

# DevOps for Defense

Microsoft Azure

Linh Nguyen  
December 2021

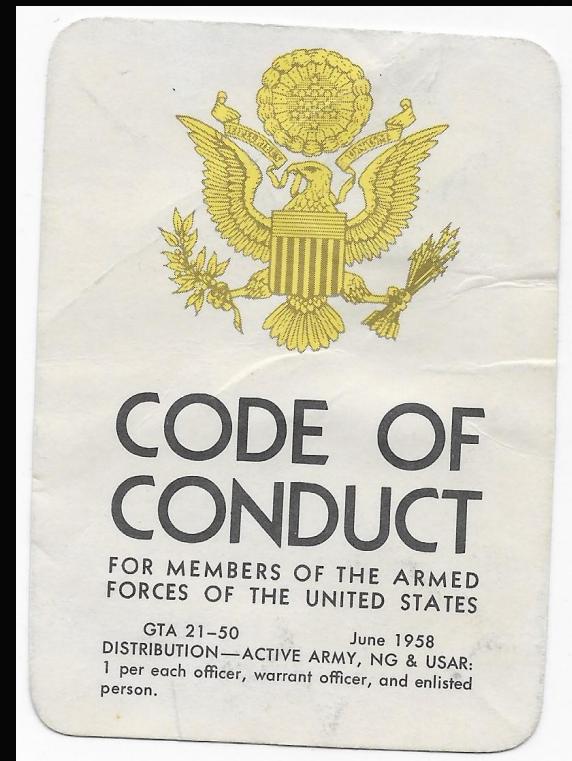
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<https://www.meetup.com/DevOps-for-Defense/>  
<https://github.com/jondavid-black/DevOpsForDefense>  
[devopsfordefense@gmail.com](mailto:devopsfordefense@gmail.com)  
<https://twitter.com/devops4defense>

# 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.
- If you're attending virtually, do mute yourself while others are speaking!





*DevOps for Defense*  
4 Year  
*Anniversary*

# Book Club

Winner of the Bronze Medal in Leadership from the 2021 Axiom Business Book Awards.

Jonathan Smart, business agility practitioner, thought leader, and coach, reveals patterns and antipatterns to show how business leaders from every industry can help their organizations deliver better value sooner, safer, and happier through high levels of engagement, inclusion, and empowerment.

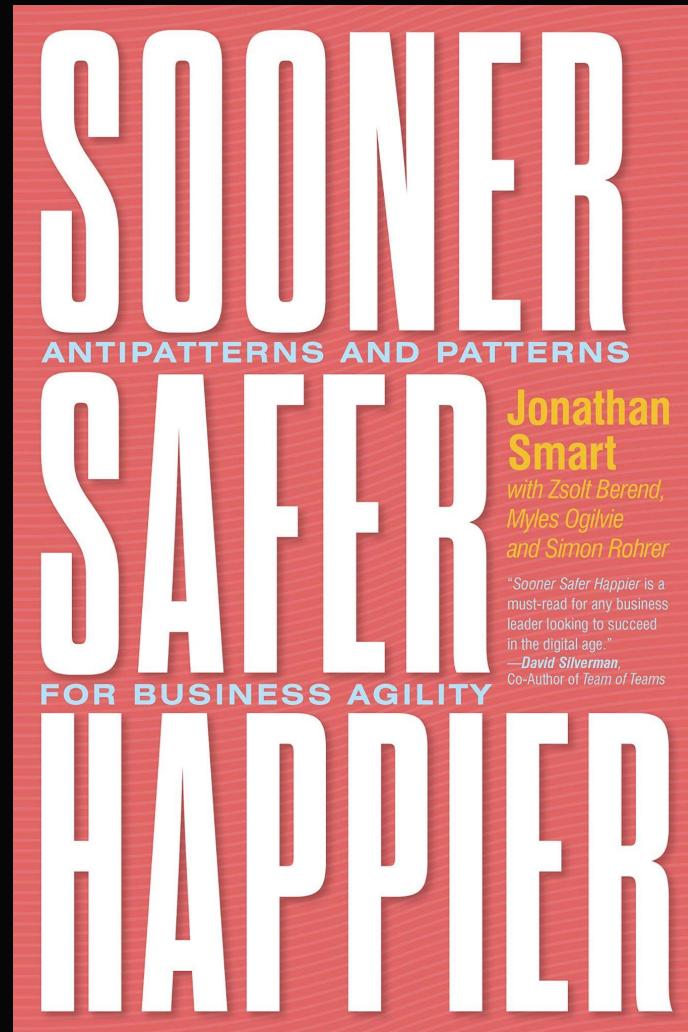
"One of the most important Agile books since *The Phoenix Project*."

—Charles Betz, Principal Analyst, Forrester Research

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Woman Owned Small Business  
In Huntsville, AL  
<https://www.qtecinc.com/>



