
AWS
re:Invent
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CON306-R

Accelerate software development lifecycles with GitOps

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Agenda

- Introduction and concepts
- Multi-cluster GitOps
- Lab time

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Introduction and concepts

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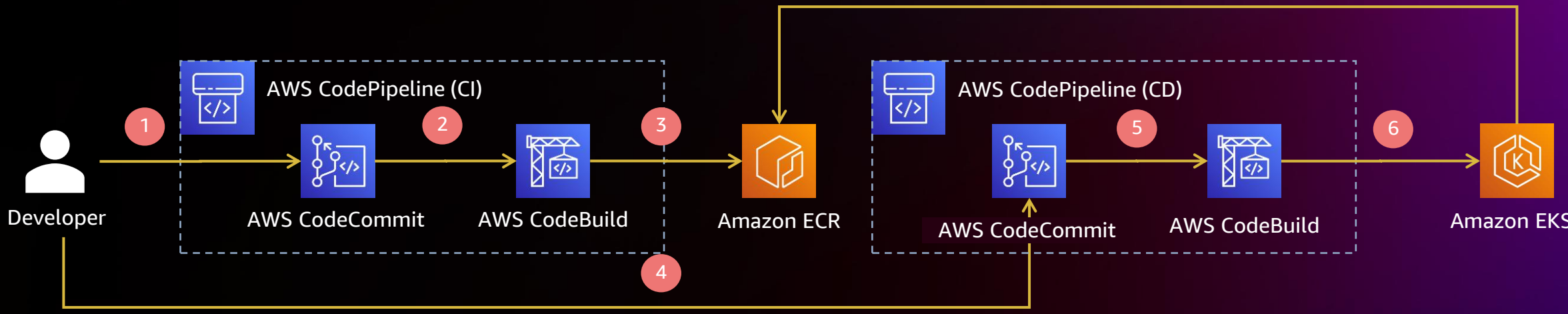
DevOps CI/CD vs. GitOps

DevOps CI/CD



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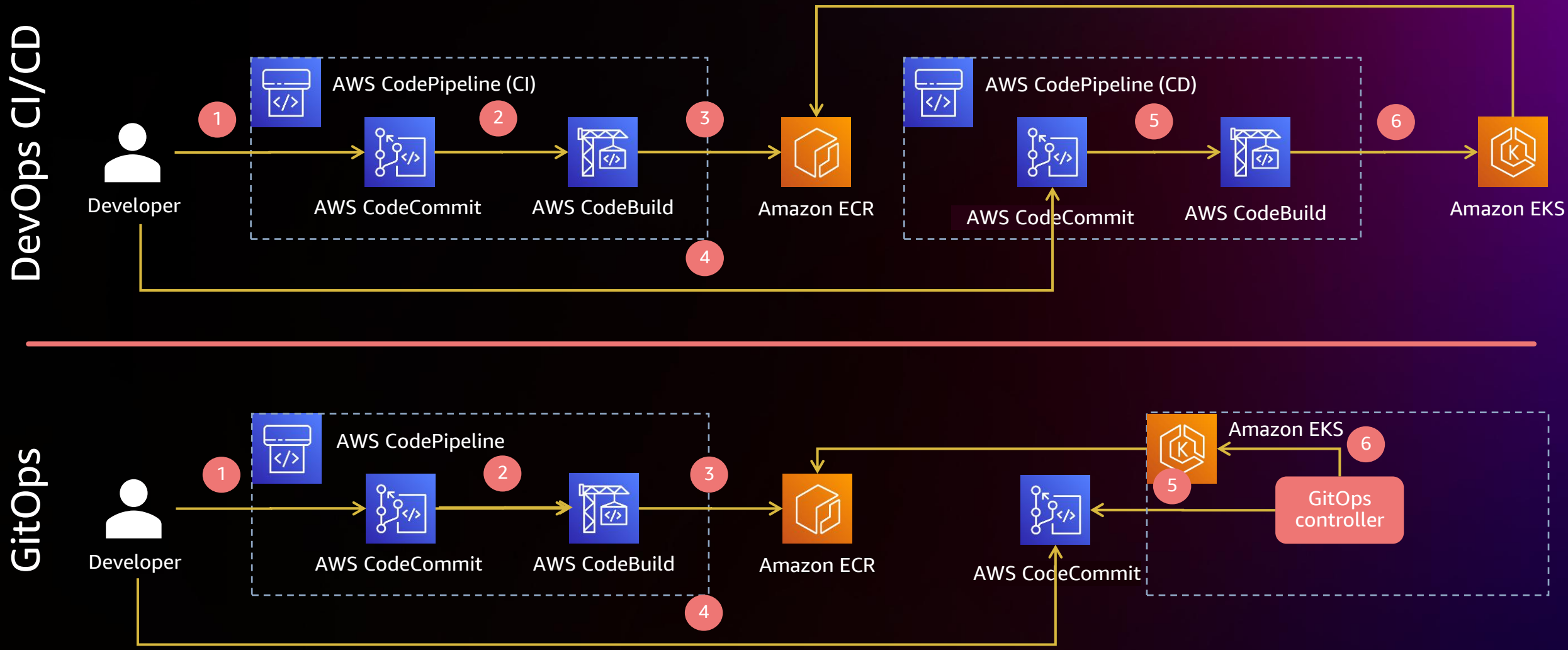
DevOps CI/CD vs. GitOps



