

Applying DevOps

A practical guide to
speed up your digital
transformation

Testing



Development

Operations

Applying DevOps: Challenges enterprises typically face



John, the CIO of a large multinational, believes in trying new technologies and procedures to improve his delivery process. His aim is to cut short software release cycles to ensure faster time-to-market and beat competition. In keeping with this goal, John created the DevOps function which would form a key component of his digital transformation vision. However, three months later, John was still not seeing any improvements in release times. In fact, the cycle times had increased.



Susan, the CIO of an international IT organization, faces a different situation. Her Dev and Ops teams understood the need for adoption of DevOps. However, the DevOps team went ahead and implemented the DevOps process without collaborating with the Ops team. They thought, Dev was the starting point of all software delivery and hence there was no need to collaborate with Ops.



Rao, the CIO of a large airline, tells his service provider, "We understand what DevOps is and what Continuous Integration (CI) and Continuous Delivery (CD) are. We know CD can resolve our problem. But, as a large organization with 3000+ applications and more than 15000 people in IT, tell us where to begin? Can you take few portions of an application and demonstrate how DevOps works? What is the benefit I can get from adopting DevOps?"

These are not isolated scenarios. Many organizations find themselves in similar situations. On one hand, DevOps is often misunderstood and treated as a cool technology implementation that will help organizations transform overnight and deliver products faster to market. On the other hand, there are people who

understand the value of DevOps, but don't know how to adopt it.

This whitepaper gives a practical view of [DevOps](#) and how to apply it – especially for organizations on the digital transformation journey. However, DevOps

doesn't work if it is simply adopted. It only works when applied in the correct way.

Adopting DevOps: Why Now

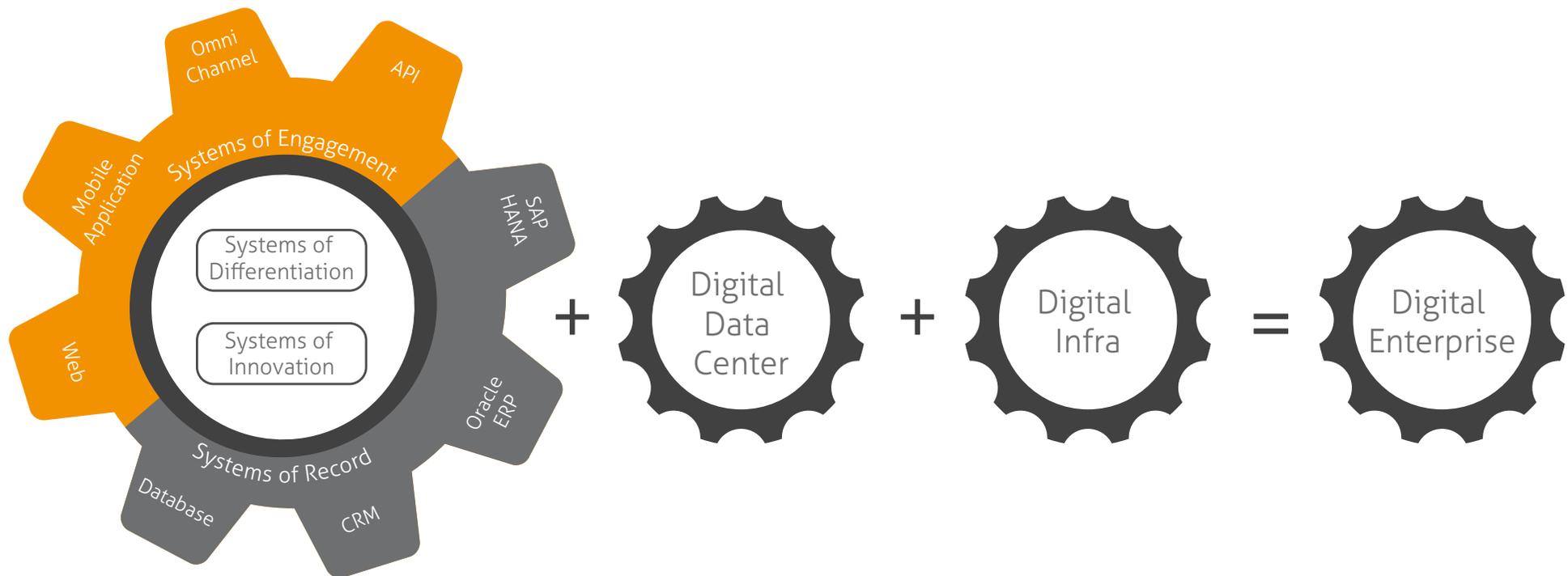
Organizations around the world are now focusing on digitizing Systems of Engagement and Systems of Innovation with a focus on improving the consumer experience. They are doing this by developing "Systems of Differentiation". Eventually, every organization will have to digitize their "Systems of Record" in order to transform into an end-to-end digital enterprise. Today, the priority is on Systems of Engagement and Systems of Innovation. Soon it will move to Systems

