Ryan Norrbom

CSD380

Assignment 1.3

August 17th, 2024

DevOps: History and Methods

DevOps is a set of practices with the goal of unifying software development. DevOps emphasizes a culture of automation, integration, and continuous feedback. With the advent of more in-depth applications, it emerged as a response to the challenges and limitations of traditional software development methodologies, such as waterfall and agile. DevOps can be seen as a continuation and evolution of several movements and ideas that have shaped the software industry over the past decades of continuous improvement.

**The Lean Movement**

The lean movement originated in manufacturing, especially Toyota. The Toyota team aimed to eliminate waste, optimize processes, and deliver customer value by applying principles such as just-in-time production, kaizen (continuous improvement), and Jidoka (automation with a human touch). Toyota's success influenced many management and quality approaches, such as Total Quality Management (TQM), Six Sigma, and Lean Manufacturing. Each of these is coveted by manufacturing and software development organizations alike.

The lean movement also impacted the software industry, as some TPS principles were adapted and applied to software development. For example, waste in software development includes defects and rework of unnecessary features, documentation, waiting, handoffs, and context switching. The concept of value in software development refers to delivering software that meets the needs and expectations of customers and users. In addition, the delivery of software that can be delivered quickly and reliably. The concept of flow in software development means ensuring that the work continually progresses smoothly and efficiently without interruptions, bottlenecks, and unnecessary slow-downs.

**The Agile Manifesto**

The Agile Manifesto was published in 2001 by a group of software professionals who were dissatisfied with the current nature of traditional software development practices. (*Agile Manifesto* 2021) The methodology is based on four values that emphasize individuals and their touchpoints with tools and processes, customer collaboration and contracts, response to continual changes, and interactions with customers and their contracts. The Agile manifesto also defines twelve principles that guide the utilization of Agile. These twelve principles value individuals, collaboration, change, and working software over inflexible processes, contracts, plans, and documentation. Ultimately, they are designed to deliver software faster, better, and cheaper

**The Continuous Delivery Movement**

The continuous delivery movement emerged in the late 2000s as an extension and refinement of agile principles and practices. The primary points behind continuous delivery is to automate and streamline the software delivery process, from code to production, and enhance software teams ability to release software anytime, anywhere, and with confidence. Continuous delivery aims to reduce the risks, costs, and delays associated with software releases and to increase the quality and customer satisfaction of software products.

The continuous delivery movement is guided by several principles. These include building quality by ensuring that every change to the software is verified and validated by automated tests and checks and that any defects or issues are detected and fixed as early as possible. In addition, it involves deploying frequently and releasing software in small and frequent increments. Collaboration across different roles and functions involved in software delivery and a culture of shared responsibility, communication, and feedback are also important.

**Conclusion**

DevOps is not a single methodology, tool, or role. Instead, it is a combination and integration of many movements, ideas, principles, practices, and tools with the goals in mind to improve and accelerate software development and release. DevOps can be seen as an evolution of the lean movement, the agile manifesto, and the continuous delivery movement, as well as many other influences. DevOps emerged because of an industry desire for collaboration and experimentation. It was created by individuals who shared their experiences and insights through blogs, books, conferences, and communities.

DevOps is not a one-time project or initiative but is instead a journey and culture that requires constant learning, improvement, and innovation. It is a way to remain curious and look for opportunities to connect with the customer, your colleagues, and the other professionals in the software industry to continue developing great, long-lasting code. None of these methods is a solve-all to building better, more reliable code, but rather frameworks for better processes that individuals can continue to build upon.

GitHub URL: <https://github.com/GeraltOfCodea/csd-380>

**References**:

*Agile Manifesto*. ProductPlan. (2021, June 2). https://www.productplan.com/glossary/agile-manifesto/#:~:text=The%20Agile%20Manifesto%20was%20published,and%20heavyweight%20software%20development%20processes.

Fenton, S. (n.d.). *Comparing lean, agile, and continuous delivery*. Octopus Deploy. https://octopus.com/blog/lean-agile-continuous-delivery

Kim, G., Debois, P., Willis, J., Humble, J., Forsgren, N., & Allspaw, J. (2021). *The devops handbook: How to create world-class agility, reliability, & Security in Technology Organizations*. IT Revolution Press, LLC.