ACL Digital
an ALTEN group company

Day-to-Day DevOps Journey with 5G

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What is DevOps: Development + Operations

DevOps is a combination of two different words, “**software development (dev)**” and “**operations (ops),** “blended into one word.

DevOps is not a technology or a tool set. This mindset enables us to build, deploy and manage code and configurations with increasing efficiency by applying standard methodologies.

DevOps is a collaborative approach to **development, deployment, product management, and operation** that stresses communication, collaboration, shared responsibility, integration, and automation.

DevOps mainly stands on three pillars:

1

Culture
Culture of Collaboration between teams, sharing common goals and KPI

2

Tools
The technology part, offering a set of SW tools realizing the DevOps Practice

3

Best practices
Set of practices enhancing the SW delivery process and guaranteeing the best value provided to customers

Any organization must adapt to all the pillars, at least to some extent, to truly consider itself to have adopted DevOps.

DevOps standards and best practices are different in every organization, and the implementation varies with each organization depending on the company’s goals, processes, and cultures.

DevOps has always been about more than technology, encompassing learning, sharing, culture, automation, and processes. As we look at the future developments in DevOps, view them through the lenses of practices, people, and platforms.

Why do we need DevOps, and what issues does DevOps address?

Many developers wonder what makes DevOps a better option though many development models exist.

The DevOps approach, which involves profound involvement from development and operational teams throughout the entire product creation process, has become one of the most discussed software development approaches today.

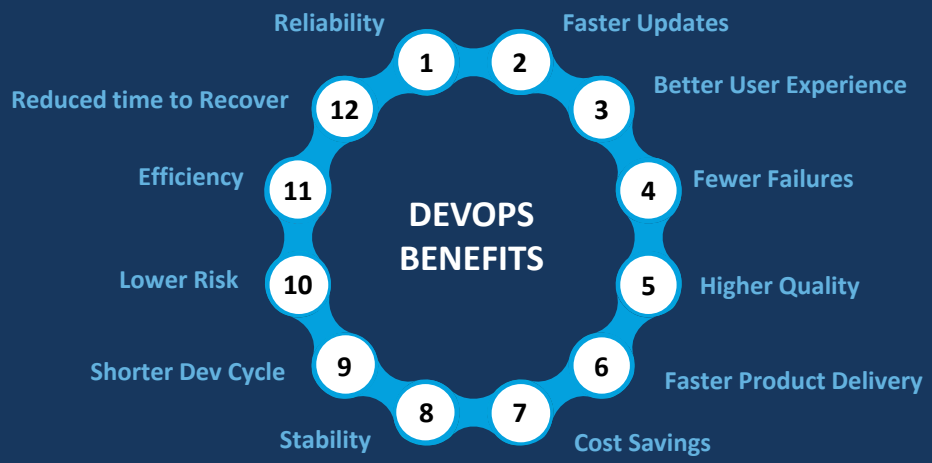
The primary aim of DevOps is to provide high-quality applications and excellent experience to end users improving software delivery speed by reducing the time from idea to production.

The main goal of DevOps is to advocate automation and monitoring at every phase of the project.

DevOps as a service will allow you to develop the business faster and provide more value to the clients by creating an agile and scalable system ready for rapid change and growth.

