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Accelerating Innovation with DevOps

DevOps: The CIO's Guide To Velocity

Businesses that evolve a rapid, customer-centric approach to application development and delivery are best positioned to innovate in their markets. They respond to market opportunities with change so fast that it becomes a competitive advantage. Using DevOps tools and services on the cloud helps teams efficiently and effectively collaborate, bringing business, IT, and operations together. Removing bottlenecks in the development process enables teams to focus more on delivering an excellent customer experience.

DEVOPS WITH CLOUD SERVICES HAVE BECOME ESSENTIAL

Businesses that disrupt traditional enterprises across all industries--including transportation, finance, and insurance--use cloud platforms, end to end mobile solutions, data analytics, cognitive and other services. The world's largest retailer now carries no inventory; the biggest media company owns no content; and the biggest accommodations company owns no real estate. As customers increasingly expect direct, digital links to perform transactions in the mobile moments of their lives, application developers are assuming a primary responsibility for delivering customer experience.

Because innovation and adaptability are critical to surprising customers and keeping them happy, both existing businesses and startups realize that Agile methodologies, Lean Practices, and Design Thinking are as essential as adopting cloud platforms and using cloud services to build their most critical apps.

ADOPTING DEVOPS AT CLOUD SPEED IS CRITICAL FOR NEW AND TRADITIONAL BUSINESSES

What could be more traditional and less likely to be disrupted than furniture manufacturing? Bernhardt Furniture Co., to make navigation of their models and inventory more efficient for potential buyers, used a cloud platform with DevOps services and practices to rapidly design and develop their Virtual Showroom mobile app experience. Based on a microservices architecture, Virtual Showroom quickly resulted in 20 percent increase in customers engaged during on and off site sales events, with a 20 percent increase in overall sales.

Based on the flexible architecture, and using DevOps best practices to automate test and deployment cycles, Bernhardt's teams perform updates in parallel to different microservices in their app, ultimately making code updates simple drag-and-drop tasks. By incorporating user feedback from sensors in showrooms on site, the latest version of Virtual Showroom refines attention to customer experience as teams evolve the app's individual microservices.

Bernhardt Furniture now matches its artisanship and fashionable designs in furniture with equally appealing, cutting-edge customer engagement.
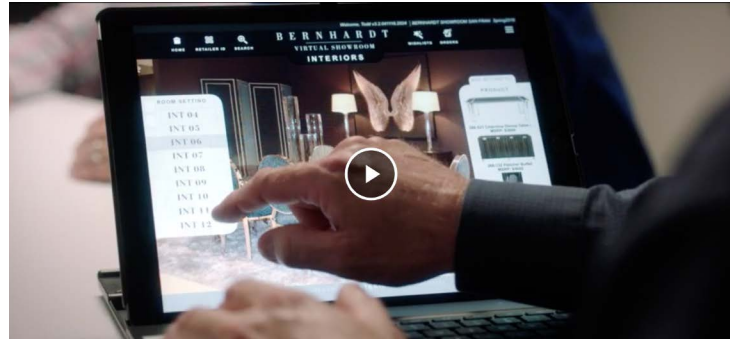
Turning to an example from a completely different industry, American Airlines uses cloud technologies with DevOps, along with their industry expertise, to expand a commitment to provide exceptional experience for their customers and team members. As they continuously modernize and transform, giving customers and team members the right services exactly when needed, technology touches every part of the world's largest airlines company.

Seeking always to keep user experience in central focus, American Airlines leverages the cloud for repeatable returns in increased DevOps productivity—gained through the methods of Design Thinking, Agile collaboration, paired programming, and lean development—and for automated app scalability.

SUMMARY

The DevOps approach, combined with an adoption of cloud technologies, while reducing time to build, test, and deliver applications, must continuously include and integrate customer feedback to enable organizations to efficiently innovate. Organizations on that path consistently outperform traditional incumbent peers in a world in which creatively transforming customer experience is the paramount competitive differentiator.

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DevOps: The CIO's Guide To Velocity

by Robert Stroud and Elinor Klavens
March 2, 2017

Why Read This Report

Chief information officers know they need to provide superior and differentiated customer experience (CX), and transitioning their software delivery model to fast, frequent releases is a key success factor. While CIOs may know the destination, many struggle to define the road map; Forrester's customer-obsessed operating model (COOM) guides organizations toward digital excellence. This report applies Forrester's COOM to development and operations (DevOps) and addresses the major stumbling block for CIOs: accepting that they must sacrifice perfection for speed.

