



GROUP

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## **Podejście GitOpsowe w K8S z użyciem ArgoCD**

Jak zarządzać wieloma klastrami?

**GitOps approach in K8S with help  
of ArgoCD**

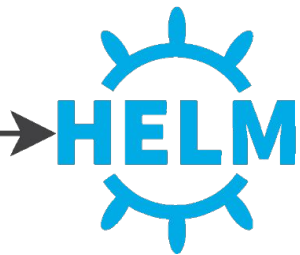
How to manage multiple clusters?

# Problem

User / CI / CD



App A



Cluster A

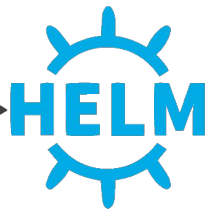


# Problem

User / CI / CD



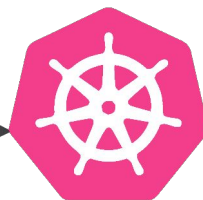
App A



Cluster C



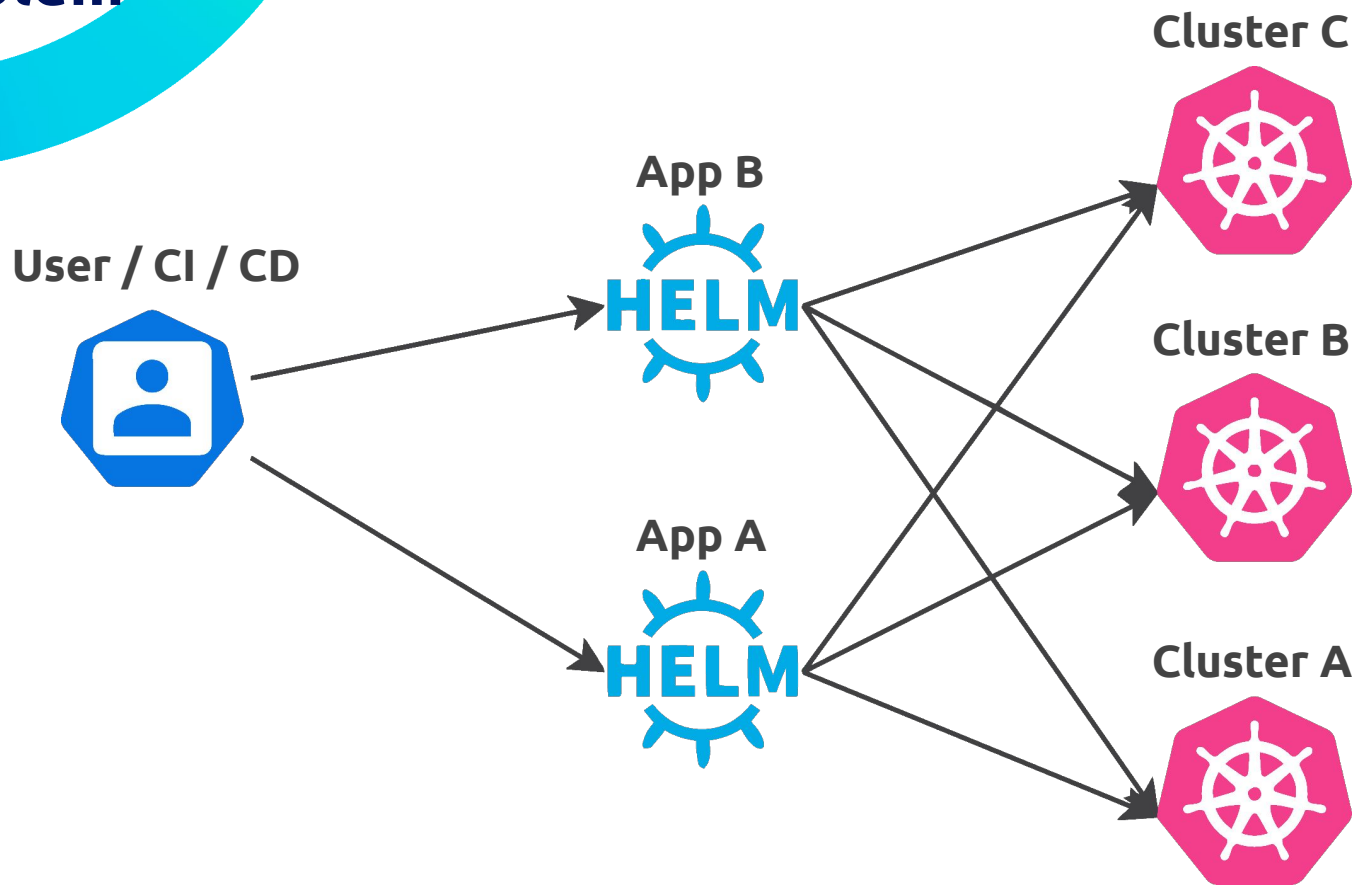
Cluster B



Cluster A



# Problem





**Problem**

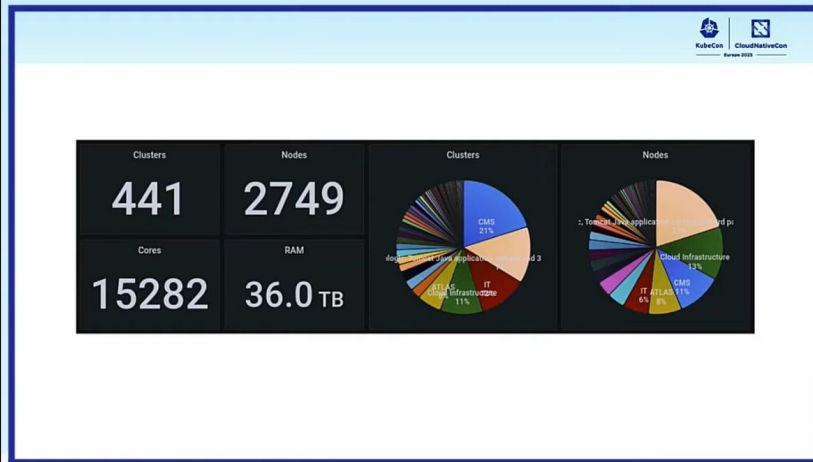
**What is the problem?**

# Problem



# Problem

The Day We Delete(d) Production - Ricardo Rocha & Spyridon Trigazis, CERN



