Building Leaders in a Continuous Learning Organization Through Agile Development

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Abstract

Information is key to modern business. Technology drives how organizations put to proper use the loads of information in their purview. In an era where the data-deluge and ever changing technology contend with each other to drive business – sometimes out of gear, the need for dynamic leadership at grass root levels is being felt like never before.

Leaders, who enable teams to be productive even as they are in a continuous learning mode, are the call of the day. They will be the key to productivity in the post-modern business scene.

Leadership is developed through practice and experience. Different development methodologies have their characteristic style of driving tasks. This paper seeks to present the style recommended by the Agile methodology, which is fast becoming a industry wide best practice. It delineates the role of Agile in development of young leaders in a continuous learning organization.

Leaders emerging out of Agile development will be well matured to lead the organization to greater levels of capability.

The paper discusses in detail the various leadership skills inculcated through the Scrum methodology, which is a type of Agile development. The paper would also be supported by a case study to show the improvement brought about in the team and leadership skills through the Agile– Scrum development.

1.0 Introduction to Agile – Scrum

In the dynamic world of software, change is inevitable. In such an environment, meeting the changing requirements and providing software solution is a challenging task to any organization. Traditional software development methodologies characterized with sequential processes, and the related management approaches can be effective in developing software with stable, known, consistent requirements. In a volatile environment, requirements for systems change very rapidly. Even seemingly minor changes can produce unanticipated effects as systems become more complex and their components more interdependent. Project management approaches based on the traditional linear development methodologies are mismatched with such dynamic systems.

In such an environment, organizations have to look for short time-bound iterative development cycles to effectively deliver to the market expectations. Agile is one such methodology known in the industry.

Scrum is an agile, lightweight process that can be applied to manage and control software and product development using iterative, incremental practices. Wrapping existing engineering practices, including Extreme Programming and RUP, Scrum generates the benefits of Agile development with the advantages of a simple implementation.

Few of the salient features of Scrum are
-   A steady requirement list
-   Cross-functional resources
-   Short and focused daily meetings
-   Specific leadership
-   Fairly high degree of freedom
-   Team empowered to take decisions

The Scrum teams have generally 7 – 8 members as active members of the team. The teams will be led by one of the team members called *Scrum Master*. Each of the development team will have members from

different functional areas – Design, Development, Testing and Product Analyst. Customer representatives could also be a part of the team.

Each of the time boxed iterative cycles in the development cycle is called as a *Sprint*. Generally each sprint runs for about a period of 30 days. The entire sprint development process is divided into three phases - sprint planning, development of the items present in the sprint backlog and sprint review.

These small time-boxed development cycles are productive in a holistic sense. Such iterative cycles have also been seen as refreshing and energizing to both the scrum team and the scrum master.

In the next two sections, the general traits of a true leader and the characteristics of a continuous learning organization are described. Further, we will see how these traits are developed through Agile development.

2.0 Leadership Traits

Strong leadership is the backbone for any organization. Leadership could be visualized as the process of influencing others and driving towards achieving shared objectives and goals. In the present era, there is a great paradigm shift from technology to information. Views on various aspects are changing, for example, from competition to collaboration, from things to relationships, from controlled environment to empowerment, from uniformity to diversity, from stability to valuing changes, etc. To drive the organization in such conflicting environments, effective leaders are needed. Certain traits are characteristic of effective leadership. Listing a few important traits:

2.1 Inspire a Shared Vision

Every organization is looking for dynamic visionary leaders for its sustained growth and for a competitive advantage over others. The essence of vision in an organization is to ignite people into thinking beyond the company's existing capabilities and present environment. This will be the ultimate goal for all the individuals in the organization. A leader should have the ability to inspire his team to share the vision of the organization along with one's own vision and motivate the team to work towards it.

