DevOps and Microservices

An overview

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Who Am I

Giuseppe Bonocore

Principal Solution Architect @ RedHat

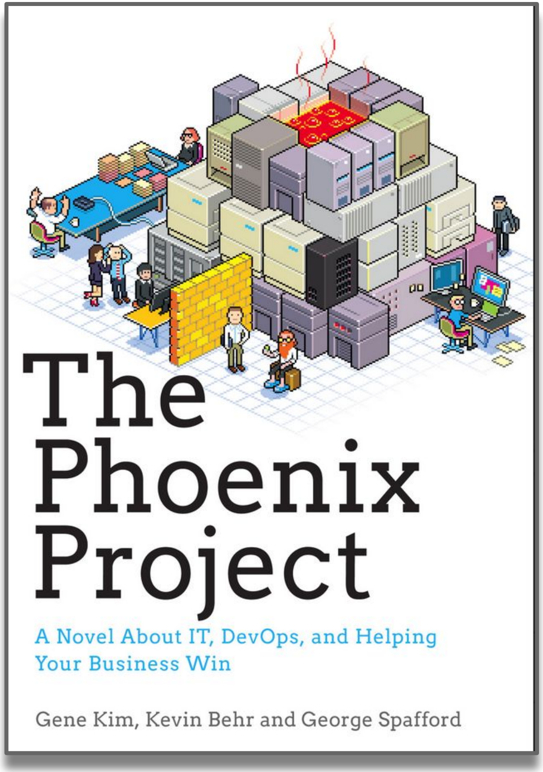
Living and working in Milan, Italy

Passionate about OpenSource since 2001

Java, Linux, Cloud, DevOps...

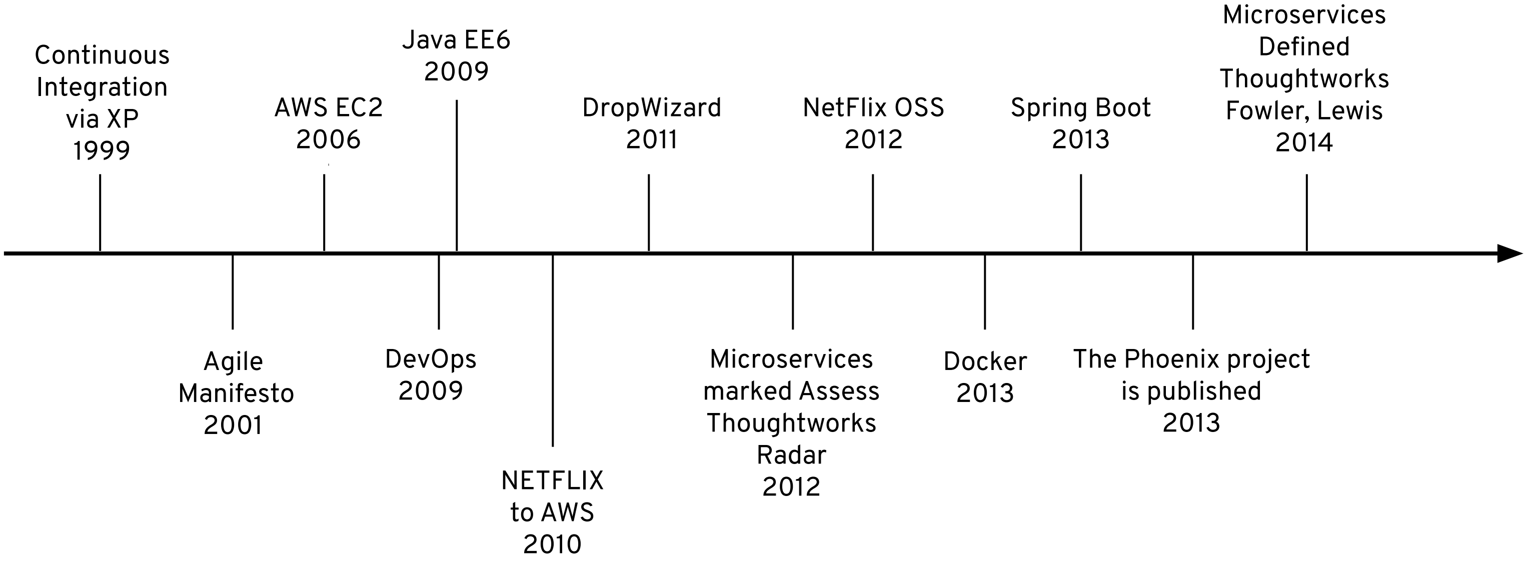
Why Microservices?

Break things down (organizations, teams, IT systems, etc) down into smaller pieces for greater parallelization and autonomy and focus on reducing time to value.