KubeCon



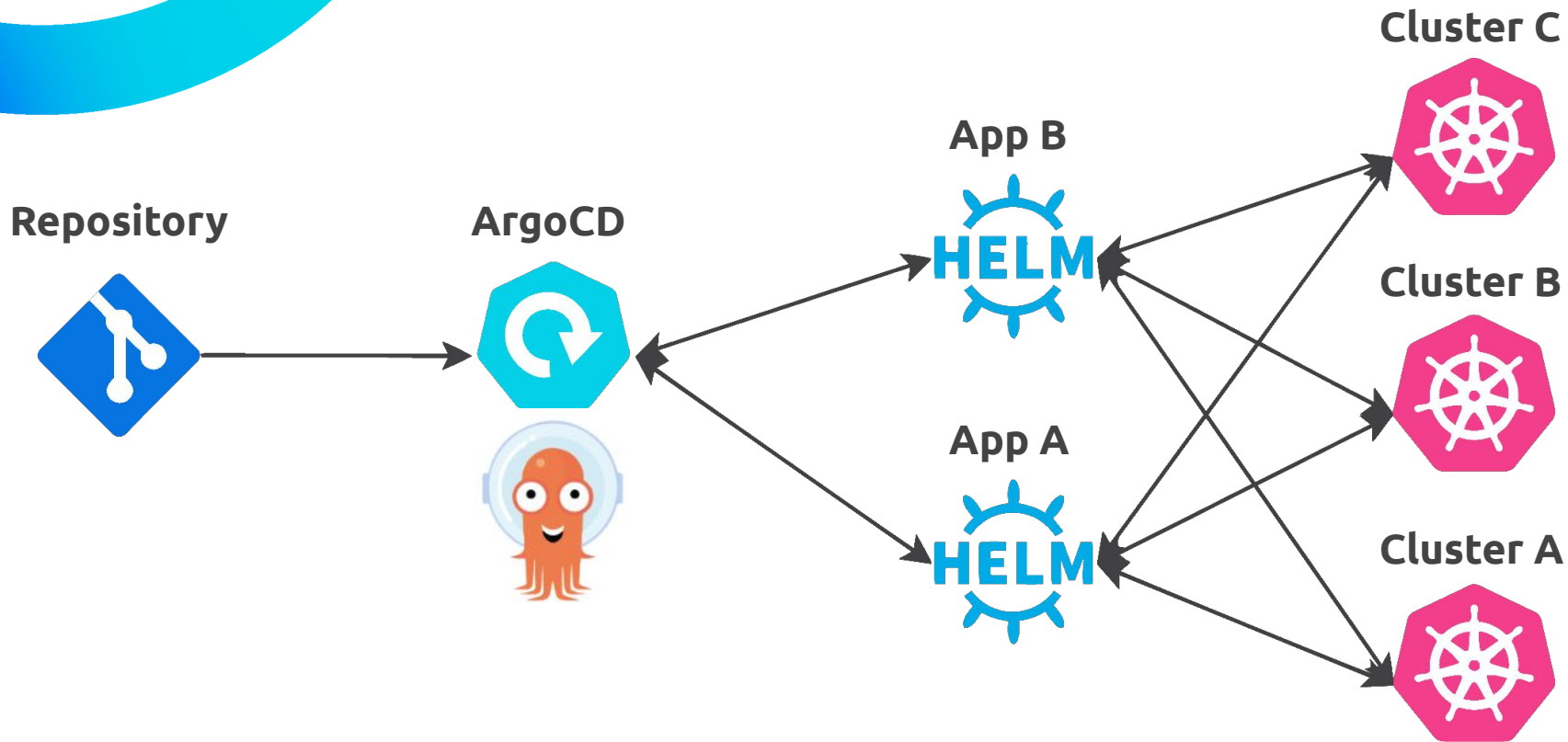
CloudNativeCon

Europe 2023

Source:

<https://youtu.be/TEg3Ne5uPYc?t=100>

# Solution





# Application

```
1  # Deploy helm chart found in this repo at 'k8s-operator' cluster to namespace 'default'
2  apiVersion: argoproj.io/v1alpha1
3  kind: Application
4  metadata:
5    name: single-app-k8s-operator
6    namespace: argocd
7  spec:
8    destination:
9      name: k8s-operator
10     namespace: default
11    project: default
12    source:
13      path: app/chart
14      repoURL: git@github.com:m-wrzesien/infoshare-2023.git
15      targetRevision: master
16      helm:
17        releaseName: single-app
```

## Source:

<https://github.com/m-wrzesien/infoshare-2023/blob/master/argo-apps/multi-app-single-cluster-k8s-operator.yaml>

# Application

```
1 # Deploy helm chart found in this repo at 'k8s-operator' cluster to namespace 'default'
2 apiVersion: argoproj.io/v1alpha1
3 kind: Application
4 metadata:
5   name: single-app-k8s-operator
6   namespace: argocd
7 spec:
8   destination:
9     name: k8s-operator
10    namespace: default
11   project: default
12   source:
13     path: app/chart
14     repoURL: git@github.com:m-wrzesien/infoshare-2023.git
15     targetRevision: master
16   helm:
17     releaseName: single-app
```

## Source:

<https://github.com/m-wrzesien/infoshare-2023/blob/master/argo-apps/multi-app-single-cluster-k8s-operator.yaml>

