

Open Infra Days
2018 - Korea

When Serverless Meets Containers

서버리스가 컨테이너를 만났을 때



KOREA

OpenInfra Days

유정협 Justin Yoo

Microsoft MVP – Azure & Visual Studio



@justinchronicle



aliencube.org



/in/justinyoo





Agenda

- Build Azure Functions Application
- Dockerise Azure Functions
- Deploy via Azure Portal
- Deploy through Azure CLI
- Deploy via ARM Template
- Build CI/CD Pipeline on AppVeyor



This is an introductory session!



bit.ly/oidk2018-hol



Prerequisites

bit.ly/oidk2018-preps



Prerequisites for All

Visual Studio Code

Azure CLI

Azure Functions CLI



Prerequisites for All

Visual Studio Code

Azure CLI

Azure Functions CLI

Azure Subscriptions

GitHub Account

Docker Hub Account

AppVeyor Account



KOREA

OpenInfra Days

Prerequisites for Linux

.NET Core SDK 2.1 for Linux

Docker



Prerequisites for Mac

.NET Core SDK 2.1 for Mac

Docker for Mac



KOREA

OpenInfra Days

Prerequisites for Windows

.NET Core SDK 2.1 for Windows

Windows Subsystem for Linux (Ubuntu)

Docker for Windows

.NET Core SDK, Azure CLI, Azure Functions CLI in WSL



Labs on Ubuntu Bash



Why Serverless?



KOREA

OpenInfra Days

Nature of Serverless



Do less setup
Focus on business



Nature of Serverless



Do less setup
Focus on business



Ease of scale
(Event-based)



Nature of Serverless



Do less setup
Focus on business



Ease of scale
(Event-based)



Pay per execution
(Micro-billing)



Event-Driven

Stateless



KOREA

OpenInfra Days

Language Agnostic

JavaScript, C#, F#, Java, Python, PHP, PowerShell,
etc...



KOREA

OpenInfra Days

Supports Windows and Linux



Why Dockerising?



Lift & Shift



On-prem to Cloud

With minimal efforts



KOREA

OpenInfra Days

Cloud Platform Agnostic

Any cloud vendor supporting Docker container



KOREA

OpenInfra Days

Open Stack



Azure Stack



Azure Cloud



AWS Cloud



GCP Cloud



KOREA

OpenInfra Days

How Azure Functions Works



Triggerd by Events

HTTP Request, Timer, Service Bus Message, etc



KOREA

OpenInfra Days

HTTP Trigger



KOREA

OpenInfra Days

Microservices Architecture Optimised



KOREA

OpenInfra Days

Unit of Work

Single Responsibility



KOREA

OpenInfra Days

Hands on Lab



KOREA

OpenInfra Days

Step 01: Building Azure Functions

bit.ly/oidk2018-azure-functions



Step 01

Azure Resource Group

Azure Storage Account

Repository Fork & Clone

Write Function Code

Build & Test Function Code



KOREA

OpenInfra Days

Step 01

Azure Resource Group

Azure Storage Account

Repository Fork & Clone

Write Function Code

Build & Test Function Code

Resource group

Create an empty resource group

* Resource group name

my-resource-group

✓

* Subscription

MVP - Sponsorship

▼

* Resource group location

Korea Central

▼

Create



KOREA

OpenInfra Days

Step 01

Azure Resource Group

Azure Storage Account

Repository Fork & Clone

Write Function Code

Build & Test Function Code

Create storage account

The cost of your storage account depends on the usage and the options you choose below. [Learn more](#)