The Phoenix Project
A Novel About IT, DevOps, and Helping Your Business Win
Gene Kim, Kevin Behr and George Spafford

10 Deploys a Day

A Brief History Of Microservices



Continuous Integration via XP 1999

Agile Manifesto 2001

AWS EC2 2006

DevOps 2009

Java EE6 2009

NETFLIX to AWS 2010

DropWizard 2011

Microservices marked Assess Thoughtworks Radar 2012

NetFlix OSS 2012

Docker 2013

Spring Boot 2013

The Phoenix project is published 2013

Microservices Defined Thoughtworks Fowler, Lewis 2014

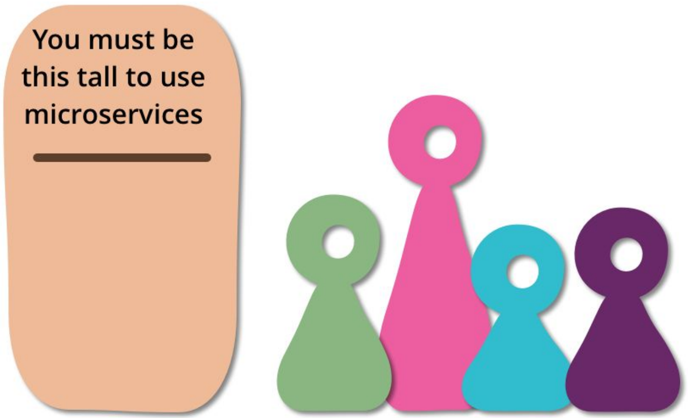
Microservices Recipes

- Immutable and externally configurable
- Stateless and horizontally scalable
- Decoupled and independently deployable
- Owns data
- Represent a business domains
- Technology independent

You must be this tall (to do microservices)

You Must Be This Tall

1. Dev vs Ops
   (who is on the pager for production app outage?)
2. Self-Service, on-demand, elastic infrastructure as code
   (how many days/weeks to provision a new VM?)
3. Automation
   (phoenix vs snowflake?)
4. CI & CD



http://martinfowler.com/bliki/MicroservicePrerequisites.html

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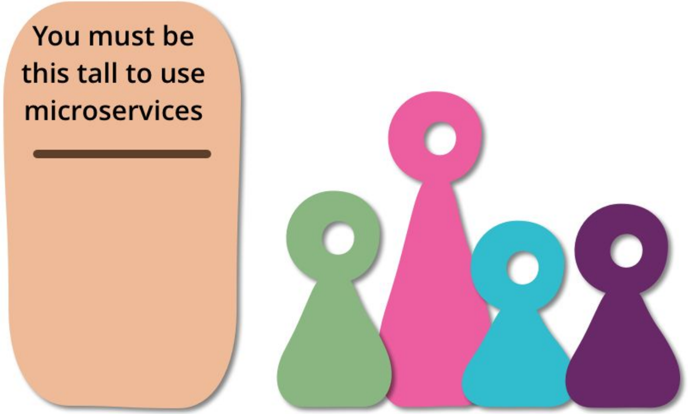

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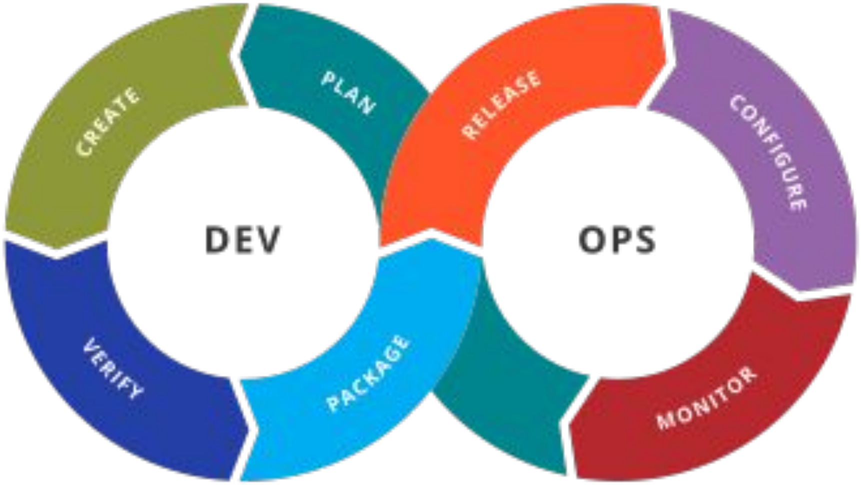
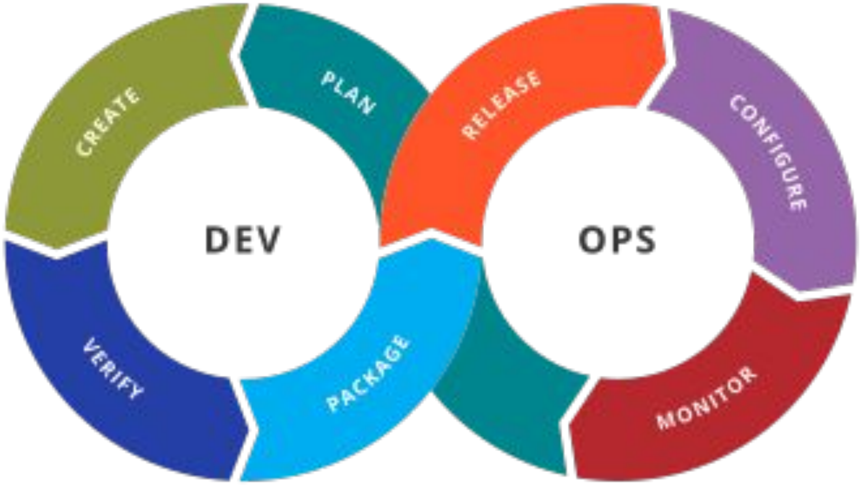
DevOps



