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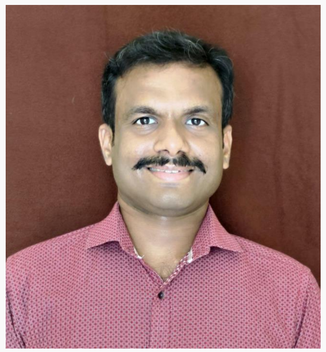
Cluster multi-tenancy on GKE

Cluster as SaaS



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@manikandank276

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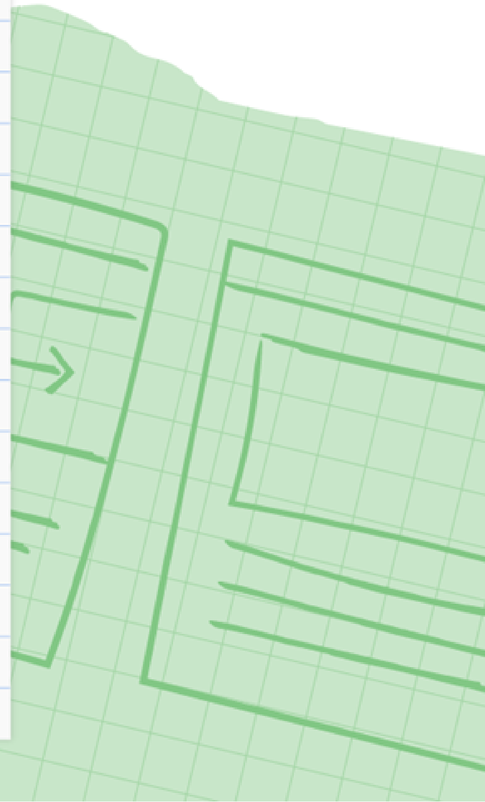
Agenda

- Google Kubernetes Engine (GKE)
- Multi-tenancy



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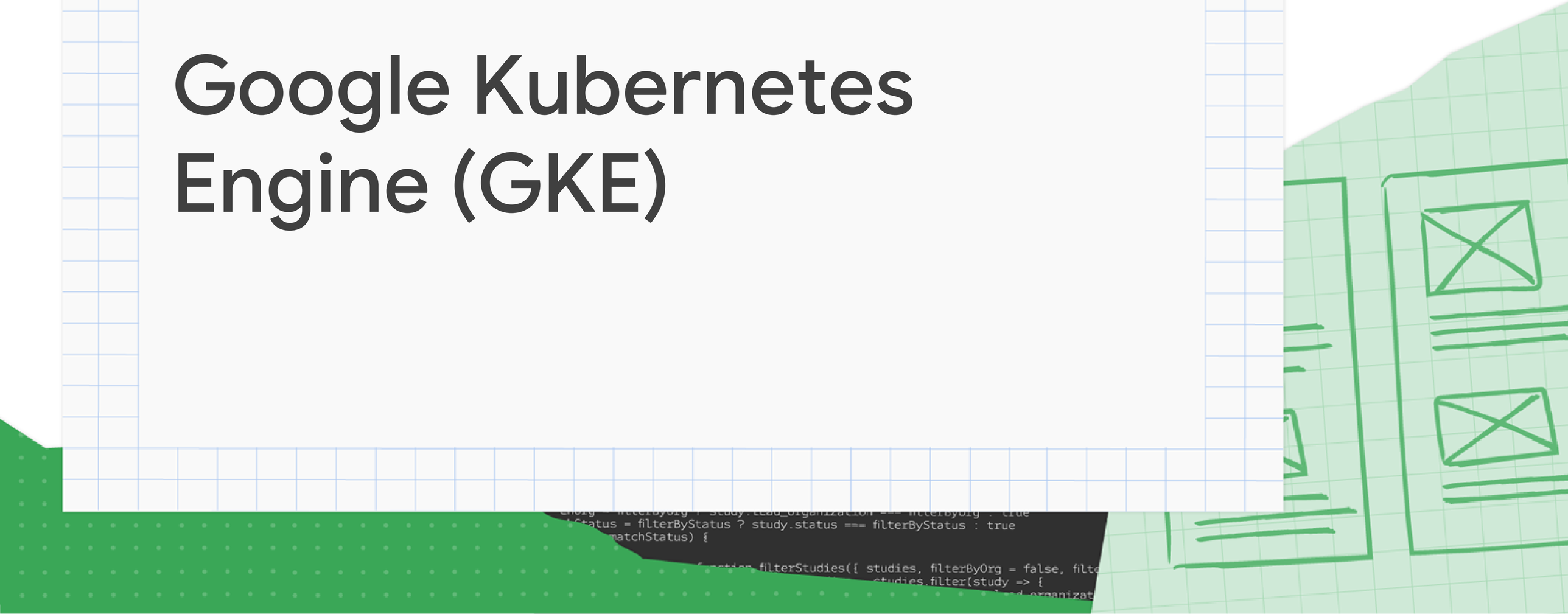
Google Kubernetes Engine (GKE)



