HOW **DEVOPS SOLVES** THE TOP **5 CHALLENGES** IN **SOFTWARE PRODUCT DEVELOPMENT**

EBOOK

Have you been struggling to overcome challenges associated with software product development? Are quality and time-to-market pressures pulling you down? *DevOps might just be the answer to all your problems! It focuses on fast, continuous iterations, and helps in optimizing software quality, and also ensuring faster delivery.*

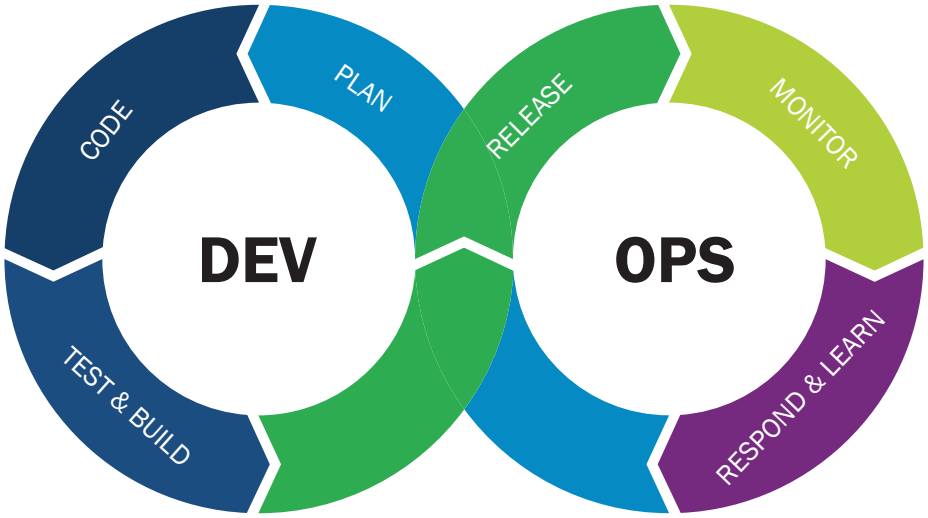
INDUSA
Powering Business through Technology

CONTENTS

INTRODUCTION

Software has become synonymous with innovation: innovative software is a great source of value to the customer, and for many organizations, it is what sets them apart from competition. It is through tech-savvy, agile software that organizations build products and rapidly deliver business value to achieve a competitive edge. So what prevents companies from driving innovation in their software product development? Do barriers emerge from globalization? Or do legacy systems and infrastructure issues restrict organizations from achieving the desired outcomes? Do time-to-market pressures pose a major obstruction? Or does extreme competition dissuade them from directing resources towards innovation?

While getting ready to build cutting edge software solutions, organizations often come face-to-face with five key challenges: 1) delayed time to market, 2) high development cost, 3) long release cycles, 4) disjoint functioning of IT with business, and 5) poor quality products. One sure-shot way organizations can overcome these challenges, while simultaneously maintaining their competitive position in the industry is by embracing DevOps. Whether you are a start-up or an established product development firm, take note that the industry is adopting DevOps at an incredible pace.



> *"The debate is over. There are only two options – implement DevOps or lose to your competition that does. Do not go ask for permission; just do the right thing for your company."*
>
> **~ Donovan Brown**

