



▶ DevOps Whitepaper

**Percipience**  
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## » DevOps Whitepaper

*In recent years the global economy has been rapidly evolving with companies such as Facebook, Netflix and others reaching hundreds of millions of people across the world with online services. At the same time these and other companies are rapidly innovating on the technology, that provides the underpinnings necessary to reach these massive audiences. The convergence of global reach with all of its opportunities and the rapid evolution of the enabling technologies is forcing software development, IT operations and business models to change or risk extinction.*

*In 2016 most businesses are somewhere along the Cloud migration journey. Some are still thinking about it, others are busy migrating and others are as far into the Cloud as they can be for their industry. Of the firms that are at least partially operating in the Cloud a good percentage are not realising the cost savings or scalability they were expecting or have not realized the true potential that is far beyond savings on data centers.*

*A similar story exists for Agile software development. Since February 2001 when 17 software developers met at the Snowbird resort in Utah and developed the Manifesto for Agile Software Development, Agile has been slowly creeping into the software development and business cultures. Agile has been often stymied by the realities of traditional IT organizations and the siloed approach to operating. Many have found some success with Agile while there is an argument that most have not realized its true potential.*

*The intersection of global scale, Cloud and other modern technologies and Agile development led to "DevOps". DevOps brings a modern approach to the culture, processes, tools and practices necessary to continuously produce high quality and high value products in today's rapidly evolving world.*

At the IBM Relay Conference in November 2015, Forrester principal analyst, John Rymer, presented the findings<sup>1</sup> from a recent survey that highlighted the link between Cloud computing and DevOps. The study, which surveyed 200 IT leaders in the U.S., Europe and Latin America, inquired about the leaders' current cloud computing deployments and plans for the next two years. Nearly 90% of respondents indicated that they have already begun migrating their systems to the cloud. Moreover, it turned out that "the advantages of more quickly implementing and iterating applications—with the focus of better engaging customers—trumps all, including security, in deciding to move more systems of record to the cloud within the next 8 quarters." Of those IT decision makers surveyed, 65% are currently using or implementing cloud platforms, 26% are evaluating cloud platforms and 9% are piloting cloud platforms.

## The Case for DevOps.

Each year, a leading software vendor, PuppetLabs, carries out a survey on the State of Devops in conjunction with IT Revolution and sponsored by PriceWaterhouseCoopers. The 2015 report<sup>2</sup>, based on over 4,000 responses, found that high-performing IT organisations deploy code 30 times more frequently and 200 times faster than their lower performing peers. They also have 60% fewer failures and recover 168 times faster.

DevOps is enabling IT to achieve higher levels of throughput and stability – a key reason the movement has gained so much traction. A November 2014 survey of 700 IT decision-makers sponsored by Rackspace<sup>3</sup> polled tech and business

managers in the U.S., U.K., and Australia, from companies that have between 250 and 3000+ employees. Of the respondents who said they hadn't yet embraced a DevOps approach, 79 percent said they were planning to begin that journey before the end of 2015.

DevOps is relatively new. However, a large number of organizations have dipped their toes in, if not completely transitioned. Over 55 percent of the surveyed companies reported they are already using DevOps practices or approaches. U.S. companies are leading that charge — 66 percent of companies have implemented DevOps as opposed to 40 percent in the U.K. and 50 percent in Australia.

# What is DevOps?

Most organisations have experienced the negative issues associated with Waterfall software development, including the pattern of disconnected groups operating in their own silos taking long periods of time to release software. In response, many of those organisations then transitioned from Waterfall to Agile software development to address business needs and to be more adaptable and produce more frequent results. While helpful, this effort still left the same groups operating in silos struggling to successfully launch new software. This severely limited the promise of Agile development. The advent of Cloud technologies and a truly global economy sparked the evolution of

