



Utilizing ArgoCD & Kubernetes for Suicide Prevention for LGBTQ+ Youth

The Trevor Project



alfredo.pizana@thetrevorproject.org



[in/alfredopizana](https://www.linkedin.com/in/alfredopizana)



paul.pham@thetrevorproject.org



[in/pham-paul](https://www.linkedin.com/in/pham-paul)



You deserve a
welcoming, loving world.

And so do the people you care about. Here you can reach out to a counselor if you're struggling, find answers and information, and get the tools you need to help someone else.



Services

Crisis Services

Advocacy

Research

TrevorSpace

Education & Public Awareness

About Us

Alfredo Pizaña

Tech Lead
(he/him)



Paul Pham

Engineering Manager
(he/him)



Agenda

1

Project Context

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3

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Impact

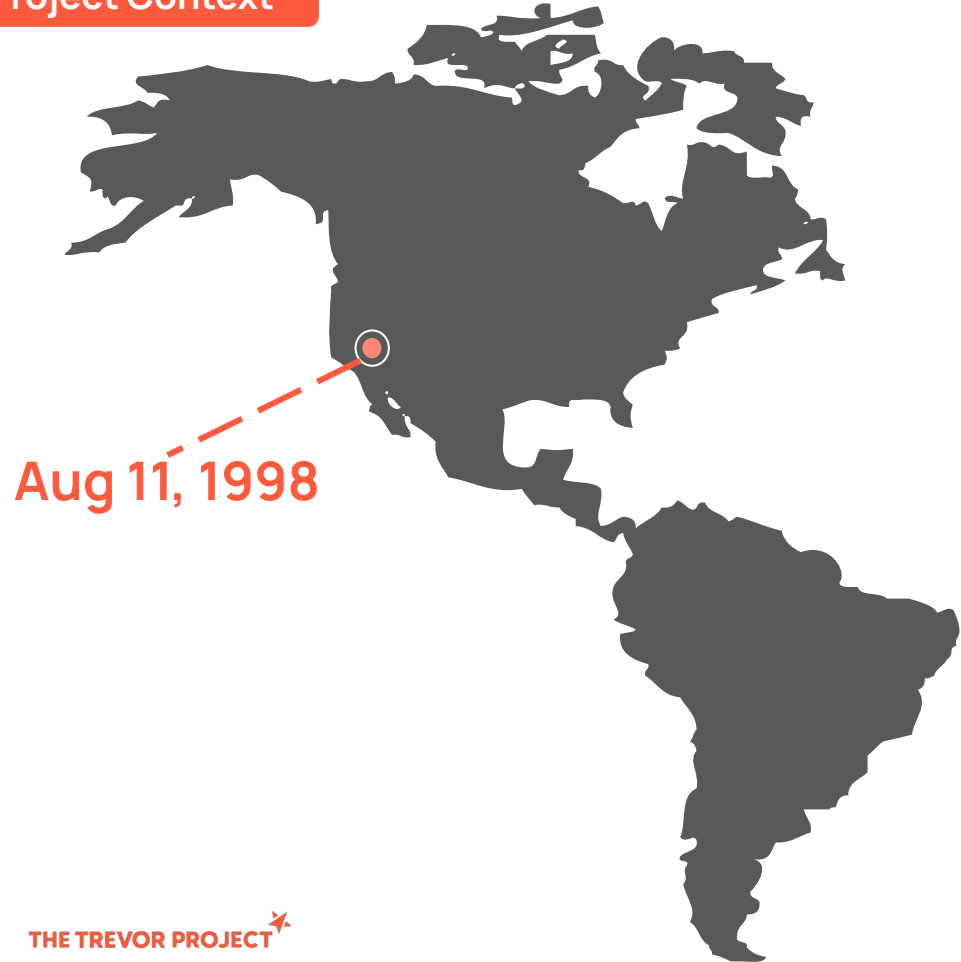
01.

