DevOps
CI / CD
Docker

Justin Pham

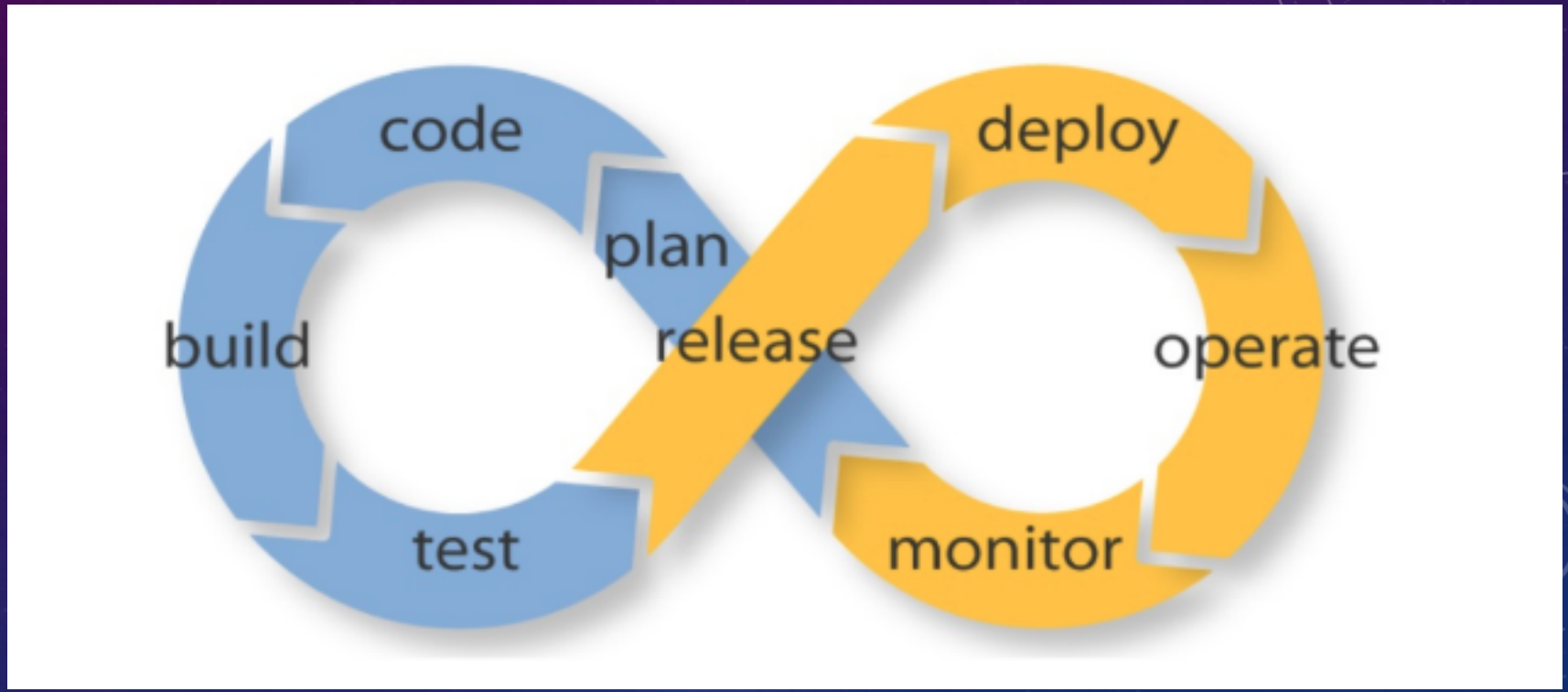
- DevOps
- CI, Continuous Delivery & Continuous Deployment
- Implementation

WHAT IS DEVOPS?

- Traditional Waterfall Development Model
  - The requirements for software are clear and well-defined in advance.
  - Developer program the software, then operational teams handle deployment
- Agile Development Model
  - Applications must be possible to constantly update and easily add new features
  - Break down to smaller iterations & sprint
- DevOps
  - Developers are not the only one react quickly and efficiently, the operational team must also quickly react deploy and monitor new application

WHAT IS DEVOPS

- Waterfall ——> Agile ——> DevOps
- The practice that development and operation engineers merge together
- Shorten the gap between development and deployment
- There are 3 main practices that usually discussed in the contexts of DevOps
    - Infrastructure Automation (OS configs, app deployments as code)
    - Continuous Delivery (Build, test, deploy app in a fast and automated manner)
    - Site Reliability Engineering (operate system, monitoring orchestration)