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Flux, the GitOps controller for Kubernetes

Implemented as a set of Kubernetes extensions

Runs as an in-cluster software agent

Amazon EKS add-on for GitOps (coming soon)

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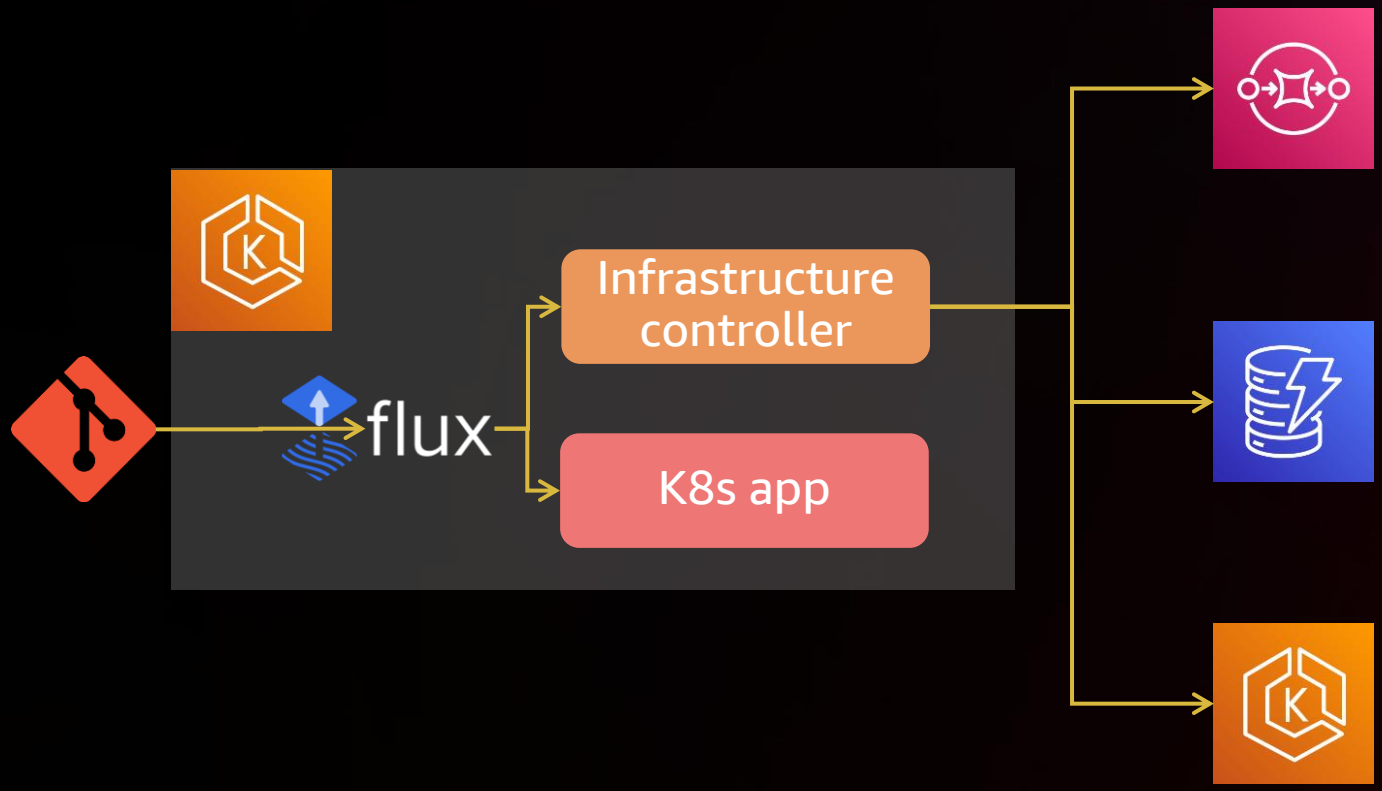
Infrastructure controllers



Sample manifest

```yaml
apiVersion: dynamodb.aws.crossplane.io/v1alpha1
kind: Table
metadata:
  name: products
spec:
  forProvider:
    region: us-west-2
    attributeDefinitions:
      - attributeName: id
        attributeType: S
    keySchema:
      - attributeName: id
        keyType: HASH
    billingMode: PROVISIONED
    provisionedThroughput:
      readCapacityUnits: 1
      writeCapacityUnits: 1
  providerConfigRef:
    name: default
```

e.g., AWS Controller for Kubernetes (ACK), **Crossplane**

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Secrets management – What are secrets?

