StackEngine

Enterprise-Grade Docker Management

Open Containers of Champagne

OpenStack Magnum

Boyd Hemphill
Director of Evangelism
@behemphi
@stackengine

Background

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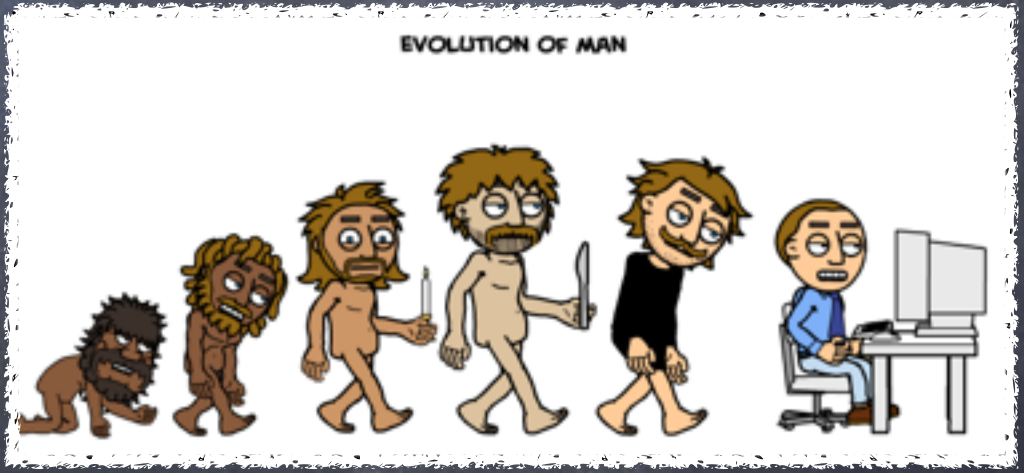
- Oracle Developer, MySQL DBA, PHP Developer, System Architect, DevOps Director (snickering encouraged), Evangelist



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- Founded Container Days 2015. Austin, Boston, San Fran, Dallas

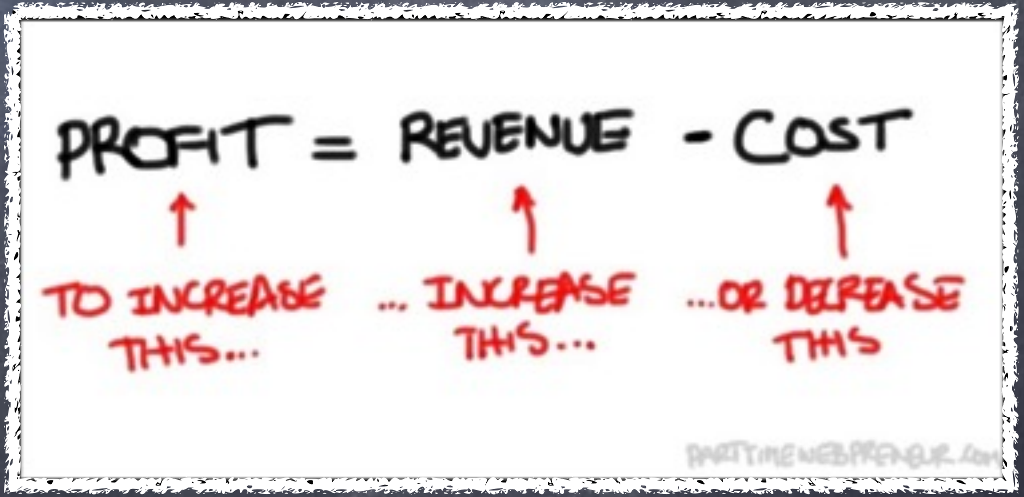
Why?

Walk away from this session thinking about uses for containers and what Magnum, Murano, nova-docker, et. al. could mean for the future of OpenStack.

Perspective

Perspective

- P = R - C



PROFIT = REVENUE - COST

TO INCREASE THIS... ... INCREASE THIS... ...OR DECREASE THIS

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Perspective

- P = R - C
- If C = 0, you are out of business.

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- Features = $
    - http://goo.gl/VUmbwP
    - http://goo.gl/2Yq2Mg