https://en.wikipedia.org/wiki/DevOps

DevOps is a set of practices that combines software development (Dev) and IT operations (Ops). It aims to shorten the systems development life cycle and provide continuous delivery with high software quality.

DevOps



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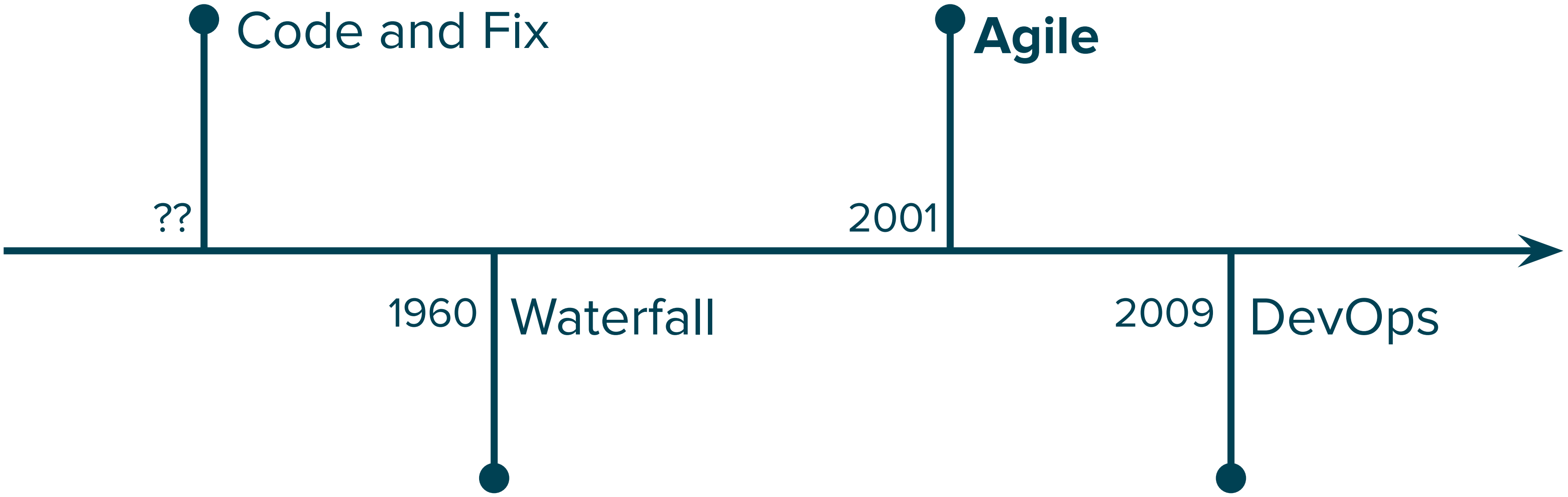
DevOps is complementary with Agile software development; several DevOps aspects came from the Agile methodology.


Code and Fix
??
Agile
2001
1960
Waterfall
2009
DevOps

We are uncovering better ways of developing
software by doing it and helping others do it.
Through this work we have come to value:

Individuals and interactions over processes and tools

Working software over comprehensive documentation

Customer collaboration over contract negotiation

Responding to change over following a plan

That is, while there is value in the items on
the right, we value the items on the left more.

agilemanifesto.org

The road to DevOps

We have Jenkins, we do DevOps!

We do lots of deploys, we do DevOps!

We run on Kubernetes, we do DevOps!

We don’t do documentation, we do DevOps!

The road to DevOps

DevOps is a philosophy and a collection of tools.

Committing to the tools enables you to adopt the philosophy.

