

2017 CIO Guide to DevOps

Getting the benefits to work for you:
How CIOs are using DevOps to achieve
their key business goals

Foreword

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“The CIO Guide to DevOps has become somewhat a yearly tradition at ECS Digital.

Last year’s was a huge success. It was downloaded by hundreds of CIOs and Senior IT Professionals from organisations including Vodafone, Tesco Bank, KPMG and Sky.

This year, ECS Digital is proud to present to you the 2017 CIO Guide to DevOps. We hope you find value in both our research and insight.”

Andy Cureton

Founder & Managing Director
ECS Digital

Introduction

2016 was marked by Gartner as the year that DevOps would evolve from a niche strategy employed by large cloud providers, to a mainstream strategy employed by 25% of Global 2000 organisations.

This explosion in the adoption of DevOps has been driven, in part, by the changing role of technology within organisations. And with this, this role of the Chief Information Officer (or CIO) continues to evolve.

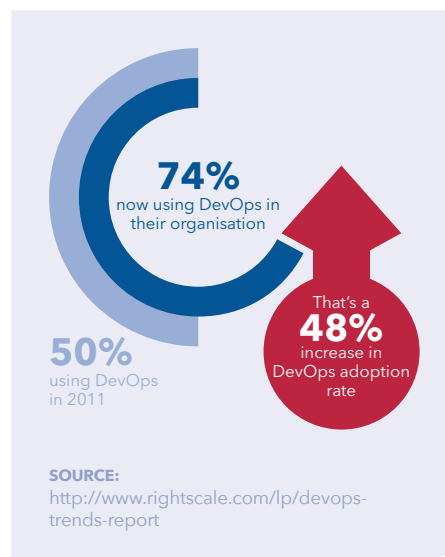
DevOps has become much more than a cultural methodology to speed up application development and deployment. It is now being used by organisations to help them achieve their key business-focused strategic goals.

Like previous years, January 2017 saw a wealth of research into what is likely to be keeping CIOs up at night.

This year, we've collected research from:

- The **Society for Information Management** (SIM) 2017 IT Trends Analysis
- The **Gartner CIO Agenda Report**
- Research conducted by **CIO Magazine**
- Our own panel of five leading CIOs

to identify the major CIO priorities of the coming year, and how DevOps is being used to achieve them.



Should DevOps be a CIO priority in 2017?

At ECS Digital, we fully believe in and support the organisational benefits of DevOps. However, we do not believe that DevOps itself should be a priority for CIOs this year, or any. It is the business outcomes that DevOps helps achieve that CIOs should be focused on realising.

What have we not included in the 2017 CIO Guide to DevOps?

The 2016 CIO Guide to DevOps* focused heavily on how DevOps can help CIOs achieve the priorities of faster time to market and increased innovation. Whilst these priorities remain high on the CIO agenda in 2017, we have chosen not to address them again, as little has changed from last year.

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If you are interested in learning more about how DevOps supports these priorities, please download the 2016 CIO Guide to DevOps at: ecs-digital.co.uk/2016-cio-guide
.....

* The 2016 CIO Guide to DevOps was published under our previous company name, Forest Technologies, before our acquisition by ECS Group.

Meet the panel

As we move into 2017, all UK businesses face a variety of challenges and opportunities. We gathered five CIOs from a range of leading organisations, to help us understand the ways they're using DevOps to meet their business priorities.



Karl Hoods
Chief Information Officer of Save the Children UK

Save the Children UK is currently deploying DevOps in the delivery of a new Digital platform. It has only just started on the DevOps journey and is currently establishing the foundations.



Adam Sewell
Chief Information Officer of Copyright Licensing Agency

Copyright Licensing Agency has adopted DevOps within its IT teams and is working on progressing this within the whole business. It works with a lot of external development partners and uses DevOps to enable greater visibility of the development pipeline.



Piers Stobbs
Chief Digital Officer of MoneySupermarket.com

MoneySupermarket.com has adopted DevOps to automate, manage and maintain the deployment of its infrastructure as code environments. Stobbs describes the company as being "on [its] way to becoming fully mature".



Ed Garcez
Chief Digital and Information Officer of London Borough of Camden

London Borough of Camden has a DevOps function that sits lower down in the organisation. Garcez is in the process of reviewing roles within its leadership team, with the view of adopting DevOps across the organisation.