What is GKE?

What is GKE?

Google Cloud Platform

CNCF

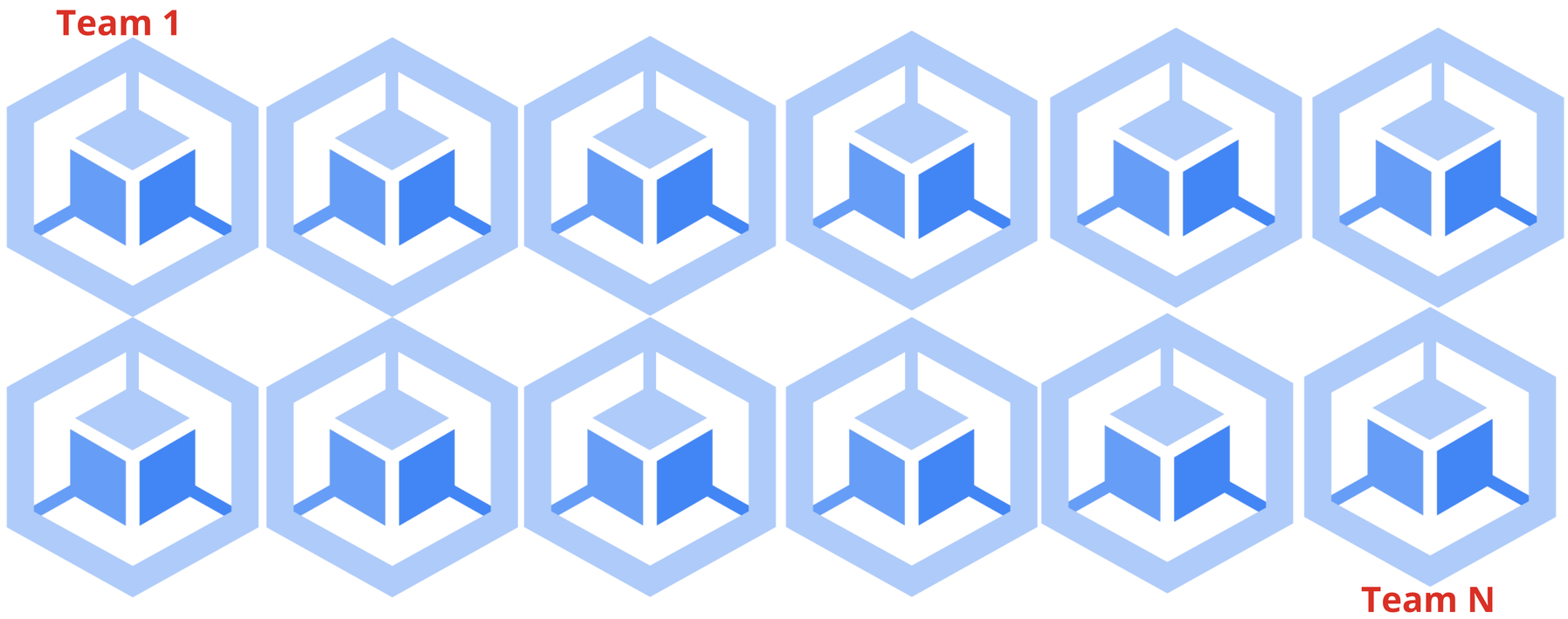
What are advantages?