Key Takeaways

DevOps Delivers Velocity With Quality And Agility
Speed rules in the age of the customer; however, speed with low quality is a disaster. The age-old quest for perfection is equally bad. Speed with quality is the mantra of the DevOps movement. CIOs must replace traditional linear thinking with Agile thinking.

DevOps Requires A Transition From Tech-Focused Teams To Product Teams
Effective DevOps requires the fusion of development and operations into teams that are product (or solution) based. These teams will own the complete product life cycle.

Automation Across The Complete Life Cycle Is A Critical Imperative To Delivering Value
Today, automation typically takes place within technology silos. Automation across the complete life cycle will drive velocity, and integration across the life cycle will remove human error to reduce risk while driving enhanced quality of service.

DevOps: The CIO's Guide To Velocity

by Robert Stroud and Elinor Klavens
with Matthew Guarini, Glenn O'Donnell, Aaron Kinch, and Diane Lynch
March 2, 2017

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Related Research Documents

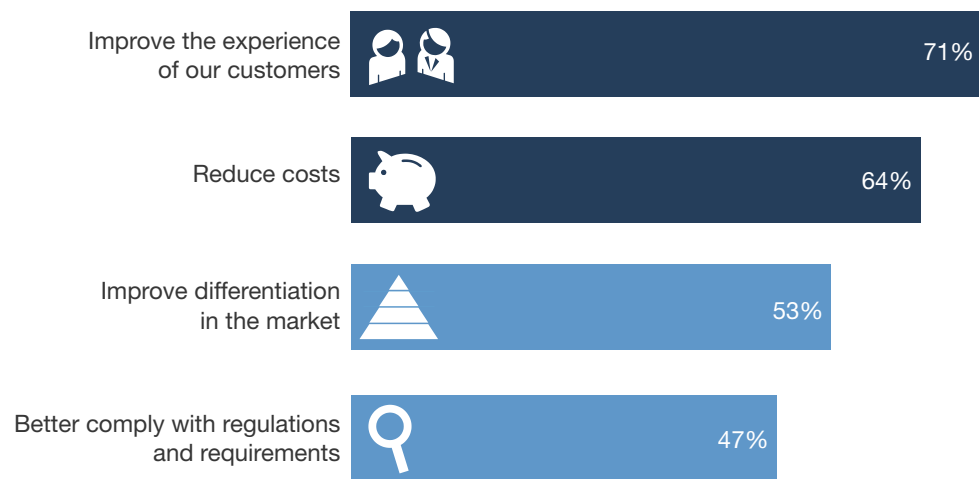## Executives Prioritize CX Yet Fail To Deliver At The Speed Of Business

The pace of customer demand dictates that CIOs must have the technology capabilities and partnerships to deliver software at lightning speed. However, many organizations still allow technology management and the business to operate autonomously. This stymies the transition to becoming an organization that differentiates itself through its technology capabilities. Domino's Pizza has embraced this transition and sees itself as "an eCommerce company that sells pizza."[1] Executives at Domino's Pizza, and their customer-obsessed peers, understand that technology capabilities unlock improved customer experience, cost management, differentiation in the market, and regulatory compliance (see Figure 1). These customer-led companies create integrated product teams that focus on innovation and CX while producing high-performing, fast-releasing software. Capital One has also benefited from adopting a customer-centric approach to development, increasing autonomy within product teams with real-time customer feedback. As CIO Rob Alexander noted, "Banking needs to be enabled by data and intelligence in terms of understanding the customer and anticipating their needs."[2] While CIOs recognize the CX imperative, many fail to take the technology steps necessary because they:

› **Prioritize modernization of legacy systems over process innovation.** Technical debt sees many CIOs diverting valuable resources to modernization programs. While most technology leaders recognize the value of automation, many are wary of trying to automate the chaos that exists around technical debt.[3] The result is siloed innovation that doesn't provide the value that organizations need to meet the needs of empowered customers.

› **Hesitate about the cloud.** Existing approaches to development and infrastructure aren't cost effective, nor do they provide the agility and flexibility CIOs need to execute on their CX initiatives. Cloud solutions offer economies of scale and free up resources to focus on innovation. Cloud revenues will total $236 billion by 2020, reflecting the acceleration in adoption to support velocity in a cost-effective manner.[4] Concerns over cloud do continue around designing the right strategy to integrate an ecosystem of cloud players into an internal business model and identifying vendors and partner players that will share the values and priorities of their organization.

› **Fail to grasp the link between testing automation and quality.** Manual testing processes bring the software delivery pipeline to a screeching halt. Executives know they need to automate quality control checks, yet they err on the side of caution and fail to make changes. For most, testing processes and the software delivery pipeline are manual or, at best, partially automated, with additional processes added after each failure. CIOs are aware that automated testing needs to form part of the life cycle, yet many fail to act on this fundamental process improvement.