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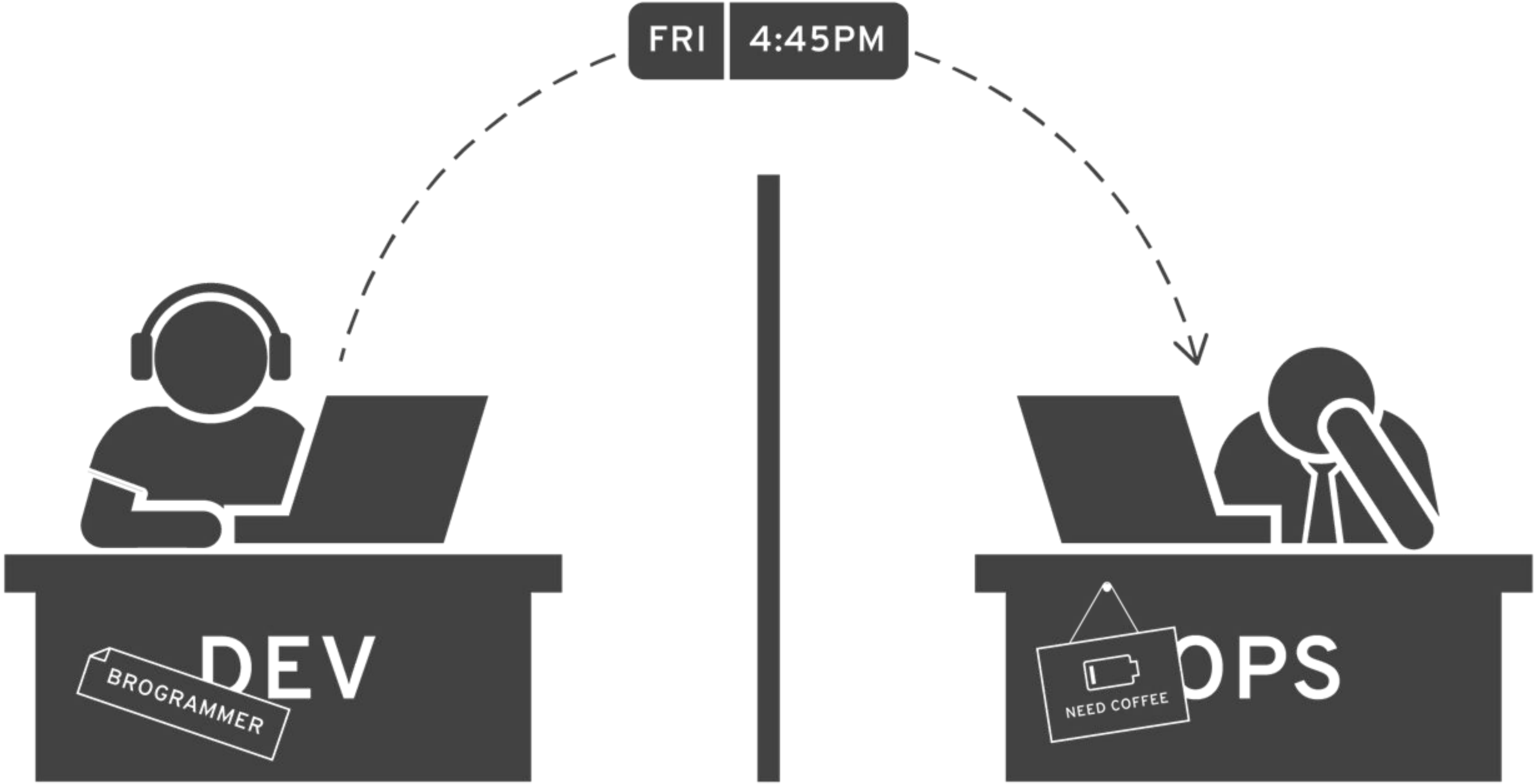
FRI
4:45PM
DEV
BROGRAMMER
OPS
NEED COFFEE

DEV
OPS
WALL OF CONFUSION

DevOps in a nutshell

- *Small, cross department teams*
  - *2 Pizza*
- *Product oriented, production oriented*
  - *You ship it, you run it*
- *Supporting technology*
  - *Self service, CI/CD, Elastic infrastructure*

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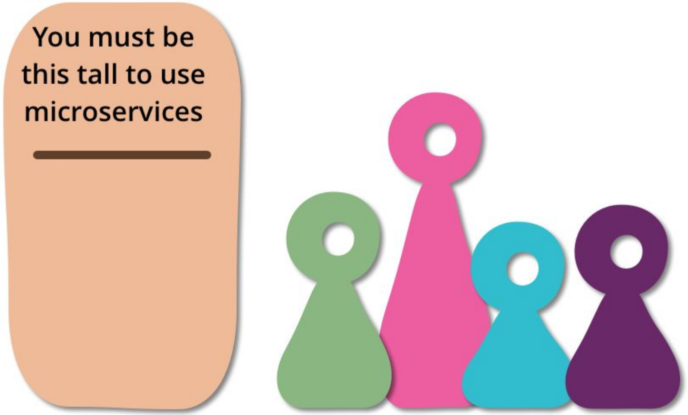