MVP STUDIO

Waterfall

Agile

DevOps

MVP STUDIO

CI, CD AND CONTINUOUS DEPLOYMENT

- With the rise of DevOps, Continuous Integration (CI), Continuous Delivery and Continuous Deployment become DevOps software development.
- Historically, in the agile age, most company would deploy or ship software in Monthly, Quarterly or Bi-Annual.
- With CI | CD, you can develop, build and deploy as often as you can

CONTINUOUS INTEGRATION

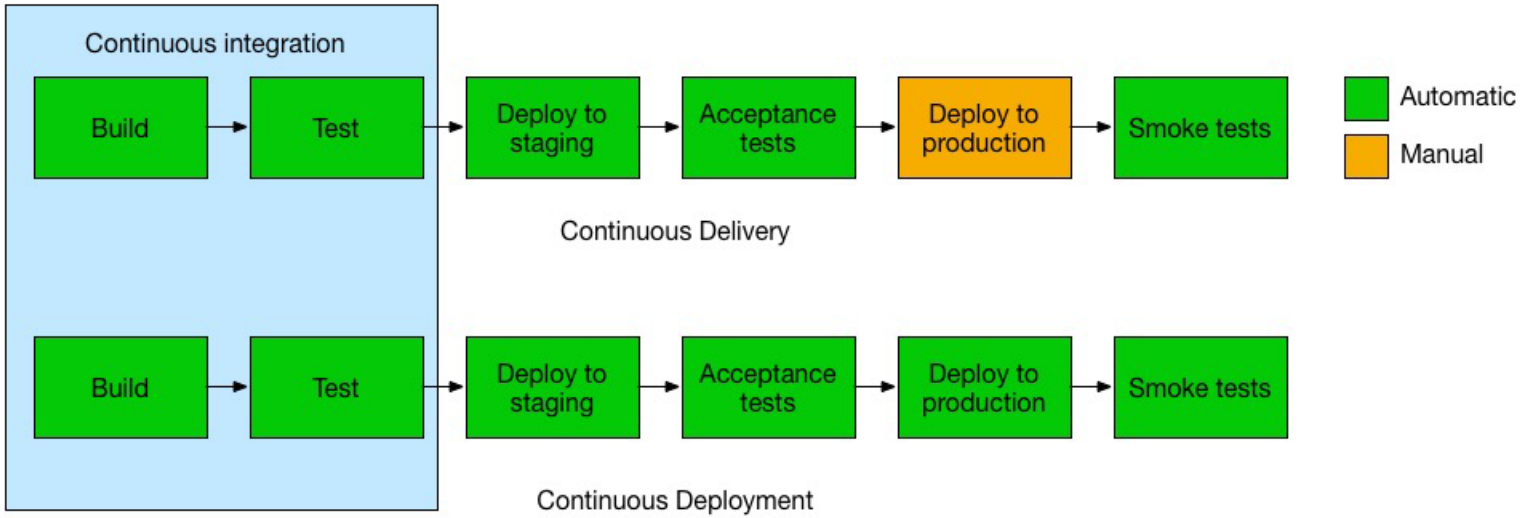
- With CI, developer frequently integrate their code into main branch without worrying new check-in will break the existing developed feature.
- System will build and automated testing scripts will execute every time when the code check-in
- Thing to adapt at MVP Studio
  - Code Review Process
  - Enable Build Process in TFS

CONTINUOUS DELIVERY

- Continuous delivery expands upon continuous integration by deploying all code changes to a testing environment and /or production after the build stage
- This mean on top of having automated scripts, we also have an automated release process and you can deploy your application by clicking the button or approving the process

CONTINUOUS DEPLOYMENT

- Continuous Deployment is actually an extension of Continuous Delivery
- The only difference between continuous delivery and continuous deployment is the manual approval to update to production.
- There is no explicit approval happens with continuous deployment


Continuous integration
Build
Test
Deploy to staging
Acceptance tests
Deploy to production
Smoke tests
Automatic
Manual
Continuous Delivery
Build
Test
Deploy to staging
Acceptance tests
Deploy to production
Smoke tests
Continuous Deployment

WHAT IS DEVELOPER PERSPECTIVE?

Continuous Integration

- Know different type of tests
  - Unit tests - verify behaviour of individual methods or functions
  - Integration tests - behaviour of multiple components
  - Acceptance tests - focus on business cases
  - UI tests - function correctly from a user perspective
- Running test automatically
  - Services e.g Bamboo, Jenkins, TFS

WHAT IS DEVELOPER PERSPECTIVE?

Continuous Delivery

- Loosely coupled components make up the subsystem
- Smallest deployable & runnable units
  - E.g server is a subsystem, micro services is a subsystem
- Consider NoSQL as a database, which is easier than RDBMS

WHAT IS DEVELOPER PERSPECTIVE?