What are advantages?

- Easy Cluster Creation
- Load Balancing
- Auto Scaling
- Auto Upgrades
- Auto Repair
- Logging
- Monitoring

What are problems?

What are problems?



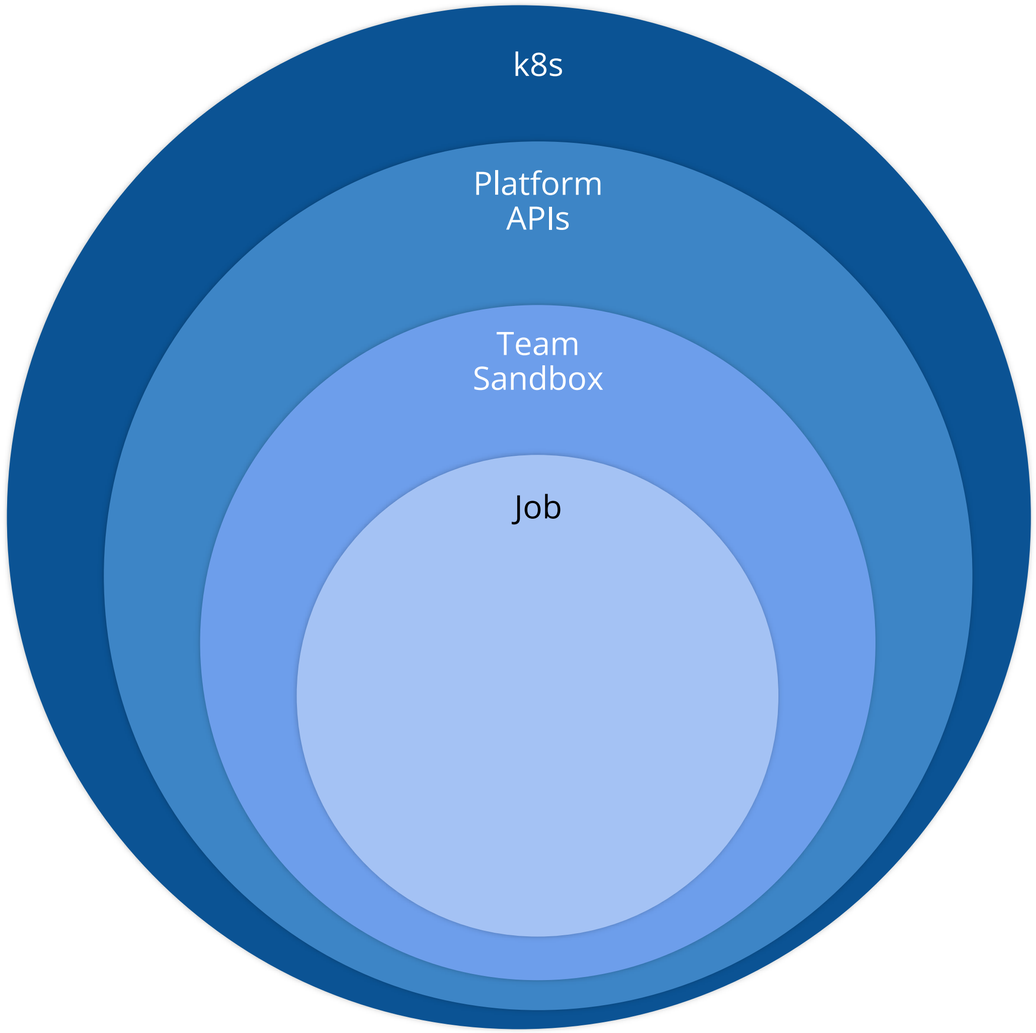
What are problems?