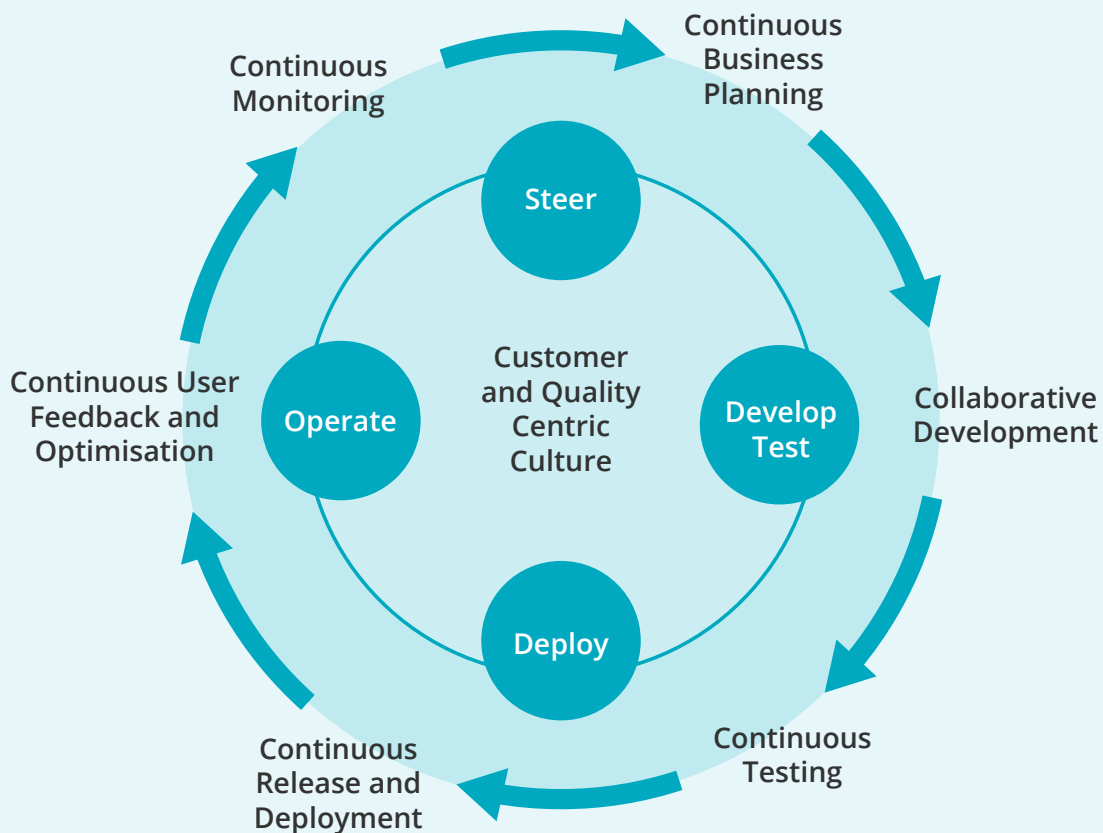
Agile into the principles and practices referred to as DevOps.

From software architecture and design to systems administration and support, the term “DevOps” refers to a style of management and implementation that places an emphasis on automation and iterative delivery of software, while also empowering team members to own or contribute to portions of the software delivery process that were previously inaccessible due to silos within an organisation.

DevOps tools and practices focus on reducing time to release and making it possible to extend the frequent iterations of Agile into infrastructure

and data environments. DevOps is inseparable from both agile software development and cloud computing principles. Success is measured by how quickly an organisation can leverage infrastructure and assemble data to support software development and delivery. DevOps success is also measured by the speed, frequency, and quality of software/product releases.

DevOps teams are often a combination of development and operations talent with few if any barriers between the successful deployment, monitoring and updating to production applications and the teams that create them.



A well planned and executed DevOps transformation results in a continuously improving and highly adaptive software development lifecycle.

# Dev or Ops?

One team with one goal. That phrase summarizes the ultimate goal from which DevOps value originates. Developers no longer throw an installation DVD and printed instructions “over the wall” to the operations team and expect a successful release. Development and Operations staff will be joined at the hip from start to finish ensuring a continuous stream of successful releases.

An organizational chart for DevOps may still depict separate development and operations teams in some cases depending on the unique needs of a business however, tight alignment and integration of development and

operations staff with consistent goals based on the value delivered to the business is critical and the cornerstone of a successful DevOps-based organization. Staff may be matrixed together by products or platforms or simply integrated through strong collaboration, integrated processes and consistent metrics for success.

Culturally, skillsets, mindsets, collaboration, tools, processes and focus shift and become more broad. Developers must understand the environments in which they are deploying. Operations must be part of the entire release pipeline ensuring data and environments are

consistent and support the needs of the applications. Developers and Operations staff will work side by side when bugs are found or issues are encountered in production. End to end visibility is provided for a product and supporting teams starting with unit level development through build, QA, release and ongoing maintenance. Development sees and are invested in the production success and operations sees and is invested in high quality development.

