

# The journey to DevOps

This paper is written for technology managers who face the significant challenge of designing and delivering transformative digital products and services. It introduces the core concepts behind DevOps, considers the unique challenges it poses, and suggests how organisations can embrace the DevOps mindset and culture that drives technical innovation in some of the world's biggest enterprises.

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# Introducing DevOps

## What is DevOps and why does it matter?

The name DevOps comes from the amalgamation of Development and Operations. In essence, it's a software productionisation and support methodology best defined by the "DevOps Mindset" which guides its implementation and management style, and the "DevOps Culture" it creates.

Although there is no consensus on an academic definition of the term, it is usually identified with a culture, a way of working, supported by: key principles such as transparent and seamless cooperation by the Development and Operations teams; shared ownership of the product between the two teams; and an aim to automate as much as possible with the final objective of reducing the feedback of software development.

Just as there is no consensus over a rigorous definition of the term, likewise there is no consensus on *when* it started. The commonly accepted beginning of the DevOps movement can be traced back to 2009, when Patrick Debois, inspired by the presentation *10+ Deploys Per Day: Dev and Ops Cooperation at Flickr*, organised the first DevOpsDays conference, marking the first time the name was used at an official occasion.<sup>1</sup> DevOpsDays conferences have since been replicated in several cities around the world, and the movement has grown in popularity, as demonstrated by the increasing number of businesses now implementing or planning to implement DevOps.

Another key moment in DevOps history was the 2013 release of *The Phoenix Project*, a novel telling the story of an IT manager who is tasked with salvaging a hopeless development project, and who learns and introduces DevOps principles to achieve that goal.<sup>2</sup> The ideas set out in *The Phoenix Project* were then codified in 2016 into *The DevOps Handbook*.<sup>3</sup>

In practical terms, organisations have traditionally assured quality, security and compliance through

post-development activities within their non-development departments including the production-supporting operations teams. These rigorous processes are designed to ensure services are production-ready, but they lengthen release cycles and delay time to market, thereby hindering workflow and stifling the adoption of agile development practices.

The introduction of DevOps processes (to automate testing, integration and deployment) reduces the potential for error and shortens development cycle times; but the full benefits can't be recognised until organisations embrace a true DevOps mindset and culture.

Within a true DevOps culture, responsibility for service management does not rest solely with the Operations department. Instead, it is collectively owned throughout the entire service delivery process. All activity gets "shifted left", such that developers build tool support into services, collaborating across teams to ensure they meet exacting service standards. Similarly, the Operations department and security engineers collaborate with the delivery team from as early in the process as possible, all to ensure that standards are met, post-development activity can be reduced (or potentially eliminated), and to allow financial impact to be monitored throughout.

In this way, DevOps has become increasingly important to organisations in multiple sectors that face mounting pressure to deliver better, faster services.

<sup>1</sup> <https://www.youtube.com/watch?v=LdOe18KhfT4>

<sup>2</sup> *The Phoenix Project*, Gene Kim, Kevin Behr and George Spafford, 2013

<sup>3</sup> *The DevOps Handbook*, Gene Kim, Jez Humble, Patrick Debois, John Willis, Nicole Forsgren, 2016

# DevOps mindset

DevOps, just like agile, is not simply a process to be followed. It is a way of thinking and a way of behaving or, as it is now more commonly described, DevOps is both a mindset and also a culture.

The core DevOps mindset comprises three key elements: **“Flow”**, **“Feedback”** and **“Grow”**. Nearly every adopted DevOps practice can be traced back to these elements.

## Flow

**You need a smooth flow of work through your journey to production**

Enabling flow means enabling work in the system to move quickly; it's the part of software development often compared to a factory floor. You could consider different “work stations” through which you want to quickly move “work items”. Your stations could be “business story being written”, “code being written”, “code being tested”, “code deployed to production”.

## Feedback

**You need fast, tight feedback loops**

It's an excellent achievement when “work items” move quickly through “work stations”, but we can't forget the importance of quality. If work is of poor quality and must continuously be moved back to earlier steps in the process, there is a problem. To prevent this, it's essential to create fast, tight feedback loops in your system. Good feedback is enabled by quality control throughout the process, supported by automation.

