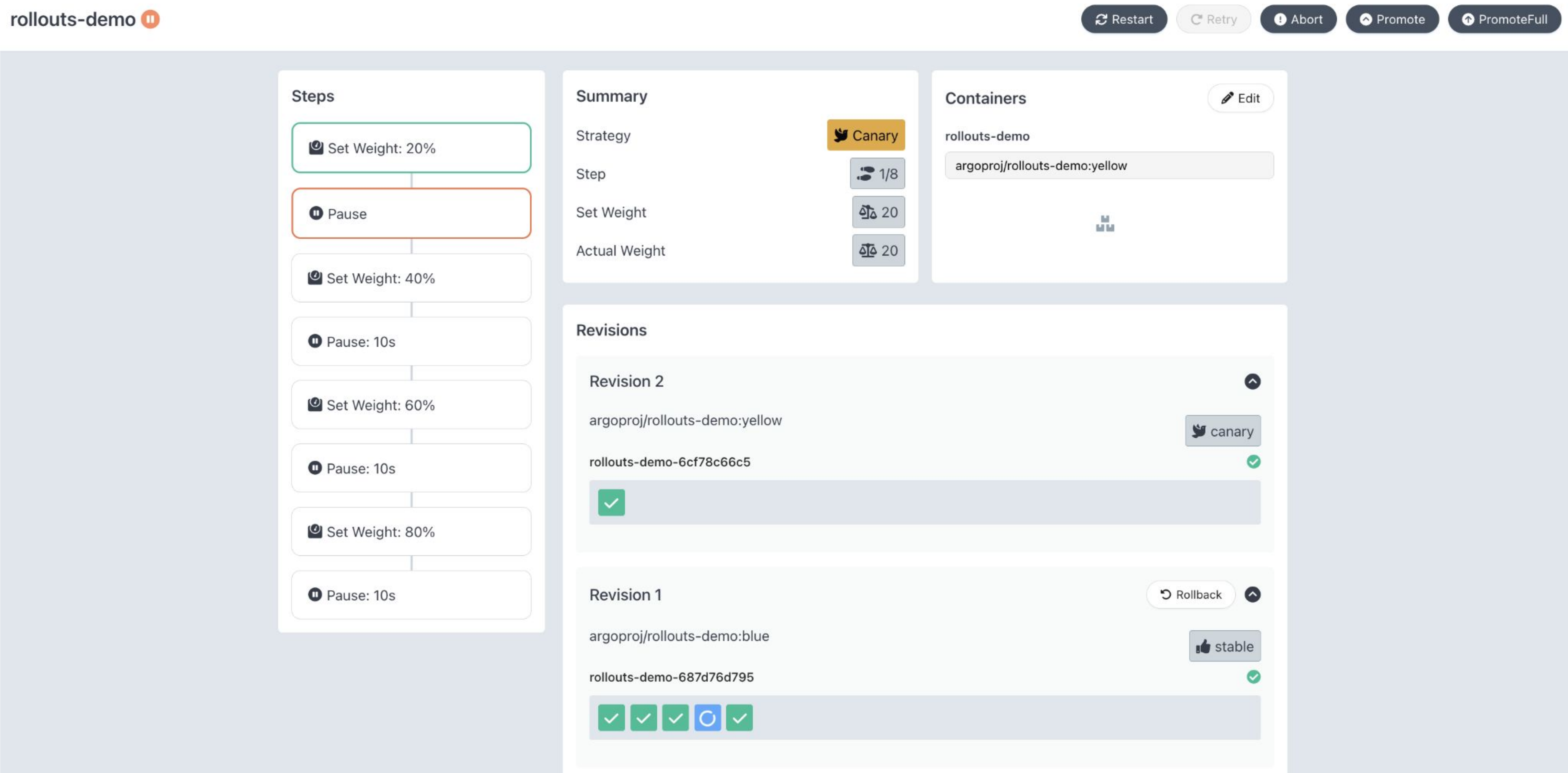
✓

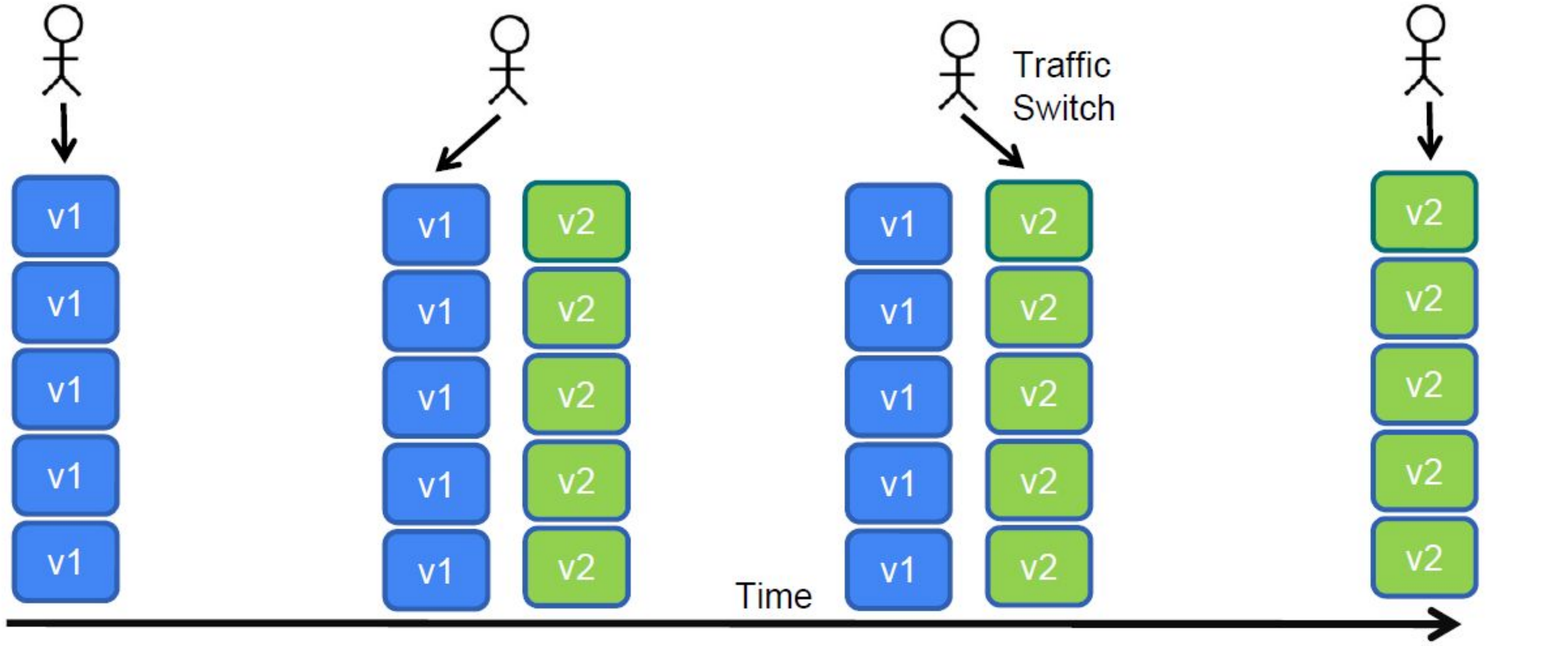
Revision 1

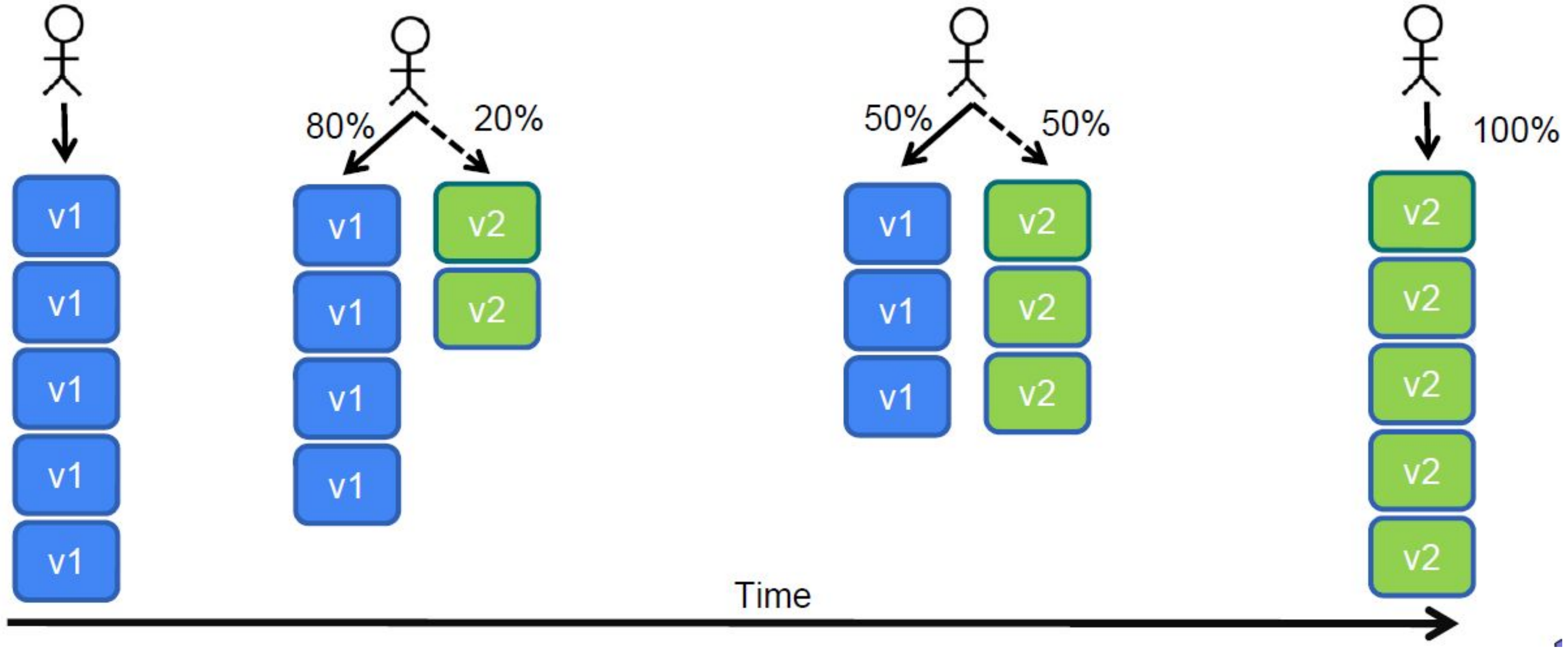
argoproj/rollouts-demo:blue — stable

rollouts-demo-687d76d795

✓ ✓ ✓ ○ ✓



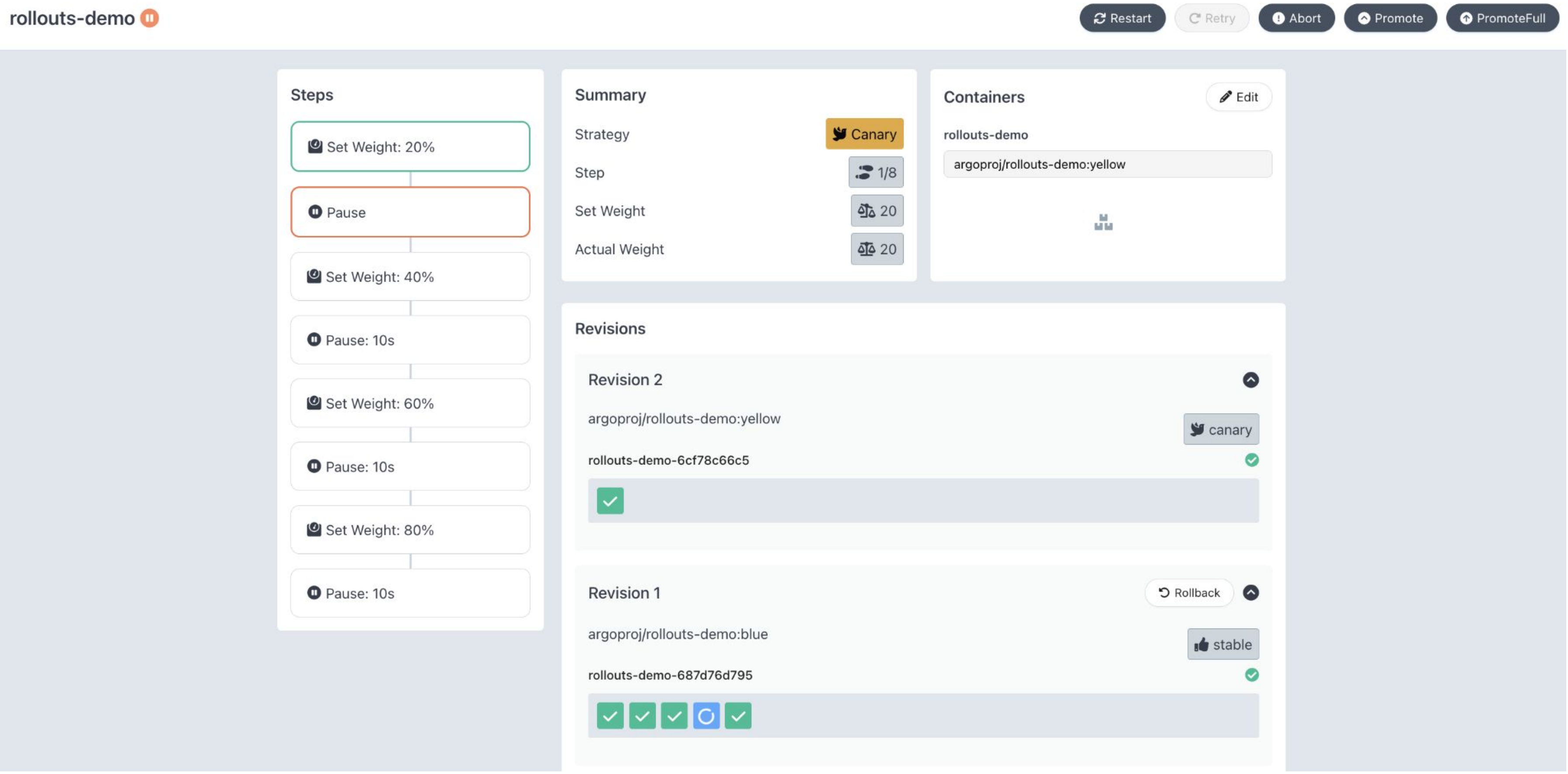




Kubernetes Progressive Delivery