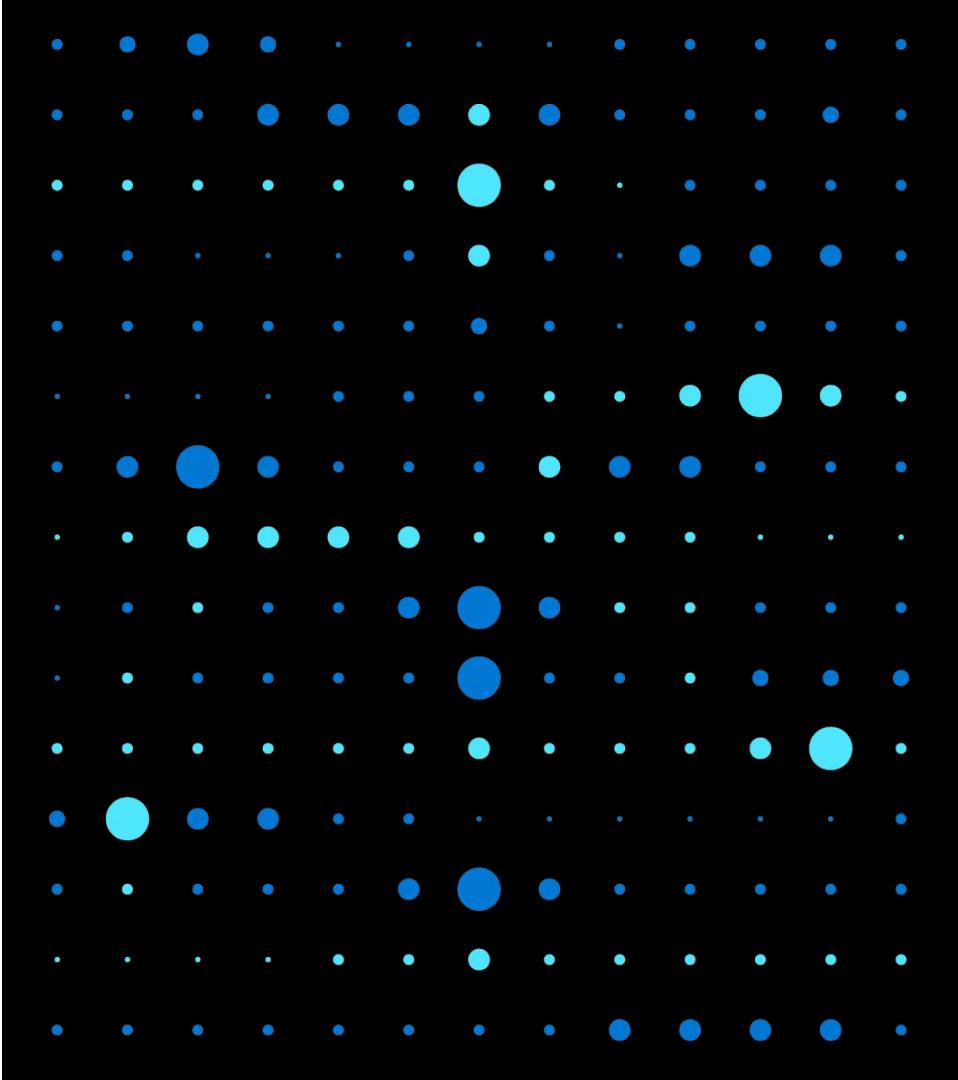
# Hello, DevOps for Defense!

Linh Nguyen

[linhnguyen@microsoft.com](mailto:linhnguyen@microsoft.com)

