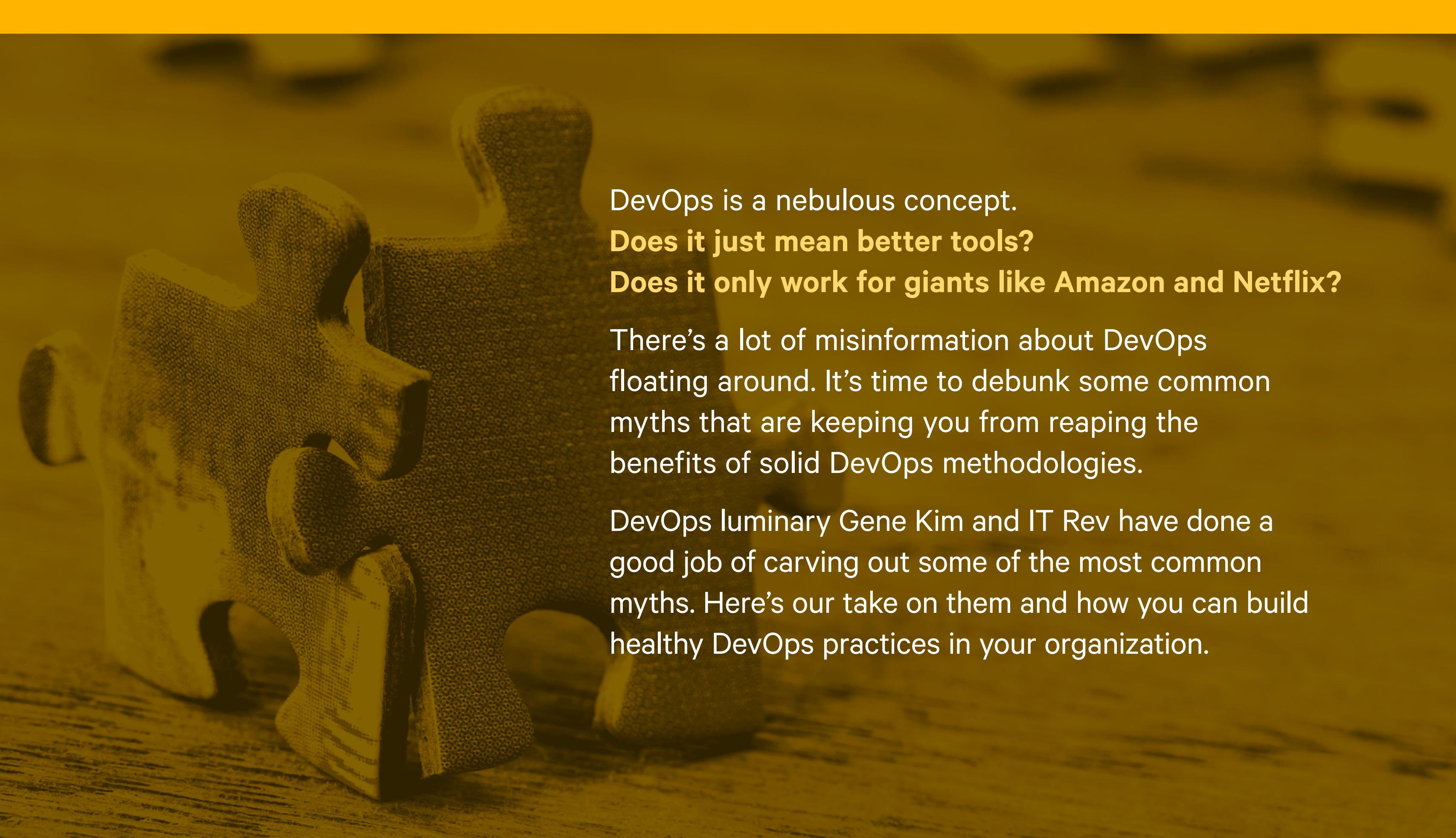


DevOps Mythbusting



DevOps is a nebulous concept.

Does it just mean better tools?

Does it only work for giants like Amazon and Netflix?

There's a lot of misinformation about DevOps floating around. It's time to debunk some common myths that are keeping you from reaping the benefits of solid DevOps methodologies.

DevOps luminary Gene Kim and IT Rev have done a good job of carving out some of the most common myths. Here's our take on them and how you can build healthy DevOps practices in your organization.

A photograph of a man with dark hair, a beard, and glasses, wearing a light-colored button-down shirt. He is seated at a desk, looking directly at the camera. On the desk in front of him is a vintage computer setup, including a CRT monitor, a keyboard, and a mouse. The background is a plain, light-colored wall.

Myth #1

There's no direct customer/business value for adopting DevOps practices

DevOps is only good for the people who keep things running — sysadmins and developers — and it really doesn't help customers. **Not true.** DevOps is, at its core, about delivering better products and experiences to your customers. Better products mean happier customers, which leads to more business.

DevOps is fast

Speed is at the core of DevOps. Every DevOps practice — from test-driven development to automation — makes writing and delivering software faster. And when you can create, test and deliver software faster, you learn more and can improve at an astonishing rate. Our 2016 State of DevOps Report shows that high-performing IT teams that implement DevOps practices are more agile — they deploy software and changes 200x more frequently with 2,555x faster lead times than their lower-performing peers.

That's a huge business value and one that directly affects your customers. In fact, it's the most valuable aspect of a DevOps practice. But speed doesn't sacrifice reliability. Again, our 2016 State of DevOps Report found that high-performing teams have 3x higher change success rates and when things do go wrong, they recover from failures 24x faster.





