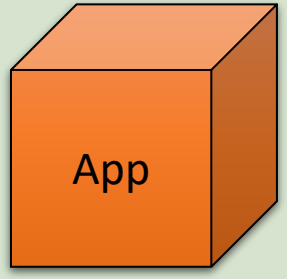
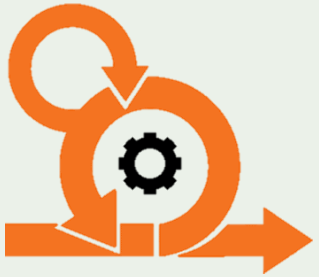
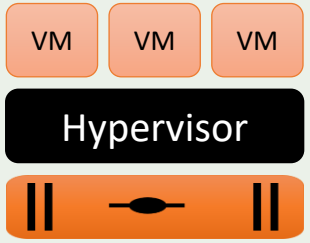
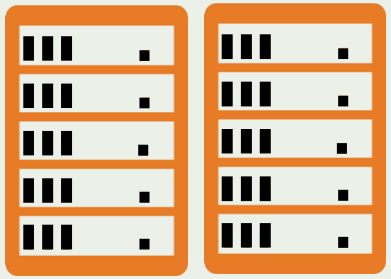
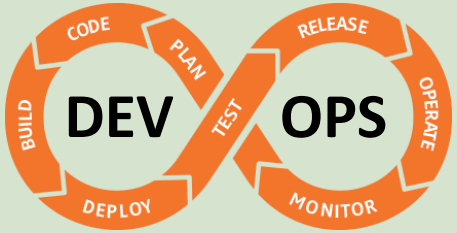
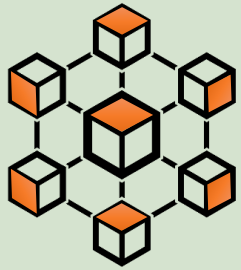
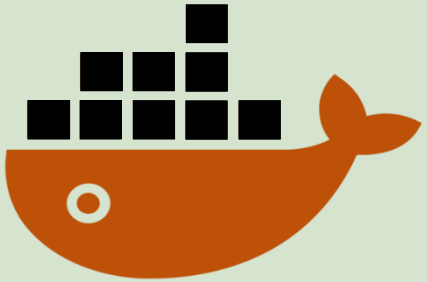
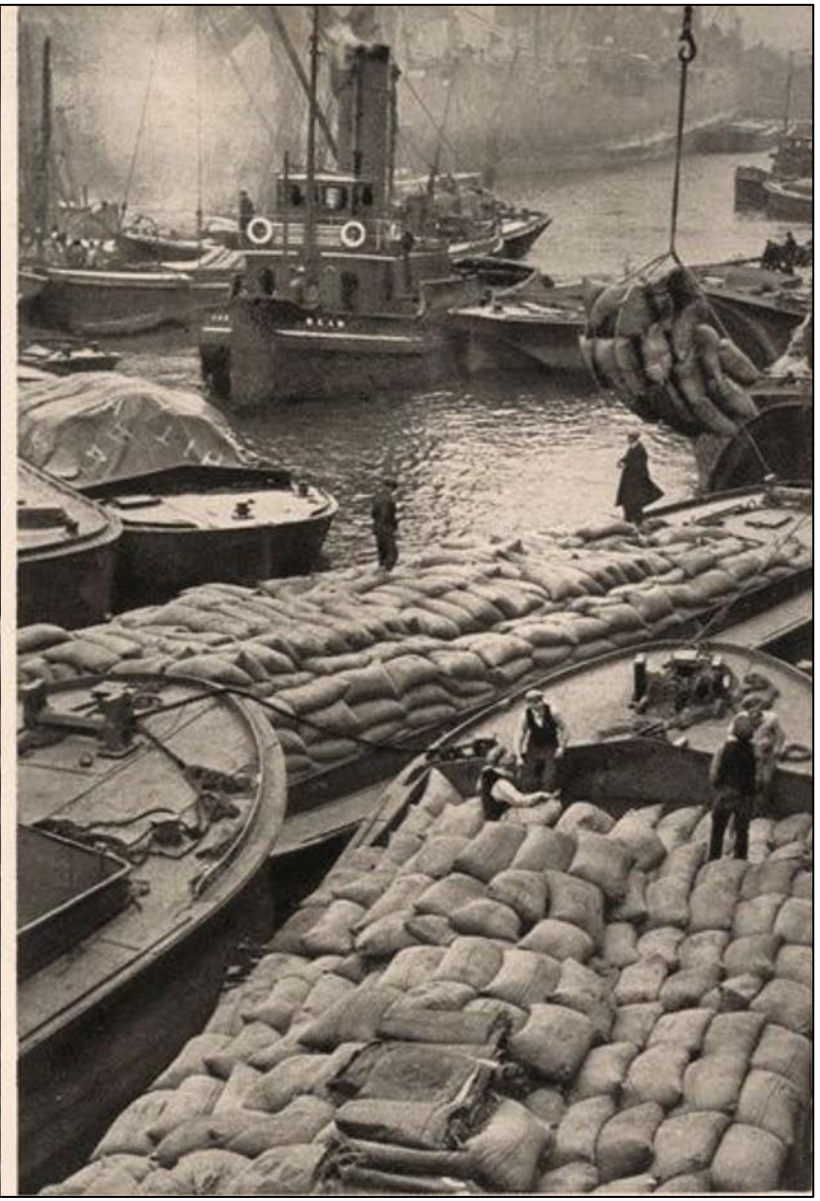

GUARDIANS
OF THE CONTAINERS
BeSA
Live Session
15th Jun
9.00 AM UK

How applications evolved?

