



KubeCon



CloudNativeCon

North America 2024





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North America 2024

Shifting Gears Leveraging CNCF Tools to Streamline Operations at Toyota Connected

Founded to help transform Toyota from an automotive company to a mobility company through connected, shared, and intelligent services

10M+

VEHICLES ON DRIVELINK
CONNECTED PLATFORM



5M+

TELEMATICS CALLS COMPLETED
WITH CUSTOMERS

19B

TRANSACTIONS PROCESSED EACH
MONTH ON OUR CONNECTED
MOBILITY INTELLIGENCE PLATFORM

200+

U.S. EMPLOYEES

Technical Challenges



Tooling



Templates



Practices



Management

Organizational Challenges



Collaboration



Responsibility



Context



Change

Vision to Roadmap



Unified place to find
all services, teams and
documentation

Vision to Roadmap



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Standardize developer
workflows



Vision to Roadmap



Empower developers to
self-service deployments

Vision to Roadmap



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Easily onboard new
developers

Vision to Roadmap



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Visibility into the
lifecycle and health of
services





Maestro

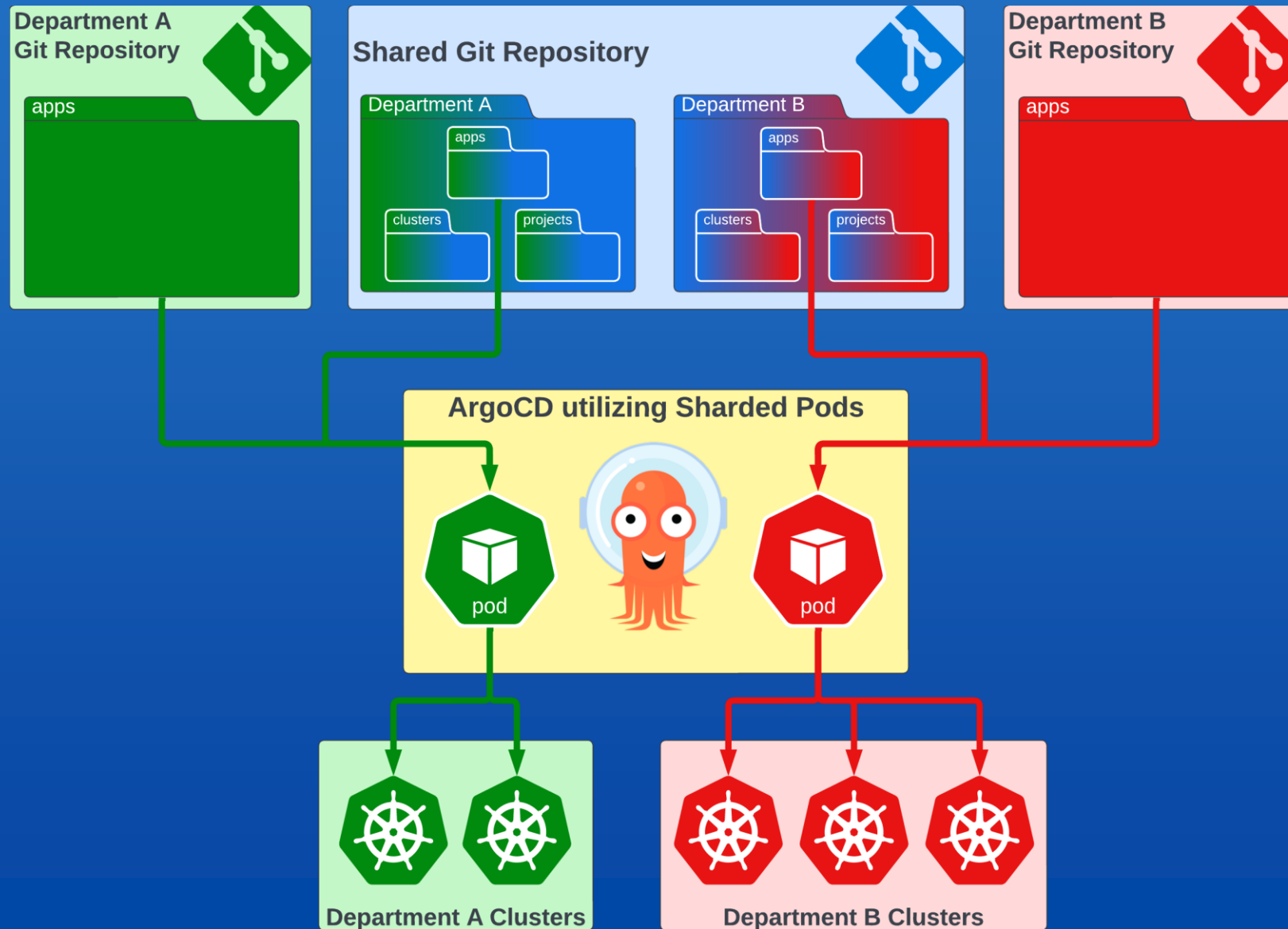
Enablers



Multi Tenant ArgoCD

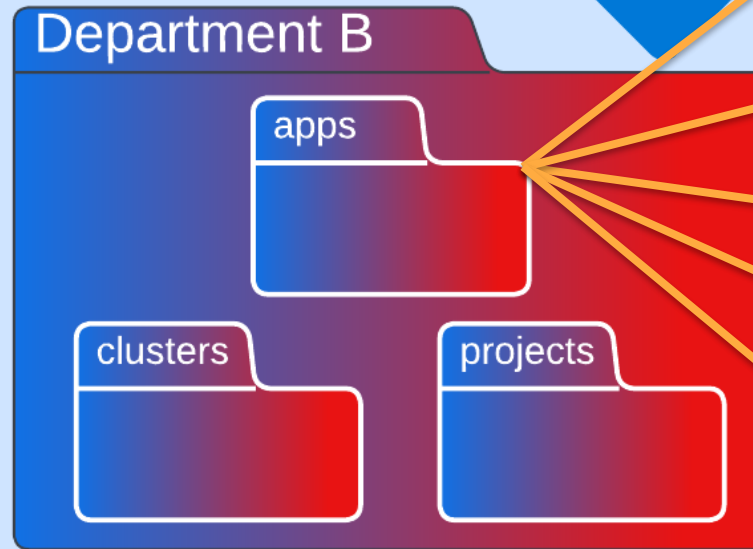
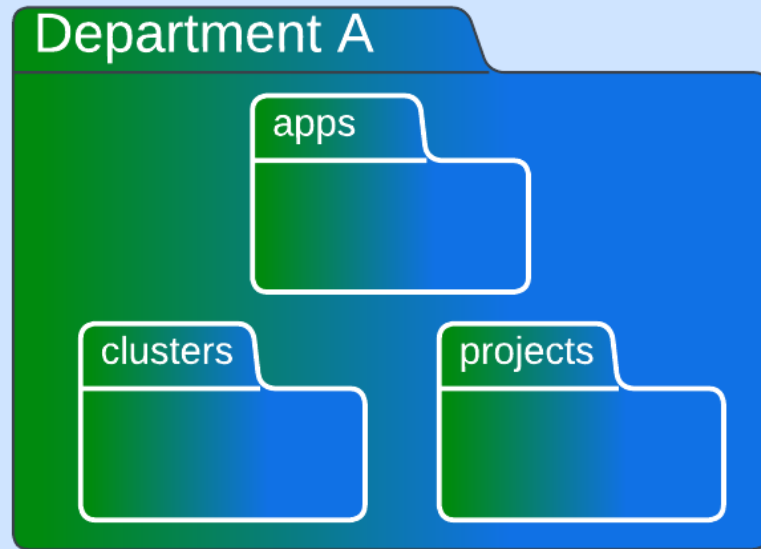