It's all in the metrics

DevOps is all about metrics — deployment frequency, reliability, downloads, uptime, etc. Those metrics aren't just important to you, they're crucial to your customer experience. When you monitor the things that matter to your software teams, everyone benefits. Your customers get better products, management gets a clear picture of development and ops.

Measuring and metrics have further reaching benefits, as well. Most dev teams are just plain bad at measuring progress and productivity. And poor measurement causes a cascade of problems. Without accurate tracking, devs can lose motivation, inspiration and dedication. When they can track progress and alert co-workers or managers when things are going astray they'll generally have a much better time. That, in turn, leads to better employee retention. Employees in high-performing IT organizations are 2.2x more likely to recommend their organization as a great place to work than their lower-performing peers. And happy employees produce better product.

DevOps is winning the market

There's strong evidence that high-performing IT organizations are winning the market. We analyzed 2014 survey results from 1,000-plus respondents and found that publicly traded companies with high-performing IT teams had 50 percent higher growth in market capitalization over three years than companies with low-performing IT teams. Respondents from high performers also reported their organizations were nearly twice as likely to exceed their own targets for profitability, market share and productivity. Don't believe us? Here are some solid examples from companies enjoying the benefits of solid DevOps implementation.



PhoenixNAP saves \$1 million with DevOps

phoenixNAP provides cloud hosting and IT services to more than 3,000 customers across 100,000 systems. By implementing DevOps practices, the company was able to save more than \$1 million over the course of a single year.

The IT firm is part of VMware's vCloud Air Network, adopted a DevOps initiative to position the company for growth. "We noticed that the more systems we deployed, the more manual processes we needed," said Marcus Vaughan, director of cloud and enterprise services at phoenixNAP. That simply wasn't going to work for an ambitious company in a competitive space.

DevOps practices and Puppet Enterprise lets phoenixNAP make changes rapidly, repeatably and reliably. "An early win we had with Puppet was when we needed to migrate a legacy, very complicated system," Marcus said. Migrations like this used to take three or four engineers three to four months to complete. But after installing Puppet Enterprise on its systems, "that migration we recently completed took only 18 hours," saving phoenixNAP \$100,000 in labor.

That's how phoenixNAP got to \$1 million in savings within the first year. "We've recorded over 800,000 changes this year through Puppet, and we say one dollar per change," Marcus said. "So we estimate that's \$800,000 [saved] just for the application services team — and that's only the middleware team. That doesn't count the developer who's not waiting for two months for a box, or the release engineer who's spending a week manually deploying a new system. Very conservatively, we have saved over \$1 million with Puppet, moving from a physical/semi-virtualized environment to a fully virtual, VMware-based environment, plus Puppet automation."

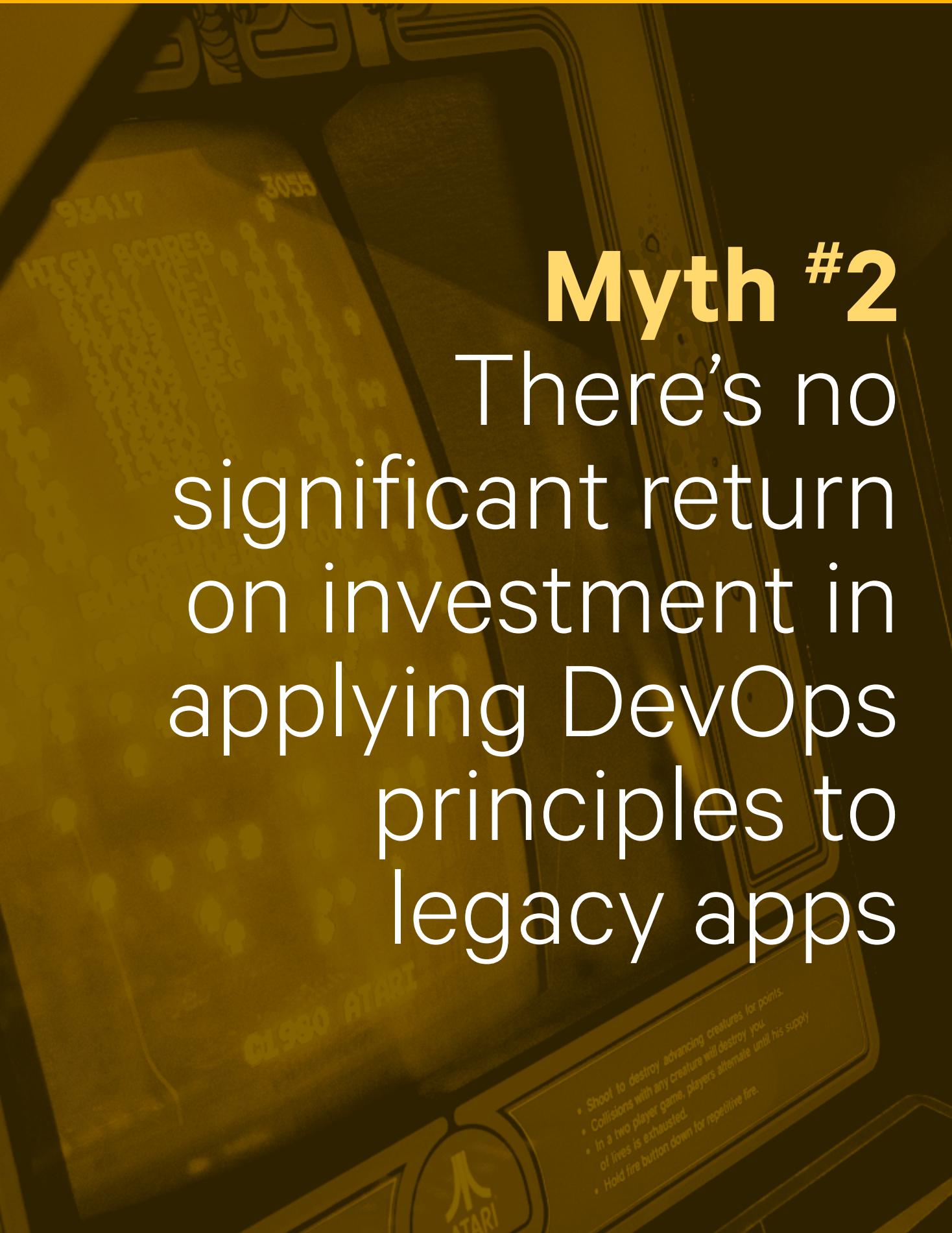
With DevOps, it's always best to start with new apps that don't carry any technical debt. But you can still gain productivity by apply DevOps practices to your legacy apps. Automating even the smallest of arduous tasks can save a tremendous amount of time and free your teams up to advance company goals and expand into new territories. Start with the three-to-five most painful processes associated with your legacy apps. If automation can save just a few minutes on each task, your team will net tremendous gains over time.



