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Module 1.3

DevOps is a cultural and breakthrough in technology that has changed the way businesses create, deploy, and maintain software. Its roots can be found in a number of fundamental movements, including Continuous Delivery, Agile, and Lean. The DevOps concept, which prioritizes cooperation, automation, and continuous improvement, is the result of important ideas and methods from each of these ideologies.

The manufacturing sector was where the Lean movement got its start, especially with Toyota's production system in the middle of the 20th century. Waste reduction, process optimization, and effectively providing value to customers are the main goals of lean. Later, these ideas were modified for the software industry, giving rise to the concept of "lean software development." DevOps has been greatly influenced by the fundamental ideas of lean, which includes reducing waste, enhancing learning, and delivering quickly. Lean, for example, places a strong emphasis on feedback loops, which are essential for DevOps pipelines to continuously develop. Lean gave the DevOps mindset a solid basis by decreasing handoffs, optimizing workflows, and encouraging cross-functional cooperation.

The Agile Manifesto was drafted in 2001 by a group of 17 software professionals in Utah, and contained ideals and guidelines for enhancing software development. The manifesto prioritized:

- Individuals and interactions over processes and tools.
- Working software over comprehensive documentation.
- Customer collaboration over contract negotiation.
- Responding to change over following a plan.

Agile brought iterative development and the idea of making smaller, frequent changes instead of big, rare releases to the table. Agile did not address the operational aspect of software delivery, regardless of the fact that it enhanced the development process. DevOps attempted to address the conflict that resulted from this divide between the development and operations teams. Software can be provided more rapidly, reliably, and with higher quality thanks to DevOps, which bridges the gap between development and operations by extending Agile's concepts to operational problems.

Under the software engineering methodology known as Continuous Delivery (or CD), code updates are automatically ready for production deployment. CD works on Agile by focusing on automation and frequent delivery of high-quality software. The idea is to minimize the risks involved with larger scale releases by guaranteeing that software is always in a deployable state.

Continuous Delivery highlights:

- automating the processes of deployment, testing, and building.
- ensuring the deployability of each modification.
- creating a culture of cooperation and accountability among teams.

Continuous Delivery also has a direct impact on DevOps technical techniques, including the implementation of CI/CD pipelines, automated testing, and infrastructure as code. By following these procedures, companies can produce software more quickly while upholding strict security and dependability requirements.

Lean, Agile, and Continuous Delivery concepts are all combined into one cohesive framework by DevOps. It takes the emphasis on waste reduction and process optimization from Lean. It takes its focus on teamwork and iterative improvement from Agile. The technical foundation for automating and speeding up software delivery is provided by continuous delivery. These actions collectively serve as the cornerstone of DevOps, which helps businesses attain better quality, a quicker time to market, and increased cooperation between business and IT.

Sources:

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