

# Adopting SCRUM Agile Project Management for Managing Academic Institutions

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**Abstract** - Managing academic institutions can be challenging and different than managing other organizations. This is because the staffs are highly qualified and may even be at the same and sometimes even higher academic level than their managers. An autocratic style of leadership may lead to tensions and be problematic for the organization. Therefore, a more democratic approach is required. SCRUM is an agile project management method, mainly used in IT domain. SCRUM teams have no manager and rely on the team to control its members. This paper will attempt to illustrate, how the SCRUM methodology can be used to manage an academic institution.

**Index Terms** – Academic Institution Management, Agile Project Management, SCRUM

## 1.0 INTRODUCTION

Academic Institutions differentiate in plethora ways from other organizations, as they are dealing with educating their students and conducting scientific research [1]. Managing such institutions can be different than managing other types of organizations and it requires different management approaches. This is because, usually the human resources to be managed are highly qualified and highly respected and maybe at the same of even higher academic level than their managers, for example it is not uncommon for a head of department to be at the academic rank of an Assistant Professor and some of his staff to hold the rank of Professor, with more teaching experience, research contribution and even influence within the department. An autocratic style of management may lead to tensions in the organization and possible have negative impact. In effect, a more flat and democratic style maybe seem more appropriate [2].

SCRUM is an agile project management methodology mainly used in the IT sector [3]. SCRUM has a more flat management [4] and like all agile project management methods, tend to focus more on activities that add value directly to an organization rather that supportive activities [5]. Members of SCRUM teams are equal and have no manager. Instead of a manager, they use the influence of the team to motivate or push the team members to complete their tasks [6].

This paper proposes the use of SCRUM agile project management methodology for managing academic institutions.

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The question that arises is if SCRUM can be applied outside the IT domain, in different teams across different hierarchy levels that needs to work together in a top down approach. This paper will attempt to answer this question by illustrating how SCRUM can be used to manage academic institutions.

## 2.0 AN OVERVIEW OF SCRUM

SCRUM is an agile project management method, mainly used by software development teams [7], however, it can be used to manage projects and activities in different areas as well. SCRUM teams are self-organized and self-managed, effectively there is no need for a manager [6]. The key idea behind this flat hierarchy, is to engage the people who will actually do the job, they know much better how to do it and how much time it will to accomplish it rather than their managers who may not even be relevant to the field. Like all agile methodologies that follow the agile manifesto [5], and as it can be deduced from it, SCRUM favors activities that add value directly to the organization over other supportive activities such as documentation. This does not mean there is no value on supportive activities, but it means that SCRUM favors actions over plans. SCRUM also promotes resources sharing over dedicated use of people and equipment. In such a way it has limited division of roles in a team like: the Product owner, the SCRUM master and member(s). Briefly, the product owner is responsible for representing the client and clarifying the requirements. The SCRUM master is the coach of the team, organizing the team's activities, meetings and helping the team members to overcome various difficulties that may appear during a project. Neither the Product Owner nor the SCRUM master are managers. Everybody in the team is a team member and all of them work together to achieve the organization's goals and objectives, set by the business and introduced by the Product Owner. The SCRUM teams usually have six to eight members. All the decisions about the team are made, reviewed and enforced by the team in a democratic style of management.

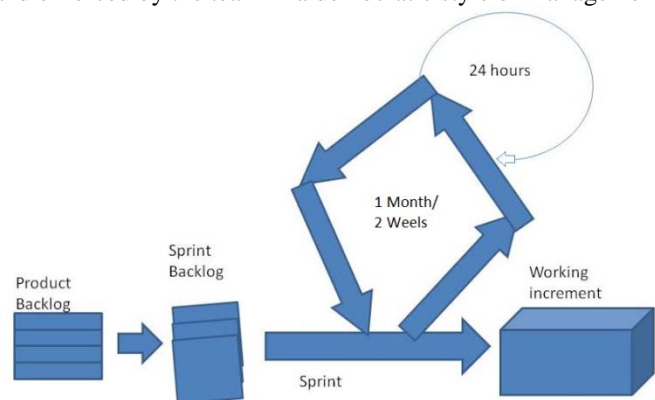


Figure 1: SCRUM overview

Figure 1, explains the process of SCRUM agile methodology. At the beginning of the project, a draft task list is generated by the business in collaboration with the Product Owner. These tasks may change during the project, due to changes in the business environment, or for other reasons. These tasks are prioritised and divided to releases forming the Product Backlog.