2.2 Motivate the Team

Motivation acts as a catalyst for the activities performed by individuals in an organization. Understanding ones needs and expectations is very important for the motivation of the team and an individual. Expectations will vary from person to person. Interests can be as varied as wanting a path for technical growth or attaining powerful positions in the organization or recognition through financial rewards etc. Timely identification of such needs and expectations and taking appropriate measures to meet them is very essential in keeping the team motivated. The leaders should be able to influence and motivate the team to take the organization to the peak of success.

2.3 Innovation

Innovation is the key to carve a good, successful and sustained growth for an organization and of an individual. In a challenging environment, creativity and innovation are the major factors in excelling over the competitors. Individuals with new ideas and the ability to convert them to tangible success stories form the core of every organization that eyes the path of success.

2.4 Celebrating Team's Achievements

Celebration of achievement motivates a team to achieve more. It also ensures the correctness of the process followed by the team in achieving the goals. Successful completion of each milestone by the team should be treated as stepping stones for the final goal.

2.5 Challenging One's Own Status

In any system growth comes to end when it reaches a saturation level. However, there is no end to learning. Learning is an infinite activity. True leaders never get saturated with their thinking. They always look forward to greater challenges. They are always exploring different options to perform better and better. During this process of self-improvement, there is an overall increase in self-knowledge and also the team's skills. It increases interpersonal competitions in a healthy way, which brings transformation to the whole working sphere.

2.6 Setting an Example

Leaders set examples for others. If a leader wants others to follow a vision, he starts by taking the first step. When a leader practices what he preaches, he sets an example. The team members should not only hear what they are expected to do but also see it in the leader.
Leading by example also brings and registers a past successful event in the mind of individuals. These examples act as benchmark for the expected goals. The success got by following a leader boosts confidence and helps in building the core competencies of the team. Further, a role model will always lay a strong foundation for one's career.

2.7 Communicative Ability

Communication is the intangible channel that connects the leader and his team. The ability of verbal as well as non-verbal communication is a major trait of a leader. For example, when a leader "sets an example", he is indirectly communicating with the team as to what is expected out of the team. A leader should be able to express his thoughts clearly. Communication should not be restricted only to exchange of information but also include building trust and confidence level of the team. A leader should also be a good listener. There are surely many key areas even for leaders to improve and this can be recognized by being a good listener. This heightens the ability of interpersonal communication.

2.8 Succession Planning

As long we can see change in the environmental variables, we can see the movement of people continuously into and out of the organization. Changes could be primarily due to superannuation or due to resignations. In such situations, maintaining the flow of the organization activities is very essential. Leaders should be able to foresee the future and take steps to ensure the stability of the organization even in the event of non-availability of resources. Building co-leaders, who can take the place of a leader effectively, is very important for the future of the organization. This also provides a growth path for team members.

In today's context, even such salient characteristics are not adequate. A leader needs to be
- a boundary-less thinker, being open to ideas with the power of out-of-the-box thinking and the ability to see the big picture.
- a strong network builder, essential to expand the organizational relationship. It provides an opportunity to share other's uniqueness.
- a diplomat, because diplomatic relations strengthens the communication, negotiations and helps to create a collaborating environment
- an interpreter who will be able to influence others and expand the knowledge base of the organization.

3.0 Attributes of Continuous Learning Organization

Learning in the universe is a continuous process. There is no such a thing as a perfect individual or organization. Having said that, a Continuous Learning Organization is one in which people at all hierarchies, individuals and team, are continuously increasing their capacity to produce results they are concerned about. Such an organization encourages learning, promotes exchange of information between employees that helps in creating a more knowledgeable workforce. It is a flexible organization that will work towards its shared vision with the help of innovative ideas from its people. The culture of organization plays an important role in the establishment of a continuously learning organization. A few of the primary factors are
- Environment
- Empowerment
- Leadership
- Awareness
- Learning
- Teamwork

Learning organization should build a working culture that
- Thrives on changes
- Encourages experimentation and innovation
- Is ready to take risk
- Has a sense of caring towards the people and process

4.0 Agile Development in a Continuous Learning Organization

In the present world, the only thing that is constant is change. In order to shine in the current business world, one should be an expert in change management. Agile development methodology is well suited for a learning organization that is well adapted to changes. The way in which the Agile development blends with the inherent nature of a learning organization is described below.