Project Context

“ The Trevor Project’s mission is to end **suicide** among **LGBTQ+** **young people** ”



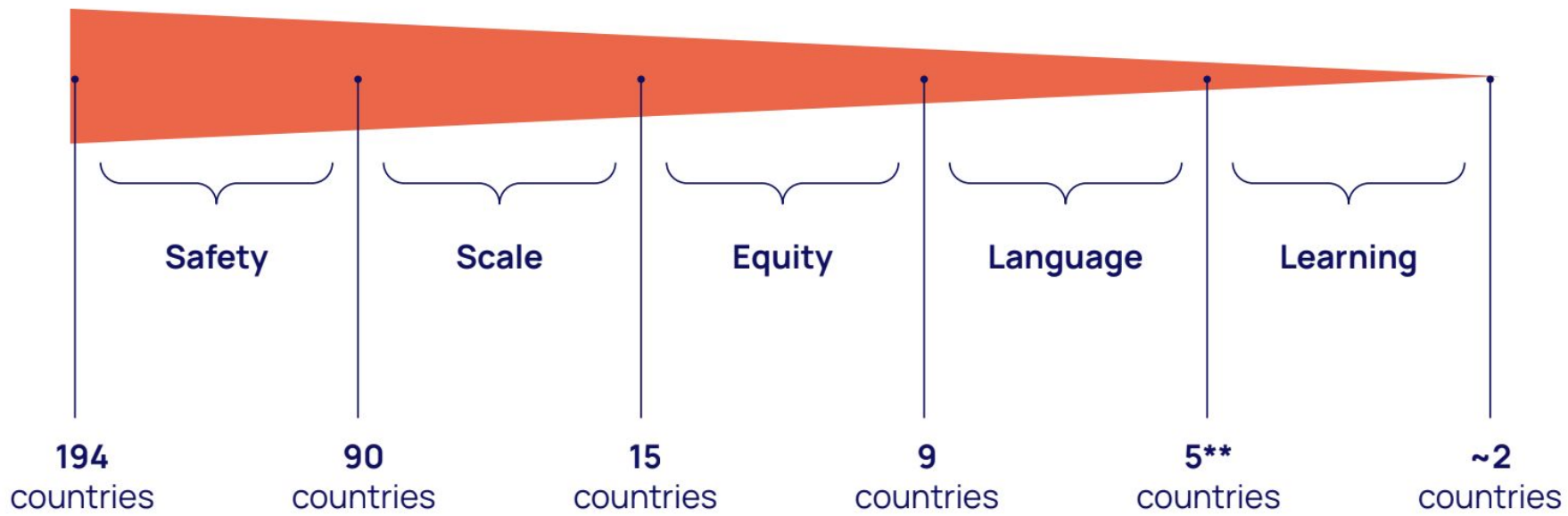
Project Context



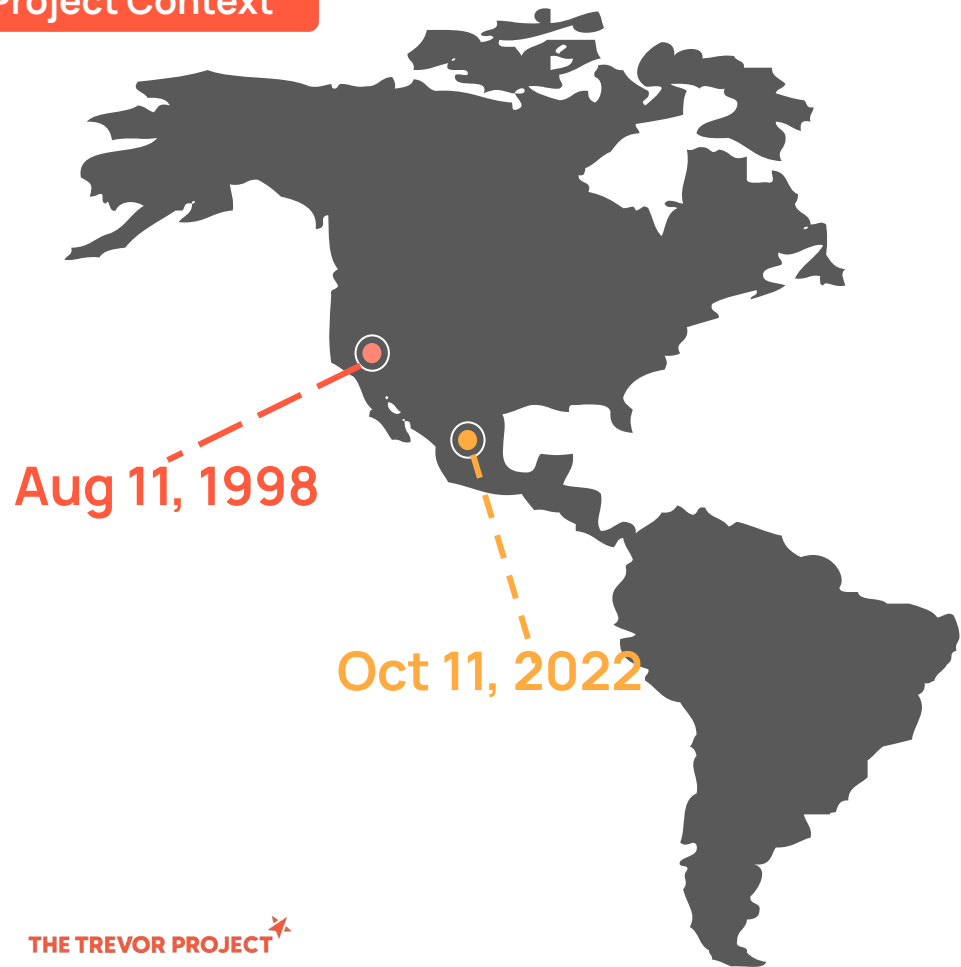
Aug 11, 1998



Project Context



Project Context





The screenshot displays the TrevorChat interface within a Salesforce environment. The top navigation bar includes "Crisis Services" and "Supervisor Dashboard". A search bar is located at the top right. The chat window on the left shows a message from a visitor: "<What's going on?> This is a test." and a response from a counselor: "Welcome to TrevorChat. My name is Milton." The right-hand side of the interface features a form for data collection, including fields for "School name" and "Grade". A "Risk Assessment" section contains several questions, with the first question, "Are you thinking of killing yourself?", highlighted in yellow and set to "No". Other questions include "How are you thinking of killing yourself?", "Have you thought about suicide before?", and "When was the last time?". The form concludes with "Cancel" and "Save" buttons.