› **Distrust automated security and compliance practices.** Evolving security, privacy, and compliance requirements pose challenges for every CIO and add extreme complexity to decision making, regardless of industry. The increased frequency and impact of attacks often leads to additional layers of security, testing, and verification. A similar approach is also prevalent in compliance. Constantly adding process simply adds delays and complexity, thus increasing, not

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reducing, business risk. Security and compliance are critical components to the life cycle, and CIOs must address them. To ensure effective security and compliance, testing and compliance must become automated processes.[5]

FIGURE 1 Executives Must Focus On Driving Customer Experience

"Which of the following initiatives are likely to be your organization's top business priorities over the next 12 months?"

Improve the experience of our customers	71%
Reduce costs	64%
Improve differentiation in the market	53%
Better comply with regulations and requirements	47%

Base: 19,775 global business and technology decision makers and influencers
Note: Not all responses are shown.
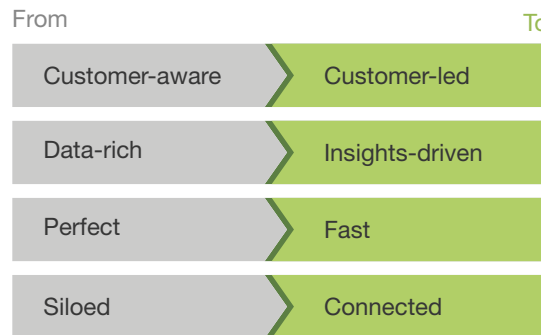Source: Forrester's Global Business Technographics® Priorities And Journey Survey, 2016

Customer Obsession Requires Velocity; DevOps Delivers It

Forrester has identified four key design levers that enable CIOs to create a customer-obsessed enterprise that focuses its strategy, operations, and budget to enhance its knowledge of, and engagement with, customers (see Figure 2). Within the technology management organization, application development professionals have focused on the "fast" lever and responded with approaches like Agile development, delivering smaller changes with greater velocity. Infrastructure and operations professionals have increased their own velocity with techniques such as virtualization and cloud solutions. DevOps represents a movement responding to internal and external demand to deliver customer-obsessed software faster by focusing on the collaboration among all technology management teams. DevOps is about people first; technology is ancillary. Forrester defines DevOps as:
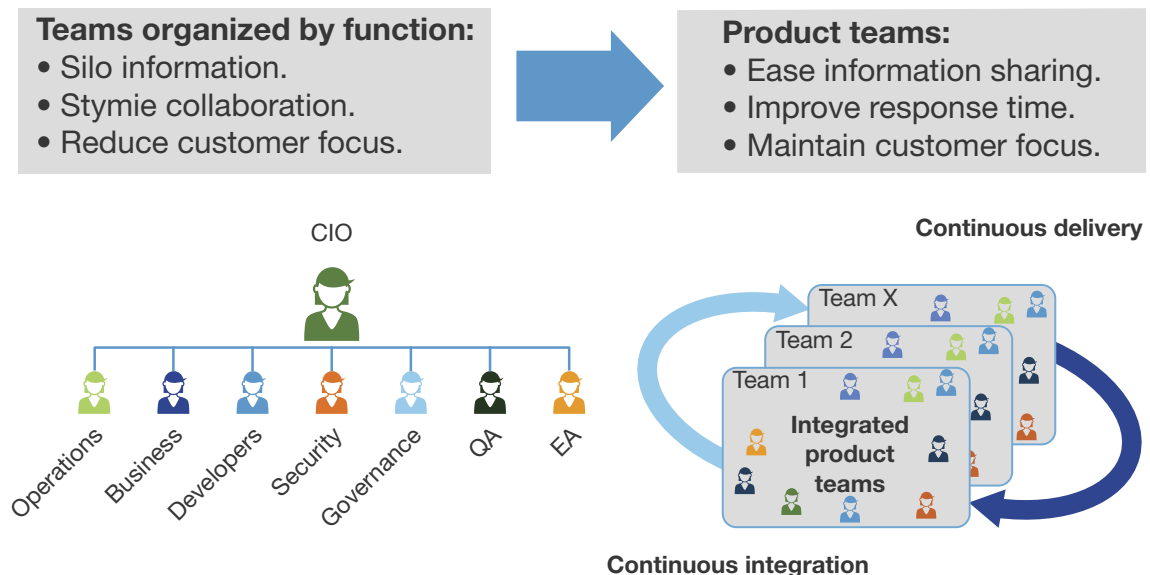
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A set of practices and cultural changes delivering the ideation, development, and delivery of an automated software pipeline, enabling organizations to deliver continuous quality innovation for their customers.