Argo Rollouts Entities

- **Rollout** - main spec
- **AnalysisTemplate** - define pre/post checks
- **ClusterAnalysisTemplate** - clusterwide
- **AnalysisRun** - result of check
- **Experiment** - a/b testing



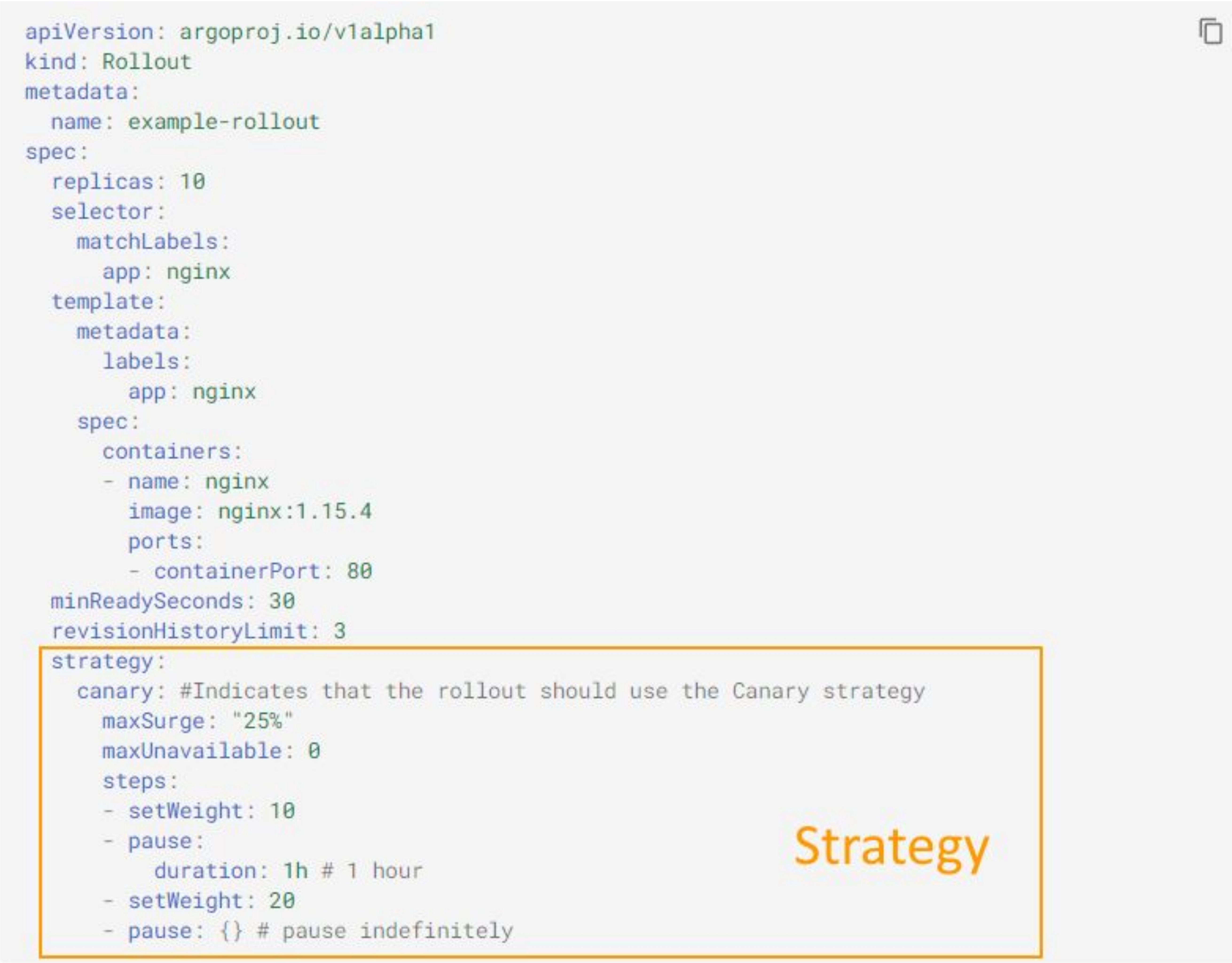
Strategy: Canary
Step: 1/8
Set Weight: 20
Actual Weight: 20

