

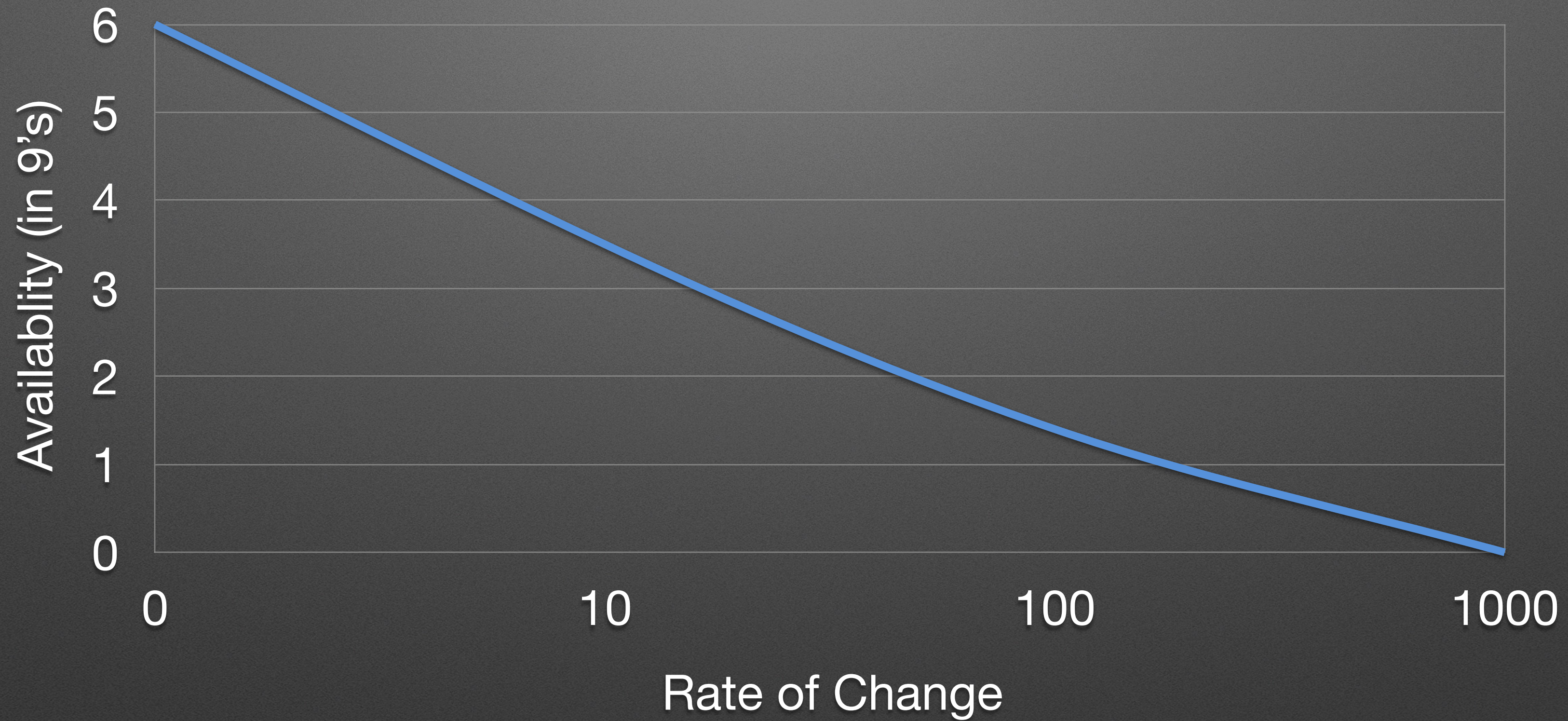


Engineering Velocity: Shifting the Curve at Netflix

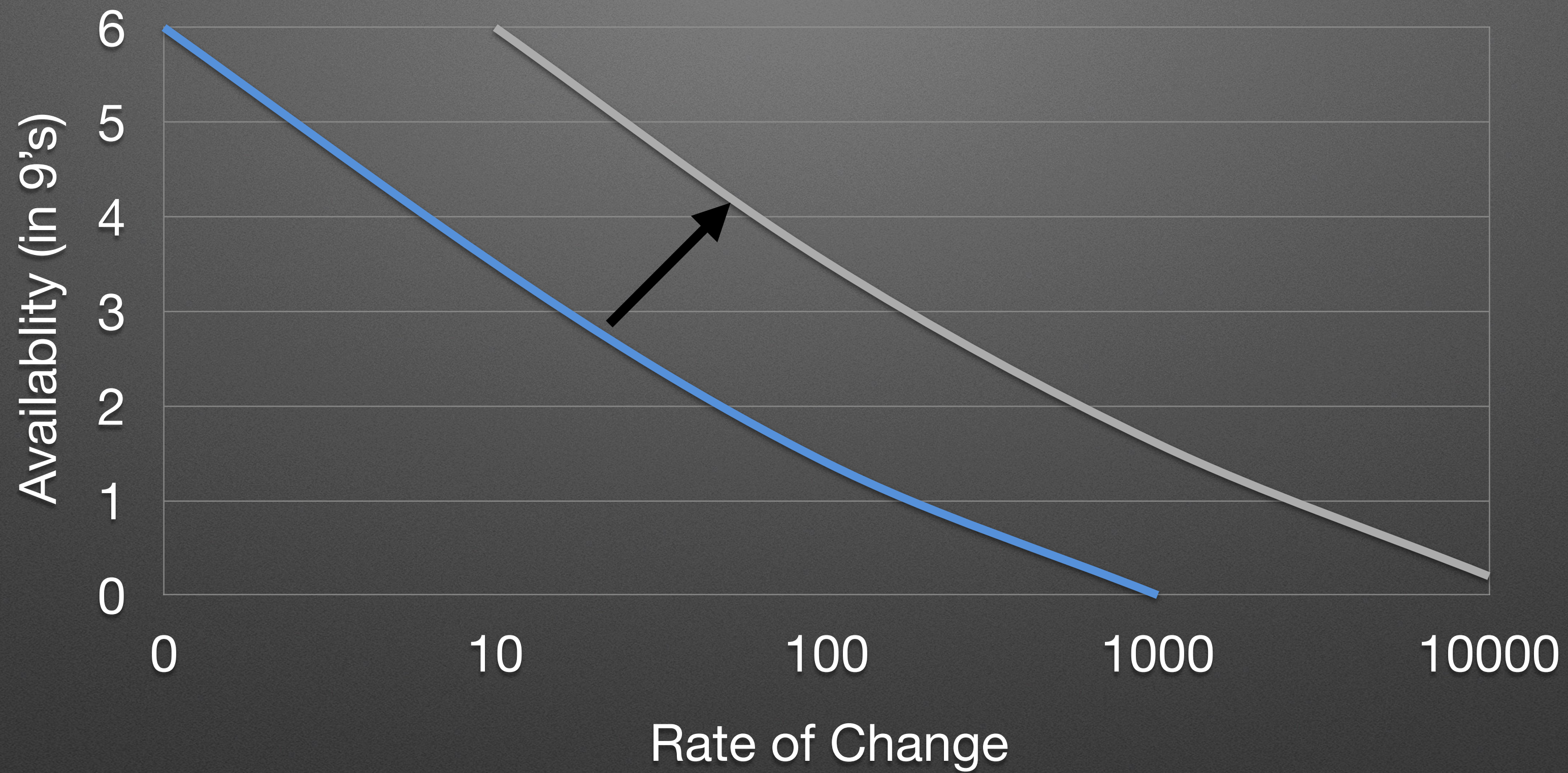
Dianne Marsh (@dmarsh)
QConNY 2014

en-gi-neer-ing + ve-loc-i-ty

**applying science and technology to designing and building
speed into a system**



Availability vs. Rate of Change



Shift the Curve



Free the People. Optimize the Tools.