In this eBook, we explain

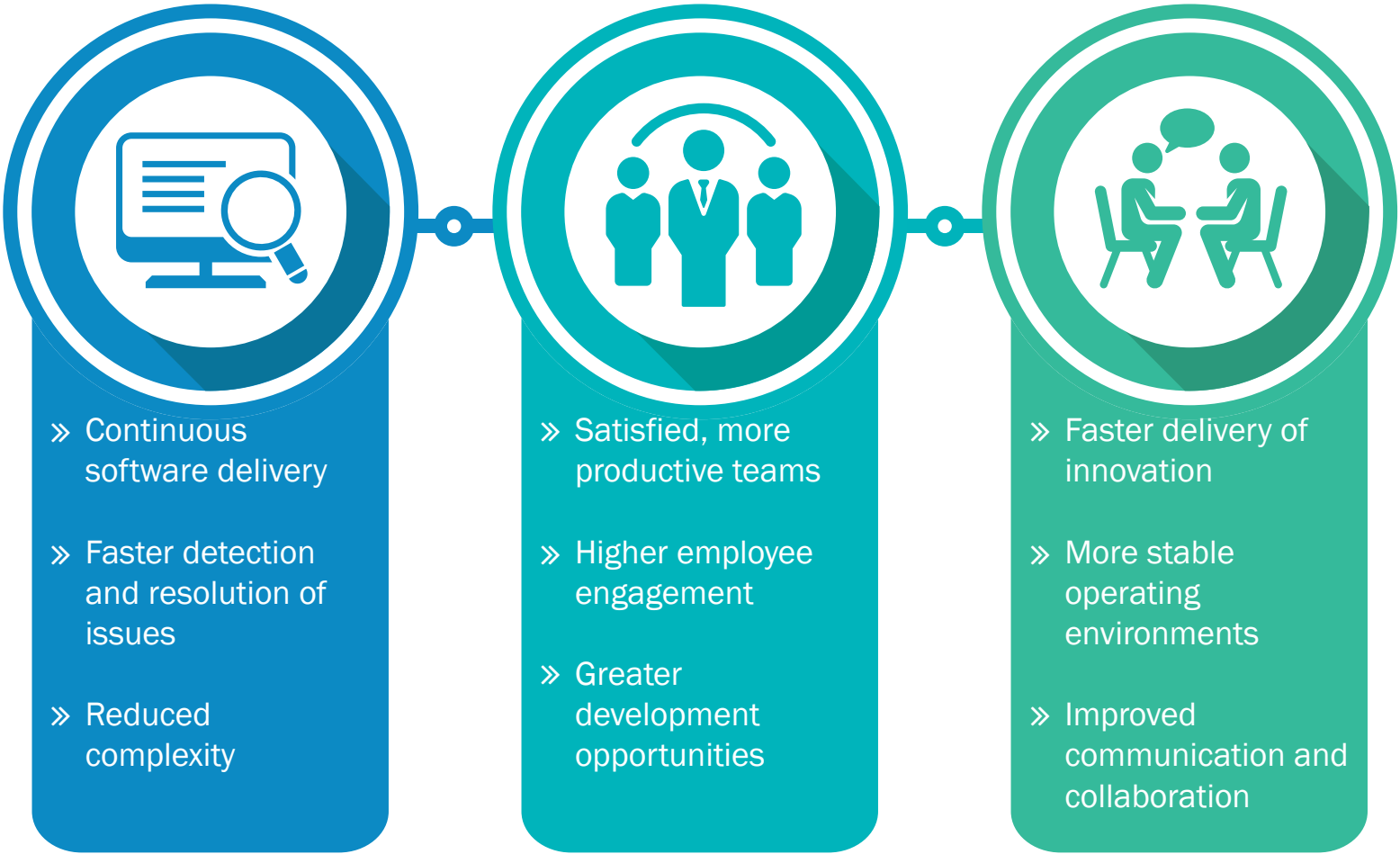
- What DevOps is
- The approach
- Why it is important for organizations to embrace DevOps
- How DevOps helps solve key product development challenges
- Measuring DevOps success
- Indusa's DevOps implementation framework
- How software firms benefit from implementing DevOps

WHAT IS DEVOPS?

DevOps integrates the development and operations activity of the software development process for the goal of shortening development cycles and increasing deployment frequency. Gartner defines DevOps as "a change in tech culture, focusing on rapid software service delivery through the adoption of agile, lean practices in the context of a system-oriented approach. It emphasizes people and culture, and seeks to improve collaboration between operations and development teams."

While different people have a different understanding of DevOps, everyone agrees that DevOps is crucial to the success of a modern development team. DevOps implementations also utilize modern technology – especially automation – and tools that can leverage an increasingly programmable and dynamic infrastructure from a lifecycle perspective.

DevOps Benefits



The recently released 2017 State of DevOps Report uncovers some impressive figures. By using various statistical analysis methods like cluster analysis, regression analysis, and structured equation modelling on a target population of tech practitioners and leaders, the report concludes that high performing organizations that effectively utilize DevOps principles achieve:

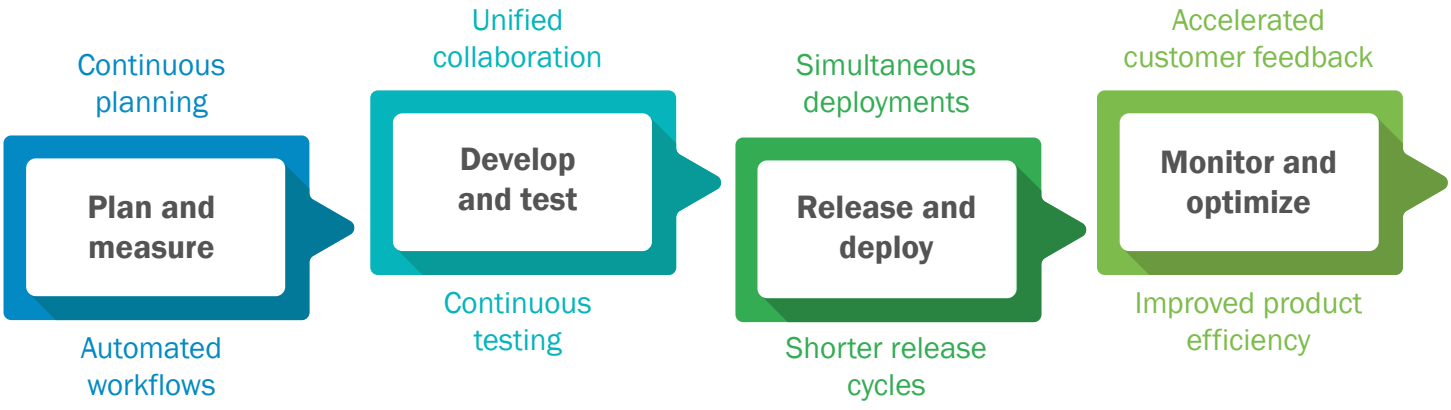
- 46x more frequent software deployments than their competitors
- 96x faster recovery from failures
- 440x faster lead time for changes
- Higher levels of customer satisfaction and operational efficiency

The Approach

DevOps applies agile and lean thinking principles to the entire software supply chain. It improves productivity through accelerated customer feedback cycles, unified measurements and collaboration across the enterprise, and reduces overhead, duplication, and rework. DevOps incorporates lean thinking and agile by:

- Removing waste – Any activity that is not necessary and adds extra cost or time without adding any value is eliminated
- Focusing on fast, continuous iterations – Any changes or iterations are fed back into the system at each stage of the development process through the use of continuous feedback loops
- Doing away with wait times and delays – Any delay caused by manual processes are eliminated through automation; as a result, bottlenecks and cycle times are also reduced
- Optimizing risk management – DevOps eliminates the possibility of personal access to production systems (reducing risk) and ensures every deployment complies with policy

DevOps Process



Why it is Important to Embrace DevOps?

One major reason why organizations implement DevOps is to achieve efficiency. If you do (and do it right), you are sure to achieve higher functionality, better speed, improved quality, and better performance. Some key drivers for DevOps include:

- Collaboration between development and operations teams
- Around-the-clock requirements of quality software
- The need to simultaneously deploy software across different platforms
- Pressure to release software more quickly to enter new markets
- The increasing need to develop or deploy cloud-based applications
- Demand for shorter release cycles and quicker time to market
- The need to reduce IT costs

DevOps Drivers

HOW DEVOPS HELPS SOLVE PRODUCT DEVELOPMENT CHALLENGES

As DevOps aims to break the barriers that often exist between development and operations teams, it can help you in delivering software reliably, safely, and rapidly. Moreover, it plays a major role in overcoming everyday challenges:

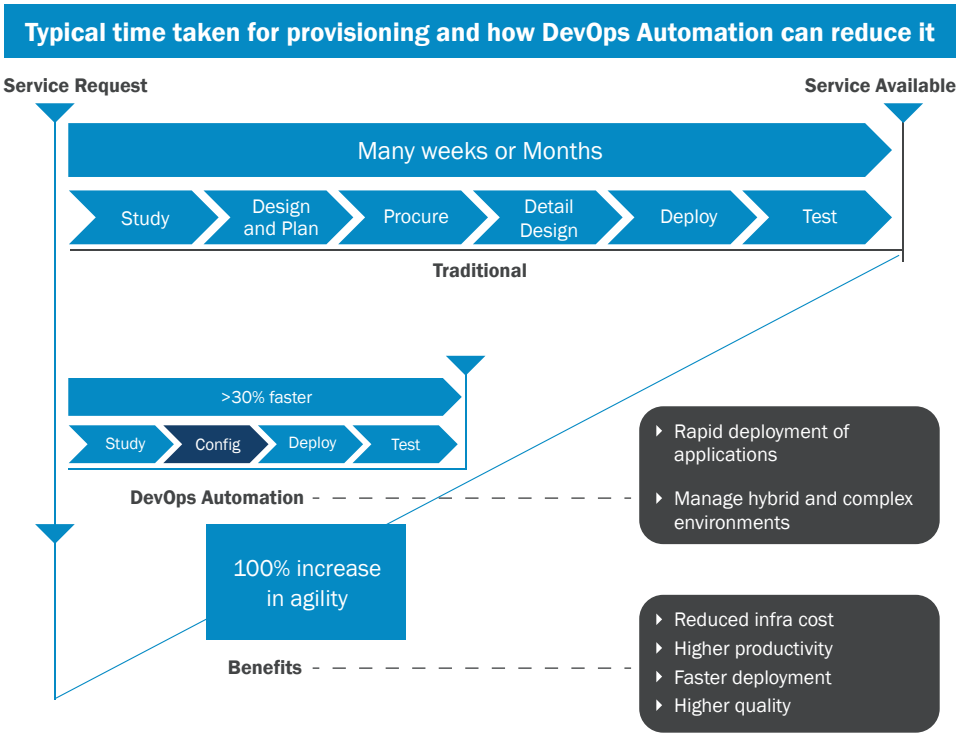
CHALLENGE 1: ACCELERATING TIME TO MARKET

The pressure of releasing software quickly to meet customer demand or capture new markets has increased the overall complexity of the software lifecycle. This often creates new constraints that are not easy to address using existing application development processes, especially with respect to time-to-market.

DevOps to the rescue: As business models shift, processes around them should also be reviewed at in order to optimize new workflows. The ability to bring new revenue-generating services faster is a key advantage. The only way you can accelerate speed of software delivery is by end-to-end automation.

DevOps is a major driving force of such automation, as it helps in delivering products into users' hands quickly, and, in turn, allows you to capitalize on the value of the product. DevOps:

- Fuels continuous integration, deployment, and software delivery
- Ensures frequent and smaller deployments to production
- Enables you to deliver new features straight through to test and production environments
- Drives productivity across development and operations and enables you to deliver better services, faster, and at less cost
- Ensures increased frequency and pace of releases



CHALLENGE 2: REDUCING DEVELOPMENT COST

Although software development teams are getting smaller and more agile and project cycles are getting shorter and more efficient, development costs never seem to come down. In a highly competitive environment, reducing development costs has become a grave necessity, and with traditional product development tools and techniques, this is often impossible to achieve.

DevOps to the rescue: DevOps professionals are often cross-trained across several disciplines, which makes it easier to balance the flow of work across teams, increasing overall productivity. By focusing on performance throughout the lifecycle – not just in the testing phase – DevOps can prevent bugs from getting deeply baked into products, when they become harder to fix. You can circumvent excessive, costly rework, and pave the way for highly satisfying and engaging user experiences. DevOps:

- Reduces process management costs as the overheads generated due to manual interventions get eliminated
- Helps overcome the overhead of launching and updating new services or features
- Minimizes the costs associated with product development and deployment
- Enables you to leverage best practices like continuous integration and continuous delivery and achieve the required levels of scalability and reliability

CHALLENGE 3: ENSURING SHORTER RELEASE CYCLE

With traditional development strategies, reducing cycle time is generally not feasible. The minute you introduce a change, it goes through the never-ending process of getting prioritized, scheduled, defined, implemented, tested, verified, documented, and deployed into production. The time it takes to complete all of those steps, plus the time that the change spends waiting between steps is usually very high – a major challenge that plagues developers day in and day out.

DevOps to the rescue: One of the biggest value DevOps offers is velocity – it ensures faster delivery of features. When you use DevOps, you can finish projects faster and move them into production faster.

Since DevOps focuses on obtaining continuous feedback and incorporating it more expeditiously into product development, you can achieve increased revenue and customer satisfaction. In the digital business era, turnaround needs to be quicker and seamless, and the use of DevOps helps drive shorter release times. DevOps:

- Helps respond quickly to market demands
- Drives frequent and smaller deployments to production and reduce production time
- Pushes frequent product upgrades enabling you to sustain in a competitive market
- Empowers a collaborative workforce that can easily and quickly look into changing customer demands

CHALLENGE 4: ALIGNING IT WITH BUSINESS

Very often, product organizations struggle to leverage IT to achieve business objectives due to differences in departmental goals, or a mutual ignorance of methods resulting in low quality products which fail to provide an effective return on investment. Aligning IT with business is sadly just understood in theory, but never practiced in reality.

DevOps to the rescue: Developing an environment that allows business and IT to align themselves behind a common set of well-understood objectives helps you achieve targets on time. DevOps creates the right amount of empathy across development and operations teams so that business value is at the crux of all your departments, especially IT.