of Differentiation and Systems of Records. A digital enterprise should imply that it is touching all the four systems and working with the digital data center and infrastructure. Unless these systems are digitally bound to each other, one cannot respond to dynamic requirements and stay ahead of the game.

DevOps is the approach that will help you to create, connect and orchestrate all these digital components to

work in tandem. DevOps enables organizations to "fail fast and fail cheap". In other words it enables faster release cycles by taking advantage of faster (agile) development cycles and faster (cloud and virtualized) provisioning of core infrastructure or platforms.

DevOps also increases collaboration between stakeholders and consumers, application developers, operations engineers and tools and processes.



Debunking myths around DevOps

There are a number of myths that are hindering organizations in successfully implementing DevOps. Here are a few:

1. Agile is the same as DevOps, right?

“We are already doing DevOps. We have Agile”. While Agile is important for DevOps, it is not the same as DevOps. Agile is required for DevOps to quickly develop an application and validate it against the requirements. But, it only solves one part of the equation for DevOps - continuous integration. The other key parts of DevOps include continuous deployment and continuous delivery.

2. Just give us more DevOps engineers

In ramping up to building an ecommerce site with a true DevOps approach, a client asked us to expand the scope of the project to roll out the ecommerce site to 40 countries. The client also requested us to add a few more DevOps engineers. What they didn't understand was there was no role called DevOps engineer. One cannot hire a DevOps engineer as these are two separate people – a Developer and an Operations Engineer. In fact, the word DevOps is finally being replaced in many circles by Continuous Integration and Continuous Delivery, which gives the right perspective to the approach.

3. DevOps is our silver bullet

When cloud technology came into picture, many organizations saw it as a silver bullet for all of the deployment challenges. The same thing is happening with DevOps. DevOps is not a silver bullet for all the challenges. DevOps aids the acceleration of Systems of Innovation and Differentiation. But by itself, it does not create innovation and differentiation. And there are still non-critical applications that don't need the DevOps approach.

Telecom major rolls out ecommerce application across 14 countries in one year using DevOps approach



Challenge

- Lack of customization and architectural design maturity across geos
- Need to increase market share
- Global diversity of applications requiring region wise customization, infrastructure setup, Continuous Integration (CI) and Continuous Delivery (CD)

Solution

- Setting up CI and environment provisioning for daily build
- Integrated different test automation frameworks
- Parameterized and customized CI and CD for various regions until project stabilized
- Zero touch deployment

Benefits

- Enabled “build once, deploy any where”
- Improved release agility and collaboration
- Accelerated delivery and removed delays and dependencies using automated environment provisioning
- Significantly reduced defect leakage into production environment

The Big Question: Where do we begin?