Myth #1
There's no
direct
value for
adopting DevOps
practices

MYTH BUSTED

Don't believe the myth: It's clear that DevOps practices deliver tremendous business value. In fact, all the tenets of DevOps were conceived specifically to drive business goals. But this is just one of the myths surrounding DevOps.



Myth #2

There's no significant return on investment in applying DevOps principles to legacy apps

You might think that DevOps is useless for legacy apps. No amount of attention and care can make them healthy again. On the contrary, a healthy dose of DevOps can revive your legacy apps and transform them into thriving, productivity-driving superstars. Or, in the very least, alleviate the pain they cause so you can get back to driving business initiatives.

Walmart saves time and money with DevOps

Before DevOps, retail giant Walmart struggled to maintain a vast legacy infrastructure that stretched across the country. The company had servers in every store and in data centers sprinkled throughout the US. Software updates, upgrades, or any changes to infrastructure would take weeks or even months to implement. As a result, the company wasn't able to move forward with long-term IT goals.

With DevOps and Puppet, Walmart was able to manage their vast, diverse infrastructure using one tool. "We adopted Puppet for the particular purpose of controlling drift in a large, legacy brownfield environment," says Walmart IT associate Martin Jackson. "It's doing that job fantastically well across multiple OS platforms, across huge geographic distances. Stores thousands of miles away are using the same infrastructure, and it's all working, and it's working well."

Martin and his team have been able to slash the time it takes to make updates and changes to the Walmart infrastructure. "Before Puppet it would takes us sometime between four weeks to never to achieve major changes... Now with Puppet we can do those changes in a week, or a couple of days, or in the case of straightforward changes, just a couple of hours."



Getty merges multiple infrastructures with DevOps

When Getty Images and iStock joined forces, the two companies kept their disparate infrastructures. And as the conglomerate assimilated other stock photo entities, their separate infrastructures were migrated into the Getty Images data center or kept running on their original sites through virtualization. The result was a hodgepodge of hardware and software that was an IT nightmare.

“The company was spending a disproportionate amount time fighting fires,” said Juan Rivera, manager of platform design at Getty Images. While Getty Images was actually using Puppet for configuration management, there were different versions running simultaneously, and multiple masters. “We had multiple repos and workflows internally, and it was not practical,” Juan said.

Getty needed a better way to manage their infrastructure. They started implementing DevOps practices — continuous integration, configuration management, shorter release cycles and testdriven development. With Puppet, they were able to manage their Amazon cloud instances to ensure their development environment configurations aligned with production environments. IT operations now uses Puppet to maintain configuration parity between development, staging and production environments for various major applications.

Gaining control of their IT environment let Getty vastly improve customer experience. They can quickly test new features for customer response, rapidly scaling the features that prove popular, and pulling back those that don’t. And because they can deploy faster, they don’t get stuck with poor-performing apps. “You’re more reluctant to pull something back that took six months to release rather than just a couple of weeks to release, regardless of its actual business value,” said Juan. “The business value is tremendous.”