rollouts-demo: argoproj/rollouts-demo:yellow

Revision 2
argoproj/rollouts-demo:yellow — canary
rollouts-demo-6cf78c66c5

Revision 1
argoproj/rollouts-demo:blue — stable
rollouts-demo-687d76d795

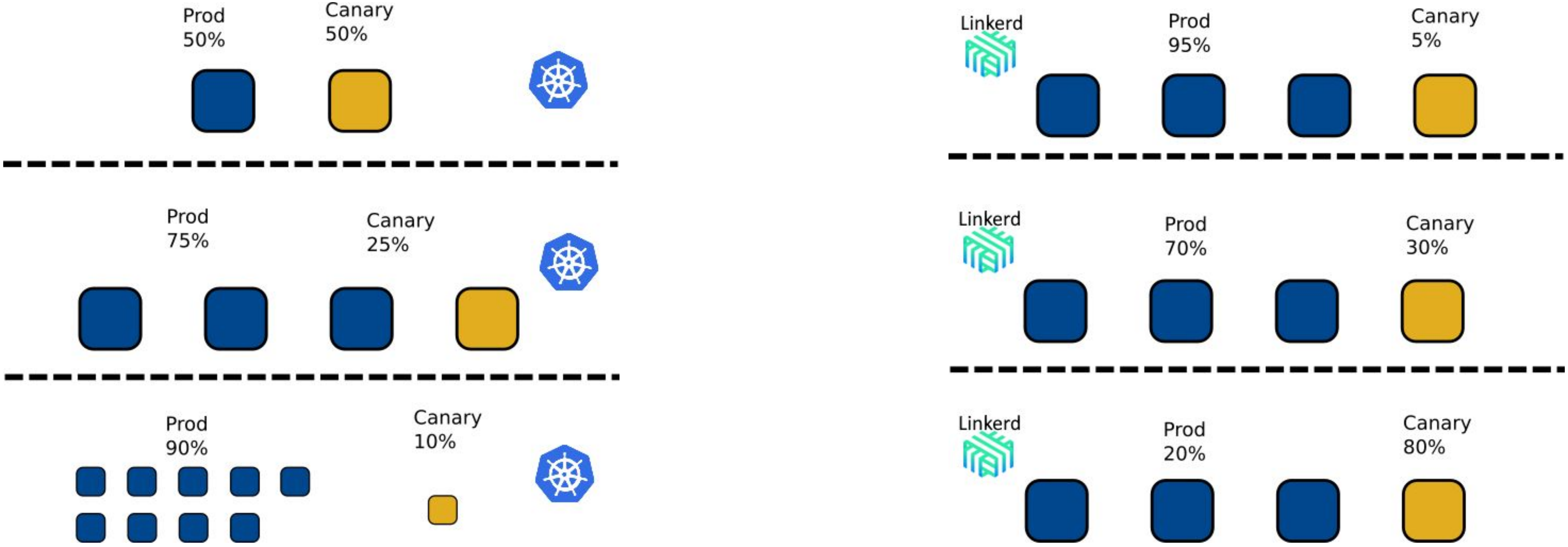
Rollout extends K8s deployment



```yaml
apiVersion: argoproj.io/v1alpha1
kind: Rollout
metadata:
  name: example-rollout
spec:
  replicas: 10
  selector:
    matchLabels:
      app: nginx
  template:
    metadata:
      labels:
        app: nginx
    spec:
      containers:
      - name: nginx
        image: nginx:1.15.4
        ports:
        - containerPort: 80
  minReadySeconds: 30
  revisionHistoryLimit: 3
  strategy:
    canary: #Indicates that the rollout should use the Canary strategy
      maxSurge: "25%"
      maxUnavailable: 0
      steps:
      - setWeight: 10
      - pause:
          duration: 1h # 1 hour
      - setWeight: 20
      - pause: {} # pause indefinitely
```

Strategy

Without/With traffic management

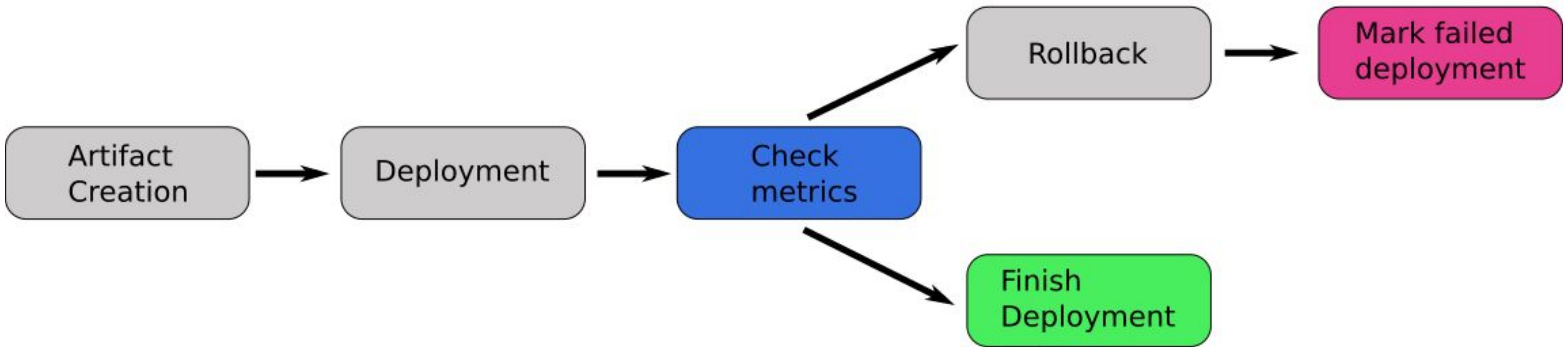


Supported Traffic managers

- AWS Ingress Controller
- Ambassador Labs
- Apache APISIX
- Linkerd
- Istio
- Kong
- Nginx
- Traefik
- Openshift Routes
- Gloo Gateway
- Contour
- Cilium
- Envoy Gateway
- Gateway API

Pre/Post checks

Fully Automated Rollbacks



Artifact Creation

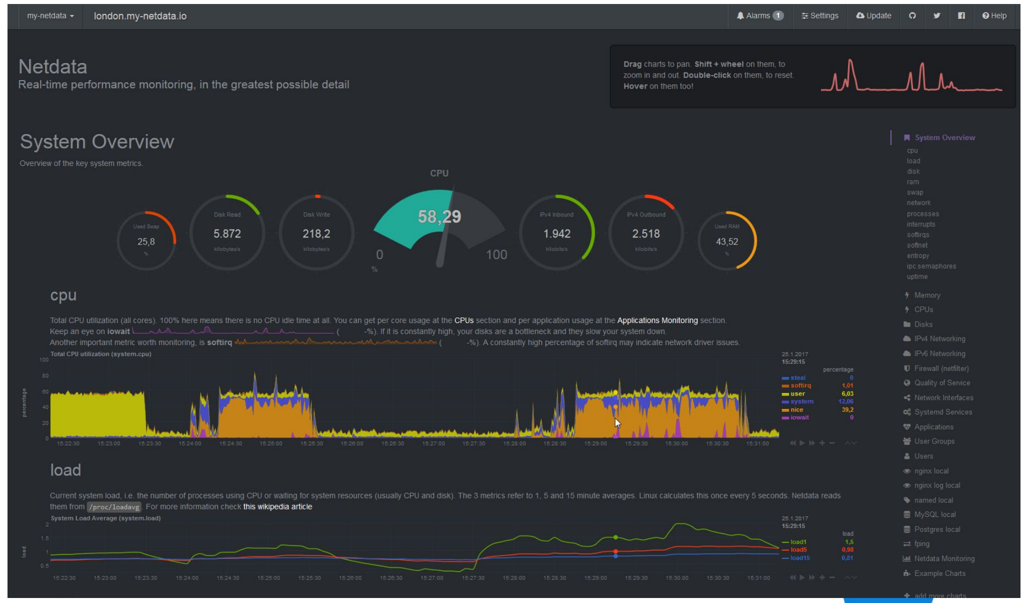
Deployment

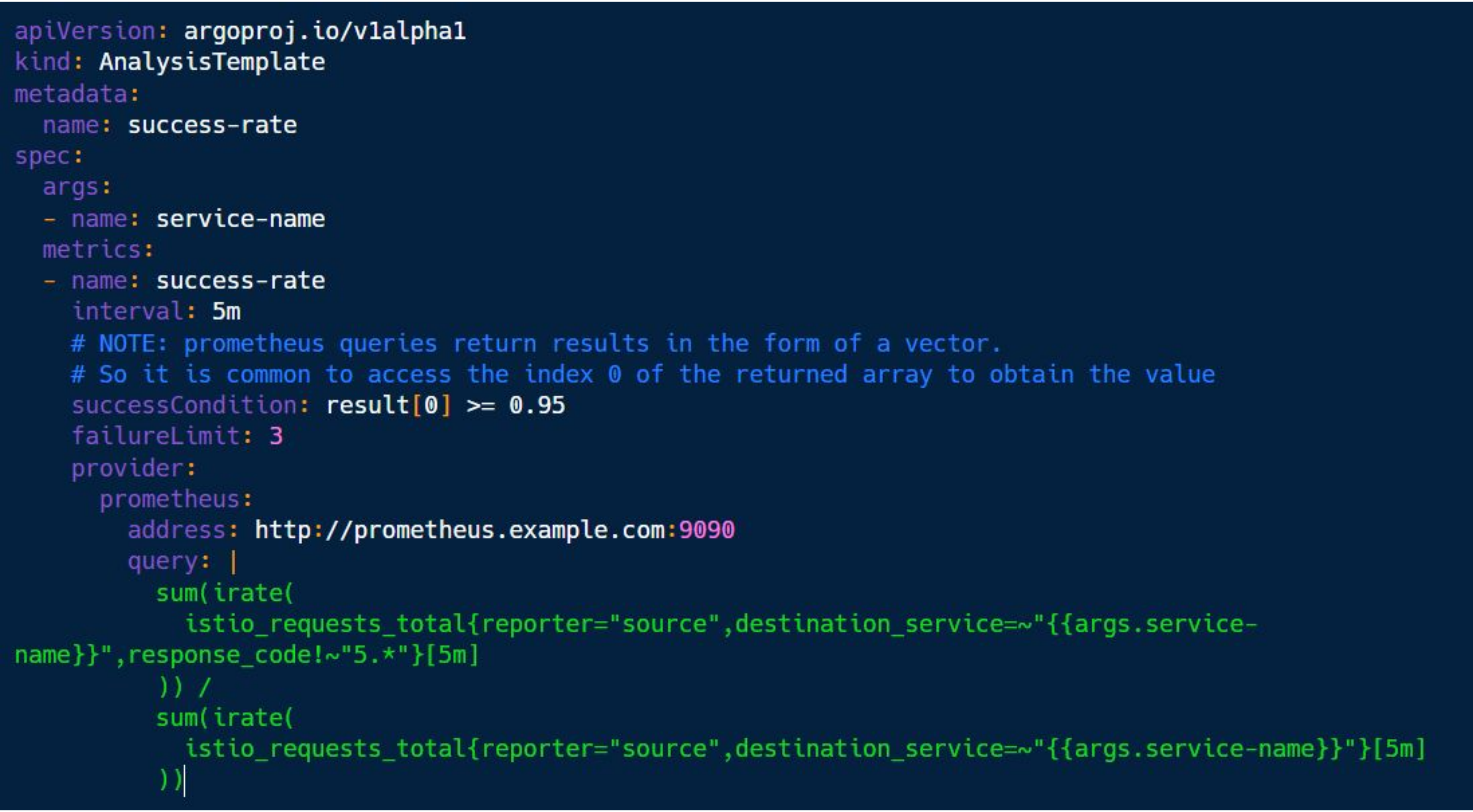
Check metrics

Rollback

Mark failed deployment

Finish Deployment


london.my-netdata.io
Netdata
Real-time performance monitoring, in the greatest possible detail
System Overview
CPU
58.29
0
100
cpu
load



```yaml
apiVersion: argoproj.io/v1alpha1
kind: AnalysisTemplate
metadata:
  name: success-rate
spec:
  args:
  - name: service-name
  metrics:
  - name: success-rate
    interval: 5m
    # NOTE: prometheus queries return results in the form of a vector.
    # So it is common to access the index 0 of the returned array to obtain the value
    successCondition: result[0] >= 0.95
    failureLimit: 3
    provider:
      prometheus:
        address: http://prometheus.example.com:9090
        query: |
          sum(irate(
            istio_requests_total{reporter="source",destination_service=~"{{args.service-name}}",response_code!~"5.*"}[5m]
          )) /
          sum(irate(
            istio_requests_total{reporter="source",destination_service=~"{{args.service-name}}"}[5m]
          ))
```