Netflix Culture: Freedom & Responsibility



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With Freedom comes Responsibility

Managers' Role

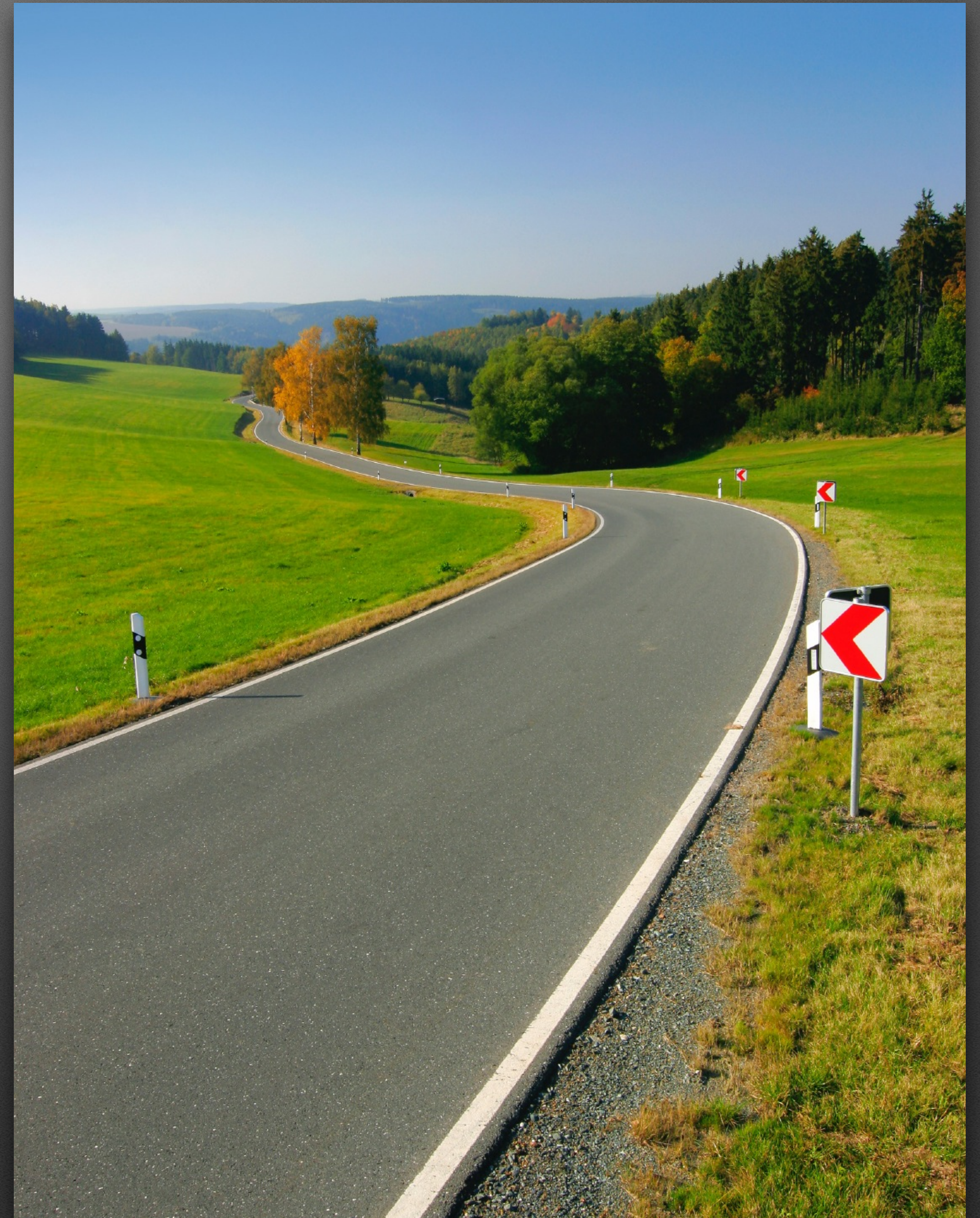
Context, not Control

Loosely coupled, Tightly aligned

Attract and retain great talent!