Container v. VM

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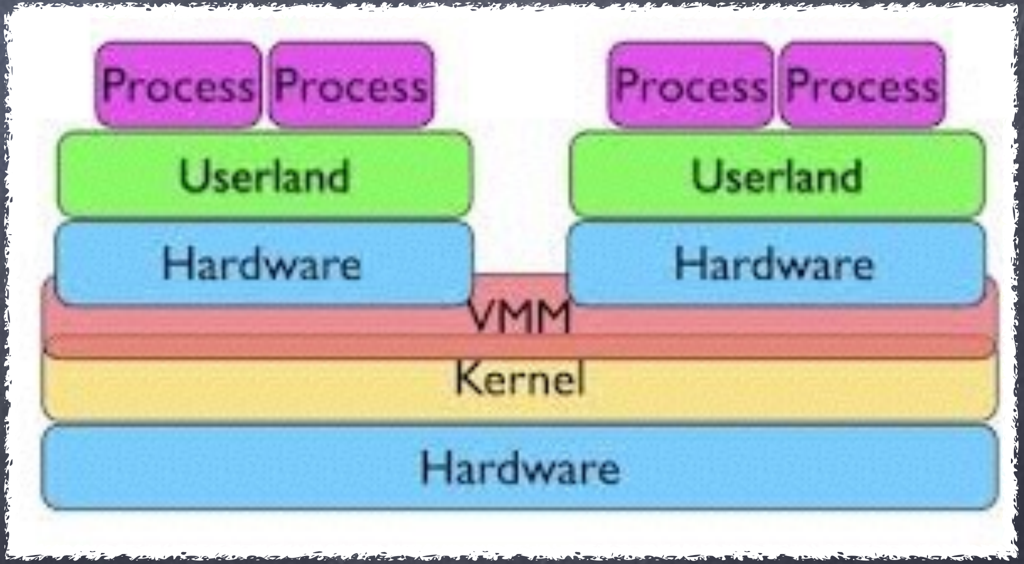
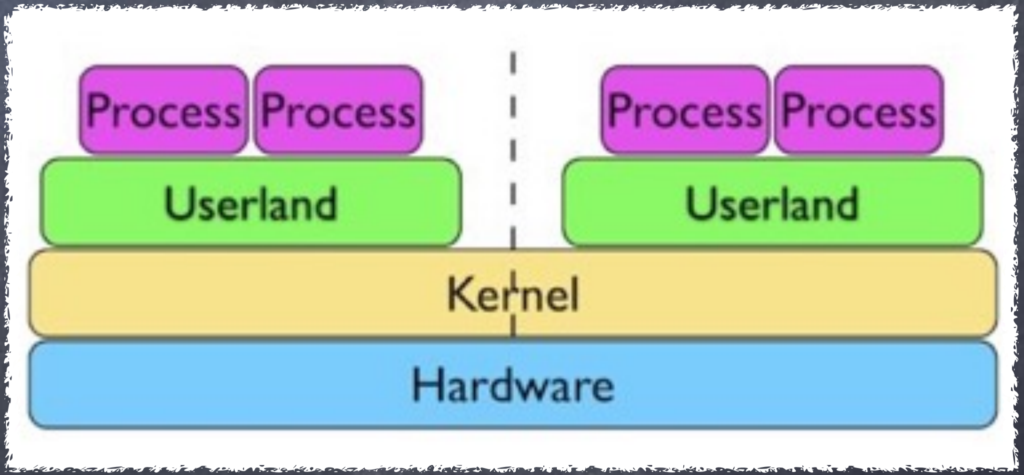
Container v. VM

- A VM is a full copy of on an entire computer running as software via a hypervisor



Container v. VM

- A VM is a full copy of on an entire computer running as software via a hypervisor
- A container is a slice of the kernel