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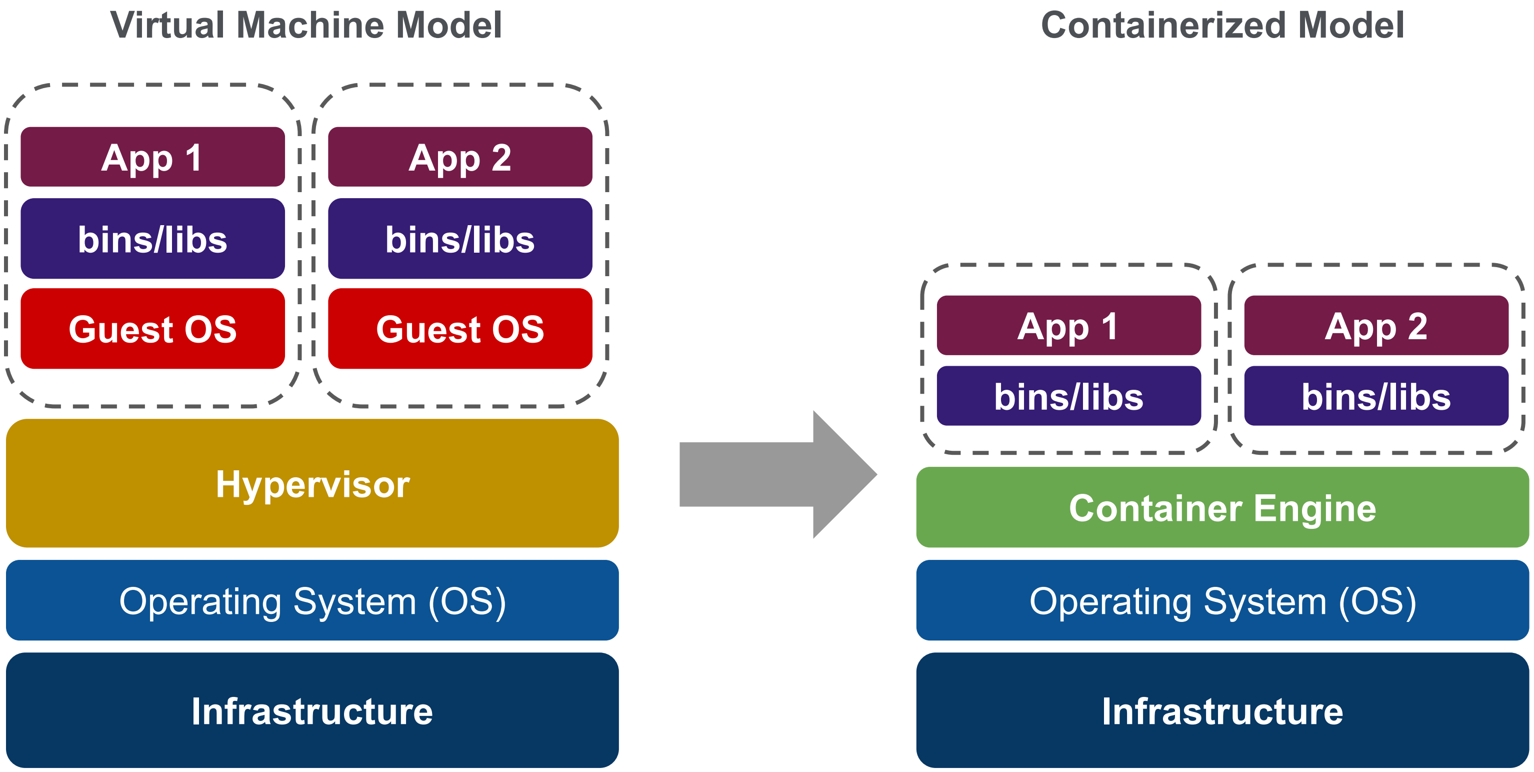
Virtual Machine v Container



Virtual Machine v Container

Managing containers can be challenging...

- *Increased moving parts*
- *Interdependencies*
- *Infrastructure*

➜ *Distributed Computing*

Kubernetes: Orchestrating containers

- *Workload placement*
- *Infrastructure services*
- *Standardization*

➔ *Operating System of the cloud*

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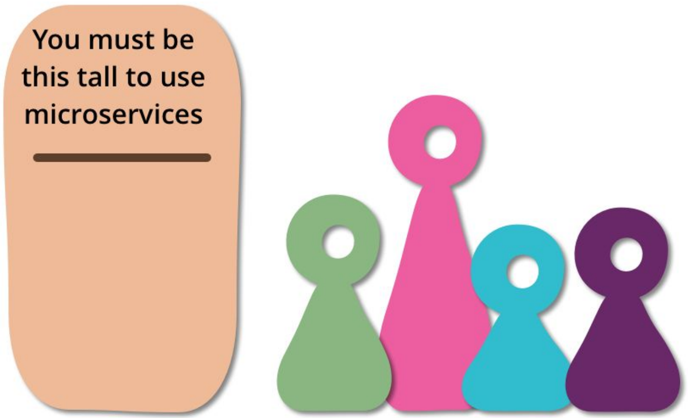