Get out of the Way

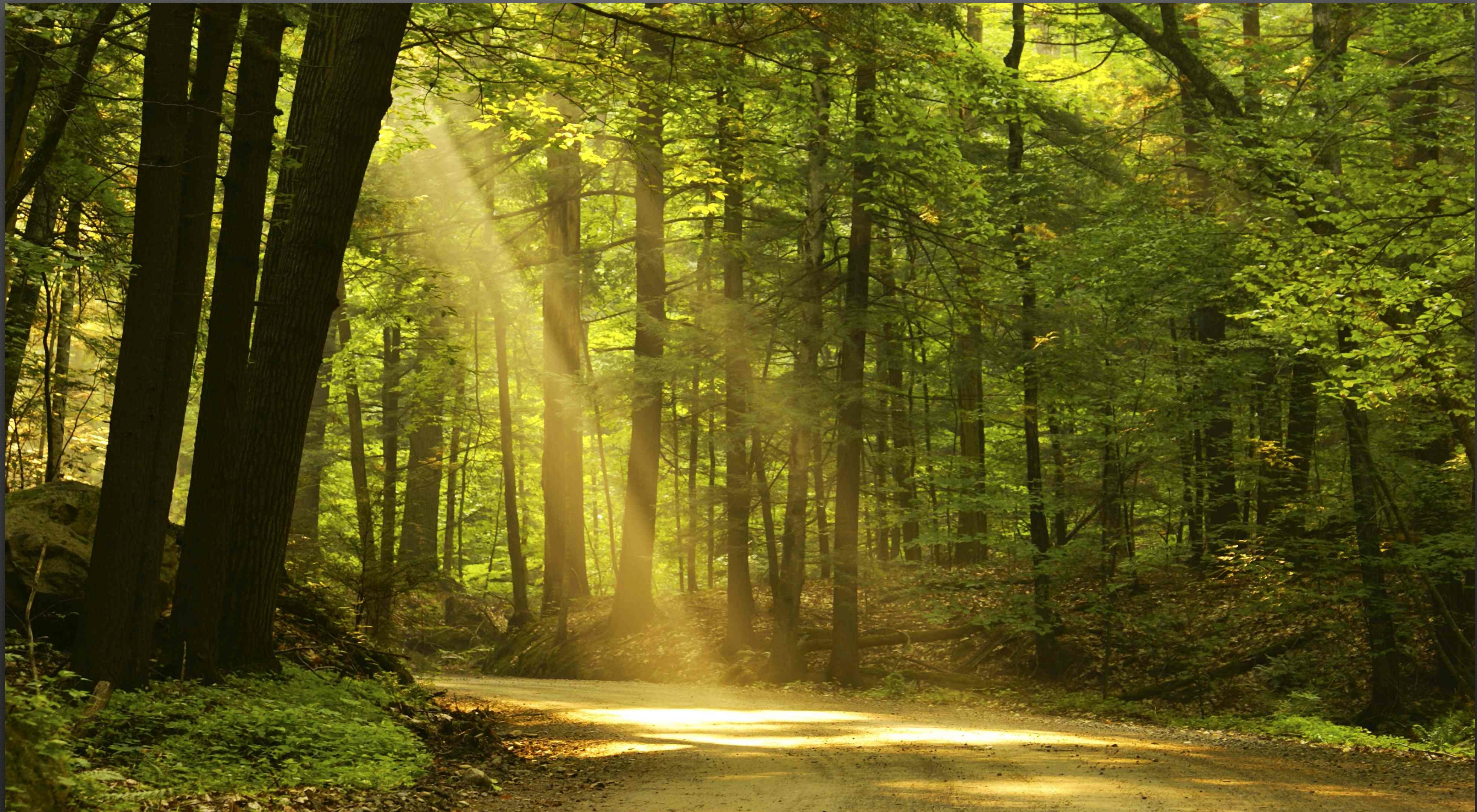
Freedom to Innovate



Support Experimentation

How We Built a Predictive Autoscaling Engine





Support Independent Paths of Exploration



Build a Blameless Culture

**Developers deploy their
own code**

Rapid

**Innovation
Detection
Response**



BUILD

TEST

BAKE

DEPLOY



Optimize your Tools

Netflix Build Language

- Based on Gradle
- Internal and Open Source
- Gradle Summit talk:

