

# Automating Your EKS Setup and Management

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**Craig Golightly**  
Senior Software Consultant

@seethatgo [www.seethatgo.com](http://www.seethatgo.com)



Toil

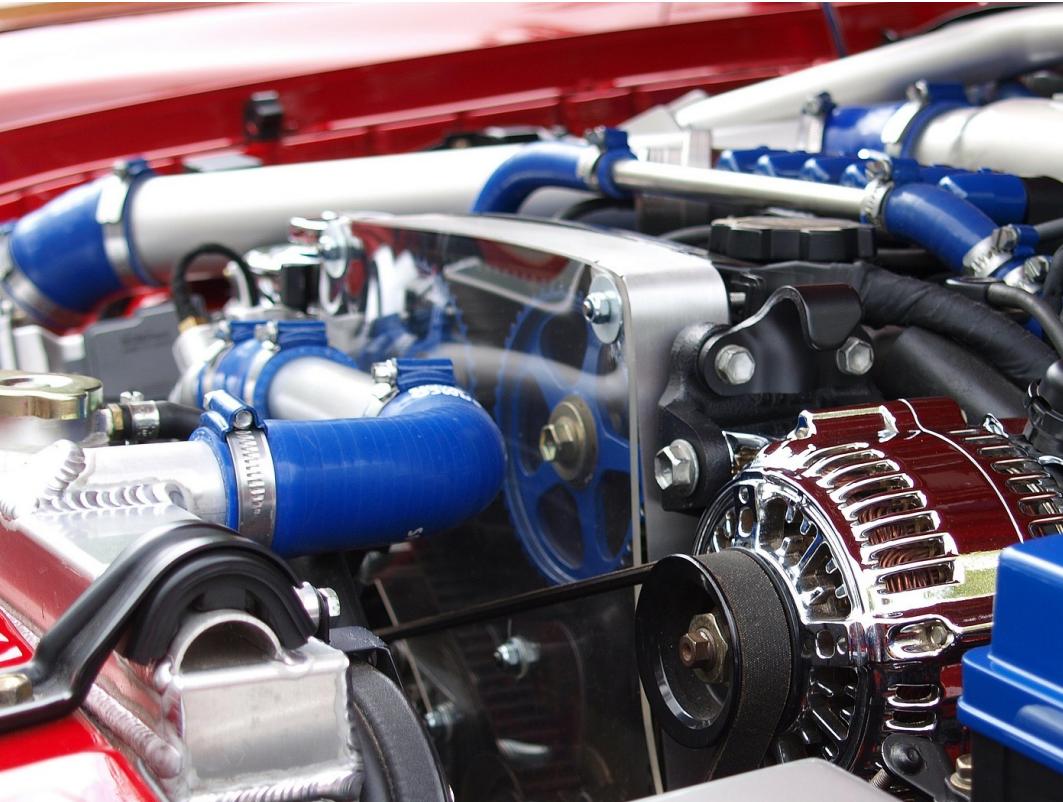


# Toil

**Toil is the kind of work tied to running a production service that tends to be manual, repetitive, automatable, tactical, devoid of enduring value, and that scales linearly as a service grows**