Fin Goulding
Chief Information Officer of Aviva

Aviva is just beginning its DevOps journey, supported by CIO Fin Goulding who has been involved with the DevOps movement since 2012 and has supported the roll-out of two previous DevOps models.

What is DevOps in 2017?

If you've chosen to download or open this paper, then you've probably already got your own idea or definition of what DevOps is.

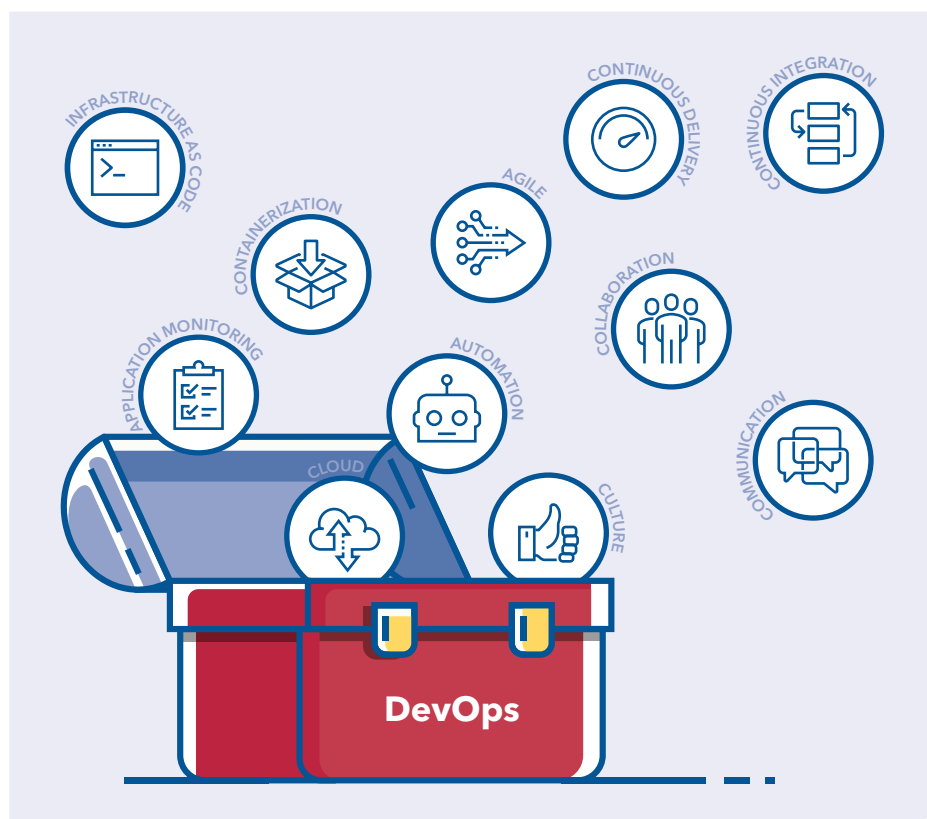
At ECS Digital, we define DevOps as a collection of principles, concepts and methodologies that enable a high-performing organisation. For us, DevOps combines the principles of several ways of working: agile, continuous delivery, automation (and more) to deliver IT software at speed, quality and at a lower cost.

Understanding and interpreting what DevOps is or means to you, is the first step on the journey to understanding how it can help you.

How mature is your DevOps?

C.A.L.M.S (Culture, Automation, Lean, Metrics, Sharing) is a common reference framework for DevOps "maturity". Companies that have adopted one or more of the C.A.L.M.S methodologies to support their business becoming more agile, are part way on the DevOps journey.

Read on to find out how we believe DevOps can help you meet your top priorities of 2017.



How does our panel define "DevOps"?

"DevOps is a culture, not just a process. It's a journey in getting everybody in the whole organisation to work together in the same direction."

Adam Sewell
Copyright Licensing Agency

"DevOps is an approach to integrating dev and ops teams, providing the people, processes and products to enable continuous delivery. For the rest of our business, [this] means delivering quicker and more often."

Karl Hoods
Save the Children

"DevOps is all about cultural evolution in the workplace."