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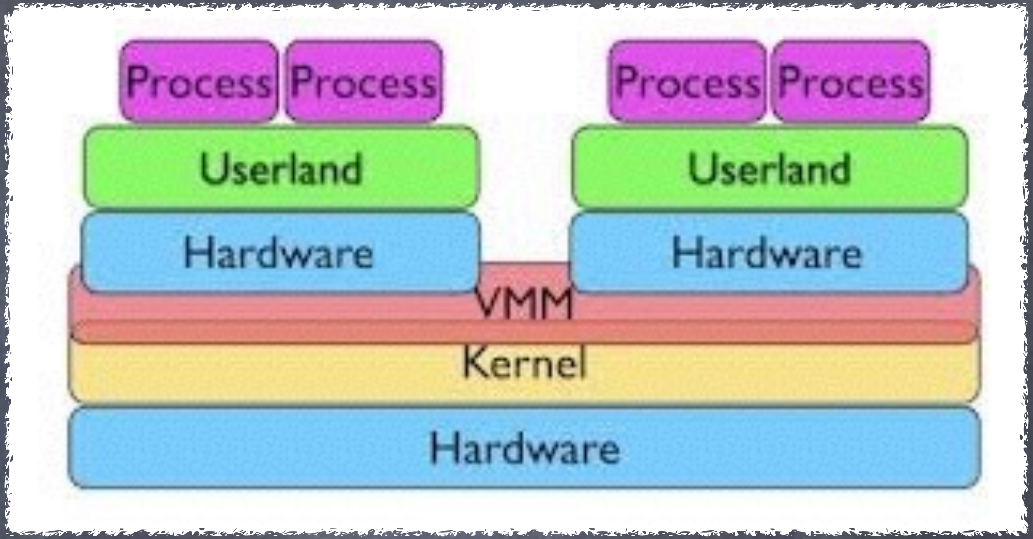
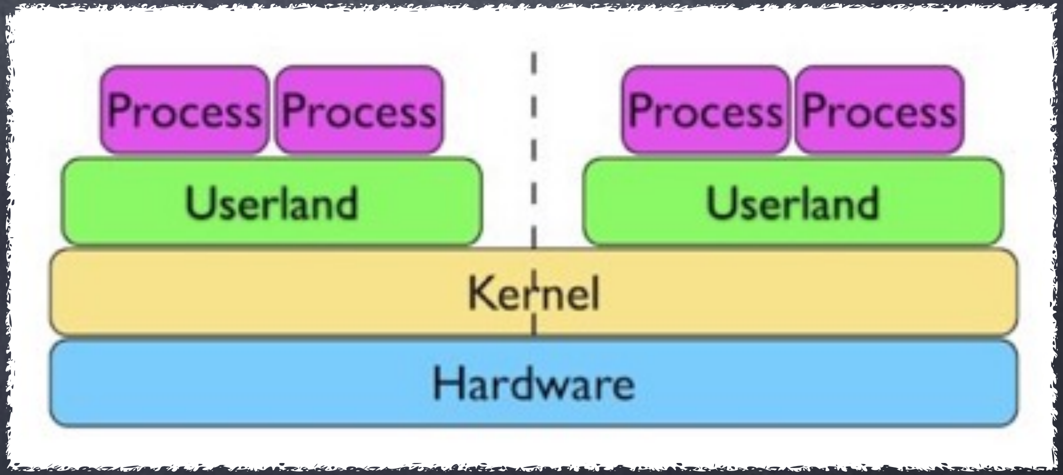
Container v. VM

- A VM is a full copy of on an entire computer running as software via a hypervisor
- A container is a slice of the kernel
- Executive Summary: The lack of extra layers means big opportunity





Language

Docker != Containers

- FreeBSD Jail (1998) - CPU, Memory, Disk, !IO
- Solaris Zones (2005) CPU, Memory, Disk, IO
- OpenVZ (2005) CPU, Memory, Disk, IO
- LXC (2008) CPU, Memory, Disk, IO
- Docker (2013) CPU, Memory, !Disk, !IO
- Rocket (2014) ???

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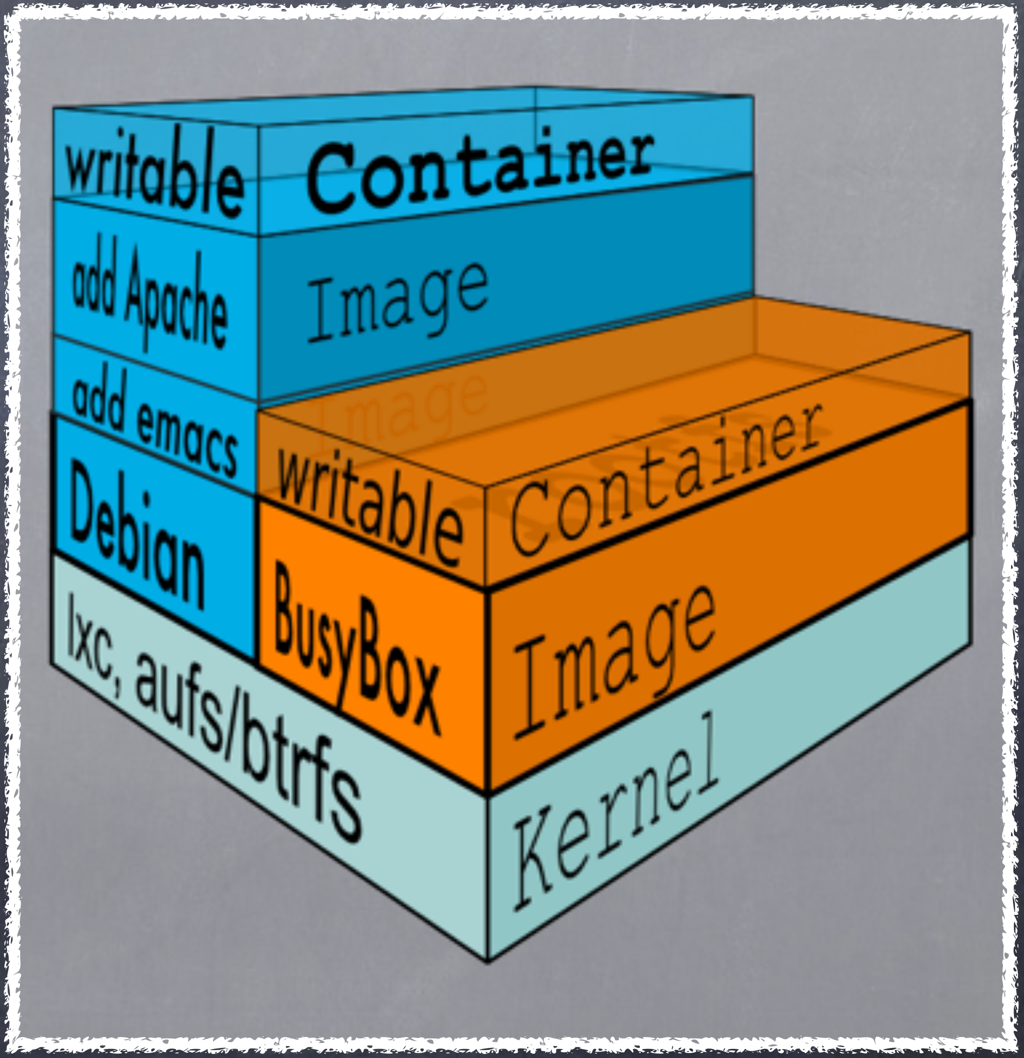
Docker != Container

