Chapter 58
Auditing an Agile Development Operations Ecosystem

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ABSTRACT

In an enterprise software development, DevOps is a practice of integrating development and operations to deliver cost-efficient, improved quality solutions to the customer by automating the existing processes to achieve "continuous delivery." In the current dynamic IT Ecosystem where there is a rising need to prove a competitive edge to maximize profitability, it is pivotal to drive business value with profound emphasis on quality. Agile enables us to take calculated risks during development whereas its affinity to adopting DevOps will promote continuous delivery with reduced friction to improve business efficiency. As this approach requires a change in people, process, technology, culture, usage of right tools and techniques, the early involvement of IT Auditors during the process of transformation could aid to build effective Risk Management strategies to handle organizational challenges. This article aims to present a risk-based audit approach to effectively use audit tools and techniques in an Agile-DevOps transformation environment to achieve maximum business value.

1. INTRODUCTION

In today's dynamic business environment where there is a critical need to be on par with changing business requirements, organizations are moving towards agility. An Agile approach enables organizations to respond faster to changes, gain a competitive advantage in the market by providing customer value-driven outcomes (Mitch et al., 2017). In the current software development arena, Agile is the mainstay of every organization that intends to respond quickly to the business requirements. As agility has engulfed the software development in the recent times, DevOps has been the engine to drive the mindset and bring about organizational transformation. DevOps is the integration of Software Development and Operations in the early stage of the Software Development Life Cycle to enable cross-functional teams to collaborate and deliver faster, quality technical solutions to address the business problems.

The traditional waterfall methodology works in a linear fashion, which requires clear, concise requirements before the beginning of the development phase. Each phase works iteratively and is dependent on the completion or outcome of the previous phase. Unlike Waterfall methodologies, Agile projects deliver a shippable product in frequent iterations (sprints), which reap benefits at an earlier stage and is adaptive to the customer feedback. DevOps being cross-functional has the ability to drive the Application Life Cycle in an agile environment. DevOps can integrate operation teams into agile development teams focusing on the quality of deliverables and continuous integration of the deliverables to maximize the efficiency of the agile chasm. Agile methodology typically reduces the development timeframe for new processes by simultaneously increasing the flexibility for existing processes, when additional requirements are to be modified. This, in turn, allows the product owners to satisfy client demands in less time, gaining more clients with low adaptation costs and finally increased revenue with continuous delivery, continuous integration, continuous testing, continuous monitoring and continuous feedback. (Virmani, 2015). The maturity of DevOps framework that we use in an agile environment will contribute to the success factor of the transformation.

Agile organizations respond to the changes quickly and encourages to be flexible. But to be successful, an agile organization must also know the art of balancing between structure and flexibility. If the requirements are changing continuously in a certain period of time, then it will be challenging for agile teams to accommodate the change requests. To address this challenge of agile' s flexible nature without affecting the productivity, DevOps could come into play which will enable continuous integration until deployment and continuous monitoring after release. It is important for agile organizations or projects to understand that balancing the edge between order and chaos determines success. This clearly depicts that an agile process can be disadvantageous if the agility factor is not regulated properly, and the level of agility needs constant monitoring in a project implementation scenario. A recent survey (Tech Beacon, 2018) states that 84% of enterprises have adopted some aspects of DevOps principles in their environment. This is a very significant metric that portrays how DevOps has pre-occupied the recent enterprise space. The ability to deliver software projects with speed and stability is evident from the facts that enterprises adopt DevOps into their delivery strategies. The evolving trend of DevOps has been quite notable since 2017 as the world is moving towards automation. In a 2017 survey (Tech Beacon, 2017), most organizations have moved towards agile and 27% of teams have adopted DevOps transformation in their organization. In fact, two-thirds described their company as either "pure agile" or "leaning towards agile," A hybrid approach is used by 24 percent of respondents, which shows that they are practicing at least some agile principles in their implementation and management of their software development projects. Only nine percent responded that they are using "pure waterfall" or "leaning

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