The DevOps mindset encourages collaboration among all teams, including the business, developers, enterprise architects, security, and tech management operations, to improve the speed and quality of delivering software. DevOps extends Agile development practices by streamlining all change through the various software development life-cycle (SDLC) stages (build, validate, test, stage, and deploy), developing and empowering cross-functional teams with full ownership (see Figure 3).

FIGURE 2 The Four Levers Of The Customer-Obsessed Operating Model

From	To
Customer-aware	Customer-led
Data-rich	Insights-driven
Perfect	Fast
Siloed	Connected

FIGURE 3 The Transition From Silos To Product-Centric Teams

Teams organized by function:
• Silo information.
• Stymie collaboration.
• Reduce customer focus.

Product teams:
• Ease information sharing.
• Improve response time.
• Maintain customer focus.

CIO

Operations Business Developers Security Governance QA EA

Continuous delivery

Team X
Team 2
Team 1

Integrated product teams

Continuous integration

DEVOPS IS AN ORGANIZATIONAL SHIFT FOCUSED ON CUSTOMER OBSESSION

DevOps requires breaking down silos that exist among development, enterprise architecture, operations, and security to deliver the promise of faster and higher-quality releases. To succeed, the entire company — from individuals to top management — must break tradition and abandon past methodologies and behaviors to create significant organizational changes. An integrated product team made up of all the individuals involved with the product or service life cycle must drive this transition.[6] These product-based teams will undertake product life-cycle ownership from ideation to delivery and, in many organizations, support. Product teams focus on customer outcomes, with the objective of delivering customer value throughout the continuous delivery cycle by using design thinking.[7] These product teams need to abide by the following COOM principles for DevOps (see Figure 4):

› **Customer-led metrics are for everyone.** Sixty percent of executives are measured on CX, yet only 33% of DevOps teams have similar measurements (see Figure 5). It's the CIO's job to ensure that each step of the development process includes customer focus. This means providing real-time dashboards that monitor application performance; ensuring feedback loops between external customer support and development teams; and giving teams the confidence to experiment with new processes, such as including security teams into the testing process and noncritical changes (see Figure 6). However, many DevOps professionals lack these resources.

› **Insight from data needs cloud tools.** Cloud provides the flexibility and scalability necessary for speed. Ease of scalability ranks as second on reasons for moving to the cloud, trumped only by individual requirements, and is essential for fast-growing businesses.[8] Cloud scalability is one component of a growing imperative — the need for change acceleration, which only DevOps can achieve. Cloud also provides quick, easy resources for testing and development. When Ricoh transitioned its business toward digital services, its challenge was managing huge volumes of information. With the eDiscovery business growing 20% each year, moving to the cloud allowed Ricoh to focus on growth rather than scaling infrastructure.[9]

› **Fast release methodologies evolve past Agile.** Agile practices have become common and accepted best practices, yet they have not achieved equal adoption within dev and ops teams. The failure of Agile to permeate the full technology management organization is apparent in the varying release frequencies; dev teams are still releasing at a higher velocity than I&O pros can deploy. A good indication of DevOps success is when both these teams can consistently cycle smaller, targeted releases through the development life cycle and into production (see Figure 7). Fannie Mae CIO Frederic Veron noted, "If you do agile without DevOps, it's like you're trying to race with a tractor instead of a car. You can go and do the laps but it's not going to go very fast, you're probably going to consume a lot of fuel and it won't be a lot of fun."[10]

› **Connected teams focus on customer value.** Organizations are looking at ways to become more connected, foster collaboration, and build integrated teams. As products and problems become more complex, firms need multiple types of expertise to produce high-quality software or resolve major issues quickly. Teams need to work across silos not only to accurately build products but also to resolve major issues and outside threats.[11]

FIGURE 4 Apply The Customer-Obsessed Operating Model

Four DevOps levers of customer obsession

Customer-led metrics are for everyone.

Insight from data needs cloud tools.

Fast release methodologies evolve past Agile.

Connected teams focus on customer value.