- Containers in Production - Pantheon (LXC)



Docker != Container

- Containers in Production - Pantheon (LXC)
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Docker != Container

- Containers in Production - Pantheon (LXC)
- Containers in build pipelines - Travis CI (OpenVZ)
- Docker is, simply, linux containers for mere mortals

Magnum seeks to include container technologies other than Docker. Think broadly about the technology, not the tool.

Use Cases

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Use Cases - SDLC

- Development
- Build / CI
- QA
- Production

Development

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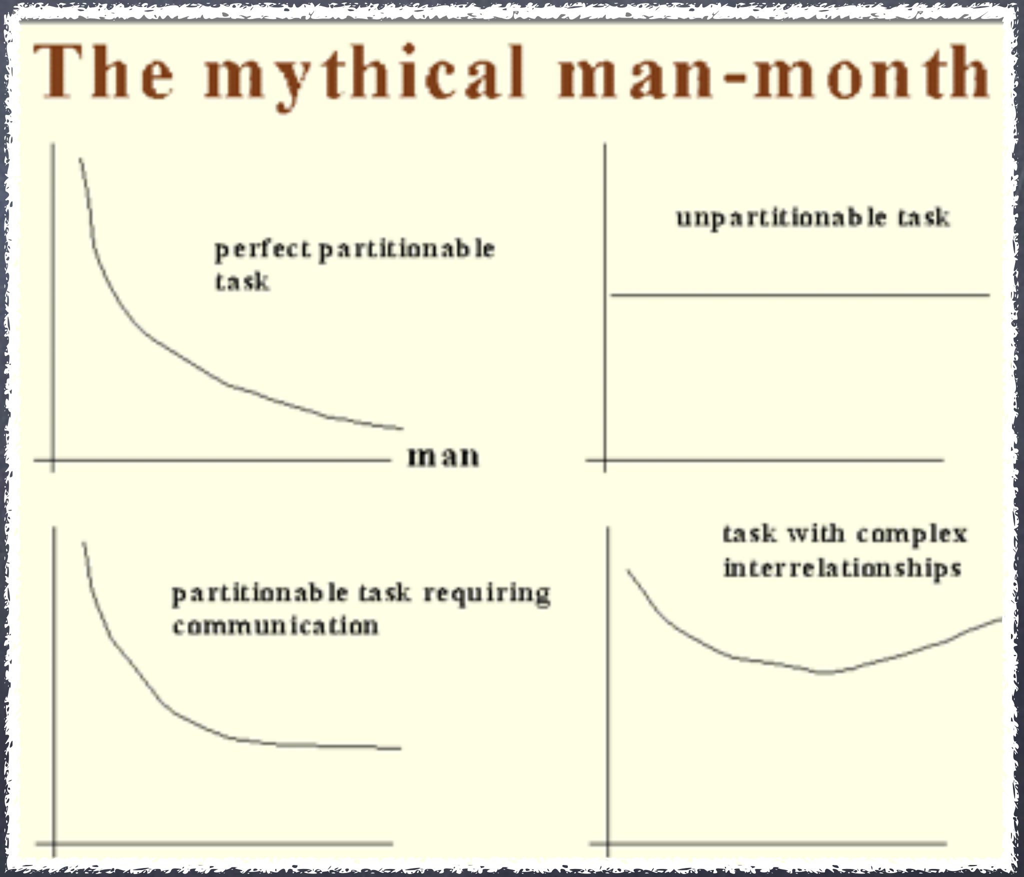
Use Case - Dev