TimeLine	Development Process	Application Architecture	Deployment & Packaging	Application Hosting Infrastructure
1980 to 2000	 Waterfall	 Monolithic	 Physical Server	 Datacenter
2000 to 2010	 Agile	 N-Tier	 Virtual Servers	 Hosted
2010 to Current	 DevOps	 Microservices	 Containers	 Cloud

Containers in Shipping

Shipping before containers



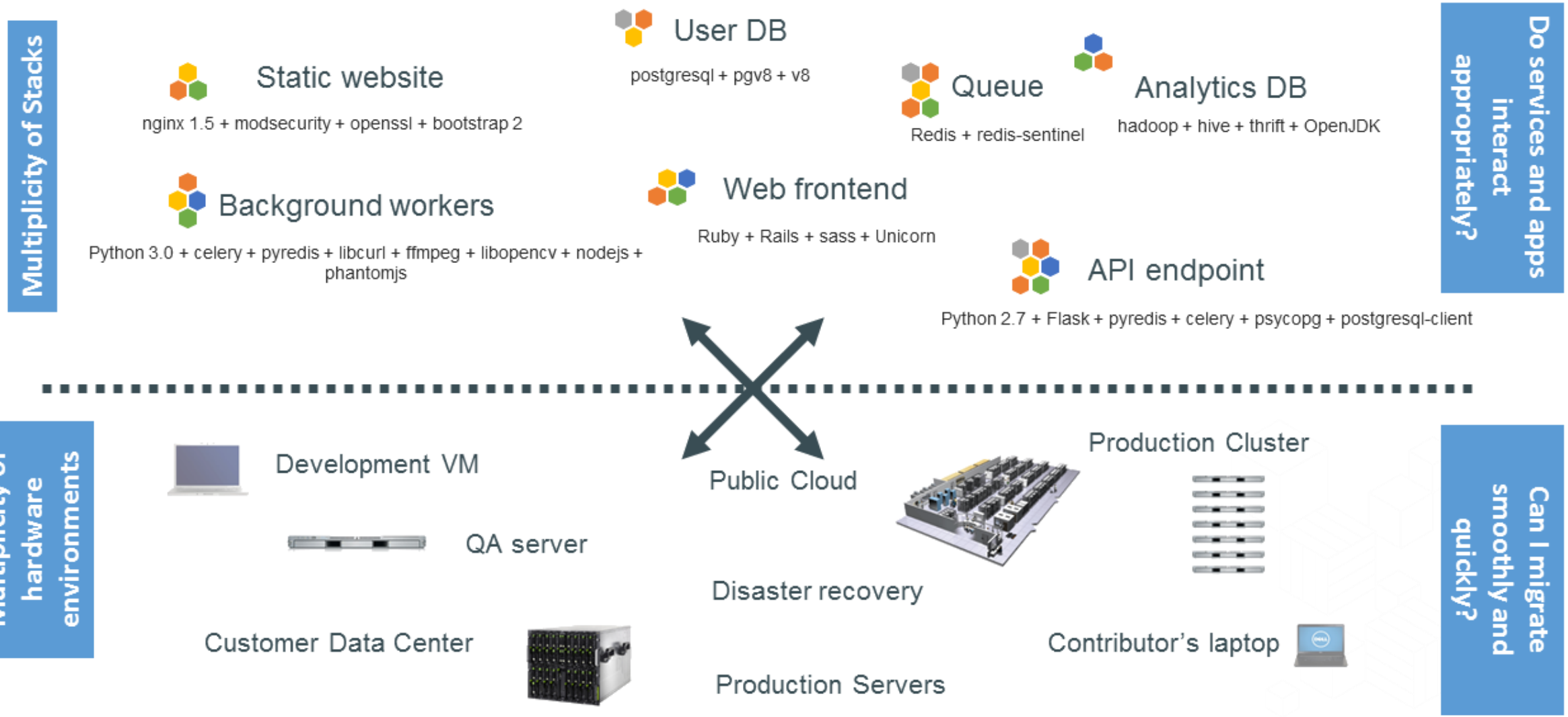
Solution – Intermodal shipping container

Shipping after containers

- Containers standardized the shipping industry

What is the Challenge?

- Maintaining multiple technology stacks across multiple environments is a nightmare



