

The Case for Continuous Delivery

An excerpt from *Lessons from 29 DevOps Experts On The Best Way to Make The Transition to Continuous Delivery*



THE CASE FOR CONTINUOUS DELIVERY

Interest in implementing continuous delivery is increasing, especially when people discover the approach's benefits and vast potential, but many companies don't know where to start. The process requires that an organization integrate a culture of continual software improvement and delivery. For most, that means acquiring a fundamental new mindset.

The Case for Continuous Delivery, written by four of the best current DevOps thinkers, aims to help companies get moving along this crucial path. It is the first in a series of six mini-e-books sponsored by Zend that offers a compelling collective argument for using continuous delivery in software development.

In this installment, for example, IT Revolution Press researcher Gene Kim argues how continuous delivery represents a “staggering” global opportunity. If IT waste were halved and the resulting savings properly redeployed, he writes, the industry could generate \$3 trillion in value annually—more than Germany's entire economic output. “The potential economic impact to productivity, standards of living, and prosperity almost makes this a moral imperative,” states Kim.

In his essay, Ido Ben Moshe, Zend's vice president of Global Support & Professional Services, describes a workbook he has created that can allow anyone to calculate expected return on investment (ROI) from continuous delivery. That workbook can be a powerful tool for convincing company leaders to make the commitment. “The business benefits of continuous delivery are very real,” Moshe writes, “and the numbers prove it, time and again.”

Every author makes an equally compelling case, sometimes through personal experiences. We learn, for instance, that Chris Hilton, lead consultant at ThoughtWorks, began writing software to amuse his brother—his first “user”—and still approaches code the same way. Continuous delivery only sharpens that focus, he argues, by shortening the distance between creator and user.

Mike Miller, co-founder and chief scientist at Cloudant, reveals that his past role as a physicist on the Large Hadron Collider project prepared him well for continuous delivery. In fact, it's really all he has ever known. “The first lines of production software I ever wrote went live a few minutes after commit,” Miller writes. “Thank goodness they passed the test!”

Essays also include bullet-point summaries of key lessons these experts learned while taking their own companies to the next level of DevOps and working closely and collaboratively with their teams to ship high-performing, continually improving code.

[Lessons from 29 DevOps Experts on the Best Way to Make the Transition to Continuous Delivery](#) provides best practices and advice from the top DevOps industry leaders. If you're interested in learning more about how to implement continuous delivery, this book covers each step: getting started in continuous development, integrating and automating the process, getting the team on board, changing the culture, and best practices for the future. **[Download the full e-book now](#)** to take advantage of these expert insights and determine whether continuous delivery is right for your business.

- Kevin Featherly

FOREWORD

Exploring Continuous Delivery

Innovation has changed. Gone are the days when a solitary genius holed up in a garage conceived a big idea, and then painstakingly perfected and brought it to market years later. Today, innovation is fluid, fast moving, and collaborative. Innovation is the engine for growth and value creation in the modern world, and software is the fuel.

The ability to create new, high-quality software applications and bring them to market more quickly is the “X factor” that defines industry leaders, and these leaders all have one thing in common: their IT organizations are leaving traditional approaches behind in favor of new, agile, collaborative approaches to the design, development, and delivery of applications.

At Zend, we are committed to helping companies deliver innovation more quickly. We’ve seen the dramatic results of this trend in working with Fiat, Hearst Corporation, BNP Paribas, Newell Rubbermaid, Prada, and other customers that are achieving faster and more frequent releases of more reliable software and, as a result, improving their business growth and profitability. Like other companies around the world, their success stems from the adoption of Continuous Delivery methodologies and best practices.

This e-book has been created for companies at virtually any stage of the journey toward Continuous Delivery. In the following pages, you’ll find essays from software industry leaders whose experiences, insights, and solutions can make it a lot easier to get started, progress smoothly, and finish strong.



Wishing you the best success,
Andi Gutmans
CEO, Zend



Zend helps businesses deliver innovation more quickly, on a larger scale, and across more

channels than ever before. More than 40,000 companies rely on our solutions, including Zend Server, the integrated application platform for mobile and web apps. Zend Server provides superior tools for creating high-quality code, best-in-class infrastructure for moving applications from source control through deployment, and the best back-end platform for performance at Web scale. Zend helped establish PHP, which today powers more than 240 million applications and websites around the world. Visit us at www.zend.com.