Fin Goulding
Aviva

"DevOps brings together dev and ops activities. It allows for a more fluid and agile approach to updating, improving or releasing new functionality... It's agile in an operational world... It's also about soft skills around communication, influence and acknowledgement of continuous improvement."

Ed Garcez
London Borough of Camden

"[It's] moving from a sysadmin to software development mindset. The concepts of continuous testing and deployment sign-off become more important."

Piers Stobbs
MoneySupermarket.com

Digitalisation

What is Bimodal IT?

The practice of managing two separate, coherent modes of IT delivery; one focused on stability and the other on agility. Mode 1 is traditional and sequential, emphasizing safety and accuracy. Mode 2 is exploratory and nonlinear, emphasizing agility and speed.

SOURCE:
<http://www.gartner.com/it-glossary/bimodal/>

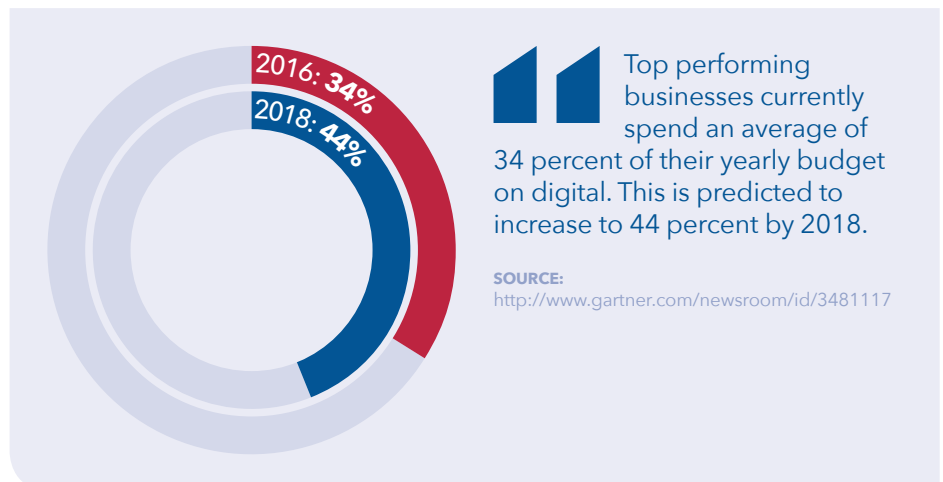
2017 Gartner research into CIO priorities highlights a projected increase in time and money spent by CIOs in support of “digitalisation” or “digital transformation”: becoming a digital-first business that can exchange information both internally and externally, using digital channels.

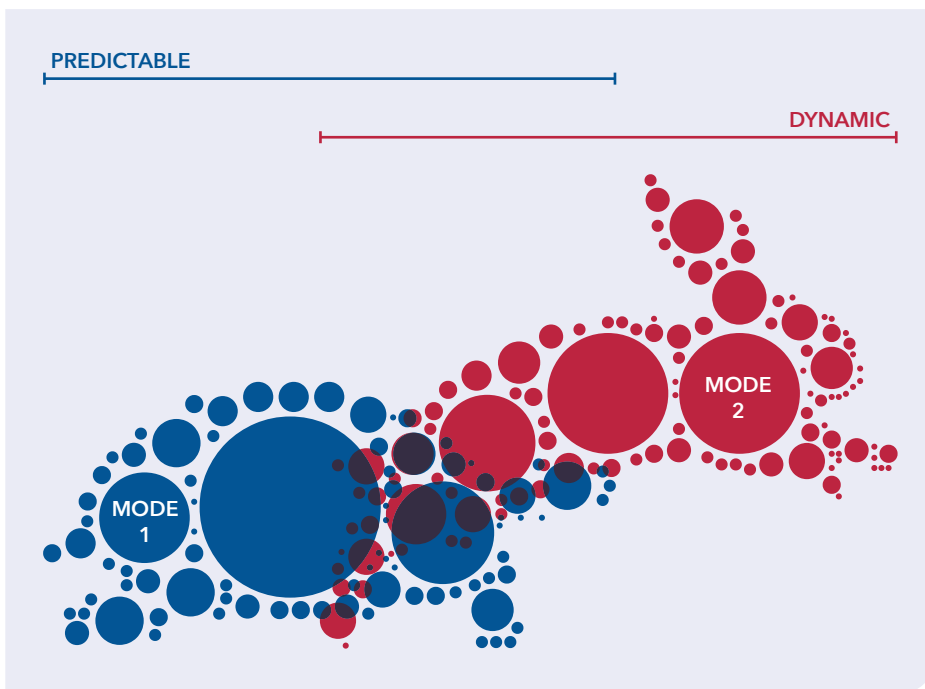
Reports estimate that over the coming year, CIOs across all industries and business sizes will increase spending by another 10% to support their digital efforts.