- Operation overhead
- Cost
- Security vulnerabilities

How to solve it?

How to solve it?

Multi-tenancy governance



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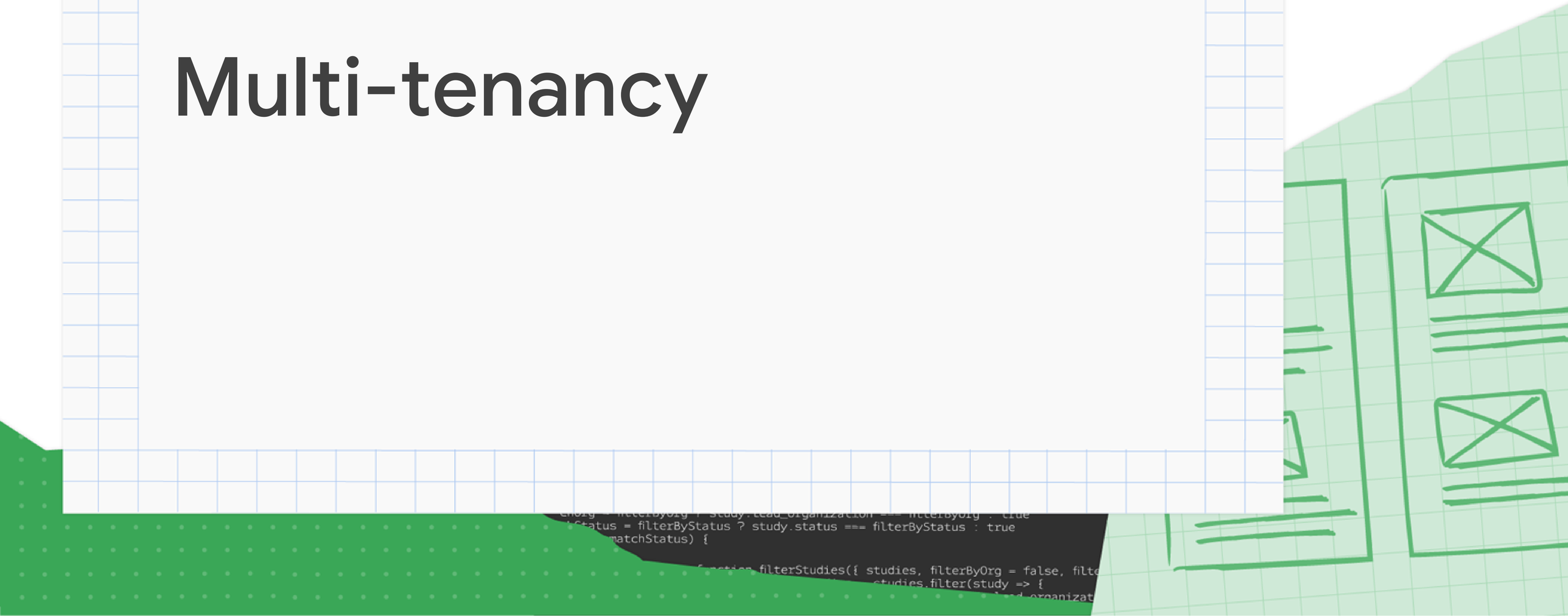
Multi-tenancy



What is multi-tenancy?

A multi-tenant cluster is shared by multiple users and/or workloads which are referred to as "tenants".

The tenants of a multi-tenant cluster share:

- Extensions, controllers, add-ons, and custom resource definitions (CRDs).
- The cluster control plane. This implies that the cluster operations, security, and auditing are centralized.

