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DevOps is often described as a modern approach to software delivery, but it is really the result of several older movements coming together. Its roots come mainly from “Lean” thinking, Agile development, and the Continuous Delivery movement. These ideas combined as organizations realized that building software quickly only works when development and operations function as one system instead of separate teams.

The Lean movement began in manufacturing, especially with Toyota’s Production System. Lean focused on improving flow, reducing waste, and building quality into the process instead of fixing problems at the end. Waste included delaying rework, extra handoffs, and unnecessary tasks. Over time, these ideas moved into software and business environments. Software teams noticed that many of their delays came from slow approvals, long testing cycles, and handoffs between teams. Lean thinking encouraged teams to shorten the time from idea to customer value by removing bottlenecks and continuously improving the system. This mindset later became a core part of DevOps culture.

Agile development added another important piece. In February 2001, a group of software professionals created the Agile Manifesto. This manifesto stressed people above processes, working software over heavy documentation, customer collaboration more than strict rules, and responding to change over fixed plans. Agile encouraged short development cycles, frequent feedback and regular delivery of usable software. While Agile improved development timelines and flexibility, it also exposed weaknesses in deployment and operations. Teams could build features quickly, but releasing them into production was often slow, risky, and stressful. This gap made it clear that development improvements alone were not enough.

The Continuous Delivery movement addressed this problem by emphasizing automation and reliable release processes. Continuous delivery promotes keeping software in a deployable state at all times through automated testing, automated builds, and deployment pipelines. Jez Humble and David Farley helped popularize these practices by showing how small, frequent changes reduce risk and make failures easier to detect and fix. Continuous delivery turned software

releases into routine events instead of major projects. This approach supported the DevOps goal of fast and safe delivery by making release processes predictable and repeatable.

DevOps emerged when these ideas were brought together. Around 2007 and 2008, developers and operations professionals began openly discussing the problems caused by traditional team separation. Developers were measured on speed and new features, while operations teams were measured on stability and uptime. This often created conflict and slow delivery. DevOps promoted shared responsibility, collaboration, and system-wide optimization. Instead of focusing on individual teams, DevOps focuses on improving the entire pipeline from code creation to production use.

Culture became a major part of DevOps. Teams started adopting practices such as shared on-call duties, blameless post-incident reviews, and closer cooperation between roles. Measurement also became important, with organizations tracking deployment speed, failure rates, and recovery times to guide improvement. While many tools support DevOps, the main idea is not about buying software. It is about changing how people work together and how systems are designed.

In summary, DevOps developed from the combination of Lean efficiency, Agile flexibility, and Continuous Delivery automation. Lean provided the focus on flow and waste reduction. Agile encouraged fast feedback and adaptability. Continuous Delivery supplied the technical foundation for frequent and safe releases. Together, these movements created DevOps as a practical response to modern software demands. As organizations continue to rely on digital services, DevOps remains important because it helps teams deliver value faster, more reliably, and with better cooperation.

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