



## Leveraging DevOps to Accelerate Innovation and Agile IT Operations

### *Identifying Techniques and Technologies to Speed Time-to-market*

### The Road to Competitive Advantage

New technologies - in social, mobile, cloud, and IoT - have fundamentally disrupted old models of business, across every industry, ecosystem, and work function. Leveraging these technologies, combined with the power of big data analytics, digital upstarts such as Airbnb and Slack have raced past industry stalwarts.

With these new cloud-based solutions and customer intimacy, the majority of enterprises are now transforming into technology companies, able to introduce products to market through cloud and Agile software development. Many, such as Nike and KeyBank, have substantially increased application deployment speed and automation with new processes and metrics. Those not embracing digital transformation have found themselves left behind.

With rapid software engineering comes the need for frequent releases and fast provisioning of systems. In fact, application development has become a focus on which companies compete, regardless of size and industry. Within software deployment, Agile development and DevOps have been advocated for some time with the former having wide adoption and the latter less so. However, business leaders are quickly realizing they must broadly embrace DevOps to keep up with rivals.

In 2016, DevOps emerged as more comprehensive and impactful than Agile development because it combines software development, quality assurance, and infrastructure operations in a single automated motion for each application effort. By nature, it also includes information security and on-demand resources that developers need to quickly focus on coding.

The benefits of DevOps are numerous. When done right, it greatly reduces deployment and testing time, ensures better and more secure code, and provides faster product release. Ultimately, this increased velocity and quality yields higher customer experience, revenue, and income.

But where does the transition to DevOps start? And who leads this effort? Not surprisingly, there is no one answer to these questions. However, given the importance of the topic to success and even survival, it's critical to take a strategic approach to DevOps implementation that will produce the desired results.

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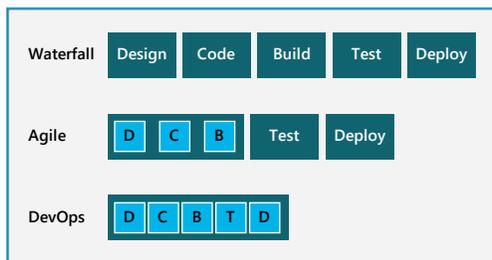
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*“Software drives our interactions and relationships, creating what is defined as the idea economy.”<sup>1</sup>*

- Raffi Margaliot,  
SVP and GM, ADM, HPE Software

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<sup>1</sup> <https://www.capgemini.com/thought-leadership/world-quality-report-2016-17>



## The Race to DevOps

Over the past twelve months, DevOps has emerged as an enhancement to Agile because of its broader scope and larger impact on time-to-market. Unlike Agile development, which includes software design, code, and build, DevOps adds testing and deployment operations. 2016 DevOps developments include:

**Higher interest** – 38 percent of business and IT leaders of the world’s top 2000 companies are focused on implementing DevOps in 2017. The rapid feature releases by Amazon, Google, Netflix, and Washington Post - dozens or even hundreds a day - have captured leaders’ attention. They desire the benefits, including intense responsiveness to the business and customer needs.

**Staffing evolution** – New hires with DevOps responsibilities are spanning the ranks of IT. With titles such as Head of DevOps or DevOps Engineer, these individuals are creating plans or building teams in parallel to core application efforts. Most often they come with architectural backgrounds and an understanding of end-to-end systems, and less so from developer ranks. While a positive evolution, it’s not clear in the long term that DevOps is a job or even a department. More likely, it’s a philosophy that traverses all of IT.

**Greater adoption** – It’s evident there is greater adoption of DevOps and usually within a bimodal IT approach; an effort parallel to core IT, not across the entire organization. Most often, DevOps is applied to new digital experience applications. Thus, while core IT is more focused on sustaining legacy applications and preventing defects, DevOps-enabled digital IT more often adds customer value and business outcomes.

**Moderate success** – In 2016, many companies implemented DevOps without a strategic approach. They realized faster application development but not testing and deployment, and still only release a few versions a month, not multiple per day. Unfortunately, these suboptimal adoptions require adjustments, and organizations are not achieving the increased productivity desired, nor the competitive advantage.

For IT leaders to truly enable engineers within a rapid, continuous motion for application deployment, they must start with a strategic approach.

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*“Baking in DevOps from the start is the key to running a lean and agile team that can scale quickly and adapt easily.”<sup>2</sup>*

*- Andy Vitus, TechCrunch*

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<sup>2</sup> <https://techcrunch.com/2016/07/04/youre-doing-devops-wrong/>

## A Strategic DevOps Approach

Embracing DevOps methodologies requires a holistic effort and a fundamental change from current IT procedures. Substantially different from older offshoring programs to cut costs, DevOps is about investing in existing staff to significantly increase productivity and velocity. As such, accomplishing this change requires a careful assessment of the current state, gap analysis, solid strategy to reach the desired end goal, and strong leadership to get there.

