О.В. Зубенко
П.О. Столярик

SCRUM – NEW WAY OF THINKING IN PROJECT DEVELOPMENT

Вінницький національний технічний університет

Abstract

This paper describes the structure and advantages of the methodology implementation of Scrum for increasing of the efficiency of project development.
Keywords: *agile, scrum, methodology development, information technology.*

Анотація

У документі описано структуру та переваги впровадження методології розробки Скрам для підвищення ефективності розробки проектів.
Ключові слова: *agile, скрам, методологія розробки, інформаційні технології.*

Introduction

The actuality of the topic of the research is due to the fact that there are many approaches to the management of project development. In addition, not all of them are appropriate for different purposes that are necessary while developing. In particular, there are two main and widespread software development methodologies - agile software development and waterfall model of software development.

Scrum is one of the varieties of flexible agile methodologies which allows to respond rapidly on external requirements that are changed so fast [1]. The basic concepts of Scrum are iteration and sprint. The entire workflow is divided into time segments, which are called iteration (sprint). The iteration includes planning, direct development (sprinting) and testing; the iteration has strict time limits. Thus, Scrum is focused primarily on the timing of tasks.

Scrum overview

In an era of information technologies, it makes sense to provide the customer with an opportunity to take directional part in developing of software product that he needs. Because of regular fleeting changes of market needs, it is almost impossible to adapt the consumer demands by project that had been planned at least a year ago. The time that would be wasted from planning to release the project using common waterfall model of development will spend a lot of money. It simply will not meet the requirements that are established for today.

The waterfall model is a relatively linear sequential design approach for certain areas of engineering design. In software development, it tends to be among the less iterative and flexible approaches, as progress flows in largely one direction ("downwards" like a waterfall) through the phases of conception, initiation, analysis, design, construction, testing, deployment and maintenance [2].

However, there is another way to manage project development. Scrum is a framework that provides a range of capabilities for productive and creative development of products with the highest possible value and solutions of non-trivial tasks in the working process.

The main elements of the framework are as follows: scrum team, roles associated with them, events, artifacts, rules. Each of the mentioned elements of the framework corresponds to a certain purpose and is mandatory for the successful use of Scrum.

The basis of Scrum is the theory of empirical control - empiricism. According to this theory, the source of knowledge is experience and decisions - real data. In order to improve the degree of predictability and effectiveness of risk management Scrum uses iterative and incremental approaches. The process of empirical management is based on three so-called pillars: transparency, inspection and adaptation.

Scrum team

The Scrum team consists of the Product Owner, the Development Team and the Scrum Master. Scrum teams are self-organizing and cross-functional. Self-organizing teams decide independently how to do their work, without using external guidance. The team model in Scrum assumes minimization of external dependencies, with flexibility, creativity and productivity. Scrum teams create a product iteratively and incrementally, maximizing the opportunities for obtaining feedback. The next version of the finished product should be available in any moment of time. Providing a ready-to-be-supplied Product Increment makes possible its permanent availability for use.

The Product Owner is responsible for obtaining the maximum value of the product and the work performed by the Development Team.

The Development team consists of professionals who are working to create potentially ready for the release of Product Increment at the end of each Sprint. Only members of the Development team create an Increment. The self-organizing Development Team independently coordinates its work, resulting in a synergy and increasing of efficiency and productivity.

The Scrum Master is responsible for the proper functioning of the Scrum process, its understanding of all team members and their compliance with the theory, rules and practices of framework.

Scrum Master is the leader and servant of the team's interests and Scrum-processes. He helps to understand the most useful interactions in Scrum-team and the optimization of the least efficient processes. Scrum master helps to transform these interactions towards the maximum value created by Scrum team. At the same time, Scrum Master is a coach, mentor and the inspirer for the development of an effective team.

Scrum Events

The events prescribed in the Scrum are envisaged in order to give the process a regular character and make the minimal number of unnecessary meetings. Each event has time constraints. The duration of the Sprint cannot be changed after its start. Other events can be completed ahead of schedule providing that goals of meetings.

Sprint serves as the core of Scrum. Sprint is the time interval of the maximum duration of one month, during which the team creates a functioning and ready to use and to release the Product Increment. It is desirable to keep the duration of the Sprint unchanged for the whole development process. The new Sprint starts right after the end of the previous one. Sprint consists of Sprint Planning, Daily Scratch, development, Review Sprint and Retrospectives Sprint.

