



# DevOps for Defense

The 3 Ways: Summary

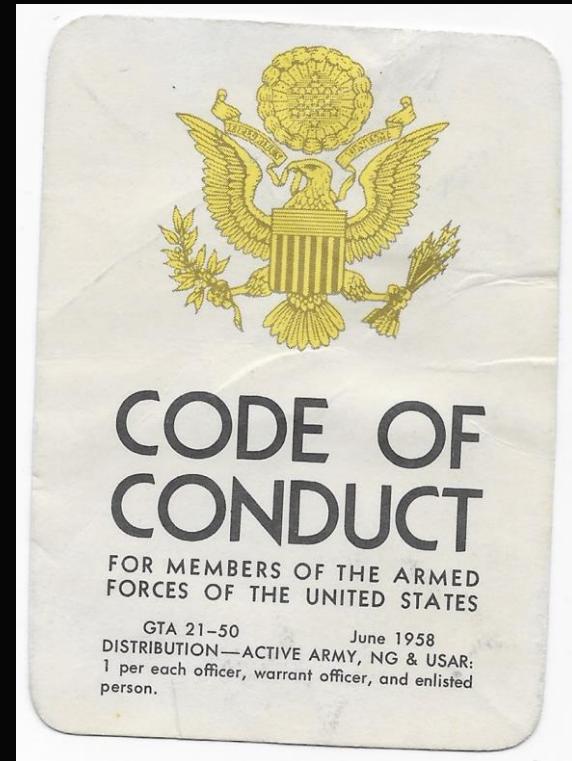
April 2018

JD Black  
Justan Provence

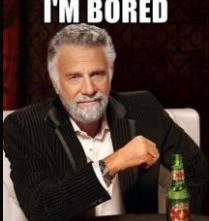
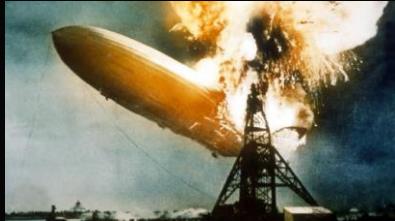
<https://www.meetup.com/DevOps-for-Defense/>  
<https://github.com/jondavid-black/DevOpsForDefense>  
[devopsfordefense@gmail.com](mailto:devopsfordefense@gmail.com)

# DevOps for Defense Meetup: Code of Conduct

- UNCLASSIFIED ONLY!!!!
- Treat each other with respect and professionalism.
- Do not talk about private, sensitive, or proprietary work.
- Do talk about your experiences, needs, desires to improve work in our domain.
- Do share your thoughts.
- Do learn from others.
- Do respect & tip your bartenders!



# Feedback from Last Month



1

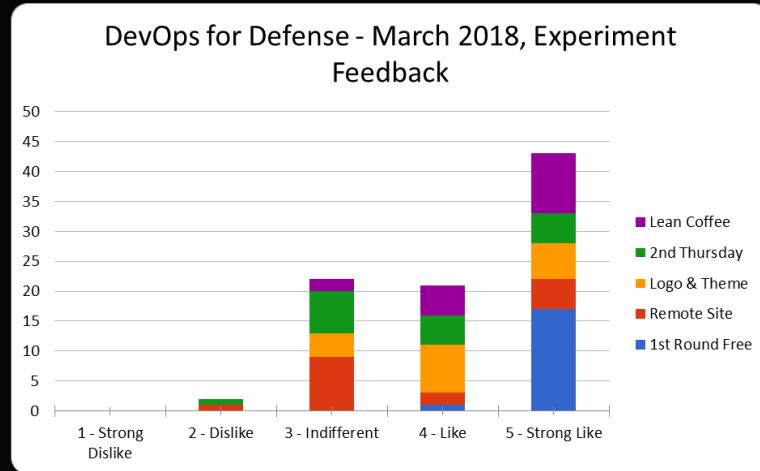
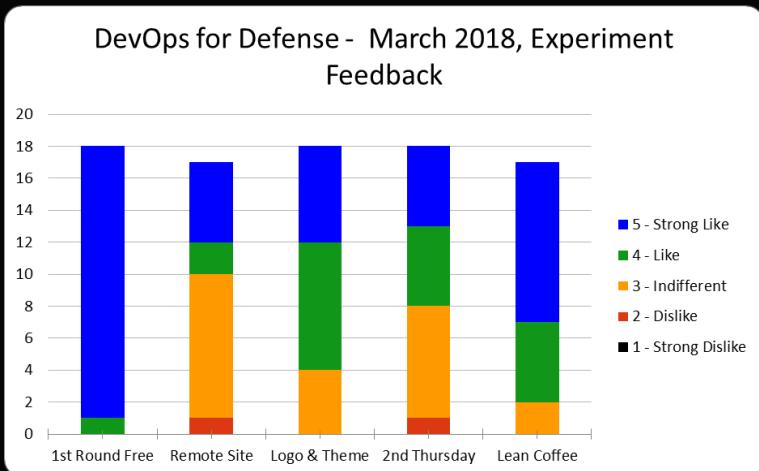
2

3

4

5

Never Again!

OK...or  
Not...WhateverOMG,  
Amazing!

# Agenda: Start with Something New

- 
- DevOps Recap/Summary
  - Agile & DevOps
  - How to Screw Up DevOps

## What's a Lightning Talk?

- 20 charts
- 15 sec auto advance
- 5 min total
- Danger = Extreme!

# LIGHTNING TALKS

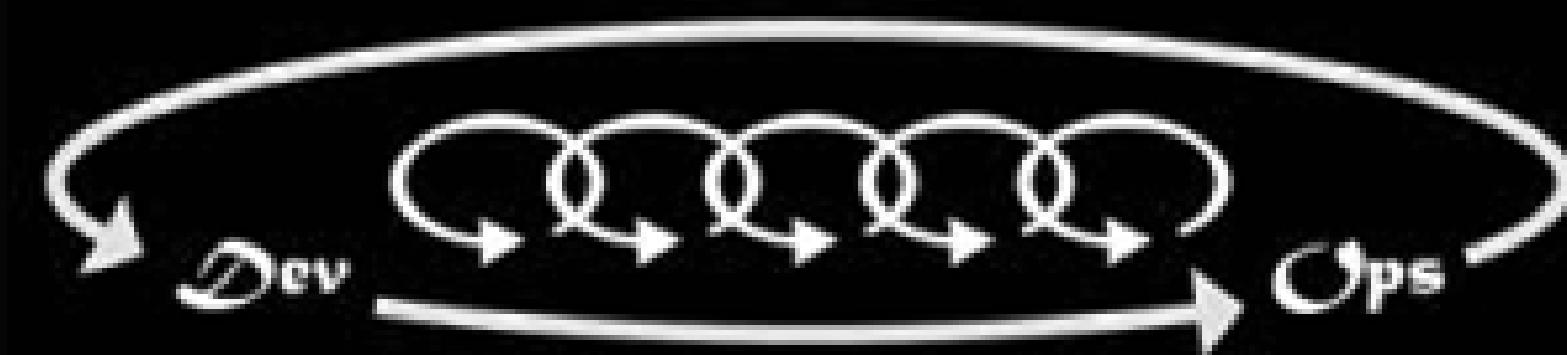
# Agenda: Finish with a Lean Coffee

1. DevOps Obstacles
  - Facilitator: JD Black
2. DevOps Transition
  - Facilitator: Justan Provence
3. DevOps Leadership
  - Facilitator: Alana Gipson

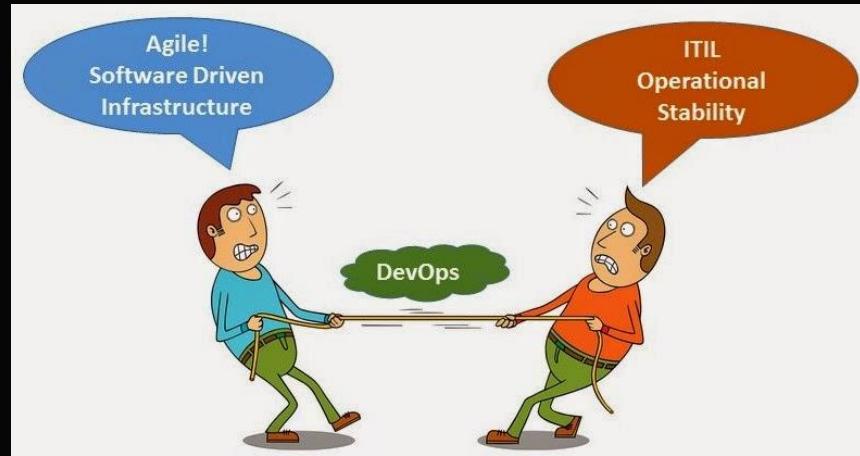


# DevOps: The 3 Ways

Summary / Recap



# Dev vs Ops



# Why DevOps?

## High Performers Are More Agile

**46x**

more frequent  
deployments

**440x**

faster lead times  
than their peers

## High Performers Are More Reliable

**5x**

lower change  
failure rate

**96x**

faster mean time  
to recover (MTTR)

