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The Case for ArgoCD and cdEvents Integration

Luke Philips – Kostis Kapelonis

Agenda

1. GitOps broke Dev EX
2. Intro to CD events
3. Existing support from other projects
4. Argo CD and CD events
5. Demo / examples
6. Specific use cases and more resources

Your hosts

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Luke Philips
Principal ~~Staff~~
Software Engineer

Kostis Kapelonis
Developer Advocate
Octopus Deploy

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Dev Ex for GitOps

Converting to GitOps

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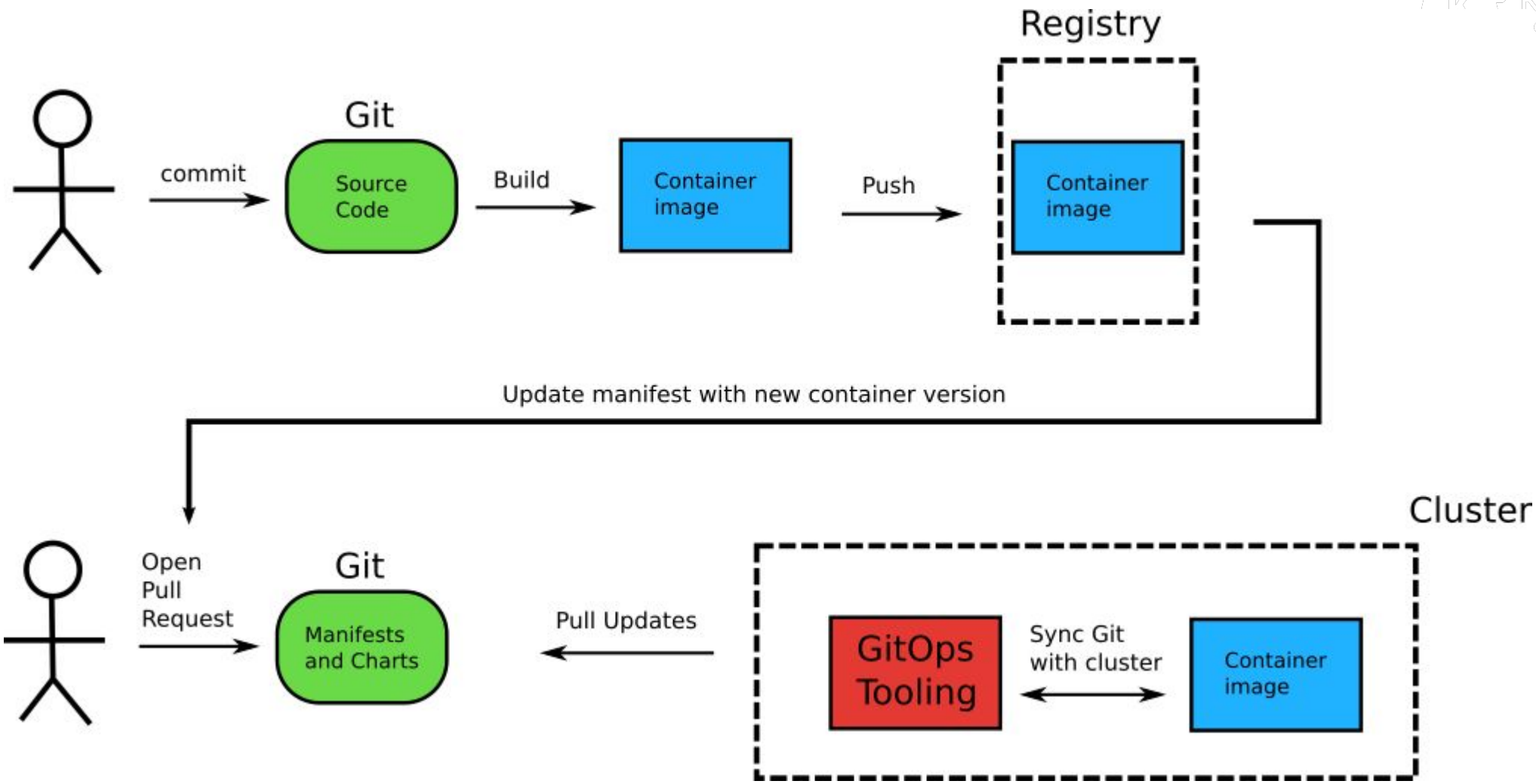

Before

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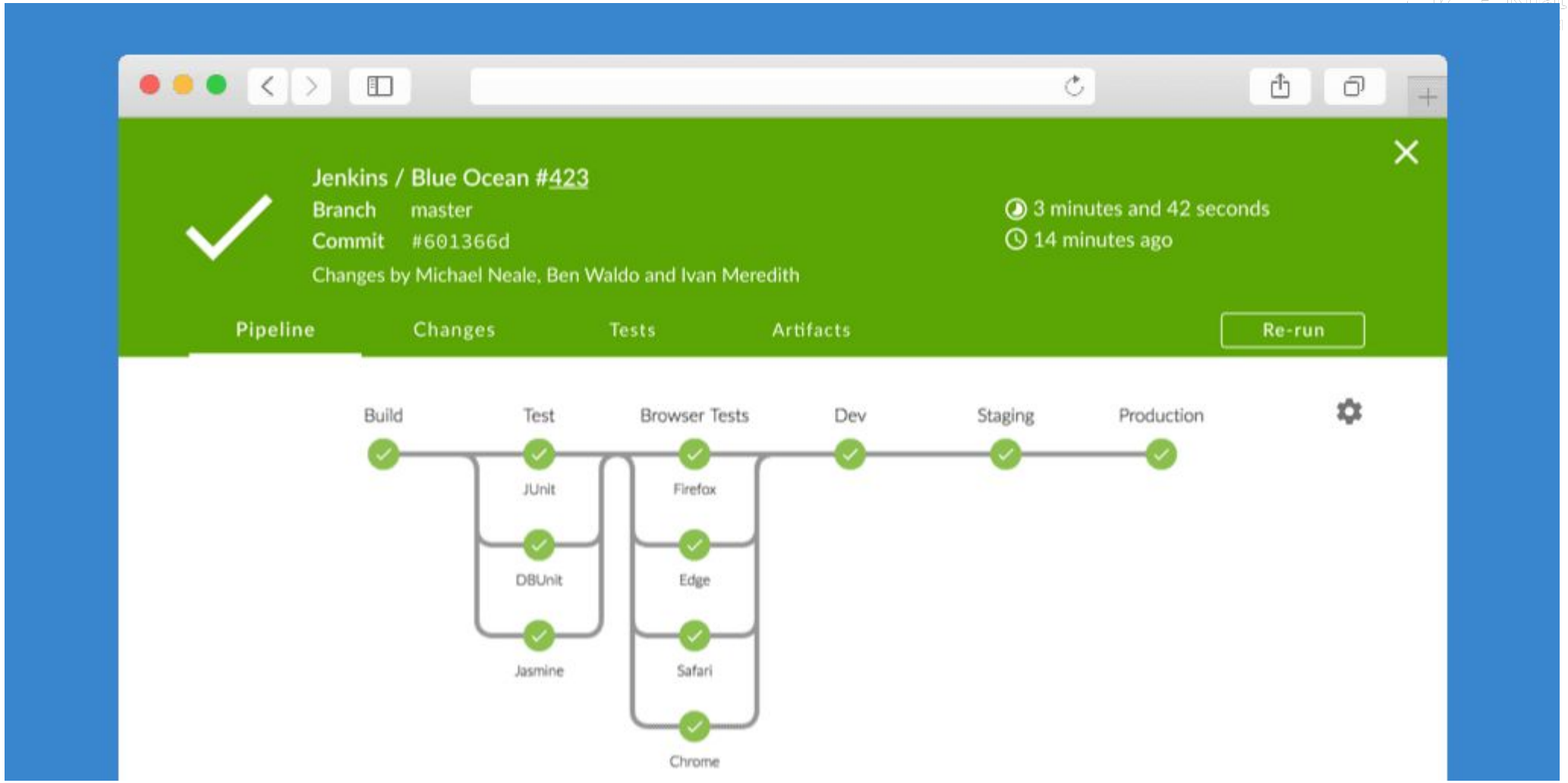
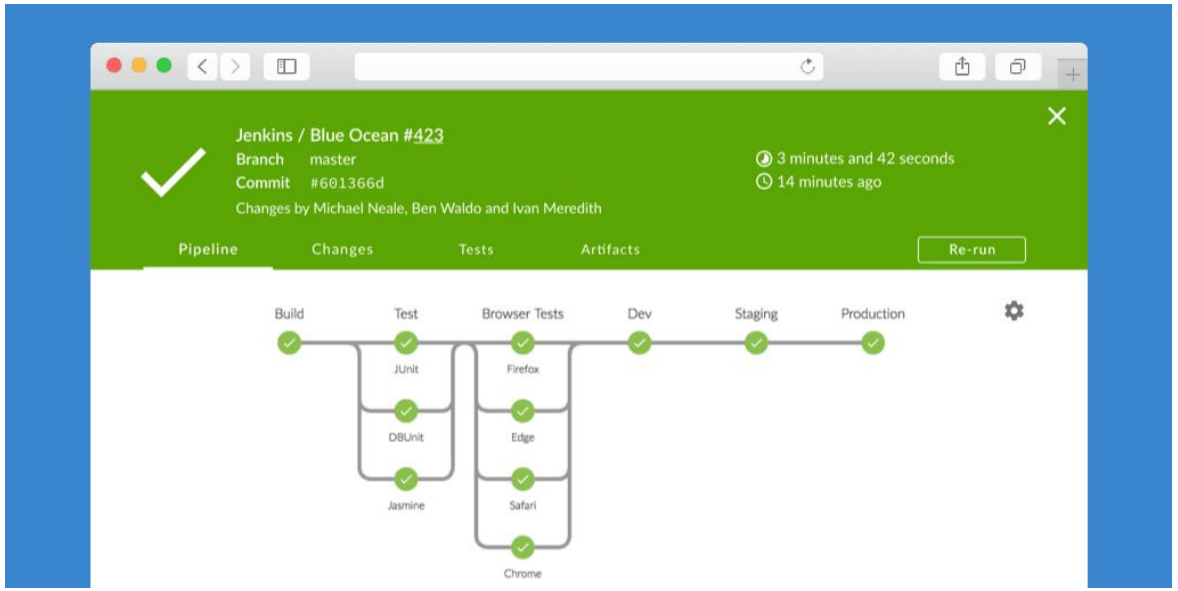
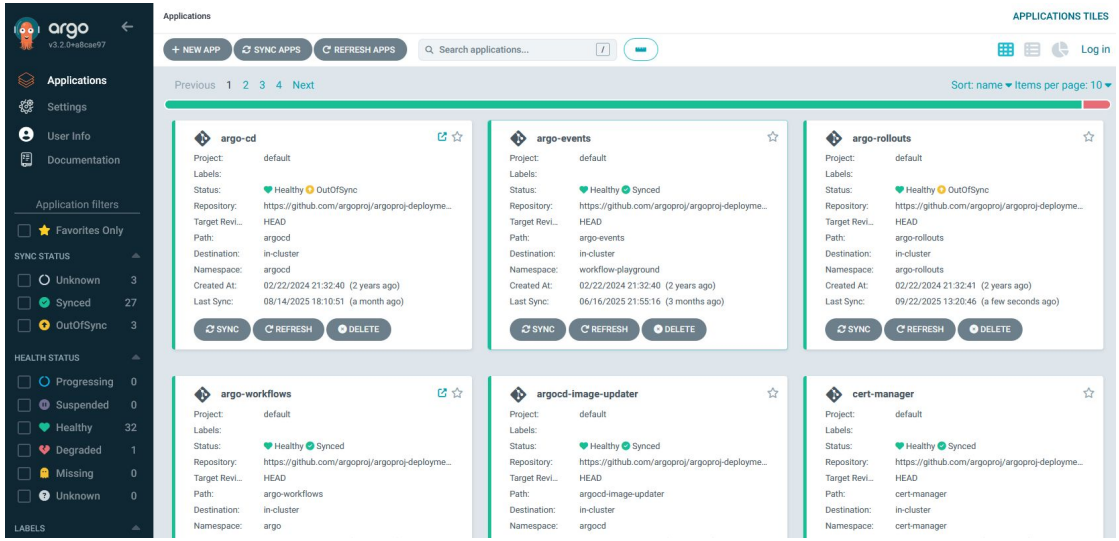
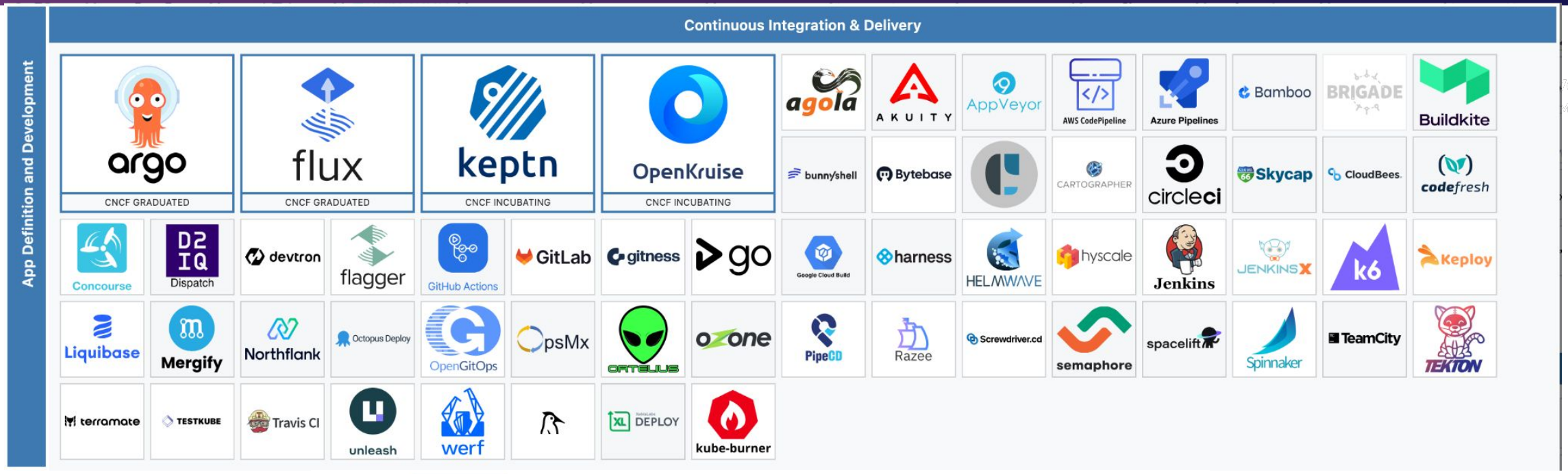


