



# Improving the Developer Experience of Infrastructure as Code and GitOps

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# Agenda

1. DX Gap
2. Demo
3. Code

# About me



**Philipp Strube**

Twitter @pst418

K8s Slack @pst in #kubestack



2009

#Public Cloud  
#PaaS



2016

#Public Cloud  
#Kubernetes



2017

#Enterprise  
#Kubernetes



2018

#Consulting  
#Kubernetes



2020

#Open Source  
#Kubernetes

# DX Gap

# DX Gap of IaC

1. Upfront effort
2. Maintenance effort
3. Slow feedback loops

# Use-case specific frameworks

django

RAILS

spring®

Gatsby

KUBESTACK

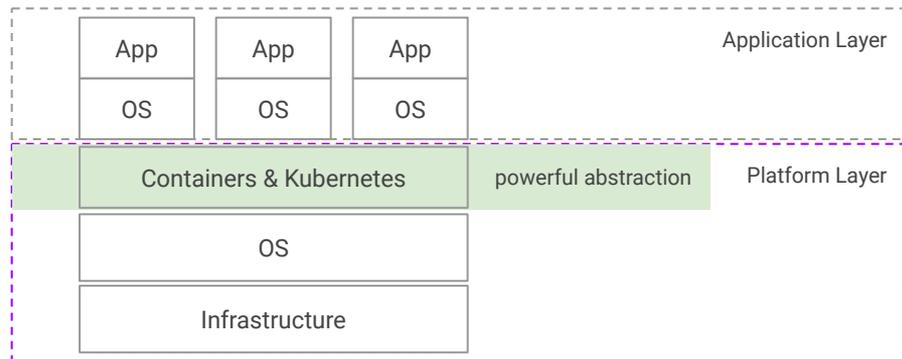
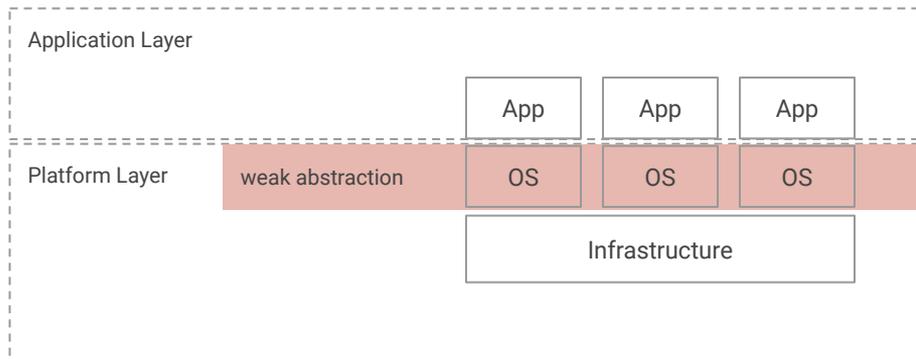


JS



# The Paradigm-Shift

that enables the **Kubestack framework**



# Demo

# Environments

# Workspaces as Environments

```
resource "google_container_cluster" "example1" {  
  name      = var.name  
  
  # ...  
}  
  
resource "google_container_cluster" "example2" {  
  name      = format("%s-%s", var.name, terraform.workspace)  
  
  # ...  
}
```

# Metadata module

```
module "cluster_metadata" {  
  source = "../../common/metadata"  
  
  name_prefix = local.name_prefix  
  base_domain = local.base_domain  
  
  provider_name    = "aws"  
  provider_region = data.aws_region.current.name  
}
```