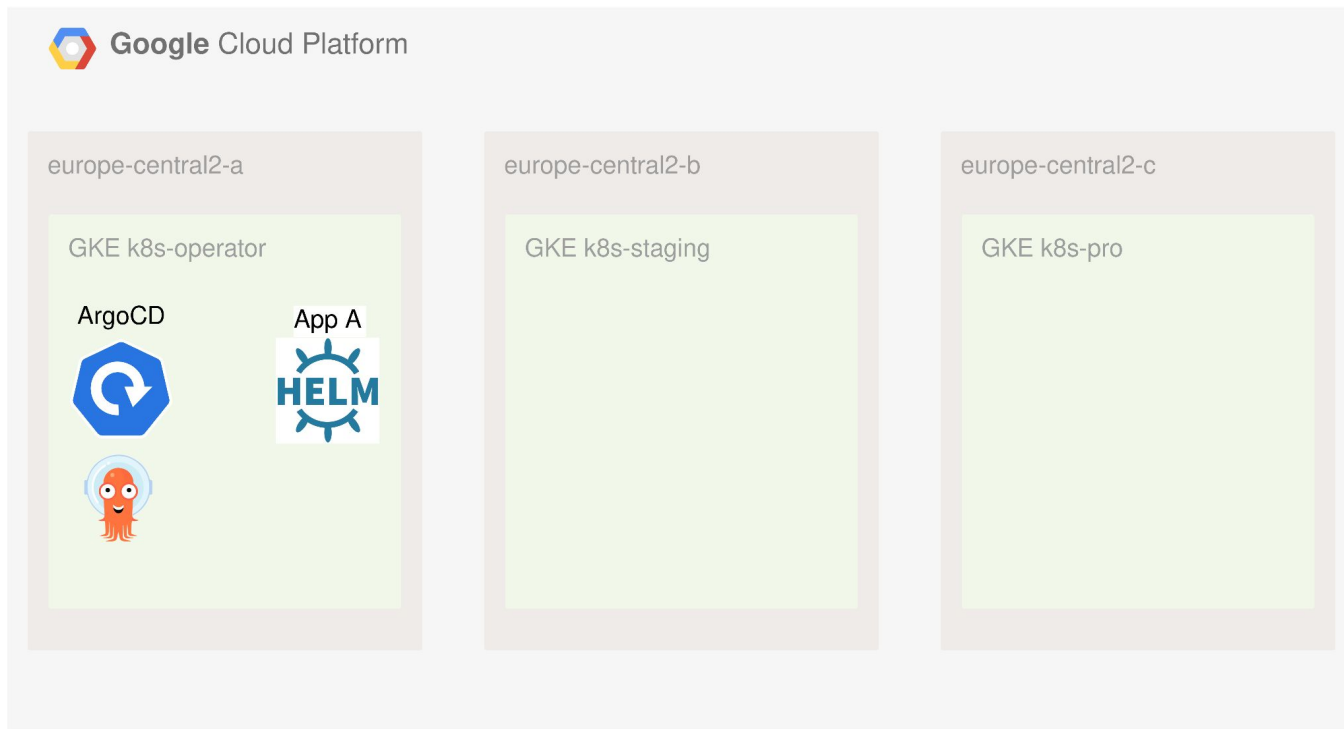
# Application

```
1 # Deploy all Kubernetes manifests found at this directory in this repo, and automatically
  synchronise the state of those manifest (including deleting those unnecessary)
2 apiVersion: argoproj.io/v1alpha1
3 kind: Application
4 metadata:
5   name: argo-apps
6   namespace: argocd
7 spec:
8   destination:
9     name: k8s-operator
10    namespace: argocd
11    project: default
12    source:
13      path: argo-apps
14      repoURL: git@github.com:m-wrzesien/infoshare-2023.git
15      targetRevision: master
16    syncPolicy:
17      automated:
18        prune: true
19        selfHeal: true
```

## Source:

<https://github.com/m-wrzesien/infoshare-2023/blob/master/argo-apps/argo-apps.yaml>