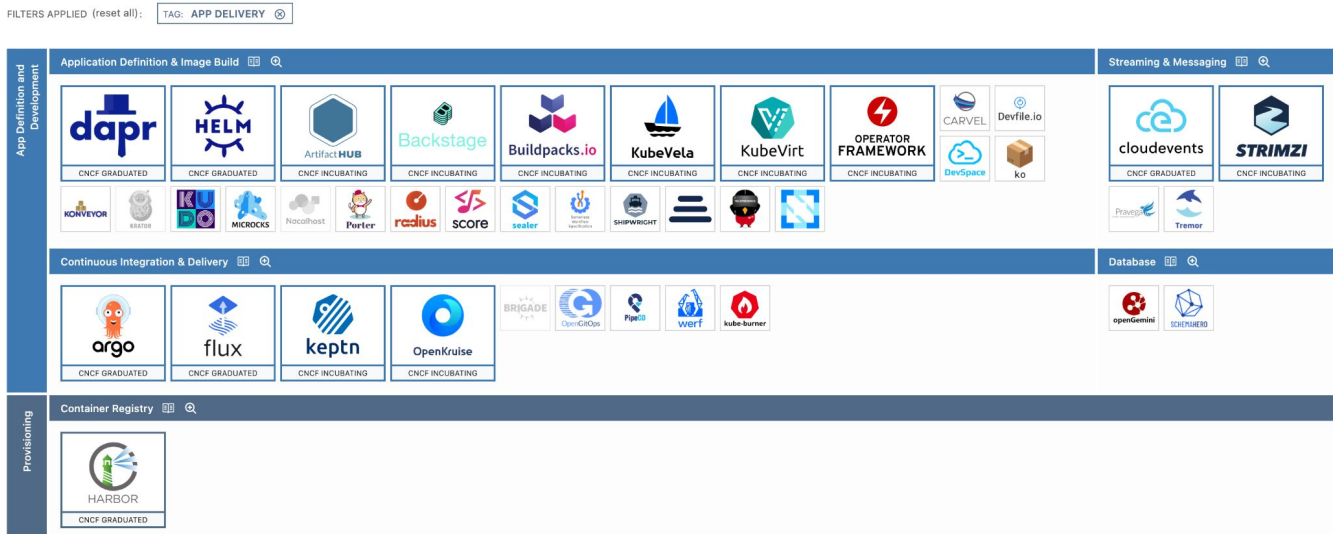
After


Jenkins / Blue Ocean #423
Branch master
Commit #601366d
Changes by Michael Neale, Ben Waldo and Ivan Meredith
3 minutes and 42 seconds
14 minutes ago
Pipeline
Changes
Tests
Artifacts
Re-run
Build
Test
Browser Tests
Dev
Staging
Production
JUnit
DBUnit
Jasmine
Firefox
Edge
Safari
Chrome