- Disposable Dev Env
  - New Devs productive 1st day



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Use Case - Dev

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Use Case - Dev

- Disposable Dev Env
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  - Innovation Increase
  - Feature Velocity Increase

Build / CI

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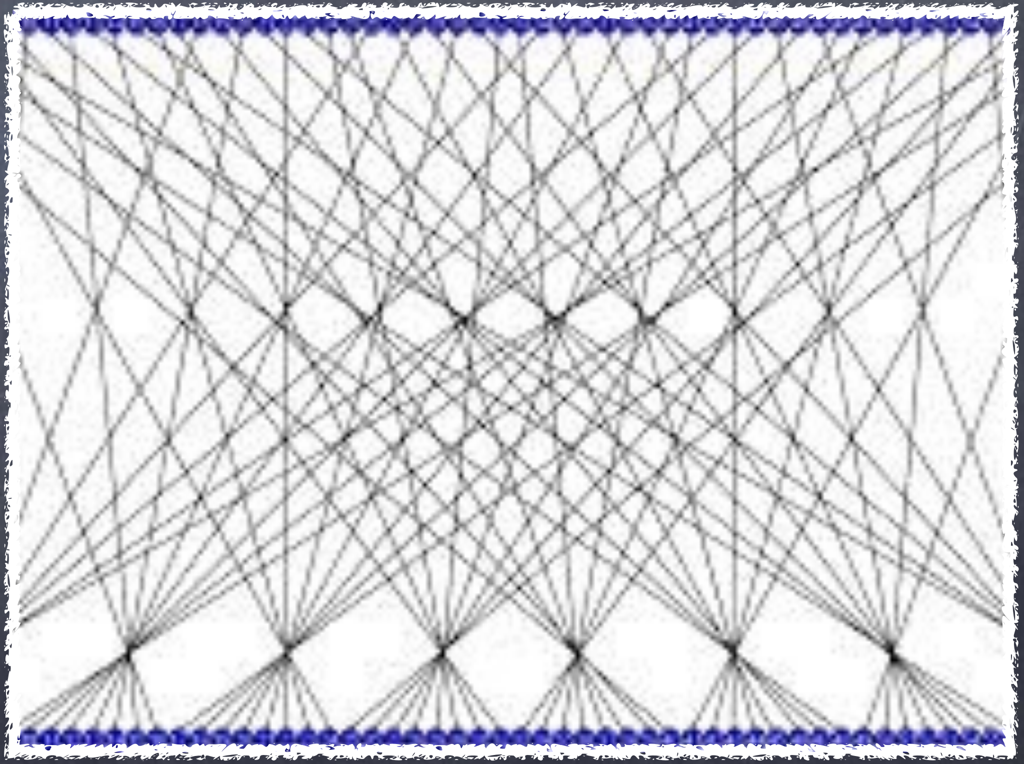
Build / CI

- Test more system permutations



Build / CI

- Test more system permutations
- Increased parallelism = increased innovation

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Build / CI

- Test more system permutations
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Quality Assurance

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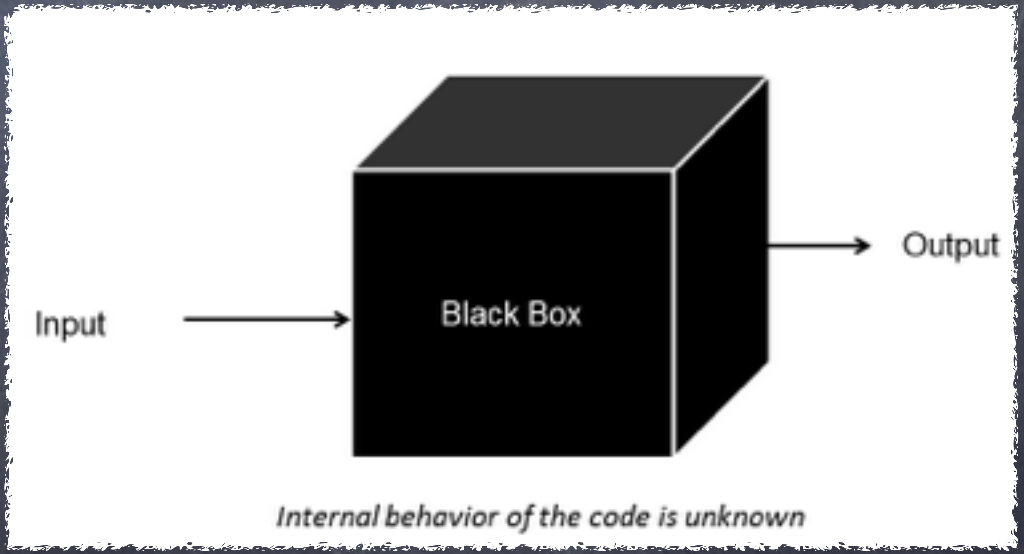
- Black Box Testing



