

Mythbusting DevOps in the Enterprise

Addressing Culture and Leadership Aspects during Transforming

DevOps Enterprise Forum

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IT Revolution
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Table of Contents

| | |
|------------------------------|-----|
| Preface | vii |
| Introduction | ix |
| CHAPTER 1: Common Myths | 11 |
| CHAPTER 2: Further Resources | 19 |
| Collaborators | 21 |
| Acknowledgments | 23 |

Preface

The DevOps Enterprise Forum, facilitated by IT Revolution, brought together 50 technology leaders and thinkers in the DevOps Enterprise community for three days in Portland, Oregon in May 2015, with the goal of organizing in to task teams and creating written guidance on the best-known methods for overcoming the top obstacles in the DevOps Enterprise community.

We tackled the five key areas identified by the community at the 2014 DevOps Enterprise Summit:

- Better strategies and tactics for creating automated tests for legacy applications
- Addressing culture and leadership aspects during transforming
- Top approaches to organizational design, roles and responsibilities
- Information security and compliance practices
- Identifying metrics to best improve performance with DevOps initiatives.

For three days, we broke into groups based on each of the key areas and set to work, choosing teams, sometimes switching between teams, collaborating, sharing, arguing... and writing.

After the Forum concluded, the groups spent the next six months working together to complete and refine the work they started together.

Our goal was to generate content in the form of white papers, articles, or other resources in time to share that guidance with the technology community during the DevOps Enterprise Summit 2015 in October.

We are proud to share the outcomes of the hard work, dedication, and collaboration of this amazing group of people.

—Gene Kim

October 2015

Introduction

At the DevOps Enterprise Summit in 2014 the community identified several problem areas with enterprise DevOps adoption we wanted more written guidance around, and one of them was around cultural and leadership aspects during transformation.

The DevOps movement has been primarily driven by practitioners, which is why we've ended up with such success at the practice level. As success and awareness have risen, we've now seen new challenges and questions around the path to success and applicability for larger organizations. Some have done this very well, others are struggling, and others yet have no idea where to start.

In May we assembled a series of working groups together to address these problems, and the Culture/Leadership group decided to focus our efforts on targeting specific subsets of enterprise VPs, CTOs and CIOs who were either facing significant internal skepticism or lacked concrete experience leading companies through a DevOps transformation.

We identified several specific technology leaders who are:

- Curious about DevOps and skeptical about whether it's applicable to their environment.
- Convinced about DevOps, but facing skepticism from their executive peers and middle managers.
- Aware of DevOps at a high level, has some teams who have led successful initiatives, but are unsure how to take an organization-wide approach.
- Experiencing pressure from their CEO and/or peers to investigate DevOps without any successful internal initiatives to learn from.

Once we started collaborating, it quickly became obvious that many of us involved in such transformations had had the same conversations over and over again, all focused around demolishing myths and misconceptions.

We decided to confront this head on, listing the most common leadership and cultural traps for our target audience, ultimately aiming to provide high-level reassurance and evidence that DevOps practices are generally applicable and plausibly successful in enterprise environments.

Our goal is to make it clear to technology leaders that transformation in enterprise environments is both feasible and desirable.

Common Myths

1

No. 1: “There’s no direct customer/business value for adopting DevOps practices.”

Why it’s a myth

- DevOps is about delivering reliable products that run well in production, thus meeting the desired customer expectations and delivering business value. DevOps leaders accomplish this by promoting a total view of product development that includes operational reliability and performance. This is often done by organizing teams in such a way that operational pain is shared and resolved by the entire team with emphasis placed on code coverage and test automation (catching defects early in life cycle).
- DevOps practices help make software delivery faster, thereby increasing competitive edge with shorter time to market while reducing labor costs. At its core, DevOps is a collection of engineering, behavioral, and organizational practices focused on going rapidly, safely, and sustainably from idea to customer/business value. DevOps leaders encourage a culture of collaboration and trust between Development and Operations with a focus on moving new features from development into production quickly and efficiently (while including QA, Security testing, Performance testing, etc.). This is often accomplished by using cross-team automation tools like automated testing, continuous integration, and continuous delivery (CI/CD).
- DevOps seeks to optimize processes, removing wasteful practices and promoting immediate feedback and learning from problems. Through continuous learning, the organization gains a strategic competitive advantage by attracting top talent who want to both grow and have an impact. DevOps leaders will champion Lean philosophies across the enterprise. They encourage a culture that focuses on the consumer perspective so that every activity is expected to add end user value and failures are

seen as opportunities, promoting faster learning and closer to real-time improvement. Value stream mapping, kaizen events, kanban boards, improvement kata, metrics dashboards, and retrospective meetings are all helpful tools in promoting these Lean improvements.

Evidence

- **HP case study**
 - **Puppet Labs/IT Revolution 2014 State of DevOps Report**
 - **Puppet Labs/IT Revolution 2015 State of DevOps Report**
-

No. 2: “There’s no significant return on investment in applying DevOps principles to legacy applications.”