"A Secret is an object that contains a small amount of sensitive data such as a password, a token, or a key."

– from Kubernetes.io

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Secrets management strategies

Externalize secrets

- Secret information stored in an external vault
- e.g., External Secrets Operator

Store secret in Git encrypted

- Secret information stored in Git, but in an encrypted form
- e.g., Sealed Secrets

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Now, let’s put all these pieces together to address a real scenario

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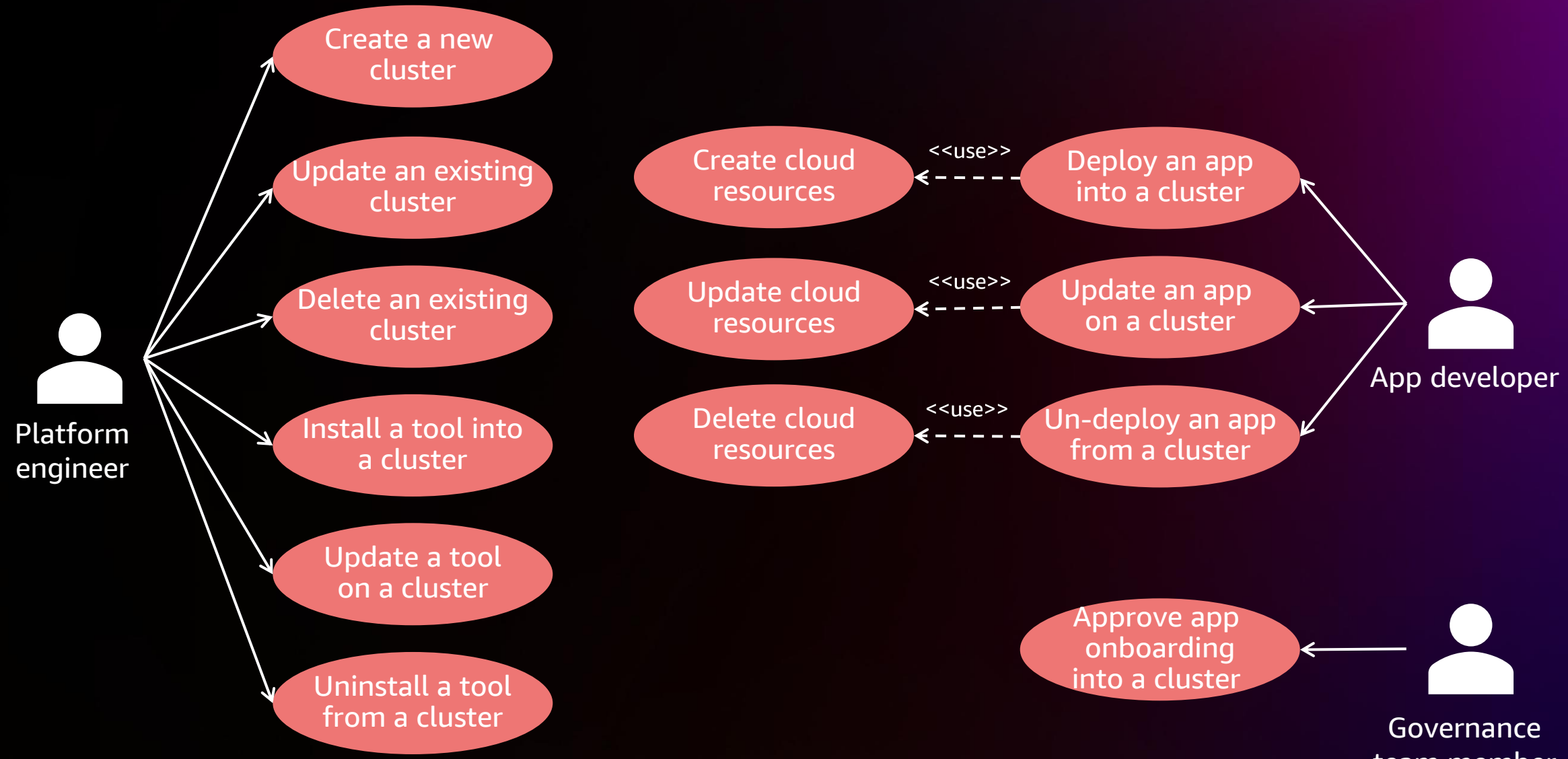
Use cases



