DevOps: A Balance of Mindset & Tools

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Back in the early 2000s, when Agile Software Development was taking the IT world by storm, some declared Agile as a fad and a fashion, a passing phase, or an old wine in a new bottle. Nearly two decades later the Agile Software Development is ubiquitous norm. Through addressing teams' practices (XP method) and their relationship with the organisation at large (Scrum framework) Agile Software Development has been instrumental in resolving some of the fundamental and persistent problems with software production including; uncertainty, complexity, capability, alignment, motivation and autonomy which has resulted in improvements in product schedule, cost and quality. While addressing problems associated with software production, two significant problems with production process remained unresolved. These were scaling of agile and, the problems relating to the delivery at the operational end of the production (infrastructure, deployment, maintenance, monitoring, etc). Advances in technology and primarily in cloud technologies gave the means of connecting the operations with the development teams and resulting in the concept of DevOps. Agile succeeded to connect software development to upstream business sponsors. DevOps has connected the software development with the downstream operations creating an end-to-end system of value stream. DevOps has completed the picture of the continuous flow. As a result, DevOps has been gaining ground for many years but ever since the introduction of the name, there has also been a debate to define "DevOps". There is now a distinct division of opinion in what DevOps really stands for. The problem with the definition of DevOps is two folds. First, is based on the valid technical arguments for the implementation of end-to-end value flow. Second, and more prevalent, is the commercial benefits of misinterpreting the word DevOps. On the one hand, organisations are seeking ways of establishing a continuous flow of value from identifying a need to delivering a solution through the efforts of everyone in the path of the workflow - as one team. On the other hand, service companies are pushing their own agenda and defining DevOps as a collection of tools and the expertise that goes with using those tools which, luckily, they possess.

The twist in this debate is that while the DevOps infrastructure and tools (to Code, Build, Test, Package, Release, Configure and Monitor) are the important components for the success of the DevOps model, the critical components of the DevOps success are the culture and mindset that drive this model. Without the DevOps culture, it is highly likely that the mistakes of the past will be repeated, this time, with new tools and on the cloud. Tools have made DevOps possible but DevOps is not defined by the tools. The traditionally slow moving, underlying support systems (infrastructure, deployment, maintenance, monitoring, etc.) can now match the rapid software development cycles, but the fundamental driver for DevOps remains to be the desire for bringing down the walls and removing silos and the tribal mentality in the path of the value stream. Companies are moving towards DevOps because they need a new approach to working and producing products and providing services without the formation of "queues" of completed work not reaching the end user. The visible or the invisible queues are the sources of delays that increase product cost, reduce earning, reduce the opportunity to produce new features and products in sync

with demand, demoralise staff (producing, deploying and maintaining the products), pit people against each other, reduce feedback frequency, alienate clients and more. They need the tools as the means of reducing the queues and the subsequent delays.

A testimony to the prominence of the mindset and the role of tools in implementing the mindset is Netflix's approach to product development and service provision. Netflix software developers and operations are responsible for the delivery of 150 million hours of video to 86 million members in 190 countries. Unsurprisingly, the technology and service vendors will tell us only their side in the Netflix success story, but listen to the people who've turned Netflix vision into reality and you'll hear that more than tools, DevOps is a whole new way of thinking. According to Netflix practitioners:

> *To rethink our approach, we drew inspiration from the principles of the DevOps movement. We could optimize for learning and feedback by breaking down silos and encouraging shared ownership of the full software life cycle: "Operate what you build" puts the DevOps principles in action by having the team that develops a system also be responsible for operating and supporting that system. Distributing this responsibility to each development team, rather than externalizing it, creates direct feedback loops and aligns incentives. Teams that feel operational pain are empowered to remediate the pain by changing their system design or code; they are responsible and accountable for both functions. Each development team owns deployment issues, performance bugs, capacity planning, alerting gaps, partner support, and so on.*

And regarding the tools;

> *Tooling and automation help to scale expertise, but no tool will solve every problem in the developer productivity and operations space … However, we're cognizant that we got here by applying and learning from alternate approaches. We expect tomorrow's needs to motivate further evolution.*

The availability of on-demand and affordable cloud infrastructure has removed the downstream obstacles from the path of the value flow. The cloud has changed Infrastructure from being capex to opex – paving the way to an entirely new paradigm in organisational approach to product development, management, financing and much more. But DevOps is much more than that; it is understanding the damage the visible and invisible queues can do to an organisation. DevOps encapsulates this new paradigm, requiring a new mindset and approach to a new organisational design.