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Integrate &
Automate

Adopt best
practices

ROI validation

Build the business case

Get started

We'll meet you wherever you are,
with the resources you need to succeed.

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“ The ability to create new, high-quality software applications and bring them to market more quickly is the “X factor” that defines industry leaders. ”

Andi Gutmans, CEO & Co-founder, Zend



INTRODUCTION

Continuous Delivery isn't just a technical shift, it's a cultural one. Even though it takes hard work to make the transition, the benefits can't be ignored. Faster time to market, better quality product, competitive advantage, higher customer satisfaction and reduced cost of development are just a few of the benefits driving CD to become the new norm.

With the support of Zend, we reached out to 29 top DevOps professionals and asked them the following question:

Your friend has been tasked with transitioning her company's software development efforts to Continuous Delivery. She's extremely capable, but she's nervous about leading the transition. Please share a story from your own experience that will provide her with a critical piece of advice that will help her to be more successful.

The response was fantastic. Not only did we receive insightful essays, but the expert advice came from the very people who have been leading this revolution – people like Gene Kim, Andi Gutmans, Rebecca Parsons, Scott Hanselman and Andrew Yochum. The essays in this book roughly break down into six categories that range from understanding the business case for CD through actually making the journey. We hope the collective wisdom and hard-learned lessons contained in these pages will inspire you and help you take your own development efforts to a higher level.



All the best,
David Rogelberg
Editor

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The Case for Continuous Delivery



GENE KIM

Business Success—and Personal Fulfillment—
Through DevOps Practices.....7



IDO BEN MOSHE

Measuring Expected ROI for Continuous Delivery.....11



CHRIS HILTON

Beyond BASIC: Modern Programming Meets
Continuous Delivery.....14



MIKE MILLER

Start Small, Launch Early, Fail Fast, and Iterate:
Continuous Delivery in Big Science.....15



BUSINESS SUCCESS—AND PERSONAL FULFILLMENT—THROUGH DEVOPS PRACTICES



GENE KIM

Author, Researcher at
IT Revolution Press

Gene Kim is a multiple-award-winning CTO, researcher, and author. He was the founder and CTO of Tripwire for 13 years. He has written three books, including “*The Visible Ops Handbook*” and “*The Phoenix Project: A Novel About IT, DevOps, and Helping Your Business Win*,” and is part of the team writing the upcoming “*DevOps Cookbook*”.



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Among the benefits organizations gain when they adopt DevOps are faster time to market and reduced IT waste, both of which increase organizational effectiveness and market competitiveness.

Faster Time to Market

Back in 2007, at the IT Process Institute, we benchmarked 1,500 IT organizations to study what the high-performing IT organizations were doing differently and how they achieved their “good to great” transformation. Back then, we thought that 1,000 production changes per week was fast.

I learned from my friends at the Software Engineering Institute at Carnegie Mellon University that in every industry, high performers accelerate away from the herd. In other words, the best continue to get even better.

Thanks to practices such as continuous integration, continuous delivery and DevOps, high performers are often now doing thousands of production deployments daily! Amazon has gone on record that they are routinely performing over 23,000 deploys per day, while preserving world-class reliability, stability and security.

The ability to sustain high deployment rates (i.e., fast cycle times) translates into business value in two ways: how quickly the organization can go from an idea to delivering value to the customer and how many experiments the organization can perform simultaneously. If Organization A can perform only one deployment every nine months and its competitor can perform 10 deployments in a day, Organization A has a significant, structural competitive disadvantage.

“ Thanks to practices such as continuous integration, continuous delivery and DevOps, high performers are often now doing thousands of production deployments daily! ”



KEY LESSONS

- 1 **WORK TO ACHIEVE FASTER TIMES TO MARKET.**
- 2 **REDUCE IT WASTE.**
- 3 **INCREASE ORGANIZATIONAL EFFECTIVENESS.**



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High deployment rates also enable rapid and constant experimentation. Scott Cook, the founder of Intuit, has been an outspoken advocate for a “rampant innovation culture” at all levels of the organization. One of my favorite examples is:

“Every employee [should be able to] do rapid, high-velocity experiments . . . Dan Maurer runs our consumer division, including running the TurboTax website. When he took over, we did about seven experiments a year. By installing a rampant innovation culture, they now do 165 experiments in the three months of tax season. Business result? Conversion rate of the website is up 50 percent. Employee result? The folks just love it, because now their ideas can make it to market.”