# Demo - Deploy App using Argo



# ApplicationSet - Cluster generator

```
You, 21 hours ago | 1 author (You) | io.argoproj.v1alpha1.ApplicationSet (v1alpha1@applicationset.json)
1 # Deploy helm chart found in this repo on every cluster registered at Argo CD on namespace 'default'
2 apiVersion: argoproj.io/v1alpha1
3 kind: ApplicationSet
4 metadata:
5   name: single-app-multi-cluster
6   namespace: argocd
7 spec:
8   generators:
9     # https://argo-cd.readthedocs.io/en/stable/operator-manual/applicationset/Generators-Cluster/
10    - clusters: {} # Automatically use all clusters defined within Argo CD
11  template:
12    metadata:
13      name: "single-app-multi-cluster-{{name}}" # 'name' field of the Secret, which is just a cluster name
14    spec:
15      destination:
16        name: "{{name}}" # 'name' field of the Secret, which is just a cluster name
17        namespace: default
18      project: default
19      source:
20        path: app/chart
21        repoURL: git@github.com:m-wrzesien/infoshare-2023.git
22        targetRevision: master
23      helm:
24        releaseName: single-app-multi-cluster
25        valueFiles:
26          - values.yaml
27          - values.multiCluster.yaml
```

## Source:

<https://github.com/m-wrzesien/infoshare-2023/blob/master/argo-apps/single-app-multi-cluster.yaml>

# Demo - Deploy App using Argo ApplicationSet Cluster Generator



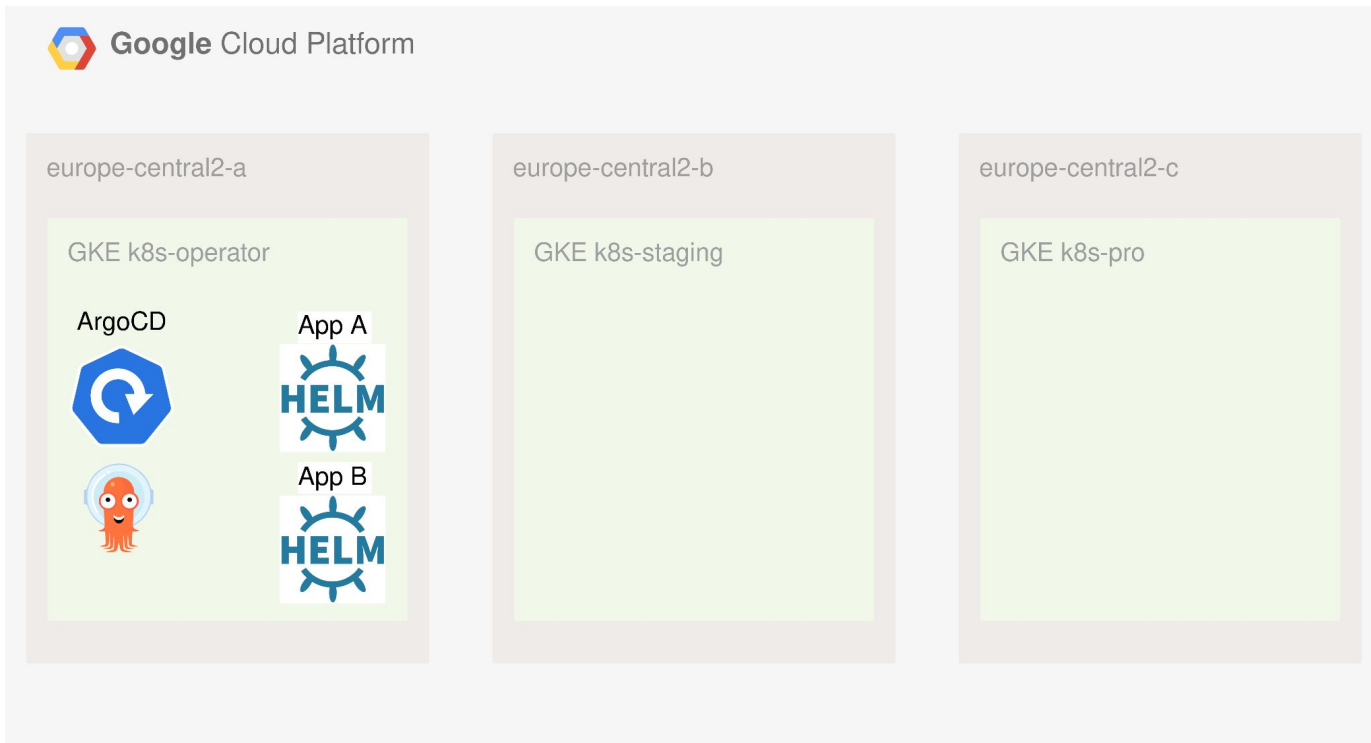
# ApplicationSet - Git generator

```
1 # Deploy single helm chart found in this repo as a multiple helm releases with different values at 'k8s-operator' cluster to
  namespace 'default'
2 apiVersion: argoproj.io/v1alpha1
3 kind: ApplicationSet
4 metadata:
5   name: multi-app-single-cluster
6   namespace: argocd
7 spec:
8   generators:
9     # https://argo-cd.readthedocs.io/en/stable/operator-manual/applicationset/Generators-Git/
10    - git:
11      repoURL: git@github.com:m-wrzesien/infoshare-2023.git
12      revision: master
13      directories:
14        - path: app/chart/apps/*
15  template:
16    metadata:
17      name: "multi-app-single-cluster-{{path.basename}}-k8s-operator" # 'path.basename' - name of one of the folder that match
18                                wildcard (e.g. app-a)
19    spec:
20      destination:
21        name: k8s-operator
22        namespace: default
23      project: default
24      source:
25        path: app/chart
26        repoURL: git@github.com:m-wrzesien/infoshare-2023.git
27        targetRevision: master
28      helm:
29        releaseName: multi-app-single-cluster-{{path.basename}}
30        valueFiles:
31          - values.yaml
32          - 'apps/{{path.basename}}/values.singleCluster.yaml' # paths is relative to the 'path' field
```

