# Cloud

# Terraformation

## FROM CLICKOPS TO INFRASTRUCTURE AS CODE

# Agenda

ABOUT

THE LANGUAGE

THE PROVIDER

THE ASSIGNMENT

QUESTIONS

# Hello from Grand Rapids!

I'm Victor Frye

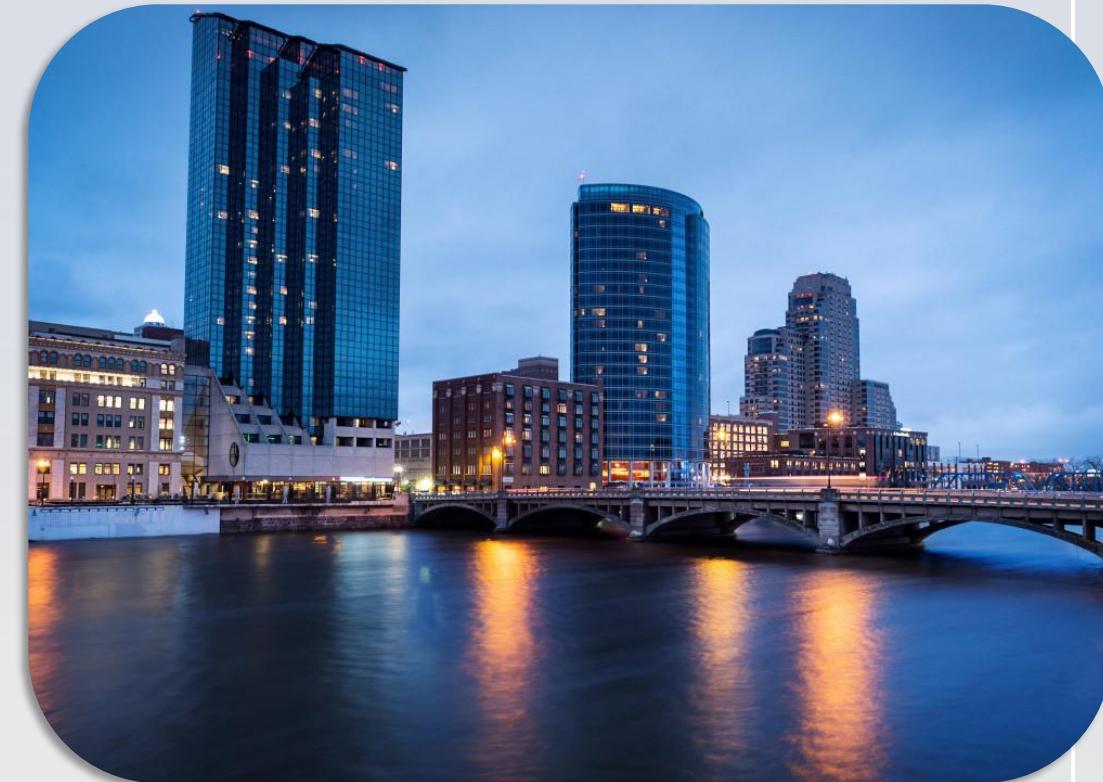Your friendly neighborhood developer

Unchallenged #1 Clippy fan

Love the internet and fun
- victorfrye.com/blog
- microsoftgraveyard.com
- shrugman.com

Passion for .NET, React, Azure, Xbox

DevOps specialist at Leading EDJE

Building with Microsoft solutions

# About **Leading EDJE**

**Technology consultancy** and services
 - Strategists, innovators, partners
 - Craft **bespoke solutions**
 - **Positive disruption** of business norm

Real. Fun. Geeks.

**FREE** lunch and learns

**Expert talent**
 - **Cloud infrastructure**
 - Digital and app innovation
 - Data and AI
 - Project management

# The ClickOps story

Build application

What infrastructure?