<http://www.slideshare.net/quidryan/gradle-summit-2014-nebula>

<https://github.com/nebula-plugins>



Jenkins Job DSL

Configuration as Code

Groovy Script

Scripts go in Version Control



Aminator

Create AMI from Base AMI

Image contains service and everything needed to run it

Builds Unit of Deployment for Test and Prod

Abstracts Cloud Details



Asgard

Deploys Netflix to the Cloud

Red/Black push

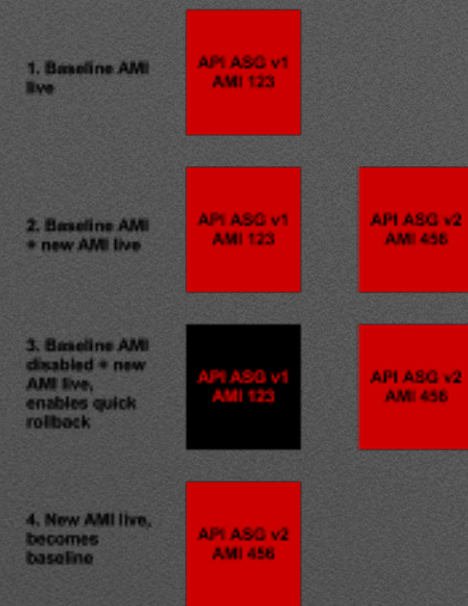
Developed to address delays in rollback

<http://www.infoq.com/presentations/asgard>

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Red/Black Push



- Scale up new instances while running the old version
- Cloud Native
- Turn on traffic to new ASG
- Canary Analysis
- Turn off traffic to old ASG
- Wait ... Analyze ... Roll Back?



Canary Analysis

- Production Deployment Pattern
- Compare Metrics vs. Baseline Version
- “Canary Analyze All The Things: How we learned to Keep Calm and Release Often”, Roy Rapoport

