**Sprint Review and Retrospective**

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One of the steps in the early stages of any project is planning. Because planning would ultimately help the team understand what they are going to build and how they are going to build it. The software development project also requires planning, indeed. But one of the differences between a software development project and any other traditional project is that at the early stage of development it is not completely clear to the developing team how the final product would look. Simply put, at the beginning the team does not have a clear picture of the final product. To facilitate the planning and design of the software development project, the developing team can use one of the two most popular models for developing software projects, either the waterfall model or the agile methodology.

The waterfall model is a plan-driven model for developing software which means detailed documentation before the start of the development is essential. Because this model follows a sequence of steps with different goals and objectives, each development phase must become complete before advancing to the next phase. Therefore, using the waterfall model requires the developing team to plan and document the detailed requirements at the beginning of the project. These characteristics of the waterfall model make it an unsuitable option to pick for the software development project. Since there is a lack of clarity at the beginning of the software development project, this obscurity would create a high level of uncertainty at the very early stage of project development. This is because the information is constantly changing which leads to change in the client’s needs and requirements. Although the waterfall model is being considered the oldest method for software development, this model’s weaknesses inspired the software development industry to search for a better candidate that can overcome these issues and is being flexible in accepting and managing changes. The creation of the agile methodology was the solution that would potentially solve these problems.

Agile is the innovative way of thinking, ability to rapidly respond to constant changes, and finding the way to successfully manage and solve uncertain circumstances. Agile is about adaptability, accepting changes, and resolving issues as they present themselves. Consequently, the Manifesto for Agile Software Development was created with four core values:

* Individuals and interactions over processes and tools
* Working software over comprehensive documentation
* Customer collaboration over contract negotiation
* Responding to change over following a plan

But agile software development is far more than that. Agile software development is the common term that incorporates methods and frameworks used in software development based on the four core values of Manifesto for Agile Software Development and the twelve Principles behind the Agile Manifesto. One of the software development frameworks that use agile methodology and is the most often used framework between software developers is the Scrum framework.

Scrum defines as the framework that enables teams and businesses to produce and deliver high-quality products through collaboration and finding solutions for problems along the way. Scrum fundamentally follows the notion of incremental and iterative production that leads to optimization and reduces failure. In summary, Scrum Team utilizes Scrum Events and Scrum Artifacts to build and deliver a high-quality product to the customer. The Scrum Team consists of Product Owner, Scrum Master, Developer, and Tester. In a simple term, the Product Owner orders the production of the product, then with the Scrum Master’s guidance and help the Scrum Team turns that order into parts call Sprint that can be implemented with incremental and iterative builds, afterword Scrum Team and stakeholders at the end of each Sprint examine the results and order the new changes and adjustments and repeat the process cycle.

After the initial meeting of the client, Product Owner, and the Scrum Master for the SNHU Travel project, each of the Scrum Team members performs their task as follow to ensure the success of the final product:

The Product Owner is responsible to manage and maintain a Product Backlog that is efficient and effective and also responsible to maximize the value of the work produced by the Scrum Team. Because the Product Owner represents the stakeholders' needs, therefore the Product Backlog must reflect those needs for ensuring the proper implementation. For the SNHU Travel Project, the Product Owner ensured the project’s success by creating a Product Backlog that specifies the product goal and orders the Product Backlog items that are transparent and clearly describe and communicate the goal of the increment and the final project.

The Scrum Master is responsible to ensure the effectiveness and efficiency of the Scrum Team by educating the Scrum Team and the organization on the Scrum fundamentals. The Scrum Master’s knowledge and expertise of the Scrum would help the Scrum Team to understand every aspect of the Scrum and to improve on the utilization of the Scrum framework. The Scrum Master is a very valuable asset for the Scrum Team and the organization. For the SNHU Travel Project, the Scrum Master ensured the project’s success by removing impediments that impact the progress of the Scrum Team, educated the Scrum Team to improve their cross-functionality, enabled the Scrum Team to concentrate on producing high-quality product through each increment, and ensured effective Scrum Events that were beneficial to the Scrum Team.

The Developer(s) and the Tester(s) are responsible to ensure that at the end of each Sprint, the incremental production of a working product is deliverable. They are the core and the central part of the Scrum Team that develops the software and examines it based on the defined requirements in the Spring Backlog. They generally have the proficiency and the expertise to meet the definition of done. The Developer(s) and the Tester(s) would also acquire the required skills needed based on any specific project since projects could differ from each other. For the SNHU Travel Project, the Developer(s) and the Tester(s) ensured the project’s success by creating the Sprint Backlog and set a plan for each Sprint based on the project requirements, work toward the goal of the Sprint to deliver a useful increment and adapt as needed and producing the quality product by accepting accountability as professionals.

One of the fundamental blocks of creating software in a Scrum-agile software development project is user stories. User stories are non-technical descriptions of attributes within the software that provide functionality and value to the end-user. Generally, user stories are explanation of customer’s point of view that provides some insight on how the existence of a feature can benefit the end-user. Scrum Team uses Scrum Events and Scrum Artifacts to ensure user stories turn into the final product. The step by steps of the process is as follow:

1. Product Owner, Scrum Master, and the client meet. The Product Owner creates the Product Backlog. The client’s needs turn into the user stories and are added to the Product Backlog.
2. The Scrum Team chooses item(s) from the Product Backlog for Implementation in a Sprint, plans the Sprint, and adds chosen item(s) from the Product Backlog to the Sprint Backlog.
3. The Scrum Team works toward Sprint’s goals to produce a working and useful product increment during a Sprint.
4. The Scrum Team finishes the Sprint and Sprint Review and Retrospective take place. Stakeholders and the Scrum Team inspect the product increment. The Product Backlog will be refined as needed.
5. The Scrum Team picks another item(s) from the Product Backlog for Implementation in the next Sprint and repeats the process.