# Automation Tools



**Complex**

**Several options and configurations**

**New to you or your team**

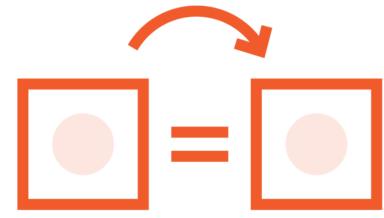
**Simple**

**Use interface to operate**

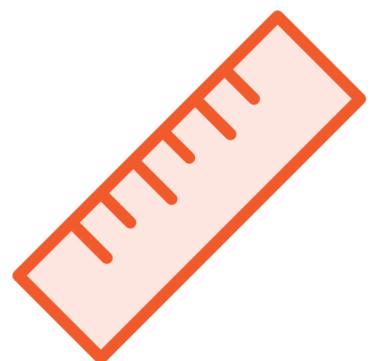
**Don't have to be an expert**



# Benefits of Automation



**Repeatable across environments and projects**



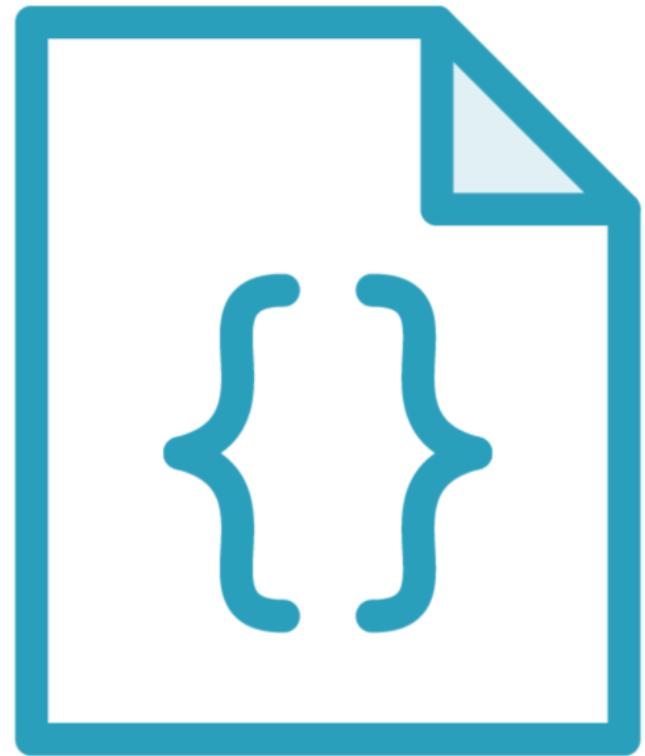
**Measurable to track improvement and reliability**



**Scalable with your team and application**



# Infrastructure as Code (IaC)



**Code vs manual processes**

**Checked into version control**

**Trigger automation to update environments**



**Team collaboration**

**Easier to understand**

**Developers can manage changes**

**Scale and transparency**



# Automation and IaC Tools



**Several options**

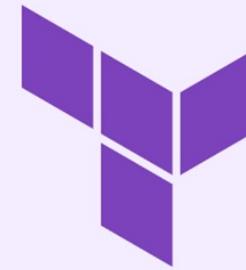
**Opinionated toolset for this course**

- Terraform
- GitOps
- Helm

**Additional options**

- kubectl
- eksctl
- CloudFormation





# HashiCorp **Terraform**

**Open-source IaC tool**  
**Multi-cloud infrastructure management**  
**Modules for each cloud provider**  
**Initial release shortly after Kubernetes**  
**450,000+ commits**  
**4000+ modules**



# Using Terraform

## Write

**Define infrastructure**

**Check into source control**

## Plan

**See what will change**

**Detect errors**

**Diff of current infrastructure**

## Apply

**Perform actions outlined in plan**

**Destroy to remove infrastructure**



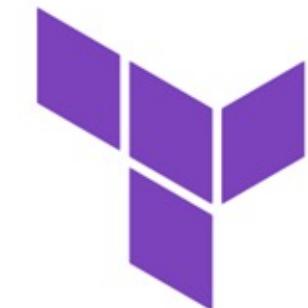
**Maintain remote state  
of infrastructure**

**Easier coordination**

**Execute and log actions**

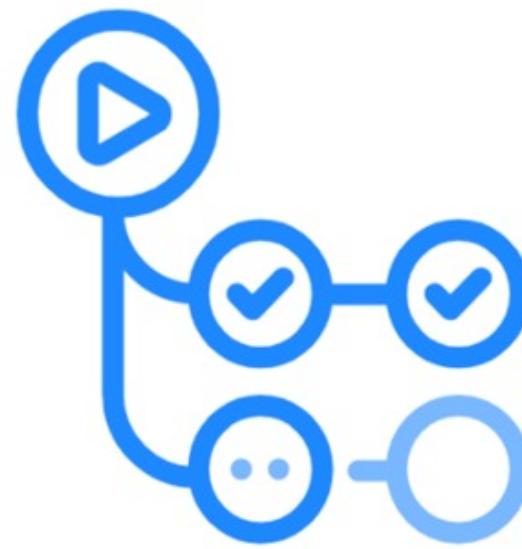
**Configurable workspaces**

**Modular infrastructure code**



# Terraform Cloud





## GitHub Actions

**Automate updates to infrastructure**

**Git repo for Terraform code**

- Terraform plan on pull request
- Terraform apply on merge

**Developers can operate in EKS cluster**

- Speed up development cycles
- Ensure changes work in EKS
- Audit trail - who, what, when



# Leverage Existing Applications



**Package manager for Kubernetes**  
**Find, share, and use software**  
**built for Kubernetes**  
**Versioned charts**



**Pattern for Terraform modules,  
Helm charts, and GitHub Actions**

<https://github.com/ManagedKube/kubernetes-ops>





## kubectl

- Control Kubernetes clusters
- Useful info about cluster

## eksctl

- Tool to manage EKS clusters

## CloudFormation

- AWS specific IaC tool



## Summary



### Toil

- Identify and automate

### Infrastructure as Code (IaC)

- Manage tools and versions
- Enable team collaboration

### Toolsets

- Terraform
- GitOps
- Helm



# Up Next:

## Creating a Staging Environment for EKS

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