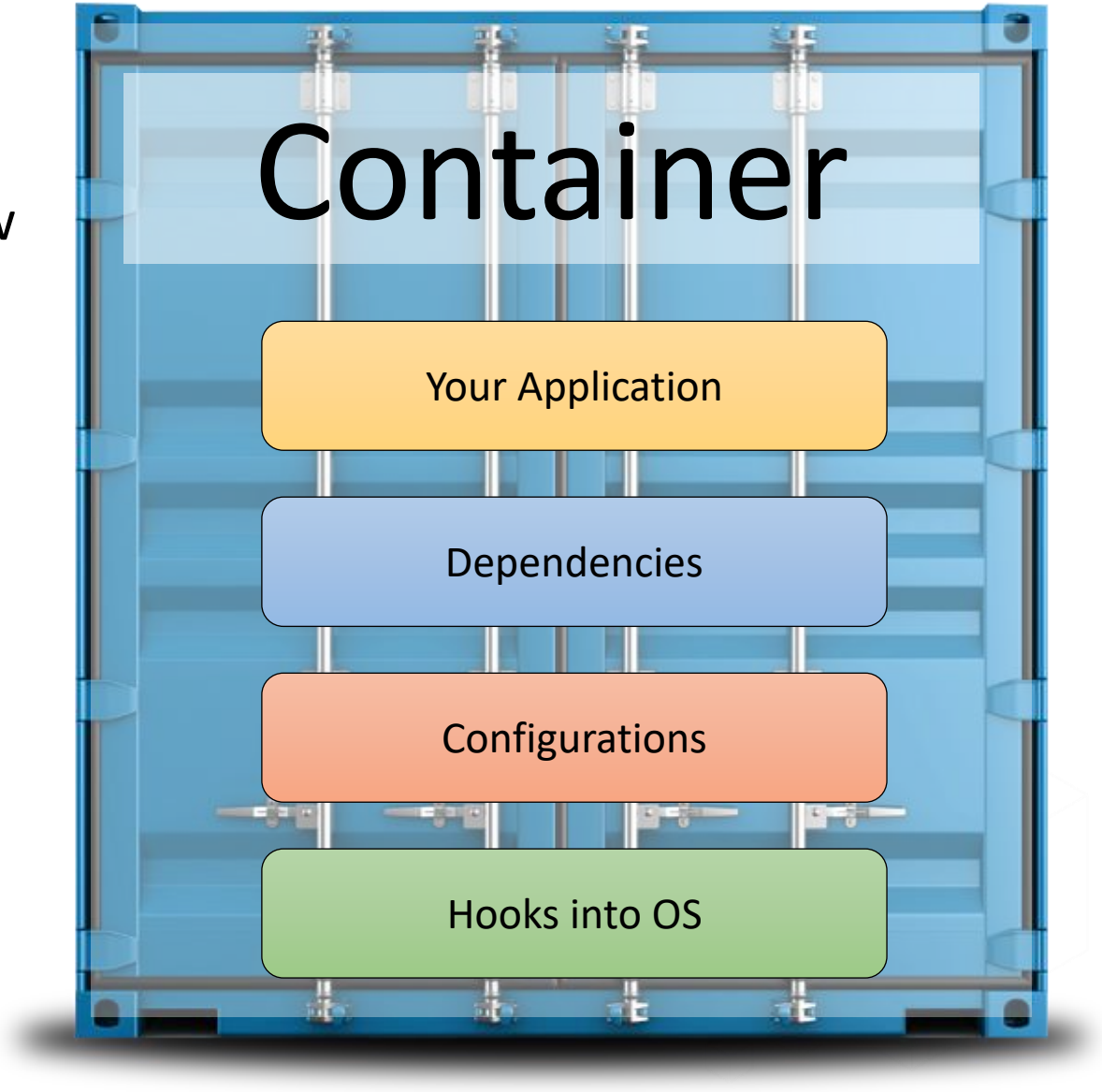
Matrix from Hell

- It is the challenge of packaging any application, irrespective of language/ frameworks / dependencies, so that it can run on any environment/cloud, irrespective of the underlying OS/hardware/infrastructure.

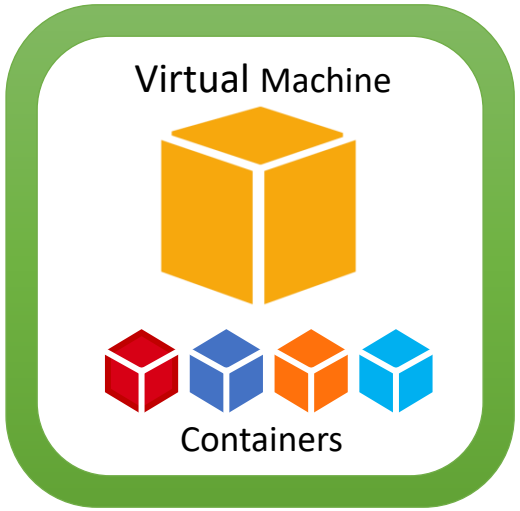
	Development VM	QA Server	Single Prod Server	Production Cluster	Public cloud	Developer's Laptop	Customer Servers
Static Website	?	?	?	?	?	?	?
Web Frontend	?	?	?	?	?	?	?
Background Workers	?	?	?	?	?	?	?
User DB	?	?	?	?	?	?	?
Analytics DB	?	?	?	?	?	?	?
Queue	?	?	?	?	?	?	?

What is a Container?

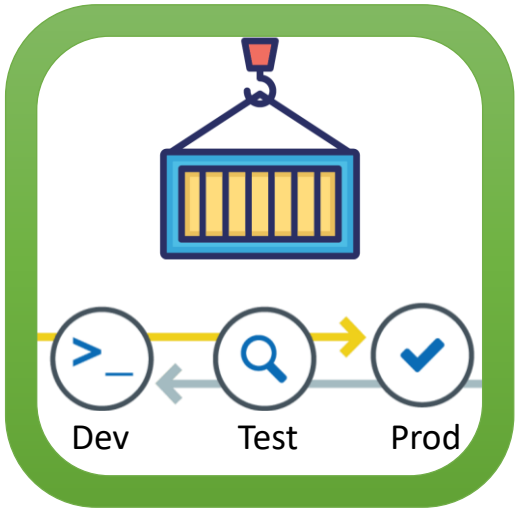
- Modeled on the success of shipping containers, an application container is designed to contain a complete deployment unit for an application to allow for automation, version tracking, and rapid deployment.
- Containers provide a standard way to package your application's code, configurations, and dependencies into a single object.