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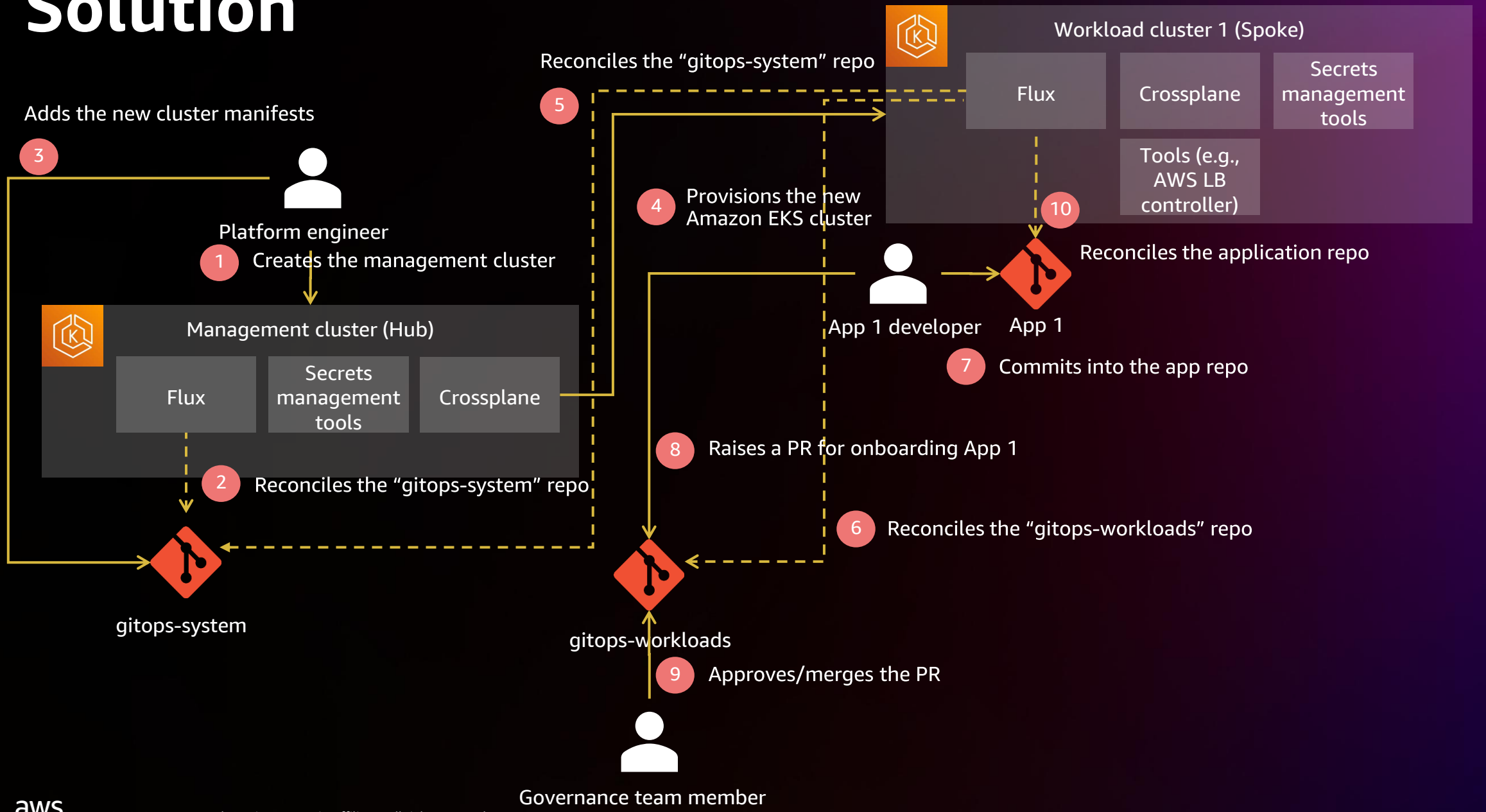
Solution