To me, the most shocking part of Scott Cook’s story is that they were doing all these experiments during peak tax filing season! Most organizations have change freezes during their peak seasons, but if you can increase conversion rates and therefore sales during peak seasons when your competitor cannot, then that’s a genuine competitive advantage. The prerequisites to doing so include being able to make many small changes quickly, without disrupting service to customers.

Reduced IT Waste

Mike Orzen and I have long talked about the enormous waste in the IT value stream caused by long lead times, poor hand-offs, unplanned work, and rework. We estimated how much value we could recapture by applying DevOps-like principles, calculating that if we could halve the amount of IT waste and redeploy those dollars in a way that could return 5 times what was invested, we would generate \$3 trillion of value per year.

That’s a staggering amount and an opportunity that we’re letting slip through our fingers. That’s 4.7 percent of annual global gross domestic product, or more than the entire economic output of Germany.

KEY LESSONS

- 1 **WORK TO ACHIEVE FASTER TIMES TO MARKET.**
- 2 **REDUCE IT WASTE.**
- 3 **INCREASE ORGANIZATIONAL EFFECTIVENESS.**

BUSINESS SUCCESS—AND PERSONAL FULFILLMENT—THROUGH DEVOPS PRACTICES



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This is important, especially when I think about the world my three children will inherit. The potential economic impact to productivity, standards of living, and prosperity almost makes this a moral imperative. However, there’s an even greater cost. Working in most IT organizations is often thankless and frustrating. People feel as if they’re trapped in an ever-repeating horror movie, helpless to change the outcome. Management abdicates their responsibility to ensure that IT is managed well, resulting in endless intertribal warfare between development, IT operations, and information security. Things only get worse when the auditors show up.

The inevitable result is chronic underachievement. As humans, we’re wired to contribute and to feel like we’re actively making a difference. Yet, all too often, when IT professionals ask their organization for support, they’re met with “you don’t understand,” or worse, a barely masked, “You don’t matter.”

At the IT Revolution Press, our mission is to improve the livelihoods of 1 million IT workers by 2017. We hope that *The Phoenix Project* can help business and IT gain a shared understanding of the problem and that the *DevOps Cookbook* can help people fix the problem.

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Bring your code and user feedback closer together



Intuit founder **Scott Cook** is an advocate for a “rampant innovation culture” and allowing employees to do rapid, high-velocity experiments. Several years ago Intuit’s Consumer Division took this to heart, and transformed the TurboTax website through **Continuous Delivery**.

Gene Kim, Author and Researcher, IT Revolution Press discusses success through DevOps practices.

The result?

They ran 165 experiments during the 3-month tax season. The website saw a **50% increase** in the conversion rate. The employees **loved it** because they saw their **ideas come to market**.



MEASURING EXPECTED ROI FOR CONTINUOUS DELIVERY



IDO BEN MOSHE

Vice President, Global Support & Professional Services at Zend

Ido Ben Moshe manages Zend's technical support, professional services, presales engineering, and solution consulting areas. In this role he leads a team of consultants that work with Zend's clients to implement Continuous Delivery. Before joining Zend, he managed the application problem resolution product line at BMC Software. Previously, he was the North America CTO at Identify Software, responsible for developing professional services, customer support, IT operations, and strategic partnerships. Ido holds a B.S. degree from Tel-Aviv University.



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Development leaders often approach me wanting to take their agile process to the next level and reap the rewards of implementing Continuous Delivery practices, but they need to make the business case to their boss, the chief information officer, or the chief financial officer. The business benefits of continuous delivery are very real, and the numbers prove it, time and again, for companies large and small across industries. Yet I've worked with many IT professionals as they grappled with how to measure the expected return on investment (ROI) of a process and methodology improvement. With this in mind, I created a workbook that anyone can use to calculate expected ROI for his or her organization and present their business case with confidence. The workbook is based on experiences of similar organizations and industry analysis.

Draw on the Successes of Others

There's incredible value in having a proven methodology based on user surveys, best practices, and benchmarks from other organizations that have successful, mature DevOps practices. IT executives can use it to determine the potential revenue gains, productivity improvements, and cost reductions realized from Continuous Delivery. They can evaluate their unique application, IT staff, and environment parameters using the ROI model, and then develop a business case that is aligned with their organization's characteristics and goals.

In the workbook, gains used to calculate Continuous Delivery ROI fall into four key areas:

- Accelerated time to market with new functionality;
- Enhanced IT team productivity and reduced headcount waste;
- Reduced application failures because of increased application quality; and
- Increased flexibility in the IT environment.

