THE POWER OF DEVOPS

Marius BOIAN

Technical University of Moldova, Faculty of Computers, Informatics and Microelectronics, group SI-221, Chișinău, Republic of Moldova

Corresponding author: marius.boian@isa.utm.md

Coordinator: Corina TINTIUC, university assistant, Department of Foreign Languages, TUM

Abstract. *DevOps is one of the most widely used models for software development and project management in the world. It can be thought of as an evolution of Agile practices, or as a missing piece of Agile. DevOps and Agile, combined, work as a perfect combination, aiming to improve the speed and quality of software development. This work also makes a systematization of the main steps (planning, coding, building, testing, deploying, operating, and monitoring) of this methodology and gives a review for each of them. All of these steps are necessary to achieve a higher quality of software, that meets all of the strict requirements for being able to run flawlessly.*

Keywords: *Agile, software development, IT operations, productivity, automation*

Introduction.

DevOps is the continuous way of improving the process of creating and delivering a final product that consists of a software package. The DevOps method was developed with the main goal of increasing the quantum of efficiency during the process of creating a software product. As a consequence it has improved many crucial industries like medicine, cybersecurity, FinTech, and many more.

What is DevOps?

DevOps is a methodology in the software development and IT industry. It integrates and automates the work of software development (Dev) and IT operations (Ops).

L. Bass, I.Weber, and L.Zhu define DevOps as a "a set of practices intended to reduce the time between committing a change to a system and the change being placed into normal production, while ensuring high quality"[1].

The key principles of DevOps are:

- shared ownership
- workflow automation
- rapid feedback.

The Implementation of the DevOps model

The DevOps model for the most part has 8 steps (see Fig.1), 4 steps for the developing process and 4 steps for the operating process in a pretty major way. The steps for the developing process are the following:

1. ***Planing*** – The part where the most important details for the making of the program like the organizing of the task, the managing tools and schedules are established. The main goal is to make a plan using the user story process from the agile methodology.
2. ***Coding*** – The process of developing, reviewing and merging of the code.
3. ***Building*** – The development of code in the desired format, combined with the compiling and deploying in a particular place of the infrastructure. This is also the fist step towards automation. During this step the Continuous Integration (CI) and Continuous Delivery (CD) tools are set up.
4. ***Testing*** – Testing the code continuously will prevent any major risks or bugs. This step is also often automatized to make it more efficient.

5. ***Releasing*** – The code has passes the testing process (continuous integration) and is ready to be deployed.
6. ***Deployment*** – When the new feature is integrated into the product, and it is also possible to set up continuous deployment.
7. ***Operating/ configurating the indrastructure*** – maintaining a scalable infrastructure, checking for security threats, log management.
8. ***Monitoring*** – The constant scanning for potential flaws in the product, and the overall improvement of the product for the end-user.

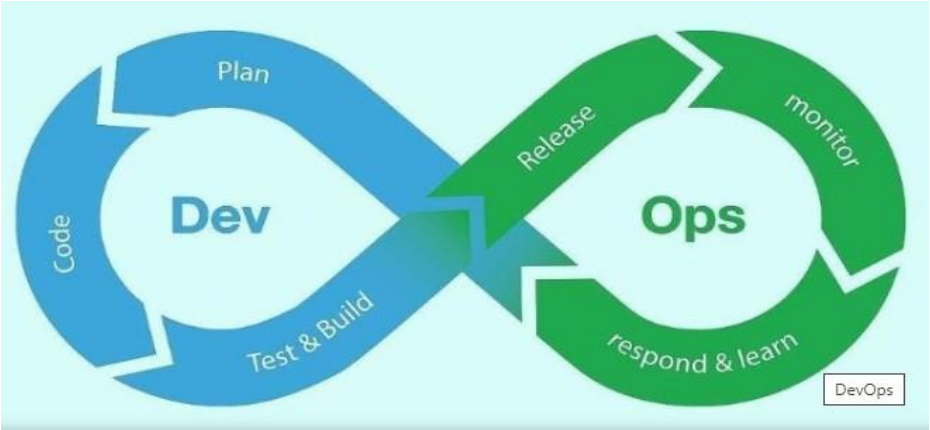

Figure 1 [2]

What is Agile and its purpose?

Agile is an iterative project management and software development approach that emphasizes collaboration, customer feedback, and rapid releases. It emerged from the software development industry in the early 2000s, assisting development teams in reacting and adapting to changing market conditions and customer demands.

An agile approach involves some upfront planning and design, but development is done in small batches with close collaboration with stakeholders. Changes are continuously incorporated, and a usable version of a product is frequently released faster than products developed using the waterfall methodology. This has many advantages, the most important of which is that if software does not meet the needs or expectations of the customer, it can be remedied in real-time[3].