## Grow

**Nothing has an end!**

Once you have high-quality “work items” flowing quickly through your system, with effective feedback loops in place, you are well on your way to embracing a true DevOps mindset. The final element to embrace is that this journey is continuous, without end. Even if you are doing everything efficiently, there are always new challenges, new people, new technology, new project realities, and this means that continual experimentation and learning is essential.

**The DevOps mindset is all about improving the speed and the quality of your outcomes while creating a lasting impact.** In some ways, it's very similar to the agile movement<sup>1</sup>, and just as with agile, it can be challenging to achieve full integration, as we discuss in the next chapter.



<sup>1</sup> <https://agilemanifesto.org/>

# Challenges to adoption

Achieving high DevOps maturity is not an easy task. Knowing what problems you may face can help you tackle them proactively, rather than waiting for them to derail your efforts in DevOps adoption.

In our experience of working on DevOps projects with public sector clients, a number of challenges repeatedly present themselves:

### **Lack of in-house DevOps expertise**

The obvious problem faced by many organisations is the lack of experience. Despite being adopted by many organisations since the mid-2000s, many companies or large departments may not have enough expertise available to set up the right DevOps mindset as the journey to DevOps is often halted midway or prevented by a fear of change. In our experience, this can happen because of two main reasons. The first is a lack of previous experience that induces a fear of perceived unknown outcomes. The irony is that this will in turn prevent any implementation experience in the organisation and therefore create a vicious cycle of fear of the unknown and lack of experience. The second takes the form of immature governance policies that require strict separation of concerns between Dev and Ops, inducing a fear of breaking these policies.

### **Lack of management support for DevOps mindset and culture**

It is not enough for DevOps to be embraced by developers and testers. It's important for the wider management to be supportive and aware of differences in mindset and culture that come with DevOps. Scott Logic can help define a plan for a phased and measurable implementation that will let senior management gradually take confidence in the DevOps space.

### **Lack of technical experience**

Adopting DevOps often requires some tools to help streamline and accelerate development. These tools include continuous integration offerings, containerisation technologies (Kubernetes, Docker) as well as a whole array of cloud tools around which there

may be a lack of in-house expertise. As in any digital transformation, this challenge can be addressed in multiple ways including retraining of the current workforce or hiring new talent. There isn't a silver bullet solution that addresses this issue in the same way for all the businesses around the world but a strategic partnership with Scott Logic can help identify what is the best plan that works for your specific situation.

### **Concerns regarding security**

With the speed of delivery increased and a strong push towards automation, it's natural for stakeholders to be worried about the security of this new approach. These concerns need to be fully understood and addressed before and throughout a successful DevOps journey, and Scott Logic as a partner can support your business to define a plan to continuously find possible issues and their solutions.

### **Misconceptions around cost**

Although it may seem costly in terms of time and resources to adapt to a completely new mindset and toolset, DevOps adoption can actually improve the financial efficiency of product development and maintenance. For example, automated tests provide faster feedback to development teams; this promotes better product quality and accelerates time to market. Once the product is live, the shared ownership between development and operations enables faster resolution of defects, reducing their financial impact. Across product portfolios, the reusability of automation allows investment in one project to benefit other projects, saving you time and money.

**In the next section, we suggest a process through which you can overcome such challenges and kick-start your DevOps journey.**

# Making DevOps work for you

## Assessing your DevOps maturity

To best direct your efforts and ensure control over your processes, it is worth assessing your organisation's DevOps maturity. Here are our top ten questions to get you started:

### 1. Integration of development and operations

In an organisation with high DevOps maturity, development and operations work hand in hand, without friction, and with shared responsibility for quality.

#### Questions to ask:

- Are developers empowered to provision their environments?
- Is there a long waiting period for any infrastructure change to happen?

### 2. Release process maturity

Continuous Integration (CI) and Continuous Delivery (CD) are closely associated with DevOps. Using CI/CD vastly increases the flow of work through the value stream. This means that to assess your DevOps maturity, you should assess the speed at which you can release your software.

#### Questions to ask:

- Do you have an automated release pipeline?
- How often are you releasing to production?

### 3. DevOps testing

An effective testing process is a key aspect of DevOps maturity. If done right, your testing should give everyone on your team greater confidence in your software once it passes through the release pipeline.

#### Questions to ask:

- Is automated testing part of your release pipeline?
- Do you have adequate monitoring support once the software is live?