“As you prepare to build your business case, identify the area or areas of greatest potential impact for your company, and go from there.”



KEY LESSONS

- 1 USE THE STRATEGIES AND SUCCESSES OF OTHER ORGANIZATIONS THAT HAVE ALREADY IMPLEMENTED CONTINUOUS DELIVERY.**
- 2 BEGIN THE MOVE TO CONTINUOUS DELIVERY BY IDENTIFYING AREAS OF GREATEST IMPACT FOR YOUR COMPANY.**

MEASURING EXPECTED ROI FOR CONTINUOUS DELIVERY



IDO BEN MOSHE

Vice President, Global Support & Professional Services at Zend

Ido Ben Moshe manages Zend's technical support, professional services, presales engineering, and solution consulting areas. In this role he leads a team of consultants that work with Zend's clients to implement Continuous Delivery. Before joining Zend, he managed the application problem resolution product line at BMC Software. Previously, he was the North America CTO at Identify Software, responsible for developing professional services, customer support, IT operations, and strategic partnerships. Ido holds a B.S. degree from Tel-Aviv University.



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It's not unusual to see returns like these in industry surveys of organizations that have invested in DevOps and Continuous Delivery:

- **21 percent** increase in new software and services delivered;
- **22 percent** improved quality of deployed applications;
- **50 percent** fewer failures; and
- **19 percent** increase in revenues.

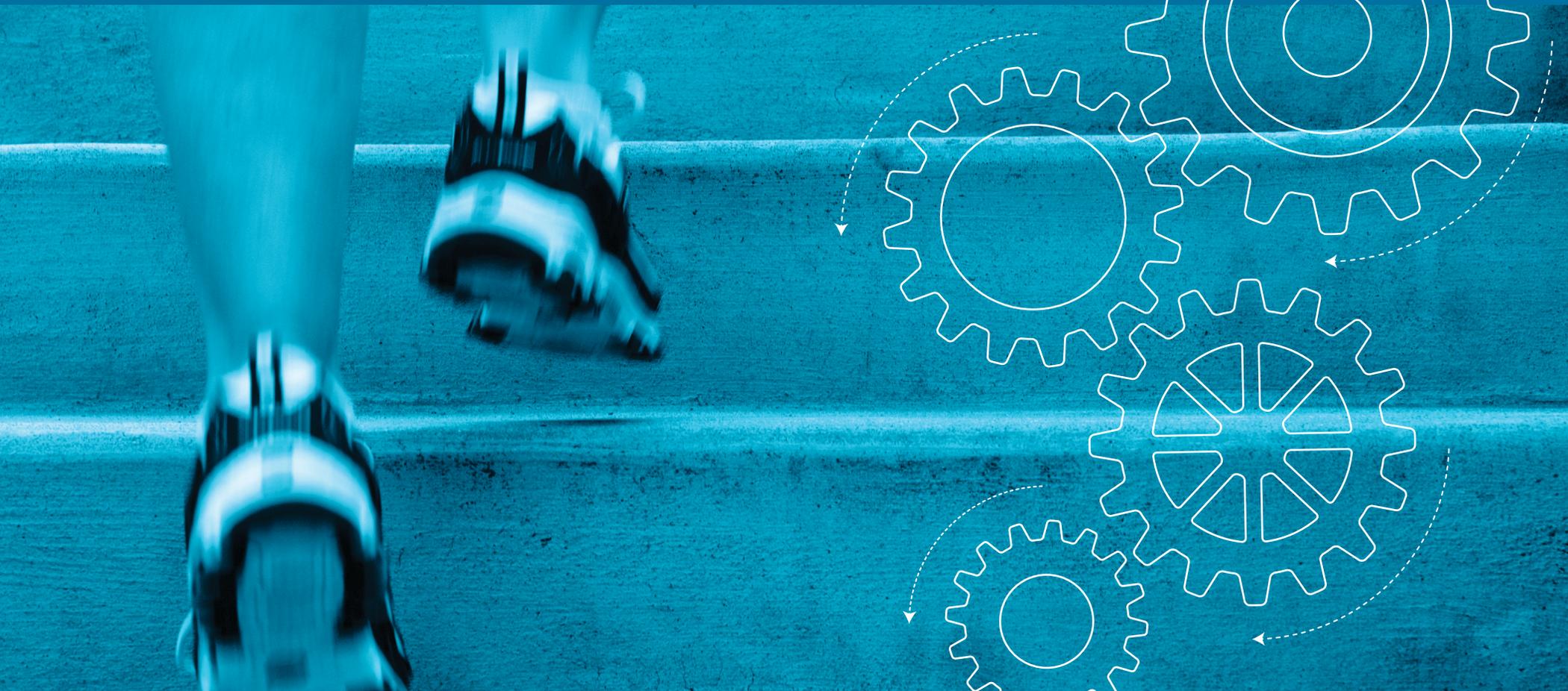
As you prepare to build your business case, identify the area or areas of greatest potential impact for your company, and go from there. Use the workbook to do the heavy lifting in terms of the data you need to gather and the formulas to use. You'll save time and effort and be well prepared to justify Continuous Delivery to your business leaders and decision makers. The workbook is available at <https://pages.zend.com/continuous-delivery-economics.html>.