Click in web portal

Deploy and cross fingers

Please do not change it

# The Answer

CODIFY INFRASTRUCTURE

# The Language

INFRASTRUCTURE AS CODE

# HashiCorp Terraform

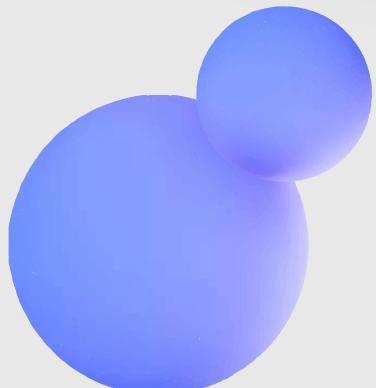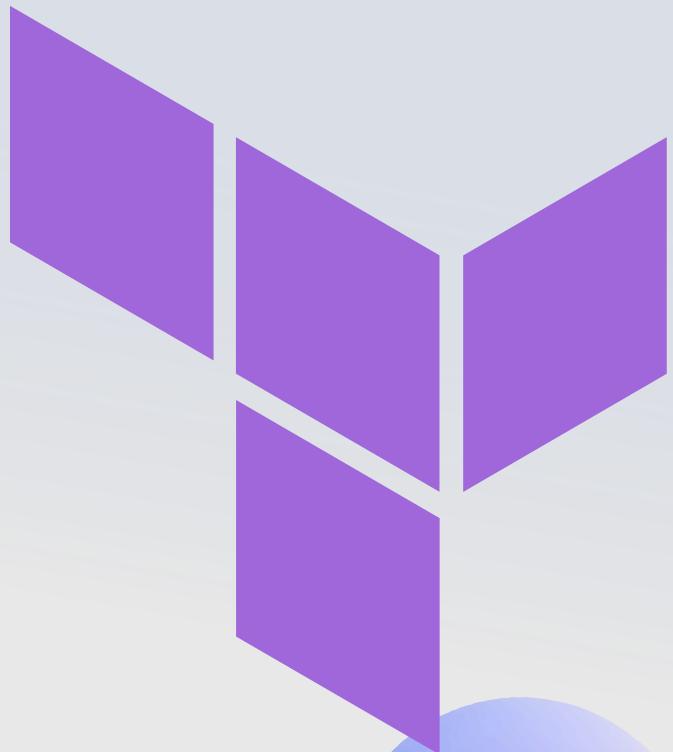An infrastructure as code tool

Source-available

Cloud-agnostic

Declarative

Stateful

Uses Terraform configuration language (HCL)

Elements include:
 - Blocks (e.g. resources, variables, data)
 - Arguments (e.g. name = "value")
 - Expressions (e.g. name = var.example)

```
resource "azurerm_resource_group" "example" {
  name     = "example-resources"
  location = "Central US"
}

resource "azurerm_static_web_app" "example" {
  name                = "example"
  resource_group_name = azurerm_resource_group.example.name
  location            = azurerm_resource_group.example.location
}
```

**EXAMPLE CODE FOR MANAGING AN AZURE STATIC WEB APP**

# Write, Plan, Apply

**Write**

Define infrastructure in configuration files

**Plan**

Review expected changes to infrastructure

**Apply**

Provision infrastructure and update state

# Alternative options

Bicep

CloudFormation

Pulumi

Chef

# Multiple providers

| | | | |
|---|---|---|---|
| AWS | AzureRM | Google | Kubernetes |
| AzAPI | AzureAD | MSGraph | GitHub |

# The Provider

YOUR CLOUD SPECIFIC INTERFACE

# Choose your provider

**AzureRM**
- Automatic API versioning
- Simplicity
- Comprehensive documentation

**AzAPI**
- Immediate API access
- Targeted resource updates
- Fine-grained control

# Terraforming Azure

ClickOps resources in the Azure portal

Configure workload identity federation with Entra ID

Set up Terraform backend with blob storage

Use template exports for Terraform

Automate CI/CD with GitHub Actions

# The Assignment

READY, SET, GO!

# Install Terraform

DEMONSTRATION

# Set up auth

DEMONSTRATION

# Create backend

DEMONSTRATION

# Configure RBAC

DEMONSTRATION

# Export Terraform

DEMONSTRATION

# Refactor configurations

DEMONSTRATION

# Import state
DEMONSTRATION

# Build plan

DEMONSTRATION

# Apply plan

DEMONSTRATION

# Automate CI/CD

DEMONSTRATION

# Did it work?

SHRUGMAN.COM

# Thank you



Cloud Terraformation: Presentation feedback

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