IT Agile Transformation

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The paper presents a case study on knowledge management for IT Agile adaptation, based on organizational changes. It includes discussions about future knowledge management challenges and favorable circumstances within Agile transformation process in terms of its pre-requisites. As shown in the research results, the entire organization was impacted by adopting Agile as a project management approach. The conclusions point out some of the most important pre-requisites for Agile transformation, such as: training and workshops, implication of Agile experts, support and effectiveness, establishment of community practice and learning organizational culture. Nevertheless, the endless learning process as a part of the learning organizational culture, was the biggest Agile challenge within companies transformation, which is like a journey without a final destination, always having to adapt to changes.
***Keywords**: Agile implementation, project management, IT organizational change, Agile methods*

1 Introduction

Agile transformation it is not represented only by software development methods and technologies, but it is also about a new way of thinking and solve the problem as quick as possible. A lot of companies are still operating with old ways of developing and because of that the speed and adaptability to change of the organization are negative affected. In the last 30 years agile methods increased success rates in software engineering, quality and also improved skills, motivation and productivity of IT teams. Many times the companies are faced with spontaneous market changes and they had to shorten the software product delivery and be more responsive to the customers' demands. Agile development methodologies are very useful in these situations because they are able to adapt according to the new market trends. Agile transformation is more open, creative, cooperative and much more efficient than other business models. Implementing agile methodologies is about prioritization and management of defining requirements within a team which is developing an IT project along SDLC (Software Development Life Cycle). It is a real challenge to migrate from a traditional perspective of implementing a project to an agile one which involves many years of change. To change a company perspective from traditional to agile means to change people's perspective meaning radical changes in attitudes, mindsets, values, ways of thinking and interacting with the world. Together means a change in organizational culture.

So, in this study I will present the aspects of agile implementation process from a wider perspective, because focusing on agile adoption is not the most important in achieving success, a strategy on change management for this organizational evolution being also very important. I will compare the most used agile tools which provides business success, giving comparisons between them and an analysis of business process changes in one of the most important Romanian banks.

The structure of this paper is as follows: section 2 represents the literature review and some of the previous works, in section 3 I'll present the methodology, section 4 presents the research results, section 5 is about summary of findings and finally section 6 concludes with final remarks.

2 Literature Review

The role of this section is to give the basic information of the paper subject through some examples of previous works about IT Agile

transformation compared to traditional software development methods.

Traditional SD (Software Development) methods were broadly used by all of the software developers for more than 40 years. At that time, Waterfall model and its incremental methods like Spiral were popular in the entire world, being supported by detailed documentation and expensive actions. Nevertheless, a pioneer group of software experts proposed changing the mindset of traditional SD formally by introducing of agility in the SD process, called agile manifesto. As a result about two decades after agile manifesto appeared, several agile methods were founded and introduced to the software industry. Although some of them have been founded before agile manifesto, it was the first time that all of them were collected under agile umbrella [1]. Scrum (Schwaber and Beedle, 2001), XP (Beck and Andres, 2004), Crystal methods (Highsmith, 2002), Test Driven Development (TDD) (Beck, 2002), Dynamic Systems Development Method (DSDM) (Highsmith, 2002), Lean Software Development (Highsmith, 2002) are some famous agile methods which are different in some activities or goals, but in fact they rely on the same values. Agile methods are described as a response to traditional methods [2] and underline new values which are ignored in traditional methods like: focusing on individuals and interaction, well developed software, customer collaboration and embracing changes [1]. Along with these values, agile methods assert to provide fast delivery, higher quality, customer satisfaction and a dozen of other advantages having the adaptive quality. The main idea these methods are based on is represented by many releases of working code delivered to stakeholders, avoiding the situation when a "*big-bang*" would be delivered when the project ends [3]. A glance at the specified benefits inspired managers and software stakeholders to use these methods, in this way several well-branded companies and organizations like IBM, Microsoft, Google etc. began using agile methods in their projects, but there are still many companies which are using traditional software development methods [4]. I consider this is happening because many companies have good experience in traditional methods and they are comfortable with this, and other companies are afraid of changing their development process.

In order to gain agile values and implement the twelve principles on which is based agile manifesto, a huge change in software development approach of every company is needed. Without an exhaustive strategy for overcoming the difficulties and issues, less value could be achieved usually, but a huge amount of effort and amount of money should be paid [1].

Benefits of agile approach in software economic actions inspired many managers to start using agile methods in their software products. Transformation process to agile methods is not achieved easily and because of its features it takes a long time. The marketplaces unpredictability, the rapidity of change and also the strong connection between education and work determined many IT companies to adopt agile methodologies in their project teams, this being a very good solution to exceed their competitors as a result of exploring new goals in projects and efficient management programs [5][6][7].