### 4. Culture of automation

The culture of automation is a visible change that happens in organisations that are successfully adopting DevOps practices.

#### Questions to ask:

- Is automation your default approach for solving problems?
- Are slow, manual processes no longer accepted as long-term solutions?



## 5. Continual experimentation and learning

DevOps is not something that happens once and is done. To deliver lasting change, you need to learn and improve continuously. One thing that is constant in software development is change, and your organisation needs to embrace this reality.

### Questions to ask:

- Do you give your employees time and resources to learn?
- Do you spend time experimenting to make your processes better?

## Starting your DevOps journey

Most organisations have already made some progress on their DevOps journey, even if this hasn't previously been identified as a strategic aim. Conversely, few organisations have fully embraced a DevOps culture. In fact, according to Puppet's *State of DevOps Report 2023*, "despite the prevalence of DevOps practices across organisations, nearly 80% remain in the middle of their DevOps journey, experiencing varying degrees of success at the team level but not across the entire organisation."<sup>1</sup>

However, we cannot assume that every organisation is capable of fully embracing a DevOps culture. In our view, it is best to see the journey towards DevOps maturity as being one of continuous improvement. In that way, the journey becomes more important than the destination and you can aim for the level of DevOps maturity that is suited to your organisation's circumstances. As your organisation evolves, your level of DevOps maturity can adapt to support that evolution.

The groundwork for this journey has already been set through the widespread adoption of agile practices, but it is still useful to understand what this new DevOps journey looks like, so you can plan how to embark upon it within your own organisation. The following pages recommend a five-step process to follow to kick-start your DevOps journey, based on several examples that have worked well with our own public sector clients.

<sup>1</sup> <https://www.puppet.com/resources/state-of-platform-engineering>

# Starting your DevOps journey

## Step one



### Identify your specific problems

It's important to understand where your problems lie in order to ensure change efforts are focused accordingly.

### You may discover specific problems like:

- Deployments to production happening very rarely (only a few times a year)
- Testing happens months after the development finishes
- The operations team is continuously firefighting
- Developers find it nearly impossible to get any IT changes done
- Architecture is despairing about the state of the system
- Things only ever get worse

### Key people needed for your journey would typically include:

- A working group with representation from different areas e.g. development, operations, testing and architecture
- Try to choose people who understand what "good" looks like and who already understand basic DevOps principles
- Senior leaders are needed to help influence and speed up the adoption of new working practices across teams
- Provide these people with clear information and evidence of improvements so they can influence their teams
- Your working group should meet quite often and you must make yourself accessible to other partners

## Step two



### Assemble your working group

Change rarely happens by chance. Recruit key people from across your organisation, so you can work towards the common goal to work better together and work faster.

## Step three

### Connect multiple teams

With the involvement of senior leaders, it will be easier to start connecting teams. You want your developers, operations and testers to feel like they are part of one family, one overarching team.



### Better collaboration across teams is essential, so you'll need to plan activities to encourage this. Here are some ideas you could try:

- Run team intro sessions, so that everyone knows each other's names
- Get a good communication channel such as Slack or Microsoft Teams
- Celebrate each other's achievements and try running joint sprint reviews
- Foster knowledge-sharing – teams that learn together, work better together
- Create a blame-free culture – encourage criticism of process, not people

For example, your goal could be the creation of a continuous integration pipeline, which you could define and deliver against as follows:

- The pipeline must satisfy testers, developers and the operations team
- You could form a dedicated team with the sole task of delivering that pipeline
- Measure savings in time and improvements in quality
- Report benefits to your working group
- With value created and the approach proven, it is then easier to take on more challenging goals



## Step four

### Set goals and deliver against them

Actions speak louder than words. If you want to achieve broader buy-in for your DevOps adoption, you need to show results.



## Step five

### Start changing the culture



Specific goal-focused projects are a good way to start, but the change can't be isolated to these "special teams" and "special projects". You need them to switch to a higher-level focus on Flow, Feedback and Grow, improving iteratively over time.