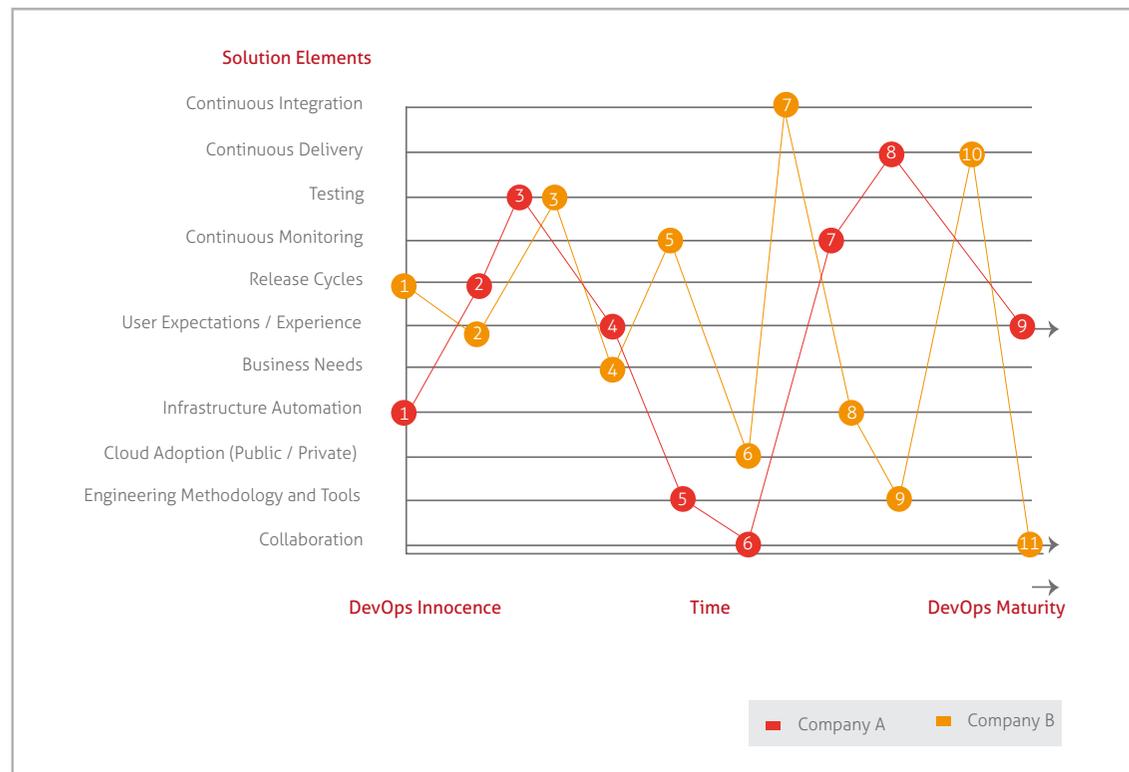
Despite years of talk in the IT industry about breaking down siloes between various technology groups, the collaboration between application developers and IT operations is often described as “throwing over the fence” into production. This means that a mythical wall stands between these groups and hinders true collaboration. This is where DevOps helps you.

The primary goal of DevOps is to make reliable production software that can be changed rapidly. This results in conflicting goals for the Developers and Operation Engineers, since each one views the other as the source of their problems.

Developers feel operators find problems with their code and push it back to them, while Operators feel the instability in the environment is purely because of the new code changes. The two groups have historically worked in silos but disruptive trends such as mobility, big data, cloud and social are driving demand for quality apps and services. And this is at a faster rate than traditional approaches can accommodate. On the surface, the groups seem to have different agendas - application developers want freedom to create, test and deliver apps. On the other hand, IT operators need control over application performance in the production environment.

However, the goal is the same: high-quality apps and services for the business. To achieve the end-objective, development teams have to accept the feedback of operational teams.

Operations, in turn, must accept frequent updates to the software that they are running.



How you approach DevOps depends specifically on the realities in your organization. There is no “one-size-fits-all” or “well-defined path” for DevOps. Each organization can have its own path to achieve the level of integration and maturity required to derive the benefits of DevOps. It’s an approach or culture of IT that seeks Security, Reliability, Availability and Performance while speeding up delivery to business. Ensure you are taking into account your industry, applications, culture, and people when developing your DevOps strategy. Then apply DevOps principles against that foundation.

There are plenty of tools available across functions that can be used

to create a platform for seamless communication. All you need is a set of integrated tools across these functions, and have the most preferred tool stack as applicable to your environment. This should be suited to manage the workflow from Development to Testing to Acceptance to Production. It’s about continuous feedback loops, continuous collaboration, continuous delivery, and continuous innovation.

Adopting DevOps practices to realize the goals of effective collaboration, smoother operations, and cleaner code, is a win-win-win for Developers, Operations Engineers and business alike.

	SCM	CI	Automation	Testing	Monitoring	Performance	App Server	Rep Mgmt	Build Tools	PAAS
Tool Stack 1	GIT	Cruise Control	Vagrant	JMeter	Logstash	Redis	Weblogic	Nexus	Maven	Open Shift
	SVN	Babmoo	Docker	SonarQube	Graphite	Memcache	JBoss	Artifactory	Ant	Windows Azure
	ClearCase	Jenkins	Chef	Covertly Save	Zabbix	varnish	WebSphere	Archieve	Make	Cloud Foundry
Tool Stack 2	Mercurial	Team City	Puppet	Selenium	Nagios		Apache		MS Build	
	CVS	TFS	Packer	Load Runner	IBM Tivoli Network Manager		Ngnix IIS		Install Sheild	AWS
	Perforce	Shippable	Ansible							
	Rational Team Concert	Electric Commander	Salt				Tomcat			

A large Hospitality brand reduces environment availability provisioning time from 7 days to 1 hour using DevOps approach



The client is Hospitality industry’s most admired company with more than 535,000 hotels and timeshare rooms. It operates 3,000 properties across 19 brands in the United States and 66 other countries and territories.