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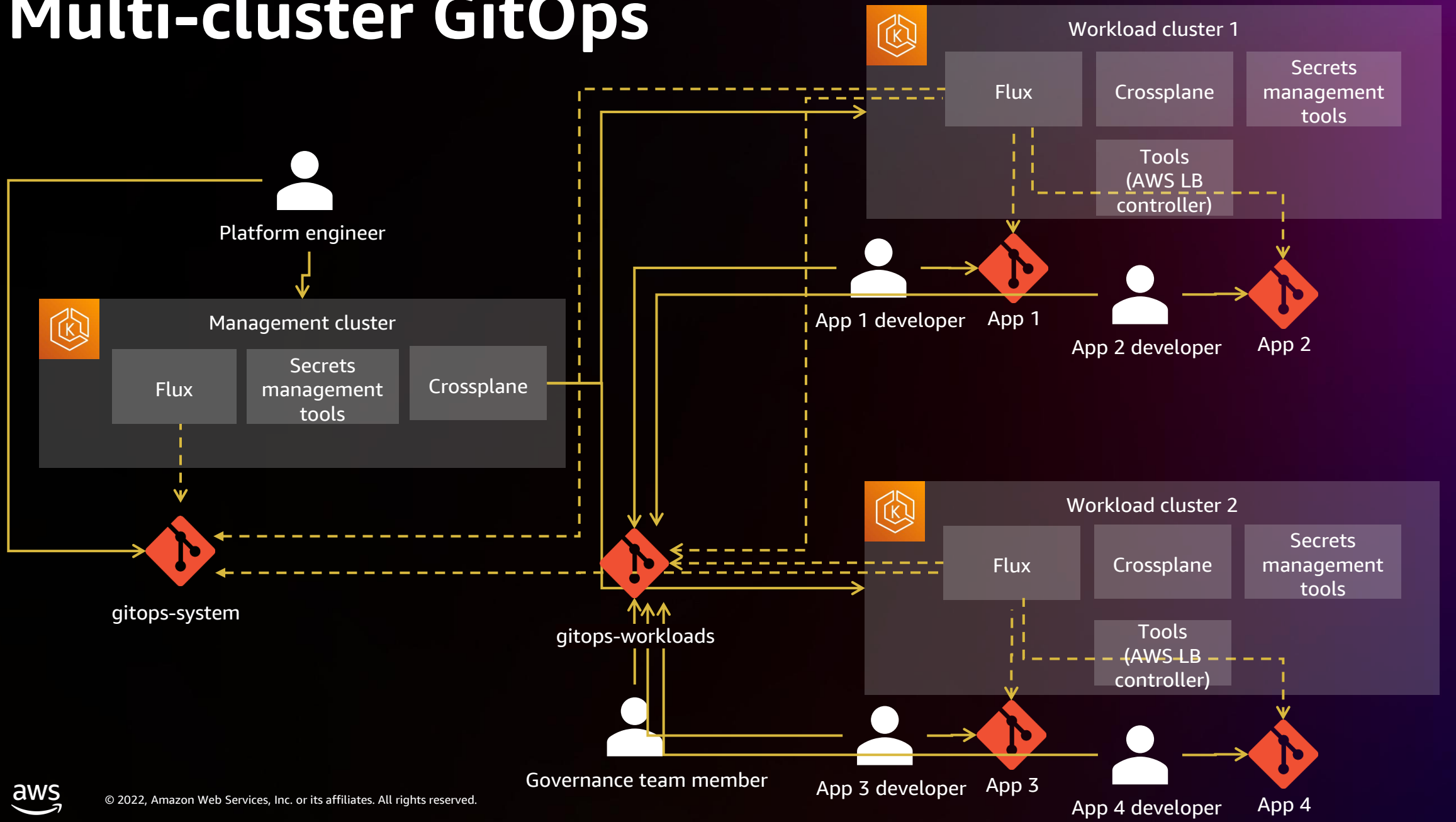
Multi-cluster GitOps



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Lab time

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Lab structure

- ~~Introduction~~
- ~~Build sequence~~
- Lab 1: Workshop setup
- Lab 2: Build a workload cluster
- Lab 3: Deploy an application into a workload cluster
- Lab 4: Manage workload clusters
- Conclusion

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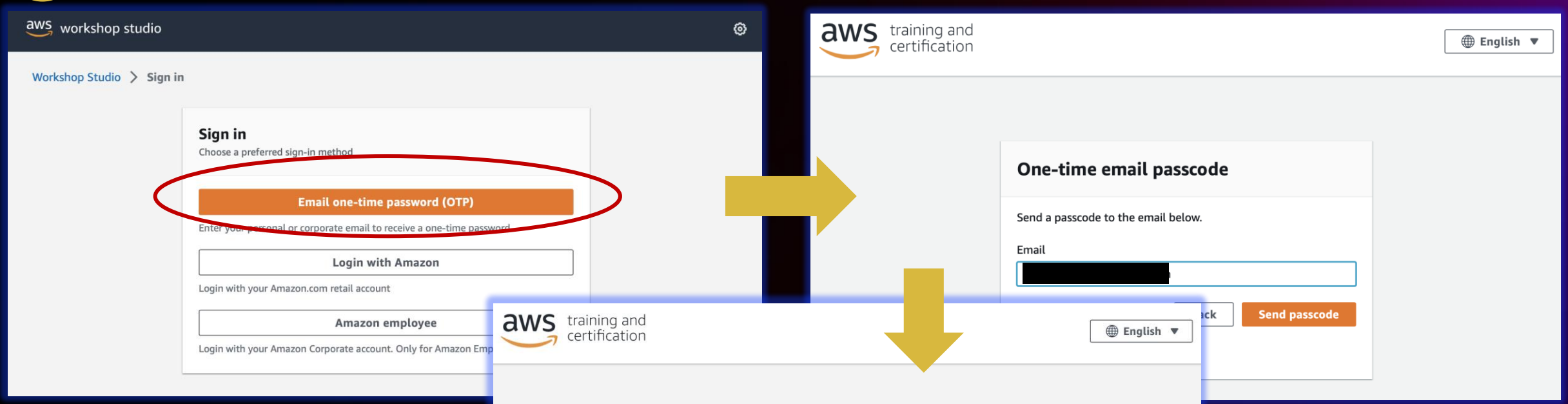
Access lab environment