FIGURE 5 Common Goals Drive Better Customer Experience

We are all measured on common goals related to customer experience.
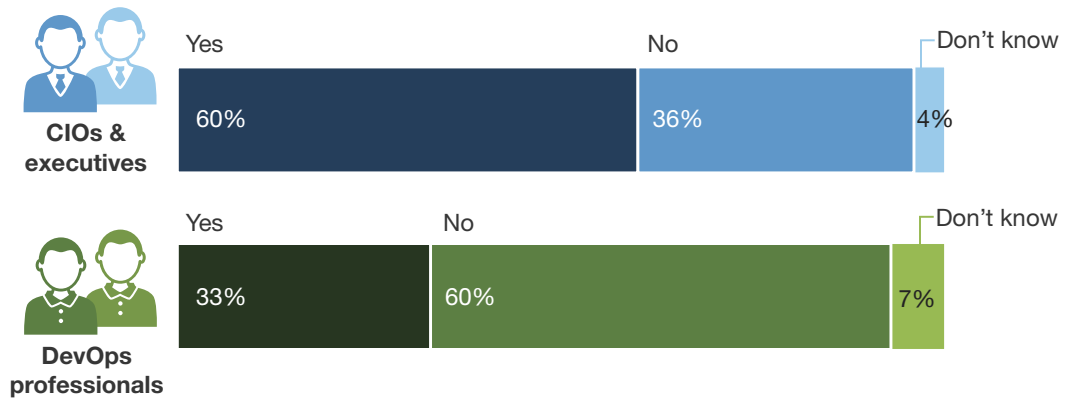
CIOs & executives

Yes	No	Don't know
60%	36%	4%

DevOps professionals

Yes	No	Don't know
33%	60%	7%

Base: 67 global executives and 75 global DevOps professionals
Source: Forrester's Q1 2016 Global Modern Service Delivery Benchmark Online Survey

FIGURE 6 Dashboards Enhance Release Management

"What types of dashboards are available that show and manage release and change pipelines?"

Executives

DevOps pros

Manual dashboards
53%
39%

No dashboards available/don't know
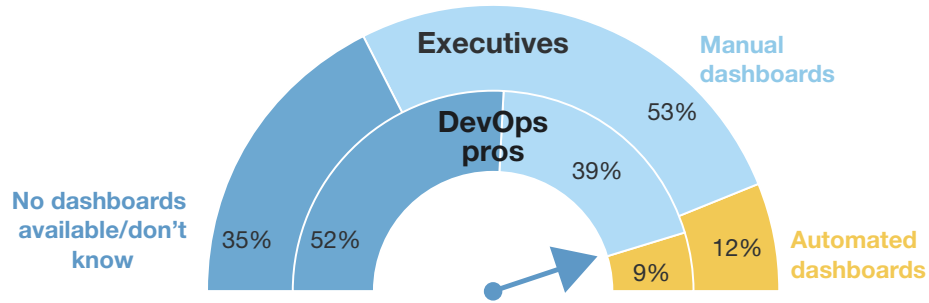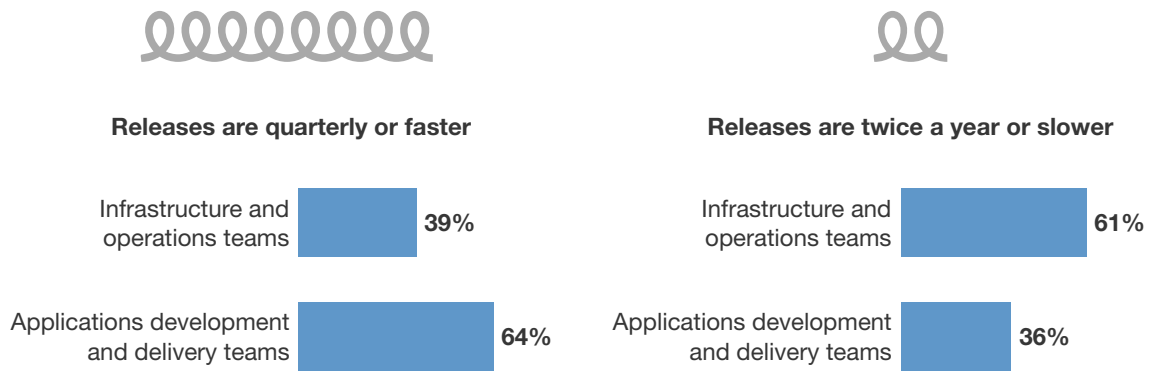35%   52%

Automated dashboards
9%   12%

Base: 67 global executives and 75 global DevOps professionals
Source: Forrester's Q1 2016 Global Modern Service Delivery Benchmark Online Survey

FIGURE 7 I&O Professionals Can't Support Development Velocity

"How often does your team (or teams) release applications?"