Azure Application Innovation Specialist

02 December 2021

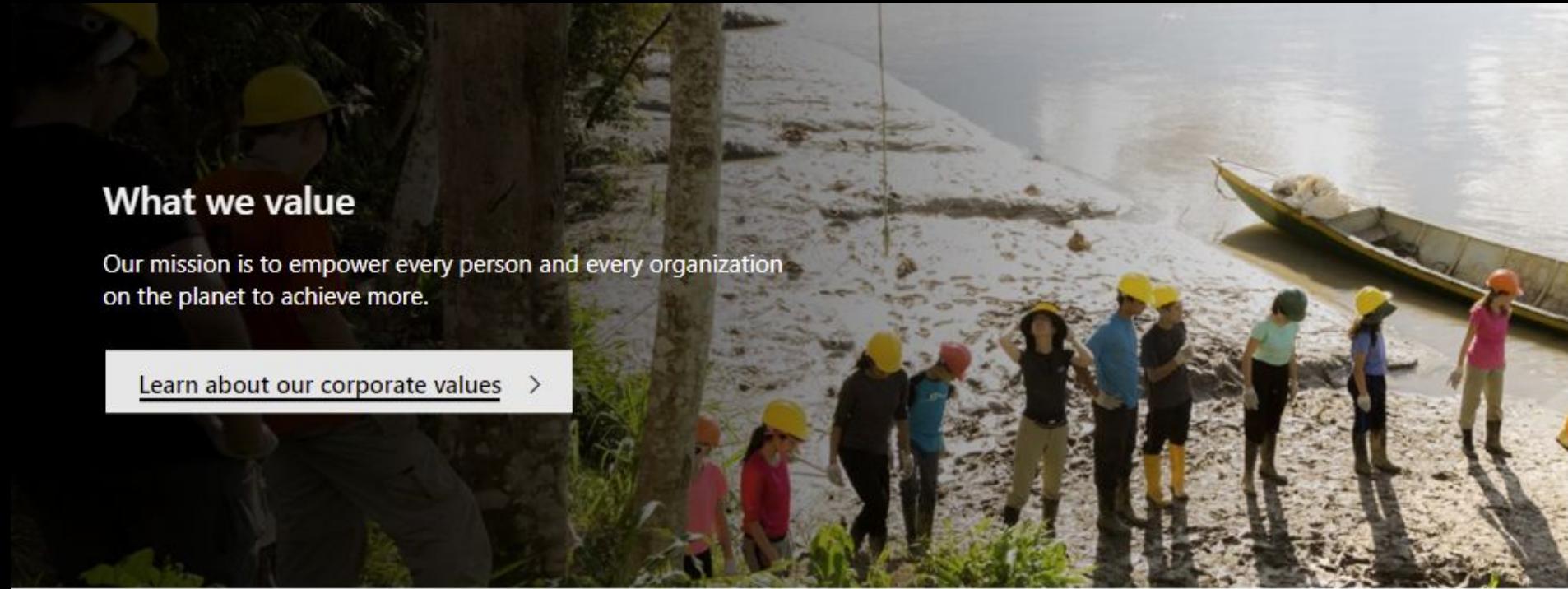


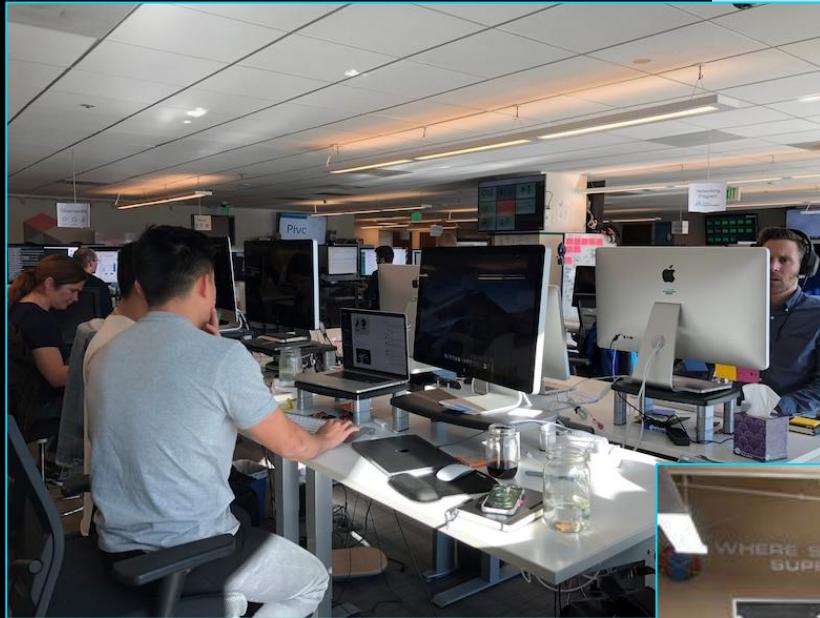
# Microsoft's mission statement

## What we value

Our mission is to empower every person and every organization on the planet to achieve more.

[Learn about our corporate values >](#)





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POLITICS

## Space Force boldly goes to Silicon Valley to get a Star Trek-flavored software boost

PUBLISHED FRI, AUG 28 2020 4:04 PM EDT | UPDATED SAT, AUG 29 2020 12:26 AM EDT

Amanda Macias @AMANDA\_M\_MACIAS

SHARE

- Agency DevOps CONOPS
- Established app platform teams
- Established software factories
- Promote innovation in DoD



Let's chat about...

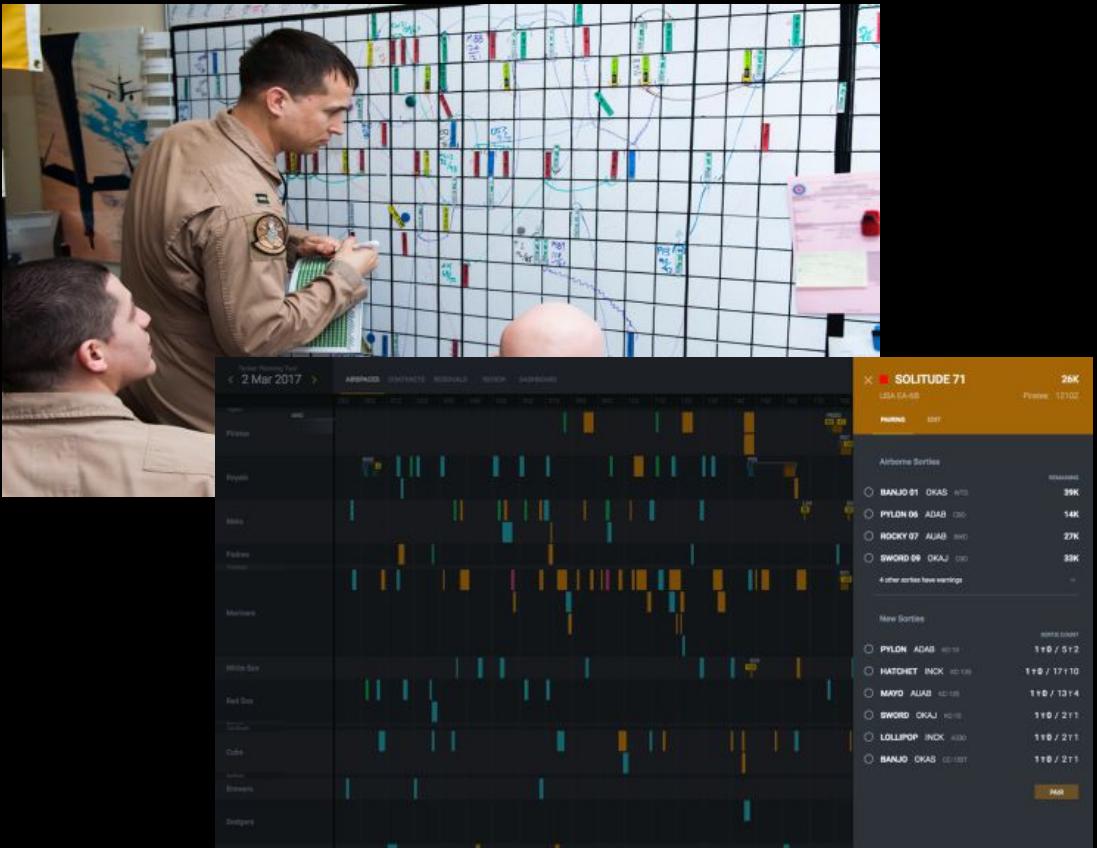
1. A DevOps origin story
2. Cloud perspectives
3. Growing