Sprint Planning is an event in which the Scrum team discusses the amount of work for the Sprint that has just begun and jointly creates an action plan. Sprint planning is limited in time - a maximum of 8 hours - for the Sprint lasting one month. Shorter Sprints suggest a shorter time planning.

Based on the results of the Sprint Planning, the Scrum team receives answers to the questions:
1. What will the increment be at the end of the Sprint?
2. How to organize work to get a ready-made Product Growth Rate?

Sprint's goal is the benchmark set for Sprint, which is achieved by performing a part of the Product Backlog. Sprint's goal is formulated during the Planning and explains to the Development Team why an Increment is created. The Sprint goal provides the Development Team with sufficient flexibility regarding the volume functionality developed in the framework of the Sprint.

Daily Scrum is an event with no more than 15 minutes duration for the Team Developments aimed at creating and synchronizing the work plan for the next 24 hours.

The Sprint Review is conducted at the end of the Sprint for inspecting the Increment and, if necessary, adapting of the Product Backlog. The Scrum team and stakeholders jointly discuss what was done for the Sprint during the Sprint Review. This data, as well as any changes to the Product Backlog in Sprint, serves as a basis for discussion of the following steps that can be undertaken to optimize the value. The result of the Sprint Review is a revised Product Backlog. It includes elements that can enter the next Sprint. The product backlog can also be supplemented to take advantage of new business opportunities.

Retrospective of the Sprint is an opportunity for the Scrum team to explore themselves and create an improvement plan for the next Sprint. The main goals of Sprint Retrospective are:
1. Inspection of the Sprint success degree regarding people, the relationship between them, processes and tools.

2. The discovery and ordering of what was well and what is to be improved.
3. Creating an implementation plan for the improvement in the process of running the Scrum team.

Scrum artifacts

The Product Backlog is an ordered list of everything that might be necessary in a product. This is the only source of demand for any kind of change that can be introduced into the product. The responsibility for the Product Backlog, including its contents, availability and ordering of the items, is borne by the Owner of the Product.

Sprint Backlog is a set of Product Backlog elements selected for the execution in the current Sprint. It includes both a plan for the development product Increment and a plan to achieve the Sprint's Goal.

The increment is the sum of all the elements of the Product Backlog, completed during the Sprint, and all increments of the previous Sprints. By the end of the Sprint, the Increment must be Ready, which means that it meets the Scrum Team readiness criterion and readiness to use.

Conclusion

In conclusion, the main benefits of Scrum using are the following:
1. A lightly controlled method insists on frequent updating of the progress in work through regular meetings. Thus, there is clear visibility of the project development.
2. Like any other agile methodology, this is also iterative in nature. It requires continuous feedback from the user.
3. Due to short sprints and constant feedback, it becomes easier to cope with the changes.
4. Daily meetings make it possible to measure individual productivity. This leads to the improvement in the productivity of each of the team members.
5. Issues are identified well in advance through the daily meetings and hence can be resolved in speedily.
6. It is easier to deliver a quality product in a scheduled time.
7. Agile Scrum can work with any technology/ programming language but is particularly useful for fast moving web 2.0 or new media projects.
8. The overhead cost in terms of process and management is minimal thus leading to a quicker, cheaper result.

СПИСОК ВИКОРИСТАНОЇ ЛІТЕРАТУРИ

1. Scrum. Взгляд программиста [Електронний ресурс]. – Режим доступу до матеріалу: https://habrahabr.ru/post/300662/
2. Waterfall model [Електронний ресурс]. – Режим доступу до матеріалу https://en.wikipedia.org/wiki/Waterfall_model

Науковий керівник*: Зубенко Оксана В'ячеславівна* – викладач кафедри іноземних мов, Вінницький національний технічний університет

Столярик Павло Олегович – студент групи 1ПІ-17м, факультет інформаційних технологій та комп'ютерної інженерії, Вінницький національний технічний університет, м. Вінниця, e-mail: pavelstoliaryk@gmail.com.

Supervisor: *Zubenko Oksana*, teacher of English, the Foreign Languages Department, Vinnytsia National Technical University, Vinnytsia

Stoliaryk Pavlo – Faculty of Information Technologies and Computer Engineering, Vinnytsia National Technical University, Vinnytsia, e-mail: pavelstoliaryk@gmail.com.