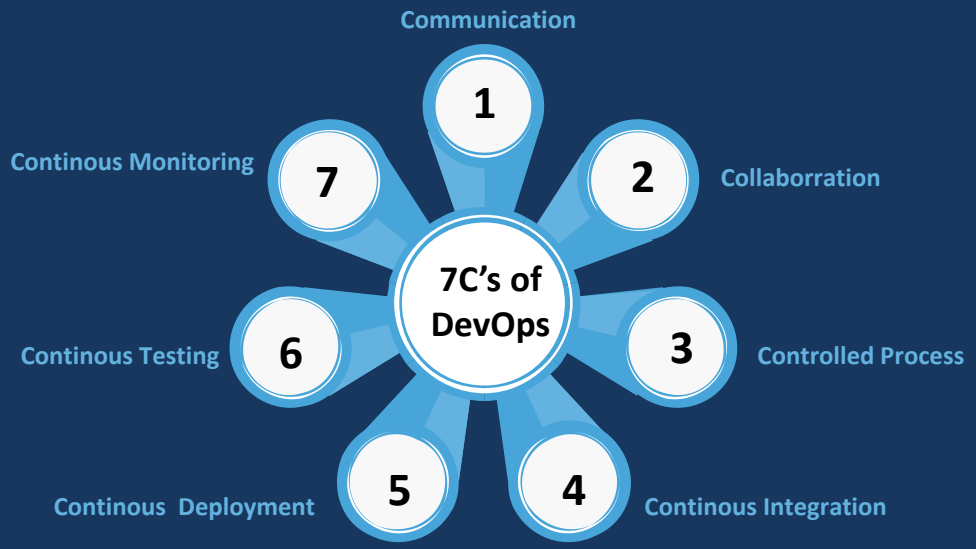
Moving from the traditional software development approach to DevOps is something organizations can only do meritoriously after some time.

Organizations need to have the right tools and to create the right culture in which everyone has their eye on the bigger picture and works together to achieve it.



Below is a list of DevOps best practices pertinent to all the stages of any application design project.

Organizations can quickly build security into their software development life cycle by adopting DevOps practices, processes, frameworks, philosophy, and workflows. They will improve the time to market and customer satisfaction for Telco industry players.



How can we measure and improve DevOps in an organization?

Metrics are crucial in knowing where we are and how we are progressing toward our goals. We also need to understand what action we will take with the information from each Metric.

Metrics-oriented thinking is essential to DevOps, which is critical to continuous improvement and is your project's vital sign.

DORA (DevOps Research and Assessments) metrics help align development goals with business goals and provide data-driven insights that help you continuously improve and deliver better software and more value to customers.

The goal of your DevOps metrics is to measure and improve the performance of the whole system, and organizations can choose open-source or commercial tools to track DORA metrics for end-to-end visibility into the health and performance of DevOps.

DORA metrics have been widely adopted and recognized as an industry standard for measuring DevOps success and benchmarking.

There are dozens more DevOps KPIs and metrics available. Calculating every factor is inefficient, and we must choose what is best for the team and the organization.

The following list of key metrics and KPIs is provided to assist the DevOps team in considering potential metrics and understanding their connection to critical initiatives. These metrics will serve as a guide for making future process and technology decisions.

- Time and frequency of Deployment
- Change Volume
- Meantime to Failure
- Meantime to Detection and Recovery
- Change Failure Rate
- Lead Time
- Early Detection of Failure
- Customer Feedback
- Automated Test Cases
- SLAs
- Availability
- Unplanned Work Rate
- Defect Volume and Escape Rate
- Application Performance
- Process Cycle Time

What is the Impact of DevOps for 5G?

In DevOps, significant innovation in processes and tools occurs as operators recognize automation as a vital component of their 5G strategies.

DevOps is a crucial technology for building Smart and agile 5G networks and the journey to edge computing. 5G networks implemented with the 5G DevOps approach bring several benefits for entire network operations to address the operational challenges and opportunities to save costs, which makes it an ideal choice for mobile network operators.

5G migrations will lead telcos to adopt DevOps principles, toolsets to address 5G challenges and a generic architecture focused on agility and flexibility.

Implementing 5G DevOps-focused services in the telecom industry is becoming common, as it boosts sales pitches and provides new offers to its prospective and current clientele. DevOps was a bonus for operators to provide a speedy and more efficient method of constant automated processes at fixed intervals required while developing 5G complex networks by reducing operational costs and person-hours.

DevOps is accelerating the 5G rollout with more automation processes and integration operations to overcome the challenges of the recent impact of Covid-19 on telecom operators and their customers.