The move towards a digital ecosystem requires changes in IT capabilities. Gartner highlights one of the key ways to create a digital ecosystem-ready organisation, as the adoption of Bimodal IT within organisations relying on large, traditional or “legacy” technologies (anything older than 5 to 10 years).

For many organisations, legacy systems are so fully engrained in the way a company runs, and have consumed much time and monetary investment, that re-engineering and replacing them with something new and modern just isn’t feasible.

Many CIOs, like Fin Goulding of Aviva, are now looking to address legacy platforms and embed new ways of working that make the most of what they’ve currently got, as part of their digital transformation efforts.





How can DevOps help?

Businesses using Bimodal IT cannot continuously work in two distinct modes of delivery.

Business processes will typically see “mode 2” systems interfacing with “mode 1” systems at one point or another, which means “mode 1” systems need to demonstrate the same speed, agility and cost effectiveness as “mode 2” do. Anything slow, bulky and process-heavy holds back organisations from moving at the pace that consumers demand.

Adopting DevOps principles and tooling allows businesses to unlock agility and value in “mode 1” systems. Continuous Delivery is 100% achievable for legacy applications. Many leading Release Automation tools such as Automomic deliver the same capability for mainframes as they do for Wintel and Linux platforms.

By applying DevOps to legacy applications, organisations can get their existing systems to move as fast as the rest of their company and their consumer – or, at least, fast enough to remain competitive.

Hear from our panel:

“In 2017, my team will be deep into digital transformation, rolling out flow methodologies and addressing legacy platforms. All of which are designed to delight our customers and drive our business forward.”

Fin Goulding
Aviva

“I’m giving a huge amount of thought to how I structure and shape our leadership teams to break us away from silos of IT, and focus us on influence, innovation and digital rather than technology silos.”

Ed Garcez
London Borough of Camden

“We’re deploying DevOps in the delivery of a new digital platform... at the same time as working on a digital transformation programme”

Karl Hoods
Save the Children, UK

Supporting cultural change

Hear from our panel:

"[The results of DevOps] help the bottom-line and encourage greater buy-in. As a by-product, staff collaborate more and they begin to enjoy their jobs more."

Fin Goulding
Aviva

"It's important that the whole business understands what you're trying to achieve. Someone said to me recently: 'Try to not use the word DevOps because it doesn't mean anything to anyone outside of IT'. It's about explaining to people how it works, without getting into technical language."

Adam Sewell
Copyright Licensing Agency

"What matters in the DevOps world is being able to communicate effectively, to collaborate really well... and recover from failure, fast. It's almost a different mind-set and approach to risk and collaboration and working together. Flexibility is key."

Ed Garcez
London Borough of Camden

"[We're] working with an external supplier to lay the foundations and transfer knowledge to existing team members."

Karl Hoods
Save the Children, UK

The most prevalent CIO priority in 2016 was innovation. But, in 2017, CIOs are taking a step-back to consider how they can support the changing mind-set of the organisation as it becomes more innovative*

This is evidence that the modern CIO is becoming less focused on technology, and more on overall business needs.

How can DevOps help?

In today's "digital world", we have seen a change in the role of IT. From being viewed as a cost to the business only a few years ago, today IT has become an 'enabler' and 'revenue generator' of business. The role of CIOs has therefore changed to evangelist for the value that IT can bring to the enterprise.

The most agile, innovative, customer-centric and digital organisations are supported by aligned and collaborative teams. Some might argue that the DevOps culture emerged from the huge number of organisations needing to move at pace in a digital world. To succeed and compete, these organisations needed business and IT teams, as well as teams within IT, to work closely, collaboratively and iteratively – and so DevOps was born. Now, all companies wishing to contend must adapt a similar mind-set.