GLISTEN

Continuous Delivery Workflow

Support the Journey

Judges between Stages

Represent Best Practices

<http://techblog.netflix.com/2013/09/glisten-groovy-way-to-use-amazons.html>

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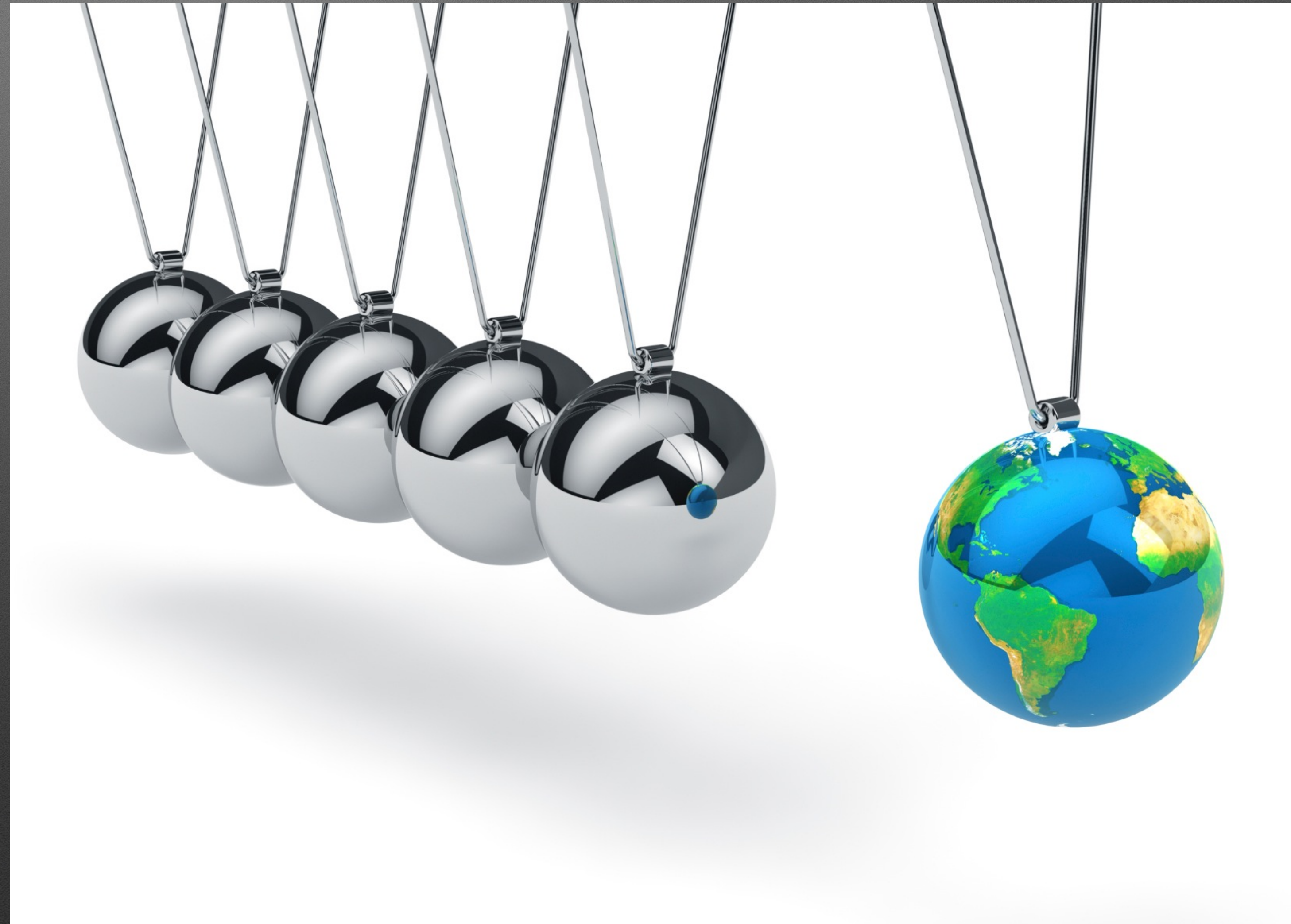
One Click Deployment?

Regional Isolation

Limit Impact of Human Error

- Stagger Deployments?
- Canary Testing per Region?

Know your Service!



Multi-Region Consistency



Build Tooling to:

- Schedule Deployments
- Prefer Off-Peak
- Choose Next Available Region
- Provide Visibility by Region

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<http://www.infoq.com/presentations/netflix-resiliency-failure-cloud>

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Chaos Monkey

Kills Running Instances

- Simulates failures inherent to running in the cloud
- In Production



Latency Monkey



Introduces Latency between services

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Conformity Monkey

Have Deployments Diverged?

- Balance Regional Consistency with Regional Isolation
- Build Best Practices into Tooling and Reporting