Advantages of using containers

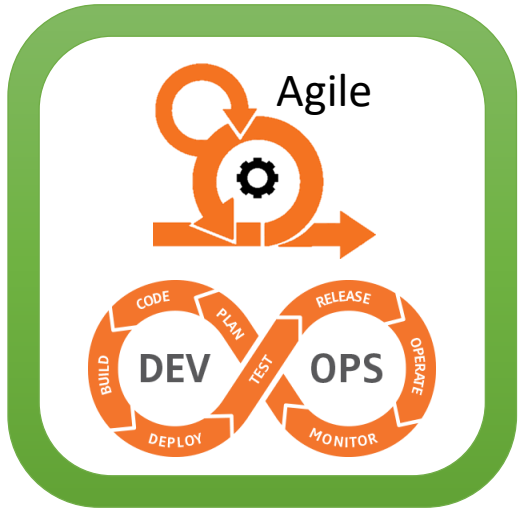


Smaller Footprint
and Less Overhead



Increased
Portability

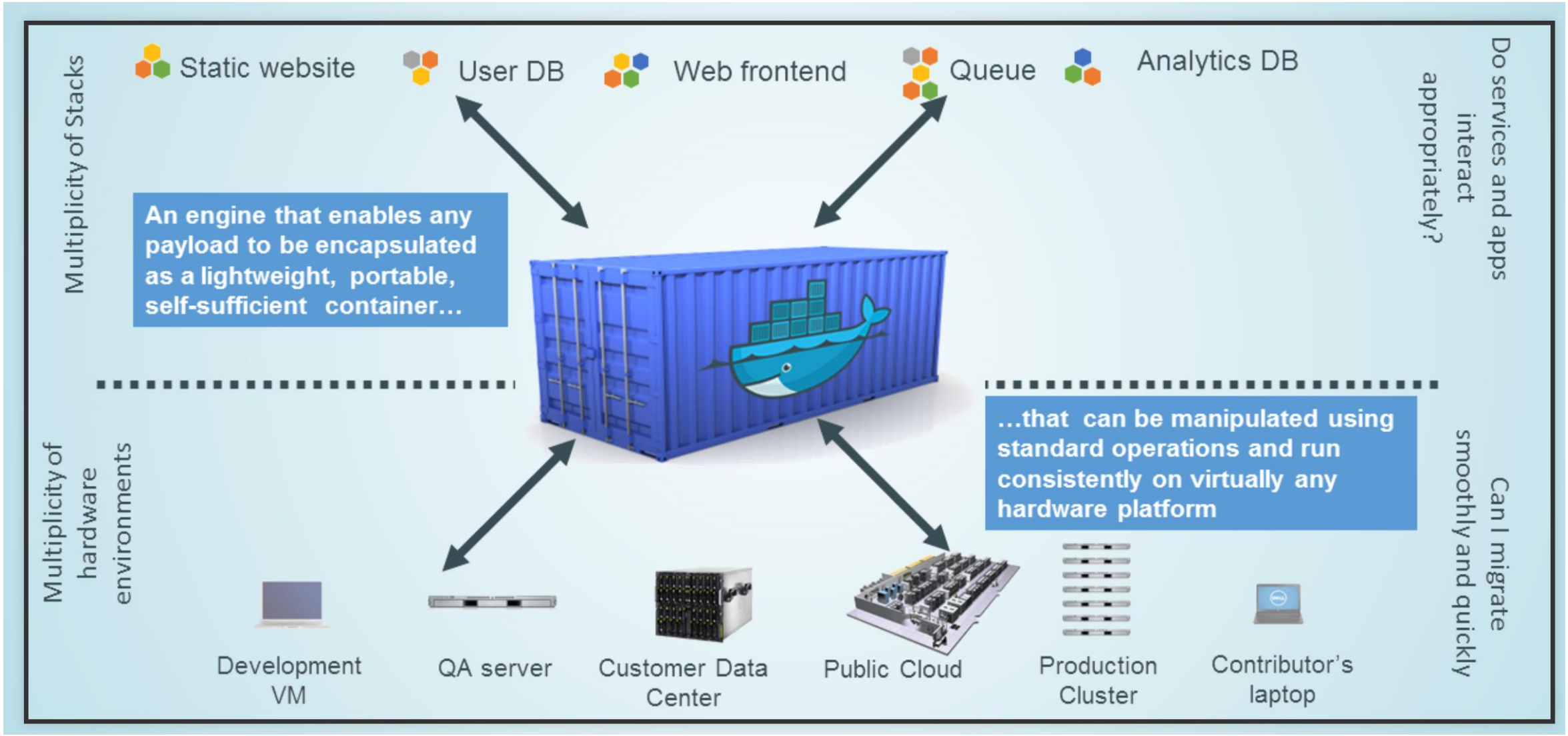
Greater Efficiency
and Smooth Scaling



Better Application
Development

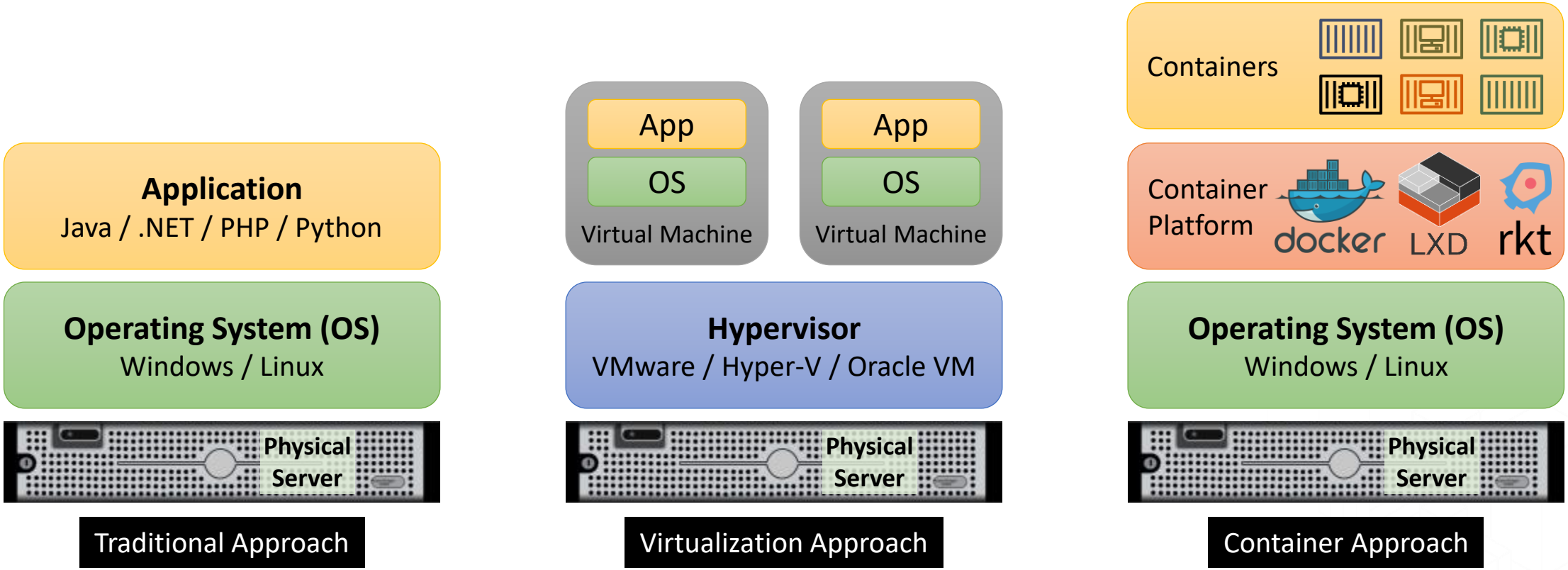
What is Docker?

- Docker is an open platform for developing, shipping, and running applications.



How containers run?

- Containers share an operating system installed on the server and run as resource-isolated processes, ensuring quick, reliable, and consistent deployments, regardless of environment.

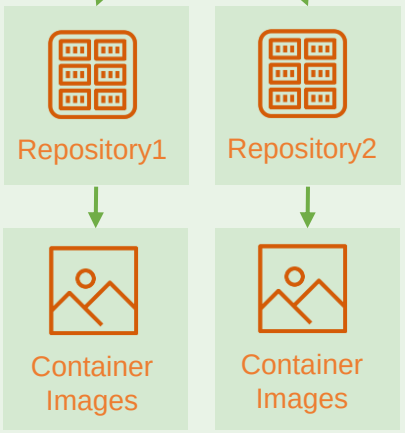


Running container on AWS