Every effort put forth is designed to shorten feedback loops, focus on continuous improvements, and above all, put the needs of the end user before everything else. This line of thinking means higher efficiency towards innovating new products and services and the agility to respond to market conditions and competition. DevOps:

- Transforms IT to deliver innovation and agility
- Spurs better collaboration, automation and process improvement delivering results based on business needs
- Enables you to introduce products faster into the market
- Ensures quality is always a priority with every team
- Drives substantial improvement in overall business performance

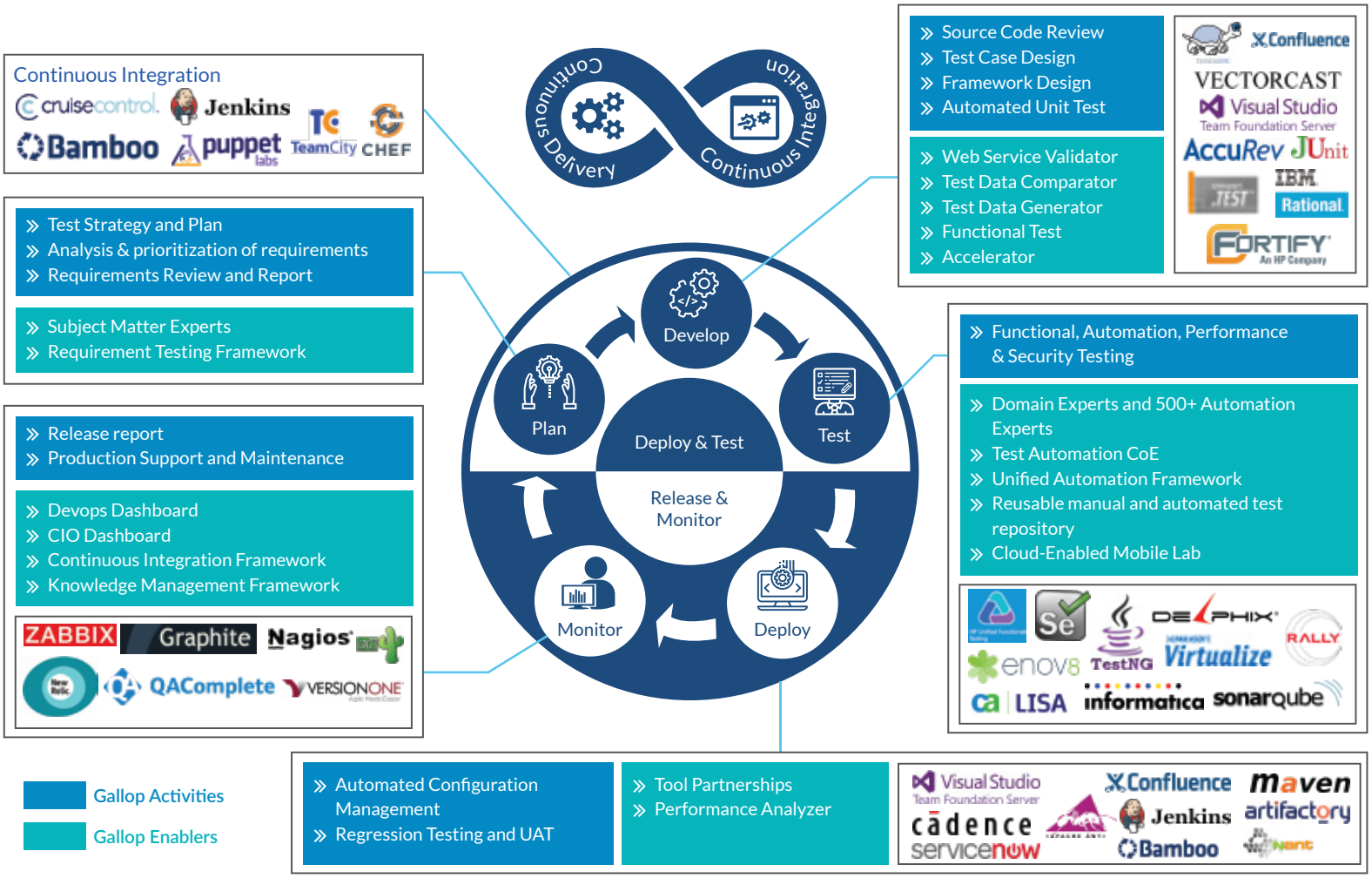
CHALLENGE 5: QUALITY PRODUCT WITH CONTINUOUS TESTING

It is easy to quickly deliver an inferior quality of software. It is also easy to deliver software with a lesser number of features. What is difficult is delivering a good quality software product with just the number of features as expected.