Flexible Central Management



Dependency Management and Collaboration

Shared Git Repository



Other Major Tools Adopted



External Secrets Operator

Security – Modularity – GitOps – Department Alignment



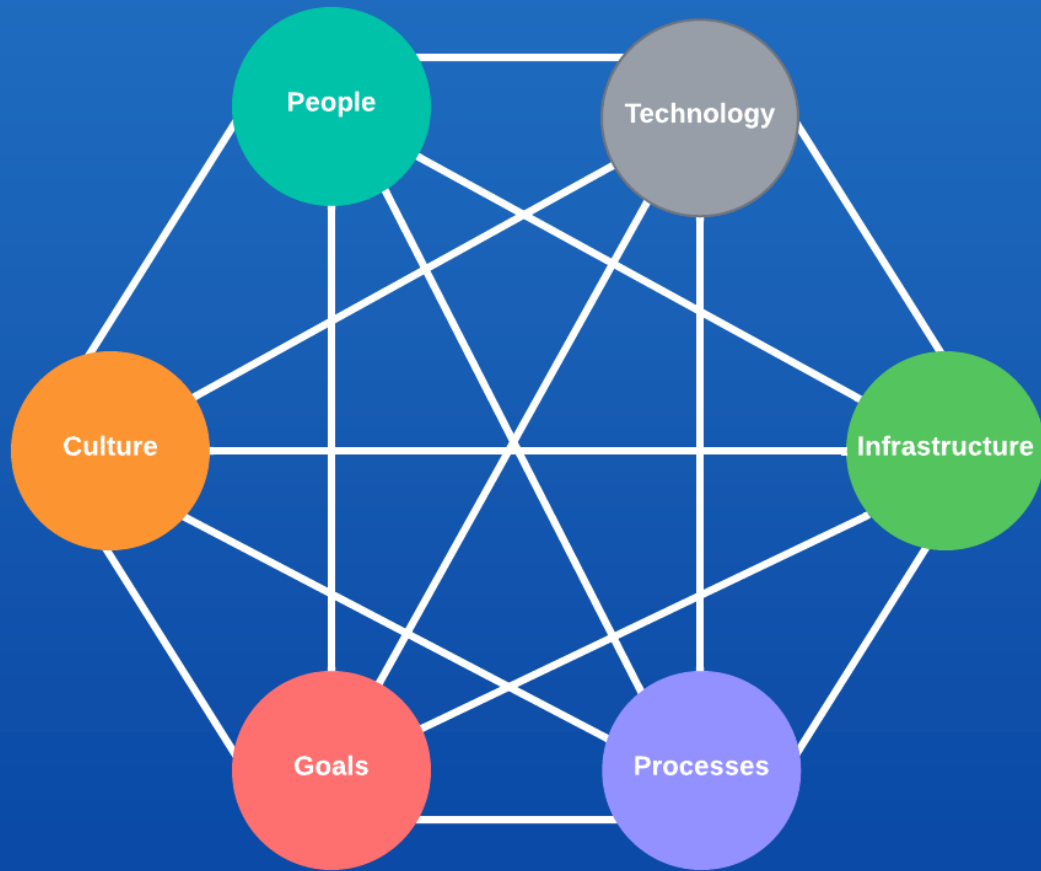
Harbor

Security – Pull-Through Cache – Multi-Tenancy



OpenCost

Multi-Cluster – Collaboration – Cost Sharing

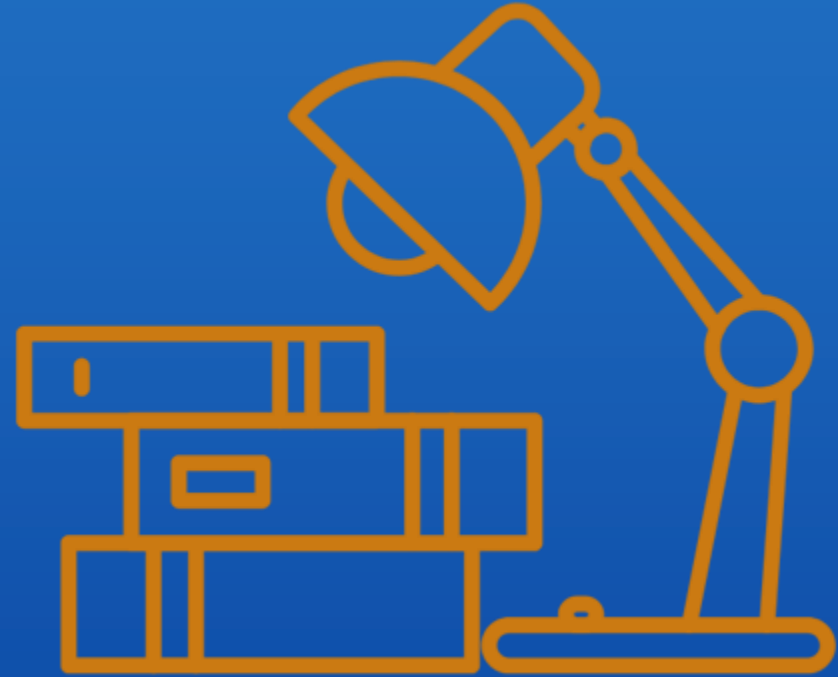


Backstage

soh-shee-oh-TECK-nuh-kuhl

Tuning the Orchestra

Team started with zero knowledge in TypeScript



Tuning the Orchestra