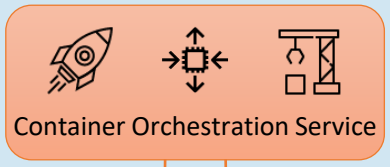
Image Storage

Store, encrypt, and manage container images

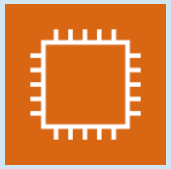
Amazon Elastic Container Registry (ECR)



Compute



Run containers with server level control



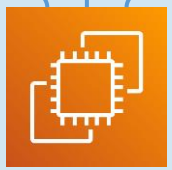
Self provisioned Cluster on EC2 Instance

Run containers using fully managed container orchestration service

Amazon Elastic Container Service (ECS)

Manage containers with Kubernetes

Amazon Elastic Kubernetes Service (EKS)



EC2 Hosted

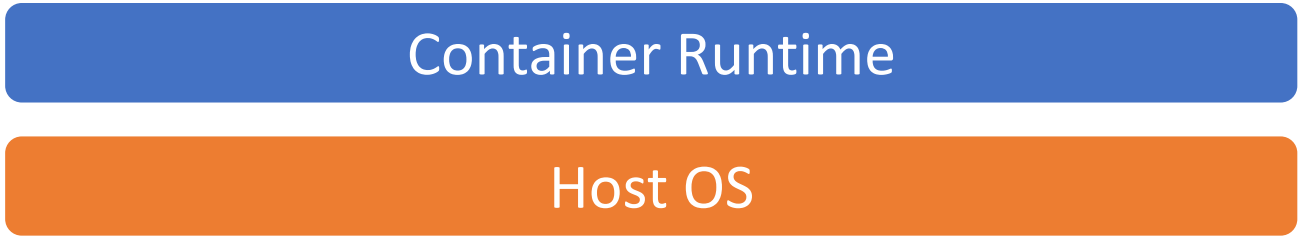
Run containers without managing servers

AWS Fargate

Serverless

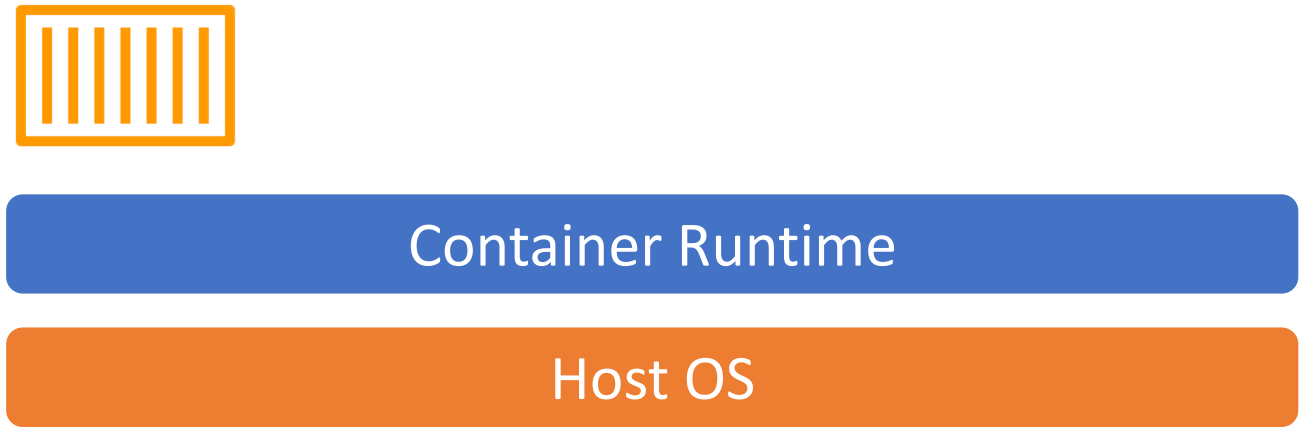
Why orchestration?

