ABSTRACT

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THE ANALYSIS AND REVIEW OF AGILE PROJECT MANAGEMENT FRAMEWORKS FOR SOFTWARE DEVELOPMENT

Mark Stelmachenko
PhD Student of the Department of Management and Finance
Mariupol State University, Ukraine

Considering the unceasing market competition in the software development industry, engineering organizations tend to regularly assess their approaches to project coordination, which consequently triggers the discovery of new facilitation methods that can enable teams to achieve maximum performance, efficiency, and flexibility. The appearance of Agile frameworks and methods can serve as a perfect example of the internal self-assessment and need-identification process that leads to the formation of practices that are designed not only to solve the existing pain points of specific groups but also to provide teams with a powerful tool that can support its long-term growth and processes enhancement. Global trends confirm that the best software engineering and coordination practices typically demonstrate a high adoption rate even outside of the initial environment, hence it is logical to assume that Agile is not an exception from this rule. Historically, the Agile way of thinking (so-called Agile manifesto) was created as a representation of a specific group's values as related to workplace activities and was based on engineers' prior experience with software development projects. Given that the Agile Manifesto defines a set of recommendations and policies that help software development teams keep a fair balance between technical aspects of the project and client-related endeavours, it potentially brings a number of methodical improvements for the sake of maximum adaptability [1]. Therefore, the cultivation and development of such an Agile-oriented mindset provides teams with a shortcut to enhanced workplace processes with an emphasis on value creation, adaptation, and versatility.

In that regard, the creation of the Agile Manifesto served the industry as a reliable and essential foundation that led to the development of diverse Agile-oriented project management frameworks, methods, and tools that could be applied to the project management process. In particular, it is essential to highlight, review, and analyze such popular examples of Agile frameworks as Scrum, Kanban, and XP (Extreme Programming).

Scrum: as outlined within the Scrum Guide, Scrum is a lightweight framework that helps teams to create value with the assistance of adaptive solutions for complex problems [2]. Such adaptivity can be achieved via a set of so-called Scrum events (The Sprint, Sprint Planning, Daily Scrum, Sprint Review, Sprint Retrospective) throughout which the project team performs a regular assessment of its work, analyzes the changes in both internal and external environments, verifies the

relevance of the work performed, and implements necessary changes that may lead to further project requirements pivoting [2]. At first glance, such an approach raises the concern regarding the potential disturbance of team focus, since continuous adjustment to changes in the project environment will undoubtedly negatively impact the team's concentration. However, the idea of Scrum Sprints that technically decompose the entire work process into small and time-bound pieces of work, helps the team not to spread their attention across all the project deliverables and focus on one single increment that will bring value to the customer.

Kanban: as defined by Kanban University, Kanban provides the industry with a method that can be applied to the existing organizational way of working for the sake of its enhancement and further improvements that will make it more visible, understandable, transparent, and manageable [3]. Worth mentioning that Kanban gained its popularity as a result of the absence of complex prerequisites that the project or the organization has to meet before transitioning to this method, which remarkably diminishes the entry barrier and helps to avoid nonessential waste of corporate resources. As related to the software development process, Kanban has eventually become one of the standard tools for both enterprises and small-scale companies (e.g. startups), especially due to its simplicity. Hence, in contrast with robust project management methodologies that require time-consuming kick-off activities, Kanban provides teams with the opportunity to rapidly set up a flexible Kanban board that will visualize the straightforward project workflow, alongside addressing the transparency need, given the fact that statuses of all the deliverables are always visible to all the team members, which fosters better communication, interaction, and team collaboration [3]. Additionally, given Kanban's set of extra recommendations related to workflow standardization (WIP limits etc.), this method is not only capable of current project endeavours illustration but also helps to become more efficient and less overwhelmed. Therefore, it is fair to state that Kanban can be applied within the software development domain as a powerful tool for both new projects and also enterprise ones that already possess an existing way of effort coordination.

XP (Extreme Programming): based on the explanation of Agile Alliance, XP is a software engineering framework that facilitates development teams to create and deliver high-quality products in addition to a better workplace experience [4]. Similar to Scrum, XP fosters a rapid response to the changing environment - for example, in case the existing requirements have become obsolete and require an enhancement, Extreme Programming can potentially lead to the workaround even in the middle of the feature implementation process. However, in comparison with other Agile frameworks, XP itself has a more technical emphasis and a broader focus on the technical aspects of the project, which eventually leads to increased engineering quality. In a nutshell, Extreme Programming introduces the concept of multiple planning and feedback loops, where during the entire development process engineers get the opportunity to perform a regular assessment of work that has been completed to verify that it meets the initial requirements, technical specifications, engineering standard, needs of the business, and project goals [5]. As a result, all of the combined steps can ensure a flexible end-to-end delivery of the project with a necessary degree of adaptability and engineering excellence.

Overall, the Agile model of software engineering project management has become one of the essential approaches that teams can use as regards to the day-to-day facilitation of workplace undertakings. Therefore, Agile delivers a huge practical value for organizations of any kind, which can benefit both businesses and their potential customers due to Agile's dedicated focus on quality, adaptability, and delivering the maximum value to the market.

References:

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