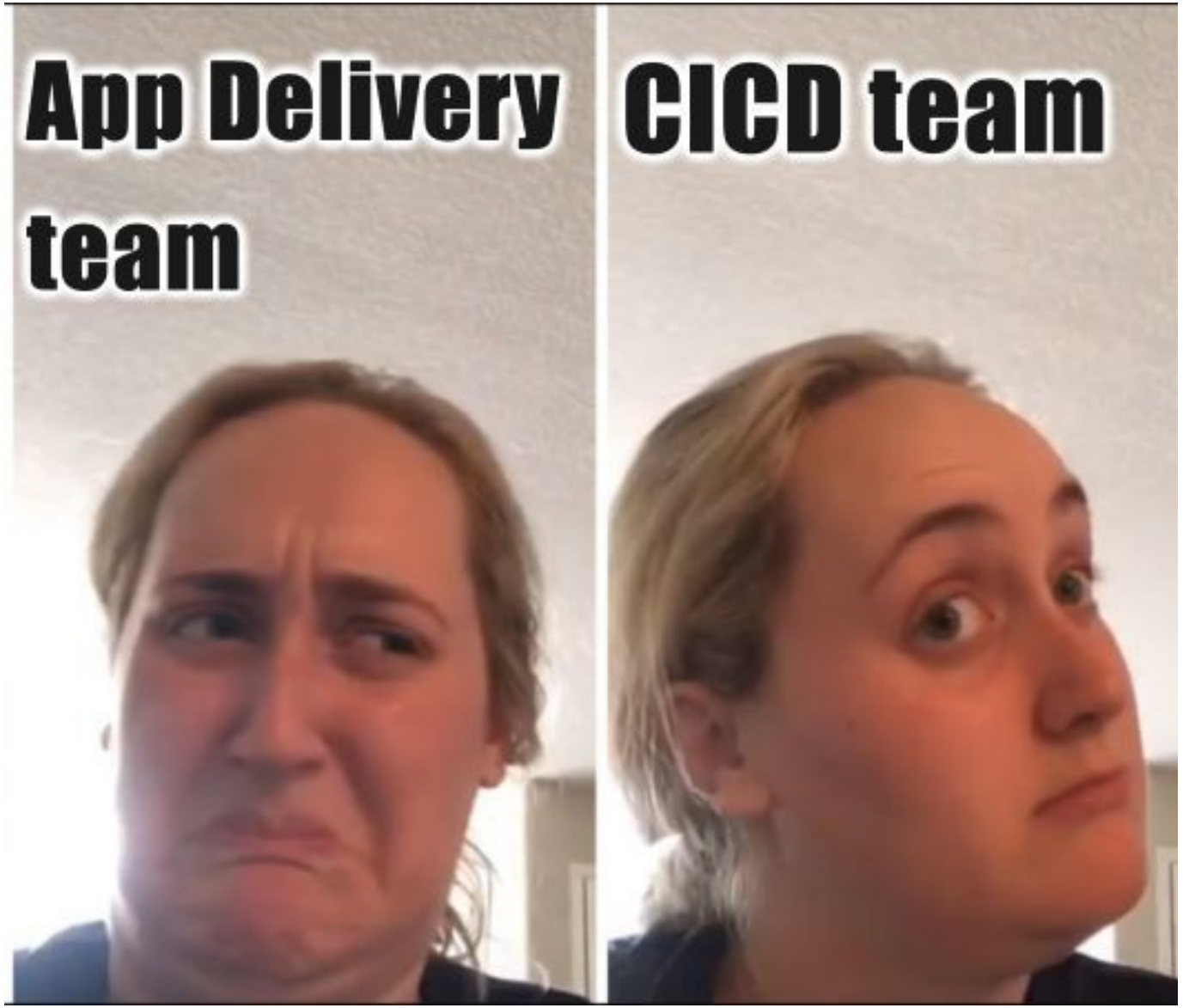

argo
Applications
Settings
User Info
Documentation
Application filters
Favorites Only
SYNC STATUS
Unknown 3
Synced 27
OutOfSync 3
HEALTH STATUS
Progressing 0
Suspended 0
Healthy 32
Degraded 1
Missing 0
Unknown 0
LABELS
Applications
APPLICATIONS TILES
+ NEW APP
SYNC APPS
REFRESH APPS
Search applications...
Log in
Previous 1 2 3 4 Next
Sort: name Items per page: 10
argo-cd
argo-events
argo-rollouts
argo-workflows
argocd-image-updater
cert-manager
SYNC
REFRESH
DELETE

How We Got Here





Challenge Your Preconceived Notions



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Intro to CD Events

cdEvents - Intro

- Common **specification** for Continuous Integration, Continuous Delivery, and Continuous Operation event communication
- Tool-agnostic, vendor-neutral
- Part of Continuous Delivery Foundation (CDF)
- Not a tool - a shared language

cdEvents - Intro

- ✅ Containers standardized shipping
- 🔄 cdEvents standardizes communication

```
{
  "context": {
    "version": "0.4.1",
    "id": "271069a8-fc18-44f1-b38f-9d70a1695819",
    "chainId": "4c8cb7dd-3448-41de-8768-eec704e2829b",
    "source": "/event/source/123",
    "type": "dev.cdevents.environment.created.0.2.0",
    "timestamp": "2023-03-20T14:27:05.315384Z",
    "schemaUri": "https://myorg.com/schema/custom",
    "links": [
      {
        "linkType": "RELATION",
        "linkKind": "TRIGGER",
        "target": {
          "contextId": "5328c37f-bb7e-4bb7-84ea-9f5f85e4a7ce"
        },
        "tags": {
          "foo1": "bar",
          "foo2": "bar"
        }
      }
    ]
  },
  "subject": {
    "id": "mySubject123",
    "source": "/event/source/123",
    "type": "environment",
    "content": {
      "name": "testEnv",
      "url": "https://example.org/testEnv"
    }
  }
}
```

What happened

Where it happened

Types of Events

(Core)

pipelineRun, taskRun

(Continuous Integration)

buildStarted, artifactPackaged

(Source control)

reporitoryCreated,

branchDeleted, changeCreated

(Continuous Deployment)

environmentCreated,

serviceDeployed

Most relevant to Argo CD

(Operations)

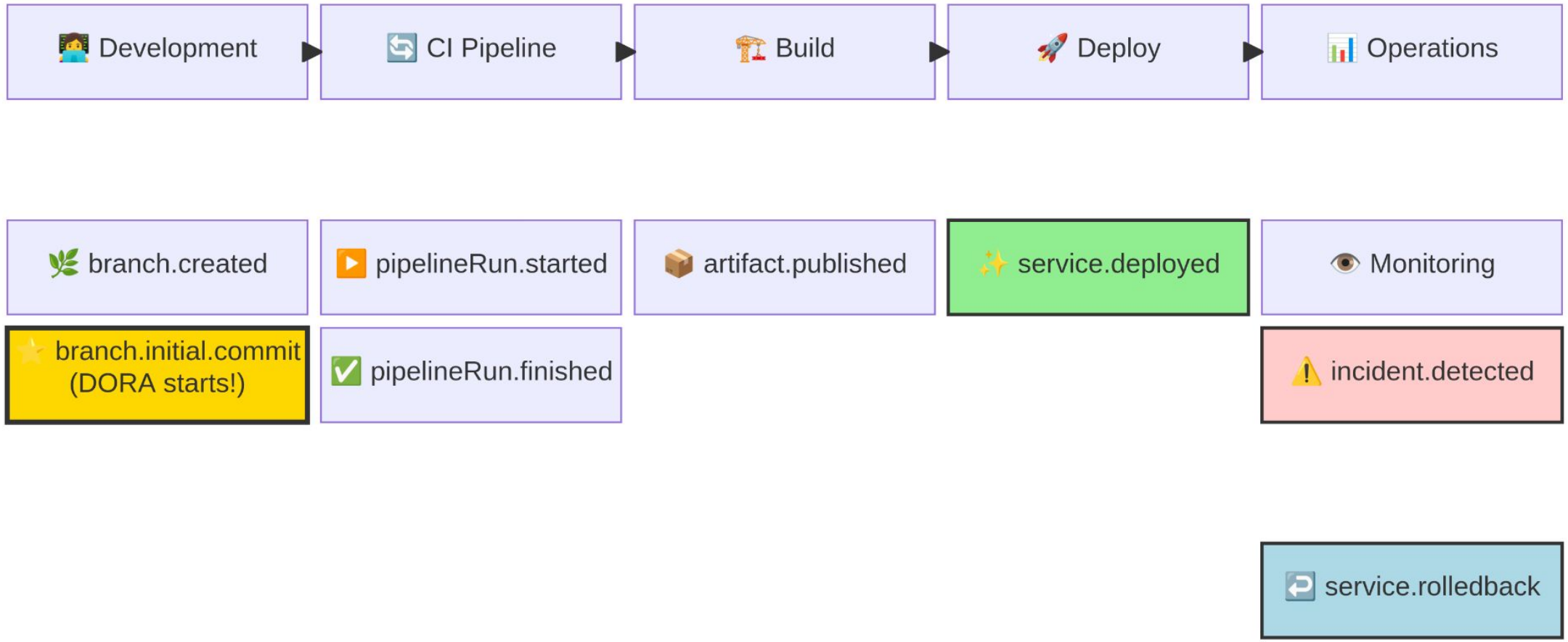
incidentReported, ticketCreated

(Testing)

testCaseRunStarted,

testSuiteRunQueued

cdEvents - In Action



Each event has standard structure: subject (what), predicate (action), context (when/where)**

cdEvents - Why?

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Integration Complexity

- Every tool speaks a different language
- Glue code multiplies with each new tool
- Example: 3 companies, 3 completely different tool stacks

Observability Gaps

- Can't see the full picture across tools
- Questions we can't answer:
  - What's running right now?
  - Where's the bottleneck?
  - How long did end-to-end take?