# Configuration

# Environment Configuration

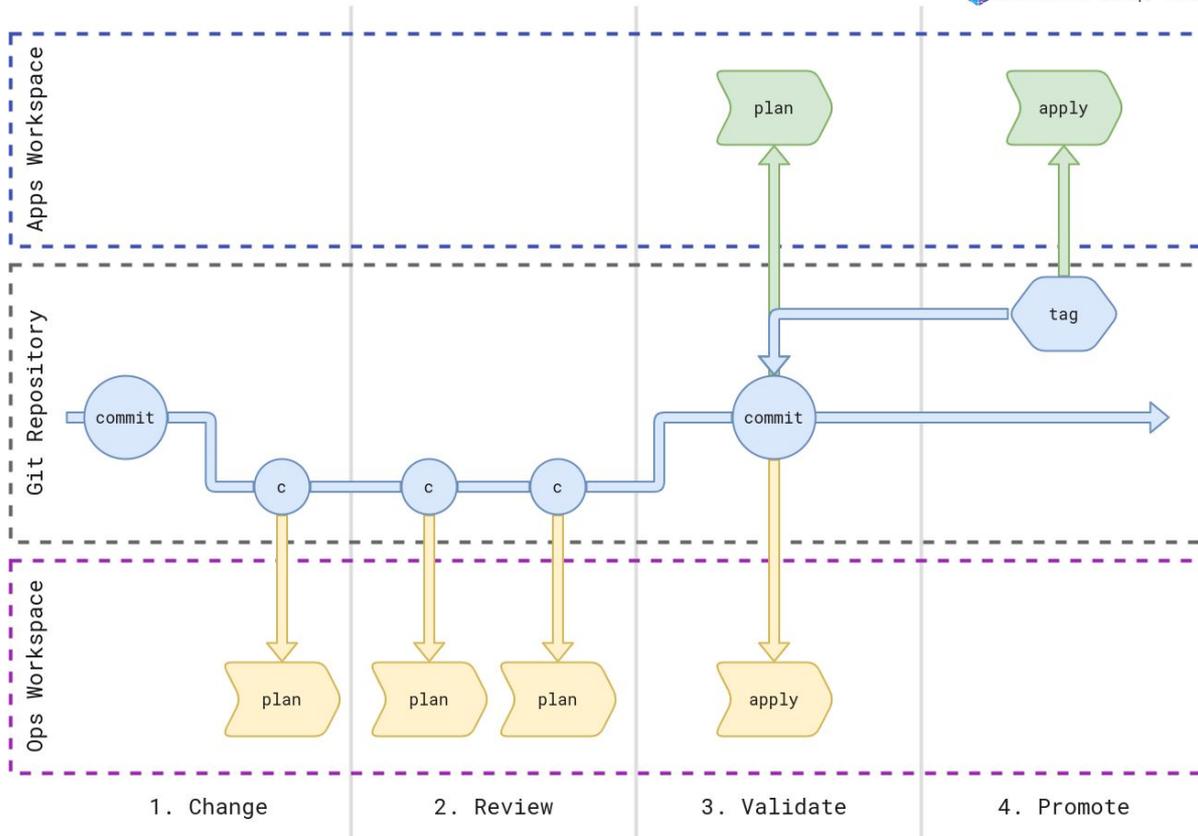
```
config = {  
  workspace1 = {  
    attr1 = "value1"  
    attr2 = "value1"  
  }  
  workspace2 = {  
    attr1 = "value1"  
    attr2 = "value2"  
  }  
}  
  
module "example" {  
  attr1 = var.config[terraform.workspace].attr1  
  attr2 = var.config[terraform.workspace].attr2  
}
```

# Inheritance module

```
gke_zero = {  
  apps = {  
    # ...  
    cluster_min_node_count = 1  
    cluster_max_node_count = 10  
    region                  = "europe-west1"  
    cluster_node_locations = "europe-west1-b,europe-west1-c,  
                             europe-west1-d"  
  }  
  ops = {  
    cluster_max_node_count = 1  
    cluster_node_locations = "europe-west1-b,europe-west1-c"  
  }  
}
```