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Continuous Delivery

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BEYOND BASIC: MODERN PROGRAMMING MEETS CONTINUOUS DELIVERY



CHRIS HILTON

Lead Consultant at
ThoughtWorks

Chris Hilton has been working with enterprise software as a build engineer and agile development advocate for more than 15 years. His four years at ThoughtWorks have seen him promote continuous delivery at a variety of enterprises in the United States and Canada. He has spoken on continuous delivery and his “Beyond Continuous Delivery” ideas in Seattle, Chicago, San Francisco, Calgary, Montreal, and Rome.



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I remember fondly my first experiences in programming. My mother worked for Apple in the 1980s and as an employee received a free Apple II+ computer. My father introduced me to BASIC and the power of GOTO. I spent hours typing on the keyboard, thinking up, writing, and modifying small programs—mostly for my brother’s amusement. He was my first user. It was a thrill to have an idea, write the code to make it happen, and show him the result.

Of course, I grew up and learned better methods of programming than BASIC and GOTO. Software development was growing up, too, and adapted to all the complexities of the modern technological world. Ideas were formed, requirements were analyzed, designs were made, and code was written. Tests were performed, and integrations were tested; then, releases were created, deployments scheduled, and eventually a user got to see the result. Hopefully, the result resembled the original idea, and he or she liked it.

Eventually, the gap between idea and user became so big that something had to be done. Agile practices came along and started to turn back that tide. Working in iterations refines the design and development process more quickly. Unit testing gives greater confidence in coding and refactoring. Continuous integration provides rapid feedback on the state of the code. All are practices that make it that much easier to put an idea in front of a person without sacrificing any of the tenets of building modern, quality software.

The most valuable thing you do as a software developer is make that connection between creation and use. Continuous delivery takes that next step, shortening the distance between the creator’s mind and the end-user’s feedback. Don’t guess what your customers need and like: streamline your process so that they can tell you themselves. Who knows what new ideas will arise to move us beyond even continuous delivery? Maybe someday we can all feel like kids tinkering away for our sibling’s enjoyment again.

“The most valuable thing you do as a software developer is make that connection between creation and use.”

KEY LESSONS

- 1 **CONTINUOUS DELIVERY SHORTENS THE DISTANCE BETWEEN CREATOR AND USER.**
- 2 **STREAMLINING YOUR PROCESS HELPS ELIMINATE THE GUESSWORK AROUND YOUR DELIVERABLES.**



MIKE MILLER

Co-founder and Chief Scientist at Cloudant, an IBM Company

Mike Miller is co-founder and chief scientist at Cloudant, an IBM Company. He cut his teeth solving petabyte-per-second problems at the Large Hadron Collider. Mike holds a B.S. in physics and a B.A. in philosophy from Michigan State University and a Ph.D. in physics from Yale University. He is also an assistant professor at the University of Washington.



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It's strange to think of continuous delivery as something new or intimidating: it's all I've ever known! I grew up programming for the ultra-real-time environment of experimental particle physics. When you're firing up a billion-dollar machine for the first time, even the best-designed systems have their commissioning quirks. Everything—down to the custom hardware—is continuously evolving. The first lines of production software I ever wrote went live a few minutes after commit. Thank goodness they passed the tests!

In big science, time is precious and expensive. Hours are measured in millions of dollars. That was a lot for a fresh graduate like myself to grasp. That pressure stemmed from opportunity, and ingraining continuous delivery mindset (the idea that “master” is essentially deployable at a moment's notice) was the best way to balance responsibility with agility. We didn't set out with a mandate to build a DevOps culture: we evolved based on our own system dynamics. Simply put, things always had to be in a production-ready state: if you wrote it, you darn well had to be there to get it running! That shared responsibility was the core principle by which our loosely federated, untrained teams were able to support such a professional enterprise.