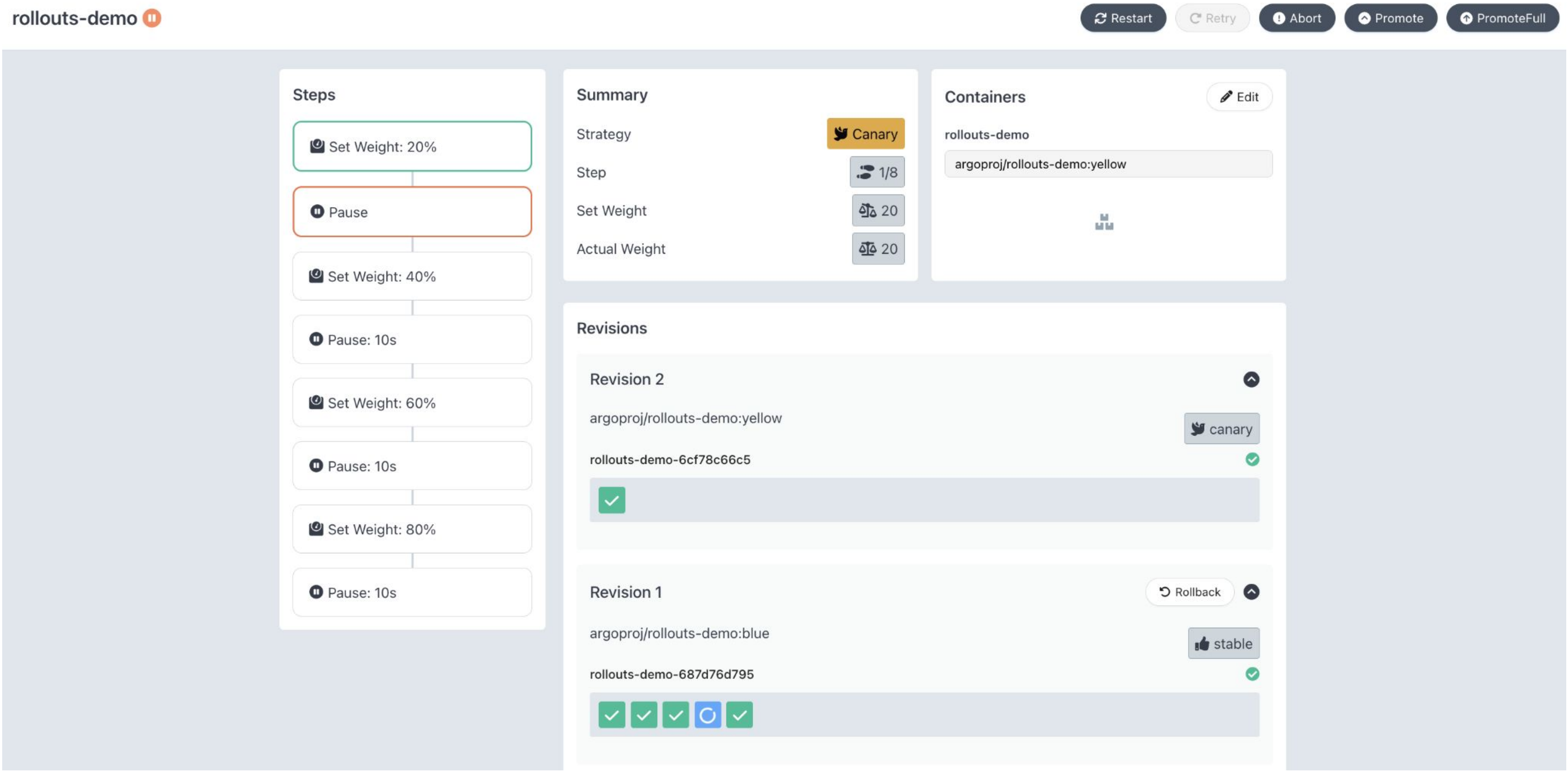
Supported Metric providers

- Prometheus
- Datadog
- New Relic
- Wavefront
- CloudWatch
- Apache SkyWalking
- Graphite

- Custom Web call
- Custom Job
- Custom plugin

Argo Rollouts - Other features

- A/B testing
- Header based routing
- Argo CD UI extension
- Notifications
- Plugins
- CLI/Metrics



rollouts-demo

Steps

- Set Weight: 20%
- Pause
- Set Weight: 40%
- Pause: 10s
- Set Weight: 60%
- Pause: 10s
- Set Weight: 80%
- Pause: 10s

Summary

Strategy: Canary
Step: 1/8
Set Weight: 20
Actual Weight: 20

Containers

rollouts-demo
argoproj/rollouts-demo:yellow

Revisions

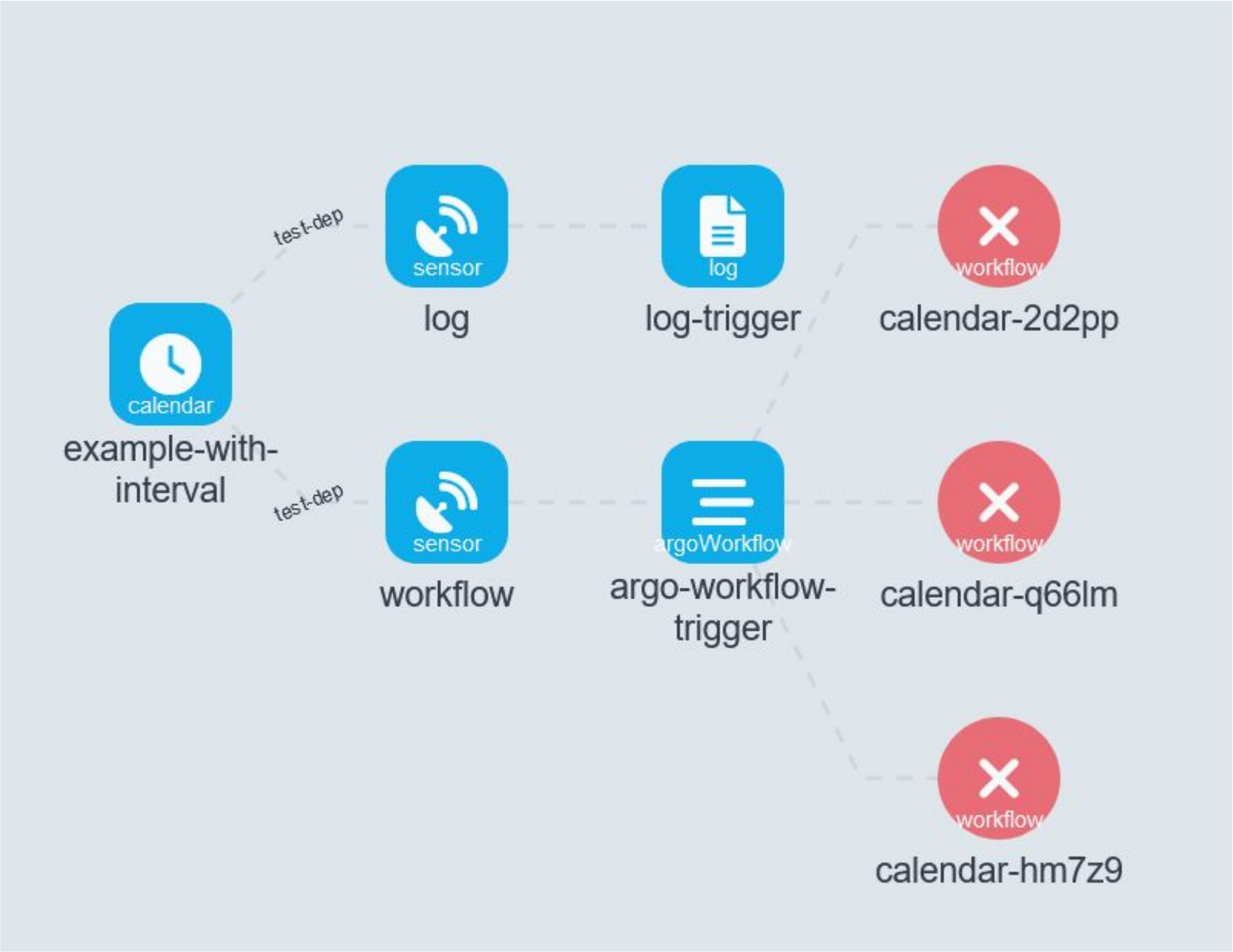
Revision 2
argoproj/rollouts-demo:yellow — canary
rollouts-demo-6cf78c66c5