Project Context

THE TREVOR PROJECT *Development*

Queue Volumes: High Your Status: **Busy**

Your Conversations

Contact
Not Suicidal
Context: ✎
Add context by clicking the pen icon.
[TRANSFER](#) [END](#)

Contact 0000945

Not Suicidal TrevorChat 23.28.70.179 00:02:16

Chat Details [CASE RECORD](#)

Resumen 3/3 required +

Información de la Persona de Contacto 0/4 required +

Evaluación de Riesgo 1/1 required -

* ¿Estás pensando en suicidarte?

Configuración del Nivel de Riesgo (establecer manualmente el nivel de riesgo si es necesario)

La ruta de No 0/3 required +

Mecanismos de Afrontamiento y Recursos 0/0 required +

Cierre 0/2 required +

[CREATE FOLLOW-UP](#)

Conversation started with Contact

Today

****Preguntas Previas al Chat**** ¿Qué esta pasando?
****Respuesta:**** Hello, eventus! 🍌

Contact - 00:00:00

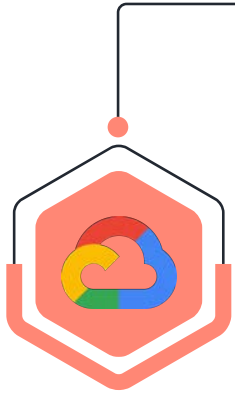
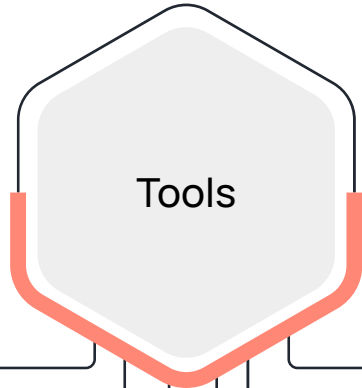
[Hello, world!](#)
Counselor - 00:00:36

woohoo!
Contact - 00:00:40

Type message

02.