In the C.A.L.M.S framework for DevOps maturity, the C represents culture and the S, sharing. This illustrates the level of importance placed on culture and collaboration within DevOps.

Did you know? **2.2x**
DevOps culture is used in many organisations to attract and retain staff. Employees in high-performing teams are 2.2 times more likely to recommend their organisation as a great place to work.

SOURCE:
Puppet State of DevOps Report 2016

DevOps culture focuses on ensuring that anyone (originally developers and operations teams) operating in the same activity or value stream are collaborating and rowing in the same direction (aligned). Using DevOps, CIOs can get people in business functions much more connected with what's going on from a technology point of view, and how it can be used to the benefit of their business.

Full adoption of DevOps itself involves cultural change. Employees need to change their mind-set to embrace smaller and faster changes, early feedback cycles and continuous improvements. DevOps initiatives such as tech-sharing sessions, process questioning, defining the definition of "done", tool trials and alignment with business teams were created to ease the changes in working practices.

End-user needs

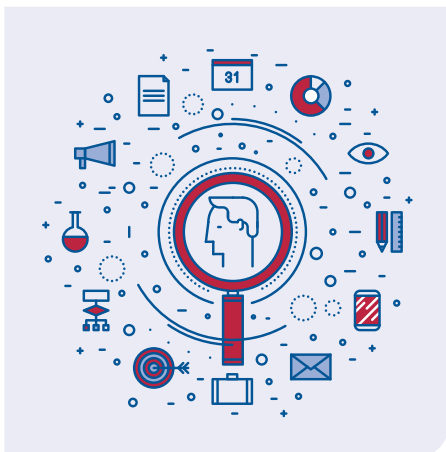
For today's modern CIO, meeting the needs of an end-user goes hand in hand with our previous priority.

Meeting end-user needs was highlighted earlier this year by Alan Crawford, CIO of City & Guilds, in CIO Magazine as one of his 2017 priorities, and stuck out as one of the top priorities with our CIO panel.

Prioritising end-user needs may seem a no-brainer for today's CIO, but for a role traditionally focused on technology, end-user needs have previously been a little far from reach.

How can DevOps help?

The shift from waterfall to agile was driven in part by lengthy projects struggling to deliver. Separate PM, BA, Dev, Test and Ops structures forced inefficiency and manual hand-offs, meaning longer elapsed time to deliver change. When projects did deliver, changes were invariably not what the customer originally wanted – or delivered at a point that the changes were no longer required.



End-user focus has long been a key driver behind DevOps, which came about to enable organisations to move at pace, in line with customer needs. DevOps developers can fully focus on the goal of serving the customer, through the following principles:

- **Shifting left:** building quality into the software development process. When you shift left, fewer things break in production, because any issues are detected and resolved earlier.
- **Working with small batches:** teams slice up products and features into small batches that can be completed in less than a week and released frequently, reducing perceived risk associated with change and elapsed time before customers get access to changes.
- **Early feedback loops:** from customers ensuring what is ultimately delivered is what is required.
- **Alignment of business users with developers:** to ensure that customer requirements are made a key priority by development teams.
- **Use of Automation:** to ensure consistency of quality amongst other benefits.

Hear from our panel:

"The first benefits [we have seen from] adopting DevOps are incremental functionality and value being shipped faster with higher quality to our customers."

Fin Goulding
Aviva

"Our whole development process has sped up considerably with DevOps. DevOps helps us develop and enhance new products, quickly. In a year's time, I think we'll be in a position where customers request new features, and we can turn them around in a matter of days... Without DevOps, we would struggle to run at the appropriate pace."

Adam Sewell
Copyright Licensing Agency

"[With DevOps] the concepts of continuous testing and deployment sign-off become more important."

Piers Stobbs
MoneySupermarket.com

"I see [DevOps] principles applying to anything that improves our customer experience."

Karl Hoods
Save the Children

"DevOps is a fluid, flexible approach around doing something and then continuously focusing on making it better."