Releases are quarterly or faster

Infrastructure and operations teams — 39%

Applications development and delivery teams — 64%

Releases are twice a year or slower

Infrastructure and operations teams — 61%

Applications development and delivery teams — 36%

Base: 3,402 infrastructure decision makers and 688 developer decision makers
Note: "Other" responses have been omitted from this analysis.
Source: Forrester's Global Business Technographics® Infrastructure Survey, 2016 and Forrester's Global Business Technographics Developer Survey, 2016

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The DevOps Competency Model: Guidance For The Journey

DevOps is more than a cultural shift. Effective DevOps relies on several competencies working together in unison to create an organization obsessed with business value rather than individual excellence. The Forrester DevOps CALMSS competency model assesses capabilities in six areas: culture, automation, Lean, management and measurement, sharing, and sourcing (see Figure 8).[12] The CALMSS model highlights the areas of competency that individuals, integrated product teams, business units, and organizational leadership must mature to run a successful DevOps practice. Maturity in the CALMSS competencies grew between 2015 and 2016, yet there's still room for improvement.[13] To enable a high-performing DevOps organization, you must:

› **Develop a trust-based culture.** In a traditional organization, failure typically leads to apportioning blame. As a result, getting processes changed may require additional approvals within significant layers of bureaucracy. The fundamental aspect of DevOps is trusting the team to work together, driving organizational outcomes and value. At Domino's Pizza, CIO Kevin Vasconi worked with the CMO and CEO to help them understand the transformation.[14] The shared mission and purpose helped make the company's DevOps transformation possible; as Vasconi noted, "Not everything we did was a complete success, and we had to be able to fail fast and move on and make that part of our culture."

› **Automation across the life cycle.** Decreasing release cycle times requires automation across the entire life cycle. Testing and building automation is commonplace, but you must automate other phases of the life cycle — such as releases and the handoffs between the automated steps — to ensure the fastest, most reliable life cycle possible. One insurance company experimented with automation to enable faster deployment methods and remove inefficient gatekeepers.[15] They complemented these tactics with automated rollbacks that saved the company $30,000 an hour.

› **Develop, adapt, and enforce Lean processes.** Trimming down clunky processes is easier said than done, especially when the processes have been around a long time. For example, failure in the release process typically results in adding additional manual checks and balances that simply treat a symptom rather than solve the challenge. Examining end-to-end processes allowed Suncorp to identify duplicate and dated systems that it could decommission.[16] The company could transfer budget from maintaining outdated systems to designing new customer touchpoints. Suncorp was able to improve customer experience and achieve 2016 cost savings of $265 million.

› **Extend measurement and management to customer metrics.** Traditional metrics are often reactive, measuring technology availability and performance rather than proactive customer metrics. Product teams should help develop metrics that focus on product performance and customer impact. In the airline industry, on-time plane departures (D0) are the golden industry metric. JetBlue Airways CIO Eash Sundaram applies this customer-centric metric to measure the performance of his DevOps teams.[17] According to Sundaram, "When everyone in IT owns that D0 metric, they become part of an entire business community that is passionate about the airline running on time."

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› **Share for the common good.** Breaking from traditional silos and delivery methods requires forming integrated product teams focused on the success of a single product or service.[18] Integrated product teams build on and develop each other and should share best practices with the team and their peers to drive excellent CX. At CarMax, CIO Shamim Mohammed advocated colocating integrated product teams.[19] This allowed team members to share information and create solutions for new customer requirements. Mohammed also established internal open houses so product teams could share their work with business stakeholders and solicit feedback.

› **Source with confidence.** Decreasing time-to-innovation requires a sourcing strategy that allows flexibility and simplicity in software, services, and human resources. Outsourcing instead of using company-only resources provides flexibility in augmenting development and delivery capabilities. For example, when the integrated product team lacks expertise, outsourcing configuration management can quickly reduce the errors generated from nonstandard system configurations among development, testing, and production environments.

FIGURE 8 Use The CALMSS Model To Guide Your DevOps Approach
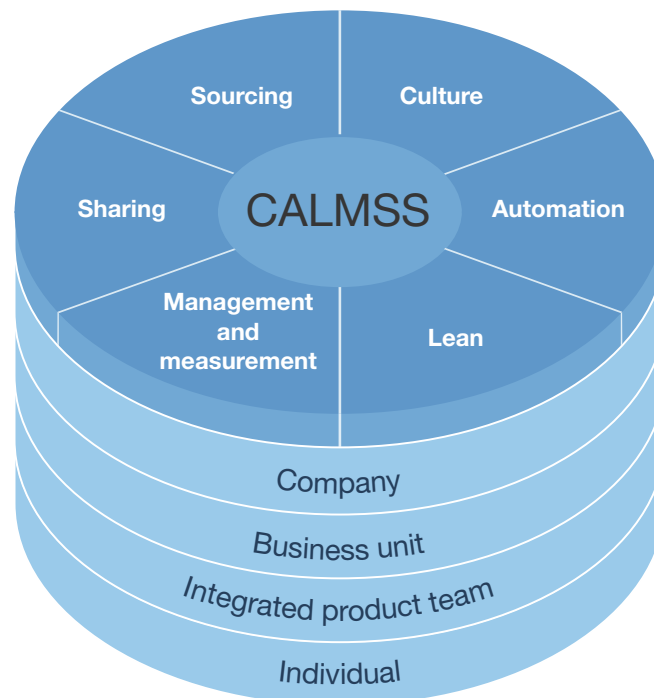
What It Means