DevOps to the rescue: In DevOps, testing is not done at the end of the release cycle, rather merged into the mainstream/beginning of each development cycle. By carrying out continuous testing and continuous

monitoring at every stage of the software cycle, QA is no longer delayed until the complete development is completed; instead every sprint includes thorough verification of the features covered. With the help of continuous build and continuous integration, you can always have a go-live product increment in place. DevOps:

- Facilitates automated and continuous quality monitoring
- Enables automated provisioning of virtualized test environments
- Helps in integrated build, deployment, end-to-end test automation and reporting



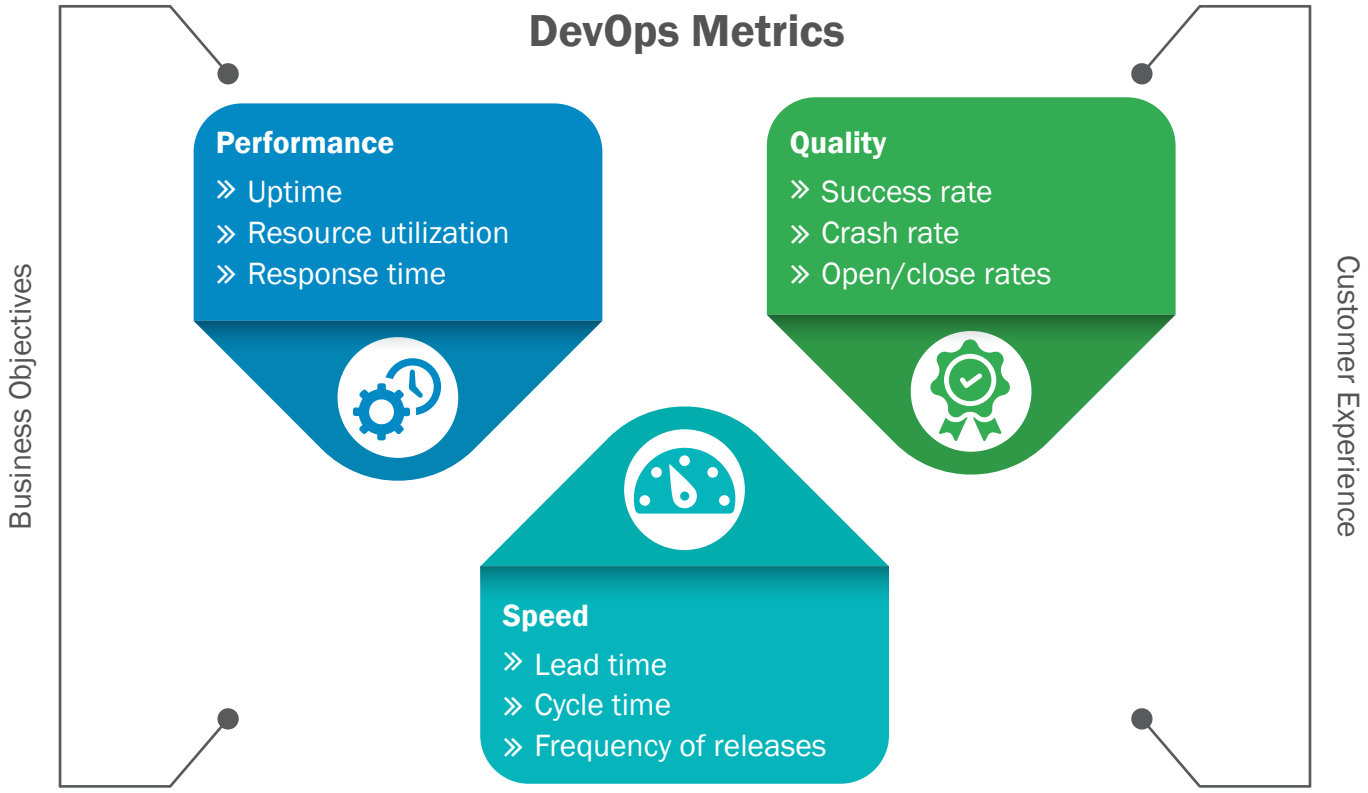
MEASURING DEVOPS

Although the concept of DevOps sounds great in theory, and may seem like a simple integration of development and operations teams, getting results from newly established roles and responsibilities and measuring the success of DevOps is not easy. Very often, organizations struggle to define organizational goals, due to siloed data sources and the lack of proper tools. That's where defining performance metrics, and having end-to-end visibility of your development and operations process helps.

Performance metrics that can be reviewed and shared universally aid in monitoring your DevOps efforts – you can clearly know how aligned everyone is, and whether or not they are moving towards the same goals.