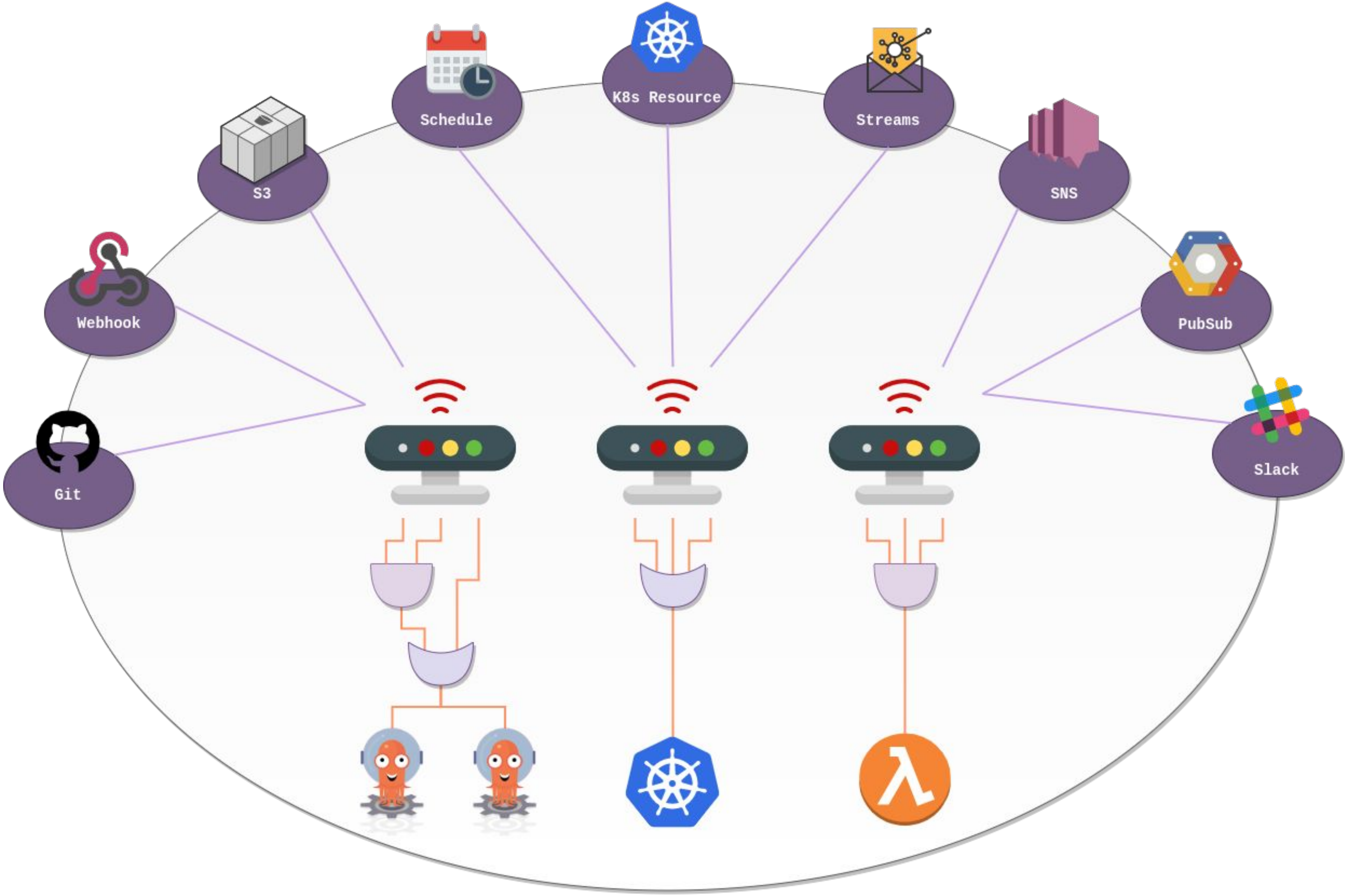
Revision 1
argoproj/rollouts-demo:blue — stable
rollouts-demo-687d76d795

Argo Events

Argo Events

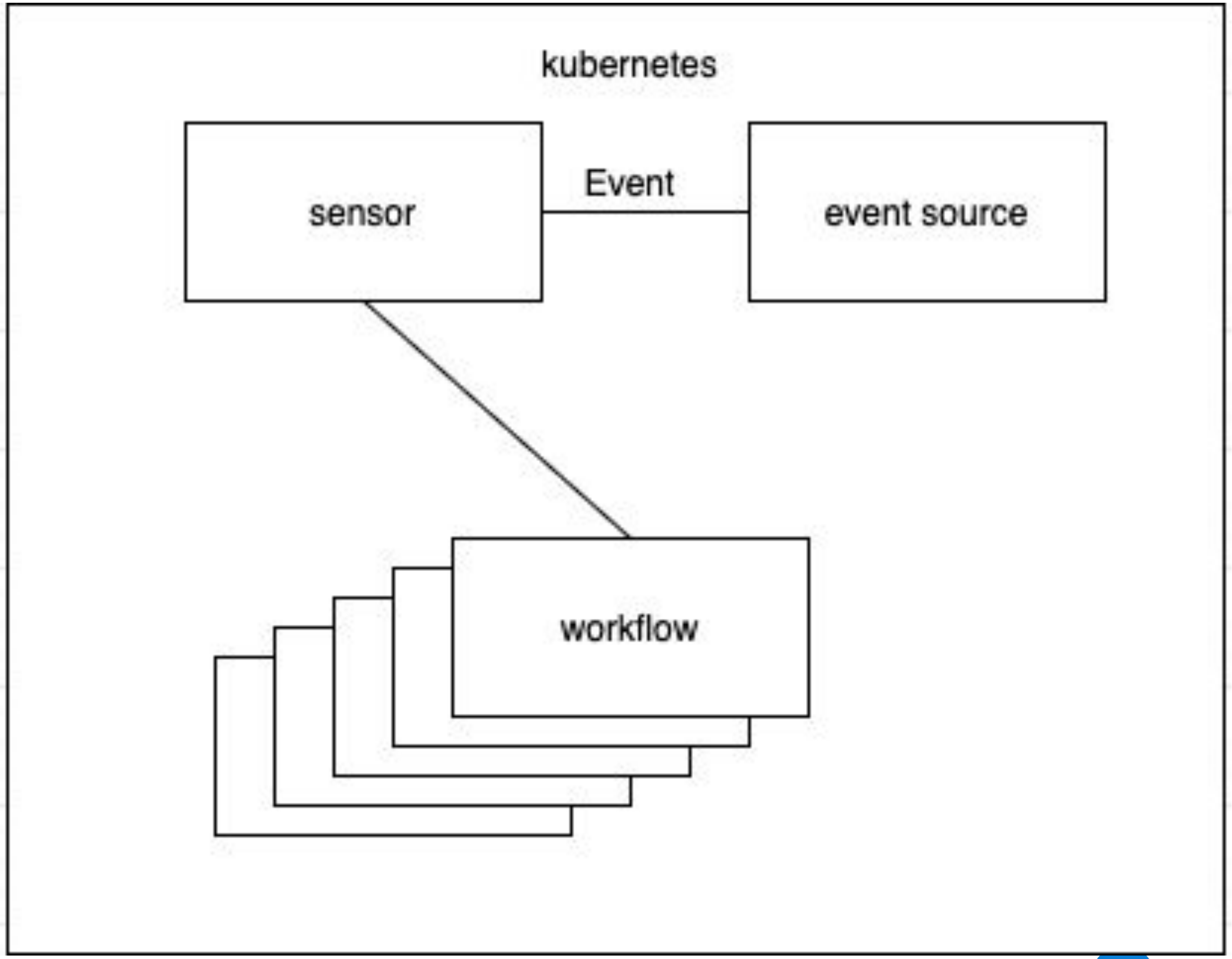
- Generic Event mechanism
- Kubernetes native
- Connects several sources such as AMPQ, SQS, PubSub, Kafka, MQTT, Slack, Webhooks
- cloudevents.io compliant