This is not a development or operations question. This is an organizational wide change for creating greater business value.

## Implementing DevOps

*The DevOps trend goes way beyond implementation and technology management and instead necessitates a deeper focus on how to effect positive organisational change. The DevOps philosophy therefore centres on people, process, technology and information. DevOps is not a one size fits all solution; it cannot be achieved with a cookie cutter approach, nor is it a prescriptive standard like ITIL or PCI.*

Cultural change is at the heart of DevOps adoption. It seeks to change the dynamics in which operations and development teams interact. Trust, honesty and responsibility are critical in affecting change. In essence, the goal is to enable each organisation to see the perspective of the other and to modify behaviour accordingly, while motivating autonomy. This can only be achieved by the buy-in and commitment of business leaders.

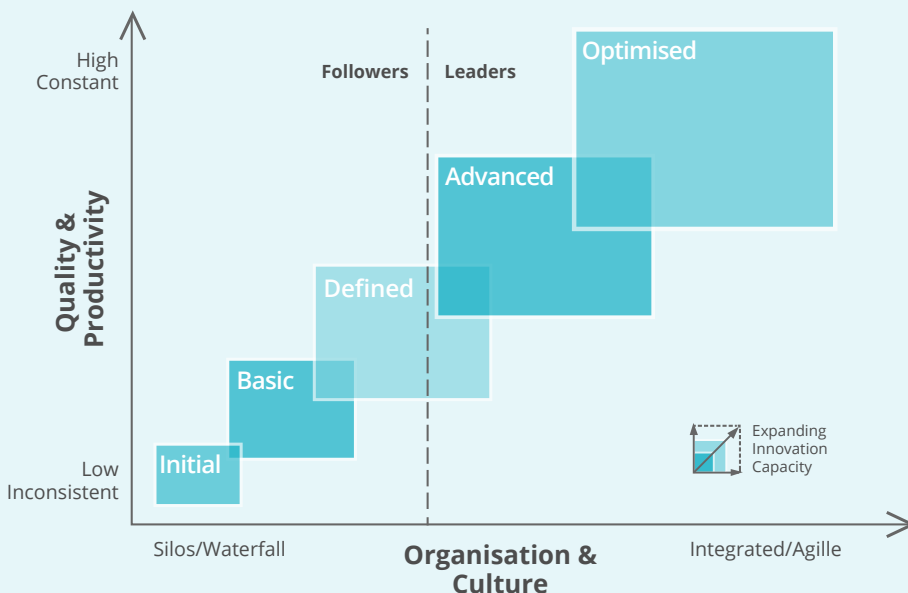
Beyond cultural change, companies wishing to design a blueprint that matches their unique needs and goals should look to use a Product Development Framework. Ideally this should be one that embeds the principles and practices of, for example, an emerging standard such as the Scaled Agile Framework (SAFe). SAFe helps organisations achieve DevOps excellence by identifying the people/roles, principles and processes at a portfolio, program and team level.

This wider and more comprehensive view allows firms to leverage talent, processes, tools, systems and platforms in ways not otherwise possible or practical.

A DevOps implementation does not require an “all-stop” to current workflow or the adoption of massive changes all at once. On the contrary, when done correctly, a DevOps implementation for an existing team is usually accomplished through gradually introducing the DevOps implementation work as epics, user stories and work items in the backlogs of Agile teams. In typical Agile fashion, the definition of “done” and priority for DevOps specific user stories may change over time but are completed incrementally. The implementation of DevOps is accomplished at a pace and in a manner that helps the organisation grow and stretch without disrupting current productivity, work in progress, delivery timetables or product schedules.

# Organizational Adoption - First Steps

A DevOps implementation can be accomplished in many ways including a “complete” implementation at the onset of a new development effort. Most organizations have various products and services in flight be they in some phase of pre-release development or full production use. The natural inclination of many teams is to begin a DevOps transformation by implementing products that claim to enable DevOps such as Jenkins or Puppet. While those products may add value to your existing development efforts, the first task should be a practical review of people, processes, technology, and the organisation as a whole. Based on the data, analysis and recommendations stemming from that effort, you will be able to identify the specific pathways, projects and priorities that will put your organisation on a solid path to DevOps-based value.