# A little idea...



*Get into 'Prod' quickly & securely by reducing...*

- Time to approve (ATO)
- Time to deploy (Day 1)
- Repeat (Day 2)



# AIR FORCE

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## NATO Buys, Operates Kessel Run's Tanker Planning App

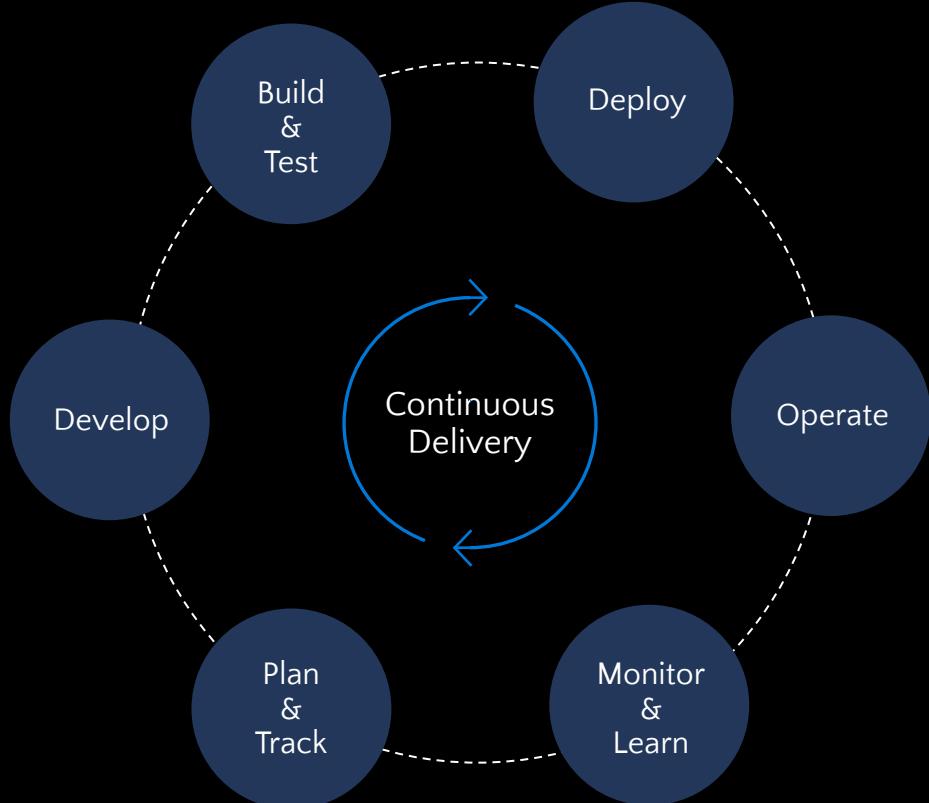
June 2, 2021 | By Brian W. Everstine

NATO has bought and already used an application known as Jigsaw, which was developed by the Air Force's in-house software development team, Kessel Run, to handle refueling tanker planning in the Middle East.



# Why DevOps

To develop and deploy new mission capabilities more *quickly, securely, and iteratively*



# DevSecOps: a practical approach

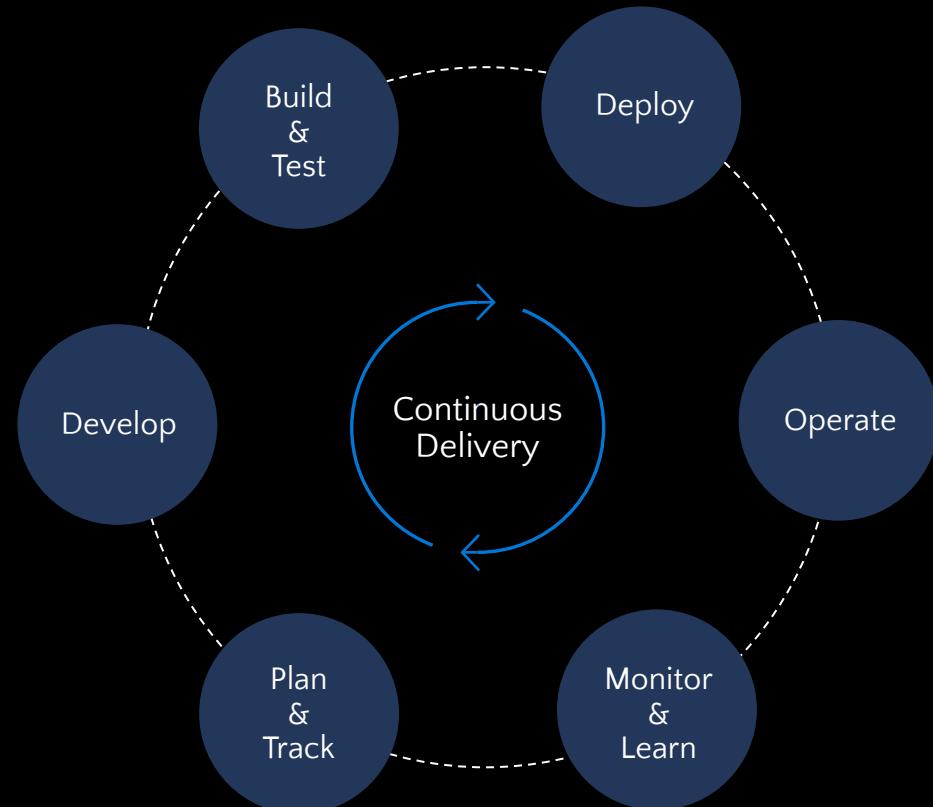
| Role                              | Plan & Track   | Develop & Test   | Build & Test  |
|-----------------------------------|--|--|---|
| Product Team (PM, Devs, Designer) | <ul style="list-style-type: none"><li>• <i>Lean Agile</i></li><li>• <i>Product Management</i></li><li>• DDD/UCD, TDD, XP</li><li>• <i>Scope app architecture &amp; deployment approach</i></li></ul>   | <ul style="list-style-type: none"><li>• Use modern language frameworks</li><li>• Use cloud-native app architecture</li><li>• Leverage cloud resources, e.g., data, security (e.g. KMS)</li><li>• Unit-code test</li></ul>            | <ul style="list-style-type: none"><li>• Automate builds &amp; tests via CI pipelines</li><li>• <i>Resolve security findings per ISSO thresholds</i></li><li>• Use security-approved base container images</li><li>• Secure container images (push/pull)</li></ul> |
| Security Engineer (ISSO)          | <p><b>Define:</b></p> <ul style="list-style-type: none"><li>• <i>App security controls</i></li><li>• <i>Test types &amp; thresholds</i></li><li>• Test tools &amp; results aggregation</li><li>• SSP</li><li>• (App) Security policies</li></ul> | <ul style="list-style-type: none"><li>• Inject security tests into dev backlog</li><li>• Clarify tests &amp; conditions, as necessary</li><li>• Inspect on-going app test results</li><li>• Inspect app architecture</li></ul>       | <ul style="list-style-type: none"><li>• Verify &amp; inspect aggregated security findings</li><li>• Assist product team to create SSP artifacts</li></ul>   |
| Platform (Cloud) Operator         | <ul style="list-style-type: none"><li>• Provision app dev &amp; test tools</li><li>• Provide access to cloud resources</li><li>• Plan app operations model, e.g. PaaS for dev/test/prod</li></ul>  | <p><b>Provision resources</b>, tools for:</p> <ul style="list-style-type: none"><li>• <i>App ops for dev/test/prod</i>, e.g. PaaS, K8s clusters &amp; namespaces, KMS, etc.</li><li>• Monitoring</li><li>• Log aggregation</li></ul> | <ul style="list-style-type: none"><li>• Provide platform, cluster credentials to dev team members</li><li>• <i>Monitor cloud resources and performance</i></li></ul>  |