* Name ⓘ
mystorageaccount ✓
core.windows.net

Deployment model ⓘ
Resource manager Classic

Account kind ⓘ
StorageV2 (general purpose v2) ▾

* Location
Korea Central ▾

Replication ⓘ
Locally-redundant storage (LRS) ▾

Performance ⓘ
Standard Premium

Access tier (default) ⓘ
Cool Hot

* Secure transfer required ⓘ
Disabled Enabled

* Subscription
MVP - Sponsorship ▾

* Resource group
☐ Create new ☒ Use existing
my-resource-group ▾

Virtual networks
Configure virtual networks ⓘ
Disabled Enabled

☐ Pin to dashboard

Create Automation options



KOREA

OpenInfra Days

Step 01

Azure Resource Group


Azure Storage Account

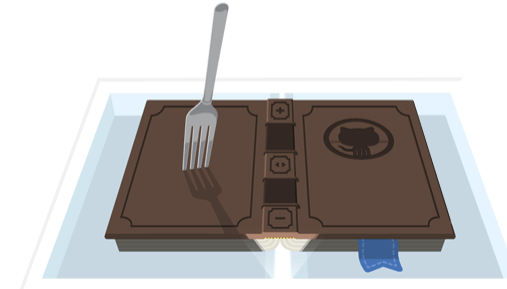
Repository Fork & Clone

Write Function Code

Build & Test Function Code

It should only take a few seconds.

 Refresh



Step 01

Azure Resource Group

Azure Storage Account

Repository Fork & Clone

Write Function Code

Build & Test Function Code

```
[FunctionName(nameof(TestHttpTrigger))]  
0 references  
public static async Task<IActionResult> Run(  
    [HttpTrigger(AuthorizationLevel.Anonymous, "get",  
        ILogger log)  
    {  
        log.LogInformation("C# HTTP trigger function processed a request.");  
  
        var name = req.Query["name"];  
  
        if (string.IsNullOrEmpty(name))  
        {
```



Step 01

Azure Resource Group

Azure Storage Account

Repository Fork & Clone

Write Function Code

Build & Test Function Code

```
dotnet build . -o output
```



Step 02: Dockerising

bit.ly/oidk2018-dockerising



KOREA

OpenInfra Days

Step 02

Write Dockerfile

Build Custom Docker Image

Test Custom Docker Image

Upload Custom Docker Image

Test Uploaded Custom Docker Image



KOREA

OpenInfra Days

Step 02

Write Dockerfile

Build Custom Docker Image

Test Custom Docker Image

Upload Custom Docker Image

Test Uploaded Custom Docker Image

```
# Get .NET SDK image
FROM microsoft/dotnet:2.1-sdk AS builder

RUN mkdir /functions
COPY . /functions

WORKDIR /functions
```