The Percipience Framework aligns everyone in pursuit of the same goal to reinvent the way ideas are turned into products for competitive advantage.

Companies will be at different levels of understanding, experience and capability with regard to DevOps. What is a priority for one organisation may be less important for another. For example, some organizations have less rigor or inconsistencies in their Agile development processes that might need to be changed. Maturity models that map levels of capability and competency against the importance and impact of

specific processes, behaviours and technology use are a tried and tested way of identifying priorities and driving continuous improvement towards a goal of best practice over time. The Percipience DevOps Maturity Model is based on the classic 5 level optimisation model, first published<sup>4</sup> by Watts Humphrey in 1987, which has become the basis for the CMMI model widely used in the software development process today.



# DevOps Maturity Model

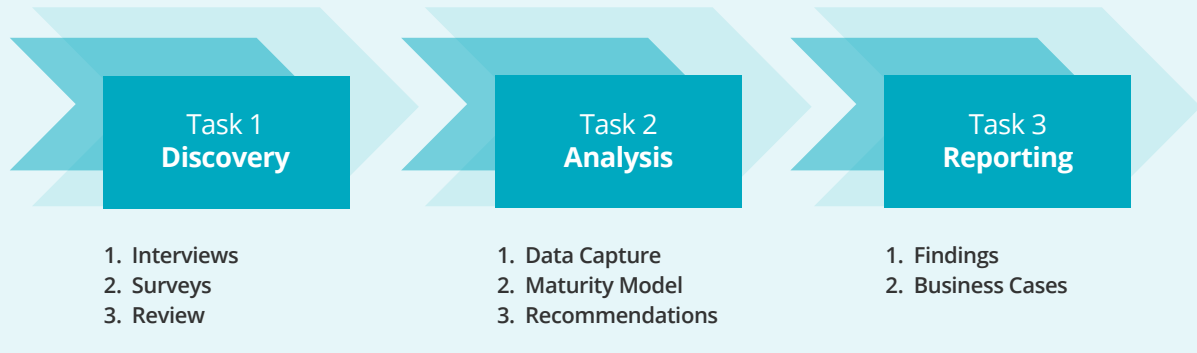
Evaluation Dimensions	Culture	Automation	Lean IT	Measurement	Sharing		
<b>Evaluation Metrics</b>	<ul style="list-style-type: none"> <li>• Motivation</li> <li>• Customer first</li> <li>• Skills</li> <li>• Unified</li> <li>• Integrated</li> <li>• Accountable</li> </ul>	<ul style="list-style-type: none"> <li>• Development processes</li> <li>• Delivery</li> <li>• Testing</li> <li>• Infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>• Delivery</li> <li>• Planning</li> <li>• Testing</li> <li>• Feedback</li> <li>• Agile</li> <li>• Scale</li> </ul>	<ul style="list-style-type: none"> <li>• KPIs</li> <li>• Dashboards</li> <li>• Applications &amp; Infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>• Consistent</li> <li>• Transparent &amp; visible</li> <li>• Tools</li> <li>• Mindset</li> <li>• Cross-discipline</li> </ul>		
<b>Maturity Levels</b> 	<b>Level 4 Optimised</b> Desired elements of the culture are identified, ingrained and sustainable — 'the way we work here.' Continually enhancing the employee and customer experience.	Self-service automation. Self-learning using analytics and self-remediation.	Autonomous habit Full empowerment External learning	Measure to customer value	Effective knowledge sharing and individual empowerment	DevOps principles firmly entrenched; 'continuous' is a way of life; nothing is manual; client is forever at the center	<b>Maturity Descriptor</b>
	<b>Level 3 Adopted</b> Culture viewed as an asset to be managed. Ability to adapt to changing business needs.	Collect and analyse metrics of the automated process and measure against business goals.	Driven deployment Majority involvement X-process learning	Monitor using business and end-user context	Collaboration based processes are measured to identify bottlenecks and inefficiencies	Strong evidence of DevOps principles in use and evolving across the entire organisation	
	<b>Level 2 Sustainable</b> Cultural traits that support business strategies have been identified. Ability to analyse trends in culture and predict issues.	Central automated processes across the application lifecycle	Goal orientated Selected items Value stream learning	Monitor resources consistently	Collaboration, shared decision making and accountability	Solid DevOps mindset and organisational wide adoption is underway	
	<b>Level 1 In Transition</b> Aware of aspects in culture that may help or hinder. Programs implemented to address specific issues.	Siloed automation, no central infrastructure	Formal structure Only specialists Team learning	Measure to project metrics.	Managed communication some shared decision making.	Starting the DevOps journey. Agile-centric roles and consistent execution; movement towards a quality culture	
	<b>Level 0 Impeded</b> Culture developed organically Lack of awareness as to how culture is impacting day-to-day business. Culture misaligned to goals.	No automation	Reactive approach Little / no involvement Ad-hoc learning	No monitoring or metrics collection	Poor, ad-hoc communication and coordination	Loosely defined and mostly ad-hoc execution across teams and disciplines	