# Why DevOps?

## High Performers Are More Secure And Controlled

**2x**  
less time spent  
remediating  
security issues

**29%**  
more time spent  
on new work

## High Performers Win In The Marketplace

**2x**  
more likely to  
exceed profitability,  
market share &  
productivity goals

**2x**  
more likely to achieve  
organizational and  
mission goals, customer  
satisfaction, quantity &  
quality goals

## High Performers Win In The Marketplace

**2.2x**  
higher employee  
Net Promoter Score

**50%**  
higher market  
capitalization growth  
over 3 years\*

Source: Puppet Labs 2016 State Of DevOps Report: <https://puppet.com/resources/white-paper>

[sources/whitepaper/state-of-devops-report](https://puppet.com/resources/whitepaper/state-of-devops-report)

@RealGeneKim

# Key Capabilities that Drive High Performance

## Technology and automation

- Version control
- Deployment automation
- Continuous integration
- Trunk-based development
- Test automation
- Test data management
- Shift left on security
- Continuous delivery
- Loosely-coupled architecture
- Architect for empowered teams

@nicolefv

## Process

- Gather and implement customer feedback
- Work in small batches
- Lightweight change approval process
- Team experimentation

@nicolefv

# Key Capabilities that Drive High Performance

## Measurement and Monitoring

- Visual management
- Monitoring for business decisions
- Check system health proactively
- WIP limits
- Visualizations

@nicolefv

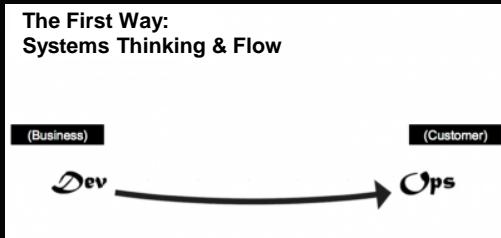
## Culture

- Westrum organizational culture
- Climate for learning
- Collaboration among teams
- Make work meaningful
- Transformational leadership

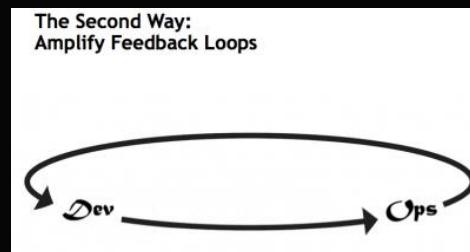
@nicolefv

# Core of DevOps

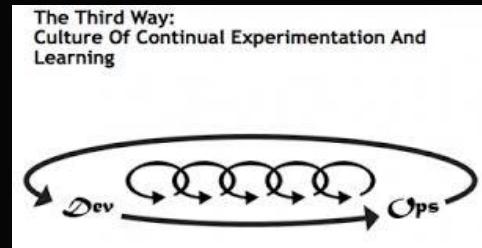
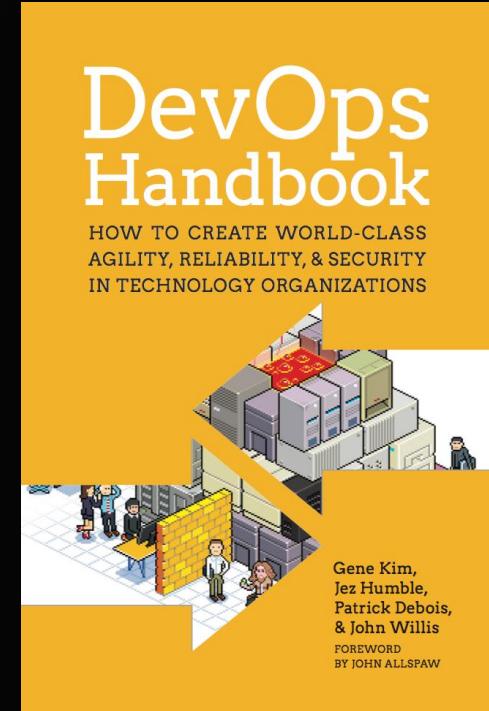
# The 1st Way: Systems Thinking & Flow



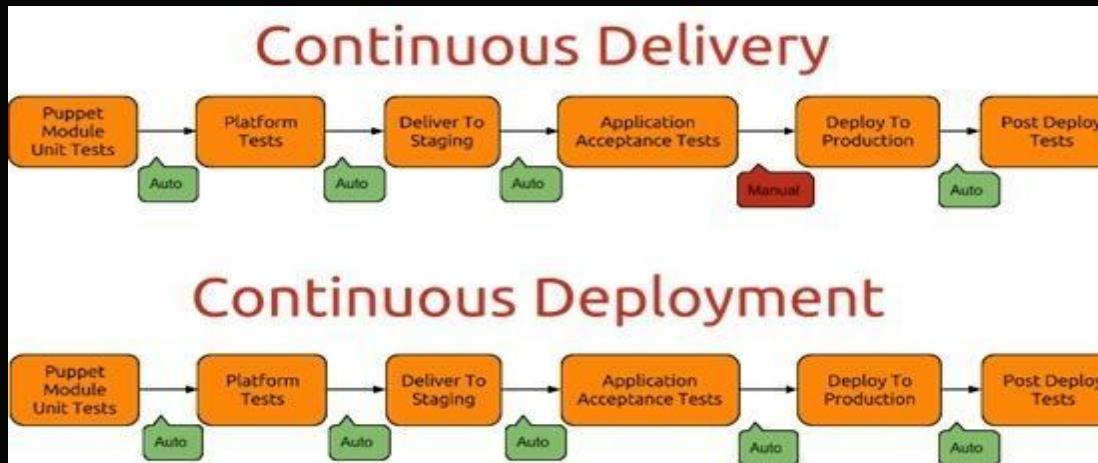
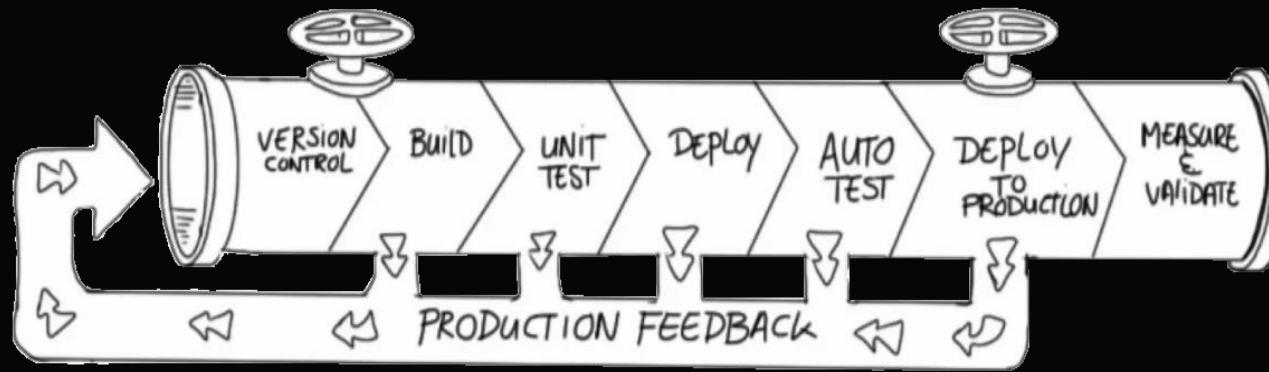
## The 2nd Way: Feedback