Ed Garcez
London Borough of Camden

* <http://www.cio.co.uk/it-strategy/2017-key-industry-trends-for-cios-3651600/>

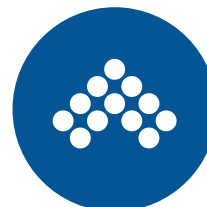
Delighting customers of a leading International Telco:

Through DevOps, ECS Digital made it possible for an International leader in the telecommunications industry to continue to place their customers at the heart of everything they do, through DevOps. Using Automation, we doubled their deployments and sped up deployment releases by 67%, freeing up their time for customer- centric innovation.

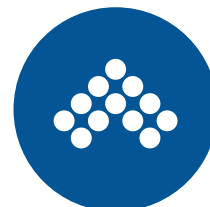
The **MVP** or “Minimum Viable Product” concept is a perfect example of working in small batches during the design process. It grew out of the Agile movement to deliver prototypes to customers that requested a change – and potential customers – so that teams could gather early feedback before making large investments in development and testing.

One of the key principles within DevOps is that improving quality becomes everyone’s job. By adopting automated testing in the early stages of the development process using continuous integration practices, instead of at the end of a development cycle, high-performing organisations spend 22% less time on unplanned work and rework. Thus, they can spend 29% more time on new work, such as new features or code – or – 29% more time adding value rather than an extra 22% delivering the same value!

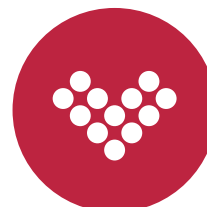
High performing organisations can also boast about the following improvements:



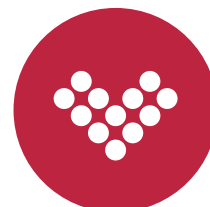
200x
more frequent
deployments



24x
faster recovery
from failures



3x
fewer change
failure rates



2,555x
shorter lead
times

SOURCE:
Puppet State of DevOps Report 2016

The sky-rocketed productivity released by DevOps ultimately enables organisations to respond quickly and efficiently to both customer and market demands.

Leveraging Cloud

The global public cloud market is growing at a 22% compound annual growth rate.*

The Society for Information Management (SIM) recently revealed that the shift of budgets from hardware and software to cloud computing is expected to accelerate in 2017, as enterprises scale to better serve customers. Piers Stobbs, CIO of MoneySupermarket.com and one of our panel members also marked leveraging cloud as one of his key business priorities this year.

The benefits of Cloud are well-known. As touched upon by Stobbs, much more than saving money, the real value of cloud lies in the ability to reduce waste and increase speed and agility. This allows teams to spend less time looking at infrastructure and more time driving innovation.

How can DevOps help?

Being a collection of concepts, DevOps is applicable to on premise, cloud and hybrid configurations. Nevertheless, cloud is built for speed and dynamism and, in most areas, includes automation out of the box. As a place to host application services, Cloud needs working practices like DevOps to ensure its benefits are not marginalised by “traditional” software development processes.

DevOps helps enhance business agility and responsiveness, and accelerates the application delivery lifecycle. The focus on lean and agile principles, alongside automating everything possible, brings the level of dynamism required to realise the benefits of moving applications into, or developing for, the cloud.

In fact, many DevOps principles and tools are critical during cloud migration. One example includes portability and containerisation (a concept that arguably took off with the DevOps movement). Docker states that today, 99% of their customers employ containers when moving to the cloud, so that they’re able to “lift and shift” their entire environment in a cost-effective way.

In a DevOps environment, code is deployed continuously for feedback and bug discovery. Release cycles may be daily or even more often, and up to 200 times** more frequently than organisations not using DevOps.

Cloud provides the fluidity that supports automated deployment from development to production, so that business can meet demanding customer requirements.

Hear from our pannel

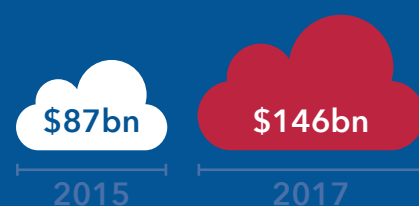
“MoneySupermarket are proponents of the infrastructure as code concept. In other words; our goal is that all our environments are cloud-based and scripted and can be deployed and pulled down in an automated way. We believe this approach allows us both the efficiency of standardised processes with the flexibility to rapidly scale as needed.