Team started with zero knowledge in TypeScript

Assorted Backgrounds and Experience Levels



Tuning the Orchestra

Team started with zero knowledge in TypeScript

Assorted Backgrounds and Experience Levels

Fill in the gaps



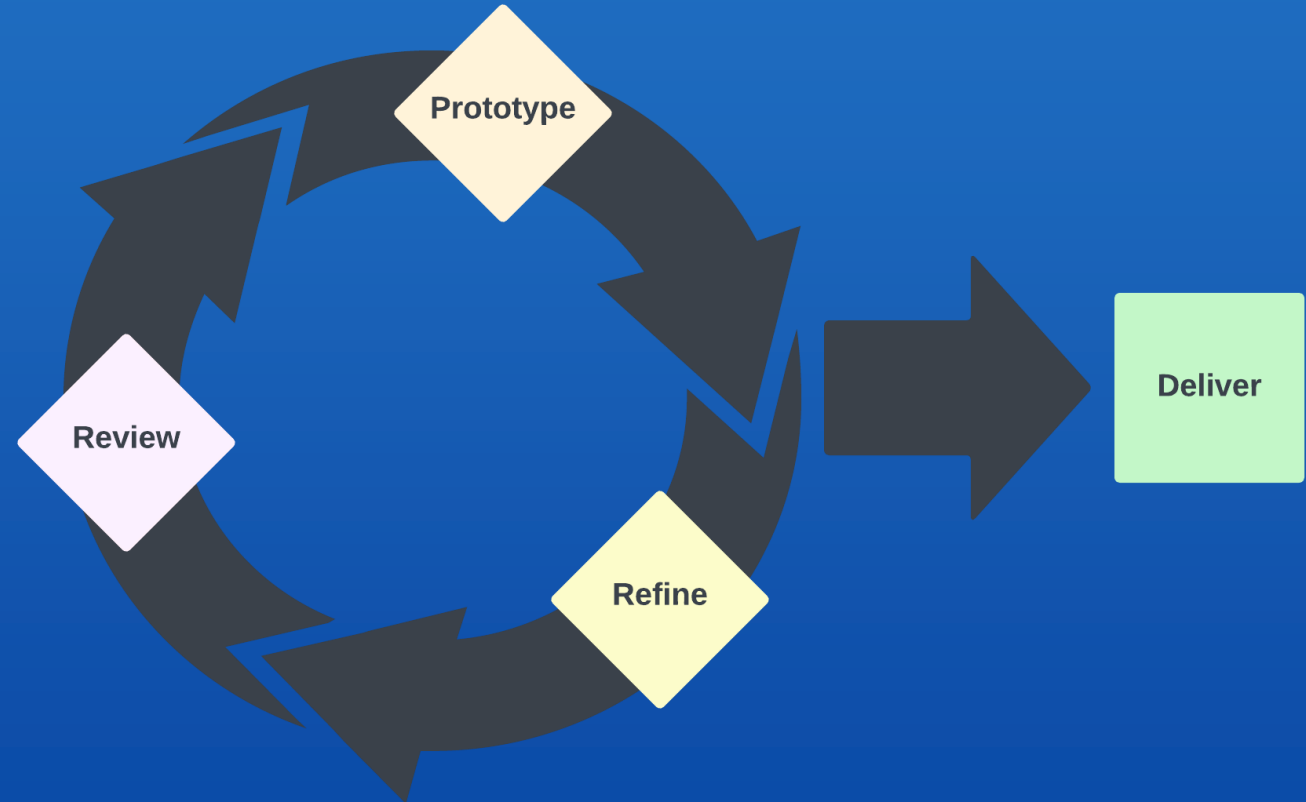
Tuning the Orchestra

Team started with zero knowledge in TypeScript

Assorted Backgrounds and Experience Levels

Fill in the gaps

Rapid prototyping



Maestro – In Concert



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Wednesday, 03 January, 2024 10:18:02

Self-Serve!