## The 3rd Way: Continual Experimentation & Learning

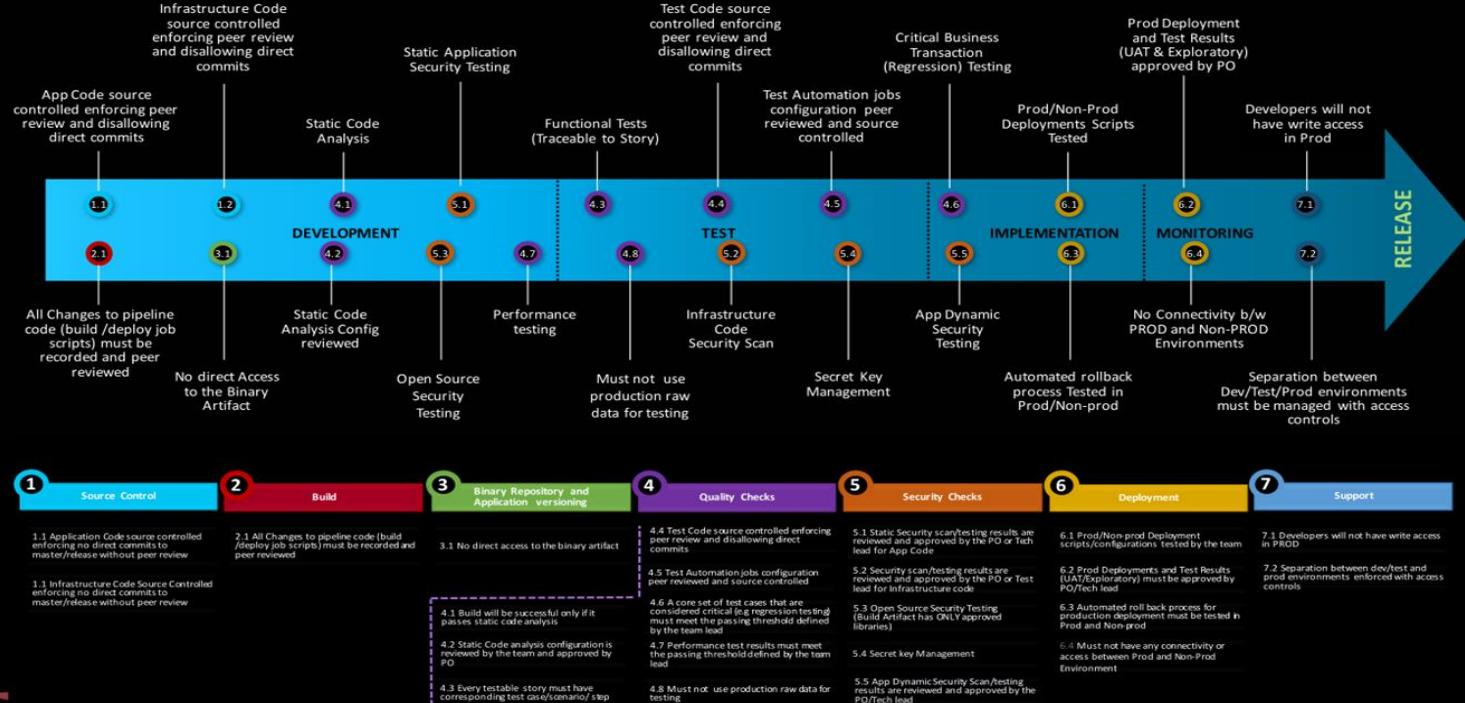


# 1<sup>st</sup> Way: What is a Continuous Delivery Pipeline?



# 1<sup>st</sup> Way: Continuous Delivery Pipelines (Capital One)

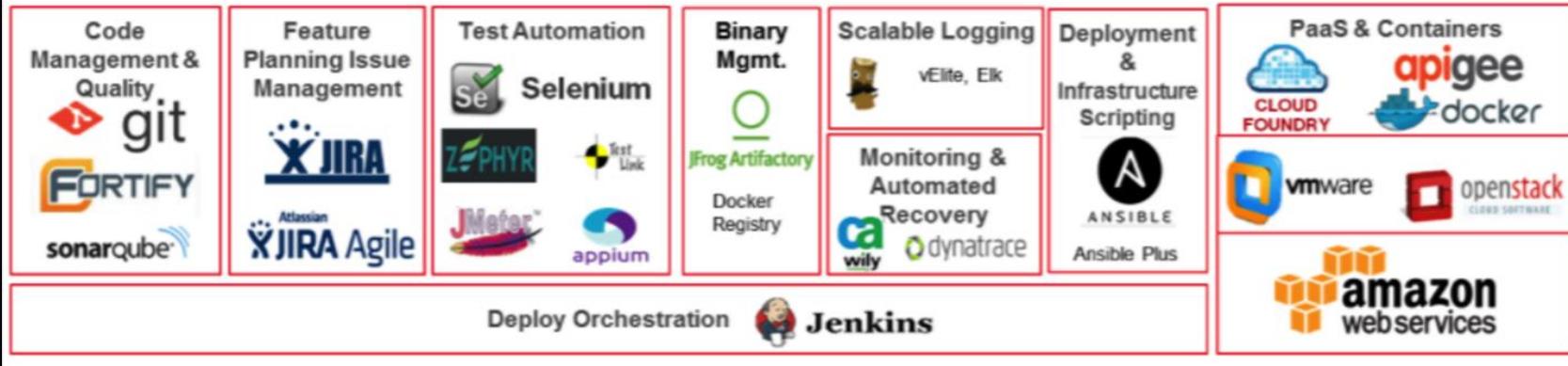
## Software Delivery Clean Room



# 1<sup>st</sup> Way: Continuous Delivery Pipelines (Verizon)

A familiar toolchain,  
operated at scale...

SDLC Automation Results	2017
Automated test runs	2M+
Automated code builds	1.2M+
Code check-ins	56K / month
Agile practicing apps in platform	3,297
Agile Jira tasks	1.9M
Agile sprints	20K+



# 1<sup>st</sup> Way: “Here at \_\_\_\_\_, we build \_\_\_\_\_ into our products!”

- Use your pipeline to build in quality, security, and the “ilities”.
- Quality:
  - Automated Unit Test - xUnit
  - Automated Acceptance Tests - Cucumber
  - Static / Dynamic Analysis - (sooo many)
  - Metrics (Sonar Qube, Jenkins, etc.)
- Security:
  - Klocwork, Fortify, Coverity, Arachni, etc.
- Deployability:
  - Puppet, Chef, Ansible
- Reliability:
  - Simian Army (Chaos Monkey, etc.)
- \_\_\_\_\_ility
  - Find/Build the right tool, Read Jez’s Book



## 2<sup>nd</sup> Way: Feedback - Let me Google that for you!

feed·back  
'fēd,bak

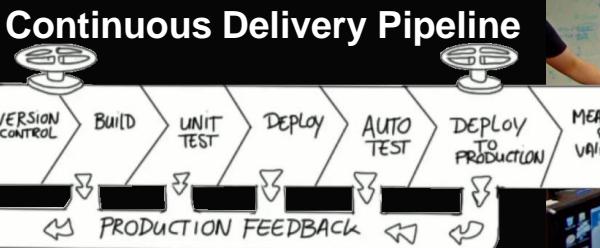
Noun



1. Information about reactions to a product, a person's performance of a task, etc., used as a basis for improvement.
2. The modification or control of a process or system by its results or effects, e.g., in a biochemical pathway or behavioral response.

synonyms: response, reaction, comments, criticism

# 2<sup>nd</sup> Way: Sources of Feedback



# 2<sup>nd</sup> Way: Make Your Feedback Meaningful...Pay Attention!

“Create a system of work where knowledge acquired downstream in Operations is integrated into the upstream work of Development and Product Management.”

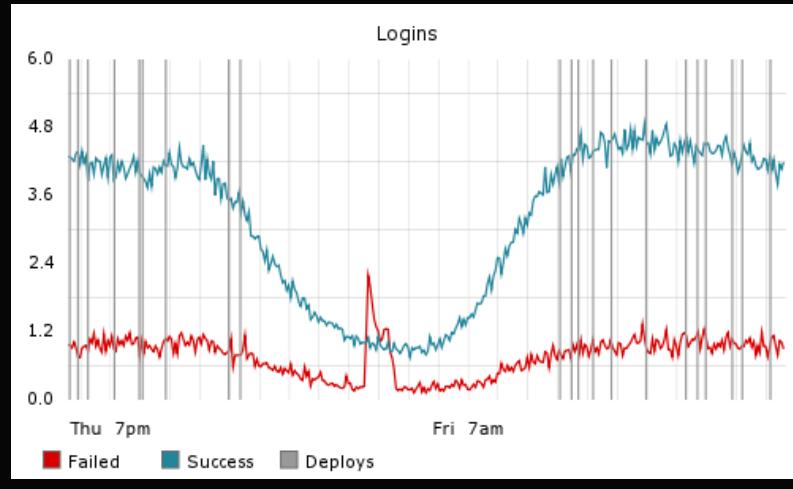
- The DevOps Handbook, 2016

“If Engineering at Etsy has a religion, it’s the Church of Graphs. If it moves, we track it. Sometimes we’ll draw a graph of something that isn’t moving yet, just in case it decides to make a run for it.”

- Ian Malpass, Etcy 2011

“By amplifying signals as part of our daily work, we make it possible to see and solve problems as they occur, and we grow safe systems of work that allow us to confidently make changes and run product experiments, knowing we can quickly detect and remediate failures.”