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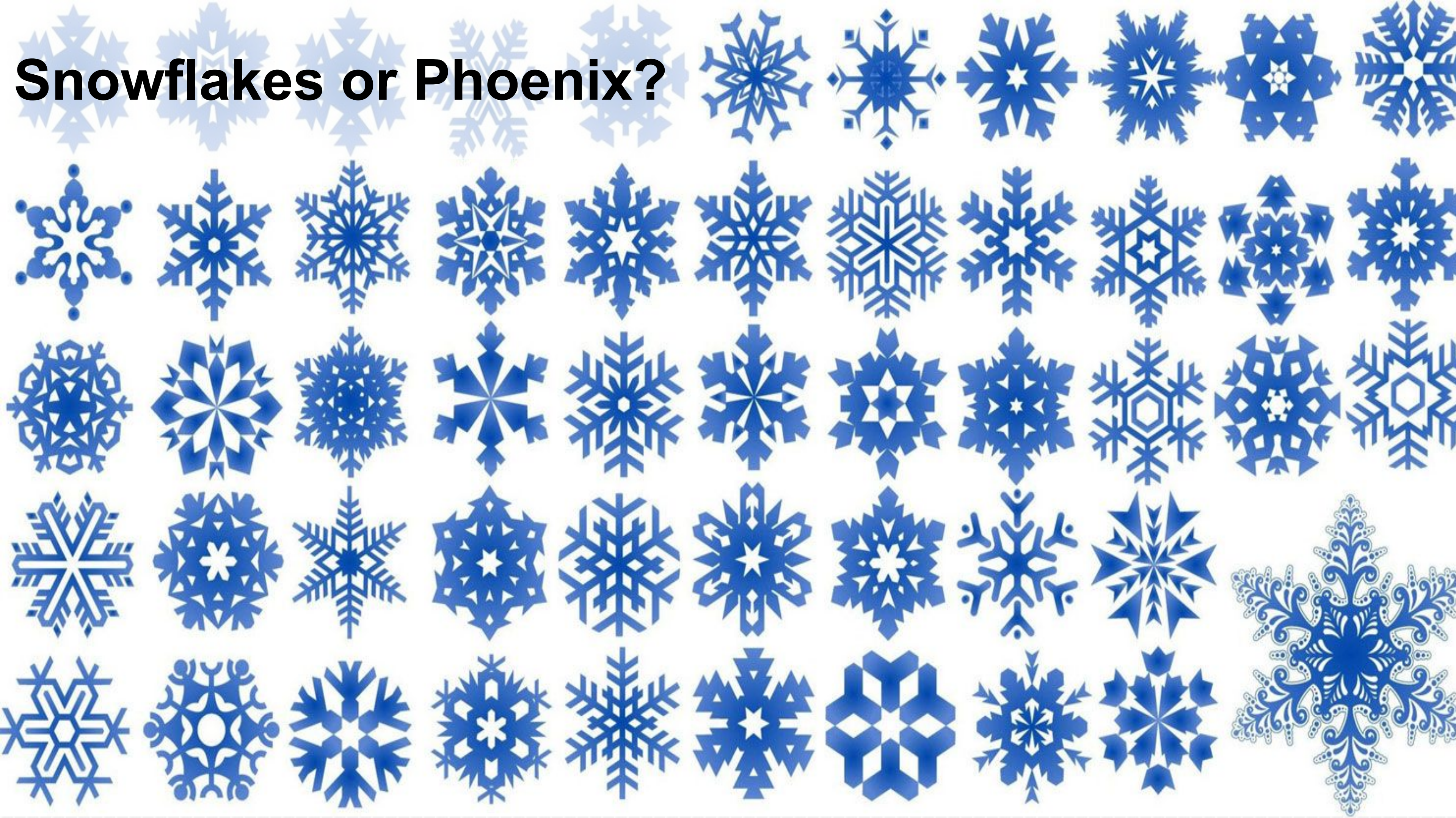
Snowflakes or Phoenix?



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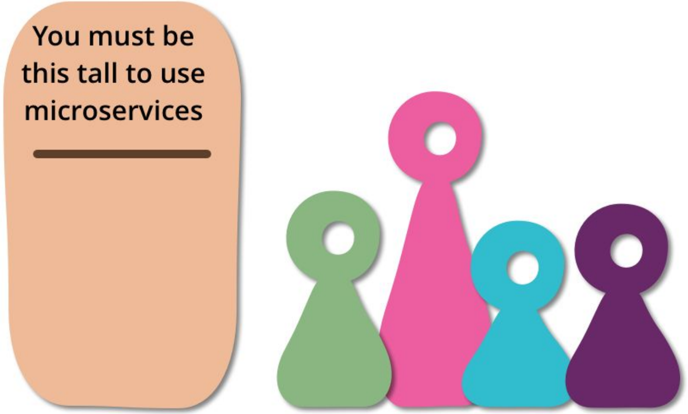