Challenge

- Deliver innovative solutions faster to market with highly scalable next generation CI/CD solutions
- Dependency on multiple integration points resulting in effort and productivity loss
- Build the QA / UAT / production environment
- Migrate application from public to private cloud environment.

Solution

- Rapid configuration of environment architecture
- Defined a flexible software configuration and release plan
- Setup build environment in the RackSpace cloud
- Ensured build stability and code coverage with Artifactory, Maven, Jenkins (CI tool) and Sonar
- Automated QA deployment

Benefits

- Delivered highly scalable next generation CI/CD solution on cloud
- On-time release of applications
- Reduced deployment period from 2 hours to 2 minutes
- Zero downtime with minimal impact on end customer

DevOps Adoption: Key success factors

While there are many challenges to implementing DevOps successfully, there are a few key factors that can ensure successful adoption.

Software delivery should be everyone's responsibility

The entire team within the delivery process should work towards a single goal – delivering a high quality product, on time and within budget. However, in some projects, developers throw their work over the wall to testers. Testers in turn, throw it forward to the Operations team who configure the product and release it. If anything goes wrong in the release process, common goals get sacrificed at the altar of blame. In fact, the amount of time spent in blaming each other, is almost equal to the amount of time spent on fixing the issue.

Some ways in which to address this issue are:

- Get everyone who is involved in the delivery process together from the beginning – not at the end or in the middle, but from the beginning of the new project.
- Align the KPIs of the entire team with a common goal – if one fails, everyone fails.
- Give each team a chance to communicate and raise their concerns.
- Keep continuous communication up for the entire team.
- Install a common dashboard to see the application health at all times.
- Reward the entire team equally for the success – no one is less or more important.

Software Configuration Management should initiate DevOps

Most organizations are unsure about who should initiate DevOps. In some cases, the Dev team thinks they should initiate it. In some other cases, Ops teams think they should initiate it as they feel they are responsible for the final release. But projects where either Dev or Ops have initiated DevOps, the maturity and success rate have been low. On the other hand, the projects where the configuration management team has initiated DevOps, the project has reached maturity stage, rapidly.

Traditionally the Software Configuration Management team has acted as a toll gate for the code to move from source code to binary. Hence, the Software Configuration Management team is best suited to adopt and initiate DevOps as this is the team that brought the Dev and Ops cycles closer to each other.

However, as mentioned earlier, it is important to communicate that the ownership of making DevOps work is on everyone. There are several other success factors too, but these are the critical ones that can keep the benefits flowing.



Why Mindtree for DevOps

The specific goals of your DevOps approach spans the entire delivery pipeline. This includes improved deployment frequency leading to faster time-to-market, lower failure rate of new releases, shortened lead time between fixes, and faster mean time to recovery, in the event of a new release crashing or otherwise disabling

the current system. Using a DevOps approach can make simple processes increasingly programmable and dynamic. DevOps aims to maximize the predictability, efficiency, security, and maintainability of operational processes. DevOps integration targets product delivery, quality testing, feature development, and maintenance

releases, in order to improve reliability and security and provide faster development and deployment cycles. Mindtree can help you apply DevOps approach correctly so that you can reap all these benefits and more. Our unique differentiators are as follows:



Digital DNA that understands the true model of Continuous Delivery



Agile Center of Excellence helping large organizations in Continuous Integration



Azure emerging partner



Pioneer in Digital DevOps for years

ABOUT MINDTREE Mindtree [NSE: MINDTREE] delivers digital transformation and technology services from ideation to execution, enabling Global 2000 clients to outperform the competition. "Born digital," Mindtree takes an agile, collaborative approach to creating customized solutions across the digital value chain. At the same time, our deep expertise in infrastructure and applications management helps optimize your IT into a strategic asset. Whether you need to differentiate your company, reinvent business functions or accelerate revenue growth, we can get you there. Visit www.mindtree.com to learn more.