

AMCIS 2019 Cancun: Maximizing the Performance of Agile Teams for IoT Development

TREO Talk Paper

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Abstract

Agile software development is a popular approach which focuses on creating small working pieces of software in iterations. One of its major benefits is that it allows customers to provide feedback and change requirements during the development phase. This can lead to outcomes that better match their specifications, which can help save time and money when compared to traditional approaches, such as plan-driven development. In today's fast-paced world, the ability to cope with continuous changes has become vital for organizations to survive, which is one of the reasons agile software development has gained more popularity. Multiple agile methodologies exist, each consisting of shared and unique practices that can be thought of as different ways of working. Organizations are not restricted to choosing just one agile methodology or adopting all of its practices, rather they can combine practices from different methodologies. This allows organization to select those practices that suit their specific needs.

Another new paradigm is the Internet of Things (IoT), which is emerging as one of the largest technological industry segments worldwide. With the IoT market growing and agile software development gaining popularity, it is important to research how agile software development can be leveraged in IoT development. This is important, because IoT development has certain characteristics that differ from other software development. For instance, IoT combines both hardware and software, whereas non-IoT applications focus mainly on software. In addition, IoT solutions are very cloud-centric and often have additional security and privacy challenges. These unique requirements impact the teams developing IoT solutions. Therefore, the objective of this research is to determine how the performance of an agile team in IoT development can be maximized.

This is a mixed methods study consisting of a survey and a semi-structured interview. Participants will be selected who are working in agile teams at IoT development companies with under 50 employees. After considering all existing agile practices, a selection has been made of 15 agile practices and 9 agile engineering practices that are used by the majority of agile teams. A 7-point Likert scale survey will be employed to ask participants how important these most commonly used agile (engineering) practices are for their team. In addition, a set of IT skills has been defined, which includes skills such as programming, systems design, project management and others. Participants will be asked about the skills that their team performs best at, to determine if there is a correlation between the skills that are present in teams and the agile practices the team uses. In a follow-up semi-structured interview, participants will be asked how the agile practices they identified as most important contribute to the success of their team. The results will help determine if there is a correlation between the agile practices and skills in teams, and their success. This study will provide companies active in IoT development insight into the (combinations of) agile practices that lead to success.