Continuous Deployment

- A process of linking the deployment service to code repository
- Automated deployed every time the code changes to code repository
- Containerised code solutions, easy to deploy, container orchestration

dotnet build
.NET Core

dotnet publish
.NET Core

~~Build webpack~~
Disabled: npm

Build Mars.App.Web image
Docker

Build Mars Listing Image
Docker

Build Mars Identity Image
Docker

Build Mars Profile Image
Docker

Push Mars Web App Image to Registry
Docker

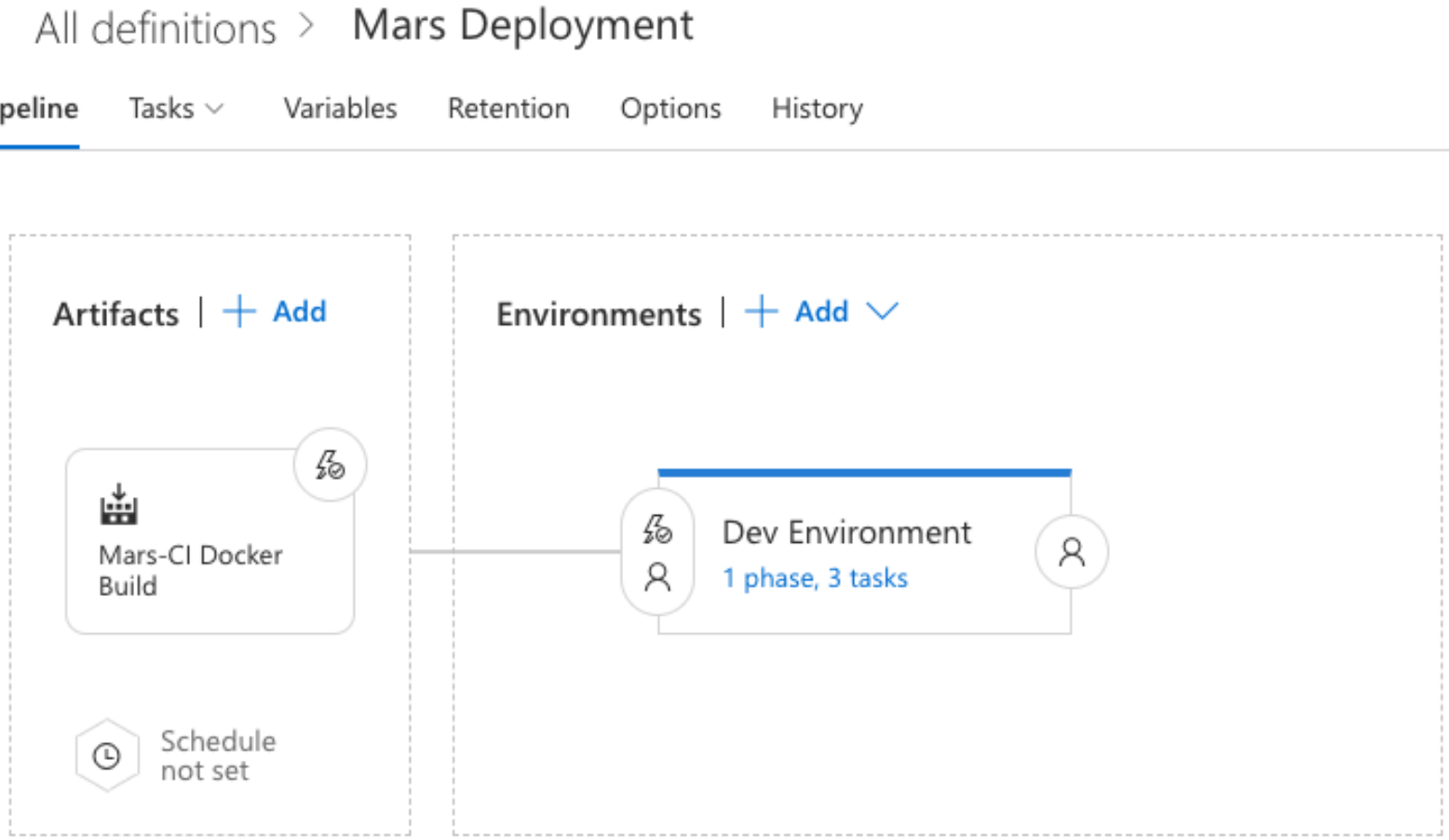
Push Mars Listing Service Image to Registry
Docker

Push Mars Identity Service Image to Registry
Docker

Push Mars Profile Service Image to Registry
Docker

Copy yaml to Artifact
Copy Files

PyCha


All definitions
Mars Deployment
Pipeline
Tasks
Variables
Retention
Options
History
Artifacts
Add
Mars-CI Docker Build
Schedule not set
Environments
Add
Dev Environment
1 phase, 3 tasks