Continuously Evolve DevOps To Transform Your Business

DevOps may be one of the most powerful weapons you have in your CIO arsenal, fundamentally altering how people work together to deliver business transformation. As any leader knows, changing institutionalized behavior is the toughest of all management challenges. Nurture a DevOps culture of experimentation, inclusion, and learning; enable it with the right tooling; and drive it with holistic life-cycle automation, and your company won't just beat your competitors — it will decimate them. In the process, you'll be instrumental in changing the course of not just your company but your entire industry. Velocity is critical for customer obsession. It helps you compete without sacrificing quality, the key to winning, serving, and retaining customers. To move forward, CIOs must adopt these DevOps principles:

› **CX needs cross-functional teams with a single product focus.** The temptation too often is to try to boil the ocean. The secret is to start small with a single project; a project team; or a new development, which should include the development of a continuous deployment stack for that software delivery life cycle and then continue from there to expand the scope. For example, start with an eCommerce website that's been difficult to deploy quickly in the past but that customers rely on to shop online with your company.

› **A culture of learning, transparency, and experimentation is essential.** Culture must transition from a tech silo approach of individual ownership to one of collaboration and communication across the complete ecosystem. Effective culture will transition into product teams that collaborate, sharing ideas, best practices, improvements, and flow among teams. Such institutional behavior change is among the thorniest challenges facing any leader. Prepare for intense resistance, and overcome it with both positive and negative performance incentives.

› **Metrics must measure new sources of value.** People want to know that the work they do contributes meaningfully to the organization's success. Ensure that appropriate business metrics are in place to allow employees to understand how their work contributes to business outcomes and provides value to external customers. Measure this at all levels, from top leadership down. Metrics must be product focused and aligned to the business results that you derive. Examples include linking features to revenue changes, reduction in delivery time supporting the earlier revenue availability, and increased quality linked to customer growth. Each of these metrics allows all groups to share a common vision. Product-based metrics ensure focus on the right business value and remove the current maniacal focus on old-school IT thinking.

› **Organizations must automate across the life cycle to deliver velocity.** Eliminating manual steps through automation facilitates the availability of additional resources, rapidly delivering repeatable and consistent quality improvements while minimizing human errors. DevOps pros should focus on ensuring that their automation drives value across the complete life cycle. This should include delivering proactive data to business leaders to effectively communicate value.

› **Embedding DevOps in the enterprise is key.** Most DevOps activity focuses on applications and their delivery, but there's a lot more to DevOps. The app focus is profoundly positive, but the supporting infrastructure is now software, too. Today, organizations often treat infrastructure as "snowflakes," with every individual configuration managed independently. Instead, treat infrastructure as a code, like software, with the same development, testing, release, and update processes.[20] A common DevOps mindset and unified architecture, design, development, engineering, and operations will catapult your business to success.

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Supplemental Material

SURVEY METHODOLOGY

Forrester's Global Business Technographics® Priorities And Journey Survey, 2016, was fielded from December 2015 to January 2016. This online survey included 18,610 respondents in Australia, Brazil, Canada, China, France, Germany, India, New Zealand, the UK, and the US from companies with two or more employees.

Forrester's Global Business Technographics Infrastructure Survey, 2016 was fielded in June and July 2016. This online survey included 3,503 respondents in Australia/New Zealand, Brazil, Canada, China, France, Germany, India, the UK, and the US from companies with two or more employees.

Forrester's Global Business Technographics Developer Survey, 2016, was fielded in January 2016. This online survey included 1,867 respondents in Australia, Brazil, Canada, China, France, Germany, India, New Zealand, the UK, and the US.

Forrester's Business Technographics ensures that the final survey population contains only those with significant involvement in the planning, funding, and purchasing of business and technology products and services. Research Now fielded this survey on behalf of Forrester. Survey respondent incentives include points redeemable for gift certificates.