# GitOps Flow

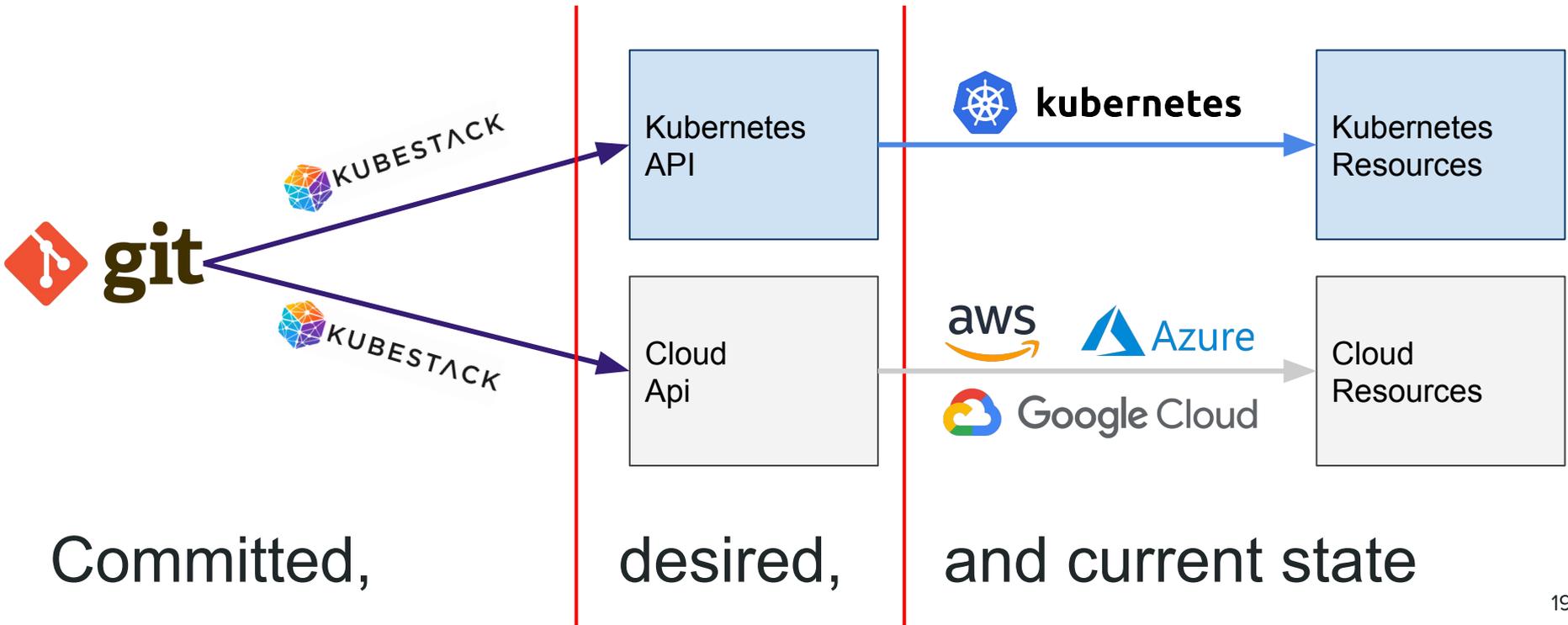
# GitOps Flow



# Pipeline runtime & resiliency

- Docker images
  - Multi-cloud: `kubestack/framework:$version`
  - AKS only: `kubestack/framework:$versions-aks`
  - EKS only: `kubestack/framework:$versions-eks`
  - GKE only: `kubestack/framework:$versions-gke`
  - KIND only: `kubestack/framework:$versions-kind`
- Extend the Dockerfile
  - `FROM kubestack/framework:v0.12.1-beta.0-aks`
- Vendoring Terraform providers
- Exception: Terraform modules are downloaded from Github

# Scope



# Cluster Services

# Cluster Services

1. Validated in ops, before promoted to apps
2. Unify application environments in multi-cluster or multi-cloud use-case

- Terraform GitOps Framework
  - The best DX for IaC
  - And rock-solid automation

# Thank you for your attention!

1. Tutorial on: [www.kubestack.com](http://www.kubestack.com)
2. Code at: [github.com/kbst/terraform-kubestack](https://github.com/kbst/terraform-kubestack)
3. Join the conversation: #kubestack on the K8s Slack

