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Leveraging DevOps and Agile to manage fast-paced application development

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Abstract

In today's fast-moving application development world many organizations are eager on implementing Agile and DevOps in tandem. Agile brings in the systematic, more methodical and process driven approach to a large problem at hand where as the DevOps adds the vaue through automating some of the processes making them more modular. There is always some confusion on how these two buzzy theories should be overlapped. There needs to be a higher level of flexibility to adapt and understand how both the theories are constantly changing. In this paper we will be taking deep five into the Agile and DevOps theories. Also, we will go through the details on how these two can go hand in hand to build successful software application.

Keywords:

Agile;
DevOps;
Application Development;
Information Technology;
Software Development Life Cycle (SDLC).

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1. Introduction: The birth of Agile Software Development Methodology

In early stages 1950s and 1960s of software development when it was rapidly growing a defined approach on how to implement a product did not exist. The organic choice during those days was using the Waterfall approach. As you might be aware that in Waterfall model for software delivery there was very little or no feedback from clients during the phases of delivery pipeline until the project went into user acceptance testing. If the client needed something different all together then this approach resulted into soiled efforts.

On the contrary, to reduce the development cycle time and improve the feedback at each stage of software development Agile methodology was introduced. To achieve this after every sprint the development progress is demonstrated to the user and the feedback is gathered. This feedback is added to the sprint backlog and implemented in the later sprints. This helps in understanding the user concerns and quickly fixing them without waiting till the end of complete product delivery phase.

In 2001, the Manifesto for Agile Software Development [1] was codified. The values for this focuses on people or individual, collaboration between team members and clients, flexibility in responding to changes. Agile development method breaks the development work into small increments this helps in focusing on small workload at each iteration. You may think of it a small iterative cycle/loop of processes that are running in each sprint. The word 'processes' here mean design, develop, test and release. Essentially this can be pictured like- in each sprint developers write the code that is shipped to testing team at a certain interval.

2. DevOps

DevOps is an IT Management philosophy that improves and speeds up the software delivery to the users. Now here we can tie the dots together as Agile Software Development Methodology uses iterative approach for development and software delivery we needed a quick solution to deploy the iteratively developed solutions at the end of each sprint. DevOps was that innovative solution!

DevOps term is coined termed on the fact that it acts a glue between development and IT operations. The faster way of deploying the developed product into various environments is achieved through the usage of

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automation and tools. Another hidden factor for the success of DevOps is the Cloud Computing. The cloud and DevOps work together to help business transforming business.
To make the complete process efficient and streamline DevOps highly relies on the following:

- High level of automation through configuration management, infrastructure management, automated testing, continuous testing, continuous deployment.
- Eliminate downtime using cloud infrastructure for continuous operations. Adding failover servers add the reliability and customer satisfaction.
- Continuous Integration and Continuous deployment increases the ease of deployment and release management.

DevOps achieves many of its results by automating as much as possible of the support for Agile methodology. It essentially changes the development techniques to make deployment quicker and less risky. At its core, DevOps is the automation of agile methodology.[2]