- Just one container is okay …

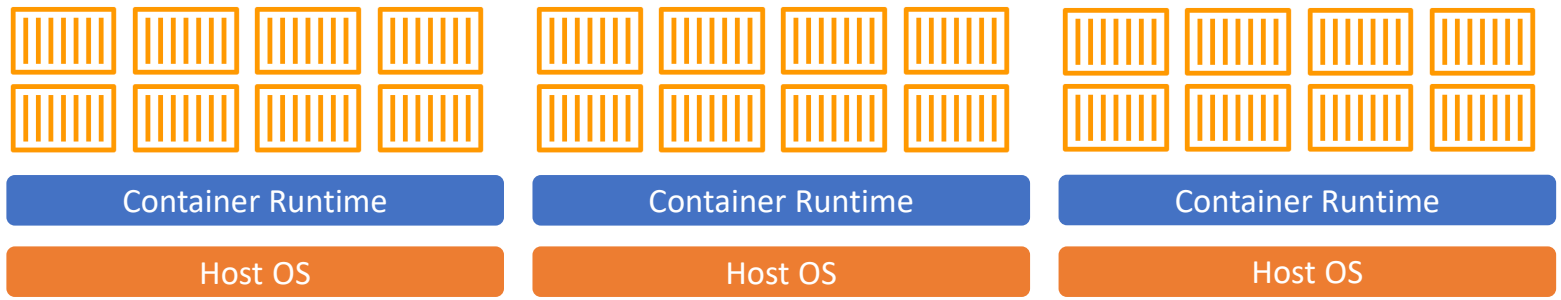


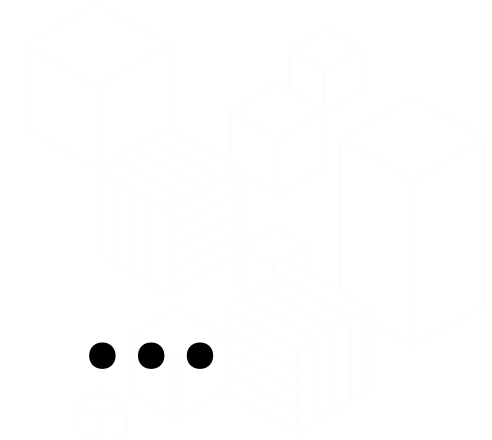
Why orchestration?

- Managing one container is okay …



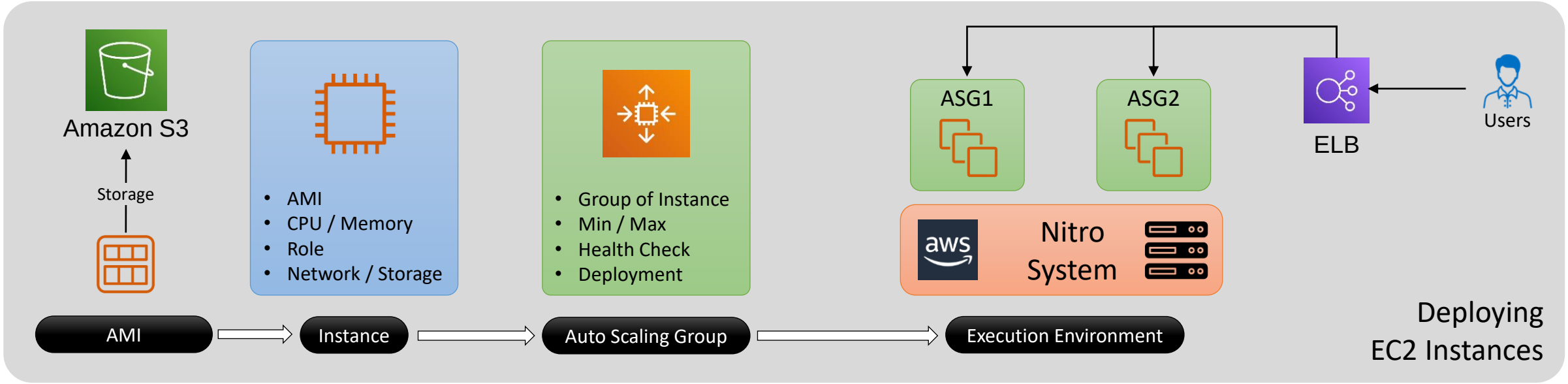
- What if this application moves into production level?

