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Agile Project Management: A Communicational Workflow Proposal

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Abstract

Embracing agility brings change to companies and everyone involved, so people have a fundamental role in project development. It is essential that teams have a good communication, motivation and concern about quality and client satisfaction, Agile Manufacturing is using Agile Project Management to provide the right team to performance difficult tasks and achieve goals.
This paper proposes a team that deals with Agile Project Management, named as AGILE team, composed by a product owner, a team leader and team members, and a communication workflow proposal concerning the conjunction of 3 momentums (requirements analyze, planning and design) along the Agile Project Management. The proposed model is being implemented in a lightening manufacturing company in a very early stage.

Keywords: Agile Project Management, Agile Manufacturing, Agility, Team, Communicational.

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Nomenclature

APM	Agile Project Management
AM	Agile Manufacturing

1. Introduction

Globalization has intensified competition around the world at the same time as the market becomes unstable and client's requirement increases [1]. Costumer's products demands are more customized and in smaller quantities or single products [2]. Over the last years, enterprises have reinforced global systems and adopted lean programs in order to minimize costs. However, they have not invested as much in flexibility into supply chain management. Instead of becoming a competitive strength, it becomes a competitive weakness [1]. To cope with aggressive competition, companies must look beyond reducing costs and start paying more attention to variables of agility, quality and speed to ensure they will be able to please the unique needs of customers [1].

The concept of Agile Manufacturing was introduced as a new paradigm in industry in the report *21st Century Manufacturing strategy: Industry Led-View* and boosted the agile manufacturing movement in USA [3]. Agility allows companies to prosper in the dynamic and turbulent contemporary environments. In doing so, organizations are forced to lead efficiently with an unpredictable, dynamic and constantly changing environments [4]. Networking, reengineering, modular organizations, virtual enterprises, employee empowerment and flexible manufacturing are examples of solutions to solve this adversities. Initially, "adaptive organization", "flexible organization" and "agile enterprise" emerged. Some authors consider them as different approaches, others as synonyms, but generally all of them can adjust and react to change [5].

Agile production does not only involve flexibility and responsiveness, but it also involves adaptive capability [5]. Being agile integrates all the employees and information tools that participate in the entire production system. The main objective of agile manufacturing is to give a solution for customer's needs, not just a product, by involving them more closely in the process of developing a product [6]. In order to implement a good agile manufacturing system, companies must learn what the customer needs now and what he will probably need in the future [3].

Developing new products, processes and strategic business models need another approach to project management - Agile Project Management (APM). APM is based in practices, values and conceptual framework [7]. There's a possibility to combine agile with other methodologies, to create a hybrid solution. Sometimes enterprises use this kind of combination to deal with one or more phases, such as planning. Recently, some popular methods are frequently used with agile, including eXtreme Programming (XP), Crystal, Scrum, Adaptive Software Development, Dynamic Systems Development Method, and Feature-Driven Development, have been created to focus on rapid iterative delivery and flexibility [8].

2. Agile Project Management (APM)

APM is a project management methodology towards agile manufacturing. Being agile requires a great behavioral change which affects the way of thinking and acting of team members in the enterprise [5]. Traditionally, project managers have a structured and planned management, avoiding change of plans whereas APM focal point its to adapt and respond to inevitable changes, focus on continuous innovation, product adaptability, improved time-to-market, people and process adaptability, quality and reliable results [7], so APM could not suited to any work environment. For this reason, APM is a project management approach that must be adopted if the organization/company as agile as an intrinsic value in its culture and strategy and there are variables to consider such as the type of problem, organization, workforce and the worldview of leader [7].

2.1. Challenges to implement agile principles

Many companies adopted and try to adopt agility but some failed to implement the agile principles due to company behavior and culture, teams are still not prepared for this challenge. In literature, it is emphasized that it is necessary

to critically analyze all company data (whether internal, external, information about competition or consumer) and only when the all company understands the importance of data, it is time to adopt agility [9]. So, according to this approach, data is the element key to achieve agile management environment. Due to agile management being used in many software companies this could be information could be considered a vital aspect.

Information is an important strength, although it could be only a part of the challenge to implement agile principles. Building a team to lead and leverage the agile management (AGILE team) and the way this team communicates with the external stakeholders and the company internal colleagues (supporting cast) along the APM are the truly main challenges to successfully implement agile practices within a company. After this implementation, monitoring, control and continuous improvement must be done [10].

2.2. Agile Manufacturing and Agile Project Management

Agile Manufacturing (AM) emerged as strategy to respond and adapt to complexity and unpredictable environments [5]. It involves not just a company, but depends on the interaction between several companies, and so it is important to establish proper relationships between them. This ability becomes a competitive advantage [11], and so cooperation can be the key to possibly complementary relationships. Strategic abilities of agility can be applied to several aspects of enterprise: flexibility, responsiveness, speed, culture of change, integration, low complexity, high quality and customized products, and mobilization of core competencies [5].

In order to align Agile Manufacturing is essential to provide an important tool to support every project (product, service, product-service system, solution) developed by the company, and, for this reason, the APM is mandatory.