- The DevOps Handbook, 2016



# 2<sup>nd</sup> Way: Zen...and the Art of Feedback

**"If you can't *measure* it,  
you can't *improve* it."**

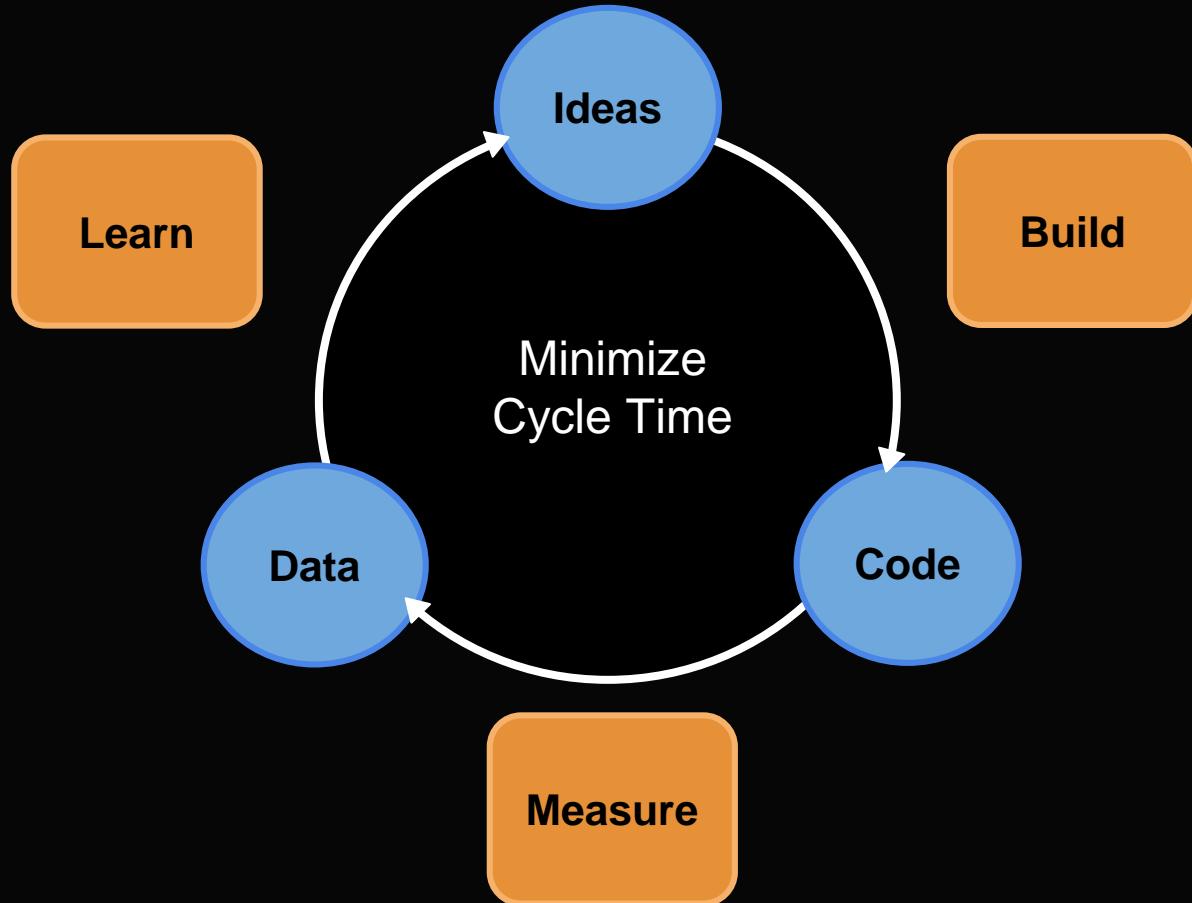
**Peter Drucker**

**"Invest *energy* in collecting  
metrics that help you make  
decisions."**

**Eric Ries**



# 3<sup>rd</sup> Way: Lean Start-Up (by Eric Ries)



## Lean Startup In Practice:

1. Define Hypothesis
2. Build the absolute smallest thing you can to test that hypothesis. This is your **Minimum Viable Product (MVP)**.
3. Collect and analyse the data to prove / refute your hypothesis.
4. If things go well, continue. If not, pivot.

In the defense domain we call this performing a **Decision Analysis Report** (DAR from CMMI) or a **Trade Study**.

Our problem is we define huge studies that take many months to complete.

# 3<sup>rd</sup> Way: Failure Is An Option - Pivot When Needed

*“Evaluating well-designed and executed experiments that were designed to improve a key metric, only about  $\frac{1}{3}$  were successful at improving the key metric!”*

- Online Experimentation at Microsoft

## Types of Pivots:

Zoom In

Customer Segment

Platform

Value Capture

Chanel

Zoom Out

Customer Need

Business Architecture

Engine for Growth

Technology

# 3<sup>rd</sup> Way: Define Your Experiment

## Hypothesis Template

We believe that

[building this capability]

[for these people]

Will achieve [this outcome].

We know we are successful when we see

[this measure / metric / observation].

- adapted from Jeff Gothelf

## The DevOps for Defense Meetup Hypothesis

creating a DevOps meetup

for defense industry professionals

a broad cultural transformation that improves DoD system development and mission value delivery by adapting commercial best practices to our domain

modern DevOps concepts and practices embraced by DoD and Industry to safely deliver greater value to our Warfighters

# 3<sup>rd</sup> Way: Limit the Blast Radius

Define in Your Backlog

Blameless Postmortems

Feature Toggles

Automate Deploy & Roll-back

Versioned Interfaces

Incremental Evolution

Canary Releases

A/B Deployments



# 3<sup>rd</sup> Way: Experiments Require a Safe Environment & Culture



*“Don’t try this at home. We’re what you call experts.”*

# What is the Goal of DevOps?

**When we can safely, quickly,  
reliably, securely achieve  
all the needs, goals, dreams and  
aspirations of everyone we serve...**

**...especially our citizens  
and warfighters**

A photograph of the Eiffel Tower in Paris, France, at night. The tower is illuminated with blue and yellow lights. A bright, jagged lightning bolt strikes the top of the tower, creating a dramatic contrast against the dark sky. The lightning bolt branches downwards, illuminating the surrounding clouds. In the background, the city of Paris is visible with its characteristic buildings and spires.

Next Lightning Talk  
...in 3, 2, 1

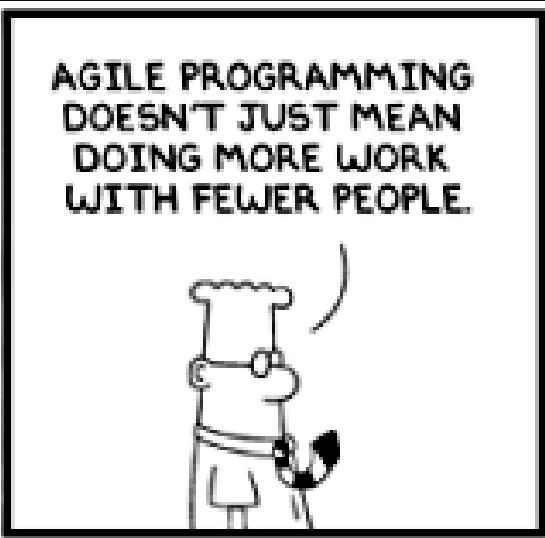
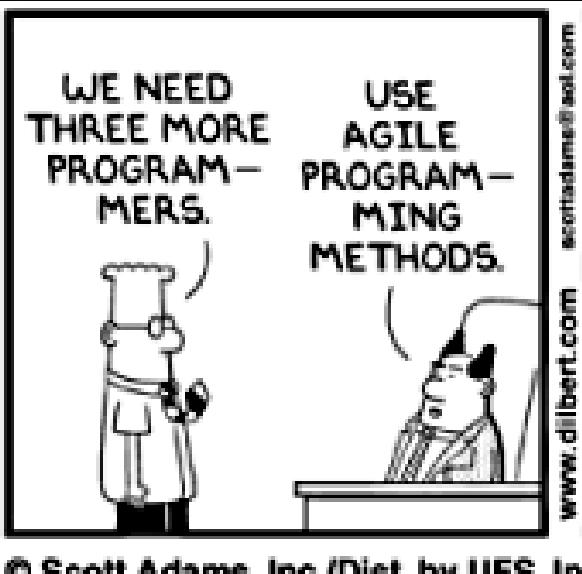


# DevOps For Defense

## Agile and DevOps Refresher Lightning Talk

April 2018 - Justan Provence

# There are a lot of misconceptions about Agile and DevOps



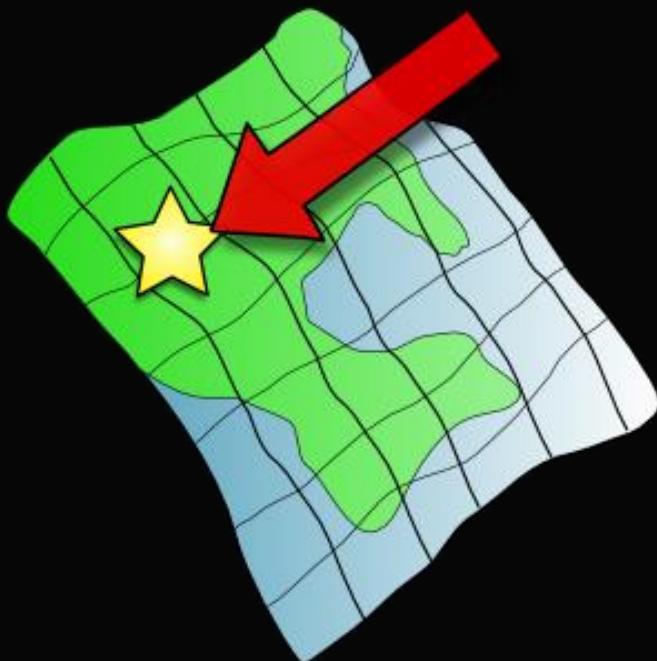
© Scott Adams, Inc./Dist by UFS, Inc.