4.1 Culture and Value

Culture acts as the environmental base for an organization. By definition, culture is a pattern of shared basic assumptions and practices that the group learned as it solved its problems of external needs and internal integration that resulted in achieving its goals. These could be taught to new members as the correct way to perceive, think and feel when they encounter the same problems. The scrum environment working principles of collaboration brings the culture practiced in different organizations together. The cross culture gaps are getting addressed in the initial phases of the development by regular interactions between the various stakeholders. This builds the relation with the team in the organization and also with the customer. Working closely with the cross functional groups, value systems across the organization are getting shared with the team.

4.2 Individuals and Team Skills

Individuals having skills in different functional areas get together to form a team. Peer programming will add value by understanding the strengths of each other in the team. It helps in validating the initial phase of the project.
In the ever-growing software industry, the influx rate of resources is also following the increasing trend. In the process, industries are finding it difficult to acquire rightly skilled resources. More over, in the product development work area, domain expertise plays a very significant role over the technical skills. Enhancing the domain knowledge is more of an experience driven process when compared to acquiring technical skills. In such situations, building teams becomes a big task for product development organizations.

Breaking a large team into smaller teams, as it is being done in the Agile - Scrum development, and involving the team in developing a set of functionalities will help in bringing the team to the stream. The scrum teams working in small numbers are focused on their work and at the same time will be having high visibility.

As each team member in scrum teams are empowered to choose the task of their choice in the available backlog, the confidence level of individuals also gets boosted. This self energizes the team and there by the team gets motivated. The motivated team continues with their innovation, which results in continuous improvement and growth of the organization.

4.3 Management Process in Team Formation

The process followed in an organization plays a very important role in building the organization. The structured process of team formation of Agile – Scrum methodology that is given below results in a matured team.

Forming: The initial stage in forming a team depends on the team leader. In this stage the team is not clear about the objectives and the vision. The responsibility to guide the team, to take decisions for the team lies with the leader alone. Clear-cut processes for the activities to be performed are not yet defined.

Storming: After the initial blindfolded situation, the team sets into the storming mode. Compared to the initial stage, the clarity with respect to the purpose and objectives of the team is increased. But certain uncertainties still persist with regard to the roles and responsibilities of the members. Each member vies for positions within the team. The leader still takes decisions on behalf of the team.

Norming: The Norming stage usually sees a sense of solidarity within the team. There is a general sense of agreement within the team. Roles are beginning to get formed. Decision-making is now a group activity with smaller decisions being delegated to individuals. There is a sense of unity prevailing in the team members and they usually take part in social activities together. A distinct working style will also start to develop within the team.

Performing: The initial uncertainties pertaining to the objective, vision and purpose of the team is completely gone. The team is now aware of its strategy and goals. Leader need not be as important in this stage. There is a high degree of autonomy that is prevailing. Leader still oversees the critical decisions and the achievements by the team. The team is matured to such a level that even if disagreements occur, the team is able to resolve it within itself.

Transforming: The final stage is the transforming stage. This is the stage where the team is completely in synchronization with each other and the system as a whole. In this stage we could see the true leader who could transform the entire system.

4.4 Recognition and Reward System

The recognition and rewards system in any organization will act as token of acceptance for the activity performed by individuals and teams. Structured rewards and recognition system will help in knowledge sharing across the organization and also contribute towards a high degree of employee satisfaction. There is a distinct difference between reward and recognition. Recognition is a public acknowledgement of an individual's or team's achievements. Reward is often tangible and usually will include money, gifts or certificates etc. Rewards may or may not be public.