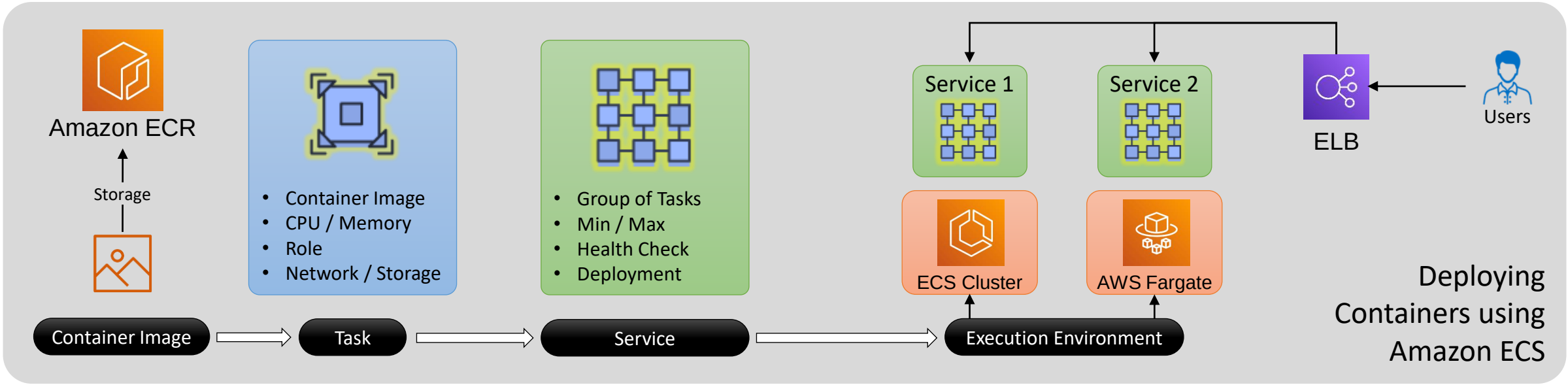




EC2 Instance vs. Containers

EC2 Instance vs Containers





Amazon Elastic Kubernetes Service (Amazon EKS)

Kubernetes

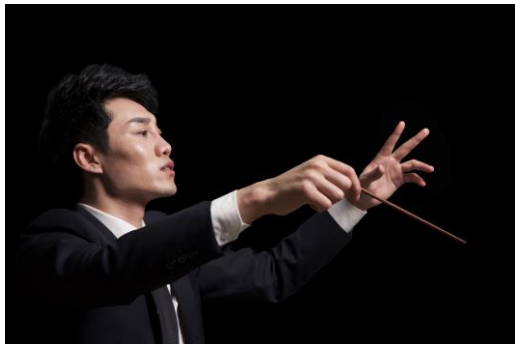
- Kubernetes is an open source orchestration system that helps deploy and scale your containerized applications

Open source container management platform governed by the community.

Run containers at scale integrating networking, storage, and compute.

Take advantage of open source tools that are designed to run on Kubernetes.