At Cloudant, we've been able to grow that base culture into something core to our entire organization. Nobody is removed from the user experience. And we're not alone. Every market is now a land grab, and new product (new revenue!) is king. That requires rapid innovation, delivery, and operations in a way that simply isn't possible with the traditional enterprise application life cycle. In the time it takes to plan your next release, someone may have already captured the market. Adopting continuous delivery approaches for your team and aggressively weaving together cloud services is the best way to be effective in this brave new world. Start small, launch early, fail fast, and iterate. That's the mark of the new winner.

“Simply put, things always had to be in a production-ready state: if you wrote it, you darn well had to be there to get it running!”

KEY LESSONS

- 1 **SHARED RESPONSIBILITY IS THE CORE OF A PROFESSIONAL ENTERPRISE.**
- 2 **START SMALL, LAUNCH EARLY, FAIL FAST, AND ITERATE.**

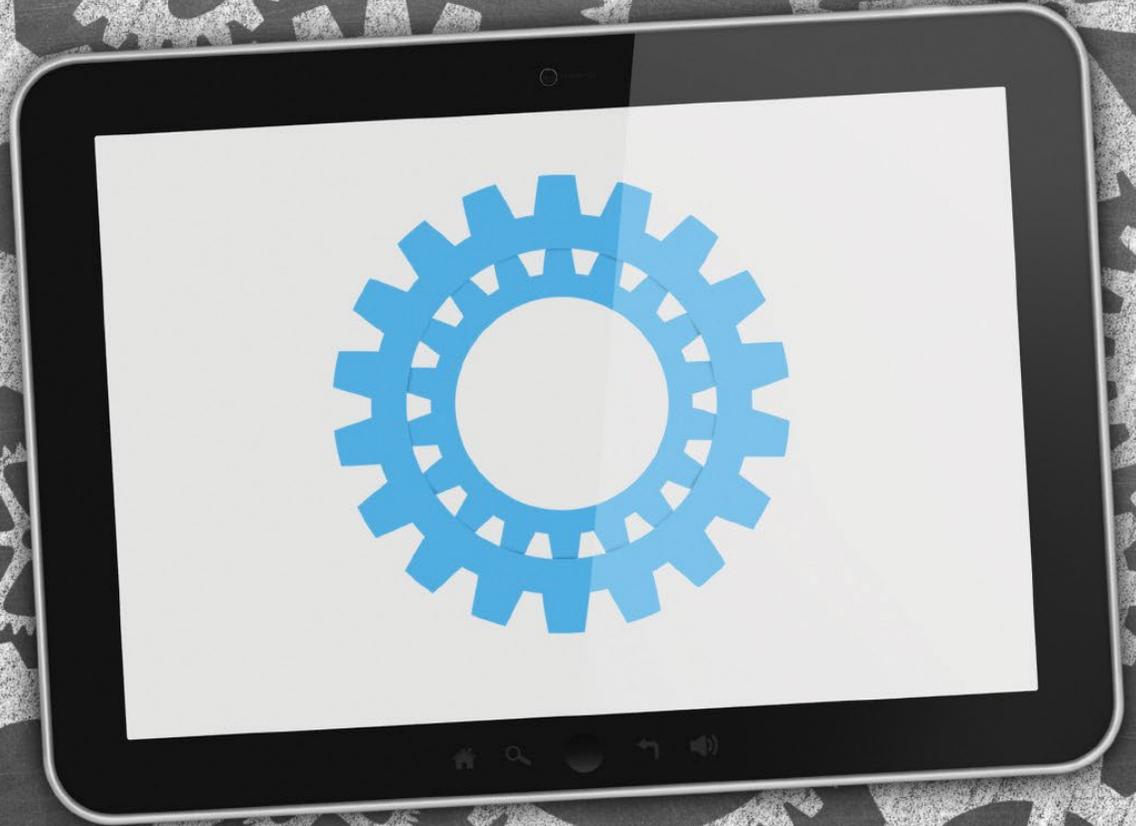


From the front lines
of Continuous Delivery
direct to your screen

Take 10
minutes

Learn from 29
DevOps
experts

Get a 360°
view of the
journey
to Continuous Delivery



Continuous Delivery: Lessons from 29 DevOps Experts on
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