Developing a DevOps Supply Chain on Zero-Trust principles is one of companies' best strategies. With this approach, they will speed up their 5G development and curb customer time to the environment.

To pilot the complexities of the new cloud-native core technology with the highly dynamic service-based architecture (SBA) of 5G needs shorter testing cycles to rapidly deliver more updates and help operators avoid error-prone, lengthy, and complex manual testing processes.

5G networks will require automation with a unique 5G DevOps pipeline to support multi-domain and multi-vendor technologies across vendors and telco operators.

DevOps 5G pipeline is an end-to-end solution that automates 5G core network function testing (NFs), helping developers execute functional, regression, and performance test cases with zero manual intervention.

DevOps is and will be at the heart of 5G transformation.

Which X-Ops Best Suits the Project?

The simple combination of Dev and Ops is not enough, and there's also an emerging push to include more disciples in the DevOps effort.

There are many different "Ops" that take the IT world by storm. And all of which aim to improve IT operations and are inspired by DevOps.

We must first understand the different Ops roles and the organization's needs before deciding which Ops role is needed and which structure makes the most sense.

Below is the high-level list and short description of the most common "Ops" in use.

- **DevSecOps:** focus on an approach that requires security integration alongside DevOps processes
- **AIOps:** focus on managing IT operations with the help of AI tools to improve workflow efficiency within the organization
- **MLOps:** focus on building and maintaining ML models and pipelines to implement quality ML models faster, better, and with fewer costs
- **GitOps:** focuses on using a version control system GIT for continuous cloud application deployment
- **PlatformOps:** focus on providing operational services for teams to go on to the next level of self-service
- **NFVOps:** focus on providing extensive support to SDN/NFV services and operations
- **ServiceOps:** focus on emerging responses to the growing complexity of managed services
- **CloudOps:** focus on playing a vital role in helping organizations manage to increase redundancy and keep all processes running smoothly
- **BizDevOps:** focus on understanding app performance from a user-experience standpoint
- **ITOps:** focuses on the core technology infrastructure, such as physical and software components
- **NetOps:** focuses on prioritizing maxim agility, velocity, and automation in networks
- **SecOps:** focus on resolving existing security concerns
- **TechOps:** focus on managing and maintaining the IT infra that runs software
- **DataOps:** focuses on making data more reliable and valuable between data consumers/producers
- **ChatOps:** focus on revolving heavily around chat and instant messaging (IM) platforms
- **NoOps:** focus on automating everything so that no dedicated operations team is needed. It is the goal for IT operations
- **ScrumOps:** focus on combining Scrum with the DevOps principles
- **EnterpriseOps:** focus on performing day-to-day operations of the enterprise in designing, implementing and maintaining automated systems
- **FinOps:** focus on collaboration between engineering, finance, and business teams to highlight the financial side of cloud spending and make data-driven business decisions in time
- **ProdctOps:** focus on optimizing the intersection of product, engineering, and customer success
- **DesignOps:** focus on optimizing and orchestrating of processes, people, and craft in order to intensify the design's value and impact at scale
- **ResearchOps:** focus on collaboration between engineering, finance, and business teams to highlight the financial side of cloud spending and make data-driven business decisions in time