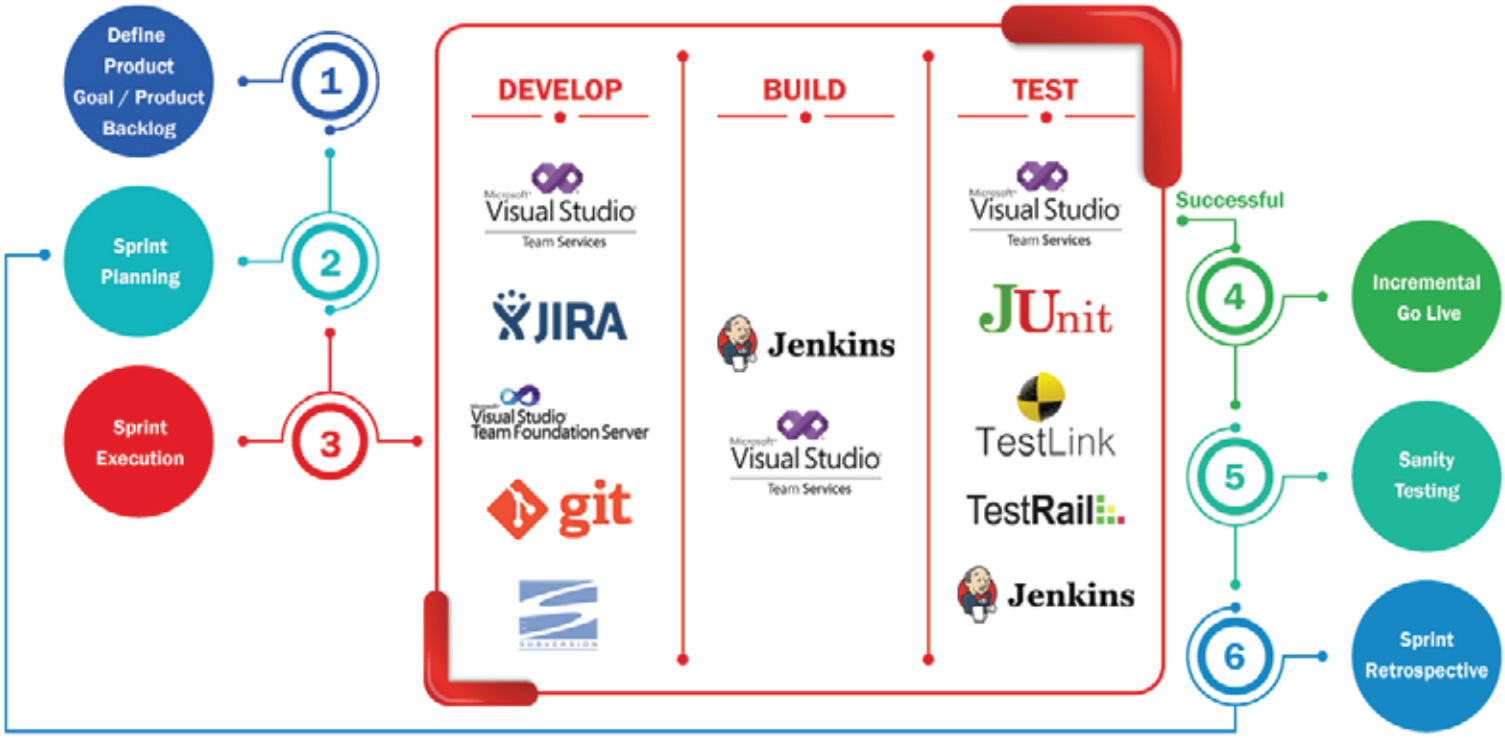
Performance metrics not just help in measuring success (or the lack of it), but also give an idea of how processes can be modified or improved. What's more, with the right metrics in place, teammates can measure their efforts easily and drive results quickly.

For DevOps to be a true success, you need to link and measure three major aspects: quality of software, speed of delivery, and performance of software. By measuring KPI data across the development and operations lifecycle, you can ensure your developed software is meeting business objectives and delivering the intended customer experience.



DEVOPS IMPLEMENTATION FRAMEWORK

With quality and speed being two of the most crucial drivers for software delivery, synergy between development teams and operations teams is primary. In a bid to keep up with market pressures, changing business dynamics, and shifting customer needs, making the most of one's strong and long-standing DevOps practice helps leverage the numerous benefits to ensure continuous collaboration and delivery. A robust DevOps practice is built on a strong culture, and utilizes the most modern tools and support software. It is iterative and mainly consists of six key steps:



Define Product Goal/Backlog

- Specify product/software requirement
- Include new changes, bugs, improvements
- Estimation of all tasks – assigning story points
- Tools used: JIRA, TFS/VSTS, Project Locker, and Assembla

Sprint Planning

- Define sprint length and number of sprints required to cover product requirements
- Prioritize requirements
- Involve the entire team – development + QA + manager/lead
- This plan helps to come out with a sprint goal and the sprint backlog
- Tools used: JIRA, TFS/VSTS, Project Locker, and Assembla

Business Case 1:

Client: A B2B marketing company

Requirement: The client was looking to develop a marketing performance management solution that could provide a single platform to track their marketing activities and measure performance, deliver insights to the decision makers about the performance of campaigns and help them make better decisions.