<div>service</div> <div>Access Profile Creation</div> <div>Template that creates a new access profile for the selected domain. Currently supporting AWS Account and GCP Project, as well as user specified custom Okta groups.</div> <div> maestro-team</div> <div>CHOOSE</div>	<div>resource</div> <div>Basic Cookiecutter</div> <div>Create a folder, modify a single file and push to a new repository</div> <div> maestro-team</div> <div>CHOOSE</div>	<div>resource</div> <div>Create Cloud Budget Alert</div> <div>Establish a new monthly cloud budget alert for the specified AWS account and maximum monthly amount (budget). Notifications will be sent via email if the budget is exceeded for the month.</div> <div> maestro-team</div> <div>CHOOSE</div>	<div>service</div> <div>Create an ADR</div> <div>Create an Architectural Decision Record (ADR) using this template and submit it as a merge request in the chosen location in TC Gitlab. This ensures a consistent format for documenting and reviewing architectural decisions across departments, facilitating organization-wide searchability</div> <div> backstage/techdocs-core</div> <div>CHOOSE</div>	<div>resource</div> <div>Create AWS Account</div> <div>Request a new AWS account</div> <div> maestro-team</div> <div>CHOOSE</div>
<div>resource</div> <div>Create GCP Project</div> <div>Request a new GCP Project</div> <div> maestro-team</div> <div>CHOOSE</div>	<div>service</div> <div>Onboard New Engineer</div> <div>Template that grants access of essential development tools to a new user. Currently supporting AWS Account and GCP Project, as well as user specified custom Okta groups.</div> <div> maestro-team</div> <div>CHOOSE</div>	<div>service</div> <div>Create InnerSource Project</div> <div>Create a new InnerSource project or link to an existing project in the catalog.</div> <div> maestro-team</div> <div>CHOOSE</div>	<div>resource</div> <div>MLOps Application Setup</div> <div>Use this template to set up a new MLOps application with all necessary configurations. It includes setting up project basics, defining the team, and managing access controls and environments.</div> <div> maestro-team</div> <div>CHOOSE</div>	<div>service</div> <div>Register New Catalog Entity</div> <div>Use the Maestro Catalog Integration Template to easily onboard your existing software component, API, or resource into the catalog. It will generate a merge request to establish a manifest that will be stored along with your code, so that you can share essential details with the organization.</div> <div> maestro-team</div> <div>CHOOSE</div>
<div>kubernetes</div> <div>New Python Project</div> <div>Want to deploy a new Python project? This template streamlines the process by automatically adding specific integrations, such as Docker, Terraform, and Renovate, to your project. Deploys to shared compute.</div> <div> maestro-team</div> <div>CHOOSE</div>	<div>component</div> <div>Shared Tool OpenCost</div> <div>Use the Shared Tool Opencost Template to add OpenCost to your clusters. This simplifies setting up a monitoring system with Prometheus and Grafana, specifically designed for handling OpenCost data. It's provided as a shared cluster addon by Cloud Engineering, making integration quick for teams using Argo. All deployment details are included in the template instructions.</div> <div> maestro-team</div> <div>CHOOSE</div>	<div>component</div> <div>Shared Tool Twistlock</div> <div>Use the Twistlock Template to add Twistlock to your clusters. Twistlock is a vital cybersecurity platform for cluster security. Cloud Engineering offers it as a shared cluster addon, making integration smooth for Argo users. Just follow the template steps to deploy Twistlock across all cluster nodes.</div> <div> maestro-team</div> <div>CHOOSE</div>	<div>component</div> <div>Standard Repo</div> <div>Use the Repos Template to create pipelines for new projects in a new GitLab repository. This template streamlines the process by automatically adding specific integrations, such as Renovate. Additionally, the new software component quickly joins Maestro, contributing to the development of our knowledge base.</div> <div> maestro-team</div> <div>CHOOSE</div>	