Our DevOps function is critical to this progress. Generally our DevOps team is focused on both the creation of these automated scripts and the management and maintenance of them, and the processes behind them.”

Piers Stobbs
MoneySupermarket.com

Did you know?

The A in the C.A.L.M.S framework represents Automation. If your organisation is automating processes, you’re already doing DevOps.



The global public cloud market will top \$146 billion in 2017, up from just \$87 billion in 2015.

SOURCE:
<http://www.cio.com/article/3137946/cloud-computing/6-trends-that-will-shape-cloud-computing-in-2017.html>

* <http://www.ecs-digital.co.uk/our-way/strategy/devops-maturity-assessment>

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

Cybersecurity

Hear from our panel:

Configuration and version control are really important because they allow us to make changes, without requiring a whole system retest. It's about being able to compartmentalise, change, assess and roll it back very quickly if necessary so we can develop on top of it."

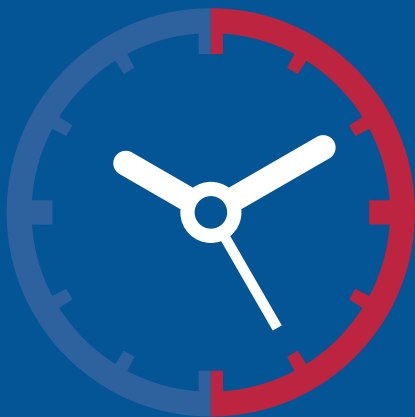
Ed Garcez

London Borough of Camden



DevOps teams are delivering at a velocity that traditional security teams are simply not structured to keep up with. By owning the security problem, DevOps teams are more self-sufficient and able to deliver rugged products at speed.

Nathan Dornbrook
CTO at ECS Security



High DevOps performers spend **50%** less time remediating security issues than low performers.

SOURCE:
Puppet State of DevOps Report 2016

Society for Information Management (SIM) research found that 36% of IT leaders place security as their top concern for 2017 – quite remarkable since just four years ago, security was listed in ninth place.

2016 was a testing year for online security. With over 100,000 incidents*, it's easy to see why the protection of personal data has become increasingly important to businesses and individuals alike. You might remember some of the following largely-publicised breaches:

- Yahoo was faced with the 'biggest data breach in history'*** back in September 2016, forcing them to admit that up to 500 million customers may have had data (including names, email addresses, phone numbers and passwords) stolen.
- Major DDoS attacks also disrupted a host of websites including Twitter, Netflix, PayPal, Pinterest and the PlayStation Network in October 2016. Although the attacks had short-term effects on these popular sites, the attack itself was staggering in size, measuring close to 1 TBps at one time.

With high-profile security breaches, and Gartner predicting that there will be 20.8 billion 'connected' things*** talking to each other by 2020, we can be sure that these kinds of attacks are just the start.

How can DevOps help?

Following an increased focus on DevOps, Gartner predicts it will become one of the largest influencers in getting security right in 2017.

Coined by analyst Neil MacDonald in 2012, DevSecOps will involve security being built into the foundations of DevOps practices, which means:

- **Increased collaboration** between security stakeholders and those involved in the application delivery lifecycle. This means that security requirements can be included alongside functional ones before development starts.
- **Small and frequent releases** with early **feedback loops** ensure security as well as functionality are validated early enough to minimise the effort in remediating any issues. This means applications are secure by design, rather than having to alter design and retrofit security.
- **Automated testing** of application security speeds up the process of delivering change and makes remediating any identified issues less costly. Applications at large enterprises typically have a final "security check" which can take weeks, in some cases, months to complete. Automated testing saves businesses both time and money by helping to minimise security incidents.

All of these combine to help prevent threats and breaches further down the line.

* <http://www.verizonenterprise.com/verizon-insights-lab/dbir/2016/>

** <http://www.welivesecurity.com/2016/09/23/yahoo-biggest-data-breach/>

*** <http://www.gartner.com/newsroom/id/3165317>

Are there any barriers to DevOps?

Whilst DevOps adoption has surged in the last year or so, we are aware that there are still barriers for companies looking to adopt.

Every organisation is unique. There is no “one size fits all” solution for the adoption of DevOps, which means that the barriers to DevOps are different and specific to each organisation.