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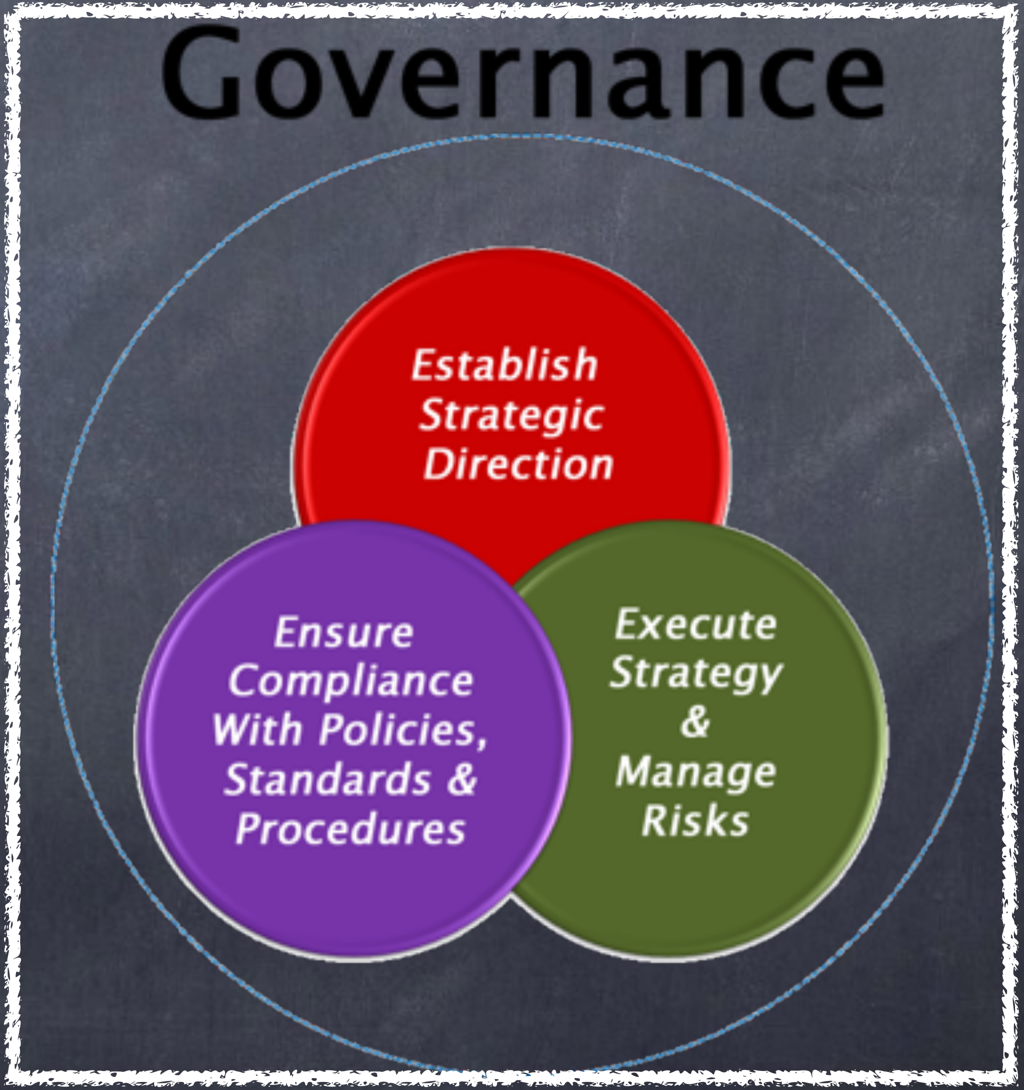
Quality Assurance

- Black Box Testing
- Compliance instead of Governance
  - Security
  - Performance
  - Functional


Governance
Establish Strategic Direction
Ensure Compliance With Policies, Standards & Procedures
Execute Strategy & Manage Risks

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Quality Assurance

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- Increases Feature Velocity