## History between the two?



Yes, starting back at the **Agile 2008 Conference** with Patrick Dubois presenting Agile Infrastructure and Operations

The DevOps philosophy is ingrained within the Agile Manifesto, and it could be said that DevOps is just an extension of Agile principles into operations



We can easily map DevOps principles to the Agile Manifesto

# Agile Manifesto Values

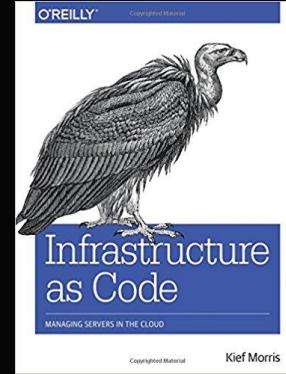
## Individuals and interactions over processes and tools



DevOps is all about collaboration among  
everyone in the software supply chain

# Agile Manifesto Values

## Working software over comprehensive documentation



DevOps takes this concept to the next level by automating environment provisioning, software installation, and automatic delivery of applications instead of document-centric step-by-step instructions

# Agile Manifesto Values

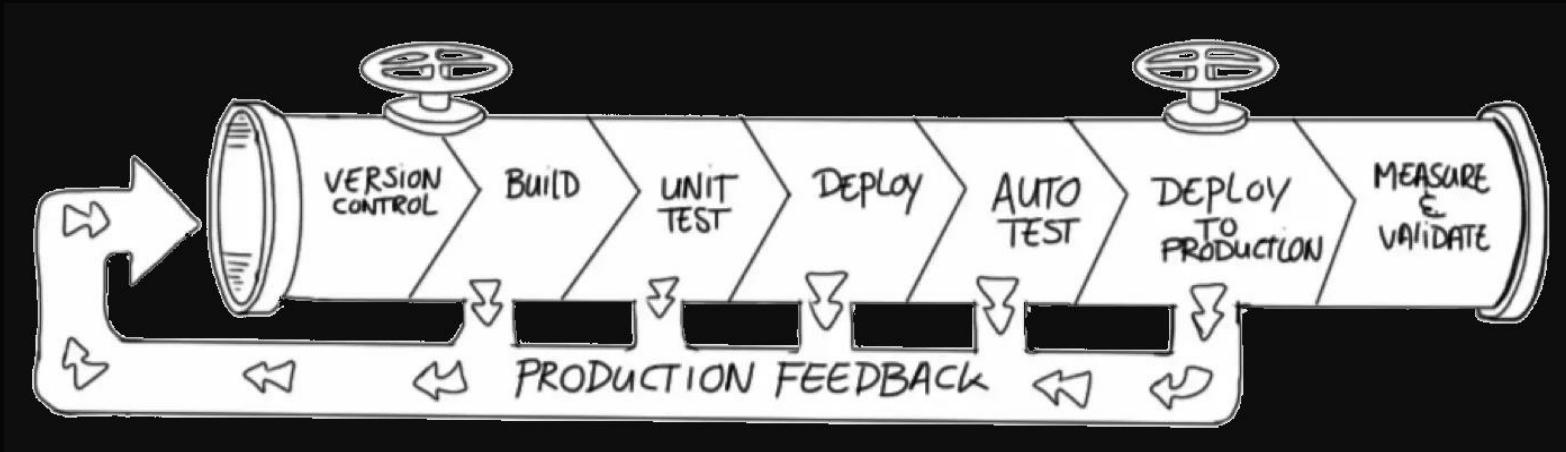
## Customer collaboration over contract negotiation



When fixes to production issues can be automatically tested and redeployed,  
it's certainly focusing on customer collaboration and value

# Agile Manifesto Values

## Responding to change over following a plan



Small batch sizes and continuous delivery support the ability to change as needed

## How are they different?



It is typically how we tend to implement our Agile process

We declare victory too early



DevOps strives to focus on the overall service or software fully delivered to the customer instead of simply “working software”

## Critical team members are not interconnected



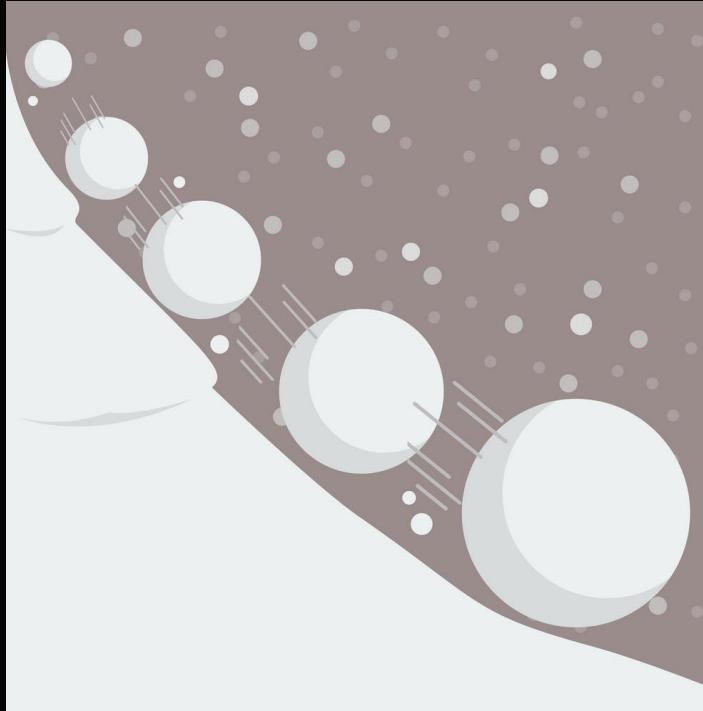
Unfortunately, not delivering releasable code frequently means that system administrators and operational personnel are not part of your cross-functional agile team. This causes communication challenges that agile was built to address!

DevOps can be implemented without Agile



It can be used to make sure that annual updates go smoothly

# Agile or Bust!



You can implement DevOps a little at a time and gain real value.  
This might not be worthwhile with Agile

# What are the key similarities?



Agile and DevOps work better in combination  
You should use both to unlock your potential

Agile nor DevOps are business goals in and of themselves



You probably won't get extra money  
from your customer for doing it!

Agile and DevOps are cultural movements that can inspire your organization with better means for achieving your goals



Agile and DevOps both encourage

Small Batch Planning & Execution

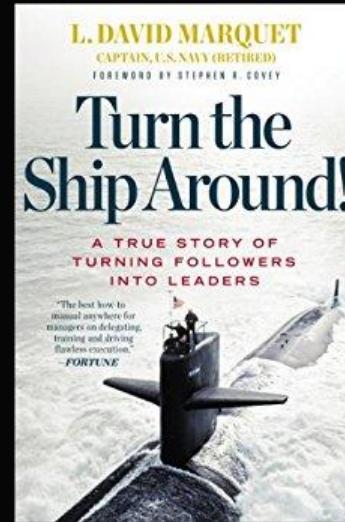
Regular cadence that delivers deployable products

Experimentation



Agile and DevOps both benefit from

A Learning Organization  
Good Transformational Leadership



# It's about communication!

Don't stop at Development and Operations!  
Involve everyone in the development of the product

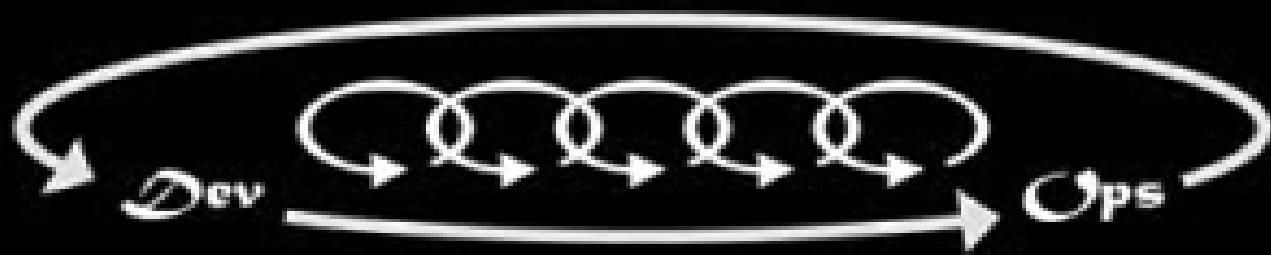


# Attack ambiguity and uncertainty

Write good stories!