The APM must be based on the agile principles (Agile Framework) that stipulates an agile behavior among collaborators, specially the AGILE team (Agile Practices), that induces the company to deliver Products/Services according to the Customer Value, in a pro-active manner (Agile Values) and based on a transform environment that creates Opportunities and New Products. This APM overall framework is presented in Figure 1.

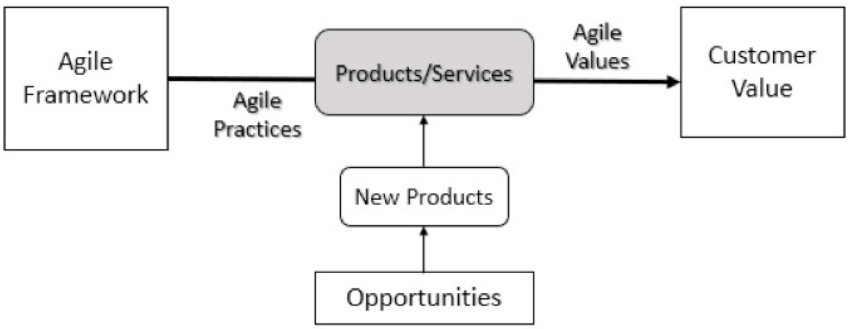

Fig. 1. APM overall framework.

3. Roles and momentums in Agile Project Manufacturing (APM)

3.1. Roles in APM

People play a key role in the company development and in their own projects. Regarding APM, embrace agile principles and values are essential for project teams and it must be mandatory to create a specialized team, designated as AGILE team, that stimulates agile actions and it compose by the following roles:

- **Product Owner:** person that is intermediary between client and the remaining AGILE team and other company colleagues, it is considered an expert on project management, and the product and client's needs. Can be considered as the customer representative and works with the remaining AGILE team and other company colleagues daily helping to clarify doubts about the client requirements;
- **Team Leader:** person that is responsible for guiding and supporting the AGILE Team Members, dealing with external problems so that team works concentrated and focused;

- **Team Members:** group that is self-organizing and cross-functional with different skills, who create the product/solution. They should be able to contribute in multiple ways to the project's goals.

In the AGILE team, one team member can have several roles, not just one [12], this means that the team is not static but dynamic, depending of the project each member could play a different role. The AGILE team must lead with two main groups:

- **Stakeholders:** external people and organizations to the company – customers, potential customers and external entities (partners, suppliers, regulation organizations, …) with direct and indirect interest in the project, and their role is to give feedback and assisting or influence the AGILE team;
- **Supporting Cast:** people in the company that supports AGILE team in product/solution development, providing several types of services, technical support mainly.

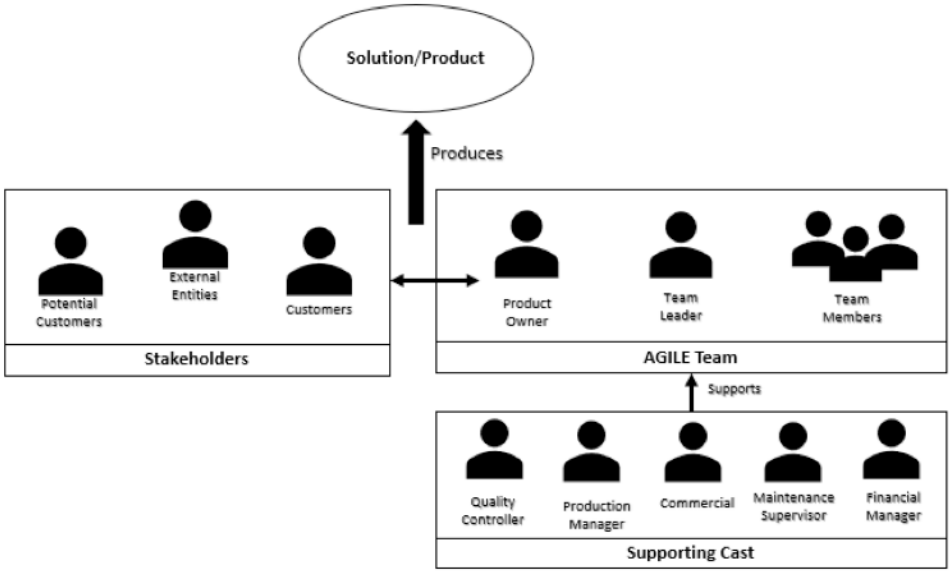

Fig. 2. Roles in APM.

3.2. Momentums in APM

In literature, project management is divided in phases to create a clear vision in the evolution of the project. Based in agile principles, project must be led in a systemic approach, not divided by phases because all phases must be treated in simultaneous. For this reason, it is identified five momentums in an APM:

1. Requirements analysis: projects, goals and objectives are defined according to customer needs and company goals;
2. Planning: AGILE team is are created and tasks are distributed. Discussion and formulation of the initial requirements are made;
3. Design: AGILE team works daily according to the requirements that are needed and giving continuous feedback of their progress;
4. Implementation/Development: AGILE team and supporting cast negotiate work to be done, review product quality testing, development documentation, and final release of the iteration to go into production;
5. Operation and Maintenance: The product is delivered to the customer and after sales services are provided in continuous. Customer feedback are considered and remains important to the continuous improvement process.