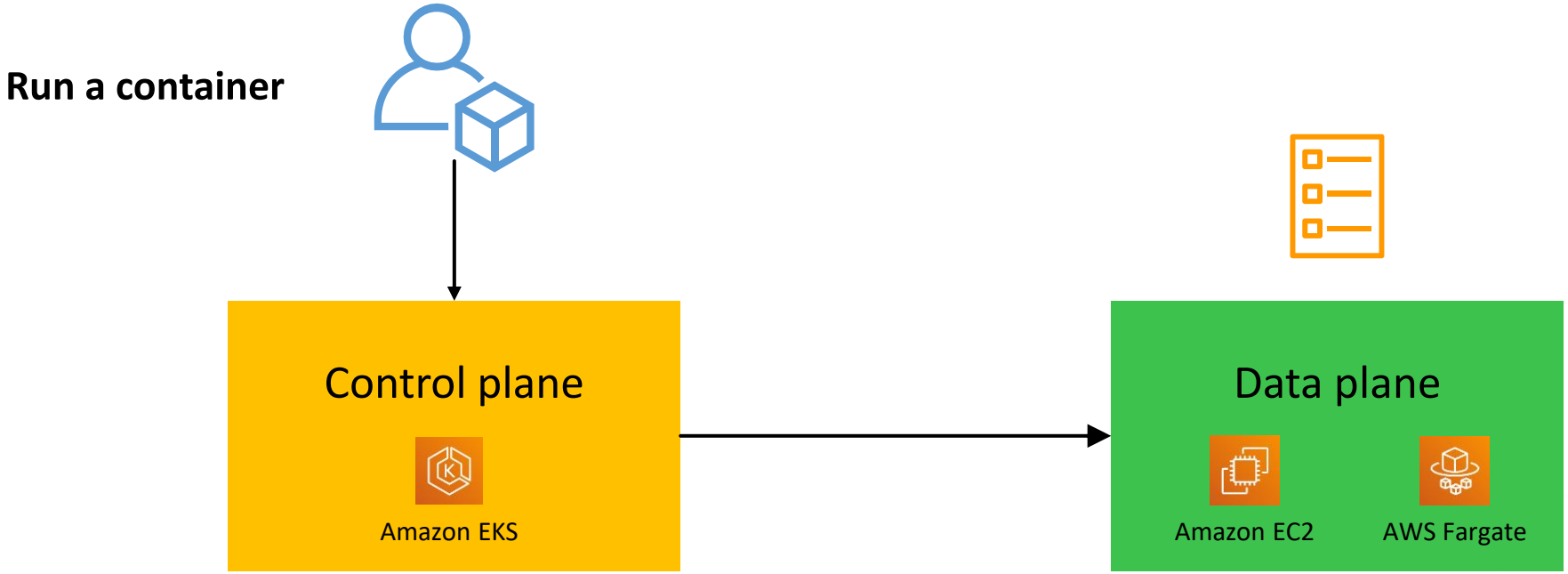
Structure of Kubernetes



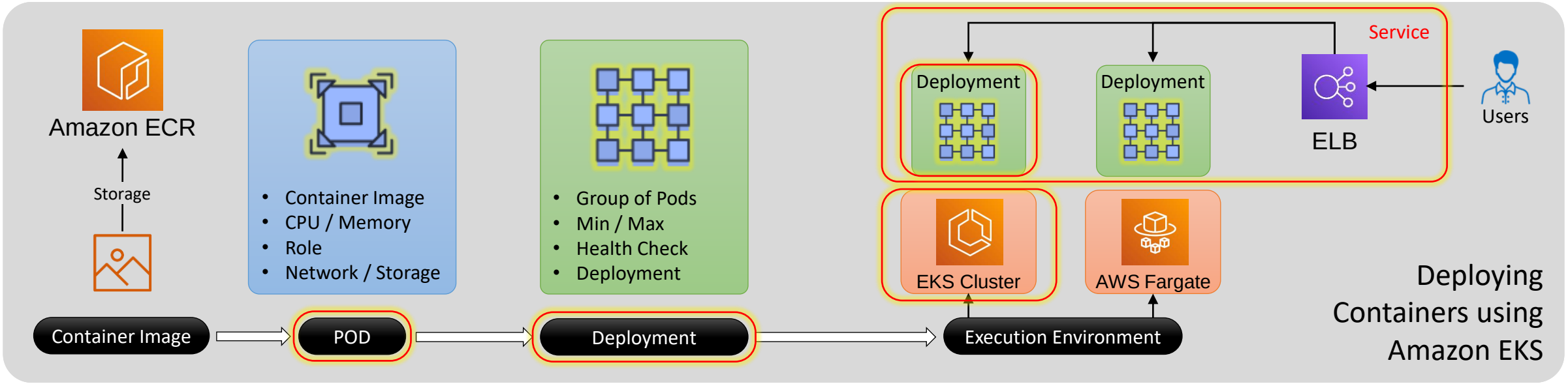
Control plane

Data plane

Structure of Kubernetes



Amazon EKS


Amazon ECR
Storage
Container Image
CPU / Memory
Role
Network / Storage
Group of Pods
Min / Max
Health Check
Deployment
Service
Deployment
Deployment
ELB
Users
EKS Cluster
AWS Fargate
Container Image
POD
Deployment
Execution Environment
Deploying Containers using Amazon EKS

Amazon EKS Portfolio

Amazon EKS

Amazon EKS
in Local Zones

Amazon EKS
in Wavelength Zones

Amazon EKS
on Outposts

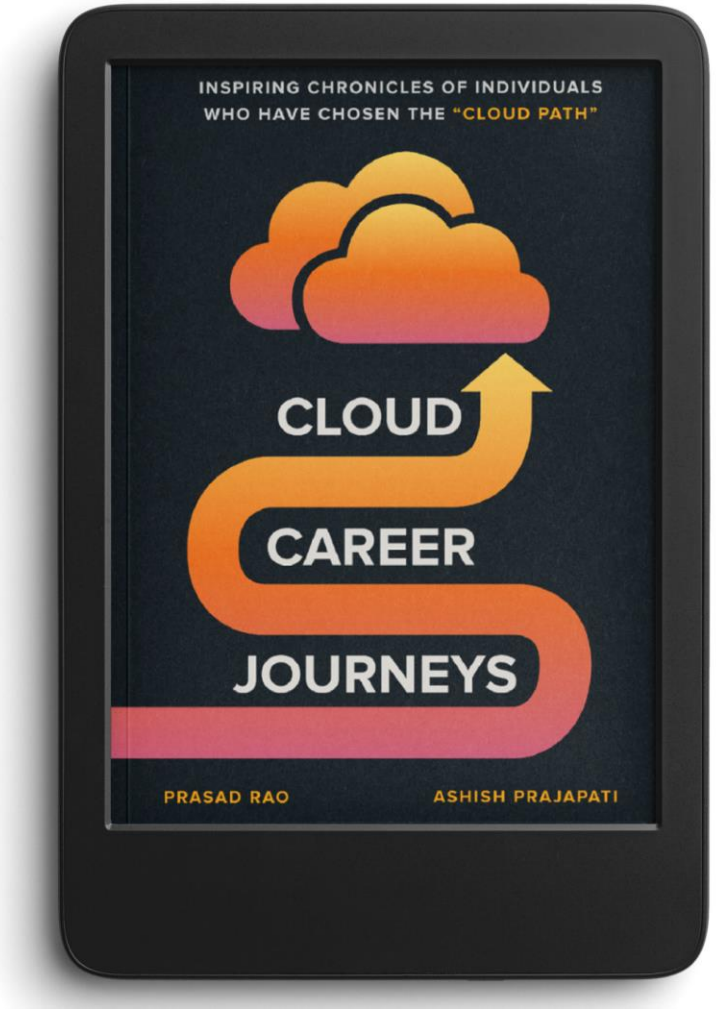
Amazon EKS Anywhere

Amazon EKS Distro

AWS Managed

Customer Managed

Giveaway Sponsors



and WHIZLABS

Giveaways

Limited to first 50 buyers

- 50% discount on – Cloud Career Journeys – eBook
- 50% discount on – Cloud Career Journeys – Starter Kit
  - **(QR Code displayed at the end of the session)**

Weekly Giveaways **(Selection based on engagement)**

- 1 x Cloud Career Journeys – eBook
- 10 x Whizlabs Sandbox Access for 3 months

12th Week Giveaways (Selection from regular participants)

- 10 x Whizlabs Premium Plus Subscription for 12 months

Week 10 Winners

Cloud Career Journey ebook	Rinku Poptani
Whizlabs 3 months AWS Sandbox Access	Joao Gaspar Silva
	N Kumar
	Manju Regi
	Suman PS
	R K
	Marco Rodrigues
	Maureen Muiruri
	Anna K
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