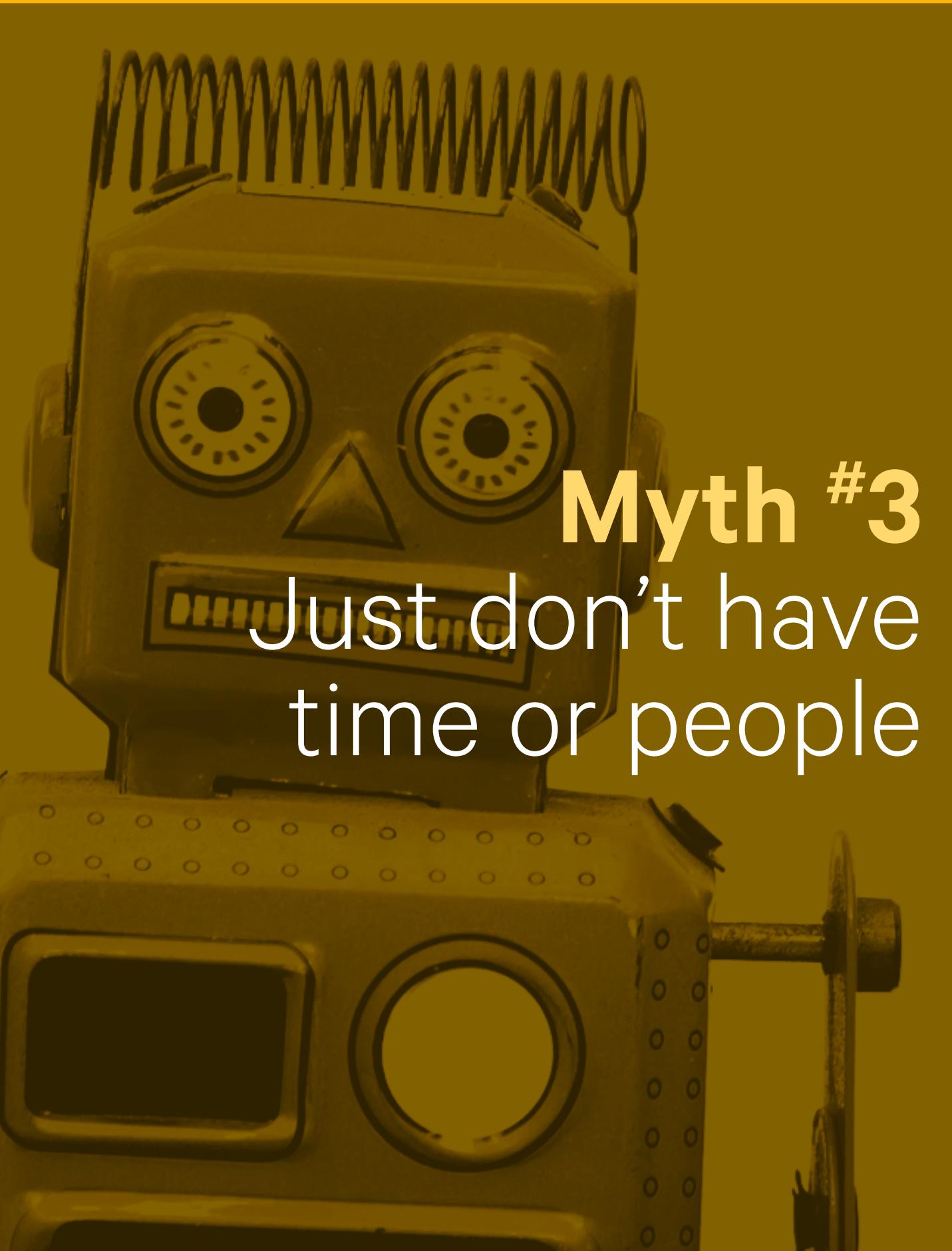


Myth #2

There's no significant benefit in applying DevOps principles to legacy apps

MYTH BUSTED

Don't believe the myth: DevOps can definitely help you optimize legacy systems and smoothly transition to newer tools.



Myth #3

Just don't have time or people

You might think you don't have the time or the staff to implement DevOps. The reality is you don't have the time to ignore DevOps. Look at it this way: For every person-hour invested in DevOps, you gain at least twice that back in free hours for you and your staff. In essence, every hour spent working on DevOps is an hour spent reclaiming lost time. For example, if you spend four hours on automation to gain two hours every day, you'll be ahead of the game.

Spend enough time automating painful processes and your work week will go from 40-60 miserable hours to 20 tactical hours. You'll have time to think about adding long-term value to your team, customers and the business. You'll have the time and capacity to work on the strategic projects you've always wanted to work on.

This change can cause uncertainty and inefficiency in the short term, so it'll be important to communicate the benefits to your teammates. Explain why you need to invest on time reclamation, automation and better tooling — because then you'll have extra time to invest in the things the business cares about.