Architecture



Google Cloud

GCP for cloud services



Github

Action Flows for CICD
Pipelines



Terraform

Infrastructure as
Code



ArgoCD

Continuous Delivery
K8s Tool



Kubernetes

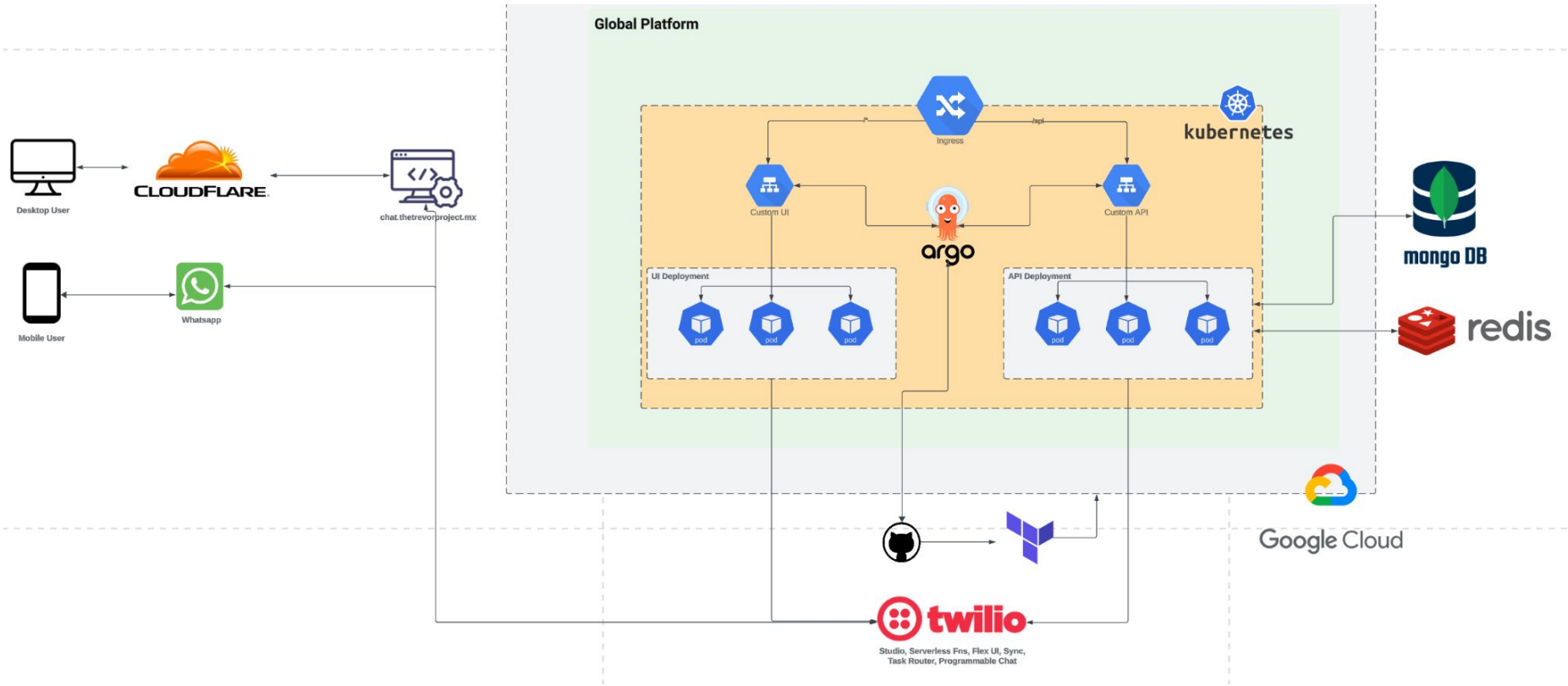
Containerized
Application



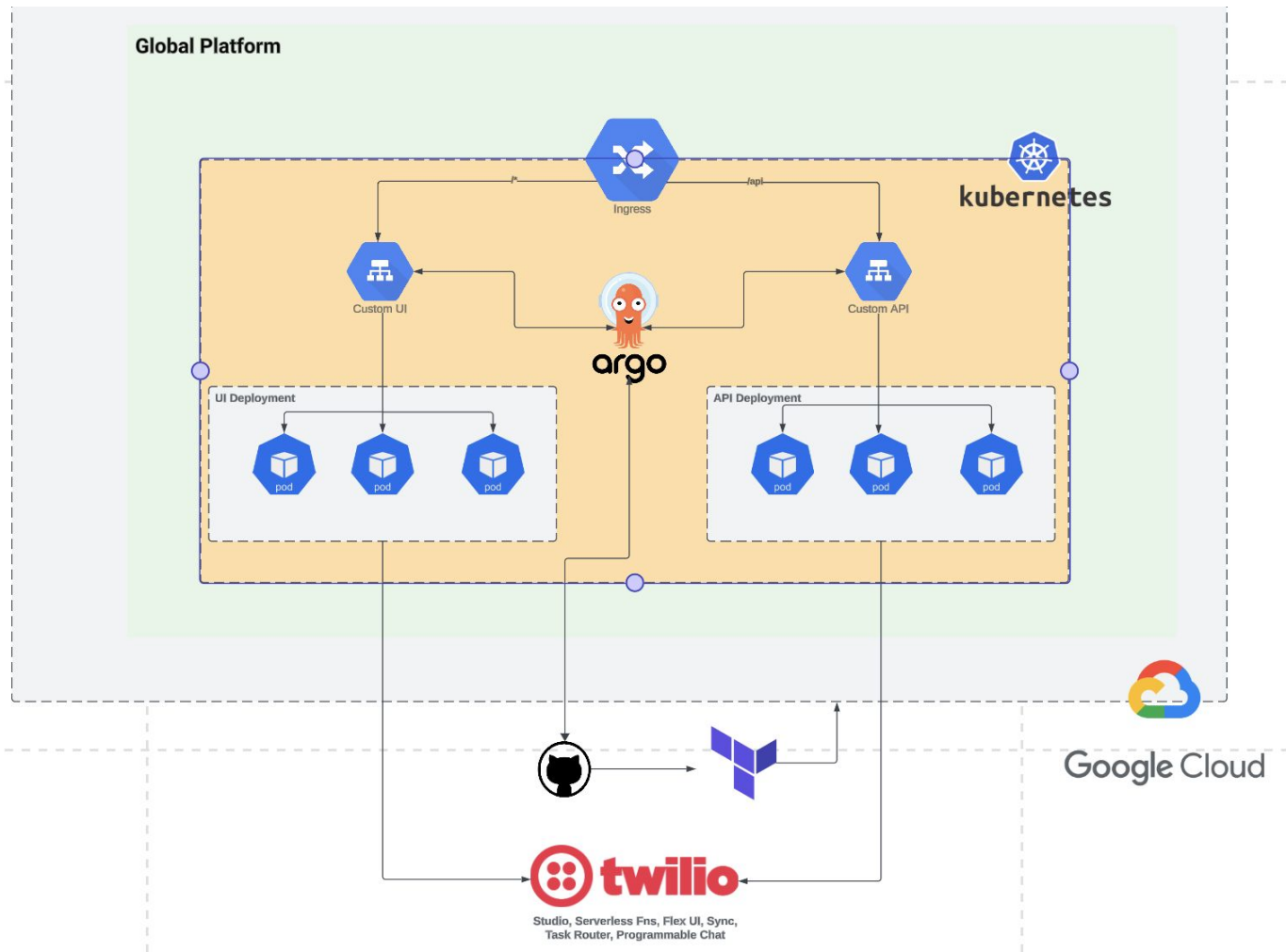
Twilio

Contact Center
Platform

Architecture



Architecture



```
1 module "gke" {
2   for_each      = var.gke_clusters
3   source        = "./modules/gke/autopilot"
4   project_id    = var.project_id
5   ip_cidr_range = each.value["ip_cidr_range"]
6   # network_suffix = var.network_suffix
7   environment   = var.environment
8   business_prefix = var.business_prefix
9   region        = var.region
10  network_id     = module.network.yes.vpc_id
11  network_name   = module.network.yes.vpc_name
12  infra_environment = var.infra_environment
13
14  depends_on = [
15    module.network
16  ]
17 }
```

- **Goal:** Define a method to deploy Apps in K8s
- **Setup:** Utilize kustomization file, which is a YAML specification of a Kubernetes Resource Model (KRM) object called a *Kustomization*. A kustomization describes how to generate or transform other KRM objects.

```
1 app1/  
2   kustomization.yaml  
3     | resources:  
4     | - ../base  
5     | patches:  
6     | - patch1.yaml  
7   patch1.yaml  
8  
9 app2/  
10  kustomization.yaml  
11    | resources:  
12    | - ../base  
13    | patches:  
14    | - patch2.yaml  
15  patch2.yaml  
16  
17 base/  
18  kustomization.yaml  
19    | resources:  
20    | - deployment.yaml  
21    | - configMap.yaml  
22  deployment.yaml  
23  configMap.yaml
```


Apps Deployment - Kustomize

- configMap.yml
- deployment.yml
- externalSecret.yml
- hpa.yml
- kustomization.yml
- secretStore.yml
- service.yml

API

- configMap.yml
- deployment.yml
- externalSecret.yml
- hpa.yml
- ingress.yml
- kustomization.yml
- searchValues.yml
- secretStore.yml
- service.yml