1. Visit https://catalog.workshops.aws/join (recommended browser: **Chrome**)
2. Choose **Email one-time password (OTP)**
3. Enter your email address
4. Enter OTP



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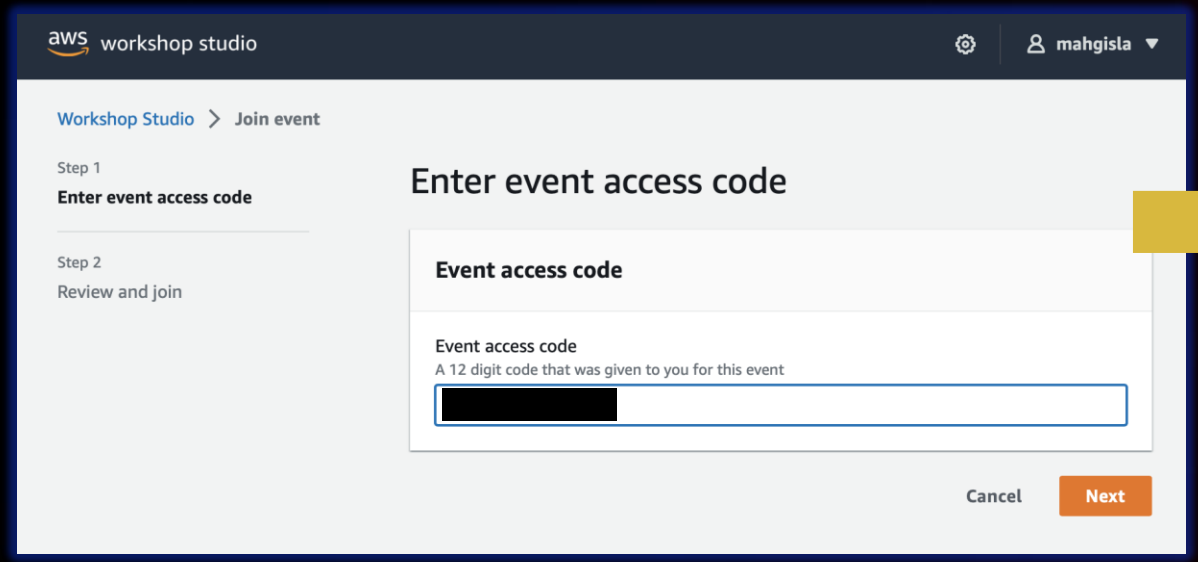
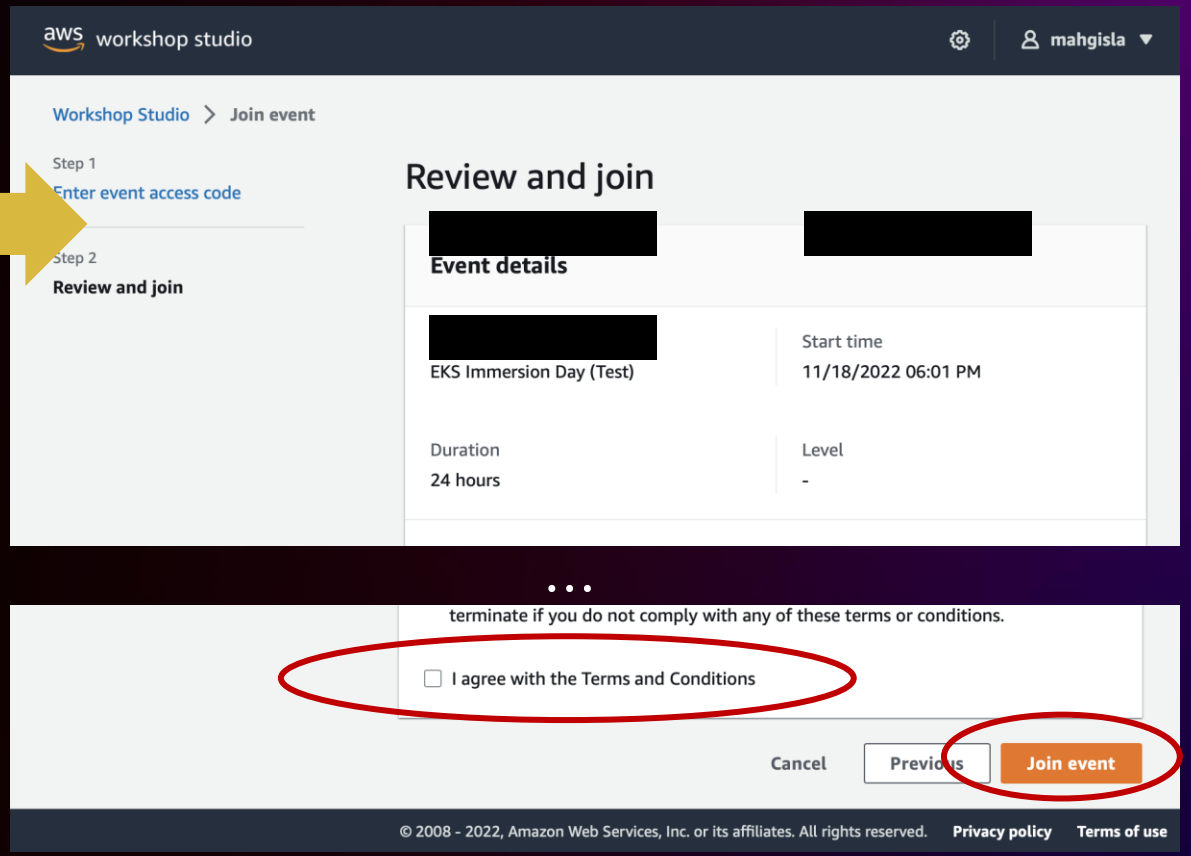
Access lab environment