Our CIO panel have first-hand experience with DevOps barriers, in the form of:

- The C-Suite and top-level buy in
- Lack of time
- Shortage of skills and resources

Talking from our 13 years of experience, there’s one thing that remains the same across all businesses: successful adoption of DevOps requires both top-down money and bottom-down buy in.

It is for this reason, that most of our customers begin their interaction with us through a DevOps Maturity Assessment.



The ECS Digital DevOps Maturity Assessment

We review your organisational culture, structure, processes and tools, and recommend how DevOps methodologies could be adopted to deliver more value to your company. The output is a roadmap for the adoption of DevOps that considers your potential organisational barriers. We suggest short high value pilots of recommendations to prove value, winning hearts and minds and generating metrics for a business case.

What DevOps barriers have our panel experienced?

“One of the biggest barriers are “toxic doubters” and the C-suite obsessed with metrics before allowing you to make organisational change.”

Fin Goulding
Aviva

“The main barrier is time. While people can see the advantages... and are keen to adopt it, getting the time to do the work required is always a challenge.”

Adam Sewell
Copyright Licensing Agency

“The main barrier has been resources... with limited resources there was always going to be contention, especially as the team get up to speed with new technologies and processes.”

Karl Hoods
Save the Children

“Recruiting for DevOps can be challenging. You are typically moving to a broader skill set requiring hands-on knowledge with understanding of different cloud-based processes and procedures, as well as distributed open-source libraries.”

Piers Stobbs
MoneySupermarket.com

“How close to the core should DevOps sit? The DevOps function within our team currently happens lower down the organisation.”

Ed Garcez
London Borough of Camden

Conclusion



DevOps is no longer optional, and if you're not doing it, you'll be left behind. So, my advice is to attend a few DevOps meetups so see what all the buzz is about!"

Fin Goulding
CIO, Aviva

DevOps, much like its predecessors, Agile and Waterfall, requires cultural change within the IT organisation. For this reason, it often needs a push from the top: from the CIO.

Hopefully this paper has gone some way to demonstrating more than just the benefits of DevOps, notably how DevOps is now being used by CIOs to help them achieve their key business priorities.

Our panel of CIOs are all currently recognising the role and value of DevOps within their organisations. Whilst key priorities differ from business to business, we've focused on the most popular CIO objectives of the year, from supporting digitalisation and culture, to meeting end-user needs, leveraging Cloud and improving cybersecurity.

Whilst not the only methodology to solve CIO priorities, DevOps is a time-tested way of working that facilitates the speed, collaboration and innovation that are crucial to business success in the digital era.

Should DevOps be your priority this year?

No! In 2017, don't focus on achieving DevOps. Instead focus on what your business needs to achieve and how DevOps can help realise those goals.

If you're interested in finding out more about how DevOps could specifically support some of your own business goals, feel free to get in touch at hello@ecs-digital.co.uk

About ECS Digital



ECS Digital is a leader in automation and digital transformation. We help enterprises deliver software and software-related services faster and at lower cost through the adoption of DevOps and Continuous Delivery practices, and have been delivering successful projects since 2003, with hundreds of happy customers.

We work closely as consulting partners with key vendors including Automic, AWS, CloudBees, Docker, GitHub and Puppet, as well as directly with customers. We have helped over 100 customers, including a global top three retailer, a top five UK retail bank, and a large European telco – realise the benefits of DevOps and Continuous Delivery practices.

Our core services include:

- DevOps Maturity and Readiness Assessments
- DevOps Strategy
- DevOps Consulting
- DevOps Training
- DevOps Tool Specific Health Checks, Recommendations and Implementation.

Many of our customers begin their interaction with us through a DevOps Maturity Assessment*, throughout which, we provide instant tailored recommendations on where they are, what they could do better, and a roadmap on how to get there.

More information can be found at www.ecs-digital.co.uk



Customer successes:

36x

Enabled a leading Telco to deliver 36 times faster than competitors

30%

Aided 30% year on year growth for an online Gambler using Automation

60x

Reduced deployment time by up to 60 times for a leading Finance company

75%

Reduced deployment times by 75% for one of the world's leading Retailers

* <http://www.ecs-digital.co.uk/our-way/strategy/devops-maturity-assessment>



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Walmart



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