UI

```
1  apiVersion: kustomize.config.k8s.io/v1beta1
2  kind: Kustomization
3  namespace: dev
4
5  resources:
6  - ../../../../base/global-csm-api
7
8  configMapGenerator:
9  - name: global-csm-api-config
10   envs:
11   - configMap.yml
12
13  images:
14  - name: us-docker.pkg.dev/trevor...
15    newTag: latest
16
17  patchesStrategicMerge:
18  - externalSecret.yml
19
20  patches:
21  - target:
22      kind: Deployment
23      name: global-csm-api-deployment
24    patch: |-
25      - op: replace
26        path: /spec/replicas
27        value: 1
```


Kustomize Example

ArgoCD

Automates the deployment of the desired application states in the specified target environments. Application deployments can track updates to branches, tags, or pinned to a specific version of manifests at a Git commit.

- Argo CD follows the **GitOps** pattern of using Git repositories as the source of truth for defining the desired application state
- Kubernetes manifests can be specified in several ways:
 - Customize applications
 - Helm charts
 - Jsonnet files
 - Plain directory of YAML/json manifests



 **Argo CD**
v2.5.6+9db2c94

- Applications
- Settings
- User Info
- Documentation

FILTERS

- Favorites Only

SYNC STATUS

- Unknown 0
- Synced 14
- OutOfSync 2

HEALTH STATUS

- Unknown 0
- Progressing 0
- Suspended 0
- Healthy 16
- Degraded 0
- Missing 0

THE TREE LABELS

Applications

+ NEW APP SYNC APPS REFRESH APPS Search applications... [/] [-]

Project	Name	Source	Destination	Version	Health	Status
mx-training	datadog-mx-training	[REDACTED]	[REDACTED]	3.7.2	Healthy	OutOfSync
nonprod	datadog-nonprod	[REDACTED]	[REDACTED]	3.7.2	Healthy	OutOfSync
mx-training	external-secrets-mx-training	[REDACTED]	[REDACTED]	0.7.2	Healthy	Synced
nonprod	external-secrets-nonprod	[REDACTED]	[REDACTED]	0.7.2	Healthy	Synced
nonprod	global-csm-api-dev	[REDACTED]	[REDACTED]	HEAD	Healthy	Synced
mx-training	global-csm-api-mx-training	[REDACTED]	[REDACTED]	HEAD	Healthy	Synced
nonprod	global-csm-api-qa	[REDACTED]	[REDACTED]	HEAD	Healthy	Synced
nonprod	global-csm-api-qa-automation	[REDACTED]	[REDACTED]	HEAD	Healthy	Synced
nonprod	global-csm-api-staging	[REDACTED]	[REDACTED]	HEAD	Healthy	Synced
nonprod	global-csm-ui-dev	[REDACTED]	[REDACTED]	HEAD	Healthy	Synced
mx-training	global-csm-ui-mx-training	[REDACTED]	[REDACTED]	HEAD	Healthy	Synced

```
1 kubectl apply -f external-secret-app.yaml
```

```
1 apiVersion: argoproj.io/v1alpha1
2 kind: Application
3 metadata:
4   name: external-secrets-mx-training
5   namespace: argo
6 spec:
7   project: mx-training
8   destination:
9     server: "https://kubernetes.default.svc"
10    namespace: external-secrets
11  source:
12    chart: external-secrets
13    repoURL: https://charts.external-secrets.io
14    targetRevision: 0.7.2
15    helm:
16      releaseName: external-secrets
17      #valueFiles:
18      # - external-secrets-values.yaml
```

Deploy App by K8 Resource



03.

Challenges & Lessons Learned



Challenges



Strict launch date by the business



Lack of knowledge on build open-source technologies



Multiple code repositories to manage (10)

Lessons Learned

1

Upskilling our engineers, product managers, and other team members on new technologies beforehand

2

Add more observability to ensure systems are up and running

3

Tracking costs and using auto-scaling to reduce computing costs



04.

Impact



Impact of the K8s Platform

1

With the help of specialized counselors, we have supported 20,000+ young people in Mexico

2

Our systems have sustainably scale to support over 1500 chats per month



Thank You!

Please feel free to ask questions
and connect with us!



alfredo.pizana@thetrevorproject.org



paul.pham@thetrevorproject.org



[in/alfredopizana](https://www.linkedin.com/company/thetrevorproject)



[in/pham-paul](https://www.linkedin.com/company/thetrevorproject)