SCRUM delivers products or services that add value in incremental releases, called ‘Sprints’. Usually, each release has duration of 2 weeks to 1 month, but this can change to fit the project needs. Each release must produce product/services or complete a number of tasks that add value to the organization. The Sprint starts with the Sprint meeting. In this meeting, the Product Owner brings the prioritized tasks, desired to be included in the next release. These tasks are called Stories, and are organizational requirements. During the Sprint meeting, the team will review each story and estimate it, by using an agile estimation approach, for example, story points [8] and initially, assign it to a team member. Later on during the Sprint, a story may be reassigned to another member, in case that the original owner of the story is overloaded with tasks while other members have still capacity to take more, or if another member is more qualified for this task. If the team is overloaded with stories, they may refuse to take on stories with lower organizational value. On the other side, if they still have capacity, they may ask for more stories. So stories original intended for a release, may be moved to another release. At the end of the Sprint meeting, the Sprint Backlog will be created.

During the Sprint, the SCRUM master will call for daily Stand-Up meetings. These meetings are five to fifteen minutes long. During the meeting, the SCRUM master will ask every member three questions;

- *What they did yesterday?*  
An overview of the work completed over the last working day.
- *If there are any problems?*  
If they are still any problems that impended the progress. In case of a positive response to this question, the SCRUM master should help the team members to solve the problem, either directly or by associating the member with the required resources for solving the problem.
- *What they will do today?*  
Tasks, actions that they will do today.

During the meeting, the members are expected to provide a brief overview, avoiding including too many technical details. Engaging discussions during the meeting is not recommended as this is intended to be a progress report meeting that will monitor and motivate the team members and not a resolution meeting. In case of any problems, the SCRUM master can follow up with the involved parties after the meeting.

SCRUM promotes good communication and teamwork [6]. During the project, the Product Owner, is available for clarifying related requirements to the team. The team members work together, helping each other to complete the tasks. The

productivity of the team, is usually measured by the ‘Velocity’ (how many stories they completed/time); calculated based on the total productivity of the team and not individual productivity. The key idea behind self-managed teams is that that if a team member does not perform well, then the team will put pressure and provide assistance to bring this team member up to speed. This SCRUM dependence towards the team is also its biggest drawback, because if they majority of the team members are focused on the benefits of the organization the team will fail. Aligning all the team members that may also have their personal agenda can be proven a big challenge for their SCRUM Master. However, once a team starts, it is like a well-oiled machine. Another, potential drawback of the method lies within the principles of the agile manifesto [5]. Because the team, focuses of the tasks that have add value directly, they may pay less attention to supportive activities such as documentation. This may lead to future problems, in terms of maintainability and extensibility of the system or process. This however, does not mean that if there is a high priority story for producing documentation or any support document, it will be ignored. Instead, it will be treated like any other story. According to the author this is the best way for inserting this type of activities to a Sprint. The next section will show, how SCRUM can be applied for managing academic institutions.

### 3.0 ORGANISATIONAL STRUCTURE OF A COLLEGE

This section will illustrate how the process of SCRUM can be adopted and optimized for managing an academic institution at a college level. Focus is given on this level because it is more close to the main function of the institution but the same approach can be extended to cover the whole organization. Figure 2, shows a generic organizational structure of a college. The aim of this structure is aid the illustration of SCRUM, however the same logic can be applied to colleges with small variations in their organizational structure.



Figure 2: College Organizational Chart

As it can be seen from Figure 2, The Deanship is the leading the organization. Under it, there are two Vice Deanships, the Unit of Development and the Director of Administration. The Unit of Development, has responsibilities regarding to quality assurance, implementation of standards and similar activities. In this example, its size is a team of six to eight people, but in

some other cases it may vary, depending on the size of the college. The Vice Deanship of Academic Affairs is responsible for the academic issues of the college and the academic departments. Each academic department has a number of committees, for example committee for curriculum development, examination committee and so on. Each committee has six to eight academics from the department. The Vice Deanship of Research is responsible for managing the research activities of the college. The Directory of Administration, is responsible for the various units within the college. For example maintenance and IT support. Management entities are managed by council/committee that consist of the head and a secretary from the entity, and the head of the heads of the entities that are under this entity in the organizational structure. For example the Vice Deanship of Academic Affairs is managed by the Vice Dean of Academic Affairs and the Head of the Departments. Each Department is managed by the head of the committees accordingly.