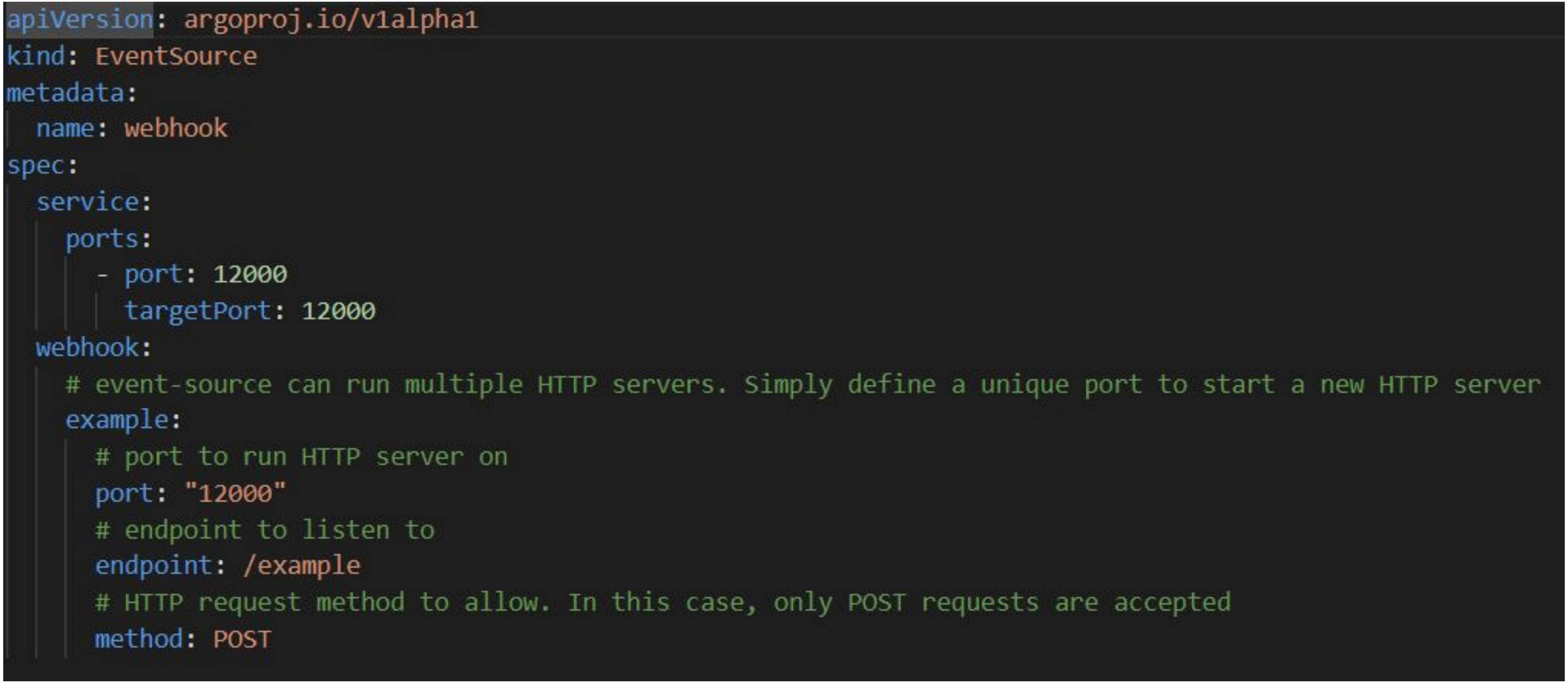

Schedule
K8s Resource
Streams
S3
SNS
Webhook
PubSub
Git
Slack

Argo Events entities

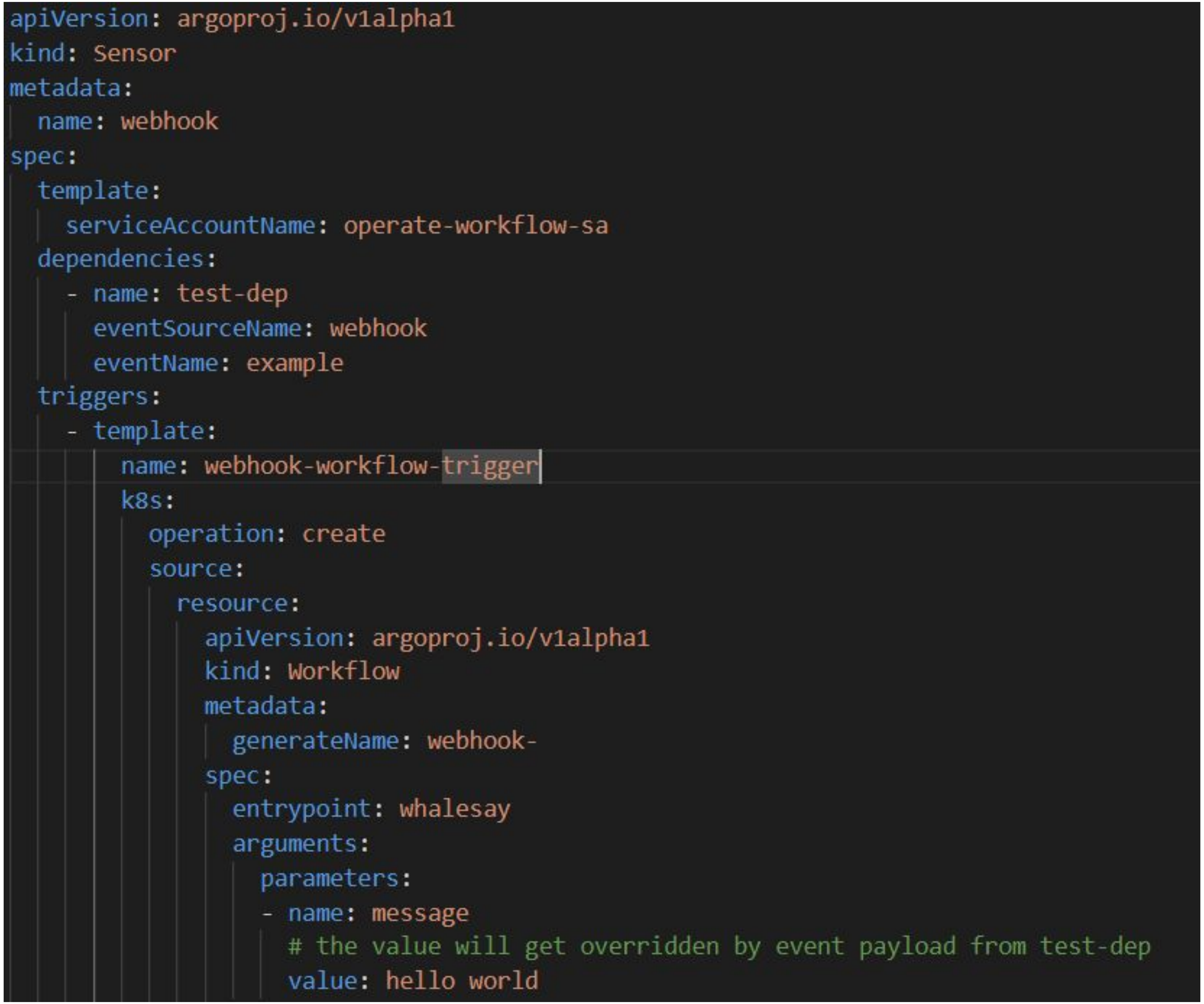
- **EventSource** - where to read events from
- **Trigger** - what to do when an event happens
- **Sensor** - connects sources and triggers
- **EventBus** - connects Sources and Sensors together



Creating events from webhooks



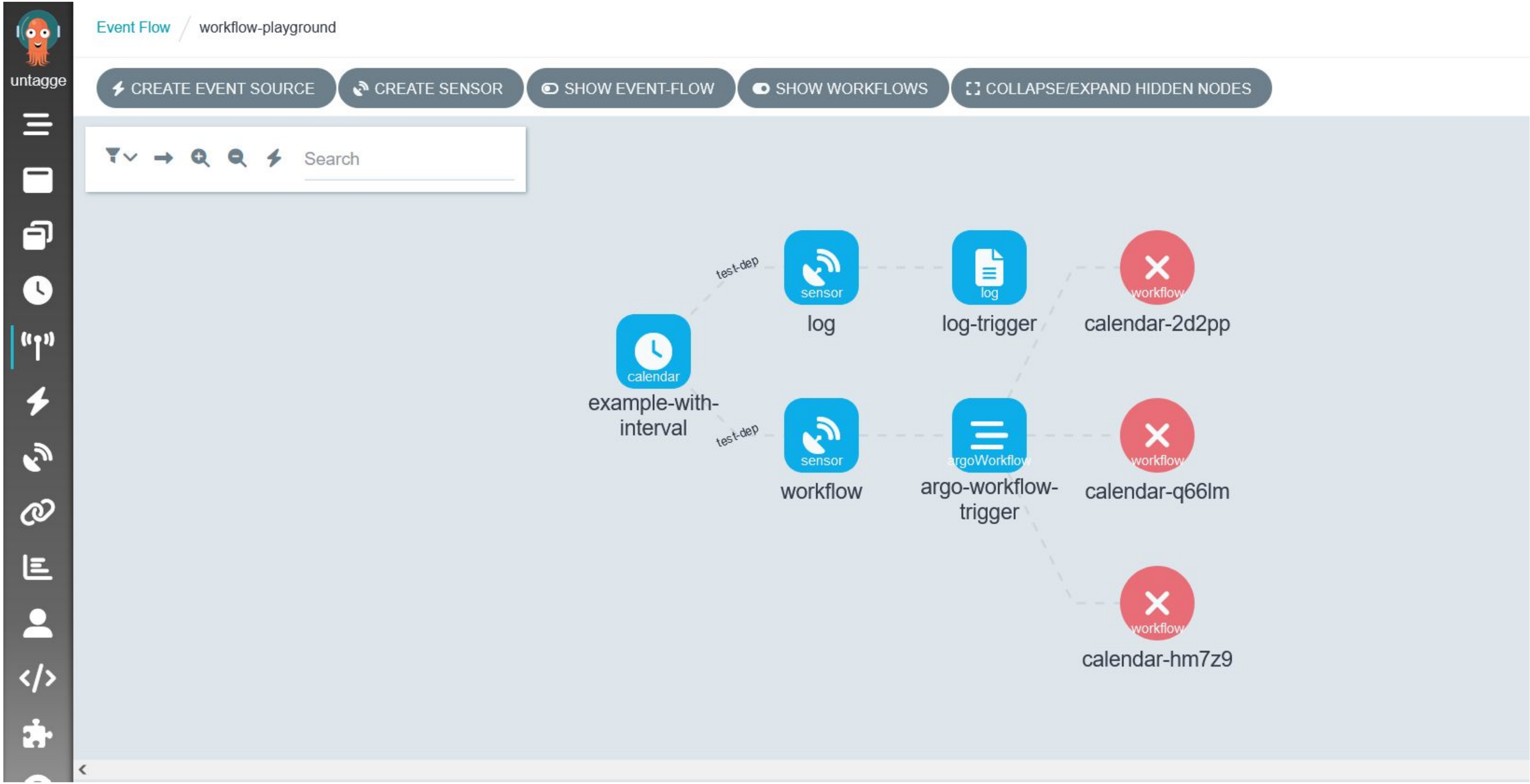
```yaml
apiVersion: argoproj.io/v1alpha1
kind: EventSource
metadata:
  name: webhook
spec:
  service:
    ports:
      - port: 12000
        targetPort: 12000
  webhook:
    # event-source can run multiple HTTP servers. Simply define a unique port to start a new HTTP server
    example:
      # port to run HTTP server on
      port: "12000"
      # endpoint to listen to
      endpoint: /example
      # HTTP request method to allow. In this case, only POST requests are accepted
      method: POST
```



```yaml
apiVersion: argoproj.io/v1alpha1
kind: Sensor
metadata:
  name: webhook
spec:
  template:
    serviceAccountName: operate-workflow-sa
  dependencies:
    - name: test-dep
      eventSourceName: webhook
      eventName: example
  triggers:
    - template:
        name: webhook-workflow-trigger
        k8s:
          operation: create
          source:
            resource:
              apiVersion: argoproj.io/v1alpha1
              kind: Workflow
              metadata:
                generateName: webhook-
              spec:
                entrypoint: whalesay
                arguments:
                  parameters:
                  - name: message
                    # the value will get overridden by event payload from test-dep
                    value: hello world
```