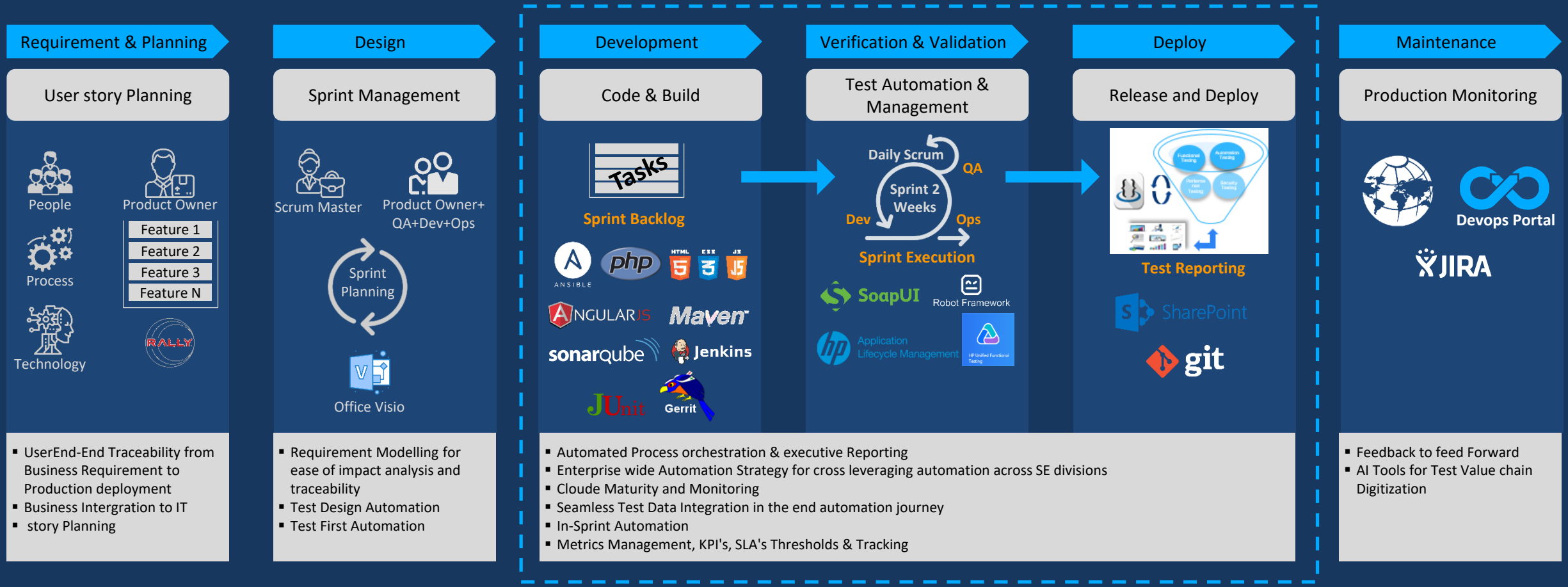
All the different Ops can be confusing and overwhelming. We need to focus on business goals and decide and pick the versions of **X-Ops** that make sense for the organization that can help enable your Ops journey.

NFVOps Automation Solution with DevOps

At ACL Digital, we have used different technologies and tools stacks to automate the development and deployment of various tools with the DevOps approach.

One such solution is the NFVOps Automation Solution, where we have designed and implemented a framework to deploy the SDWAN VNFs in the open stack that will take care of configuring both Day-0 and Day-1 config in a multi-cloud data center.

Using the framework, we have minimized the deployment time from Manual (~3 days) to Automation (~3 Hours) of deploying the VNF components on both Primary and Secondary DC, including the post configurations.



Conclusion

According to the latest market trends, the market size for DevOps globally is projected to reach **$14,969.6 million by 2026.**

DevOps is everywhere, and it isn't going anywhere. We need to work together with the customer every step of the way with requirement setting and continue through development and operations.

The move to DevOps would result in improved customer service and customer loyalty, where you need a partner who can help you realize the benefits of making DevOps work for your organization more competitively and produce more sales.

We can find several open-source tools and testing frameworks available in the market for DevOps, and the right choice of tools will make a huge difference.

At ACL Digital, we will help you create more disciplined teams by instilling a DevOps culture, setting up tools and fine-tuning processes to ensure automation, and improving the company's infrastructure.

ACL Digital has built an industry-leading, hybrid cloud DevOps capability to help teams deliver reliable software to the edge as fast as possible.

In order to scale your business and choose where to invest your resources, our team of open-source DevOps experts can help you speed up application development and deliver applications at a faster rate and also helps in their integration, configuration, and delivery management needs.

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