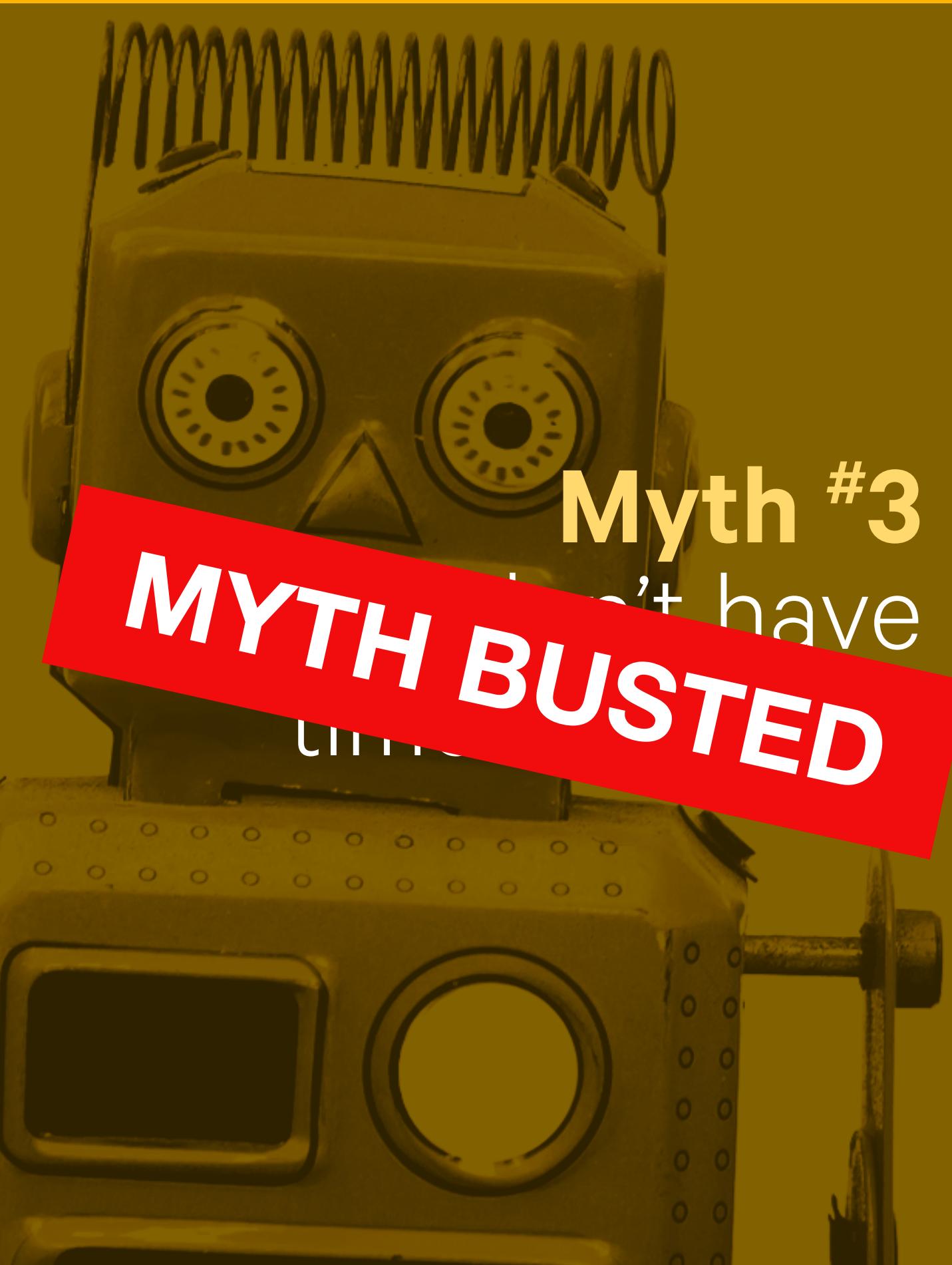


Insurance saves time with DevOps

Property and casualty insurance provider Hiscox experienced rapid growth in the 2010s. They quickly ran into infrastructure and development roadblocks built on legacy tech and practices. The team knew they needed to transform the way they worked, but Hiscox is a huge company with multiple teams, thousands of employees and millions of customers. “Starting our DevOps journey was largely delayed by the sheer scope and size of the challenge ahead,” said Jonathan Fletcher, DevOps lead at Hiscox. “Trying to effect process, people, technology and cultural changes across the entire application portfolio, in a globally dispersed team and with a lot of associated technical debt, is an epic challenge. If you think about deployment, testing, moving to Agile, spinning up new environments, instituting new version control strategies, etc., it’s just too much to do in one hit.”

Finding time to even start DevOps initiatives seemed nearly impossible. But Jonathan and his team was able to eek out a few hours during the week to get started and within months were reaping the benefits. “We’ve had some great results from our DevOps initiatives so far. We reduced our cost per release on one application by 97 percent ... By automating our testing, we’ve reduced multiple man days of effort down to an overnight hands-free process.”





Myth #3

DevOps doesn't have time for creativity.

MYTH BUSTED

Don't believe the myth: Every minute you put into implementing DevOps practices will net untold amounts of time in the long run. You'll automate tedious processes that are wasting your time and sapping your creativity.