Step 02

Write Dockerfile

Build Custom Docker Image

Test Custom Docker Image

Upload Custom Docker Image

Test Uploaded Custom Docker Image



Step 02

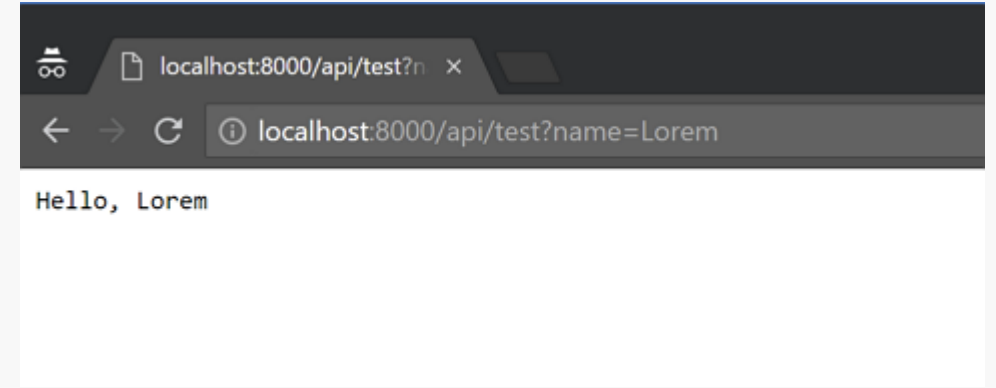
Write Dockerfile

Build Custom Docker Image

Test Custom Docker Image

Upload Custom Docker Image

Test Uploaded Custom Docker Image



Step 02

Write Dockerfile

Build Custom Docker Image

Test Custom Docker Image

Upload Custom Docker Image

Test Uploaded Custom Docker Image



Step 02

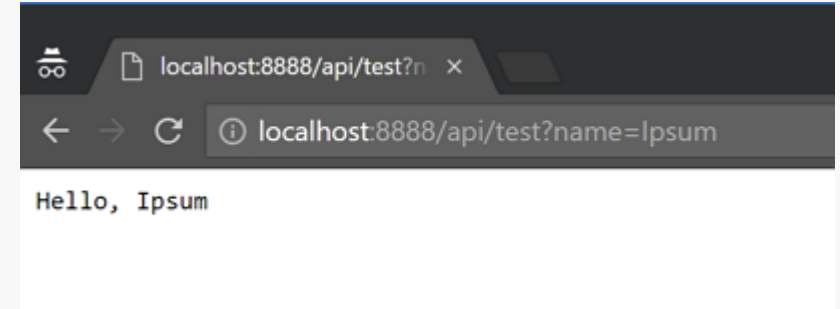
Write Dockerfile

Build Custom Docker Image

Test Custom Docker Image

Upload Custom Docker Image

Test Uploaded Custom Docker Image



Step 03: Deploying via Azure Portal

bit.ly/oidk2018-azure-portal



KOREA

OpenInfra Days

Step 03

App Service Plan for Linux
Azure Functions Instance
Deploy Custom Docker Image
Test Azure Functions



KOREA

OpenInfra Days

Step 03

App Service Plan for Linux

Azure Functions Instance

Deploy Custom Docker Image

Test Azure Functions

New App Service Plan

Create a plan for the web app

- * App Service plan
my-app-service-plan ✓
- * Subscription
MVP - Sponsorship ▼
- * Resource Group ⓘ
☐ Create new ☒ Use existing
my-resource-group ▼
- * Operating System
Linux ▼
- * Location
Korea Central ▼
- * Pricing tier
S1 Standard >

☐ Pin to dashboard

CreateAutomation options



KOREA

OpenInfra Days

Step 03

App Service Plan for Linux

Azure Functions Instance

Deploy Custom Docker Image

Test Azure Functions

Function App

Create

* App name

my-function-app

.azurewebsites.net

* Subscription

MVP - Sponsorship

* Resource Group

☐ Create new

☒ Use existing

my-resource-group

* OS

Windows

Linux (Preview)

Docker

* Runtime Stack

.NET

* App Service plan/Location

my-app-service-plan (Korea Cen...

>

* Storage

☐ Create new


☒ Use existing

mystorageaccount

Application Insights

On

Off



For optimal performance you should use a storage account in the same region as the Function App.