# How to Screw Up DevOps



# Leadership – Critical to DevOps Success

## Decentralize decision making Unlock intrinsic motivation

*Intellectual Stimulation (IS)*

- Challenge the status quo
- Encourage followers to learn, be creative, explore new ways of doing things
- Decentralize decision making
- Expect relentless improvement
- Encourage innovative thinking
- **Adaptive leadership**

## Inspire and align with mission

*Inspirational Motivation (IM)*

- Articulate a clear vision and intent
- Inspire passion and motivation to achieve goals
- Drive organizational alignment
- Encourage others
- **Charismatic leadership**

## Transformational Leadership



## Develop leaders

*Individualized Consideration (IC)*

- Offer personalized support, coaching, and encouragement
- Keep lines of communication open
- Offer direct recognition individual and team contributions
- Exhibit genuine care and concern
- **Empathetic, Servant leadership**

## Lead the change Know the way

*Idealized Influence (IIA/IIB)*

- Be a role model; set the example
- Be a lifelong learner; gain the knowledge required for change
- Create an environment of trust and respect through transparency
- Act with integrity
- **Authentic, Charismatic leadership**

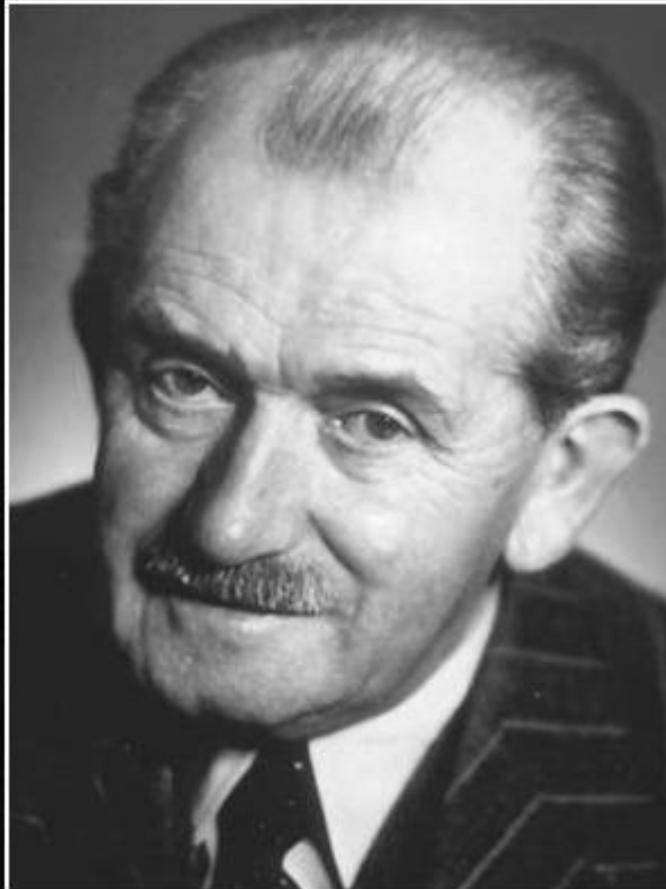
# Leadership...Except – Knows We're Going Somewhere...Where?



Today I'm excited to lead  
this team as we begin our  
DevOps journey?

What on Earth  
is this DevOps  
thing?

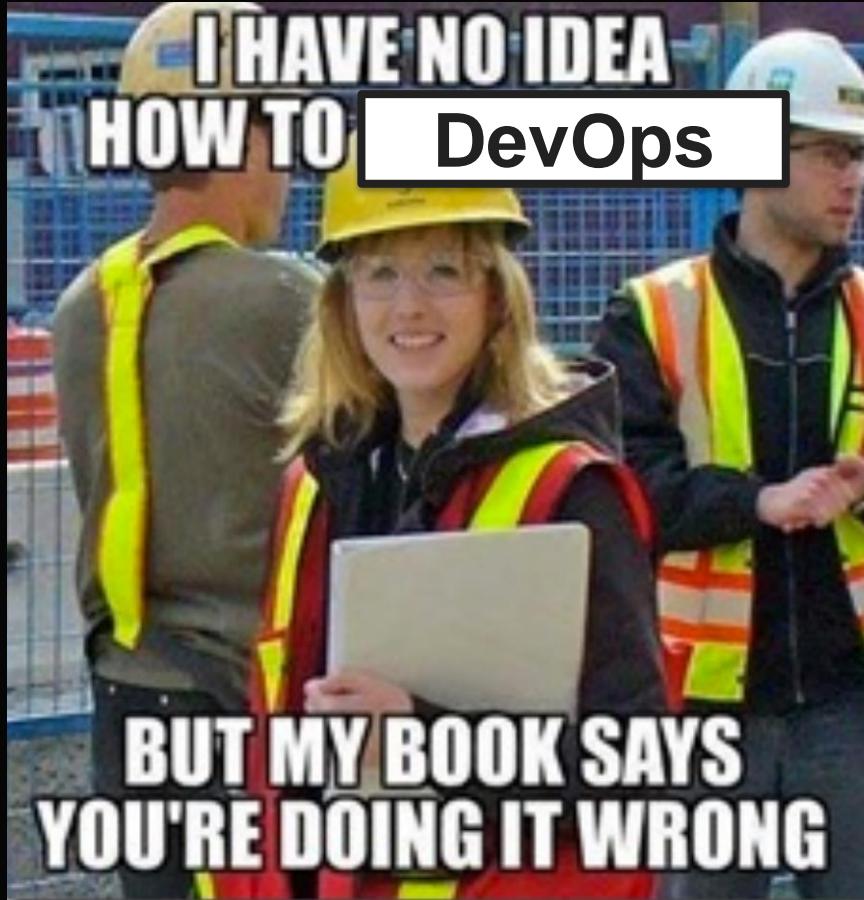
# Leadership...Except – When Change == Success



Change is easy. Improvement is far more difficult

— *Ferdinand Porsche* —

# Leadership...Except – When Just Checking the Boxes



# Leadership...Except – When Authority is Centralized and Responsibility is Decentralized

I need to see  
more  
analysis to  
assess risk.

Now is not a  
good time.

Has this  
been pre-  
coordinated  
with that  
team that  
has nothing  
to do with  
this?



**Change Control  
Emperor**



New Feature?

Reduce Technical  
Debt?



Process  
Improvement?



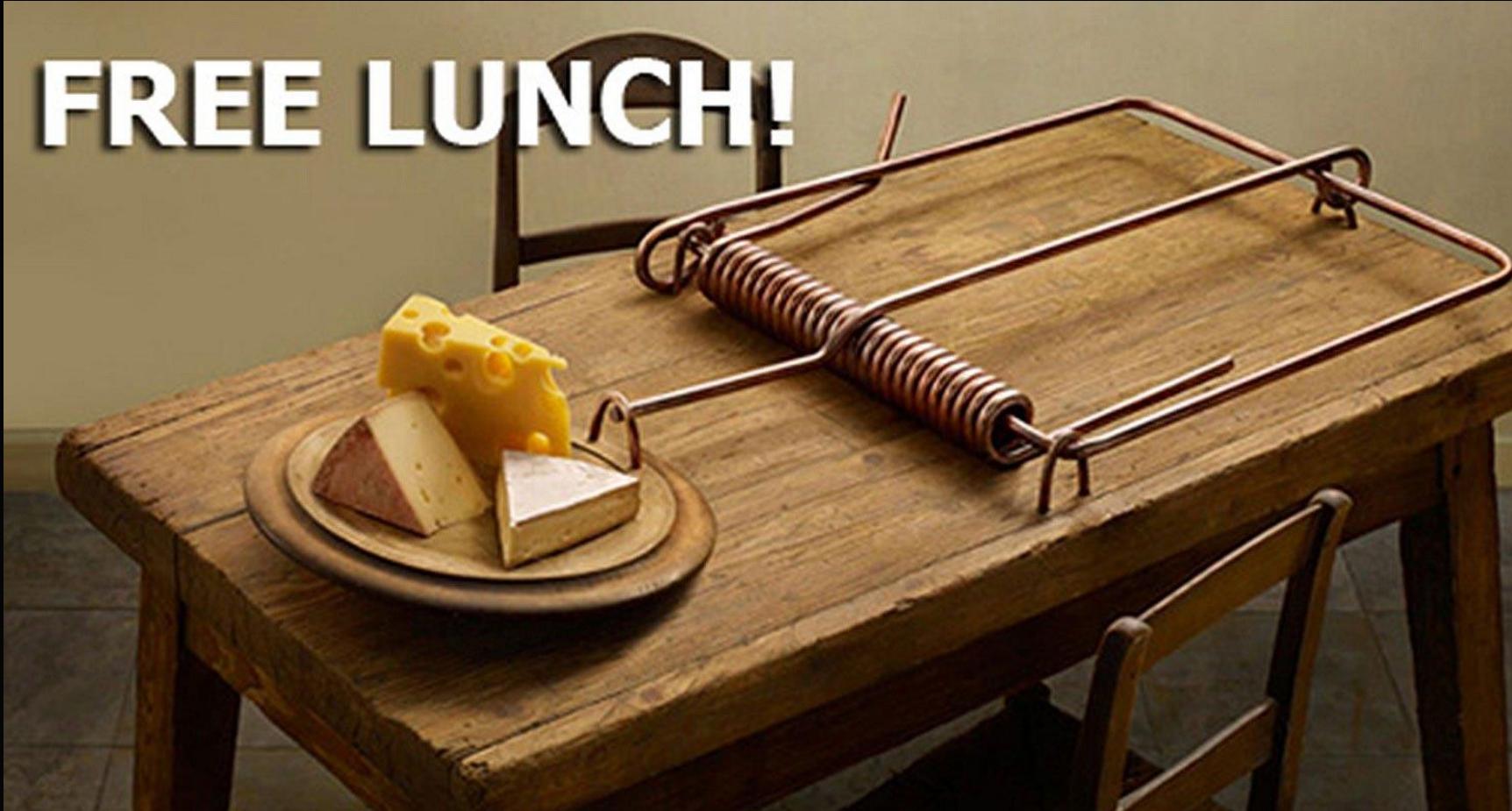
# Expectations – Critical to DevOps Success