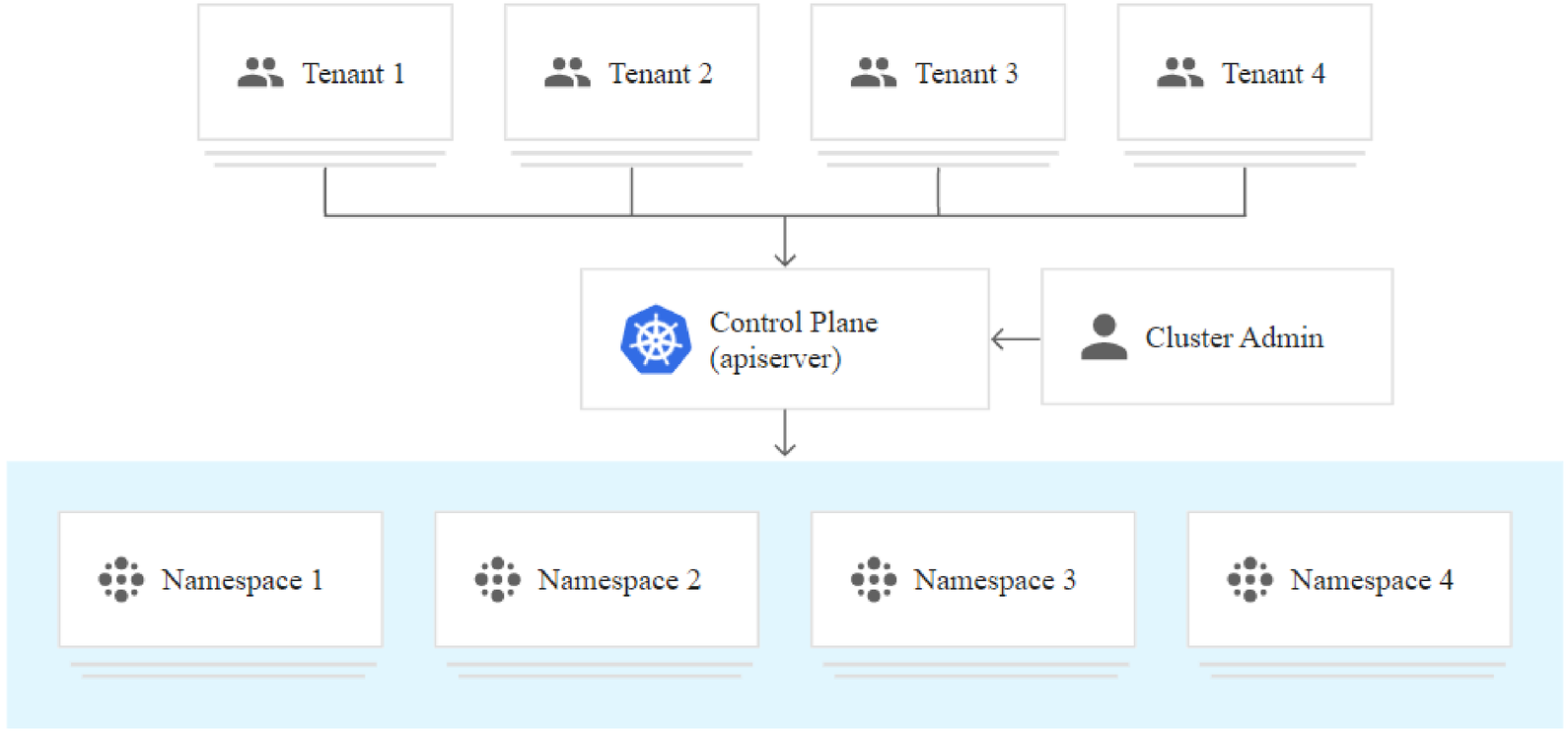
Multi-tenancy advantage

- Reduced operation overhead
- Reduced resource fragmentation
- Centralized security management
- No need to wait for cluster creation for new tenants