Solution: Using DevOps, the marketing performance management solution was developed, ensuring the startup cost was kept to a minimum and the release cycles were as quick as possible with substantial features getting released frequently.

A CI/CD pipeline was setup to enable continuous integration and deployment to test/development/staging production stack.

The entire development workflow was automated using Jenkins.

Benefits: Client could cater to the growing demands of customers while ensuring optimal resource utilization in addition to

- Accelerated Time to Market
- Shortest possible release cycles
- Minimum downtime

Sprint Execution

- Develop + build + test
- Daily Scrum – max. 15 minutes – every member sharing updates
- Sprint review
- Daily/Weekly status updates to client
- Automated tasks to cover
  - Build management
  - Automated unit testing
  - QA environment configuration
- Code completion
- Code freeze
- Regression testing on preview/stage environment before going live

Go-live

- Deployment to production from Preview/Stage environment
- Release management and release notes for the product increment

Business Case 2:

Client: A leading global B2B research and advisory firm

Requirement: The client wanted to develop an online suite of marketing technology software tools and automate the traditional tool set which was Excel based and difficult to manage.

Solution: DevOps was implemented to handle the development cycle and release deployment. This ensured that the release management was handled properly avoiding any possible downtime.

Benefits: Client was able to observe the following benefits:
- Ensure faster time-to-market
- Early detection and faster correction of defects

Sanity Testing

- Quickly check the live data
- Find errors/bugs

Sprint Retrospective

- Shed light on what mistakes were made
- Ensure better planning for next sprint
- Involve the product owner, developers, QAs, and Scrum master
- Tools used:
  - JIRA, TFS/VSTS, Project Locker, Assembla for project management etc.
  - GIT, SVN, TFS/VSTS for source control
  - Jenkins, VSTS for environment configuration, automated sanity testing, release management etc.
  - TestLink, JUnit for test management

If the product goal is not achieved, work on next sprint by repeating from step 2.

Business Case 3:

Client: A leading software company

Requirement: : The client was in search of a cloud application support expertise in increasing the efficiency and performance of their cloud application.

Solution: After understanding the application's architecture and considering the unique business requirements and goals of the software company, Indusa deployed the environment to provide application support. The support activities involved – code management, build management, bug management, and test case management.

Tools such as Team Foundation Server (TFS) and TestRail were used extensively.

Benefits: By handing off support services for their product to Indusa, the software company freed up their in-house IT personnel, to allow them focus on core business activities. From handling incidents, changes, and defects, to developing new features and testing them, Indusa's cloud application support services continue to help the software product company utilize their cloud application to its full potential.

DRIVE SPEED AND INNOVATION

A software product is like an iceberg – 90% of the complexity is generally not visible. A lot goes into developing state-of-the-art software products: developers work around-the-clock to deliver on time against a wave of challenges and complexity to deliver high performing, high quality software. As you reflect on your organization, what is the greatest challenge you are facing now? Is it accelerating time to market? Or reducing development cost? Is aligning IT with business a daunting exercise? Or is ensuring shorter release cycles your biggest concern? What do you need to do next if you want to innovate and set yourself apart from the competition? With DevOps, you can overcome all of these challenges and get more done. With a single team of cross-functional members working in collaboration, you can deliver products with maximum speed, functionality, and innovation. ~DevOps is not a goal, but a never-ending process of continual improvement~ Jez Humble.

ABOUT INDUSA

For global midmarket organizations, Indusa is an innovative technology partner that provides end-to-end enterprise software solutions and services to deliver business results: improve productivity, increase efficiency, and reduce costs. With offices in the United States and Asia Pacific, Indusa has a global team of experts to deliver transformative technology solutions to meet all of the needs of our clients from consulting to maintenance, in our core practices – Microsoft Dynamics 365 (AX ERP, CRM), Cloud, BI and Predictive Analytics, SharePoint, Enterprise Mobility, Software Product Engineering, QA/Testing, Office 365 + Project Pro, and Custom Application Management.

Quick Facts

- Established in 1989: over 28 years of experience.
- Headquartered near Chicago, USA with delivery centers in India.
  - **Anyshore**: onsite, offsite, offshore, blended. You call the shots.
- Operate globally; served 500+ clients in over 14 countries.
- Implemented 1500+ successful projects.
- Over 90% of team (250+) working on Microsoft-related technology projects are certified.
- Deep midmarket expertise.
- Microsoft partner with 14 gold and silver competencies.

Powering Business through Technology

T: +1-630-424-1800 | +91-79-6682 4700
W: www.indusa.com