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Janitor Monkey

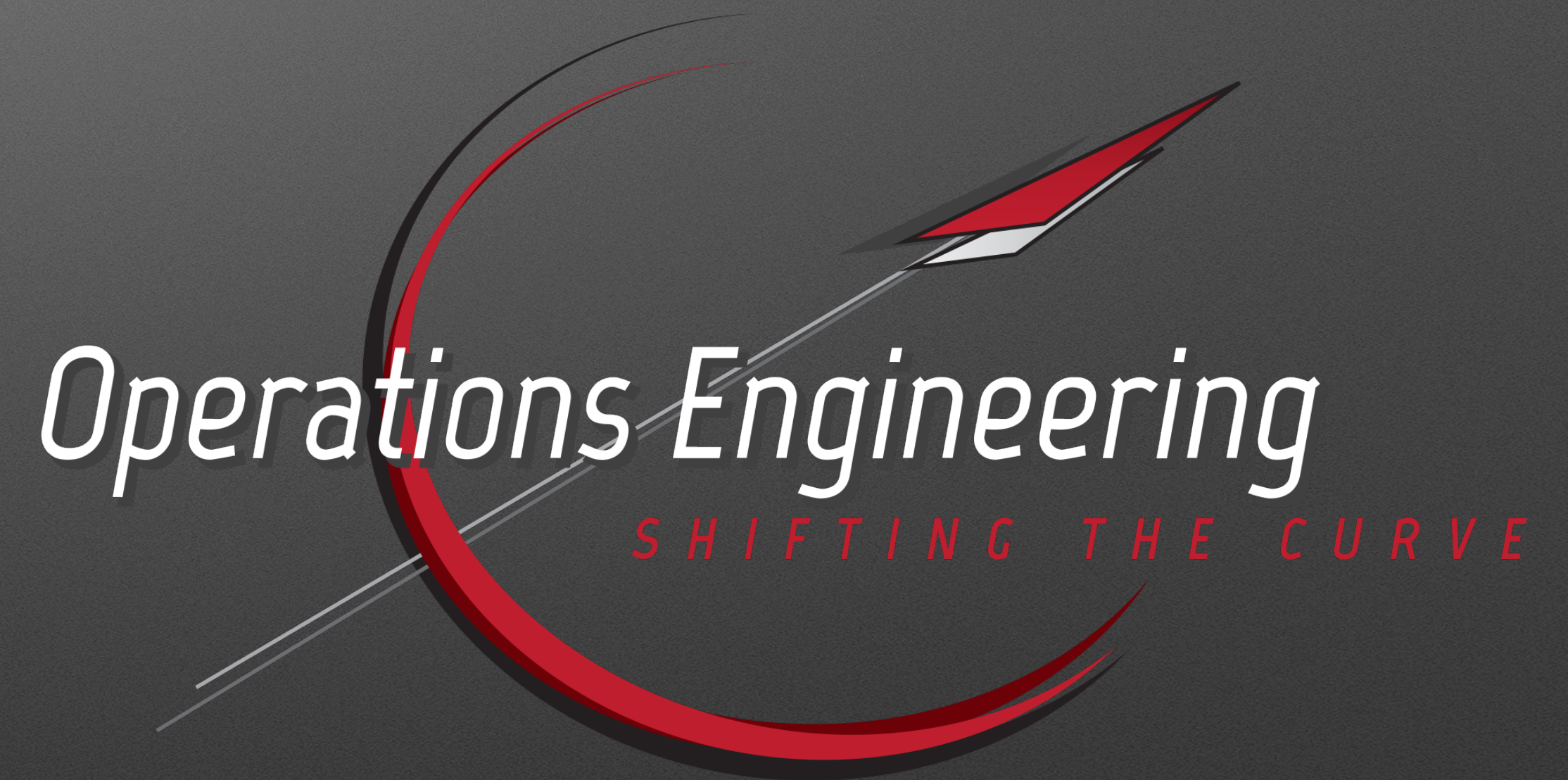


Reduce Cognitive Load and Cost

- Remove unused instances
- Uniform way to clean up

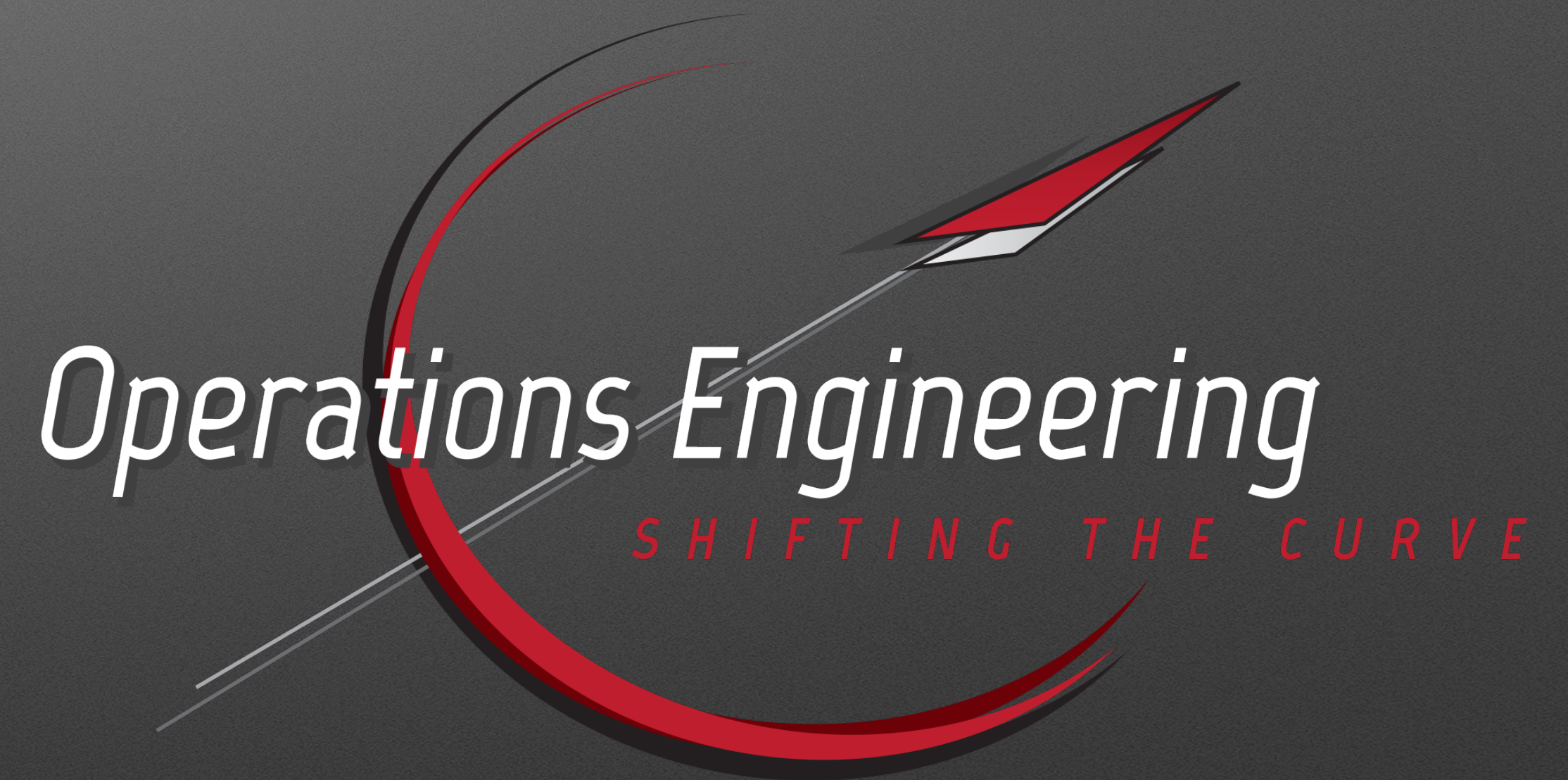
Shifting the Curve with Tools at Netflix

- Value Self-Service
- Test Everywhere
- Awareness of Multiple Regions
- Best Practices Represented in Tooling
- Recover Quickly and Easily
- Be Cloud Native
- Respect the Journey



Shifting the Curve with Culture at Netflix

- Free the People!
- Context not Control
- Freedom to Experiment
- Blameless Culture



TECHNOLOGY LAB / INFORMATION TECHNOLOGY

How Team Obama's tech efficiency left Romney IT in dust

Obama campaign's tech team beat Romney by using opposite strategy—"insourcing."

“As the number of applications and the scale of the campaign's AWS infrastructure use climbed, the DevOps team shifted to using Asgard—an open-source tool developed by Netflix to manage cloud deployments.”

ArsTechnica, November 2012

Thanks!

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