# DevSecOps: a modern, practical approach

| Role                                 | Deploy   | Operate   | Monitor & Learn  |
|--------------------------------------|--|---|--|
| Product Team<br>(PM, Devs, Designer) | <ul style="list-style-type: none"><li>Create app deployment manifests</li><li>Use CD jobs to automate app deployment</li><li>Automate deployment, config of data services</li><li>Deploy to dev/test</li></ul> | <ul style="list-style-type: none"><li><b>Demonstrate how to deploy for Ops team</b></li><li>Perform app checks: health, readiness</li></ul> | <ul style="list-style-type: none"><li><b>Monitor app performance</b></li><li>Adjust: app instances, mem</li><li><b>Get user feedback</b></li></ul> |
| Security Engineer<br>(ISSO)          | <ul style="list-style-type: none"><li>Verify &amp; inspect aggregated security findings</li><li><b>Assist product team to create SSP artifacts</b></li><li>Inspect security policy(-ies) execution</li></ul>   | <ul style="list-style-type: none"><li><b>Review &amp; grant app ATO</b></li></ul>   | <ul style="list-style-type: none"><li>Monitor app patching &amp; updates</li></ul>   |
| Platform<br>(Cloud) Operator         | <ul style="list-style-type: none"><li><b>Deploy to Prod*</b></li><li>Monitor PaaS, clusters</li></ul>  | <ul style="list-style-type: none"><li>Monitor app and services health (SRE)</li></ul>   | <ul style="list-style-type: none"><li>Monitor PaaS, cluster performance with dev team</li></ul>  |

# DevSecOps Phases: Proven Methods

- Product Management:
  - Lean Enterprise
  - Experiment & learn from users
- Develop, Build, Test
  - Leverage CI/CD tools
  - Run app security tests early
  - Smaller security 'accreditation' packages
- Deploy & Operate
  - Cloud-native PaaS as the app runtime
- Monitor and Learn
  - Everyone pays attention to performance
  - Four Golden Signals



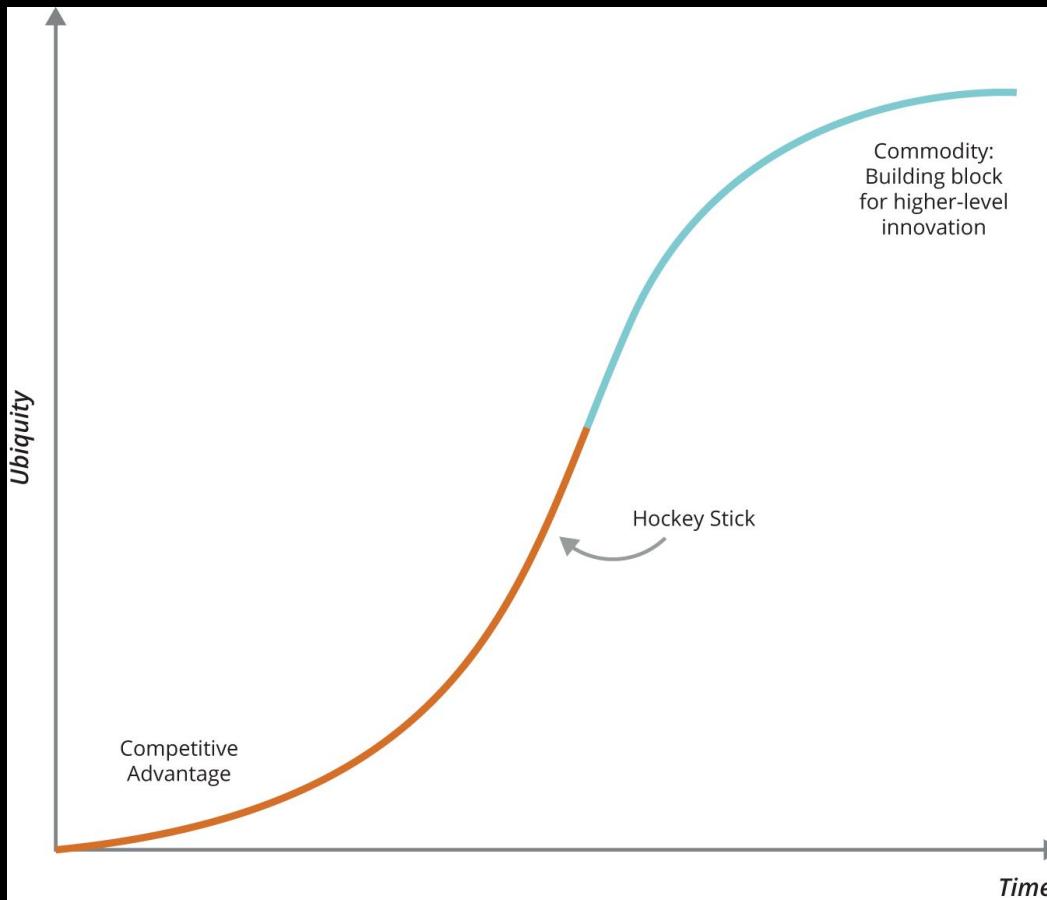
‘What is (your favorite article here) Cloud?’