Forrester fielded the Forrester's Q1 2016 Global Modern Service Delivery Benchmark Online Survey to 385 individuals. Only a portion of survey results are illustrated in this report. For quality assurance, we screened respondents to ensure that they met certain standards in terms of job responsibilities in IT roles and are involved with customer-facing business services/applications. Exact sample sizes are provided in this report on a question-by-question basis. Respondents were asked for their opinions on the current state of modern service delivery and DevOps. These respondents were narrowed down to those who were able to completely answer the full scope of modern service delivery and DevOps questions.

Endnotes

[1] Source: Shareen Pathak, "Domino's is now 'an e-commerce company that sells pizza,'" Digiday, April 3, 2015 (http://digiday.com/brands/dominos-now-e-commerce-company-sells-pizza/).

[2] Capital One shifted to DevOps to keep pace with customers. Source: Clint Boulton, "Capital One shifts to DevOps to keep pace with customers," CIO, October 25, 2016 (http://www.cio.com/article/3134871/cio-role/capital-one-shifts-to-devops-to-keep-pace-with-customers.html).

[3] For more on the impact that technical debt has on innovation, see the Forrester report "When To Stop Improving And Start Innovating."

[4] Public cloud adoption will reach $236 billion by 2020, which represents a 23% increase on 2014 estimates. For more information, see the Forrester report "The Public Cloud Services Market Will Grow Rapidly To $236 Billion In 2020."

[5] For more information on this style of automation, see the Forrester report "Use DevOps And Supply Chain Principles To Automate Application Delivery Governance."

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6 For more information on organizing for successful DevOps, see the Forrester report "Organize And Staff I&O Pros For Successful DevOps Practices."

7 Design thinking is a creative problem-solving — and opportunity-finding — mindset and methodology with a bias toward action that puts the emphasis on empathizing with the customer, clearly defining the problem, collaboratively ideating solutions, and then prototyping and testing those solutions. For more information, see the Forrester report "Master Design Thinking To Accelerate Your BT Agenda."

8 Source: Forrester's Global Business Technographics Infrastructure Survey, 2016.

9 Source: Thor Olavsrud, "Ricoh USA transforms ediscovery in the public cloud," CIO, November 28, 2016 (http://www.cio.com/article/3144516/cloud-computing/ricoh-usa-transforms-ediscovery-in-the-public-cloud.html).

10 Source: Clint Boulton, "True agile software development requires DevOps," CIO, November 15, 2016 (http://www.cio.com/article/3141577/cio-role/true-agile-software-development-requires-devops.html).

11 For more on how to create integrated, cross-functional teams, see the Forrester report "Organize And Staff I&O Pros For Successful DevOps Practices."

12 For more information on the history of the CALMSS model and its creation, read this blog post. Source: Eveline Oehrlich, "DevOps Now With CALMSS," Eveline Oehrlich's Blog, March 2, 2015 (http://blogs.forrester.com/eveline_oehrlich/15-03-02-devops_now_with_calmss).

13 DevOps professionals showed progress in all six areas, with particularly strong improvement in culture and measurement. To see the full results of CALMSS maturity, see the Forrester report "Brief: How To Deliver Services With Quality, Agility, And Value."

14 Source: Beth Stackpole, "We Mean Business," IDG Enterprise (http://resources.idgenterprise.com/original/AST-0168533_CIOD_JUN.pdf).

15 Source: "Consulting case studies," PwC, May 15, 2015 (http://www.pwc.com/us/en/advisory-services/case-studies/accelerating-software-releases-through-devops.html).

16 Source: "Evidence and case studies," Continuous Delivery (https://continuousdelivery.com/evidence-case-studies/).

17 Source: Carla Rudder, "After interviewing 40+ CIOs, executive recruiter Martha Heller shares insights for the 'New Era of IT,'" The Enterprisers Project, September 27, 2016 (https://enterprisersproject.com/article/2016/9/martha-heller-interviews-40-cios-and-shares-tips-cios-new-era-it).

18 For more information on the details of the CALMSS model and its applications to modern service delivery, see the Forrester report "CALMSS: A Model For Assessing Modern Service Delivery."

19 Source: Caroline Donnelly, "Case study: What the enterprise can learn from Etsy's DevOps strategy," Computer Weekly, June 9, 2015 (http://www.computerweekly.com/news/4500247782/Case-study-What-the-enterprise-can-learn-from-Etsys-DevOps-strategy).

20 For more information on infrastructure-as-code, see the Forrester report "Infrastructure As Code, The Missing Element In The I&O Agenda."

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