Why it’s a myth

- Few businesses are truly static, and very few legacy systems operate in true isolation. The business pressure to respond to market conditions quicker, cheaper, and more reliably affects all of IT. If one part of your system is slow and brittle, it will affect the entire system. Ignoring “legacy” systems, and the processes that manage those systems, will undermine your improvement efforts elsewhere and drive up your overall costs.
- The true costs of legacy applications are often poorly understood. The hidden wastes that can be found inside routine “run the business” activity are a significant drag on your business. Those wastes also have ripple effects that undermine your ability to speed up the “grow the business” activity. The opportunity for the largest returns and increases in business benefits often come from improvements to areas that aren’t considered “new investment.”
- Large returns can be had from minimal investment. Applying DevOps methods and practices is not an all-or-nothing decision. For example, you can individually deploy proven techniques like value stream mapping to find waste and bottlenecks, service verification tests to improve handoffs, cross functional teams to improve collaboration, or ensuring consistent “prod-like” environments in Dev and QA to improve quality. The initial iterations of these improvements can be rolled out with minor investment and have a significant positive impact on an organization.

Evidence

- Disney - The Systems Engineering team supporting the Consumer Products legacy applications introduced self-service process automation, which opened the door for more significant DevOps conversations and the introduction of CI/CD. Technology leaders were convinced by these successes and expanded scope to include other legacy systems. See “**Using Rundeck to Enable Self-Service Operations**” by Jordan Koch and Jason Cox.
 - “**DevOps and Lean in Legacy Environments,**” presentation by Scott Prugh, DevOps Enterprise Summit 2014
-

No. 3: “DevOps only works with ‘unicorn’ companies and not traditional enterprise businesses like ours.”

Why it’s a myth

- DevOps practices are already being used and championed by several large traditional enterprise companies that are reporting benefits like reduced time to market for software (including cycle time/lead time), lower MTTR, and high levels of employee engagement. Large, traditional enterprises are adopting DevOps at an accelerating rate. This will soon be the new normal, those behind the curve will find themselves unable to effectively adapt to inevitable changes in customer expectations and at a disadvantage for attracting top talent.
- DevOps is about efficiently building and operating quality software. As more and more products, services, experiences, and engagements are digitized, all companies are becoming software companies. The goals of shipping software faster, with fewer errors and lower operational burdens apply to everyone. Time to market and quality are universal business needs and while the methods may vary from company to company, the core lessons are applicable everywhere.
- DevOps can start small, providing value in one area without requiring enterprise-wide adoption and support. It is not an all-or-nothing proposition. Any product, development, or operations team can leverage DevOps practices to realize efficiencies and quality benefits. Proven success in one area will open the door to champion the change in another area.

Evidence

- **“Nationwide banks on DevOps to drive towards Continuous Delivery,”** Devops.com, November 12, 2014
 - **“Ambit Energy’s Competitive Advantage? It’s Really a DevOps Software Company,”** Puppet Labs case study
 - **“Disney’s DevOps Journey: A DevOps Enterprise Summit Reprise,”** Puppetlabs.com, February 24, 2015
 - **“USCIS CIO Mark Schwartz on how DevOps can fix federal government IT,”** Agile Government Leadership, November 21, 2014
-

No. 4: “Improvement via DevOps principles requires spare time and people that we simply don’t have.”

Why it’s a myth

- An outcome of any successful DevOps transformation will be that an organization is able to spend more of its time on breakthrough/value-adding activity and less of its time on activity that doesn’t add value (fire-fighting, rework, delays, etc.). By reducing the need for an organization to spend that effort on activities that don’t add value, you free up capacity within that organization. This capacity can be “returned” to the business for new innovation activity or can be reinvested into further improvement activities (usually some amount of both). Because of this capacity-freeing effect, DevOps transformation efforts should be self-funding after a minimal initial investment.
- When leadership declares DevOps a priority and simultaneously states that there is no time or budget for improvement efforts, this is a sign of an organization that does not have a clear understanding of where the time and money is going today. These are organizations that can’t see their actual workflow and therefore do not understand what is consuming their resources today. Step number one for these organizations is to map the flow of work today in order to make explicit where the time and effort are going, what is getting in the way, and exactly how much “waste” (activity, necessary or not, that doesn’t add value) there is. A popular technique for this is called Value Stream Mapping (VSM). Most organizations who go through this VSM exercise with an eye toward determining how to deliver the value the business needs to succeed will find that the question is not “how can we afford to change?” but rather “how can we afford not to

change?” It quickly becomes clear that the business is operating at a clear disadvantage.

- The imperative to create and maintain additional capacity within an organization is even stronger when you consider the Principles of Flow as described in Physics, the Theory of Constraints, and Lean product development. In short, a system without slack (which often happens when management effort is focused on maintaining 100% resource utilization) will underperform, have less throughput, and breakdown far more often than those systems that maintain slack. The evidence from management science and physical science is clear: simply trying to push more through an organization already at capacity will fail. You can use DevOps techniques as a way to create both the capacity and the capability that your organization needs to succeed.