Multi-tenancy use cases

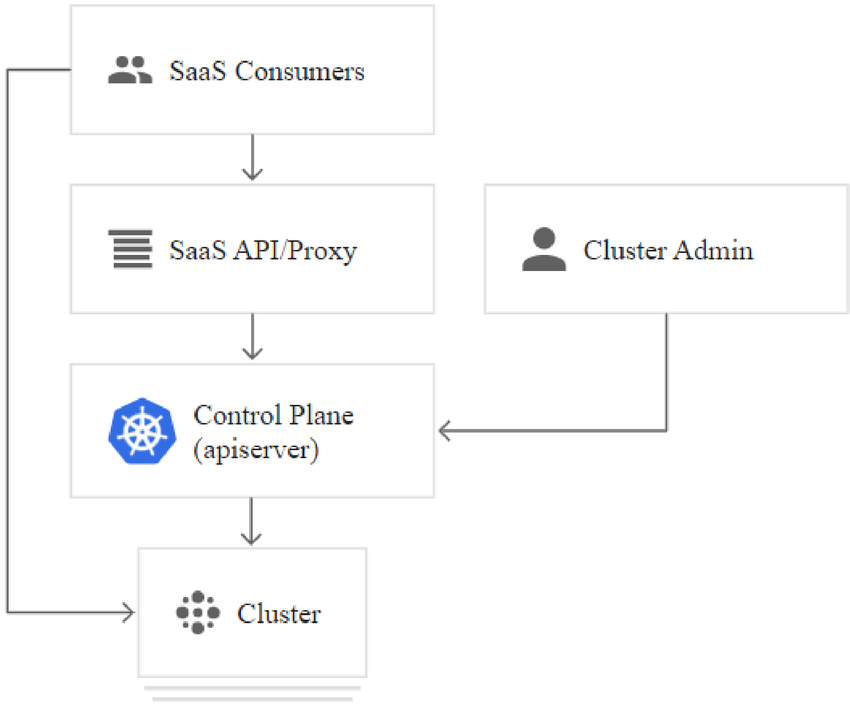
Multi-tenancy use cases

Enterprise multi-tenancy



Multi-tenancy use cases

SaaS provider multi-tenancy

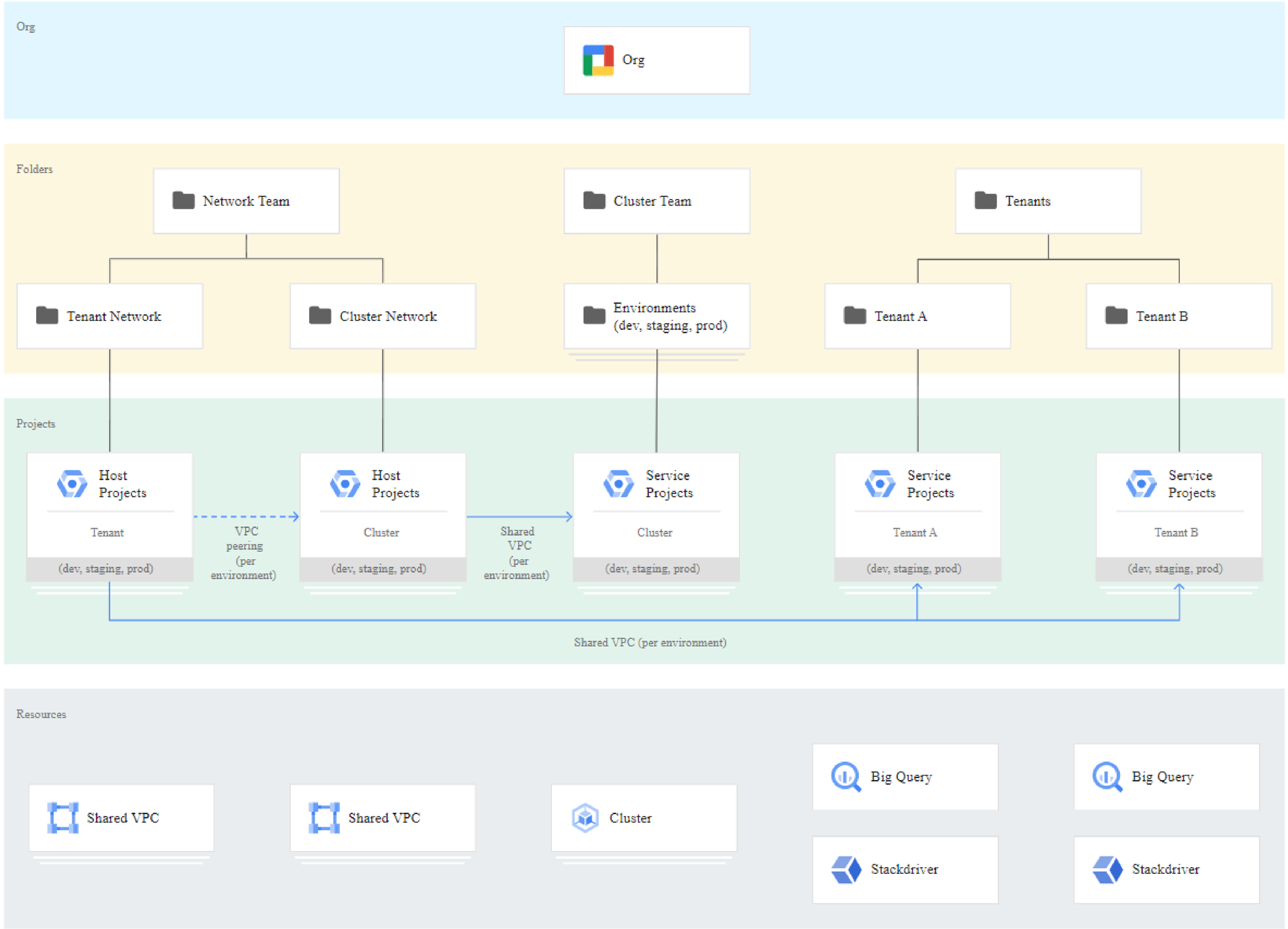


Multi-tenancy policy enforcement

Multi-tenancy policy enforcement

- Access control
- Network policies
- Resource quotas
- Pod anti-affinity

Best practices for enterprise multi-tenancy


Org
Org
Folders
Network Team
Cluster Team
Tenants
Tenant Network
Cluster Network
Environments
(dev, staging, prod)
Tenant A
Tenant B
Projects
Host
Projects
Tenant
(dev, staging, prod)
VPC
peering
(per
environment)
Host
Projects
Cluster
(dev, staging, prod)
Shared
VPC
(per
environment)
Service
Projects
Cluster
(dev, staging, prod)
Service
Projects
Tenant A
(dev, staging, prod)
Service
Projects
Tenant B
(dev, staging, prod)
Shared VPC (per environment)
Resources
Shared VPC
Shared VPC
Cluster
Big Query
Big Query
Stackdriver
Stackdriver

Demo

Reference

- GCP document: Cluster multi-tenancy - https://cloud.google.com/kubernetes-engine/docs/concepts/multitenancy-overview
- CNCF event: Running a multi-tenant platform on a managed Kubernetes cluster - https://www.youtube.com/watch?v=O0nDzo_8NUk

Sincere thanks for author. This presentation use content from reference.