Vendor Lock-in

- Switching tools means rewriting integrations
- Technical debt prevents innovation
- Cost of change is prohibitive

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Ecosystem support

cdEvents - Already Adopted

Production Ready:

- ✅ Jenkins - Plugin available in official repository
- ✅ Tekton
- ✅ Spinnaker
- ✅ Flux
- ✅ Argo Events

In Progress:

- 🔄 Harbor - CloudEvents support, cdEvents planned
- 🔄 ArgoCD - That's why we're here!

cdEvents - contributors

Red Hat

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Argo CD and CDEvents

cdEvents - direct

cd events

cd events

Receiver

cdEvents - intermediate proxy

Notification

Event manager

cd events

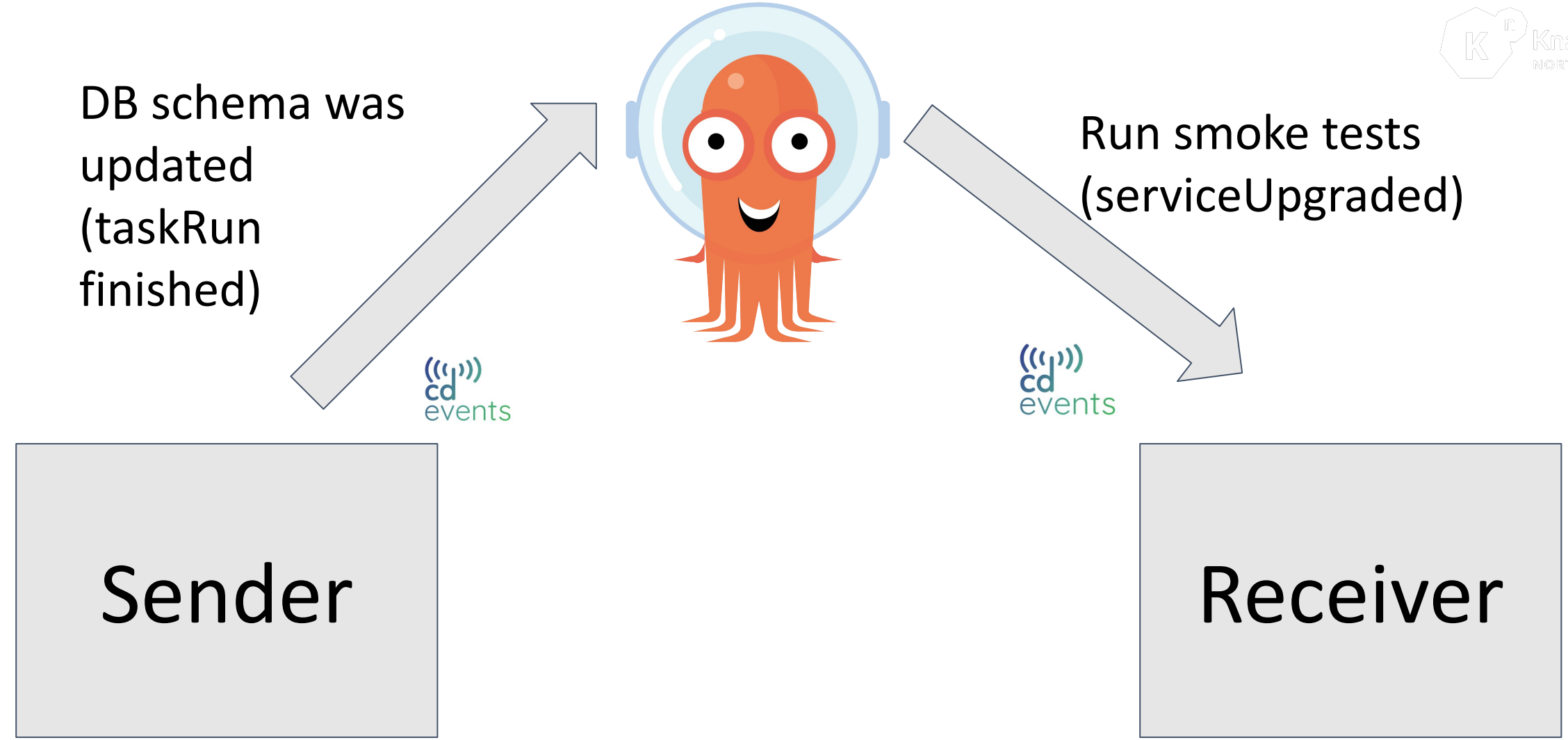
Receiver

cd events

cdEvents - Receive

Sender

cdEvents - full vision



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Demo

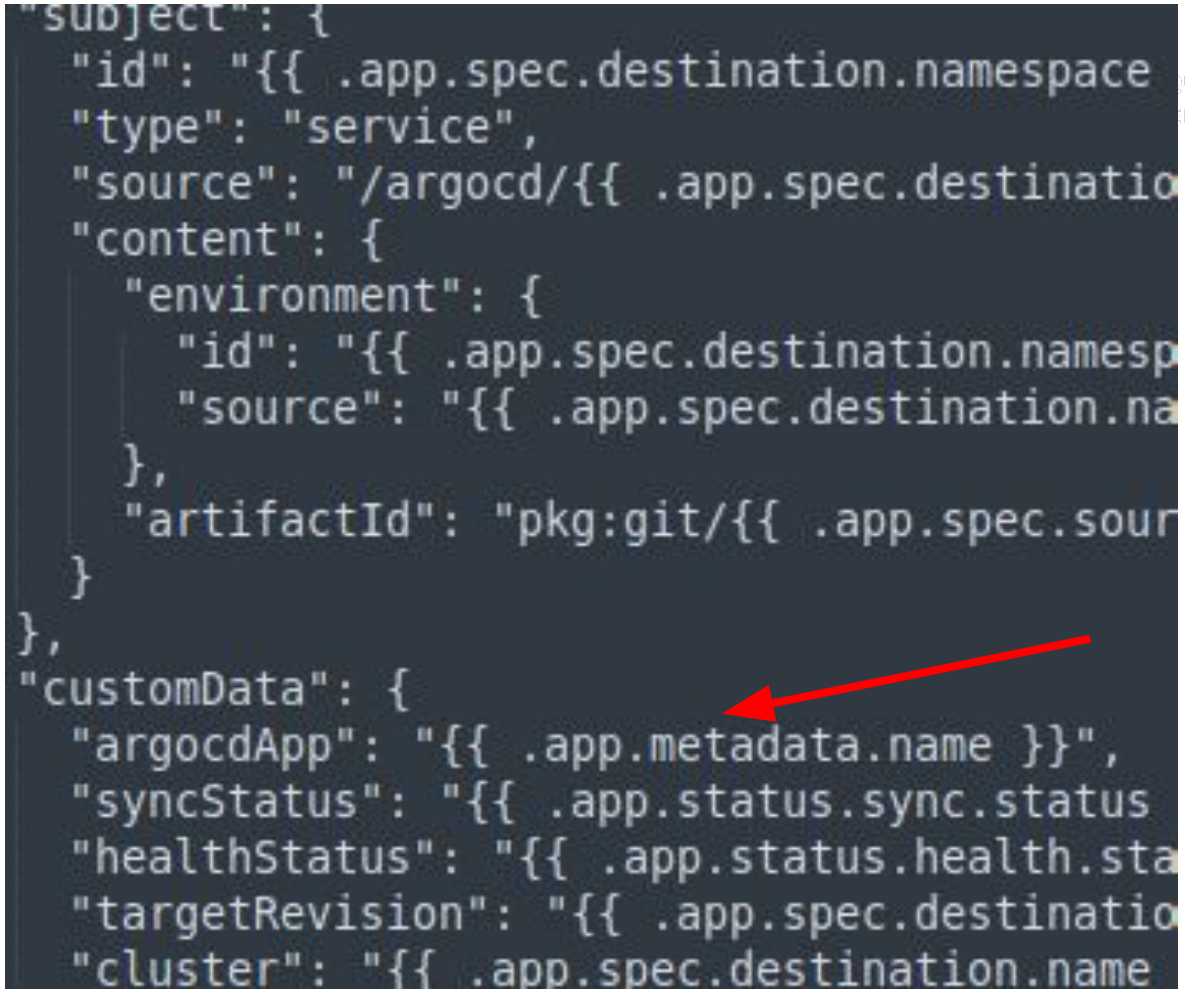
Demo

- Argo CD mapping for cdEvents via Notifications
- serviceDeployed, servicePublished, serviceRemoved
- incidentDetected, incidentResolved