Evaluating accomplishments for recognition and rewards can be classified broadly as in an organizational perspective and an individual perspective. Both these systems for evaluations are necessary. The intrinsic need for acceptance of ones expertise by peers and the organization is often satisfied by individual rewards and recognitions. This motivates the individual and the team to perform with a sense of pride and satisfaction. There is complete transparency with regard to the accomplishments of every individual within the scrum team.

4.5 Sense of Ownership

The scrum team has freedom in selecting the task from the available pool of functionalities to be developed. Thus, the team members will be working with choices of their own. Team members communicate their progress on these tasks regularly in meetings. This builds a sense of ownership for the tasks taken up by them. Subtle competition also arises among the team members and they begin to work with more conviction towards accomplishing assigned tasks. Such a sense of commitment and ownership in every individual ends up in effectively accomplishing the final goal of the team.

4.6 Learning

Continuous learning is very essential to be inline with the changing system. Especially in the product development area, long engagement with a single product development keeps the team out of touch with the technological advancements taking place in the outside world. To best utilize the technological advancements, the iterative development of Agile – Scrum provides a good opportunity.

5.0 Developing Leaders in Agile

The importance of effective leaders for the growth and sustenance of an organization has been seen. Let us see how Agile-Scrum influences in building leaders.

5.1 Hierarchies to Networking

In traditional software development methodologies, information flow in the project team takes a stepwise path that is based on the hierarchical structure of the team. However, the Agile development methodology removes the hierarchical team structure and hence information exchange follows a collaborated network. In case of absenteeism, there is no hindrance to information flow and the system does not break. It continues to work with minimum disturbances. This structure also helps in establishing varied contacts among the team members and results in expansion of their communication networks.

5.2 Collaborated Development

The Agile methodology ensures team work in a collaborative manner. Regular involvement of the primary stakeholders ensures such a collaborative environment. Participation of the stakeholders during planning phase of the sprint and the sprint review phase validates the deliverables of the iterative development cycle. This ensures delivery of a matured product with minimum expectation mismatches. Individuals working in a scrum team have greater opportunity of knowledge sharing during the development. Such collaboration creates a synergy in the team that maximizes the productivity.

5.3 Adapting to Changes

The most common obstacle faced by any development team in the software industry is the constantly changing requirements scenario. The project team should be able to adapt to such frequent changes without affecting the productivity or the schedule. By principle, the Agile method, is followed in software development to address this volatility of requirements.

Agile works on an iterative model, the sprint model, that is well suited to changing requirements. These sprints are small time-based iterative cycles that have a set of stable requirements. Due to small time intervals in the completion of each sprint, the next set of requirements can be handled in the upcoming sprints.

Such quick responses to requirement changes help in many ways. It ensures delivery of the product on time according to market expectations, which enables active presence of the organization. It can manage changes very effectively which results in a very strong customer relationship. Customer satisfaction and delight being the key factors for every organization, ensures the growth of the organization. Finally the teams following this practice will be geared up to face the changing situations and will be ready to work without losing confidence. Since they can view tangible success frequently, motivation level is very high. Leaders of such teams will be skilled enough to handle volatile scenarios and they build up to be situational leaders.

5.4 Empowerment

Empowerment is the power of sharing and the delegation of power or authority to subordinates in an organization. Key elements that need to be looked in view of empowerment are Information, Knowledge, Discretion, Meaning and Rewards.
In the Scrum development methodology, each the team member is empowered to take decisions. However the entire team will be evaluating the proposals and it selects the best one. In this process, individuals will evaluate own decision and proceeds with the team's vote. Information and knowledge are getting shared in such meetings. Rewards for achievements and good decisions will further help in empowering the team.