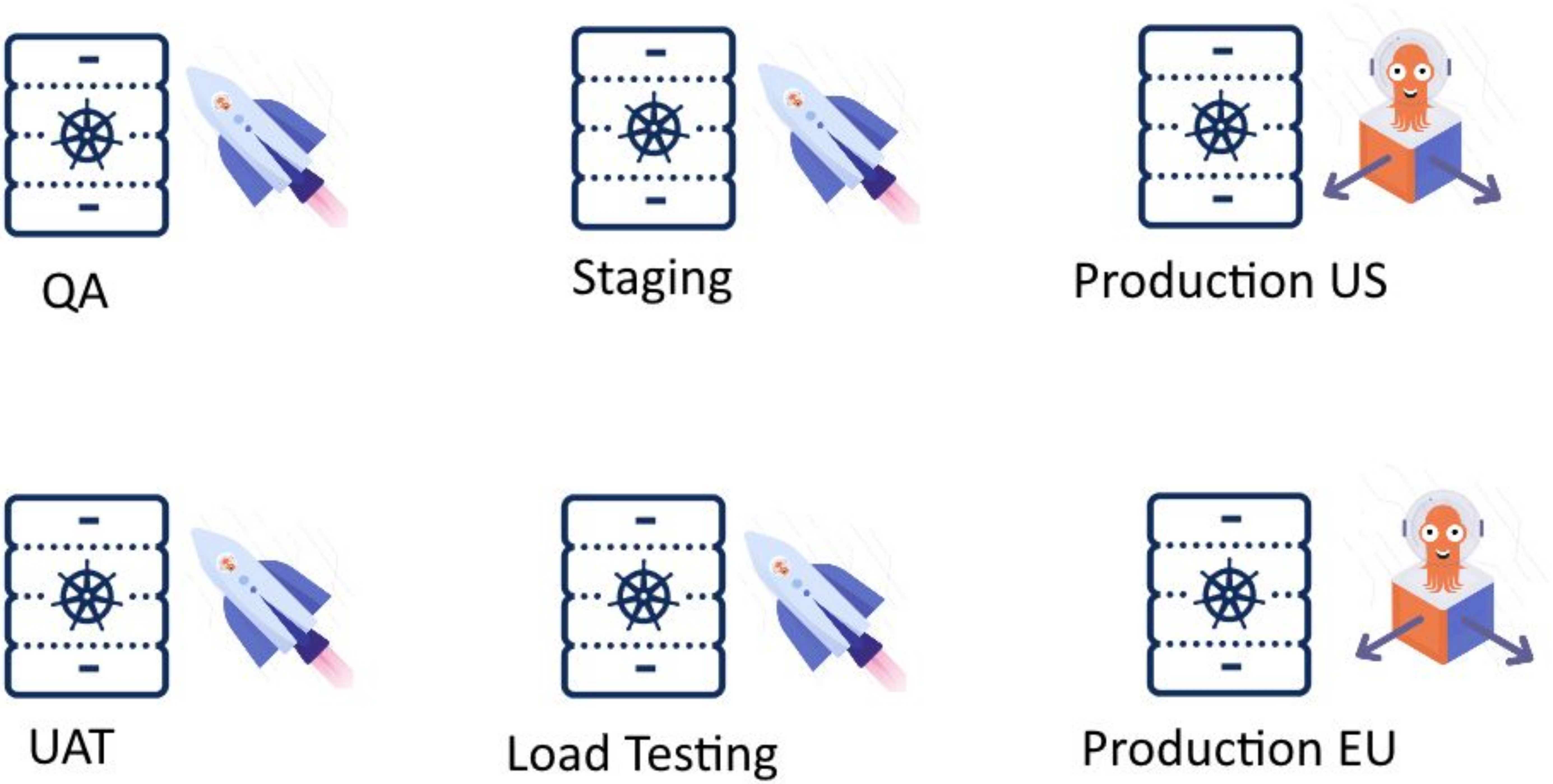
Starting a workflow from a webhook event