A strategic approach to achieving a successful DevOps environment includes the following components that cover technologies, practices, and people:

**Current state assessment** – Review and document existing software development lifecycle - design, code, deliver, test, deploy - including workflow, topology, and challenges; record manual, ad-hoc, and inconsistent processes.

**Business and technical objectives** – Identify business goals related to product releases and the challenges in current release cycles to achieve desired objectives of business and technology teams; establish most impactful areas to the enterprise.

**Release objectives** – Discover release goals including deployment frequencies and motives.

**Success parameters and metrics** – Develop metrics across the full DevOps application lifecycle to track progress such as process productivity, and speed of deployment versus defect leakage; define success parameters; measure current state as baseline for future comparisons and evidence-based improvements.

**End-state vision** – Define full scope of end-state operations including: DevOps practices, communications and collaboration planning, infrastructure as code (IaC) processes, automated testing, and streamlined release management; identify continuous development, integration, testing, deployment, and operations tools.

### Life cycle needs

- Development: automated provisioning, software configuration management (SCM) and versioning, build scripts, dependency maps, component deployment, and system deployment
- Testing: test scripts, test deployment, risk-based testing, regression rationalization, load/soak scripts, data provisioning, baseline benchmark, test reports
- Operations: image management, patch management, automated environment deployment, start/stop scripts, rolling upgrades, security configurations

**Change management** – Prepare for disruption in roles, workflow, and culture; invest in change management experts and leadership; build plans for cross-department communications and goal alignment; anticipate needs for new resources where skill sets are missing.

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“*Organizations need to invest just as much in their people as they do in their technology.*”<sup>3</sup>

- 2016 State of DevOps Report,  
Puppet

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<sup>3</sup> <https://puppet.com/resources/whitepaper/2016-state-of-devops-report>



*"The categories of tools have expanded and leaders have emerged as follows, according to Xebia Lab's Periodic Table of DevOps Tools." <sup>4</sup>*

**DevOps pipeline** – Build prioritized pipeline of new and existing applications to transition into DevOps environment.

**Budget** – Create financial plan for the journey to the desired end-state including infrastructure, tools, services, and engineers.

After these items have been integrated into a strategic plan and approved by management, it is time to begin with a DevOps pilot:

**DevOps Pilot** – Acquire initial tools and infrastructure; pilot 1-2 applications to test DevOps concepts; calculate metrics and impact; share success with broader organization.

**Opportunities for improvement** – Learn from mistakes, document best practices, close toolchain and technology gaps, alter pipeline, and implement organizational change as needed.

After a successful pilot, the next step in a strategic DevOps approach is transitioning projects from the pipeline into the new application development lifecycle, applying adjustments as needed. It's important to build empathy into the journey as modifications to roles and responsibilities are inevitable, and change can be unsettling. True DevOps success is only achieved when the entire organization is working together. But it takes some time to get there.

## Critical Success Factors

There are a handful of critical considerations that require special attention for the road to DevOps success as follows:

### Cloud DevOps Advancements

While some companies must keep software development and testing onsite due to compliance constraints, others find it beneficial to shift the entire DevOps environment to the cloud. A primary reason is the breadth of tools and resources now available from cloud providers such as Amazon Web Services (AWS), Azure, Google, and IBM. A second factor is the challenge - both time and cost - of getting a complete toolchain set up and maintained in house.

AWS, for example, provides a set of flexible services to simplify provisioning, infrastructure, deployment, and monitoring. AWS DevOps requires minimal setup, scales fast, and charges only for services used. Furthermore, advanced DevOps tools, such as CloudFormation templates, EC2 Container Service, and Lambda provide comparable functionality to corresponding on premise solutions.

### Know the DevOps Toolchain

As DevOps has gained momentum, the breadth and depth of tools has exploded and now provide substantial benefits to development, QA, and operations teams. Containerization tools, such as Docker and Kubernetes, have received the most attention and deserve that focus given their contribution to productivity. But solutions across the DevOps lifecycle are driving significant gains. Given the proliferation of tools, developer preferences vary. A common starting point is using solutions familiar to the current team. However, it's critical to keep abreast of advancements by reading industry blogs, and attending user groups and conferences. News spreads fast by word-of-mouth in the application development community. Thus, networking is important until the toolchain ecosystem becomes more mature.