Docker


AMERICA
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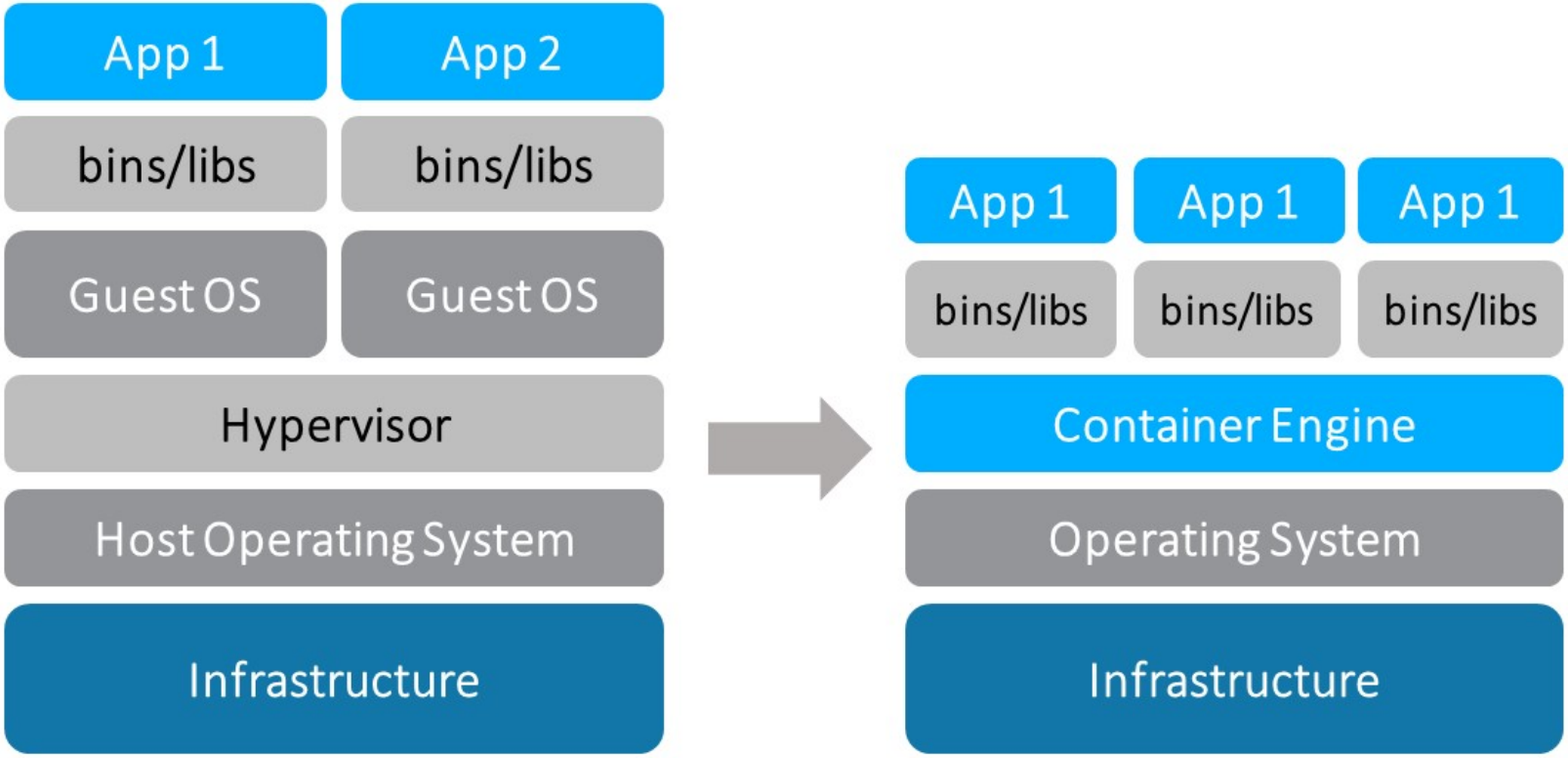
MVP STUDIO


App 1
App 2
bins/libs
bins/libs
Guest OS
Guest OS
Hypervisor
Host Operating System
Infrastructure
Virtual Machines
App 1
App 1
App 1
bins/libs
bins/libs
bins/libs
Container Engine
Operating System
Infrastructure
Containers

Dockerfile

```
1  FROM microsoft/aspnetcore
2  WORKDIR /talentIdentityService
3  COPY ./.bin/Docker .
4  ENV ASPNETCORE_URLS http://*:60998
5  ENV ASPNETCORE_ENVIRONMENT docker
6  ENTRYPOINT dotnet Talent.Services.Identity.dll
7
8
9
```

Thank you