Myth #4

DevOps doesn't play nice with regulatory and compliance requirements

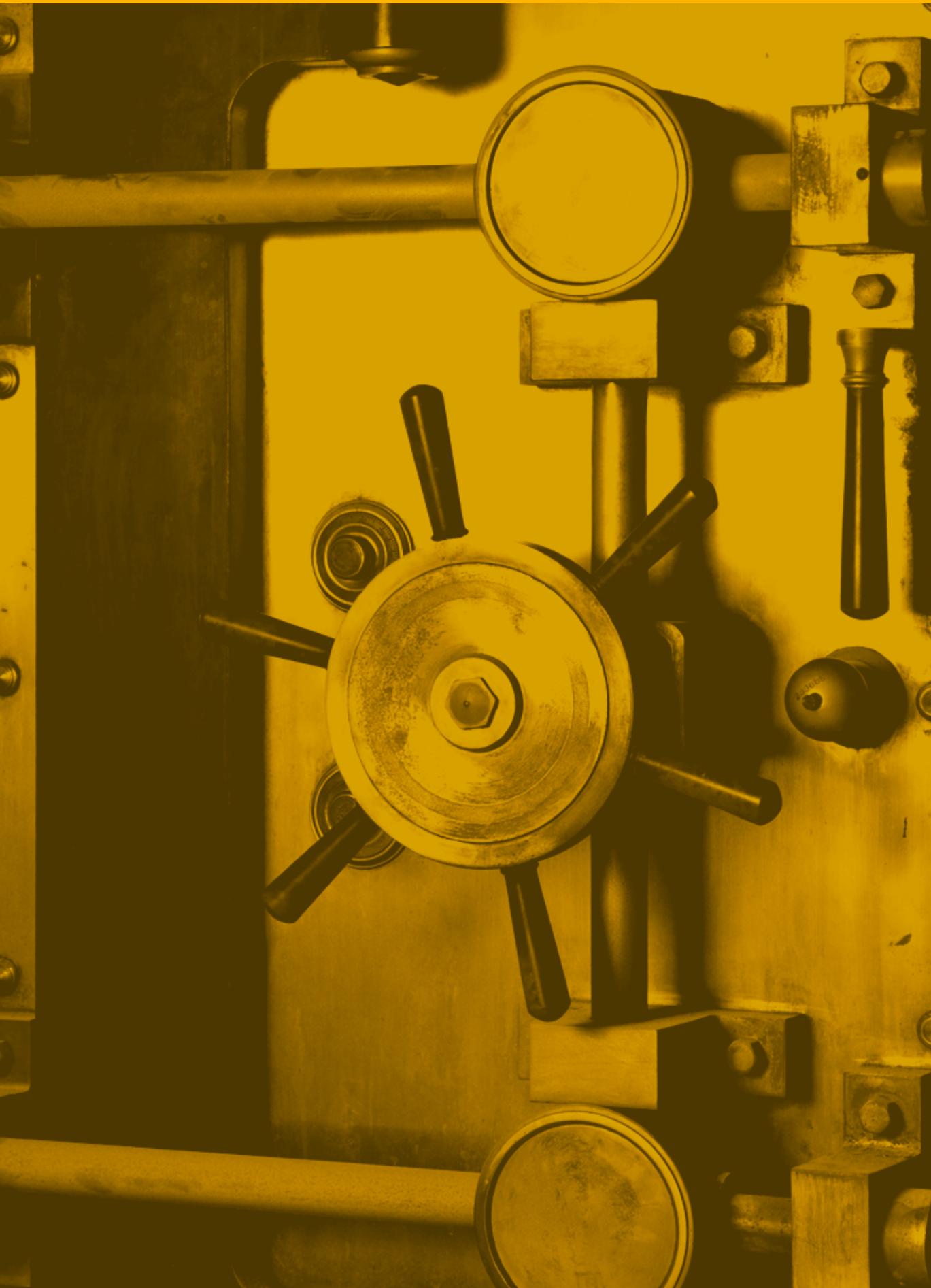
IT and dev teams in highly regulated industries often get mired in convoluted processes and strict standards. And when you're stuck in the middle of so much complexity, it may seem impossible to break free and adopt DevOps practices. On the contrary, DevOps can help speed up regulatory vetting and ease the auditing process. The 2016 State of DevOps survey found that 48% of high performers had at least 1 compliance requirement (like PCI DSS, HIPAA, X, Y or Z - but not Other). Also, 55% of all respondents had at least 1 compliance requirement. With automation, you can ensure all the systems in your infrastructure meet regulatory requirements at once. There's no need to give auditors root access to any machines nor have they compare config states on a hundred-plus machines. With a tool like Puppet, auditors can be assured that all the nodes in your infrastructure meet requirements and standards — and that they'll stay that way.

DevOps practices don't come at the expense of security and compliance — they help enable security and compliance. DevOps encourages dev and ops teams to work with security teams early and often to incorporate security requirements. In fact, according to the 2016 DevOps Report, high-performing IT teams spend 50% less time fixing security issues than their lower-performing peers.

When teams implement common DevOps practices like automated configuration management, testing and deployment, it's easier for them to meet compliance. These practices make it possible to:

- Define and deploy your security and compliance policies
- Continually monitor and enforce those policies over time
- Prove compliance with detailed reporting on the state of your infrastructure

Here are a few examples of Puppet customers who were able to use DevOps practices to meet security regulations and compliance faster and easier than before.





Infusionsoft.

Infusionsoft saves time & meets PCI standards with DevOps

Infusionsoft develops and sells CRM systems for small business. In the early days, the company grew at an astonishing rate. To keep up, the ops team had to rapidly scale infrastructure while meeting Payment Card Industry (PCI) Digital Security Standards. Before DevOps, the team would spend hours provisioning new servers.

The Infusionsoft team needed a better way to deploy and manage their infrastructure. They turned to DevOps practices and started automating server provisioning with Puppet Enterprise. The team would be able to automate provisioning and management of VMware virtual machines. And, of course, reporting became much easier.

“Recently, leadership has asked us questions about what’s in our environments,” Said Ben Hainline, production operations engineer at Infusionsoft. “Using PuppetDB, we can query and provide information that helps with capacity planning — what we are running right now, how much we’ve grown recently, and what we’ll need to grow in the future.”

That same reporting has made meeting PCI requirements a breeze. “We can use Puppet to control who has access to specific systems, and we can add and remove control quickly,” Ben said. “We can also push out any new security configurations we need to adhere to, and show what we’ve changed with the reporting.”

1-800-Flowers and DevOps

Online flower giant 1-800-Flowers needed to move to the cloud to better meet seasonal demand. But before anything could be migrated to the cloud, the IT team would have to ensure the new setup met Payment Card Industry Digital Security Standard (PCI DSS) and Sarbanes-Oxley requirements. Prior to using Puppet Enterprise, system engineers wrote in-house scripts for compliance. Achieving consistency was a challenge.

“It’s not easy to handle deploying changes in a mass, across hundreds of systems,” said 1-800-Flowers Director of IT Infrastructure Veerakishore (Kishore) Vellanki. “We need to have consistent builds across systems, and make sure we have a continuous check that configurations are not modified, and not altered by somebody. This is an area where Puppet is helping a great deal.”

Kishore’s team is now using Puppet files to standardize configurations, checking them into a version control system. The system operations team is able to apply these configurations consistently through all stages of change, from development through QA to user acceptance testing and on to production. This infrastructure-as-code approach not only ensures consistency, it also provides visibility to anyone involved in the development and delivery process. Treating infrastructure as code is also a necessary step for 1-800-Flowers.com to move to continuous delivery.

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The New York Stock Exchange and DevOps

The New York Stock Exchange (NYSE) is the world's largest stock exchange by market capitalization. In 2015, it raised \$137 billion in capital, including \$6 billion from tech IPOs, making NYSE the U.S. leader in tech IPOs. NYSE is part of Intercontinental Exchange (ICE), which owns 23 exchanges and marketplaces, as well as five central clearinghouses.