<sup>4</sup> [https://xebialabs.com/assets/files/infographics/periodic\\_table\\_11x17inc\\_v2\\_clean\\_outlines.pdf](https://xebialabs.com/assets/files/infographics/periodic_table_11x17inc_v2_clean_outlines.pdf)

Software Configuration Management	Github, Git, Mercurial
Build	ANT, Liquibase, Packer
Continuous integration server	Bamboo, Jenkins
Repository management	Artifactory, Docker Hub
Testing	Cloudtest, DataVision+, FitNesse, JMeter, JUnit, Keynote
Deployment	Apache Maven, Otto, SmartFrog
Configuration & provisioning	Chef, Puppet, Salt
Containerization	Docker, Kubernetes
Release management	BMC Release Process, HP Codar
Collaboration	Jira, ServiceNow, Slack
Business intelligence & monitoring	AppDynamics, New Relic
Logging	Logentries, Splunk
Cloud management platform	CliQr, Scalr

## Test Automation

With digital transformation and a transition to a higher mix of customer facing applications, testing now plays a more central role to the success of the enterprise. While testing has increase to 30-40 percent of the DevOps process, it is the most neglected step in the development lifecycle. The simple reason is that many companies fail to understand their needs and delay automation and attention until later phases of execution.

DevOps leaders must replace traditional ways of testing with new directives to prevent defects from reaching production, and to improve customer experience and business outcomes. Otherwise testing becomes a troublesome bottleneck in digital application development. In the relentless push for speed and competitive advantage, developers commonly improve efficiency first. But linear increases in design, code, and build, are followed by exponential growth in testing. And very few companies retire old and irrelevant test cases.

Furthermore, up to 50 percent of testing is still manual. To remedy the situation, DevOps leaders must consider testing needs at the start of the journey and strive for automated testing and test-driven development where QA is embedded early in the lifecycle. Machine-based testing is a likely next wave of QA improvements, but current usage is minimal. Still, integrating data scientists into DevOps teams to achieve data-led and predictive QA is a good idea.

## Metrics and Measurement

As velocity is a primary DevOps goal, it's extremely important to rapidly find and address inefficiencies. DevOps is all about hyper-automation and it's important to be precise and build in automation early. Metrics and measurement are an effective way to expose the weak links in the DevOps lifecycle, and are critical to track progress and failure.

Levels of DevOps maturity will vary across teams and within departments. Advanced practices in one unit are negated by lack of maturity in others, and total velocity is only as fast as the slowest area. Points of weakness and inefficiency in the DevOps lifecycle to watch out for include poor collaboration between development and IT operations, limited testing resources, and manual or ad-hoc processes. Whichever is the case, these shortcomings can be quickly identified and addressed through strong attention to metrics and measurement.

## How Trianz Can Help

Trianz specializes in combining cloud, analytics, digital, and security technologies with business acumen to help *Fortune* 1000 and emerging leaders achieve measurable results. With a track record of over 2000 successful client partnerships and engagements spanning 15 years, Trianz has enabled organizations, across dozens of industries and geographies, to define strategies that enhance and expedite the journey to digital transformation.

Trianz' DevOps practice focuses on helping clients achieve strong operational results with an emphasis on business outcomes. Trianz DevOps experts employ a holistic and integrated approach, from infrastructure to production deployment, and on premise to cloud domains. Critical to each project's success is developing a common understanding of implementation processes as well as expected benefits and outcomes.

All Trianz DevOps engagements include tracking metrics to find early signs of progress and challenges, and creating an environment that fosters a learning-centric approach to process improvements. Proven DevOps reference architectures for desktop and mobile applications are deployed where relevant. And prioritized application-based DevOps pipelines are developed to achieve early success.

Furthermore, strong attention to metrics helps clients track progress in five primary domains: IT operations, applications and services, organizational development, customer satisfaction, and business results.

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*“DevOps is allowing KeyBank to shorten delivery time by up to 85% and reduce defects by at least 30%.”<sup>5</sup>*

*- Robert Stroud,  
Forrester Research*

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<sup>5</sup> [http://blogs.forrester.com/robert\\_stroud/17-02-24-devops\\_no\\_longer\\_just\\_for\\_unicorns](http://blogs.forrester.com/robert_stroud/17-02-24-devops_no_longer_just_for_unicorns)

## About Trianz



Trianz simplifies digital evolution through effective strategies and excellence in execution. Collaborating with business and technology leaders, we help formulate and execute operational strategies to achieve intended outcomes by bringing the best of consulting, technology experiences, and execution models. Powered by knowledge, research and perspectives, we serve *Fortune* 1000 and emerging organizations across industries and geographies to transform their business ecosystems and achieve superior performance by leveraging Cloud, Analytics, Digital, Infrastructure and Security paradigms. For more information, visit [www.trianz.com](http://www.trianz.com).

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