## Source:

<https://github.com/m-wrzesien/infoshare-2023/blob/master/argo-apps/multi-app-single-cluster-k8s-operator.yaml>

# Demo - Deploy App using Argo ApplicationSet Git Generator





# ApplicationSet - Matrix generator

```
1 # Deploy single helm chart found in this repo as a multiple helm releases with different values to each registered cluster to namespace 'default'
2 apiVersion: argoproj.io/v1alpha1
3 kind: ApplicationSet
4 metadata:
5   name: multi-app-multi-cluster
6   namespace: argocd
7 spec:
8   generators:
9     # https://argo-cd.readthedocs.io/en/stable/operator-manual/applicationset/Generators-Matrix/
10    - matrix:
11      generators:
12        - git:
13          repoURL: git@github.com:m-wrzesien/infoshare-2023.git
14          revision: master
15          directories:
16            - path: app/chart/apps/*
17          - clusters: {} # Automatically use all clusters defined within Argo CD
18    template:
19      metadata:
20        name: "multi-app-multi-cluster-{{path.basename}}-{{name}}"
21      spec:
22        destination:
23          name: "{{name}}"
24          namespace: default
25          project: default
26        source:
27          path: app/chart
28          repoURL: git@github.com:m-wrzesien/infoshare-2023.git
29          targetRevision: master
30        helm:
31          releaseName: multi-app-multi-cluster-{{path.basename}}
32          valueFiles:
33            - values.yaml
34            - "apps/{{path.basename}}/values.multiCluster.yaml"
```

## Source:

<https://github.com/m-wrzesien/infoshare-2023/blob/master/argo-apps/multi-app-multi-cluster.yaml>

# Demo - Deploy App using Argo ApplicationSet Matrix Generator



europa-central2-a

GKE k8s-operator

ArgoCD



App A



App B



europa-central2-b

GKE k8s-staging

App A



App B



europa-central2-c

GKE k8s-pro

App A



App B





# Documentation

<https://argo-cd.readthedocs.io/en/stable/>

<https://argo-cd.readthedocs.io/en/stable/operator-manual/applicationset/>

# Source



**Github:**

<https://github.com/m-wrzesien/infoshare-2023>



GROUP

**Thank you**

for attending our Infoshare 2023  
speech!