☐ Pin to dashboard

Create

Automation options



KOREA

OpenInfra Days

Step 03

App Service Plan for Linux

Azure Functions Instance

Deploy Custom Docker Image

Test Azure Functions



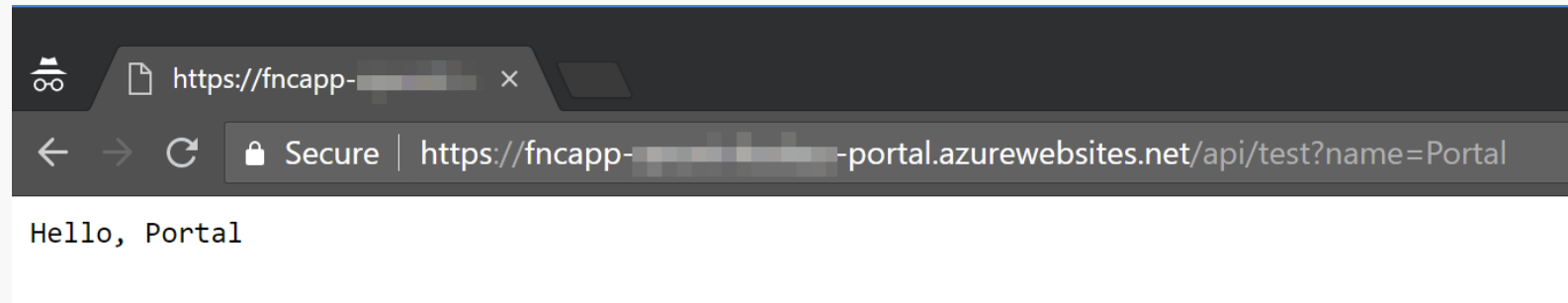
Step 03

App Service Plan for Linux

Azure Functions Instance

Deploy Custom Docker Image

Test Azure Functions



Step 04: Deploying via Auzre CLI

bit.ly/oidk2018-azure-cli



Step 04

Azure CLI Login

Azure Functions Instance with Custom Docker Image

Test Azure Functions



KOREA

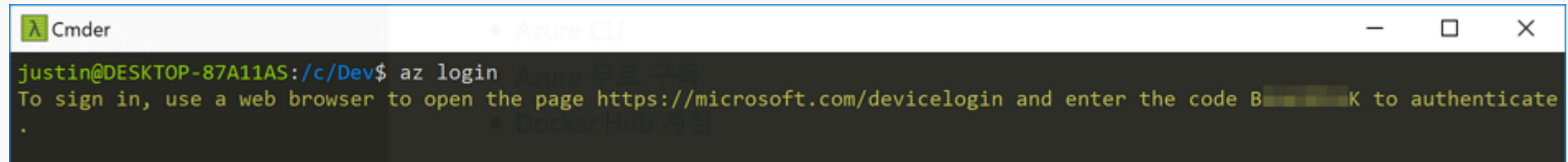
OpenInfra Days

Step 04

Azure CLI Login

Azure Functions Instance with Custom Docker Image

Test Azure Functions



```
Cmder
• Azure CLI
justin@DESKTOP-87A11AS:/c/Dev$ az login
To sign in, use a web browser to open the page https://microsoft.com/devicelogin and enter the code B██████K to authenticate
.
```



Step 04

Azure CLI Login

Azure Functions Instance with Custom Docker Image

Test Azure Functions

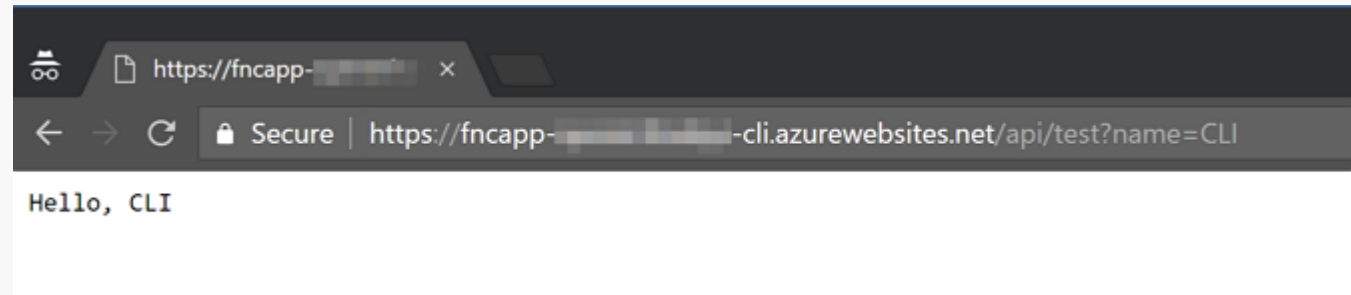


Step 04

Azure CLI Login

Azure Functions Instance with Custom Docker Image

Test Azure Functions



Step 05: Deploying via ARM Template

bit.ly/oidk2018-arm-template



KOREA

OpenInfra Days

Step 05

Build ARM Template

Azure CLI Login

Deploy ARM Template

Test Azure Functions



KOREA

OpenInfra Days

Step 05

Build ARM Template

Azure CLI Login

Deploy ARM Template

Test Azure Functions

```
{
  "$schema": "https://schema.management.azure.com/schemas/2015-01-01/
  "contentVersion": "1.0.0.0",
  "parameters": {
    "location": {
      "type": "string",
      "metadata": {
        "description": "The region where resources are deployed"
      },
      "defaultValue": "[resourceGroup().location]"
    },
  },
}
```



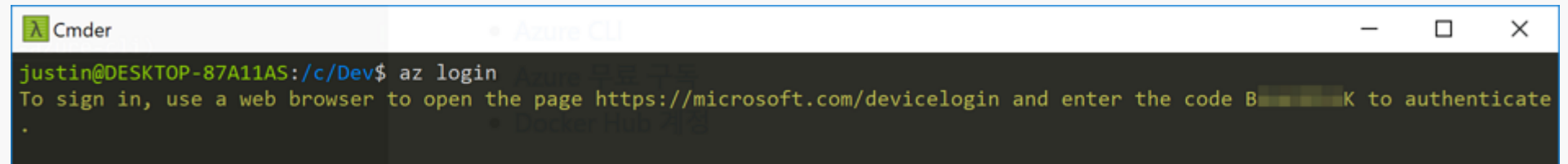
Step 05

Build ARM Template

Azure CLI Login

Deploy ARM Template

Test Azure Functions



```
Cmder
• Azure CLI
justin@DESKTOP-87A11AS:/c/Dev$ az login
To sign in, use a web browser to open the page https://microsoft.com/devicelogin and enter the code B██████K to authenticate
.
```