github.com/argo-multiverse-labs/local-cluster/tree/main/argo-cdviz

Demo

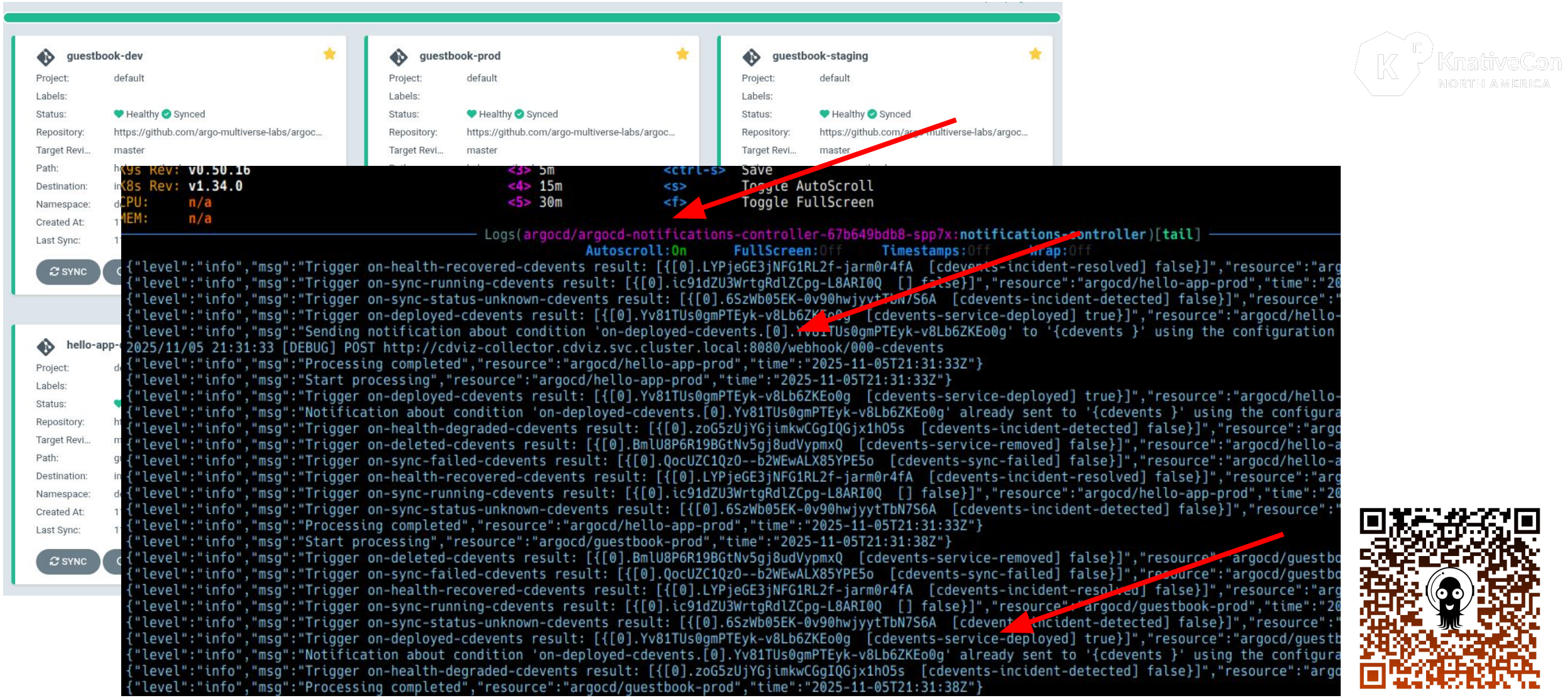
```
# CDEvents-compliant notification templates
templates:
  # Service Deployed/Upgraded Template
  template.cdevents-service-deployed: |
    webhook:
      cdevents:
        method: POST
        body: |
          {
            "context": {
              "version": "0.4.1",
              "id": "{{ .app.metadata.uid }}
              "source": "/argocd/{{ .app.me
              "type": "dev.cdevents.service
              "timestamp": "{{ .app.status.
            },
            "subject": {
```



```
"subject": {
  "id": "{{ .app.spec.destination.namespace
  "type": "service",
  "source": "/argocd/{{ .app.spec.destinatio
  "content": {
    "environment": {
      "id": "{{ .app.spec.destination.namesp
      "source": "{{ .app.spec.destination.na
    },
    "artifactId": "pkg:git/{{ .app.spec.sour
  }
},
"customData": {
  "argocdApp": "{{ .app.metadata.name }}",
  "syncStatus": "{{ .app.status.sync.status
  "healthStatus": "{{ .app.status.health.sta
  "targetRevision": "{{ .app.spec.destinatio
  "cluster": "{{ .app.spec.destination.name
```

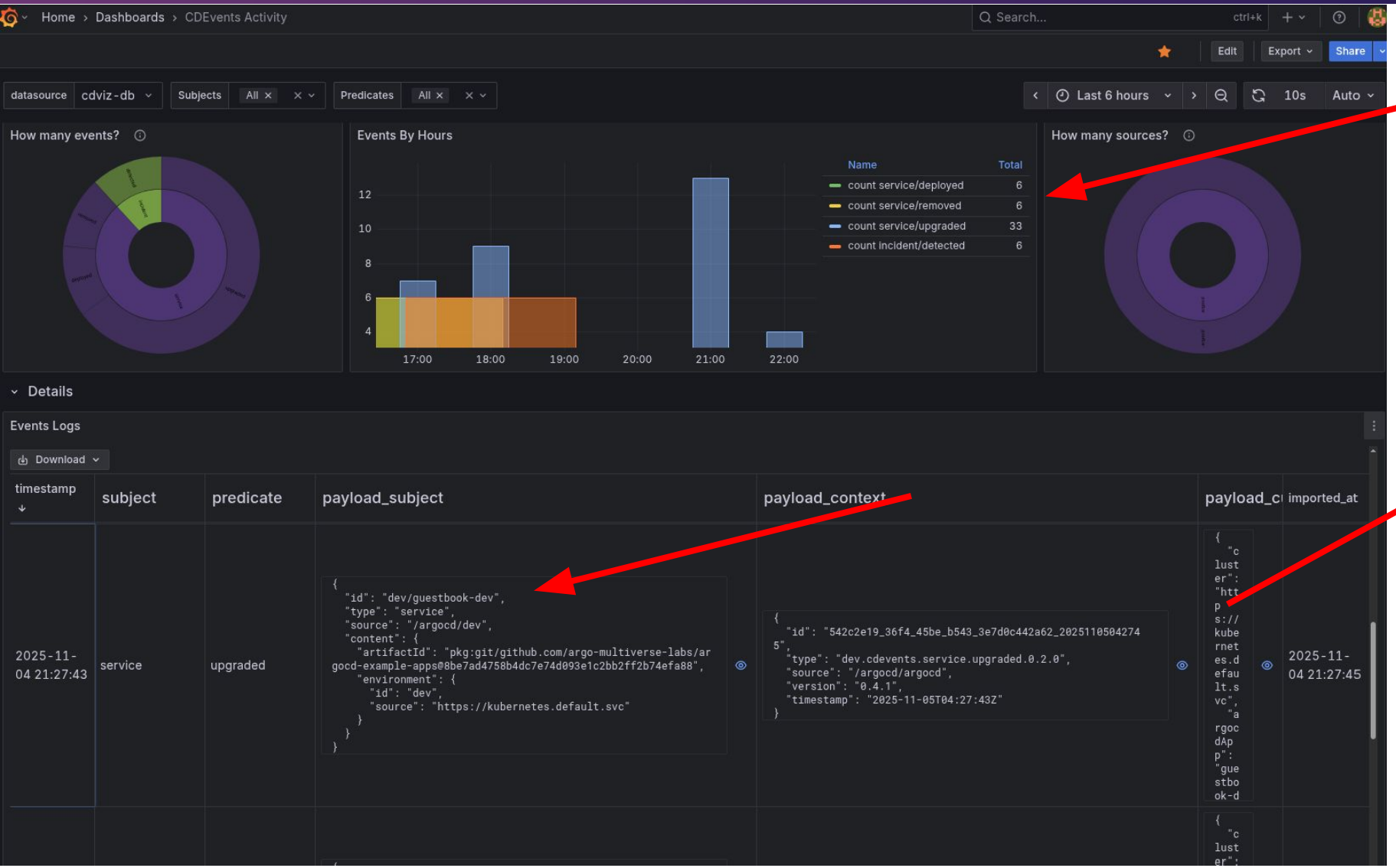
github.com/argo-multiverse-labs/local-cluster/tree/main/argo-cdviz

