Software engineering is the process of analyzing user needs and constructing end-user application which is efficient, reliable, usable, maintainable, and cost-effective. It is the application of engineering principles to software development [1]. Software development is a process that holds different process stages, and model. The process starts by gathering requirements from the user and designing, implementing, testing, deploying, and maintaining the product. The software development models are different methodologies that are being selected for the development of the project depending on the goal of the project. Agile is one of development life cycle model that has been developed to build the best product that satisfies the customer.

The Agile Alliance was formed in 2001 by a group of industry experts who want to outline the values and principles of a great software development model. One of the most important Agile ideas of developing software is to satisfy the customer through early and continuous delivery. This allows the customer and the developer to work closely and discuss more on the product features. It reduces the risk of customer dissatisfaction by clearing the visibility of what currently completed and increase customers' trust by delivering some features early whenever they are good enough to be used. Another inspiring Agile's idea is that the customer, stakeholders, and developers must work together daily throughout the project. The developer and the business side of the project are vital to the success of the project. Also, customers usually modify their requirements once the system starts functioning or even late in development, which is another principle of agile. Therefore, it is a great idea to have the customers involved in the project development process from the beginning so that when requirements change, the impact on the system will be minimal. Furthermore, working software is the primary measure of progress. The major need of the customer is to have a product that works as they want. The customer usually does not care about which tools the development team used. If the software is not working, the whole development is a failure, and customers will be dissatisfied. Therefore, one of the most important Agile principles is to make sure that all delivered product functions perfectly as the customer requires.

Primavera is an enterprise project portfolio management software. The growth of the company in business was leading to increasingly complex client needs, which put strains on the ability to release a product that satisfies their customers. After a bad release in 2003, the company made a brave decision to adopt Scrum and XP, an agile process, to increase their developers’ productivity and teamwork. One of the most valuable Agile practices that helped the Primavera is the interaction and face to face conversation to exchange information, as

well as delivering software frequently. The team starts to gather in one room, joining the discussion and working together toward a common goal along with customers who provide feedback to build the best release possible. Moreover, the entire company commits to a 30-day “Sprint” in Scrum terminology, to deliver finished and tested software so that the customer can review if it’s what they are looking forward to. This gives a chance to the customer to review the product in the early stage and won’t give much work to the developers if requirements change, the impact on the system will be minimal.

Scrum is a process for building software in a complex environment. As it is shown in ‘The Scrum Software Development Process for Small Teams’ paper, scrum is more effective for a small team that works independently. The main principle of scrum is that the number of members of each team should not exceed more than ten, which should work perfectly well in a course project of four to five teams. The other important idea of scrum is Sprint which lasts from one week to four weeks, where the entire work is divided into small part within the unchangeable deadline that improve the productivity of the team and let them focus on finishing one task at a time. The time box would fit for a course project since there will be a fixed time frame in a semester which cannot be changed. Also, each member of the team knows his/her task to work independently while the team focuses on a single goal. In a course project, this can give flexibility for the team members to work on their time pace since most of the team members can have a different schedule. Moreover, ScrumMaster is a leader of the team that is responsible for making sure that all members are as productive as possible. However, not all Scrum parts applicable for a course project such as the daily scrum, which is a daily meeting to discuss each day's work to make sure that each member is on track. This might be hard for the team on a course project, because of the time available to meet daily might differ for all team members.

As we see in the Agile process, not only good and qualifying members of a team are enough to succeed, but having both a good team and a great development process is the key to successful development. A course project can deal with a bad programmer like Harold, and he/she can bring a negative impact on the team. This might happen in some team members because of a lack of experience, or a lack of basic programming skills. However, giving all team members a chance to show their ability and trust them could positively lead to a successful team. Also, ScrumMaster must try to understand each member's strengths and weaknesses to set a plan on how to utilize the strengthens of each team member to achieve the project goal. On top of that, the ScrumMaster must create some standard guidelines for

each member to accomplish the subtasks. To summarize, giving all team members the accommodation and environment they need will build a trust culture among members and customers will result in a greater outcome.

Reference

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