Argo Workflows UI also works for Argo Events



Use Cases

Argo CD and Argo Rollouts



QA

Staging

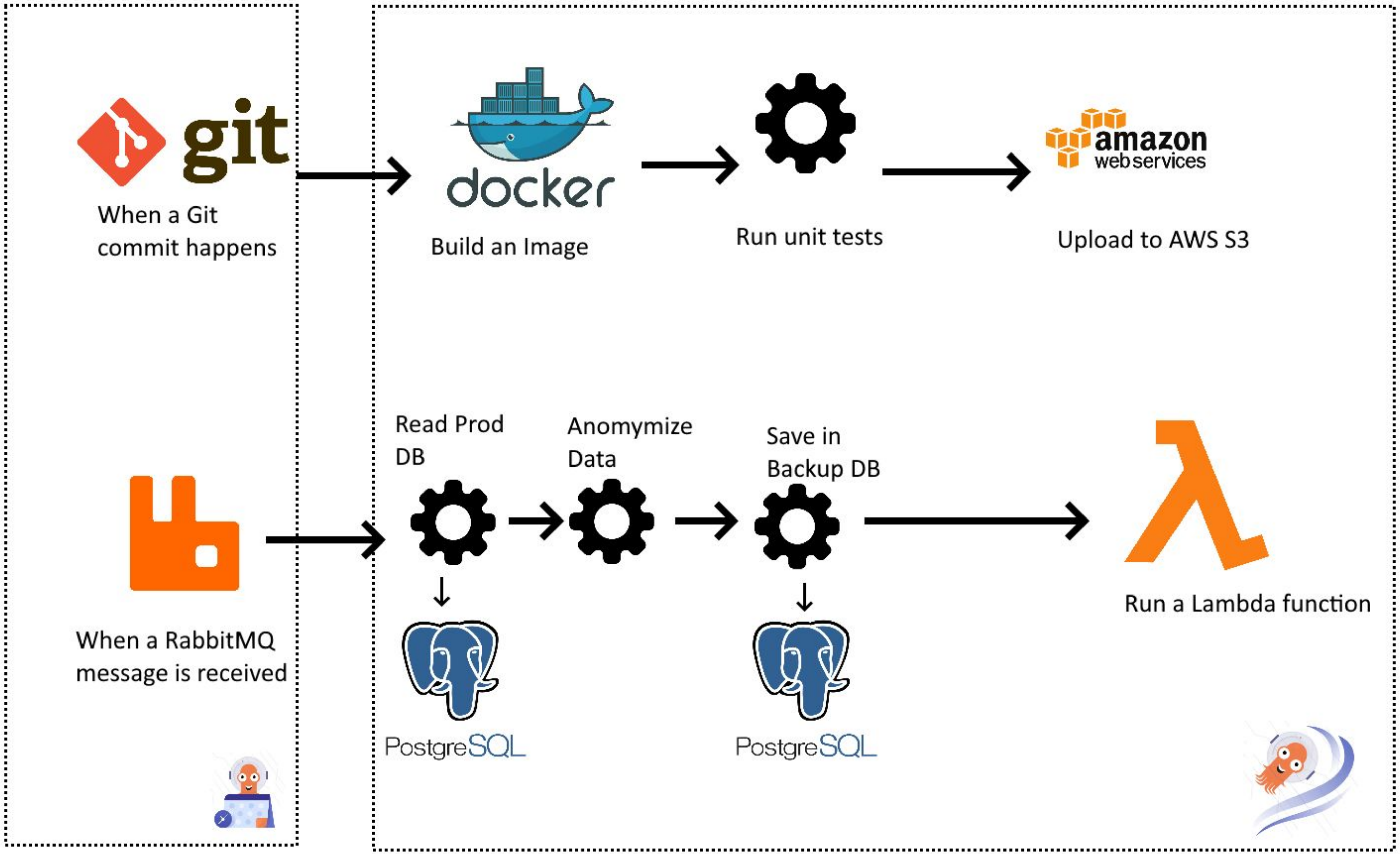
Production US

UAT

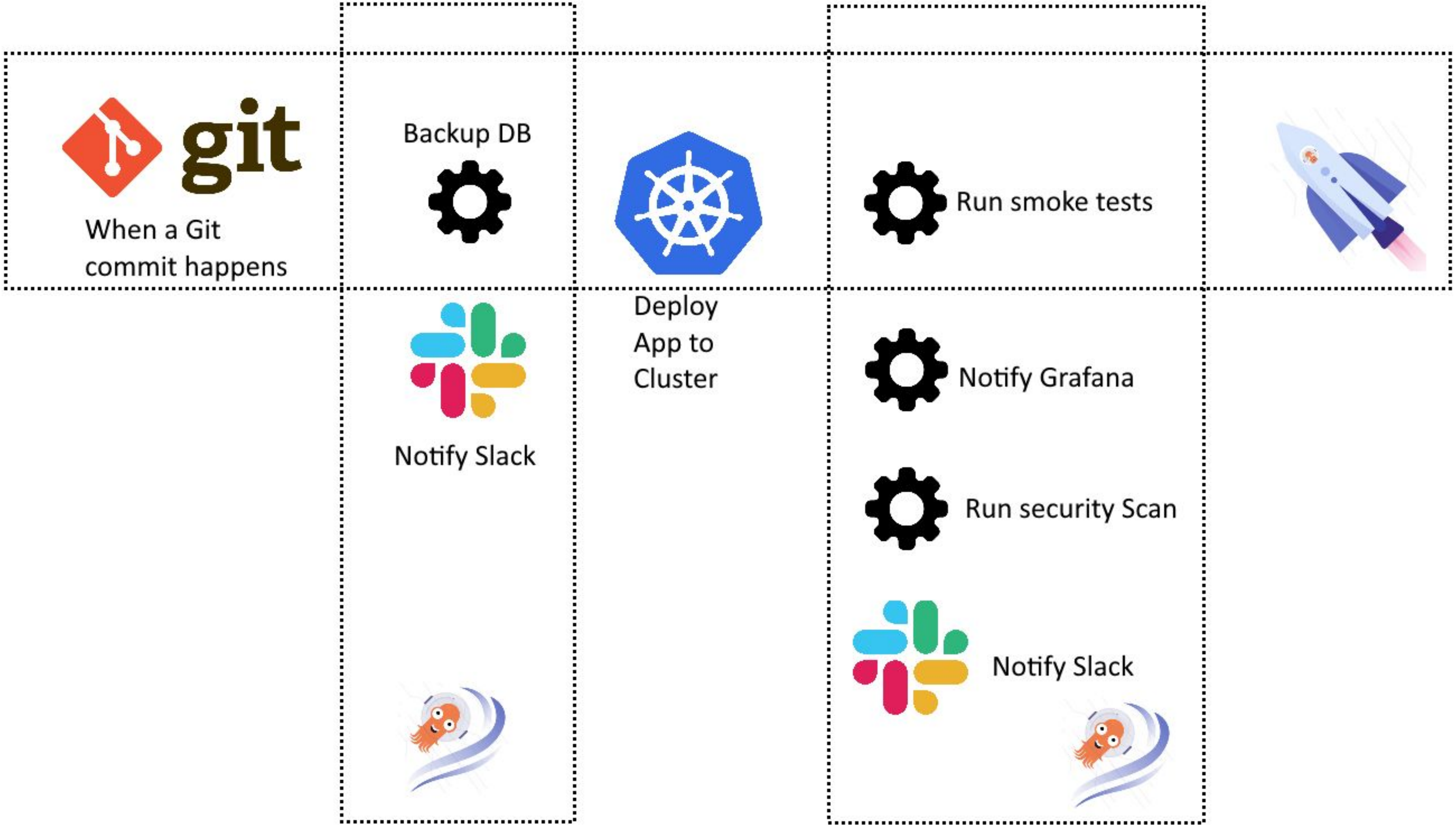
Load Testing

Production EU

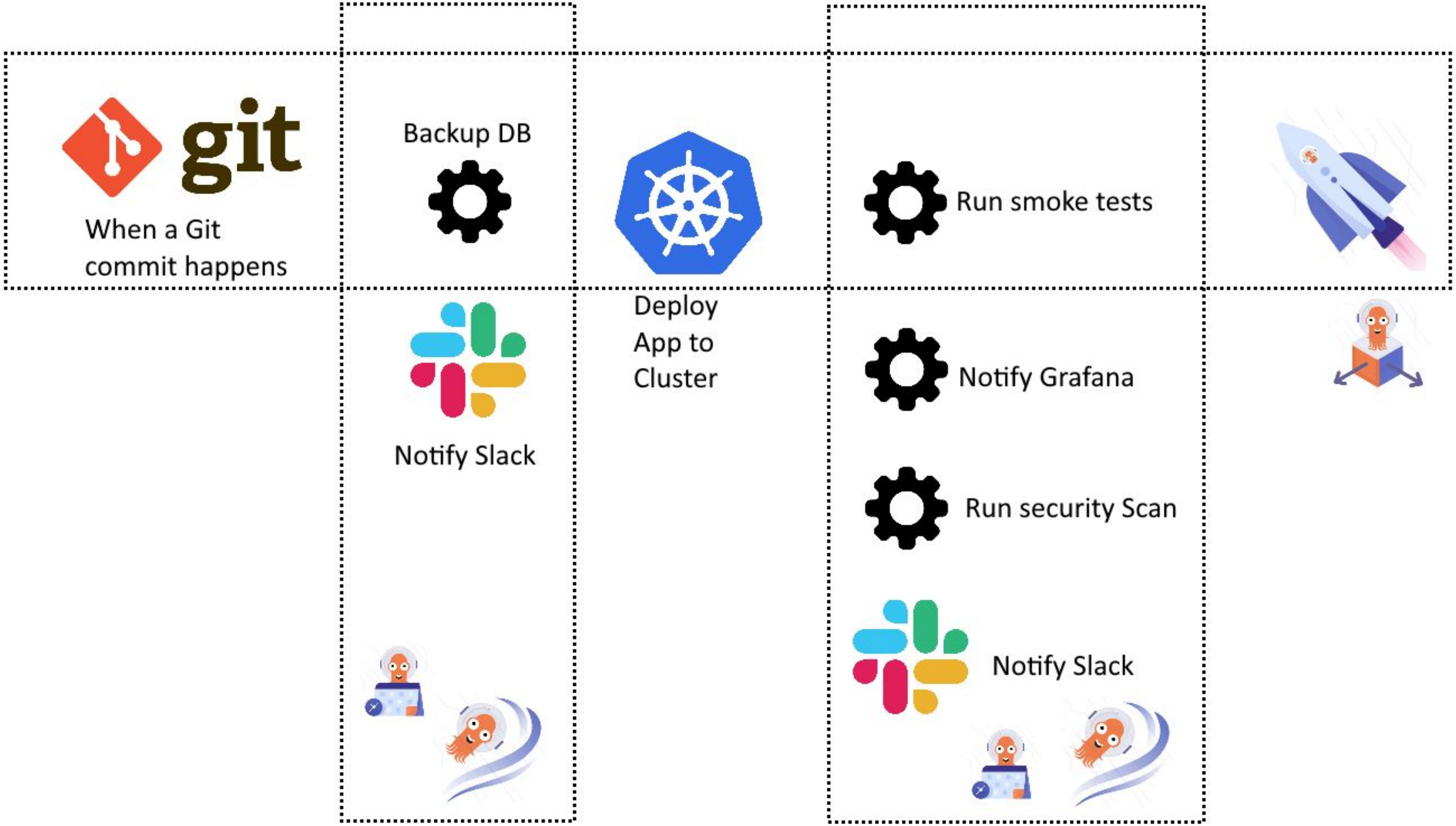
Argo Workflows and Argo Events



Argo CD and Argo Workflows



All 4 Argo projects (developer portal)



When a Git commit happens

Backup DB

Notify Slack

Deploy App to Cluster

Run smoke tests

Notify Grafana

Run security Scan

Notify Slack

Thank you!

Questions: kostis.kapelonis@octopus.com

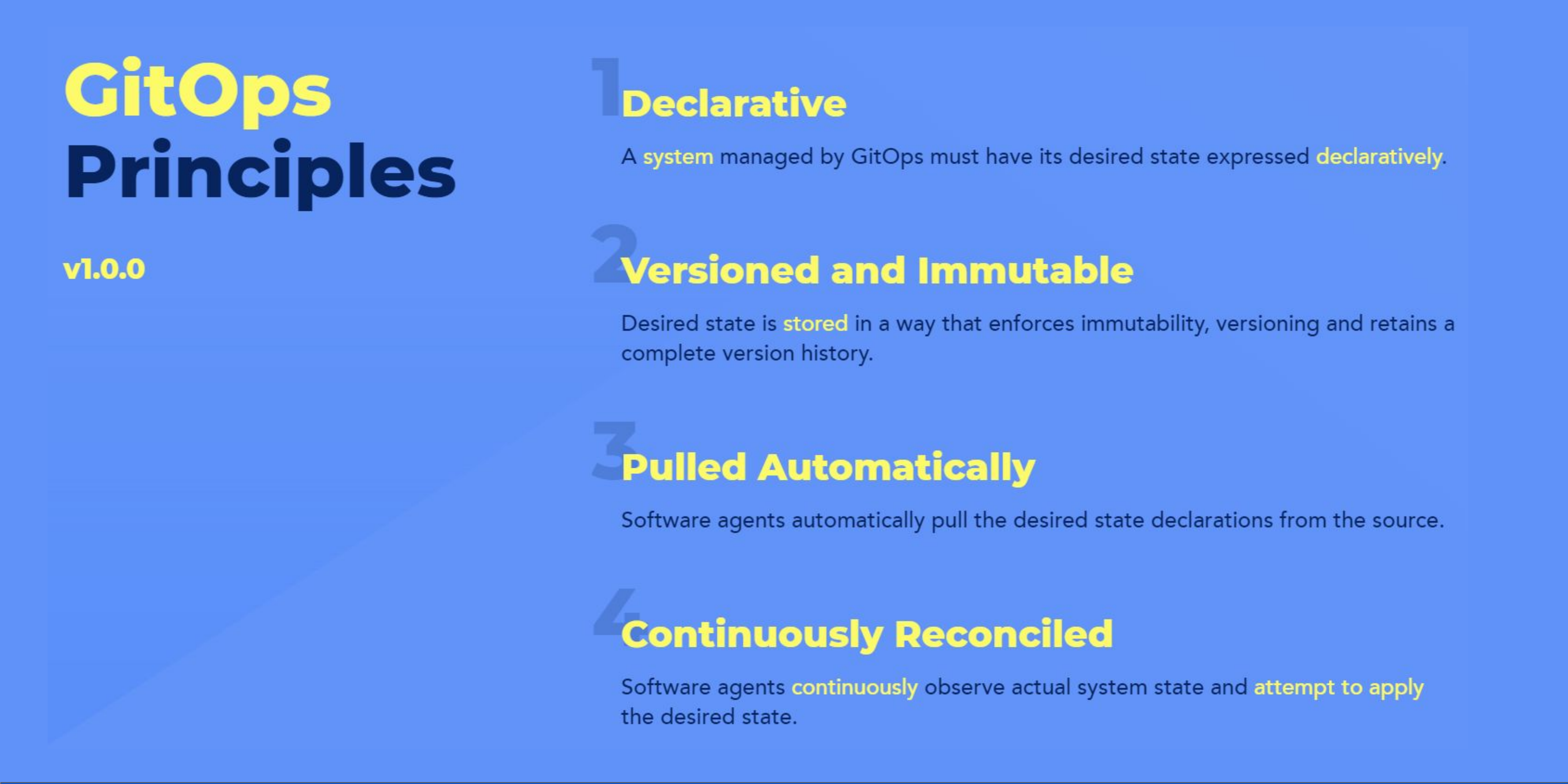
GitOps/Argo CD certification learning.codefresh.io

CNCF Slack https://slack.cncf.io/

Blog https://blog.argoproj.io/

Octopus Deploy

Backup Slides



GitOps Principles

v1.0.0

1 Declarative

A system managed by GitOps must have its desired state expressed declaratively.

2 Versioned and Immutable

Desired state is stored in a way that enforces immutability, versioning and retains a complete version history.

3 Pulled Automatically

Software agents automatically pull the desired state declarations from the source.

4 Continuously Reconciled

Software agents continuously observe actual system state and attempt to apply the desired state.

From OpenGitOps.dev

Project history

1. Startup Applatix was formed (2015)
2. Argo Workflows was released by Applatix (2017)
3. Applatix was acquired by Intuit (2018)
4. Argo CD and Argo Rollouts were created by Intuit (2018 and 2019)
5. Argo Events was donated by Blackrock Inc (2018)
6. Incubating open source software of the CNCF (accepted in 2020)
7. Graduated from CNCF in 2022 😎