5.5 Effective Communication

Each team member represents his task in meetings and is responsible for its successful execution. There are regular meetings conducted in which the member communicates to the others his progress and issues if any. This helps in developing clarity in thought process and hence builds effective communication skills in every individual. Further, there are regular discussions held with all the stakeholders which bring everyone on the same plane of understanding. This reduces the chances of mismanagement of requirement understandings which can arise due to lack of communication.
Since customer interaction is done directly by the team members on a need basis, the customer expectation is not misunderstood and the entire team is well aware of the goals.

5.6 Driving Towards Vision and Mission

The scrum team regularly reviews and evaluates its goals. Corrective actions are taken at the early stages of the cycle to reach the goals effectively. This ensures that the team is in the right direction in achieving its mission. Each and every team in the organization is aware of the goals and is indirectly working towards achieving the vision of the organization. Regular organization feedback on the team's performance will help in constant awareness of the vision and mission.

5.7 Innovation

A scrum team that is working in a collaborative fashion has large opportunities to share values and knowledge. During this process of knowledge sharing, extensive brainstorming sessions are conducted which results in different and new thought processes. Such sessions give birth to creative and innovative ideas that help in achieving the team's goals. It also results in expanding the knowledge and innovative base of the organization in a holistic sense resulting in an edge over the competitors. Fast market acceptance of innovative ideas is generally seen due to quicker iterative cycles. Hence there is a sense of validation and acceptance of the team's work. This motivates the team.

Effective Leaders Through Agile

A scrum master plays a major role in taking the team forward and leading it to success in Agile method. He is well equipped with all the leadership traits listed above due to his experience with the Agile practice. Even though he is a facilitator, he has all the qualities of an effective leader to lead the scrum team.

External to the scrum, he is the primary contact for the management. He is constantly reviewing the progress of the team, addressing any issues that act as obstacles for the team's progress and protecting the team from the effects of such obstacles. He is actively involved in forming the scrum team and is mainly responsible for the growth of the team from the forming to the transforming stage.

6.0 Case Analysis

Siemens, a global organization, is into development of variety of products belonging to various verticals. "Soarian" is one among the many hospital management products by Siemens that has contributed to the global healthcare system. This product is being developed with cutting edge technology. Though various versions of product have been released to the market, organization is not satisfied with the rate of releases that are made. One of the reasons was the frequent changes in the technology and as a result, changes in the customer expectations.

To meet the customer or market expectations in such a changing environment, the organization moved towards a different methodology for providing regular updates to the customer with the actual product. The new method, Agile – Scrum method, was adapted for developing the upcoming releases of Soarian. Soarian being an Enterprise wide product has various sub-product lines, like Soarian clinicals, Soarian Scheduling, Soarian Financials etc. As a sub-set to Soarian clinicals, there are various departmental solutions – Cardiology, Oncology, and Operation Room Management. Such applications are also made available under Soarian product family. From the beginning of 2005, all these subsystems started their migration to the Agile way of development. Since then number of sprints have been completed and subsequently various versions of the product has been released to the customer.

During the migration process, considerable changes in the organization were observed. Apart from changes due to the teams migrating from the traditional method to the Agile method in the development of the product, noticeable changes were observed in the characteristic of the team.

Delivering the Releases

Usually, the entire set of customer requirements are managed through a repository. These repositories are categorized with the various stages that are called with respective backlogs. All the requirements of the product are maintained in a Product backlog. Based on to the priority of the feature, release contents are prepared and these are available in release backlogs. The items available in the release backlogs are considered in various sprints. Each sprint will have its own sprint backlog. Each requirement in the sprint backlog is defined through a "User Story". This backlog is available to the scrum team. The team then proceeds with delivering the targeted objectives with regular feedback from the product analyst team. Having smaller achievable goals fresh in mind, shorter development iterations are accomplished most of the times. Cumulatively the product is made available to the market on time. Following such iterative cycles during development and proactive communication with the customer, the maturity of the application is always inline with the customer expectations.

Such regular successful releases to the customer motivated the team to celebrate their achievements. This contributed in self-energizing the team and carried the confidence of the team to a higher degree of performance.