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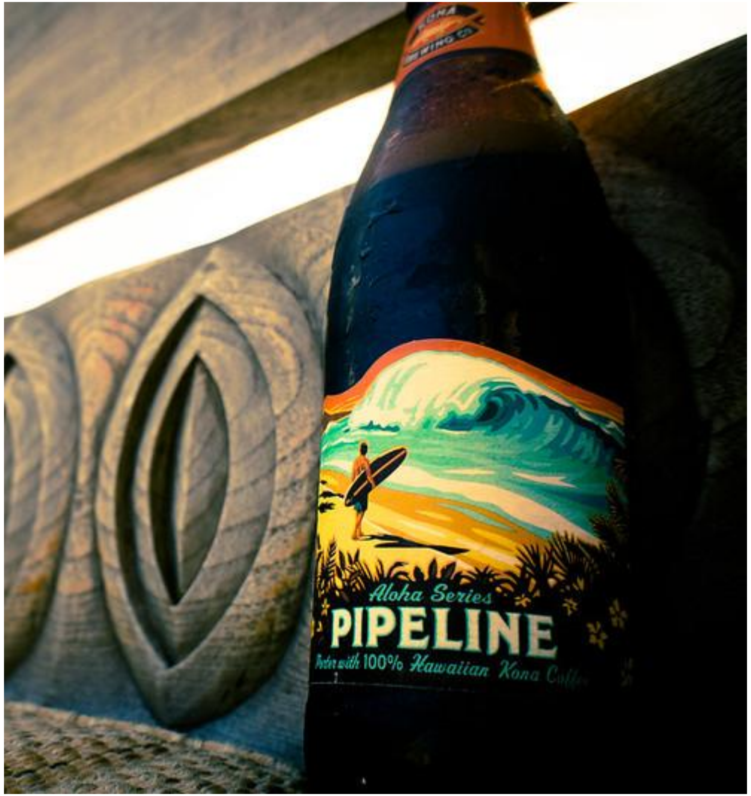


https://www.flickr.com/photos/mentalwanderings/14559188821/

Job of the deployment pipeline is to prove your release candidate is undeployable.

Otherwise deploy.