Evidence

- **Nordstrom restaurant story** - Using these concepts allowed us to retain individuals on a team that were all running at capacity and burned out. And, how they moved from a highly operational backlog to a more balanced investment in breakthrough (automation, etc.)
 - Ticketmaster - “Support at the Edge” initiative lead to big capacity gains that came through decreased escalations, shorter MTTR
-

No. 5: “We have regulatory and compliance requirements that preclude the adoption of DevOps principles.”

Why it’s a myth

- DevOps is a cultural revolution that is about aligning the people, process, and technology involved in the software development life cycle (SDLC) with business value. It is more than development and operations, but it is inclusive of all entities within the business required to deliver business value, which includes the audit and compliance teams. Their inclusion will generate a shared understanding, build interdepartmental empathy, increase productivity, and decrease security incidents because security and compliance will become a practice that is fully integrated into the SDLC.

- DevOps practices build cross-functional system level understanding preventing blanket unneeded audits because the audit and compliance teams are involved in the SDLC from the start.
- Because core DevOps tenants facilitate system thinking, often the deployment and configuration pipeline is automated removing much of the human intervention and manual manipulation that slows and pains the audit and compliance processes. In general, automated repeatable processes are easier to audit, easier to understand, and easier to secure, which enable the shift from merely passing the test, to securing the business.

Evidence

- **“Keeping The Auditor Away: DevOps Audit Compliance Case Studies,”** slideshare of presentation by Gene Kim and James DeLuccia
 - **“Audit 101 for DevOps,”** IT Revolution blog
-

No. 6: “We don’t have any problems that adopting DevOps principles and practices would fix.”

Why it’s a myth

- Continuous improvement is one of the hallmarks of an organization successfully applying DevOps principles and practices. Being “good at getting better” is a key capability that can provide an operational advantage for any business.
- One of the key elements of DevOps is that it helps surface what the real problems are vs. jumping to conclusions. By adopting the problem-solving mindset and using Value Stream Mapping to understand where the problems are, you can ensure that the biggest problems are being surfaced and solved in a disciplined, structured way.
- Have an open and honest dialogue with the business leadership in your company. Even in companies with regulatory or business model advantages, there is pent-up demand to either move quicker (experiments and fast feedback), get more done (improve throughput), or improve quality (stop the outages). Often it is all three. DevOps principles and practices are about addressing these exact needs.
- The difficulty of attracting top talent is a well known problem in our industry. Burnout and the difficulty of retaining talent is becoming an increasingly well known problem. While DevOps shouldn’t be viewed as a magical panacea for all cultural ills, the common principles and practices

of DevOps are focused on eliminating the most frustrating parts of IT work—firefighting, arguing, miscommunication, wasted effort, unreasonable burdens, delayed or missing feedback, constant rework that isn't adding value, and more.

Further Resources 2

- **Web Operations: Keeping the Data On Time** by John Allspaw and Jesse Robbins (O'Reilly Media, 2010)
- **Leading the Transformation: Applying Agile and DevOps Principles at Scale** by Gary Gruver and Tommy Mouser (IT Revolution, 2015)
- **“From Mainframes to Continuous Delivery in 1000 Easy Steps by John Kordyback,”** 2013 FlowCon presentation
- **Lean Enterprise: How High Performance Organizations Innovate at Scale** by Jez Humble, Joanne Molesky, Barry O'Reilly (O'Reilly Media, 2015)
- **Puppet Labs/IT Revolution 2014 State of DevOps Report**
- **Puppet Labs/IT Revolution 2015 State of DevOps Report**
- **“The Results Are In. Enterprise DevOps Is Real”** by Mike Kavis, Forbes.com, June 5, 2014
- **“Enterprise DevOps Adoption Isn't Mandatory — but Neither Is Survival”** by Gene Kim, The Wall Street Journal: CIO Report, May 22, 2014
- **Learning to See: Value Stream Mapping to Add Value and Eliminate MUDA** by Mike Rother, John Shook, and Jim Womack (Lean Enterprise Institute, 1999)
- **The Goal: A Process of Ongoing Improvement**, Eliyahu M. Goldratt, Jeff Cox, and David Whitford (North River Press, 1984 and 2014)
- **“Getting Started with Value Stream Mapping”** by Anders Nielsen, 2008
- ***The Phoenix Project: A Novel About IT, DevOps, and Helping Your Business Win*** by Gene Kim, Kevin Behr, and George Spafford (IT Revolution, 2014). CISO undergoes a “DevOps journey” in the book.
- **DevOps Audit Defense Toolkit**

Collaborators A

There are many large-scale companies across a multitude of industries adopting DevOps practices. Within these companies, DevOps champions are surfacing as change agents who are helping transform their organization as well as influencing others outside their group. Below is the list of change agents who have helped prepare and validate this document and are available to discuss their DevOps journey or answer questions related to your own journey:

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- Jason Cox, Director of Systems Engineering, The Walt Disney Company
- Jason DuMars, Senior Director of Technical Operations, SendGrid
- Damon Edwards, Managing Partner DTO Solutions, Inc
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- Nigel Kersten, CTO, Puppet
- Gene Kim, Author and Researcher
- Courtney Kissler, Vice President of E-Commerce and Store Technologies, Nordstrom
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