### Specific activities to improve Flow:

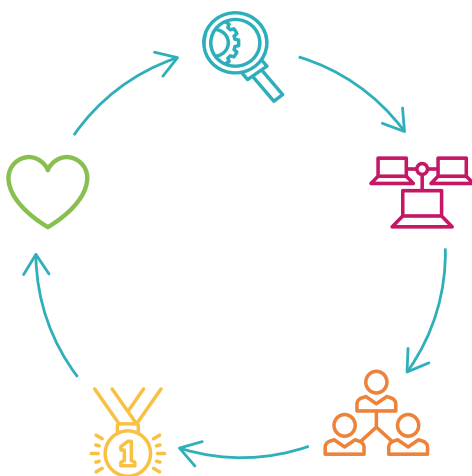
- **Improve the quality of business stories and tasks** to stop tasks repeatedly going back to the business for refinement
- **Improve the sign-off process** so that finished work items are signed-off in weeks, not months
- **Make deployments automatic** so you can eliminate errors from manual activity
- **Make an Operations representative join Development stand-ups** to improve the speed of problem resolutions
- **Streamline processes** so your team is not slowed down

### Specific activities to improve Feedback:

- **Review business stories quickly** and involve testers and developers early on
- **Automate testing as part of development** so you don't need to test the system manually with every new feature
- **Add different levels of testing across the deployment pipeline** with time-consuming tests later in the pipeline
- **Involve the business early**, for example, through quick feature mocks to test against business criteria
- **Insist on good code review and branching processes:** merge/pull requests and code reviews are now standard
- **Agree clear definitions of 'Done'** so everyone understands what it takes to finish a task

### Specific activities to support Grow:

- **Prioritise continuous integration** from the very start
- **Establish continuous delivery** by starting with connecting people rather than taking on difficult challenges straight away
- **Enable Continuous Deployment** so that automatic deployments to production are enabled after the code is merged



# Enjoying the rewards of DevOps

By the end of step five, you may feel your DevOps journey is over, but unfortunately you'd be wrong! To enjoy the benefits of DevOps, it's important to remember that all software projects involve a constant stream of change and challenge.

It's critical to build this realisation into your project expectations; to accept that you'll never stop learning, and to encourage your team to embrace and enjoy change, rather than resisting it. This is key to achieving a DevOps mindset and culture throughout your organisation.

But it is definitely worth the effort! Our consultants have seen increasing numbers of clients commit to their own DevOps journeys, and realise significant, measurable benefits. In fact, the growing adoption of DevOps has transformed the way in which we deliver our software and consultancy services in a number of really important ways:

- We see much higher levels of motivation and morale in all the teams
- Delivery speed across all aspects of projects drastically increases
- There is a tangible improvement in the quality of the end product
- Automation is everywhere, meaning the removal of slow and tedious processes
- Projects are succeeding more speedily, despite the doubt and challenges

DevOps marks a new and exciting way in which we deliver software and it can have a truly transformative impact on any organisations willing to embark upon the journey. We wish you luck as you plot and prepare for your own travels, and if we can help in any way, please don't hesitate to get in touch.

## At-a-glance benefits<sup>5</sup>

- **99%** of respondents to an Atlassian survey said that DevOps has had a positive impact on their organisation.
- **61%** of respondents said DevOps helped them produce higher quality deliverables.
- **49%** said that DevOps enabled faster time to market and improved deployment frequency.
- **48%** of respondents said that practising DevOps had helped them get a pay rise.



<sup>5</sup> 2020 DevOps Trends Survey, Atlassian, 2020

# Scott Logic client stories

Read how Scott Logic helped Rabobank shape an effective DevOps culture.

SCOTT LOGIC / ALTOGETHER SMARTER



## Helping shape an effective DevOps culture

 Rabobank

When Rabobank wanted to ensure that its delivery teams were adopting DevOps methods effectively, it called on the experienced team at Scott Logic.

Rabobank's London IT Department was six months into its transformation to DevOps. However, the company felt the culture needed help to take root, and lacked uniformity within the various delivery teams across IT systems in London.

Scott Logic consultants provide bespoke solutions that fit in with a company's wider goals. Therefore, their first step was to travel to the company's head office in Utrecht to meet the DevOps coaches helping to shape delivery teams in The Netherlands. They had started their journey six months ahead of the London office and were able to advise on their strategy. Working with these coaches, Scott Logic identified a strong collaborative approach which would help the London teams transform, while maintaining the unique culture of the business itself.