5 Enter access code: **142b-0aea4a-0a**



6 Review terms and conditions, select the checkbox, and then select **Join event**



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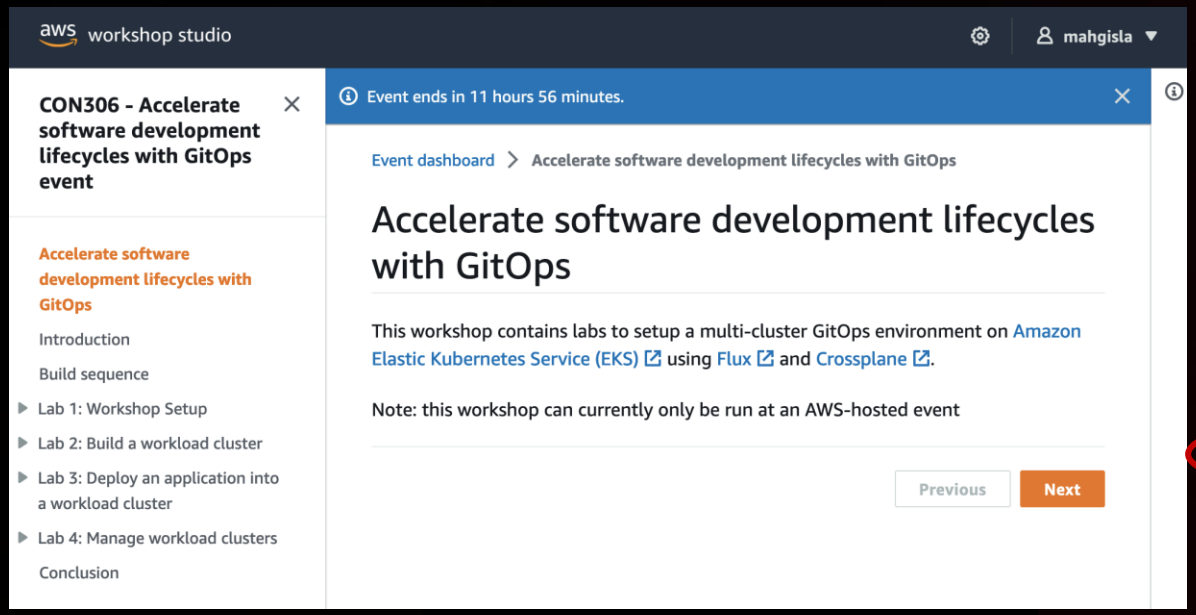
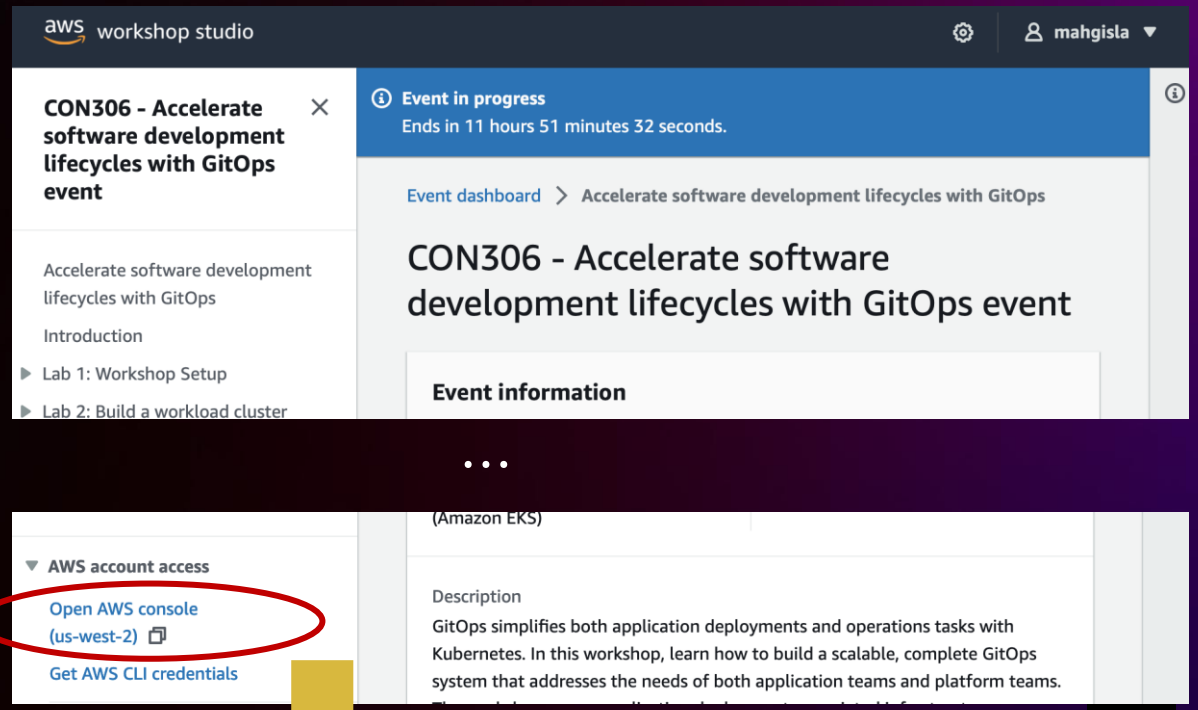
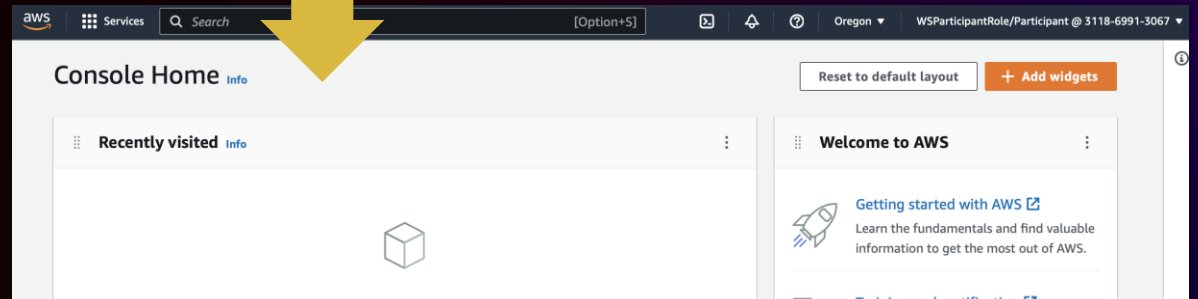
Access lab environment

7 Review lab instructions



8 Access your AWS account by selecting **Open AWS Console (us-west-2)**





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Access lab environment

1. Visit Workshop Studio: https://catalog.workshops.aws/join
2. Choose **Email one-time password (OTP)**
3. Enter your email address
4. Enter OTP
5. Enter access code: **142b-0aea4a-0a**
6. Review terms and conditions, select the checkbox, and then select **Join event**
7. Review lab instructions
8. Access your AWS account by selecting **Open AWS Console (us-west-2)** (located at the bottom-left part of the Workshop Studio web page)

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Conclusion

What have we accomplished?

- Combined a GitOps controller (Flux) with an infrastructure controller (Crossplane) to build an end-to-end/multi-cluster GitOps
- Learned how to structure Git to support large/complex environments

Next steps

- Visit our GitHub repo: github.com/aws-samples/eks-multi-cluster-gitops. Take it out for a spin. Watch it, star it, fork it, and start sharing feedback through GitHub Issues.

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Thank you!

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