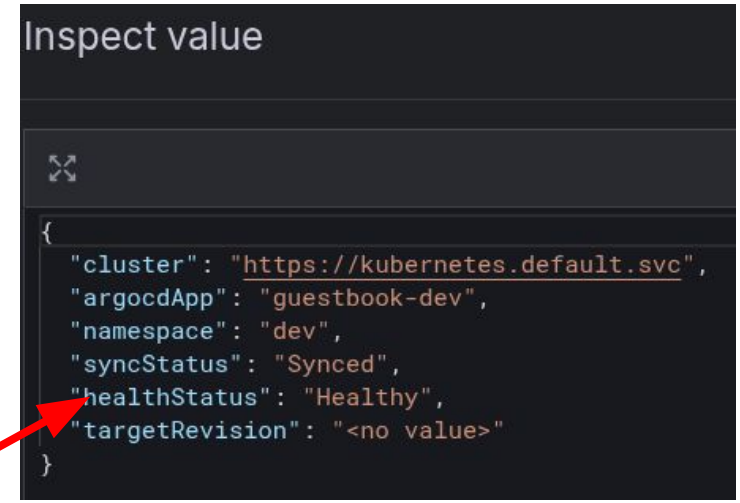
Demo



github.com/argo-multiverse-labs/local-cluster/tree/main/argo-cdviz

Demo





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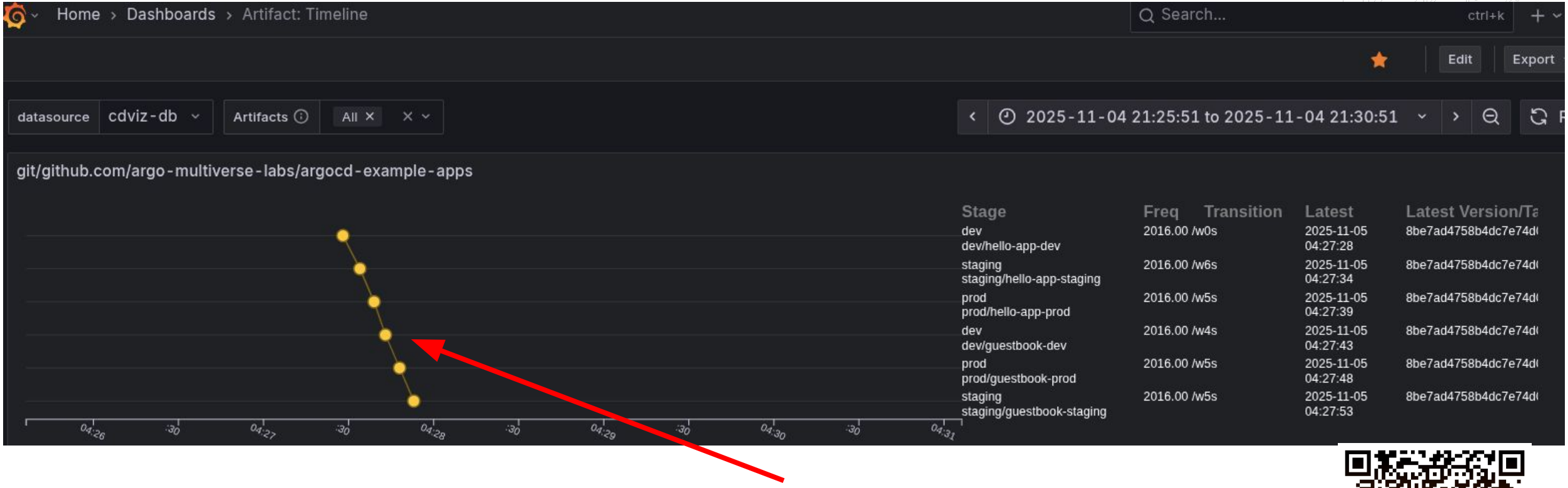
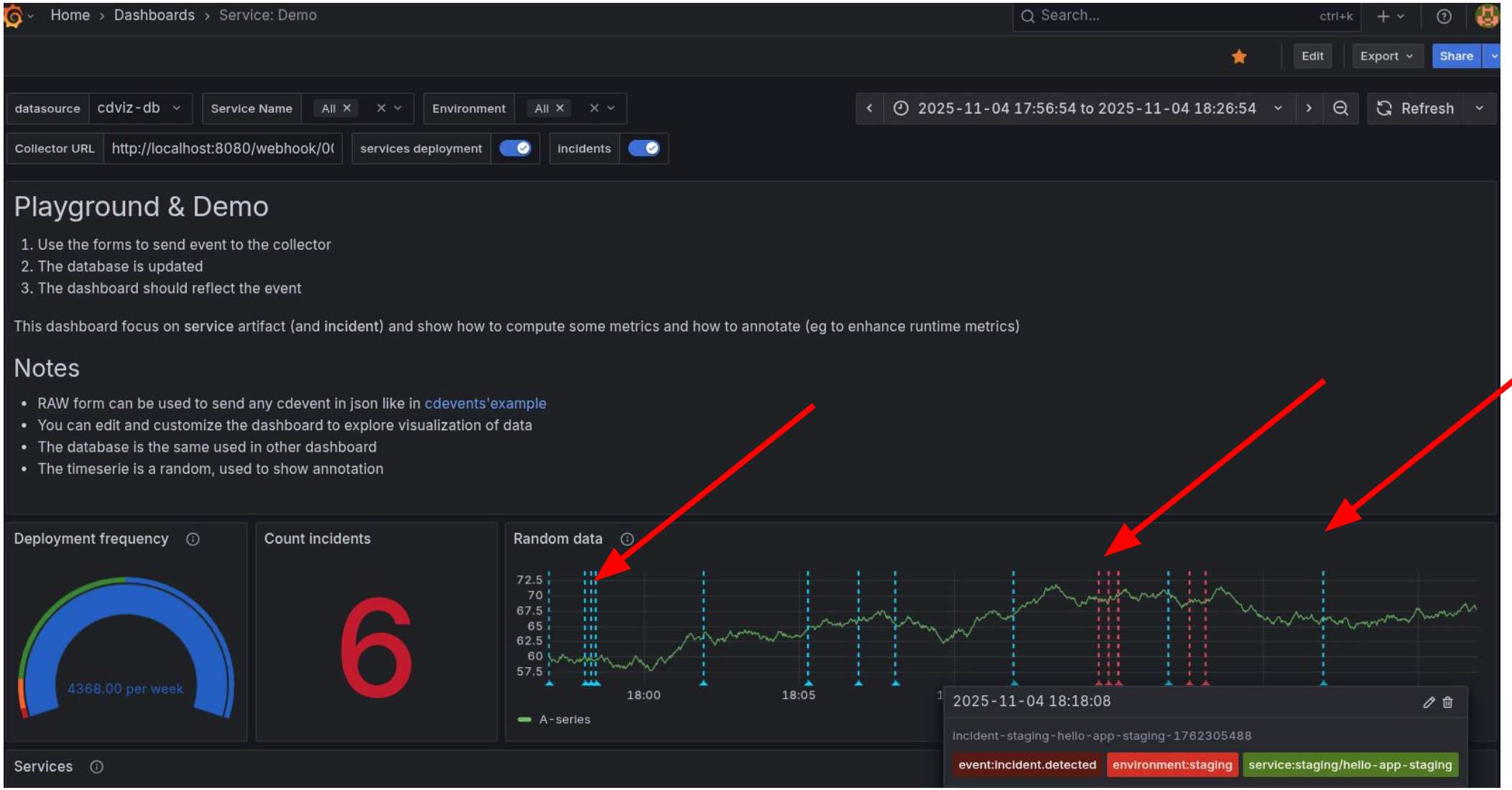
Demo



github.com/argo-multiverse-labs/local-cluster/tree/main/argo-cdviz

Demo



github.com/argo-multiverse-labs/local-cluster/tree/main/argo-cdviz

PR is already open

👍👎 We need your feedback!

https://github.com/argoproj/argo-cd/pull/24106

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Use cases

Use Case - Multi-Argo Architecture

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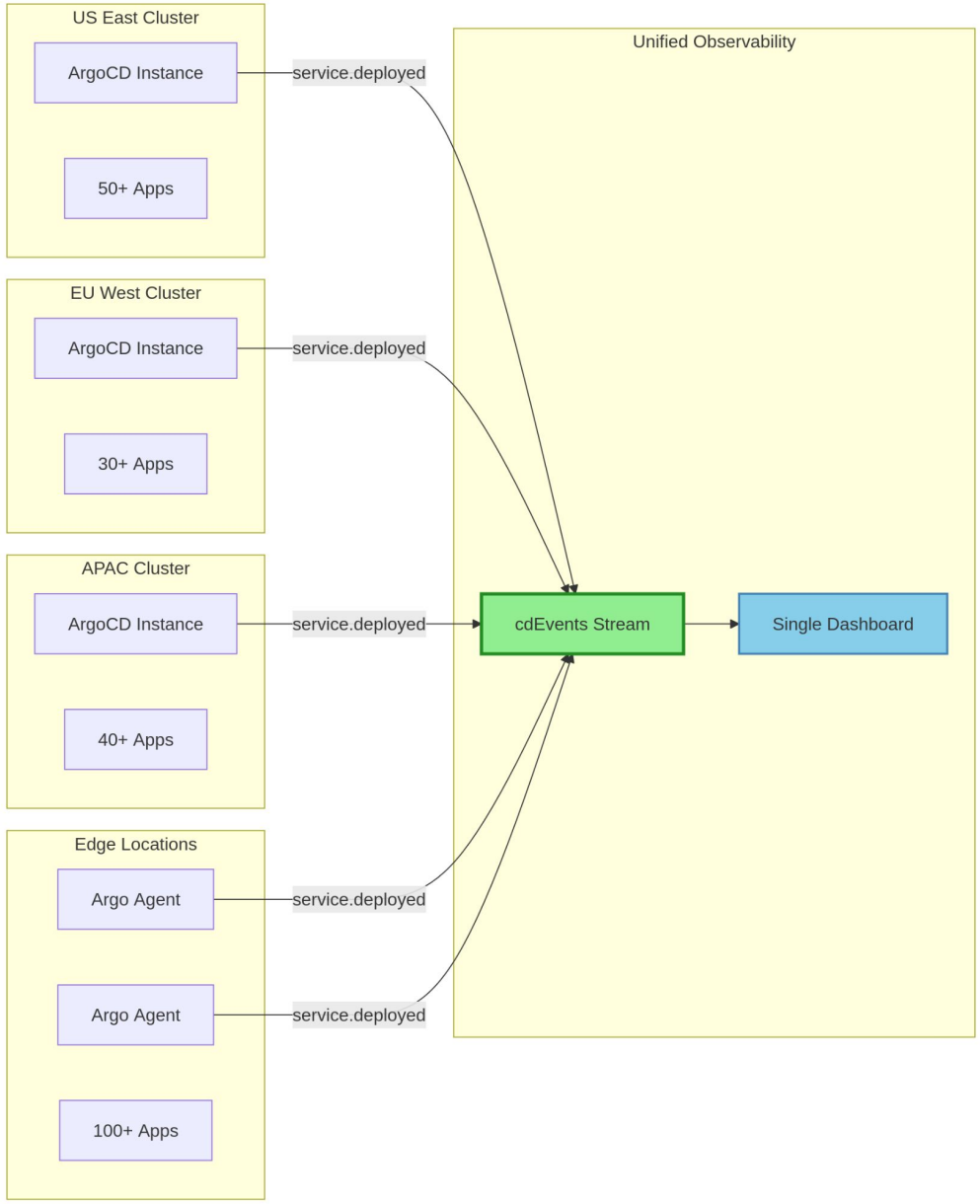
Many ArgoCD Instances, One Event Stream

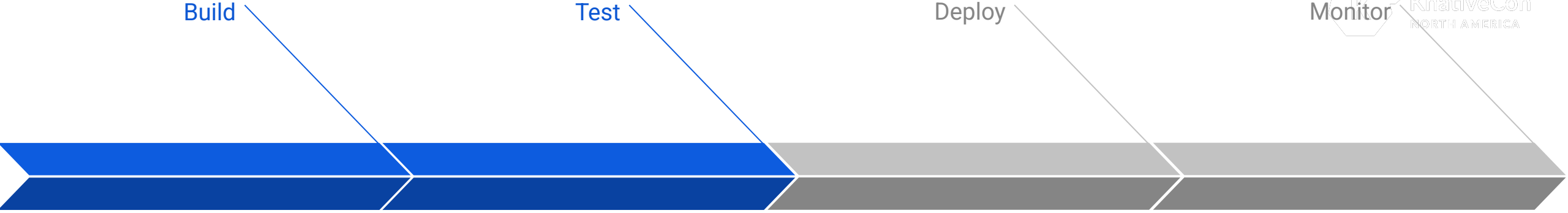
The Challenge:

Which Argo architecture do you choose?