Operations

Operations

- Process Density

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- Ants not Cattle

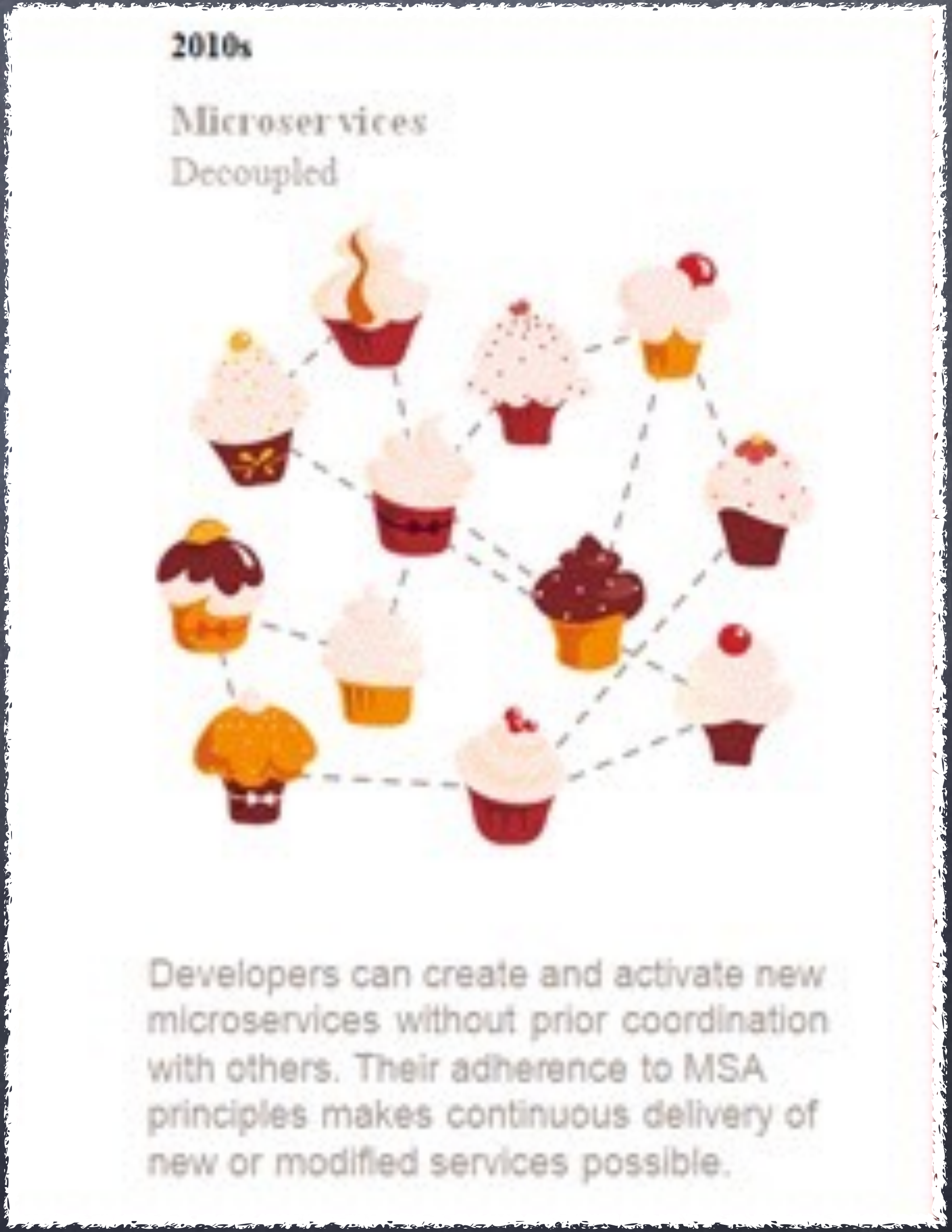
Operations

- Process Density
- Ants not Cattle
- New Capacity Planning thinking

Bonus

System Architecture

- Micro Services mean Micro teams



2010s

Microser vices
Decoupled

Developers can create and activate new microservices without prior coordination with others. Their adherence to MSA principles makes continuous delivery of new or modified services possible.

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System Architecture

- Micro Services mean Micro teams

System Architecture

- Micro Services mean Micro teams
- Increased Feature Velocity
- Lasting competitive business advantage

Batteries Not Included

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- Docker ~= Hypervisor and not much else

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Batteries Not Included

- Docker ~= Hypervisor and not much else
- Further symmetry
  - !Storage (Swift, Cinder)
  - !Networking (Neutron)
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- Further symmetry
  - !Storage (Swift, Cinder)
  - !Networking (Neutron)
  - !Identity (Keystone)
- Nascent Ecosystem

OpenStack, via Magnum, has the potential to provide excellent answers to very difficult questions about container workloads and application topologies

Parting Thoughts

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- Developer adoption of Docker is only valuable as a first step. There is not enough benefit from it alone to justify the effort, it must inform system architecture and production operations <u>over time.</u>

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- Horses are starting to become unicorns. Evolve or die.

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- Docker's system architecture ramifications have the potential to provide a significant and lasting competitive business advantage
- Unlike most improvements from DevOps thinking, container adoption is Dev/QA driven since the greatest benefits are from system architecture. This fits existing common OpenStack use cases.
- Horses are starting to become unicorns. Evolve or die.
- The last point is FUD. "Consider how to evolve or die," is the real truth.