Thank you

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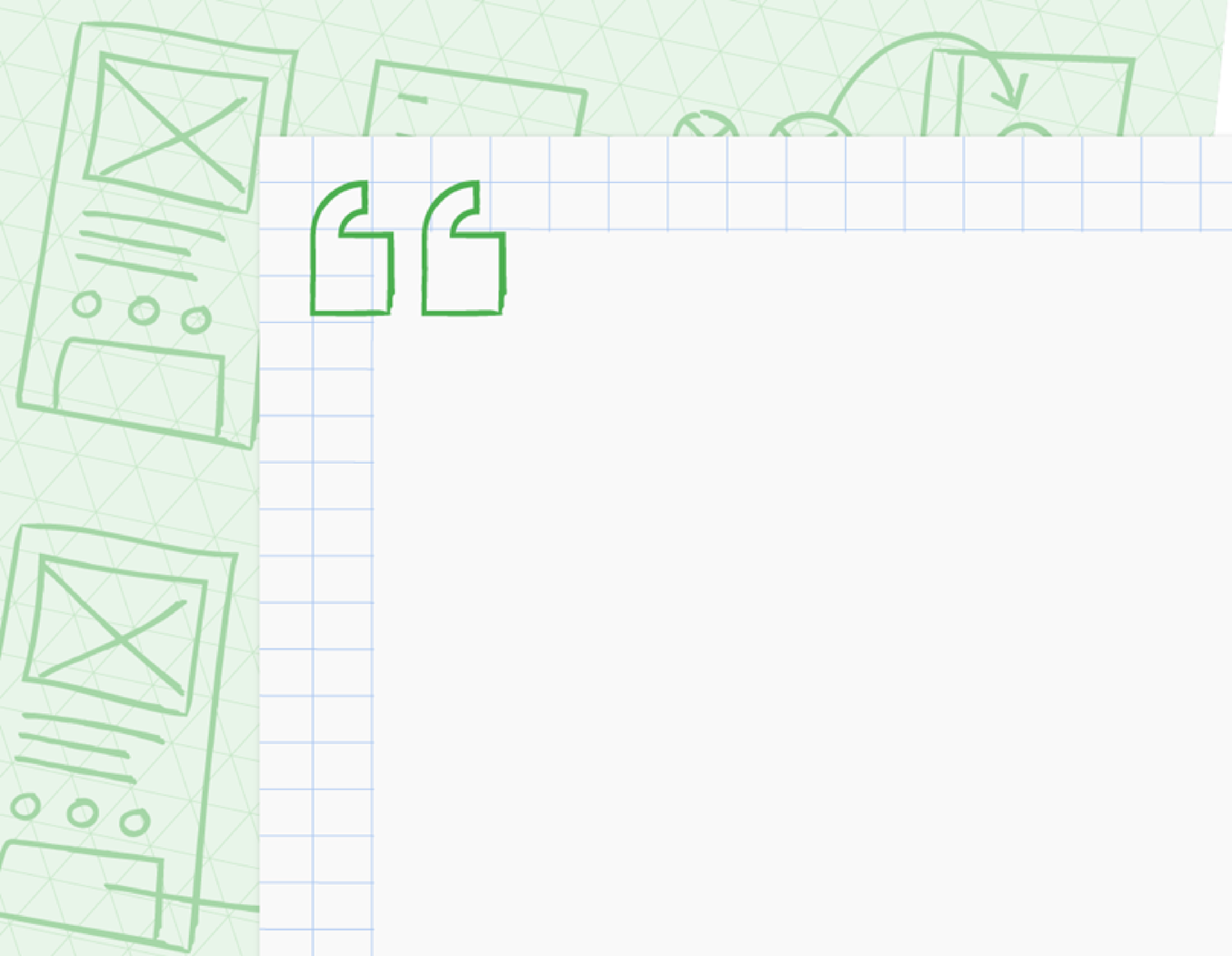
Sincere thanks to GDG Community , Family , Friends



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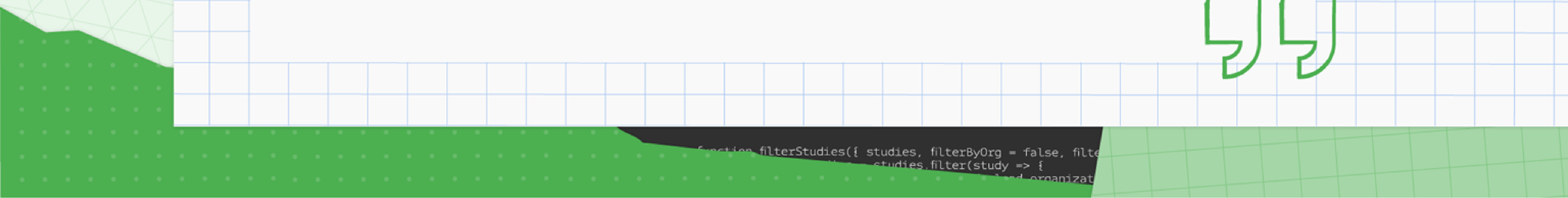
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