Scott Logic shaped bespoke coaching sessions for six delivery teams, facilitating intense review and discussion of DevOps principles, and agreeing achievable goals. As a result, each team was able to demonstrate tangible progress toward adopting DevOps, in a way that was more positive and in-keeping with the values of the bank.

// Through their coaching style, Scott Logic's team has empowered individuals in their new DevOps roles which has encouraged greater collaboration within teams. This has resulted in the faster, more efficient delivery benefits of DevOps being realised across the whole IT Operation. //

John Hinks, Head of IT Systems Rabobank


**Rabobank**

Rabobank is an international financial services provider operating on the basis of cooperative principles. It offers retail banking, wholesale banking, private banking, leasing and real estate services. It serves approximately 8.7 million clients around the world.

As one of the oldest branches in the Rabobank international network, the London office is strategically aligned with one of the world's most important and dynamic financial centres, and offers a number of products and services within corporate banking, corporate finance and global financial markets.

[scottlogic.com/our-work](http://scottlogic.com/our-work)

SCOTT LOGIC / ALTOGETHER SMARTER



## Disruptive, without disruption

Rabobank's delivery teams are busy, and time is precious. Therefore the company was keen that coaching was effective, yet unobtrusive.

Scott Logic devised an approach that would leave teams with real outputs, as well as benefits that would be evident immediately. Instead of long-winded end-of-project reports, consultants proposed improvement items that could be placed straight into the backlog of work. These were both actionable by the team, and visible to Rabobank management.

Scott Logic organised intensive two-day workshops with each team, which maintained a strong focus without consuming too much of the team's time. These workshops encouraged the team to share their thoughts about DevOps and the challenges that stood in the way. The open, relaxed atmosphere empowered teams to confidently discuss shortfalls and suggest improvements.

These workshops were followed by a coaching day, in which teams participated in a frank round-table discussion about DevOps principles.

// Scott Logic's consultants helped us identify various practices which will enable us to function better as a DevOps team. We are already reaping the benefits of this. We found them very knowledgeable about DevOps practices and a pleasure to work with. //

Paul Johnson, Scrum Master Rabobank

## Delivering immediate value





When it came to DevOps, different teams had achieved different measures of success. Using ideas gathered from earlier sessions, Scott Logic formulated a team exercise that identified important goals, and planned realistic and achievable improvements that would bring those aims closer to reality.

The exercise was based on the GROW coaching model (pictured left), and provoked considerable discussion about key topics. These included cross-team communication, process-led concepts such as automation and monitoring, and the integration of support within the model. These conversations weeded out the root causes of the cultural divisions within the teams.

Scott Logic suggested ways to fix bottlenecks in areas such as testing, automation and deployment through wider discussion, and helped teams identify measurable items for improvement.

Through a structured and open discussion, Scott Logic coached each team to confront their most fundamental cultural concerns. It also left them with a solid model that would help them improve their performance, and build a more cohesive culture of collaboration and communication.

### GROW Coaching teams to define themselves

 <b>Goals</b> What are your goals?	 <b>Reality</b> What's the reality of your current state?
 <b>Options</b> What could you do?	 <b>Will</b> What will you commit to doing?

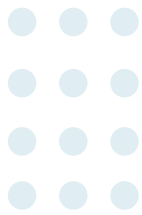
## Interested in partnering with Scott Logic?

If you'd like to find out how Scott Logic can help with your DevOps needs, then get in touch with our Technology Director, Colin Eberhardt: [colin@scottlogic.com](mailto:colin@scottlogic.com)

## Rabobank client story

Rabobank is an international financial services provider serving approximately 8.7 million clients around the world. When the organisation wanted to ensure that its delivery teams were adopting DevOps methods effectively, it called in the experienced team at Scott Logic.

[scottlogic.com/our-work/case-study-rabobank](http://scottlogic.com/our-work/case-study-rabobank)



## Want to discuss the impact of DevOps in your organisation?

At Scott Logic, we design and build software that transforms the performance of some of the world's biggest and most complex organisations. This means truly understanding current and emerging technologies, and helping our clients make the right choices.

If you'd like to discuss your own DevOps journey, or any other technology challenges that face your organisation right now, we're always happy to chat.

**To arrange a free consultation, contact Rob Griffiths on:**

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