- 🏢 **Hub-and-Spoke** (single control plane)
- 🌐 **Distributed** (many independent instances)
- ☁️ **Managed** (Akuity, Codefresh)
- 🤖 **Argo Agent** (upcoming)

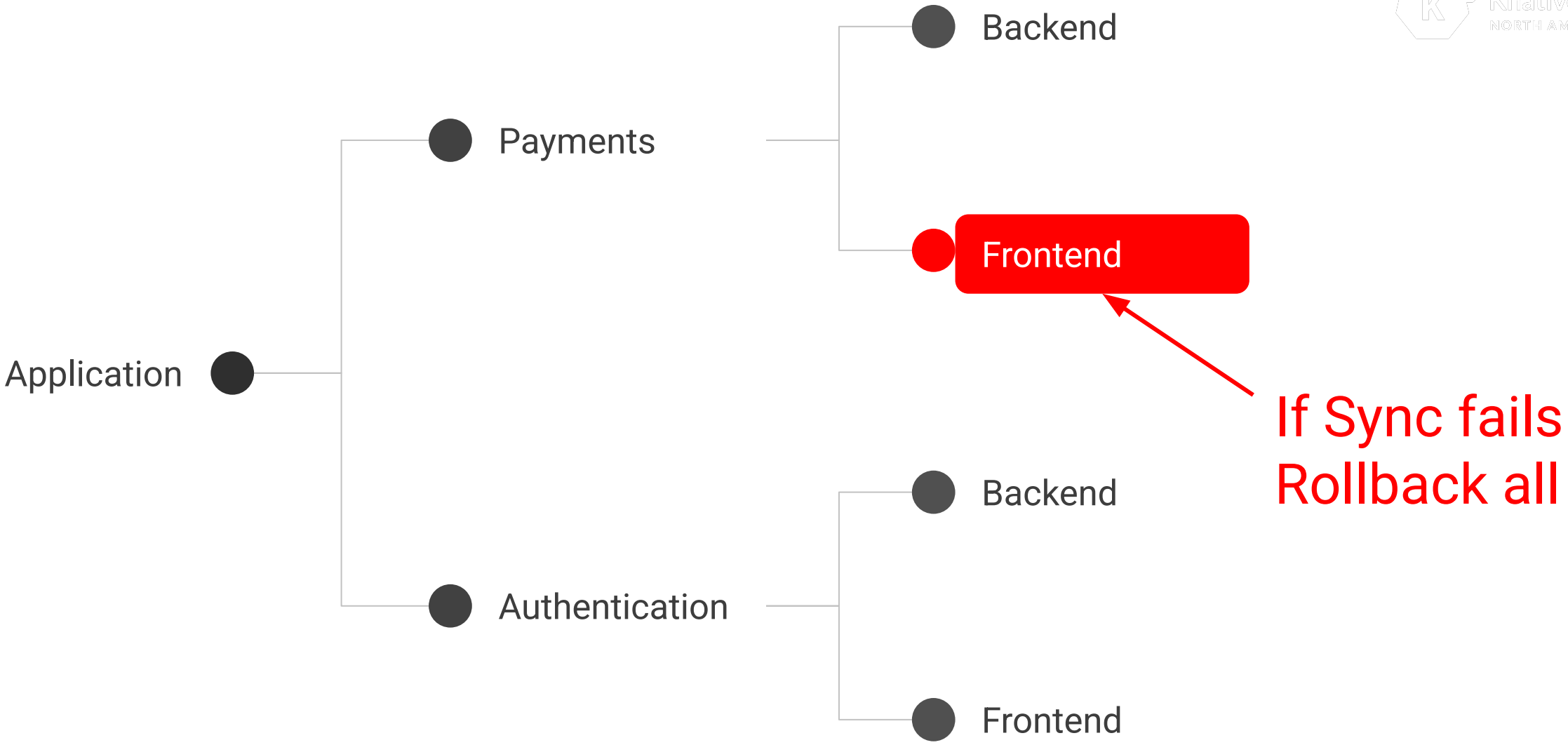


Use Case - Developer Dashboard

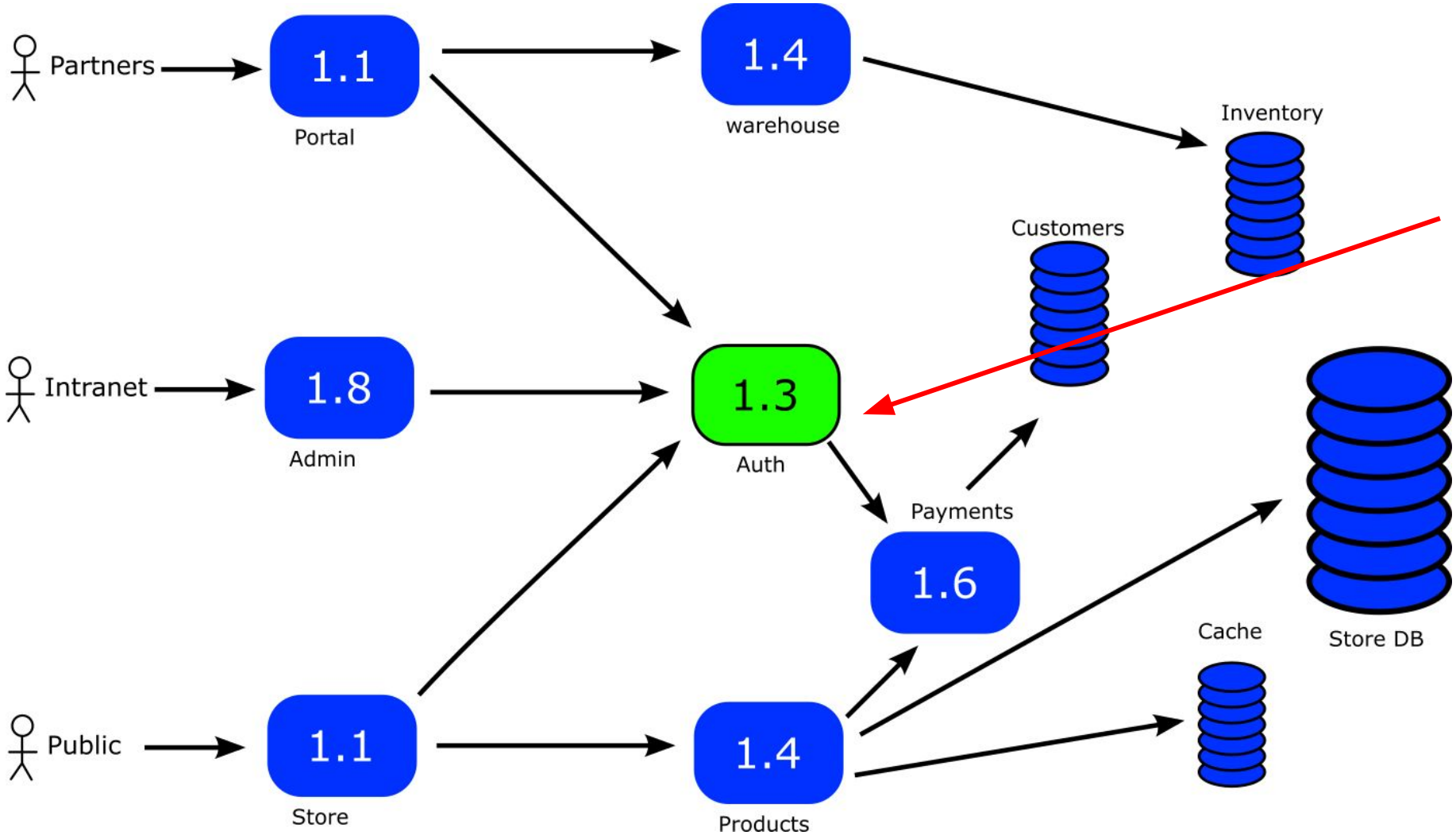


GitHub actions	TestKube	Argo CD	Monitoring system
Build started	Test suite run started	Environment created	Incident created
Artifact packaged	Test suite run finished	Service deployed	Ticket opened