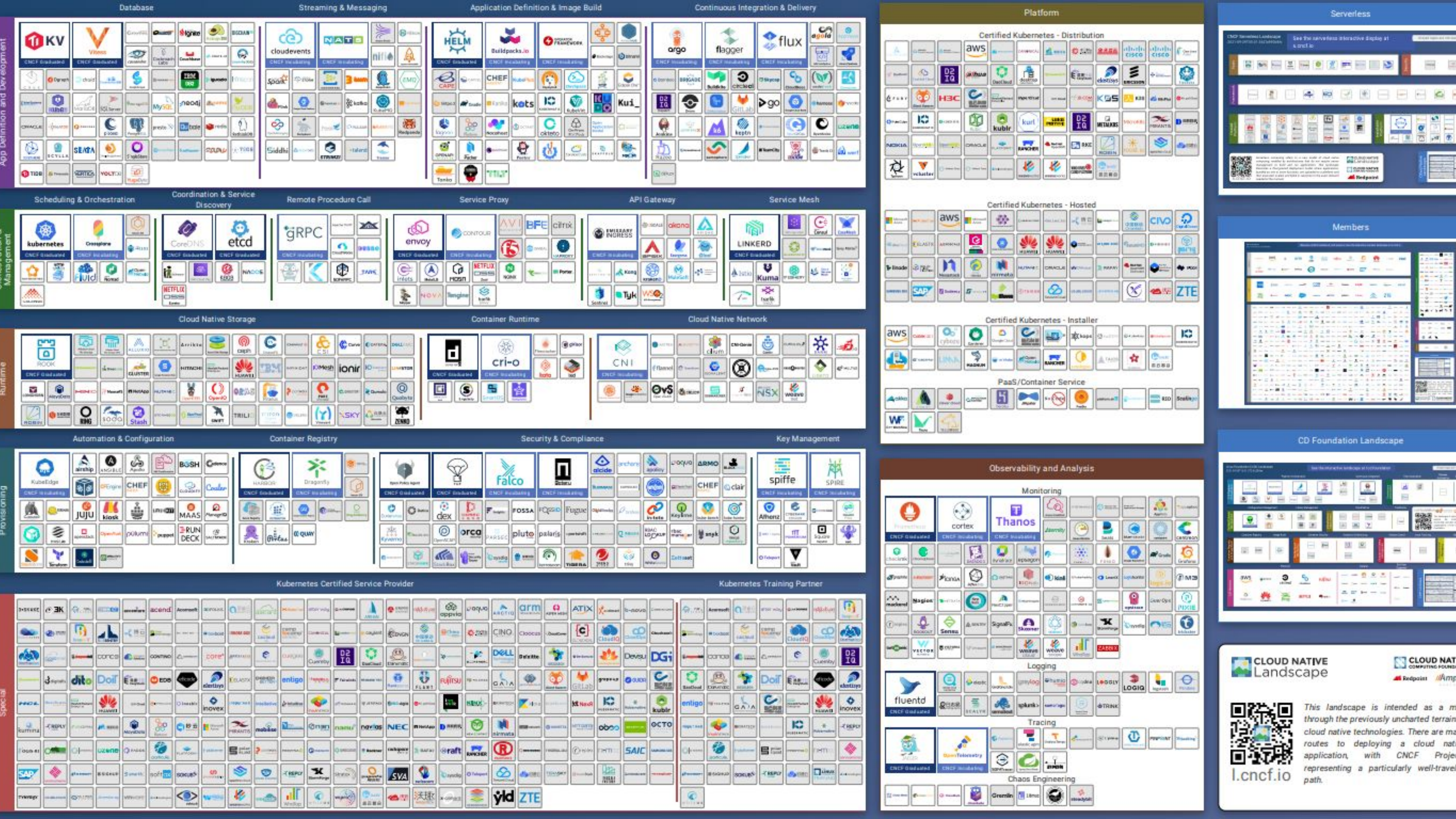
Jez Humble,
Consultant and Author

OpenSource?

DevOps ♥ OpenSource

https://opensource.com/business/14/4/devops-adopts-open-source

- *Open exchange*
- *Participation*
- *Rapid prototyping*
- *Meritocracy*
- *Community*



App Definition and Development

Database

Streaming & Messaging

Application Definition & Image Build

Continuous Integration & Delivery

Management

Scheduling & Orchestration

Coordination & Service Discovery

Remote Procedure Call

Service Proxy

API Gateway

Service Mesh

Runtime

Cloud Native Storage

Container Runtime

Cloud Native Network

Provisioning

Automation & Configuration

Container Registry

Security & Compliance

Key Management

Special

Kubernetes Certified Service Provider

Kubernetes Training Partner

Platform

Certified Kubernetes - Distribution

Certified Kubernetes - Hosted

Certified Kubernetes - Installer

PaaS/Container Service

Observability and Analysis

Monitoring

Logging

Tracing

Chaos Engineering

Serverless

Members

CD Foundation Landscape

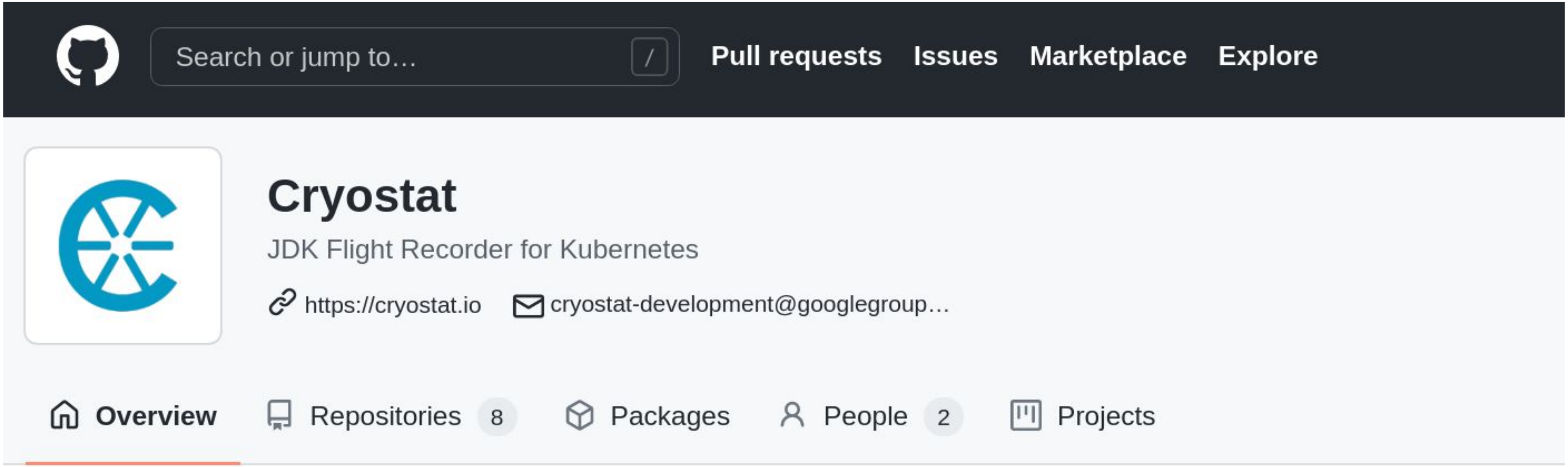
CLOUD NATIVE Landscape

l.cncf.io

This landscape is intended as a m through the previously uncharted terrain cloud native technologies. There are ma routes to deploying a cloud nati application, with CNCF Proje representing a particularly well-travel path.

github.com/topics/hacktoberfest

Open source is changing the world – one contribution at a time.



Cryostat

JDK Flight Recorder for Kubernetes

https://cryostat.io cryostat-development@googlegroup…

github.com/cryostatio

Question time

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