OR

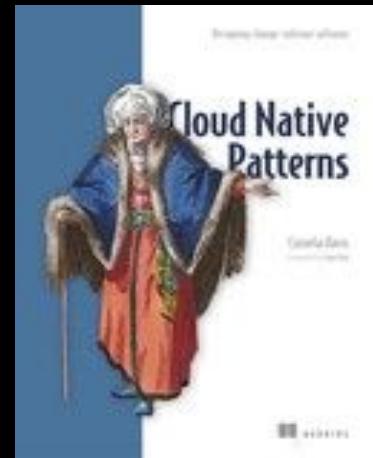


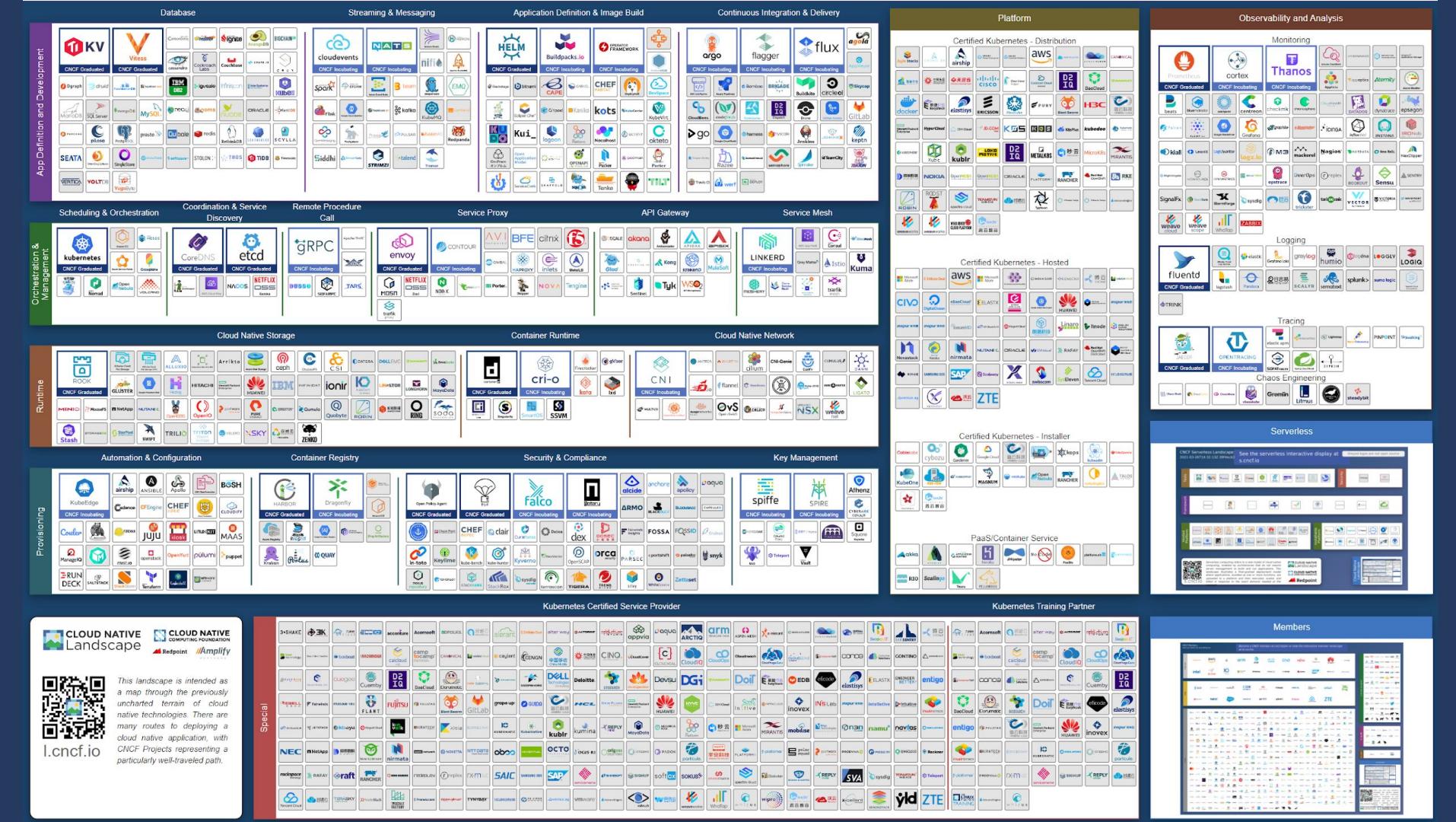
## Lifecycle of Innovations (*Lean Enterprise*, Humble/Molesky/O'Reilly)