Agile transformation is based on organizational change, so companies are faced with many challenges during this process. This strategy should take in consideration all aspects of change approach because it represents the underpinning of achievement in agile transformation process through independent transformation experiences. This transition process implementation is very complex, of a long duration and progressively due to the measurability problem which needs synchronization of all these agile transformation changes through organizational components in a big company [8][9]. The cost of Agile adoption will become significantly high regarding money, resources, working routines and development quality, so it is a requirement to present knowledge management characteristic in

order to reduce the risk of an unsuccessful achievement [10]. When talking about knowledge management in the agile transformation context, we can include some aspects as: organizational culture, training courses and workshops, continuous learning process, knowledge management training. In order to face these organizational changes it is desirable to increase knowledge depositories and also a great communication to create, accumulate, distribute and apply this knowledge for the transformation process [11].

3 The Research Methodology

I am working in a company that in the last years has focused on enhancing the UX (User Experience) and delivering innovative functionalities and features to customers on digital channels. A few years ago, the board decision was to introduce agile methods within IT department projects, but at the beginning it did not include the business as today, talking about a limited way of agility. The agile adaptation process started with the IT department because teams could develop business requirements and test the concept in a short time splitting them into small tasks, before the company extended the method widely. This was a safe and certain way to continue the transformation process to the business side, but I think that is possible to roll out simultaneously a value stream in business and IT, for example mortgages.

As long as my research is about IT Agile transformation, in this section I will focus the discussion on the proposed method in the implementation process of the agile PM methodology based on the best practices in change management and tools that were analyzed in order to achieve the best results in the organization I work. I will highlight their main characteristics as a consequence of getting valuable information about the adoption process in the company I work from one of my colleagues who was involved in the agile transformation from the beginning, but also from my knowledge and analysis of different papers.

The whole process of project management methodology transformation has been organized according to a method evaluated with a case study research within a bank IT department and Scrum methodology has been chosen as the base methodology. The IT team had 14 employees and the implementation took about 10 weeks (5 sprints) ending as a release. To begin with, the employees' analysis was done and they implemented the following principles from Scrum methodology depending on the enterprise fundamentals:

- artefacts (web-based Appian product, business requirements and test scenarios),
- roles (scrum master, DEV team, TEST team, business owners, stakeholders and analysts)
- practices (grooming, planning, retrospective, demo and daily meetings as ceremonies, Kanban board which contains user stories and bugs, prioritization by business owners)

In Figure 1, is shown an overview of the method phases implemented within the IT department.

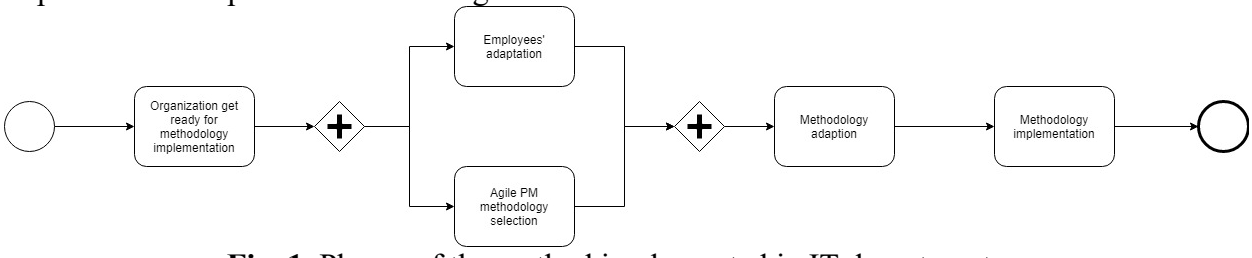

Fig. 1. Phases of the method implemented in IT department

I. Modelling phase

This phase helped the IT team to get ready for methodology change. Implementation of the agile PM methodology included adjustments in employees' way of thinking and also in the physical processes. The involved employees' culture is probably one of the most valuable element of this transformation, so they spent a

lot of time trying to assimilate the convenient behavior of an agile culture like ownership, acknowledgement and customer importance.

II. Employees' adaptation phase

This phase is based on employees' interests, relationships and the possible agile methodology roles. This being said, the employees had to learn the most useful thing: adapting to the change process faster in order to achieve the project goals. The first step was represented by a month onboarding program when every employee spent a week in a branch, paying attention how our colleagues interact with applications and what they complain about. After that, different activities from bank departments were presented to understand better the environment they work in. Moving the IT team around the main departments of the bank led to a deeper knowledge of the business which helped them a lot in agile adoption.

III. Agile PM methodology selection phase

During this phase the board had to choose between the existing agile PM methodologies which is the most suitable for the bank, based on domain features, team and projects. I understood that this phase was a crucial one because the chosen methodology should fit most of the bank projects and this was not easy at all. They did not want to make the situation more complex creating an own methodology for the organization, so they preferred the easier and safer way: choose an existing methodology and adapt it, because existing methodologies have already been applied on different projects so its advantages and disadvantages in different circumstances have been known. According to implied specialists' opinion and after they read different guidelines for selection the PM methodology they concluded that Scrum methodology will fit best the company needs.

IV. Methodology adaptation phase

During this phase have been analyzed and implemented methodology adaptations based on differences between the organization fundamentals and selected methodology or employees' personality. This step was very important because methodology adaptation according to project and team requirements, helped the company to get better results in the next phase: methodology implementation. Elements of the agile PM methodology like: roles, processes and practices were analyzed during this phase in two ways: reorganizing existing roles to agile ones and adapt agile roles to existing roles.