Step 05

Build ARM Template

Azure CLI Login

Deploy ARM Template

Test Azure Functions



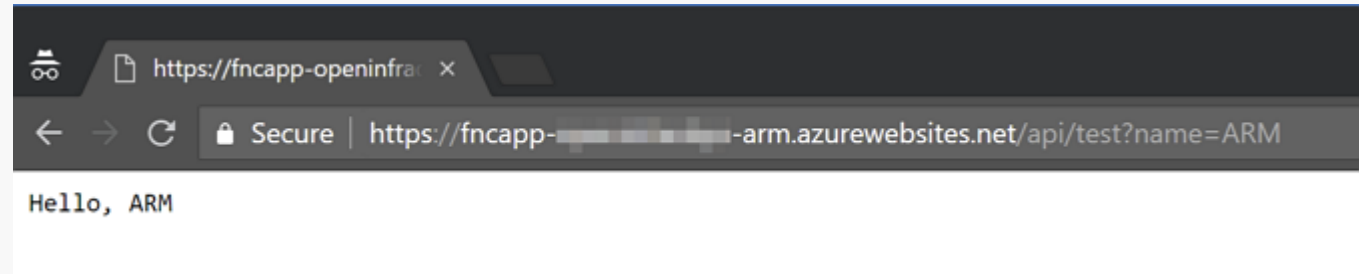
Step 05

Build ARM Template

Azure CLI Login

Deploy ARM Template

Test Azure Functions



Step 06: Build CI/CD Pipeline

bit.ly/oidk2018-ci-cd



KOREA

OpenInfra Days

Step 06

Azure Service Principal

Connect AppVeyor with GitHub

Build appveyor.yml

Activate CI/CD

Test Azure Functions



KOREA

OpenInfra Days

Step 06

Azure Service Principal

Connect AppVeyor with GitHub

Build appveyor.yml

Activate CI/CD

Test Azure Functions



Step 06

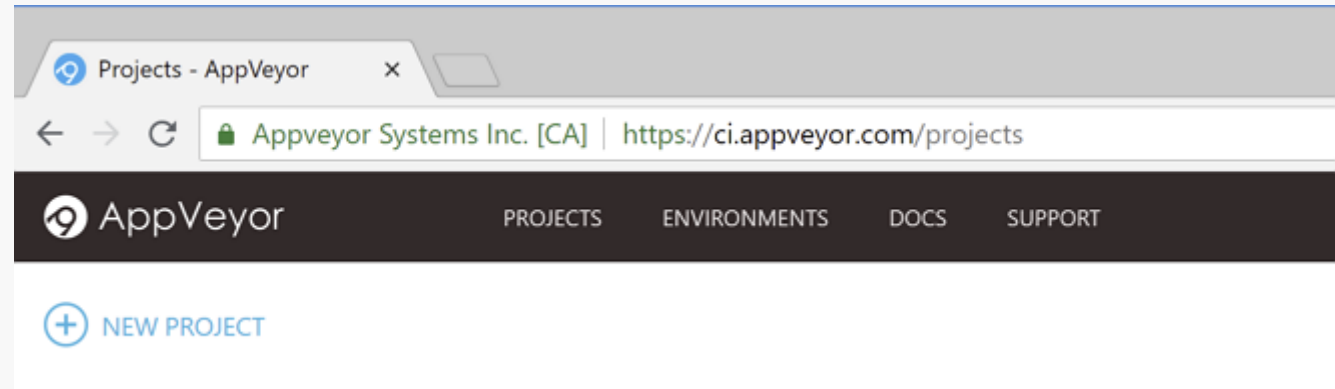
Azure Service Principal

Connect AppVeyor with GitHub

Build appveyor.yml

Activate CI/CD

Test Azure Functions



Step 06

Azure Service Principal

Connect AppVeyor with GitHub

Build appveyor.yml

Activate CI/CD

Test Azure Functions

```
version: 1.0.{build}
image: Ubuntu
services:
- docker
build_script:
- sh: docker build src/Dockerised.FunctionApp -t fu
```