Use Case - Distributed Rollback

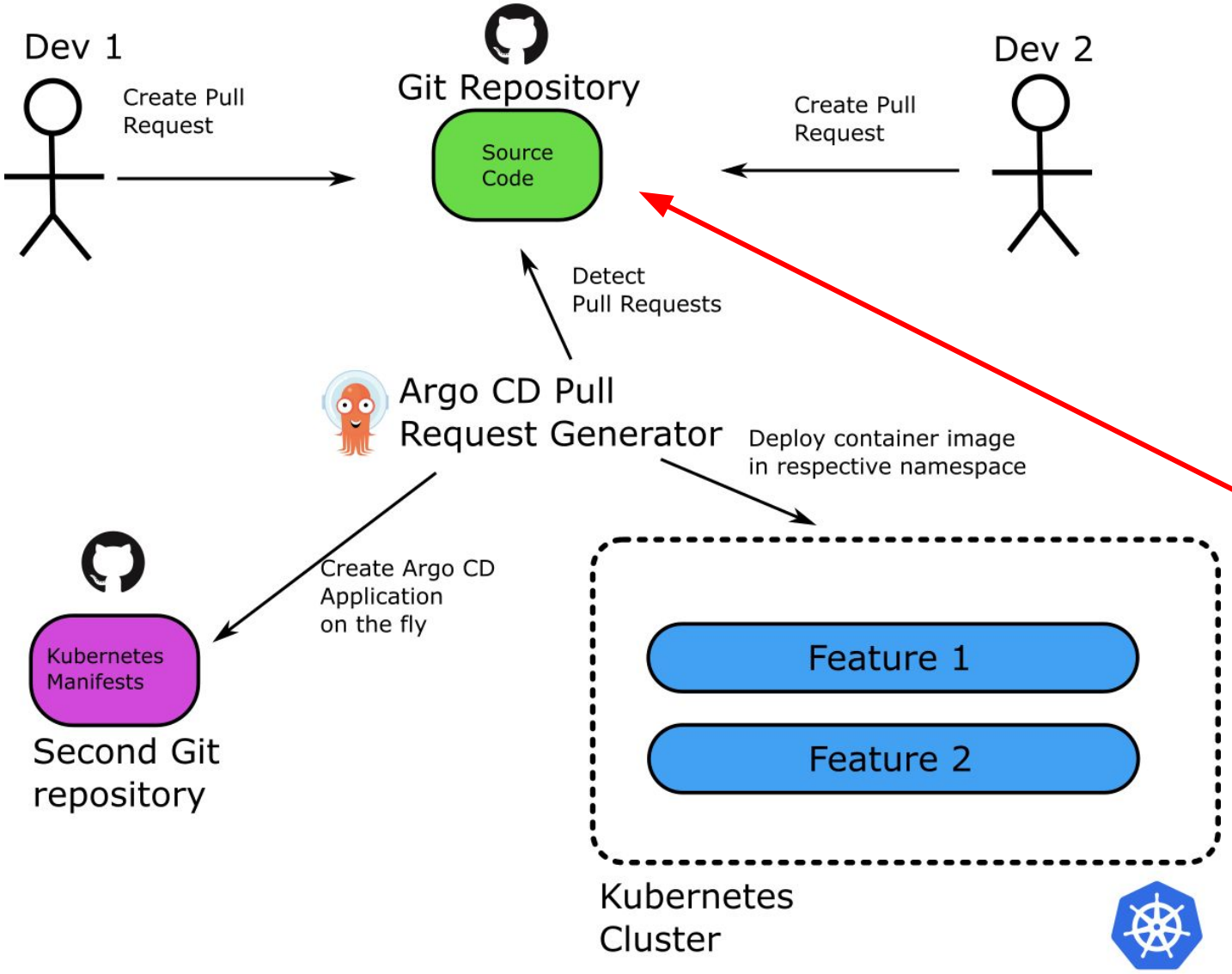


Use Case - Microservice Testing



Test portal, admin, store when Auth is deployed

Simple Preview Environments



Create preview environment when source code changes

Use Case - Preview Environments

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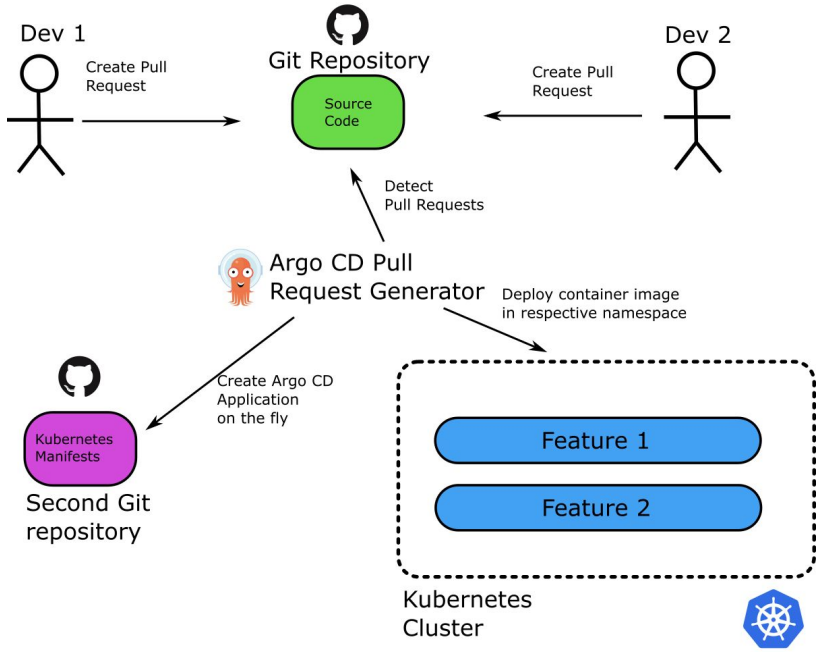
Advanced scenarios

Create/Update preview environment when

- the new DB schema is updated
- A cache is cleared
- A 3rd party service is updated
- When security controls/RBAC changes



The Expanding Domain

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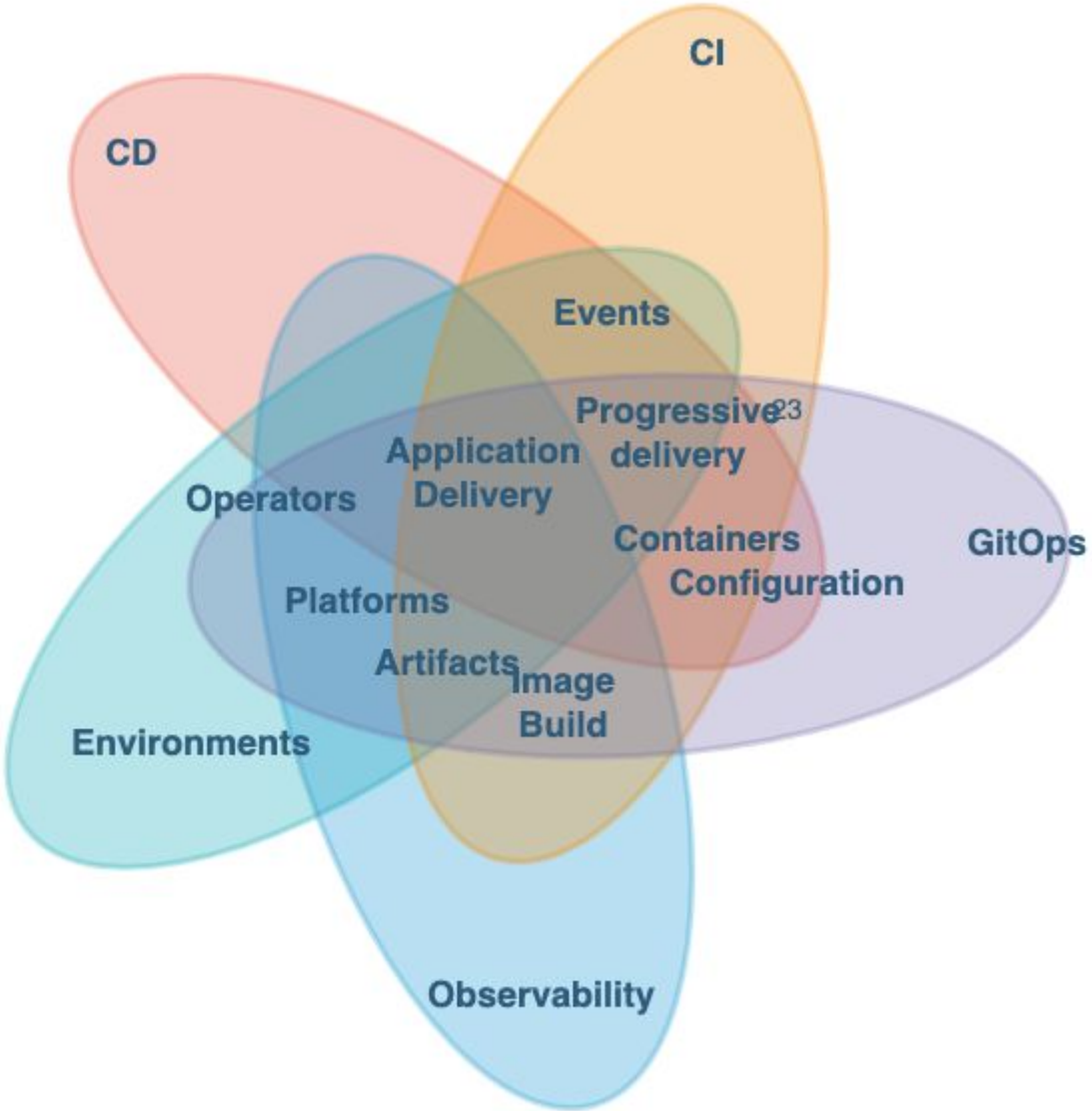

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Conclusion

Summary

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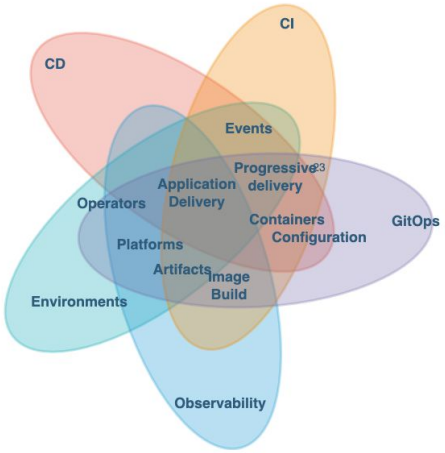
- cdEvents is a standard for cloud communication
- Already supported by Jenkins, Flux, Spinnaker etc
- Proposal is open for Argo CD - give feedback !
- https://github.com/argoproj/argo-cd/pull/24106



Join **#argo-cd** in CNCF slack @*luke* @*kostis*

Contact lukephilips@gmail.com and kostis.kapelonis@octopus.com

Resources - Thank You!

1. github.com/argo-multiverse-labs/local-cluster/tree/main/argo-cdviz
2. https://cdviz.dev/
3. https://cdviz.dev/docs/getting-started