*Going to “the cloud” is more about how you design your applications than where you deploy them.*

Cornelia Davis, Cloud Native Patterns (May 2019)

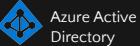




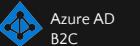
## Security & Management



Sentinel  
and Security  
Center Portal



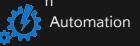
Azure Active  
Directory



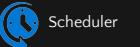
Azure AD  
B2C



Multi-Factor  
Authenticatio



n  
Automation



Scheduler



Key Vault



Store/  
Marketplace



VM Image  
Gallery  
& VM Depot

## Media & CDN



## Integration

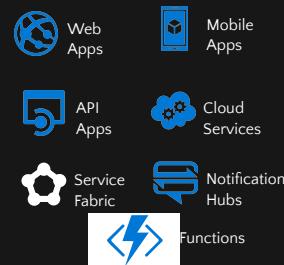


## Compute Services



## Platform as a Service (PaaS)

### Application Platform



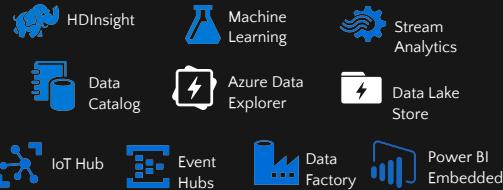
### Data



### Intelligence



### Analytics & IoT



## Hybrid Cloud



AD Privileged  
Identity  
Management



Backup

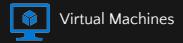


Import/Export



Azure Data  
Box

## Compute



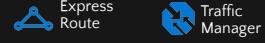
## Storage



## Datacenter Infrastructure



## Networking



# Azure covers 54 compliance offerings

Azure has the deepest and most comprehensive compliance coverage in the industry

| Global   |                    |                |                      |                      |                      |                                 |                    |                  |                          |                        |                      |           |
|----------|--------------------|----------------|----------------------|----------------------|----------------------|---------------------------------|--------------------|------------------|--------------------------|------------------------|----------------------|-----------|
|          | ISO 27001          | ISO 27018      | ISO 27017            | ISO 22301            | ISO 9001             | SOC 1 Type 2                    | SOC 2 Type 2       | SOC 3            | CSA STAR Self-Assessment | CSA STAR Certification | CSA STAR Attestation |           |
| US Gov   |                    |                |                      |                      |                      |                                 |                    |                  |                          |                        |                      |           |
|          | Moderate JAB P-ATO | High JAB P-ATO | DoD DISA SRG Level 2 | DoD DISA SRG Level 4 | DoD DISA SRG Level 5 | SP 800-171                      | FIPS 140-2         | Section 508 VPAT | ITAR                     | CJIS                   | IRS 1075             |           |
| Industry |                    |                |                      |                      |                      |                                 |                    |                  |                          |                        |                      |           |
|          | PCI DSS Level 1    | CDSA           | MPAA                 | FACT UK              | Shared Assessments   | FISC Japan                      | HIPAA / HITECH Act | HITRUST          | 21 CFR Part 11           | MARS-E                 | IG Toolkit UK        |           |
| Regional |                    |                |                      |                      |                      |                                 |                    |                  |                          |                        |                      |           |
|          | Argentina PDPA     | GDPR           | UK G-Cloud           | China DJCP           | China GB 18030       | China TRUCS                     | iDA                | irap             | Australia IRAP/CCSL      | New Zealand GCIO       | Japan My Number Act  | ENISA IAF |
|          |                    |                |                      |                      |                      |                                 |                    |                  |                          |                        |                      |           |
|          |                    |                |                      |                      |                      |                                 |                    |                  |                          |                        |                      |           |
|          | Japan CS Mark Gold | Spain ENS      | Spain DPA            | India MeitY          | Canada Privacy Laws  | Germany IT Grundschutz workbook |                    |                  |                          |                        |                      |           |

# Learning Resources

- Azure for Students
- Training and Certification Programs - Learn New Skills | Microsoft
- Cloud-native architectures

The screenshot shows the Azure for Students landing page. It features a large green button labeled "Start free". Below it, text reads "Try Azure for Students free today" and "Get \$100 credit and free developer tools. Sign up without a credit card." A "See FAQ for eligibility >" link is also present. At the bottom, there's a screenshot of the Azure portal interface showing various service icons like AI, App Service, and Storage.

The screenshot shows the Microsoft Learn homepage. The main heading is "Build the skills that lead to success". Below it, text says "Gain high-demand technology skills and advance your career with Microsoft Virtual Training Days, instructor-led courses, Microsoft Certifications, and free learning paths from Microsoft Learn." A "Customize your learning path" button and a "See all learning paths >" link are visible. The navigation bar includes "Training resources", "Learning paths by role", "Customer stories", "Resources", and "Community".

The screenshot shows the Azure Architecture Center homepage. The main title is "Azure Architecture Center" with a subtitle "Guidance for architecting solutions on Azure using established patterns and practices." Below this, there are four main sections: "ARCHITECTURE" (Browse Azure architectures), "CONCEPT" (Explore cloud best practices), "HOW-TO GUIDE" (Assess, optimize, and review your workload), and "WHAT'S NEW" (See what's new). Further down, there's a section titled "Architecting Applications on Azure" with three sub-sections: "Designing for the cloud" (Principles of a well-designed application, Responsible innovation, Web API design), "Optimizing your workload" (Guiding tenets for your architecture, Examine your workload, Performance tuning), and "Choosing the right technology" (Choosing a Compute Service, Choosing a Load Balancing Service, Choosing a data store).

