NIH PROJECT MANAGEMENT COMMUNITY

THE DEVOPS EFFECT

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Welcome!

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• Certified in Knowledge-Centered Support (KCS) Principles

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WHY DEVOPS?
The Government Perspective
Our Cadence is Off

Historically...

Government Agencies

Mission

Dev

Waterfall Projects

Ops

Rigorous Processes
Impacts to Government Agencies

• Slow responsiveness
• Citizen dissatisfaction
• Poor user experience
• Pain and negative impact to mission and reputation when things go wrong
• Wasted time and tax dollars
• Lost productivity
• High costs and risks
Agile and lean development practices speed things up, but....

Government Agencies

Increased citizen expectations

Dev

Agile/Lean Dev

Ops

Rigorous Processes
DevOps Improves Our Cadence

...agile and lean service management practices are also needed.

Government Agencies

Success through Innovation

DevOps

Continuous Delivery
WHY DEVOPS?
THE IT PERSPECTIVE
The Wall of Confusion (1)

Dev wants change

Ops wants stability

Banging your head on a wall burns 150 calories per hour
What are the dangers?

Isn’t this the way it should be?

- Extreme Focus on Change
- Extreme Focus on Stability

- All of the above
“DevOps really is key with the pace of today's development environment. By integrating teams and quality early in the process, providing better communications, purpose and direction, continually refining processes, it greatly improves outcomes and stops the blame game.”

Keith Thurston
General Services Administration
WHAT IS DEVOPS?
What is DevOps?

DevOps is a cultural and professional movement that stresses communication, collaboration and integration between software developers and IT operations professionals.

• Acknowledges
  – Stakeholder interdependence
  – Need to rapidly produce quality software
  – Need to increase rate of production releases

• Supports the use of agile and lean development practices
DevOps Stakeholders

DevOps extends beyond software developers and IT operations.

• Dev includes all the people involved in developing software products and services including
  – Architects, business representatives, customers, product managers, project managers, quality assurance (QA) testers and analysts, suppliers, etc.

• Ops includes all the people involved in delivering and managing software products and services including
  – Information security professionals, systems engineers, system administrators, IT operations engineers, release engineers, database administrators (DBAs), network engineers, support professionals, suppliers, etc.
Who is Adopting DevOps Practices?

Public (Federal Government)
- 18F – General Services Administration
  - @18F
  - chat.18f.gov
- cloud.gov
- Defense Information Systems Agency
- Department of Veterans Affairs
- U.S. Citizenship and Immigration Services
- U. S. Patent and Trademark Office

Private
- Academia
- Entertainment
- Financial
- Insurance
- Manufacturing
- Publishing
- Retail

*DevOps practices will continue to evolve through communities of practice.*

*Seek out opportunities to collaborate with others.*
DevOps Value

DevOps practices improve IT performance.

- Organizations are more agile
  - Code is deployed 30 times more frequently
  - Deployments are completed 200 times faster

- Services are more reliable
  - Changes are 60% more successful
  - Service is restored 168 times faster

Organizations that have implemented DevOps practices are up to five times more likely to be high performing.

Source: 2015 State of DevOps Report
Measuring Success

- Deployment frequency
- Change lead time
- Cycle time

- Change failure rate
- Mean time to detect incidents (MTTD)
- Mean time to recover (MTTR)
- Mean time to restore service (MTRS)
ULTIMATELY...

DevOps enables organizations to deliver better software, faster.
DEVOPS VALUES
More than anything else, DevOps is a cultural movement based on human and technical interactions to improve relationships and results.
DEVOPS AND OTHER FRAMEWORKS
Successful DevOps relies on the adoption and integration of multiple frameworks and methodologies.
“Without a doubt, the next surge of productivity will coming from improvements in the IT value stream, the likes of which we have not seen since the manufacturing movement during the 1980s.”

Julia Allen
DEVOPS AND AGILE
DevOps and agile complement each other to deploy working functionality into production faster.

Operations

- Non-functional requirements
  - Define Ops acceptance criteria
  - Infrastructure provisioning
- Embed Ops knowledge in Dev
  - Design, build, test ITSM and IT Operations automation capabilities

Define

Plan

Build and Test
DevOps is not just about automation but there are common enabling practices.

- Treating infrastructure as code
- Cloud-based service models (e.g., IaaS, PaaS)
- Repeatable and reliable deployment processes
  - Continuous integration, continuous delivery and continuous deployment
- Development and testing (preferably automated testing) performed against production-like systems
- On-demand creation of development, test, staging and production environments
- Proactive monitoring of infrastructure components, environments, systems and services

*Shared access to automated testing, deployment, monitoring and ITSM tools streamlines software delivery.*
Automated tests in production-like environments assure the code and environment operate as designed and are always in a releasable state.

Continuous Delivery

Stop the line when tests fail

Feedback – test results, monitoring data, etc.

Dev
Commit Code

Test
Build and Test

Staging
Acceptance Test

Prod
Deploy to Prod and Test

Release

Automated Trigger

Manual Trigger
Continuous Deployment

Code deployed into production may be invisible to customers, but features can be run and tested by internal staff.

Stop the line when tests fail

Dev
Commit Code

Test
Build and Test

Staging
Acceptance Test

Prod
Deploy to Prod and Test

Release

Feedback – test results, monitoring data, etc.

Automated Trigger

Manual Trigger
ADOPTING A DEVOPS CULTURE
DevOps Requires a Holistic Approach

In that order!
• Get clear on the opportunity – the ‘Why?’
• Create a cross-functional team
• Identify and prioritize improvement opportunities
  – Align with agency mission and goals
• Set quantifiable goals
• Experiment, learn, iteratively and incrementally improve
• Share what you learn and accomplish
• Show progress along the way

Get good at continually improving!
Additional Sources of Information (1)

DevOps and the Federal Government

- Mark Schwartz - U.S. Citizenship and Immigration Services
  - https://www.youtube.com/watch?v=QwHV1Jtqhal
- Bret Mogilefsky – cloud.gov
  - https://www.youtube.com/watch?v=nCycNkxs-rE
- Mike Bland – Practice Director – 18F
  - https://www.youtube.com/watch?v=ahtihwxgriA
- Alan Kraft – U. S. Patent and Trademark Office
## Want to Learn More?

<table>
<thead>
<tr>
<th>Class</th>
<th>Next Class Date</th>
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</thead>
<tbody>
<tr>
<td>DevOps Foundation</td>
<td>Virtual: January 12-15 2016 (10am-2pm ET)</td>
</tr>
<tr>
<td>Certified Agile Process Owner</td>
<td>Virtual: January 19 - 22 2016 (9am - 1pm ET)</td>
</tr>
<tr>
<td>Certified Agile Service Manager</td>
<td>Virtual: February 1 - 4 2016 (10am - 2pm ET)</td>
</tr>
<tr>
<td>Certified Process Design Engineer</td>
<td>Virtual: January 25 - 29 2016 (9am - 2pm ET)</td>
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