#### **4.0 APPLYING SCRUM TO ACADEMIC INSTITUTION MANAGEMENT**

The key idea behind applying SCRUM for managing academic institutions is that each management entity will be considered as a SCRUM team. The head of the management unit will be the Product Owner, and the secretary or one of the other members the SCRUM master. Any member of the team can be a SCRUM master as long as fulfils the criteria and is willing to do it. However, due to the workload involved, it is recommended that secretary can be appointed for this role. The Stand-Up meetings can be replaced by daily conference calls, where each member has to answer, what it was done the day before, if there were any problems and what it will be done today. An electronic version of the Story Board will be required for managing the team. The members of each team will be also the Product Owners of their teams. So the Head of the Departments, will be members of the Vice Deanship of Academic affairs, team but they will also be Product Owners, in their Departments. The committee members of each department, will be members in the Department council team but Product Owners in their Committees. At the beginning of the Sprint, the Product Owner of a management entity will bring the tasks that need to be completed during this sprint, like any Sprint Meeting. During the meeting, the tasks are estimated, accepted and allocated to different members. However, unlike a normal SCRUM team, the tasks are not going to be completed by the individual person but by the member's team. The member as a Product Owner in his own team, will be responsible for breaking down the work to be done in prioritized stories and supply these stories to its own team, in their Sprint meeting. After the end of the Sprint Meeting, the member will take all these tasks to its own team, where the member will now be the Product Owner. The same process will be repeated until tasks reach individual persons. It is worth to be noted that the tasks are not going to be the same. The teams closer to the leadership, will have higher level goals and objectives, while the teams at the bottom of the organizational

structure, will have less complex but precise tasks. It is the belief of the author that by using this type of recursive approach, SCRUM but be used to manage an academic institution.

#### **5.0 LIMITATIONS**

Applying this approach for managing the institution, may be difficult at the beginning as the Heads and Chairmen, may feel that applying the SCRUM methodology aims to take away their powers. This maybe be true in some extent, but the real aim of applying the approach is to create a high performance, less bureaucratic working environment [9]. In order to manage their resistance, they can be allowed to keep their titles, for example, Head of the IT support unit and so on, as long as they do the tasks required by the role of the Product Owner. The second limitation is that it adds some complexity to the management process as the members will be involved with more than one teams. They will be members in one team and Product Owners in the other team, so daily they have to attend two Stand-Up meetings. In general, more close to the bottom of the organizational structure, there is a need for daily meetings. However, teams at a more high level in the organizational structure may not be required to have daily Stand-Up meetings. Instead, they could limit them to two times per week. Also the duration of the Sprint could be adopted accordingly as long as it does not cause co-ordination problems between various teams.

#### **6.0 CONCLUSION AND FUTURE SCOPE**

This paper illustrated how the SCRUM methodology can be used to manage academic institutions. The method was applied to "generic Organizational Structure" of a college. While this structure may not be the same with some academic institutions, the author believes that the method presented in this paper, can be easily tailored to map most academic institutions. The key idea, is that each managing entity will be considered as a SCRUM team. The head of the entity will be the Product Owner, the secretary the SCRUM master and rest of the team will be the members. Each member of a team will be the Product Owner of its own team, so recursively the tasks will be passed to the teams, lower in the organizational structure. Further to the main limitations of applying SCRUM to manage academic institutions is that people who hold manager positions may feel threaten if their title is changed to Product Owner. The approach allows them to keep their current titles as long as they also deal with the tasks of the Product Owner. Another limitation of this approach is that it adds some overhead, as some members will belong to two teams and may not even be in the same locality. To solve this problem, Story Boards can be replaced with electronic boards and Stand-Up meetings with conference calls. The frequency of the Stand-Up meetings can be also be reduced and the duration of the Sprint can be modified to fit the organizational needs. Following this approach, this paper demonstrated how SCRUM can be used to manage academic institutions.

## 7.0 ACKNOWLEDGEMENT

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