The Agile Model and DevOps

The combination between the Agile Model and DevOps Model is one of the most efficient methods of delivering a high quality product to a client. This is achieved by the constant mutual comunication and reviewing between the two parties: the developer and the client. A possitive feedback loop is created when this model is used. The first step is for the client to send a detailed list of requierments for their product. The second stept is for the developer to understand the assignment and to create a draft for the client, and meanwhile respect some other important steps in order to ensure the quality of the final product [4].

This process continues until both parties are satisfied with the outcome. Some of the major advantages of this model is that it prevents dissonance between the two parties and the creating of a partially or totally flawed product on the behalf of the developer, and on the side on the client, recieving a bad product, and the waste of time and resources in the case of both parties [5].

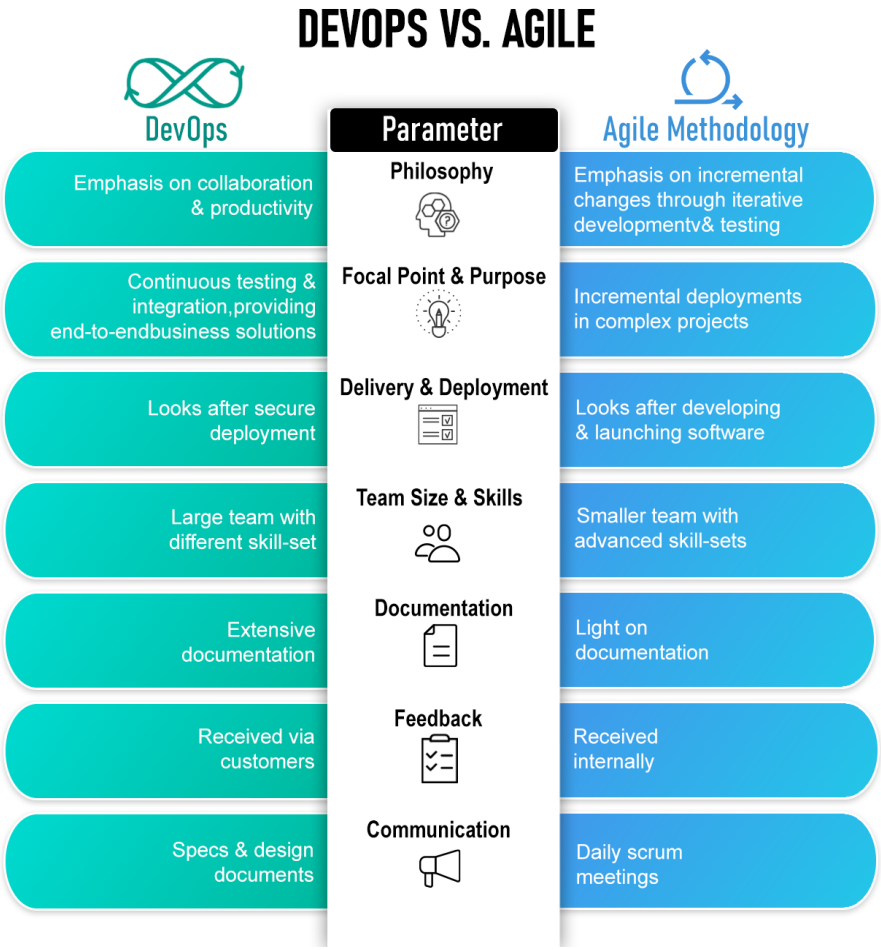

Figure 2 Differences between DevOps and Agile [6]

DevOps requires Agile software development that is linked with feedback, quality, and speed. DevOps has bridged the gap, connecting teams through processes and technology [2].

Conclusions

To summarize, DevOps can help software organizations innovate faster and be more responsive to business needs. The combination of Agile and DevOps will make software development and its delivery process smoother, it will maximize productivity. In an organization, the DevOps capability depends on technologies, processes, and people. DevOps really deserves very close attention and adopting its philosophy requires a new mindset, new tools and new skills. The implementations of both Agile and DevOps has uncovered new horizons for the IT industry as a whole. The combination of both methodologies has not only remained confined to just customers and employees but it has also brought new business opportunities for enterprises that have adopted both Agile and DevOps.

References:

1. Bass, LEN, Weber, INGO, Zhu, LIMING. DevOps: A Software Architect's Perspective, 2015
2. https://dzone.com/articles/devops-and-agile-a-perfect-combination [accessed 09.03.2023]
3. https://www.atlassian.com/devops/what-is-devops/agile-vs-devops [accessed 09.03.2023]
4. https://www.youtube.com/watch?v=Me3ea4nUt0U&ab_channel=Simplilearn [accessed 06.03.2023]
5. https://www.educba.com/agile-devops/ [accessed 06.03.2023]
6. https://www.spiceworks.com/tech/devops/articles/devops-vs-agile/ [accessed 09.03.2023]