One Click Deploy

kubernetes

New Python Project

Want to deploy a new Python project? This template streamlines the process by automatically adding specific integrations, such as Docker, Terraform, and Renovate, to your project. Deploys to shared compute.

maestro-team

CHOOSE

Maestro

Search

Home

Catalog

Cloud Accounts

APIs

TechDocs

ADRs

Self Service

Resource Mgmt

Tools

Announcements

Training

News

Notifications

Finance Opera...

Add Shortcuts

Self Service

Leverage templates for crafting various items, including catalog entities and infrastructure resources, among others.

New Python Project

Please fill out this field.

Want to deploy a new Python project? This template streamlines the process by automatically adding specific integrations, such as Docker, Terraform, and Renovate, to your project. Deploys to shared compute.

Permissions Check

Create Project

Review

Owner *

Owner of the entity

System (Product Container)

System (Product Container) that the entity belongs to

Name *

Unique name of the entity

Example: "Next-Best-Thing"

Project Description *

Select a GitLab Group *

Select the GitLab group for your new repository

Entity Type *

The default component types are predefined categories that help organize and manage various software components within the catalog. The catalog entities like services, websites, libraries, etc. The default component types include:

- service: Represents a backend service or API.
- website: Used for frontend websites or web applications.
- library: Denotes reusable code libraries or packages.
- tool: Represents tools that aid in development or operations.
- app: For mobile or desktop applications.
- api: Used for defining APIs, often linked with the service component type.
- resource: Represents infrastructure resources like cloud buckets or storage.

One Click Deploy

Maestro
Search
Home
Catalog
Cloud Accounts
APIs
TechDocs
ADRs
Self Service
Resource Mgmt
Tools
Announcements
Training
News
Notifications
Finance Opera...
Add Shortcuts

Self Service

Leverage templates for crafting various items, including catalog entities and infrastructure resources, among others.

New Python Project

Please fill out this field.
Want to deploy a new Python project? This template streamlines the process by automatically adding specific integrations, such as Docker, Terraform, and Renovate, to your project. Deploys to shared compute.

1 Permissions Check2 Create Project3 Review

Owner *
Owner of the entity

System (Product Container)
System (Product Container) that the entity belongs to

Name *
Unique name of the entity
Example: "Next-Best-Thing"

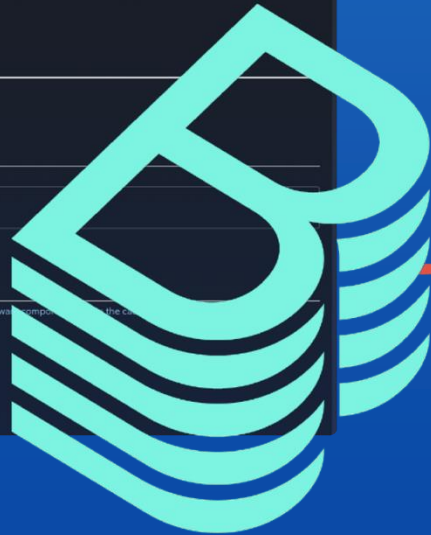
Project Description *

Select a GitLab Group *

Select the GitLab group for your new repository

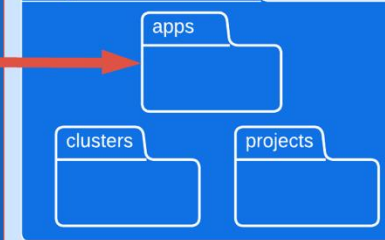
Entity Type *
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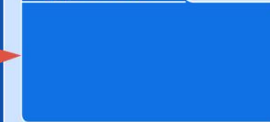
Shared Git Repository