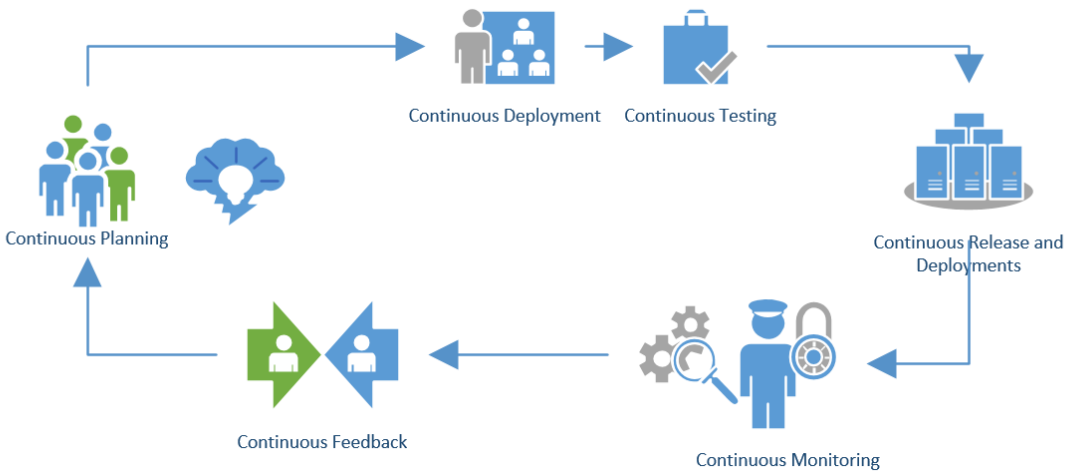

Figure 1. DevOps process phases

3. DevOps and Agile

The main aspect that was overlooked from Agile before DevOps was introduced was the important role of Operations team. DevOps act as the bridge between Operations and Development team. It is essentially a contribution between development, QA and Operations teams to make continuous delivery possible. The releases can occur even on a daily basis or it can be scheduled based on the need of the releases. The Dev Ops makes the deployments in Agile much smoother and flexible. DevOps requires that teams communicate rapidly and effectively.
It seems very essential to fit the whole concept of DevOps in the agile process. As the fast application development includes continuous deployments and releases the role of DevOps is very crucial to the process. As the Agile is making the good progress over the couse of their scrums there is always a need to deploy the developed code to various environment so that testing teams can start testing the application befor it is released on the main production server. DevOps lays the foundation for such deployments where developer checks in the code and it passes the review process, the code can then move to the testable environment using automatic builds/ continuous integration and deployments.
The various factors that play key role for the success of Agile and DevOps when used together are:

- Make sure that all development and deployment environments such as Integration, Staging/Testing/QA, Production are available early and working throughout for continuous integration, testing, deployments and releases. The usage of cloud infrastructure such as Azure, AWS can be helpful as they provide lots of DevOps supported features.
- Using GitHub or BitBucket may be useful to match up with the fast devliery and deployment needs. Old legacy appliactions sometimes lack the new features. Organizations might have to move from the old versions controls to the Cloud supported versions.

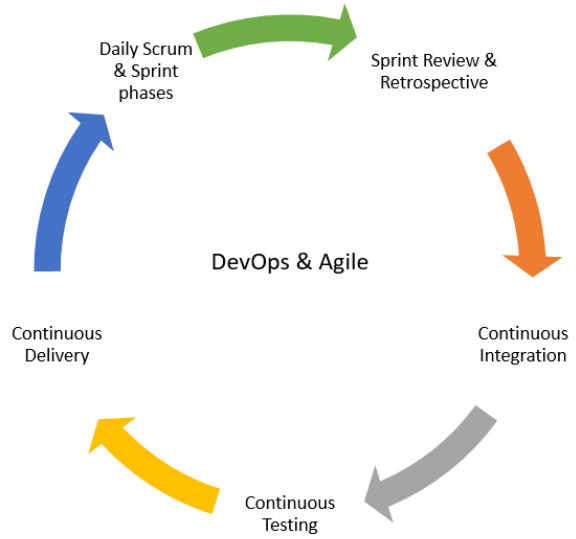

Figure 2. Agile and DevOps

- Continuous integration is another important factor that cannot be overlooked in Agile.
- Setting up automated builds after the code integration has to be done to make Agile and DevOps a success. The automated builds can be set up using the automated build scripts where DevOps will configure the machine address and code deployment strategies.
- Feedback of the whole process can be used to improve the process and reduce the inefficiencies from the past developments and deployments.
- Another important factor is collaboration between the teams. This starts right from the Business Analysts, Developers, Quality Assurance and DevOps. The collaboration between the teams and people can make the whole process a big success where on each iteration the whole process is getting better and flawless.

4. Conclusion

The paper presents an overview of Agile and DevOps fro optimizing the work and elemeinating the waste from the overall software development process. For seeting up the complete process may need motivation for months and complete collaboration between the teams and management. Although implementing these is a long and painful process it is assured that if followed and managed properly the Organization can deliver the software in a much faster and efficient way possible.

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