Chapter 13
Adaptation of Modern Agile Practices in Global Software Engineering

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ABSTRACT

Software engineering has been an active working area for many decades. It evolved in a bi-folded manner. First research and subsequently development. Since the day of its inception, the massive number of variants and methods of software engineering were proposed. Primarily, these methods are designed to cater the time-varying need of modern approach. In this connection, the Global Software Engineering (GSE) is one of the growing trends in the modern software industry. At the same time, the employment of Agile development methodologies has also gained the significant attention in the literature. This has created a rationale to explore and adopt agile development methodology in GSE. It gained rigorous attention as an alternative to traditional software development methodologies. This paper has presented a comprehensive review on the adaptation of modern agile practices in GSE. In addition, the strength and limitation of each approach have been highlighted. Finally, the open area in the said domain is submitted as one of the deliverables of this work.

INTRODUCTION

Agile Software Development (ASD) and GSE are two rapidly growing fields in the software development industry (Cockburn 2002). This growth has translated into a significant advancement in both industry and academia. GSE is an extensive concept incorporating software development methods across both, organizational and geographical borders (Rodríguez,et. al. (2012). While ASD emphasis on the development of close collaboration between users and developers. It focuses on delivering software within timelines considering budget constraints. This process is repetitive, adaptive, and shortly defined (Kruchten, 2013).

During the last several years the trend of globalization of business has witnessed, that brought changes in industries. Most of the companies started working on Global Software Engineering (GSE), to get results more efficient, cheaper and faster. However, these benefices are not easy to accomplish. Culture, collaboration between teams, language, time zones, economic conditions, insufficient knowledge of client's interest and many more make the tasks harder to achieve. Researchers have investigated this issue and have identifies teamwork as a significant actuating parameter to handle the issues of GSE.

During the past decade, the hybridization of Agile Software Engineering (ASE) and Global Software Engineering (GSE) concept has submitted the significant change in software industry. This includes, but not limited to, rapid application development, round the clock development, taking the most eminent professional on board irrespective of their geographical location, reduced production cost, less time to launch etc. (Kaur, et. al. 2014). In spite of the fruitful benefits of agile GSD, it is faced with some challenges. One important challenge is the effective and adequate communication in between distributed teams and customers (Jalali, et. al. 2010). Poor communication is an extensive risk to agile GSD (e.g., delivering an inaccurate, incomplete or inefficient message (Abrahamsson, et. al. 2017). Knowledge sharing and communication is the constitutional concern of distributed global agile development environments (Èmite et. al. 2011). During the recent years organizations are moving to the development of Global Software Engineering. The Projects which are been developed by separate teams have been noted as more challenging as compare to those project which are been running at one platform (Kaur, et. al. 2014). Furthermore knowledge of all possible challenges and potential mitigation strategies of GSE is essential for running a successful project. The collected challenges may further arrange into checklists. Moreover the developed checklists separated into risk management process particularly risk identification and risk mitigation planning.

In recent literature, the researchers have investigated the hybridization of ASD and GSE (Wohlin, 2014). This has evolved a trend of implementing agile development in global software projects. Moreover, the hybridization of ASD and GSE has also accumulated their strengths. This includes, but not limited to, rapid development, optimum resource utilization, integration of global experts, better communication, reduce coordination issues, increased trust, improved productivity, etc (Kaur, st. al. 2014)

In addition, the implementation of the agile method in GSE is also encouraged by the fact that agile development gained huge attentiveness from industry (Kaur, st. al. 2014). In recent literature, although there is a growing interest in becoming agile and globalized for rapid and optimal software development. However, a few works have been reported in this connection.

The main goal of agile development focuses on face-to-face communication among collocated teams compared to geographically dispersed (Global Software Development) GSD teams (Šmite, et. al. 2010). The increase in the use of agile approaches in GSD along with the literature on communication challenges has recently become of interest (Lanubile et. al. 2010). Communication challenges in agile GSD

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