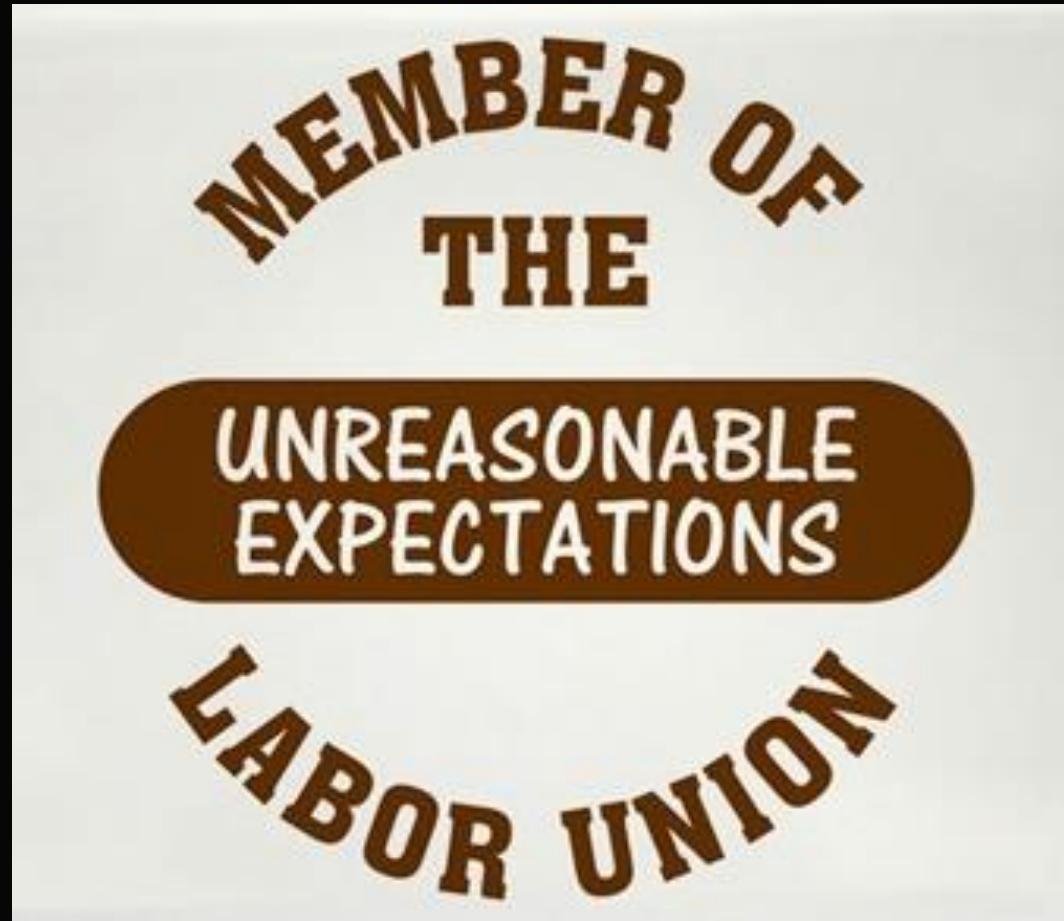
High achievement always takes place in the framework of high expectation.

— *Charles Kettering* —

Expectations...Except – Better, Faster, & Safer is Free Right?



Expectations...Except – Complete that Transition by Tomorrow!



# Expectations...Except – Jenkins is Installed, DevOps Achieved!



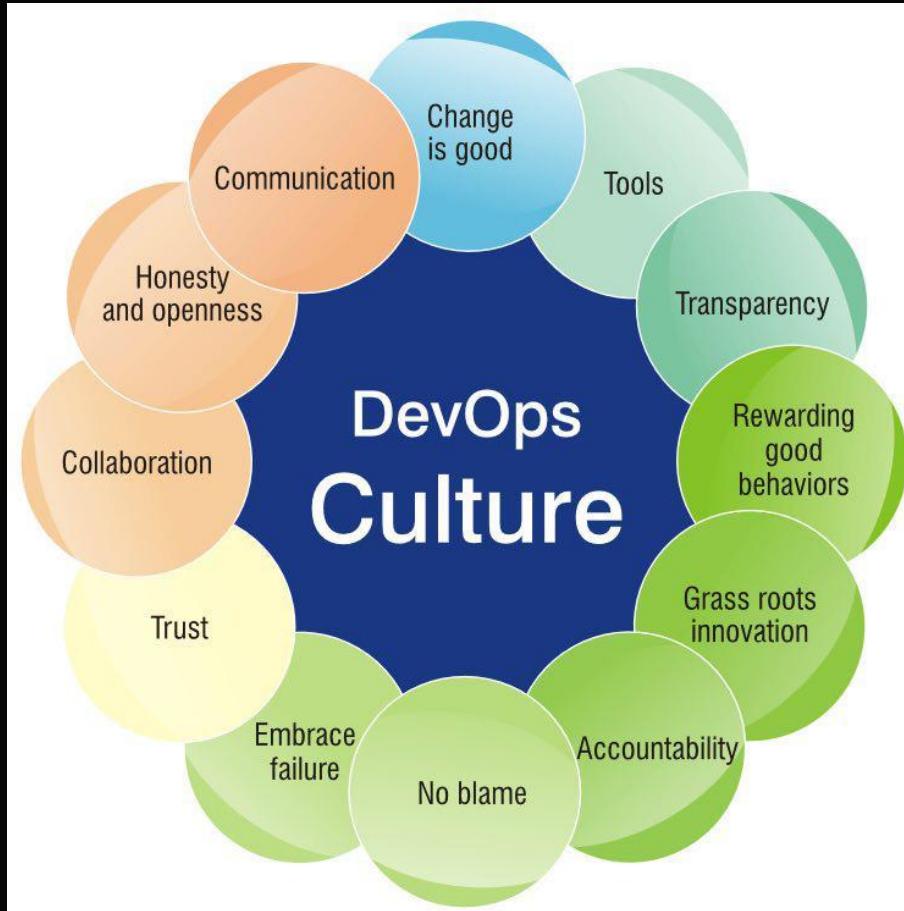
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Expectations...Except – It works for that team, it must work here.



# Culture – Critical to DevOps Success



Culture...Except – “My Work is Too Important to Change.”

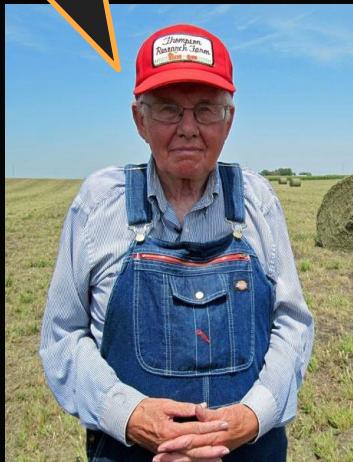


# Culture...Except – DevOps is just a Layer on Top



# Culture...Except – When we Keep Our Silos.

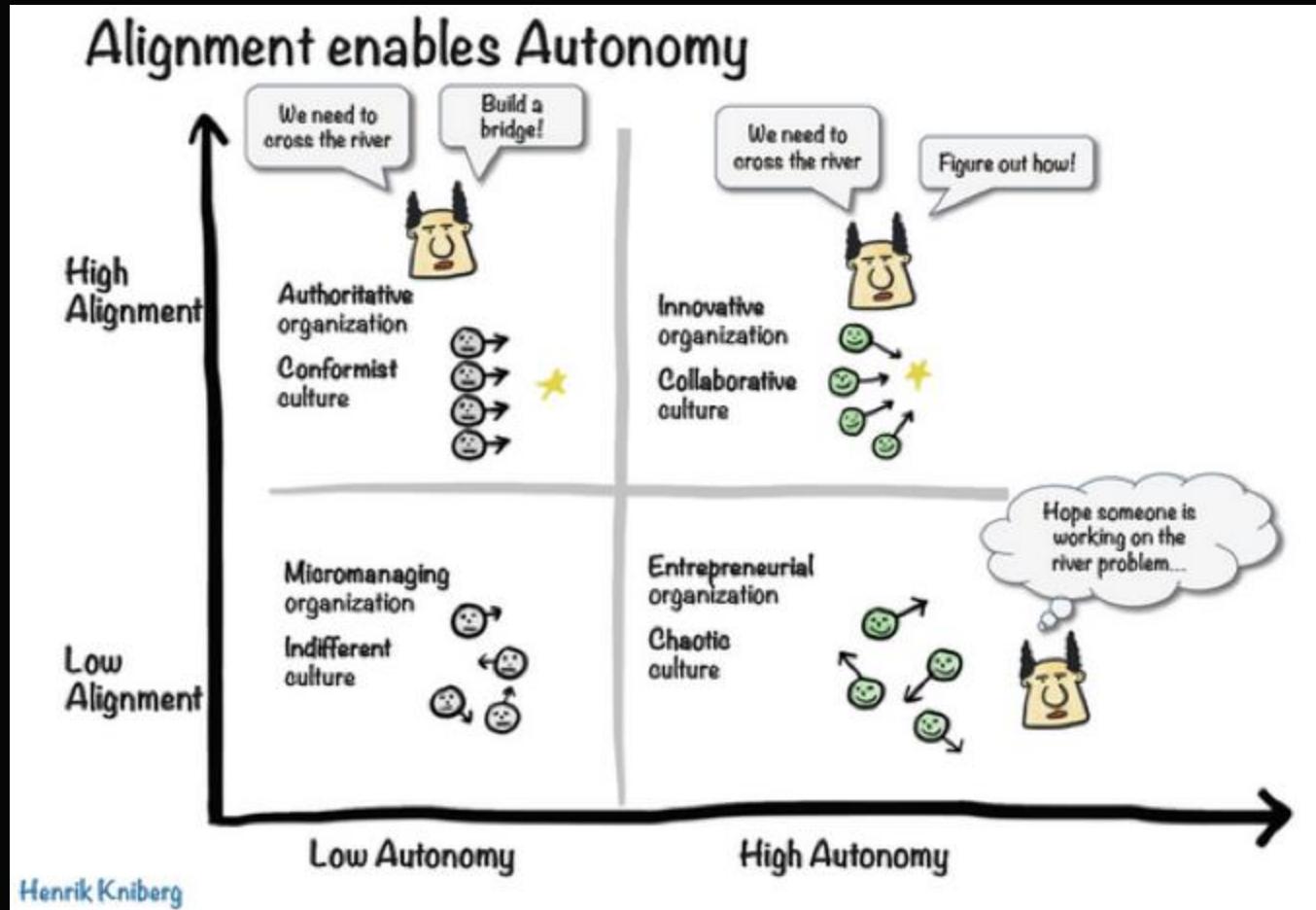
Yep...my silo is looking pretty good.