*The Percipience DevOps Maturity Model serves to guide a comprehensive and holistic assessment of a company's current state product delivery capability. It allows you to identify the opportunities for improvement, and becomes the underpinning for a roadmap that enables you to achieve your desired results. The gradual ascent through the model using Agile development methods produces opportunities for early wins, team success and validation, and continuous results. The approach meshes well with other corporate activities such as budgeting, change and people management.*



# Getting ready for DevOps implementation

## A 3 stage process



**Discovery:** Use surveys, interviews, shadowing and documentation review to understand current state including:

- ▶ Culture & Strategy
- ▶ Automation
- ▶ Lean IT
- ▶ Measurement
- ▶ Sharing

**Analysis:** Analyse the data gathered to assess organisational maturity, skills gaps, tooling deficiencies, and key risks

**Reporting:** Produce a summary report of the findings, documented recommendations and business cases with justifications and costs for implementing each of the recommendations

## Discovery

Only once you have assessed your organisation's current state, maturity level and orientation can you begin to understand how to transform your organisation and achieve your goals. To know where you're going, you need to know where you are now inclusive of people, culture, technology and processes.

You need to interview and/or survey all team members and a subsection of external stakeholders. Then review documentation pertaining to the inner workings of the team including but not limited to processes and policies. You may also need to speak with customers. You might also want to shadow people within certain roles in the organisation throughout the execution of a sprint. This will give visibility into how work gets identified and completed within the various disciplines that exist today.

## Key DevOps Best Practices

- **Alignment**  
Align incentives and rewards to foster one team
- **Automation**  
Automate wherever possible
- **Tools**  
Leverage best tools available to foster transparency and communications
- **Collaboration**  
Enable collaboration and knowledge sharing
- **Ownership**  
Organise around product teams
- **Metrics**  
Measure everything and make it visible to everyone
- **Quality**  
Test everything and correct immediately; minimise technical debt

## Analysis

Analyse the data gathered in order to create a documented summary of the findings from Discovery. Then you can make an assessment of your DevOps maturity using Percipience's DevOps Maturity Model and identify key risks to organisational transformation.

The interviews, surveys, shadowing and documentation review will enable you to assess and measure your organisation's status across each of the DevOps maturity dimensions. This will serve as a benchmark; provide a clear view of the opportunities for improvement, and the performance indicators that track progress towards improvements.

## Reporting

Develop reports that document the recommendations, risks, skills gaps and business cases with justifications and costs for implementing each of those recommendations. The reports should then be presented to key stakeholders at an in-person, group meeting.

## Conclusion

*DevOps is proven to increase the frequency and speed of software releases as well as improving software quality. The ability of DevOps methodologies and to handle, not only new software development, but also the deployment and management of COTS and proprietary in-house developed applications that are being migrated to the Cloud, helps deliver the cost savings that Cloud promises. Companies looking to maximise the benefits of DevOps need to drive cultural change from the top and gain a clear understanding of their current competencies and capabilities. Then, prioritise actions that improve DevOps maturity and introduce DevOps projects in incremental steps to ensure the business benefits of cloud deployments are met fully.*

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# About Percipience

Percipience help Chief Operating Officers achieve their vision.

We are Digital Business Transformation specialists with expertise that covers three key areas:

## ▶ Cloud Services

Global SaaS revenues are forecasted to reach \$106B in 2016, a 21% increase in 2015 spending levels. Are you ready to fully capitalise on Software as a Service?

## ▶ Digital Content Services

The media industry is in the midst of an historic transformation from traditional to digital platforms.

## ▶ Diligence Services

Technology diligence is part of a continuum. We conduct technology diligence as critical step in the M&A process that links strategy and investment goals to integration, transformation and value realization.



## About the author

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