Step 06

Azure Service Principal

Connect AppVeyor with GitHub

Build appveyor.yml

Activate CI/CD

Test Azure Functions



KOREA

OpenInfra Days

Step 06

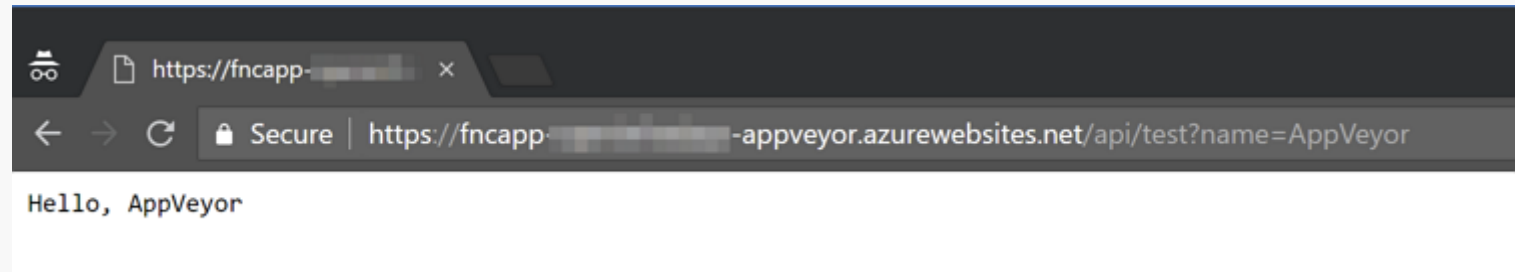
Azure Service Principal

Connect AppVeyor with GitHub

Build appveyor.yml

Activate CI/CD

Test Azure Functions



KOREA

OpenInfra Days

Summary

Summary

- Built Azure Functions Application
- Dockerised Azure Functions
- Deployed via Azure Portal
- Deployed through Azure CLI
- Deployed via ARM Template
- Built CI/CD Pipeline on AppVeyor



KOREA

OpenInfra Days

bit.ly/oidk2018-hol



Questions?



KOREA

OpenInfra Days

Microsoft
Partner



Gold Cloud Platform
Gold Application Integration
Gold Application Development
2017 Partner of the Year Winner
Australia

Looking for a NEW ADVENTURE?!!



Mexia is continually on the lookout for great talent!

GREAT
PLACE
TO
WORK®

Our focus on people and culture has won us the **#8 Great Places to Work for SME in Australia, 2017.**



We refer to our people as **Unicorns** because they are rare, hard to find, unique, and loved by everyone!

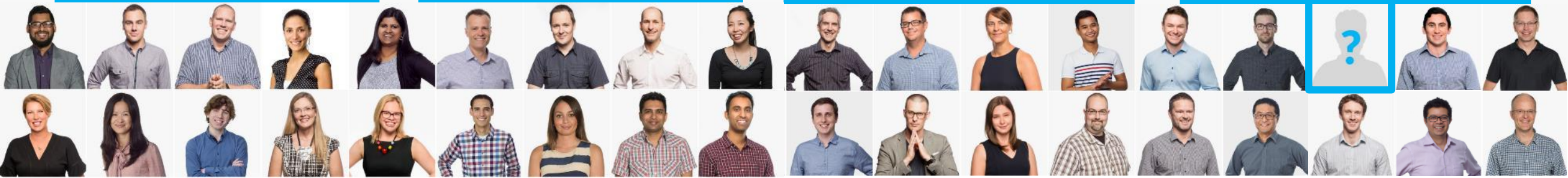
Key skills & roles we look for:

- .NET Developers
- Integration Analysts
- Enterprise Developers
- Microsoft Azure
- Agile Project Management
- Microsoft Certification



Current range of **exciting opportunities!**

Head to Mexia Careers:
mexia.com.au/careers



Thank You!

유정협 Justin Yoo
Microsoft MVP – Azure & Visual Studio



@justinchronicle



aliencube.org



/in/justinyoo