## Take-away...

- Experiment & learn
- Do what works
- Build your own team culture
- Share and help others



# Group Exercise: Lean Coffee

1. The facilitator has a short introduction.
2. Everyone makes cards with questions or topics for discussion on the subject.
3. Everyone votes on each question or topic by clicking the thumbs up button on the corner of the card. 5 votes per person.
4. Cards with most votes goes first. Set a timer for 5 minutes and discuss.
5. After 5 minutes, either vote (thumbs up/down in your Zoom window) to keep going or move on to the next card.

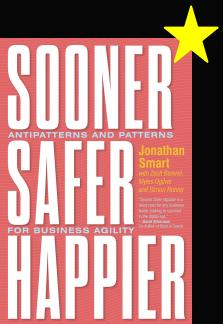
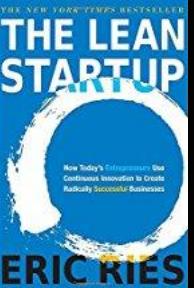
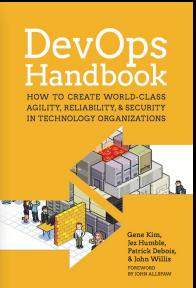
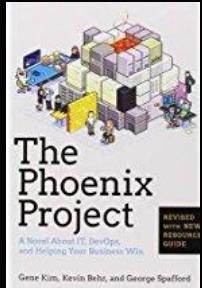


**Suggested Topic: “How could cloud change your value stream?”**

# DevOps Resources

<https://devopsfordefense.org/resources/>

Books / Publications:



The  
Phoenix  
Project

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

REVISED WITH NEW  
GUIDE

DevOps  
Handbook

HOW TO CREATE WORLD-CLASS  
AGILITY, RELIABILITY & SECURITY  
IN TECHNOLOGY ORGANIZATIONS

Gene Kim, Jez Humble,  
Patrick Debois,  
& John Willis  
Foreword by Steve Allens

THE LEAN  
STARTUP

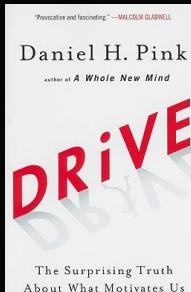
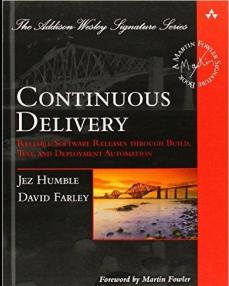
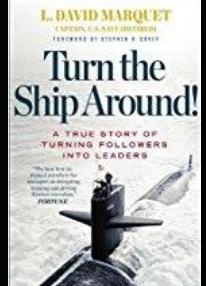
How Today's Entrepreneurs Use  
Continuous Innovation to Create  
Radically Successful Businesses

ERIC RIES

Gene Kim,  
Jez Humble,  
Patrick Debois,  
& John Willis  
Foreword by Steve Allens

The  
Unicorn  
Project

A Novel about Developers,  
Digital Disruption, and  
Thriving in the Age of Data  
Gene Kim  
Author of The Phoenix Project

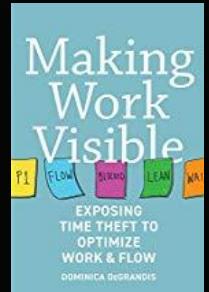


The Addison Wesley Signature Series  
CONTINUOUS  
DELIVERY

RELEASE SOFTWARE RELEASES THROUGH BUILD,  
TEST, AND DEPLOYMENT AUTOMATION

Jez Humble  
David Farley

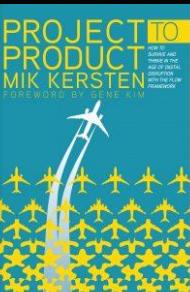
Foreword by Martin Fowler



How to  
Turn  
Work  
Visible

EXPOSING  
TIME THEFT TO  
OPTIMIZE  
WORK & FLOW

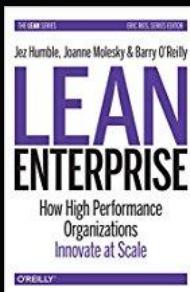
Dominica Grigoridi  
Foreword by Gene Kim



How to  
Turn  
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EXPOSING  
TIME THEFT TO  
OPTIMIZE  
WORK & FLOW

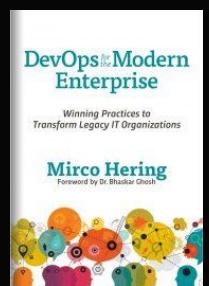
Mik Kersten  
Foreword by Gene Kim



How High Performance  
Organizations  
Innovate at Scale

Jez Humble, Joanne Molesky & Barry O'Reilly

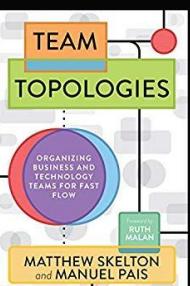
Foreword by Brian Wozniak



Winning Practices to  
Transform Legacy IT Organizations

Mirco Hering  
Foreword by Dr. Bhaskar Ghosh

Ruth Malan  
Foreword by Matthew Skelton and Manuel Pais



Organizing Business and Technology Teams for Fast Flow

Matthew Skelton and Manuel Pais  
Foreword by Ruth Malan

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

devopsfordefense@gmail.com

Conference Presentations (YouTube):

- DevOps Enterprise Summit (DOES)
- IT Revolution
- Velocity
- GoTo