Team Building

The scrum teams are usually made of members from various cross-functional areas, such that objective of the team can be met independently without interactions with people/groups outside the team. Usually a scrum team consists of software development engineers, testing engineers and product analyst. If the product is being developed simultaneously across different parts of the world, the team also might be distributed across the sites. The teams are empowered to take necessary decisions in delivering the objective of the sprint. Team members with various skill sets will work in a collaborative manner. Due to peer programming, the team members work closely with each other. This continuously builds the individuals skills. Effective teamwork is observed with self-motivation in delivering the sprint goals. As

each of the team members has freedom in putting forward his thoughts, various alternatives get evaluated which will be a value addition to the product.

It is observed that the confidence level of individuals is relatively higher at the end of the sprints. Constant mentoring due to their active involvement benefits especially the juniors. They get exposed to the various aspects in the product development. The regular progress reviews create a competitive environment. Innovative ideas and solutions are a result of this competition among the team members. As a result, the overall knowledge and skill level of the organization is improved. Moreover, due to a globally distributed team structure, the involvement by the scrum team for the daily activities bridges the common gaps that arise due to cultural differences.

Communication

 Regular meetings are practiced during the sprint to exchange the progress made regarding the sprint goals and to remove the obstacles or issues faced by the scrum teams.

The equality followed by the scrum teams ensures that everyone in the team expresses their accomplishment and also knows the individual and team hurdles that are to be cleared. At times, on a need basis, a member will directly interact with the customer. This type of communication process followed helps in expanding ones network and builds relationship.

Toward Vision and Mission

The features developed by the individual scrum teams usually represent a vertical part of the product. In the process entire team will be exposed to the realities of market. The regularly tuned product not only meets the customer needs but also adds technological value to it. Due to working closely with latest customer needs, the entire team is always in synch with market expectations. This inherently makes the team drive toward organization goals, which leads to achieving the vision and mission of the organization.

Leadership

Each individual of the scrum team is exposed to leadership activities and hence has the ability to emerge into an effective leader. Though the scrum master is considered as a facilitator, the role is more like a leader of the team. The role of a scrum master is not fixed for an individual of the team. Any team member can choose this role for one sprint. This enables most of the team members to perform the scrum master role. This helps in building the leadership traits.

7.0 Conclusion

As the Agile environment provides opportunity for individuals to follow the various leadership practices, multiple leaders emerging out of the Agile methodology can be seen. Continuous learning on various organizational practices practically develops motivated teams and the most matured organization.

Today, dynamic teams and leaders are essential for the development and sustenance of an organization. Both the people and the process should be adaptable to the ever-changing world. Agile process for development satisfies most of the requirements to adapt to the current volatile environment. The leaders born out of Agile are well equipped to handle the current needs of an organization. They are the true leaders of the future.

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Authors' Biography

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In the present role, Venkatesh is responsible for development and delivering modules of "Soarian", a hospital management product from Siemens. Venkatesh is involved since the inception of the product and has serviced as Test lead, Module lead. Currently he is providing services as Project Manager. Venkatesh joined Siemens in 2000 and has since been contributing for various releases of Soarian.

Prior to joining Siemens, Venkatesh worked as design engineer in a consulting organization called Tata Consulting Engineers from 1995 to 2000. Here, he provided services in designing and engineering various power and captive power plants. The major projects in which Venkatesh was involved are Jindal Power Plant, Kudremukh Captive power plant, Captive power plant for ACC and the Nuclear Power Project.

Appendix

Agile – One of the development methodologies following the iterative development cycles
Scrum – One of the types of agile development methods
Sprint – Period of development cycle followed in Scrum
Scrum Master – Facilitator for the Scrum team
Product Backlog – Repository of product level requirements
Release Backlog – Release specific requirement repository
Sprint Backlog – List of deliverables of a sprint