Of course, this is not a comprehensive list of everything that would happen during a Scrum-agile software development project. Also, it could potentially be different from one project to another because the client’s needs are different and consequently the nature of each project would be different. That was just an overview and summary of steps that would normally occur in a Scrum-agile project. For the SNHU Travel project, following those outlined processes of the Scrum-agile approach helped the completion of the user stories.

Welcoming change at any stage of the project development is one of the distinct characteristics of the agile methodology. Agile is highly adaptable and extremely flexible in accepting changes. Adaptability contributes to the project improvements and flexibility helps with the facilitation of direction change management of a project. Scrum would certainly utilize these attributes of the agile methodology to respond to changes that could potentially interrupt and shift the direction of the project to ensure the success of the final product. At the end of each Sprint, the Scrum Team and stakeholders inspect the produced incremental product and provide their feedback on the product increment. Usually, stakeholders decide and request any possible changes based on the presented product increment at this meeting. For the SNHU Travel project, after the client inspected the product increment, the decision for the change has been made and it has been concluded that providing the detox/wellness travel package for the customers would be an excellent option. SNHU Travel believes this change helps them to compete with other Travel agencies. Adaptability and flexibility of the Scrum-agile approach certainly enable the Scrum Team to implement SNHU Travel’s requested change in the product.

Information changes constantly that could consequently impact the client’s needs. Since the client’s needs change as the project progresses, Scrum Team needs to implement those adjustments to the product. Because the final goal of the Scrum Team is to produce a high-quality product that satisfies the customer and meets the end user’s needs. Therefore, constant communication becomes vital for the Scrum Team to stay informed and up to date about any changes and successfully collaborate to produce a satisfying final product. Communication also promotes openness and transparency that are important pillars of the agile methodology. For the SNHU Travel project, samples of communication would be as follow:

Sample email to the Scrum Team after the initial meeting with the client:

To: The Scrum Team

Subject: Creating a new and advanced booking system

Hello Scrum Team,

After the initial meeting with the client, SNHU Travel, we have decided to implement a booking system for them to increase their customer booking through their website by offering interesting and competitive travel packages to the customers. They are interested to continue staying on top by offering excellent deals on the places that customers want to travel to the most. I will collaborate with the Product Owner to create the Product Backlog and add items to it for implementation.

Thank you,

Scrum Master

Sample email to the Product Owner after the client requested some changes:

To: The Product Owner

Subject: Applying new changes clarification

Hello Product Owner,

After having today’s Scrum meeting, I have noticed that our client has been requested some new changes to be made to the software. Since we are in the process of developing software based on the previous requirements and the client’s needs, I will need to understand if we need to develop new software for our client. On the other hand, if we can implement the new requested changes in the current developing software what would be the priority of those changes?

Thank you,

Developer

Sample email to the Tester after the client requested some changes:

To: The Tester

Subject: New changes to the software

Hello Tester,

After communicating with our Product Owner, we have concluded that some major changes must be made to the developing software. Since we want to ensure that the final product satisfies our client’s needs, we would like you to be informed of these new changes and make appropriate changes to your test cases to be able to test and verify that our final product would perform properly.

Thank you,

Developer

The Scrum Team is a small team of professionals that is focused on a unified goal that is the Final Product Goal. They have the necessary skills to produce value in each Sprint (cross-functionality), and they also decide how to implement the product and what is each team member’s responsibility (self-manageability). The Scrum Team members hold each other accountable to meet the Definition of Done. This creates a sense of responsibility within the team that leads to collaboration between the team members.

The Daily Scrum is an important part of Scrum Events that promotes collaboration by identifying impediments and improving communications. Because the Daily Scrum creates an environment that Scrum Team can openly and transparently communicate about their success and collaborate to meet the Sprint goal. They can also discuss any obstacles that they have encountered during their work by identifying impediments. The Scrum Team can utilize any type of information radiator to facilitate the Daily Scrum meeting. The information radiator could be the physical Scrum board or the electronic version of it.

Although there are many advantages to use the agile methodology for a software development project, there are still some disadvantages to this methodology. Throughout this paper, some of the strengths of an agile methodology approach have already been explained. Therefore, here only some of the weaknesses of this methodology will be covered. Perhaps the most notable ones are the absence of specifics and the negligence on the paperwork. Because of the reactive and dynamic nature of the agile methodology and the high level of uncertainty in a software development project, it is very hard to estimate the exact cost of implementation and the required time to finish the project. Without enough attention and not having the required experience, even the approximate estimation of the project could end up being incorrect. As it was pointed out in this paper, agile methodology is very flexible in accepting changes, therefore, the change or even constant changes in a software development project becomes inevitable. Consequently, this can lead to a constant shift in the direction of the project that may not provide enough time for the team to do the proper documentation of the development stages. This is how the documentation that is one of the important aspects of a software development project, can be easily neglected.

But the Scrum-agile approach was an effective method for the SNHU Travel project. Because the Scrum Team was able to easily manage the shift in the direction of the project and implemented the client’s requested changes in the software. It was the correct option to pick for this software development project.

**References**

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