Colophon

Unicorn Case

- Pantheon/Rackspace blog: http://goo.gl/93steF
- Note the date: October 7th, 2013 (This is LXC)
- Amazing video presentation: http://goo.gl/gRkKGN
- Docker makes this easier to consider in our own contexts

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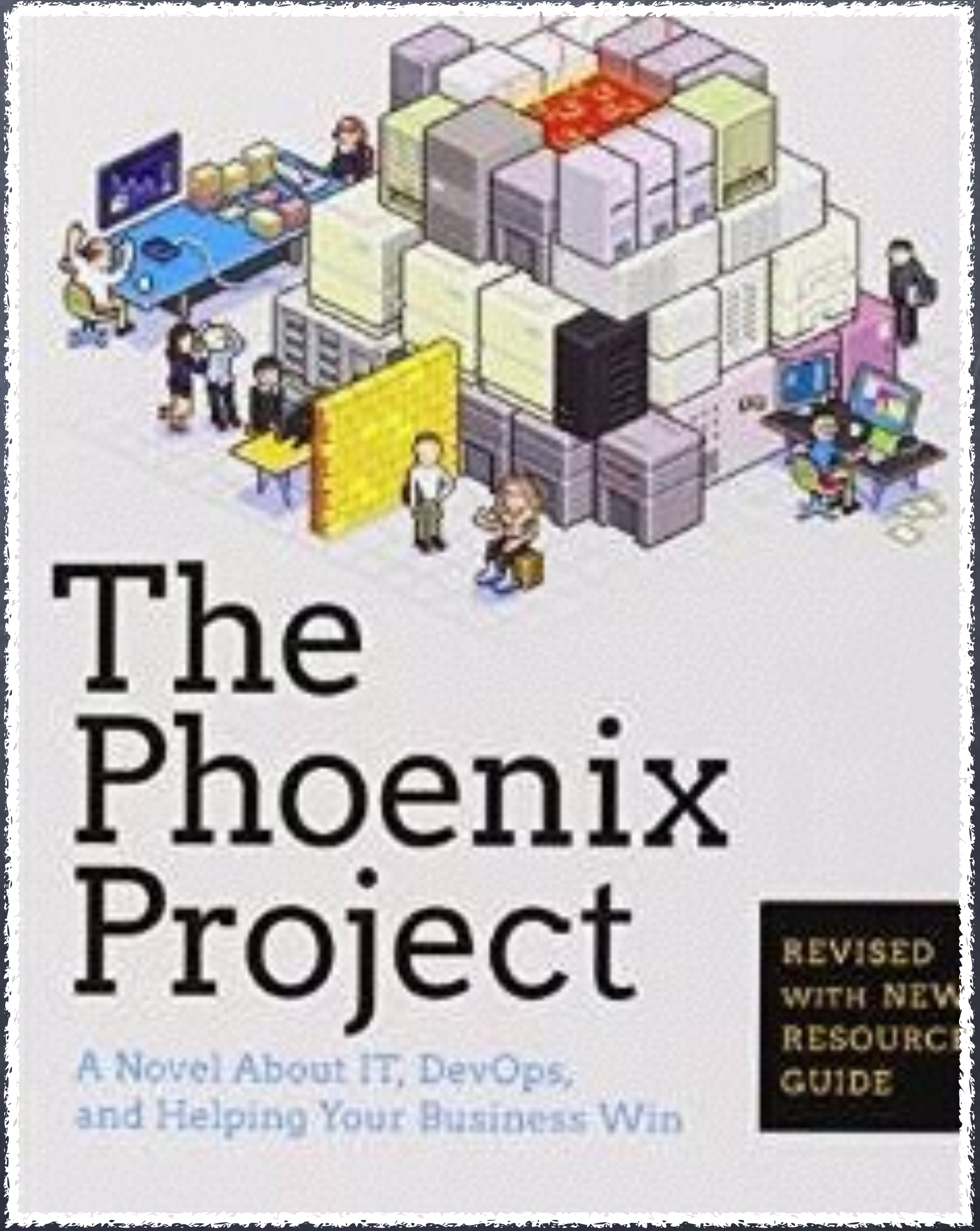
Reading

- The Phoenix Project - Kim (Lean/tech)
- The Lean Startup - Reis (Lean)
- The Goal - Goldratt (Theory of Constraints)
- It's not Luck - Goldratt (Theory of Constraints)
- Good to Great - Collins (Culture)
- The No Asshole Rule - Sutton (Culture)
- Continuous Deliver - Humble (*) (deep tech)
- The Lean Enterprise - Humble (*) (Lean)
- Twelve Factor - http://12factor.net (deep tech)


The Phoenix Project
A Novel About IT, DevOps, and Helping Your Business Win
REVISED WITH NEW RESOURCE GUIDE