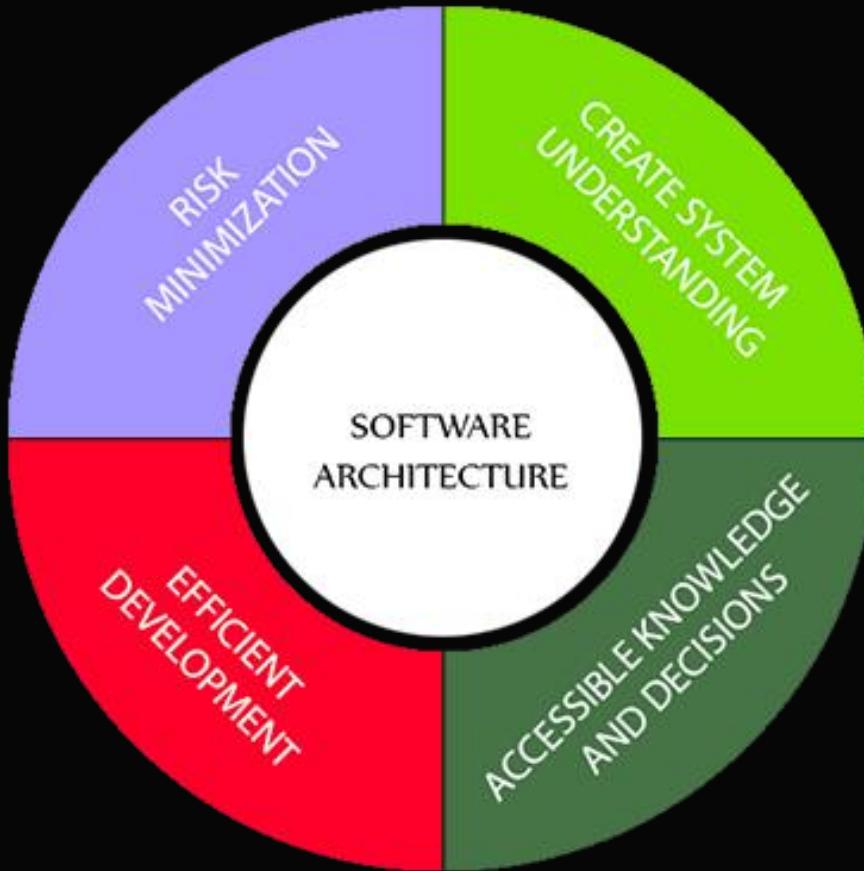
Yep...my silo is looks good too. This is going great!



# Culture...Except – When Teams Aren't Aligned to be Autonomous



# Architecture – Critical to DevOps Success



# Architecture...Except – Can't Risk Changing the System



# Architecture... Except – When We've Lost the 'Why'



The Architect put  
that there for a  
reason.

Really? What  
reason?

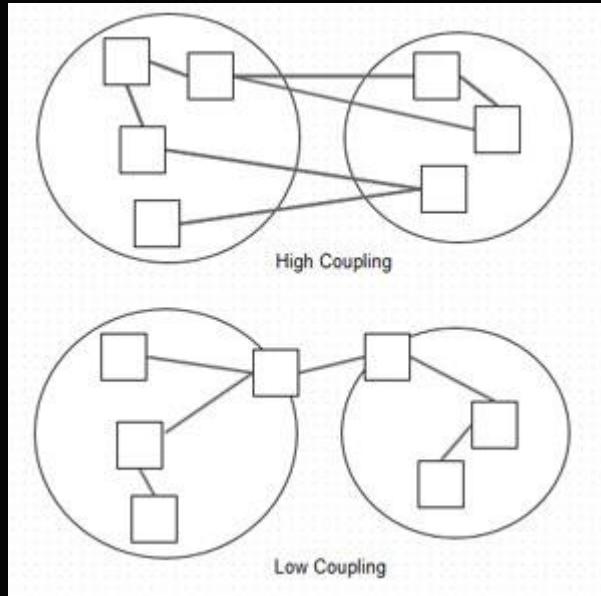
I have no  
idea, so we  
shouldn't  
mess with it.



# Architecture...Except – When It Only Applies to New



# Architecture...Except – Doesn't Reduce Coupling or Support Separation of Concerns



# Lightning Talks – Done!

A wide-angle photograph of a city skyline at night under a dark, turbulent sky. Numerous bright, branching lightning bolts strike across the sky, illuminating the clouds and casting a glow on the city lights below. The city's buildings are silhouetted against the bright lightning and the dark sky.

# Group Exercise: Lean Coffee

1. Each table has a facilitator.
2. The facilitator has a short introduction to an aspect of continuous experimentation and improvement.
3. Everyone write down questions on the subject. Place them in the middle of the table.
4. The group votes on questions by placing a dot on the card. 3 votes per person.
5. Question with most dots goes first. Set a timer for 5 minutes and discuss.
6. After 5 minutes, either vote (thumbs up/down) to keep going or move on to the next question.



# Agenda: Finish with a Lean Coffee

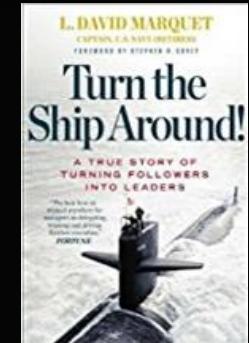
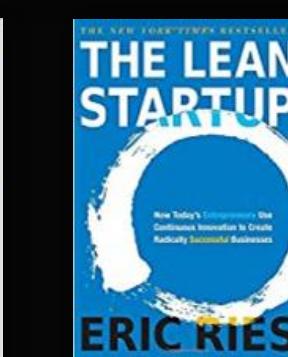
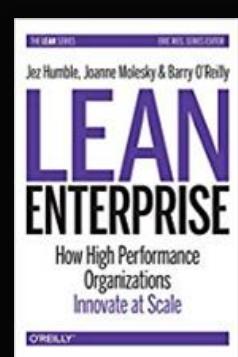
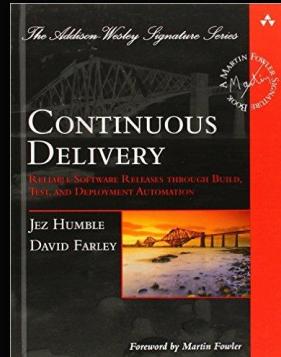
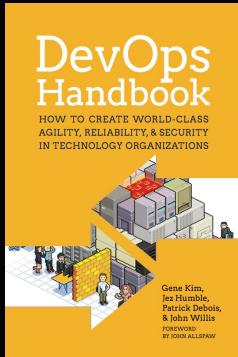
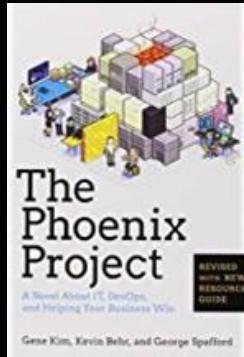
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  - Facilitator: JD Black
2. DevOps Tools & Best Practices
  - Facilitator: Justan Provence
3. DevOps Leadership
  - Facilitator: Alana Gipson



# DevOps Resources

## Books / Publications:

- The Phoenix Project
- The DevOps Handbook
- Continuous Delivery
- Lean Enterprise
- Lean Startup
- The State of DevOps Report
- Turn This Ship Around!



<https://www.meetup.com/DevOps-for-Defense/>  
<https://github.com/jondavid-black/DevOpsForDefense>  
devopsfordefense@gmail.com

## Conference Presentations (YouTube):

- DevOps Enterprise Summit (DOES)
- Velocity
- GoTo