4. A proposal for a communication workflow in APM for Agile Manufacturing

An effective communication helps support teams accomplish activities and achieve goals. Moreover, communication is the only possible way to organize dynamic team such as AGILE team.

Since the client makes a request until it is successfully approved there is a complex organizational process, in the perspective of APM for AM. The process starts from the client's need or request to manufacture and provide a determined product/service/product-service system/solution. The person with whom the customer has the most contact will be the product owner, as mentioned before, a project management and product specialist. The product owner reports to the team leader and the remain AGILE team development team and works with them daily, clarifying and discussing the requirements demanded by the client. The people responsible for creating the product are guided by the team leader, to whom they are reporting the status and progress of the project, until they get feedback. Meanwhile, the team leader must consult supporting cast to provide technical services (quality, production, maintenance, …) and then get the final approval from the product owner. At this period, the product owner contacts with the customer in order to see if the final product meets the client's needs and consequently their validation. This is considered the conjunction of 3 momentums: requirements analyze, planning and design. The Figure 3 illustrated the interactions between client, the AGILE team (product owner, team leader and team members) and the supporting cast, developed in UML (Unified Modelling Language).

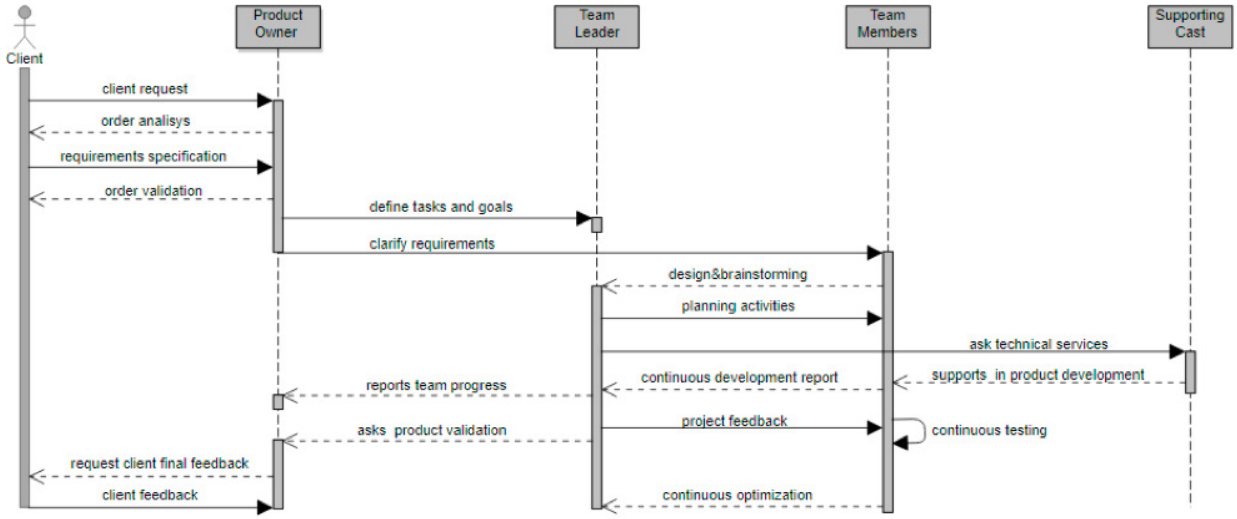

Fig. 3. UML communicational workflow proposal in APM for AM.

After the final client feedback with the approved version of the product, then implementation/development, and operation and maintenance momentums are well defined to produce, deliver and provide the service of after-sale. Besides the clear understanding of the client's needs, the people in the company are completely aware of the product requirements and have a clear vision of the product development and manufacturing.

5. Conclusions

Companies must be prepared to innovate and be pro-active concerning clients' expectations, and not be afraid of taking risk and, most probably, to fail. Taking the agile principles, when failure occurs it is a moment in the learning process that must be perceived by companies' team, specially, the team that directly manages Agile Project Management.

So, in order to achieve an Agile Project Management for Agile Manufacturing, this paper proposes the presence of a team that deals with Agile Project Management, named as AGILE team, composed by a product owner, a team leader and team members. Each member of the AGILE team could assume different roles depending of the project

characteristics and parameters, assuming the condition of dynamic team. A communication workflow proposal concerning the conjunction of 3 momentums (requirements analyze, planning and design) along the Agile Project Management is also presented and represented in UML.

The present proposal is being implemented in a lightening manufacturing company. This company produces high quality products, cutting-edge design and with high level of customization. Although, the company have several agile elements they did not previously assume the agile principles due to the lack of knowledge of the concepts and benefits of adopting Agile Project Management and Agile Manufacturing. Due to the early stage of the implementation, it is still not possible to achieve substantial findings.

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