NYSE and the rest of the ICE exchanges are subject to many regulatory requirements, and the organization is able to meet many of these with DevOps practices and Puppet. “It’s a great tool that demonstrates our commitment to automation and consistency to auditors,” said Pope Davis, senior director of systems engineering at ICE. “They [auditors] often ask how we can ensure a server meets its goals, and we say, ‘We run Puppet at build time, and on a consistent basis.’ They are excited that we’re using a tool that enforces consistency.” ICE also relies on Puppet to push out security changes quickly, in a consistent and orderly fashion.

Myth #4

DevOps doesn't get in the way of compliance.

MYTH BUSTED

compliance requirements

Don't believe the myth: Contrary to common belief, DevOps doesn't get in the way of compliance. In fact, DevOps makes it easier to meet stringent regulations.



Myth #5

We don't have any problems that DevOps could fix

If you're doing well, it may seem like there's no reason to adopt DevOps practices. But even if your company is functioning at a high level, it could always do better. Every organization has to be focused on getting better and faster at what it does, no exception. And that's at the core of DevOps practices. There is always a slow or poor-performing piece in any system. The question is how do you find it and improve or optimize it? That's what DevOps can help you do.

Discovery is a core tenet of DevOps. There may be pain points or inefficiencies in your system that you're not aware of. DevOps will help you find them and improve them. It may simply mean finding the most annoying or troublesome aspects of your workflow and automating or eliminating them so you have more time to focus on improving or expanding your business. It can also mean deploying faster or more frequently, or improving service availability and mean time to recovery (MTTR).

New Zealand research company finds efficiency with DevOps

GNS Science is New Zealand's leading provider of Earth, geoscience and isotope research and consultancy services. GeoNet is a GNS Science project funded by the New Zealand Earthquake commission, to build and operate a modern geological hazard monitoring system in New Zealand. It comprises a network of geophysical instruments, automated software applications and skilled staff to detect, analyze and respond to earthquakes, volcanic activity, large landslides, tsunami and the slow deformation that precedes large earthquakes.

The GeoNet IT infrastructure consisted of around 100 or so completely heterogeneous nodes. The majority of these nodes were a mix of physical and virtual machines running Red Hat Enterprise Linux (RHEL), CentOS or Scientific Linux in 5.x and 6.x, on both 32-bit and 64-bit architectures. There was also a smattering of Windows hosts for interfacing with specialized hardware. Most nodes were run in a geographically redundant pair, no with little or no staging. While many parts of the GeoNet

infrastructure were well maintained, with versioned configurations, the team wanted to centralize configurations. It was difficult to keep such heterogeneous systems maintained and up to date; much configuration was being done manually, resulting in some divergence in configurations between hosts.

GeoNet wanted to streamline the process of getting code from development to production — a common reason for organizations to look into DevOps. Adopting Puppet Enterprise was an important step in getting DevOps practices established, as described in a blog post by Geoff Clitheroe, GeoNet's systems development manager: "Puppet describes server infrastructure as code. Once a server, and the installed software, are described in code, then making a new server that is exactly the same becomes as simple as running a computer program — something that the Puppet master is very good at."



Don't believe the myth: DevOps can benefit any company that has an infrastructure to manage. It doesn't matter if you're a software company or a shipping company or a scientific research organization.



Myth #6

DevOps is just for startups or unicorns, not enterprise businesses

It's true, companies like Google, Apple and Salesforce.com have been early adopters of DevOps practices. But that doesn't mean you have to be one of those companies to make DevOps work. DevOps is about improving the way teams work together to deliver better software that meets the needs of customers and end users. These days, every company needs to behave like a software company and recognize that technology is a strategic differentiator that helps organizations compete and meet customer needs in new and innovative ways.



Staples automates VM deployment

Office equipment megastore Staples needed a more efficient way to manage their internal private development cloud. To speed things up, the team implemented DevOps practices, including heavy automation of VM deployment and configuration.

“Staples had just a limited number of people with a set of very specialized skills who could automate,” said Jeff Quaintance, senior cloud and automation engineer at Staples. “We had a lot of development teams just chomping at the bit to start expanding the number of tools that they used in house. They wanted that automated.”

Staples’ IT team is now using Puppet Enterprise to manage the VMs in its private cloud, which runs on Linux. While system engineers are certainly saving a lot of time on routine tasks, the biggest benefit is the vastly increased speed of getting a package developed and installed.

“If we have the package already developed, what took days before now takes literally minutes,” Jeff said. “For a new capability — say a new application server container we need to install — what took several weeks is now down to a week.”

That has made a big change in the perception of IT Operations and its role within Staples. “We can turn this stuff around really, really fast, because we’ve done a good job with building the configurations within Puppet,” Jeff said. “People are amazed at how quickly we’re turning things around. We’re doing a good job of keeping pace with our development teams as they try to roll out new functionality for our business, and that’s helped me and my team build credibility within the global technology organization here at Staples.”

This shared responsibility for delivering code that moves the business forward is, of course, what DevOps is about. “I look at it as bringing operations and development closer together to solve business problems, regardless of whether that’s a software release or you have a priority incident to address,” said Tom Sabin, IT manager for cloud and automation at Staples.



Fulcrum automates server deployment

When Bill Wellington came to work at telecom infrastructure management software company Fulcrum Technologies in 2011, he found a company managing close to 100 servers with one-off manual configuration scripts. Fulcrum's infrastructure was split about evenly between the development environment and the production environment. The SaaS environment was growing quickly — for each new customer Fulcrum needs to spin up at least two new nodes.