Department A

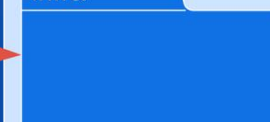


New App Repo

app code



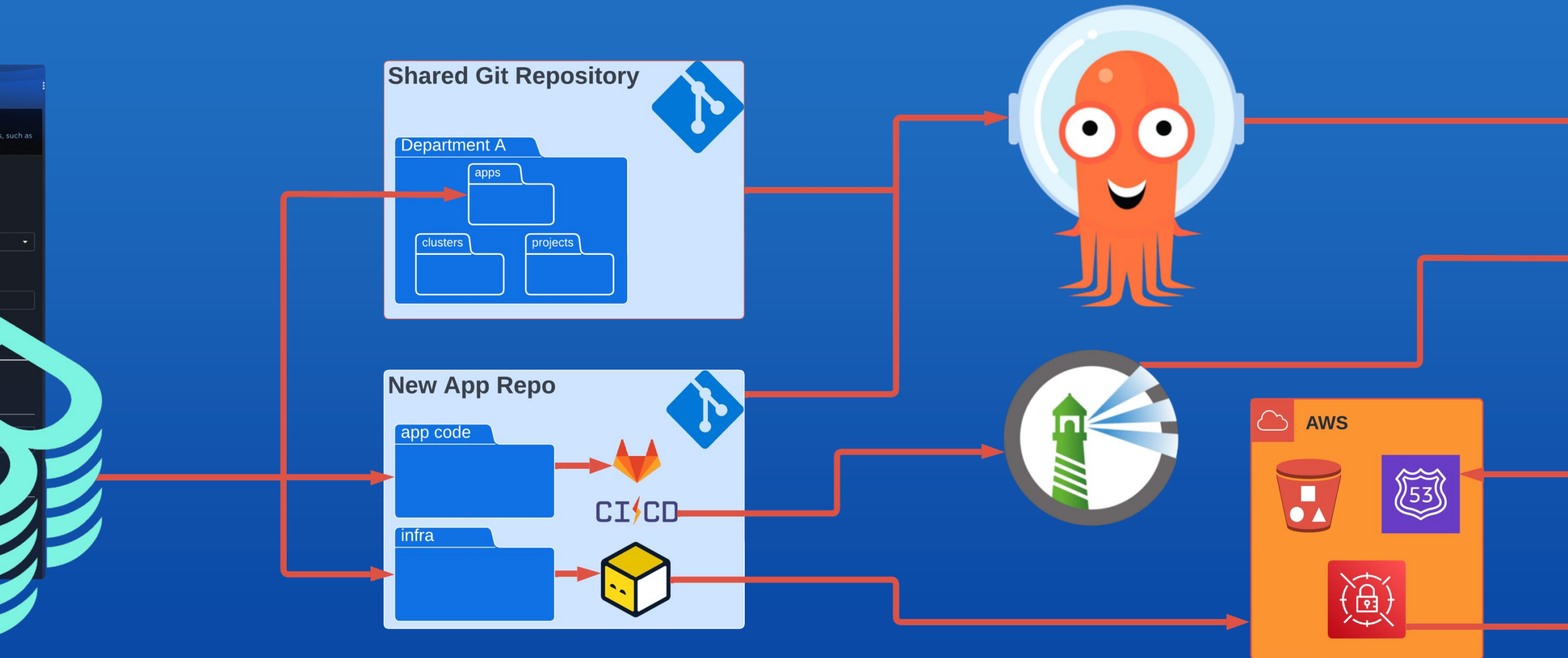
infra



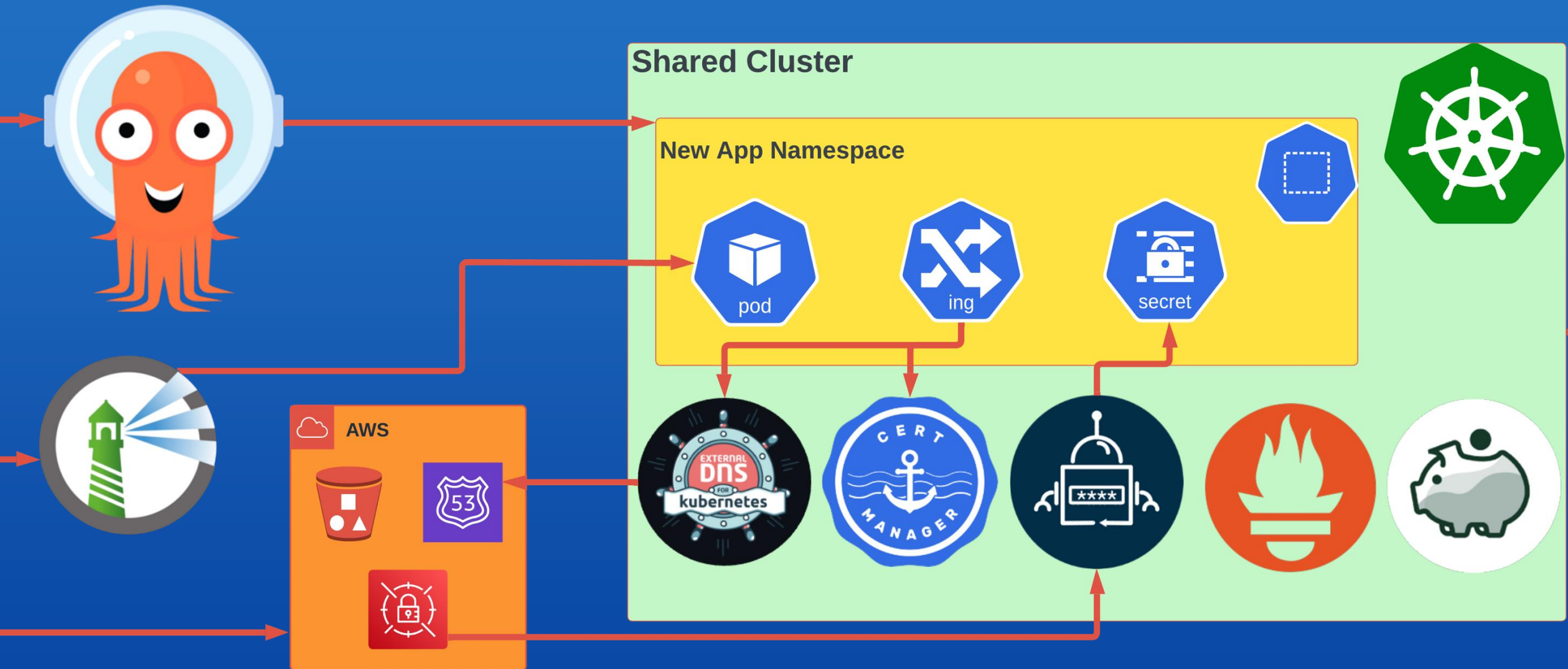
CI/CD

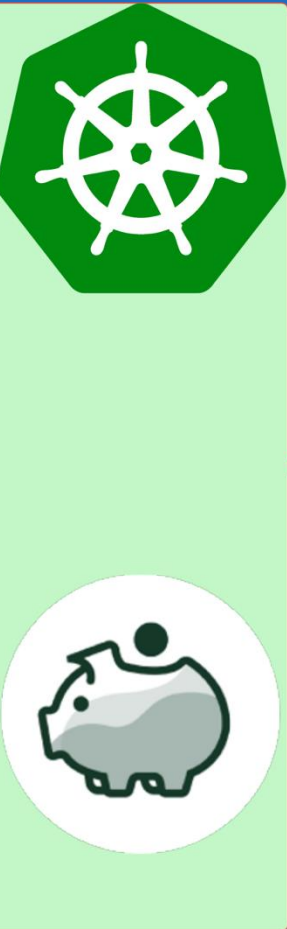


One Click Deploy



One Click Deploy






Maestro Automation[Get Started](#)

Accelerate Development with Maestro Automation

Empowering TCNA to Innovate Faster with Automated Infrastructure



What is Maestro Automation?

Maestro Automation is a powerful platform that streamlines the development process by automating infrastructure setup and deployment. With just a few basic details about your project, Maestro creates a fully configured environment including a GitLab repository, shared Kubernetes cluster, and continuous integration/delivery pipeline. This allows developers to focus on writing code and building features, rather than worrying about infrastructure and deployment processes.

Key Features



Increased Collaboration



Innersourcing



OSPO



ADR/RFC Processes



Standardization