Once Fulcrum adopted DevOps practices and Puppet Enterprise, Bill and his team no longer needed to manually set up hardware, provision it with working software and configure backend networking. Now most of the work of deploying Fulcrum's application stack is accomplished by simply deploying a Puppet agent. "Automating the actual building of systems means I can concentrate on the other pieces, while Puppet manages building the systems for me," Bill said.

The time that Bill has saved because of DevOps and Puppet is now available for other projects that improve operations and move the business forward. "I was able to concentrate on the problem of monitoring our complex infrastructure in the time I would have spent building machines by hand," Bill said. He's also been able to spend more time helping people on his team develop in their jobs — an investment in Fulcrum's future growth. And because nearly everyone on Fulcrum's IT team uses Puppet, others also have more time to focus on other challenges.

Fulcrum's team makes fewer errors with configurations and deployments. Developers write code in an environment that reflects Fulcrum's production environment, and QA is testing in a similarly real-world environment, so code delivered to production works as expected far more often.

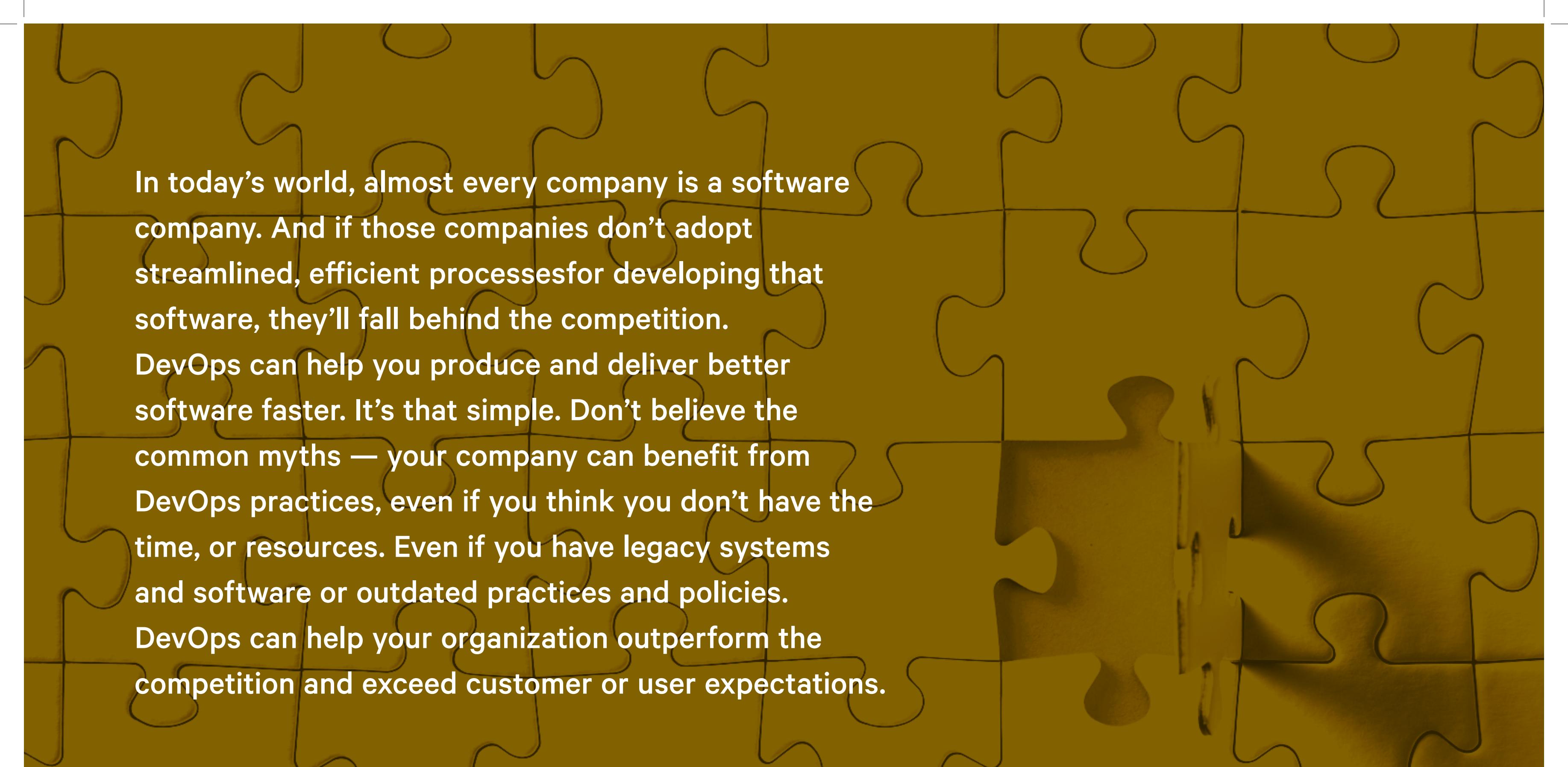


Myth #6

DevOps is just for unicorns, not enterprise businesses

MYTH BUSTED

Don't believe the myth: Enterprise businesses often have more to gain by implementing DevOps than startups or young companies. DevOps can streamline the management of legacy systems and drastically improve processes.



In today's world, almost every company is a software company. And if those companies don't adopt streamlined, efficient processes for developing that software, they'll fall behind the competition. DevOps can help you produce and deliver better software faster. It's that simple. Don't believe the common myths — your company can benefit from DevOps practices, even if you think you don't have the time, or resources. Even if you have legacy systems and software or outdated practices and policies. DevOps can help your organization outperform the competition and exceed customer or user expectations.