V. Methodology implementation phase

This phase activities are shown in Figure 2 and their role is to assure that methodology is implemented according to the chosen model. Here, Deming cycle played a key role because it helped the company to improve the implementation process quality and it led to guarantee success, changing legacy IT systems into powerful and profitable ones through agile transformation. In order to achieve a complete change based mostly on leadership and dedication, we manage our tasks efficiently, updating daily information on the walls around our offices. This method is very important in order to hold the organization together, like traditional reporting lines did before.

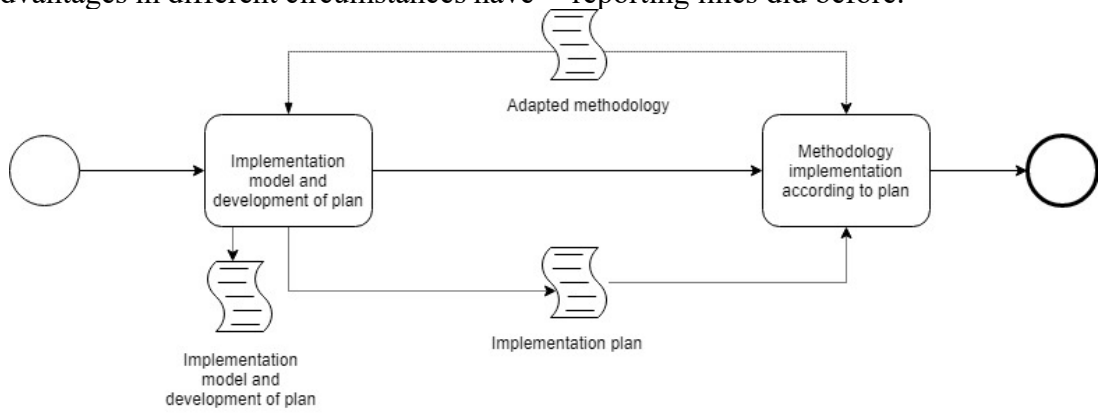

Fig. 2. Methodology implementation phase

4 The Results

The benefits of adopting Scrum methodology has been evaluated about half a year after the last phase: implementation, and they were based on the following findings:

- employees' analysis before and after Scrum methodology application. The first analysis' target was very important in the second one, because it proved that improvements in team relationships, motivation and self-organization were achieved.
- project performance statistics. They also set a target to achieve in order to evaluate benefits of adopting the proposed methodology. Two projects with the same business owner and development team were compared in three different ways: number of development tasks versus bugs, the impact analysis and number of meetings. The projects were similar as complexity and the amount of work was represented by the count of tasks in every project. One project used the new methodology and it was finished faster and with fewer bugs than the second one which was developed using a traditional methodology.

In figure 3 are presented the effects of the migration to a new Agile PM methodology and there are revealed the most relevant organizational changes on the applied technology and tools (web-based Appian Platform for application development, Jira for project management, HP Application Lifecycle Management for testing), on the communication between teams, business owner relationship, processes and methods including guidelines and best practices etc.

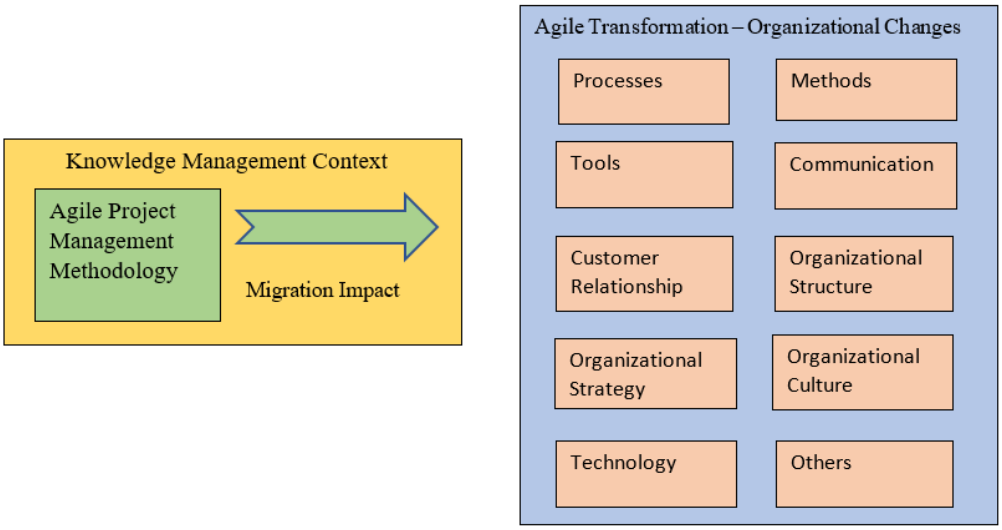

Fig. 3. Changes due to IT Agile adaptation process

In Figure 4 are shown the organizational changes of processes during the IT Agile transformation. These changes are related to: business processes, innovative tools and clear methods, customer relationship, user experience, architecture, strategy, culture, costs and applied regulations.

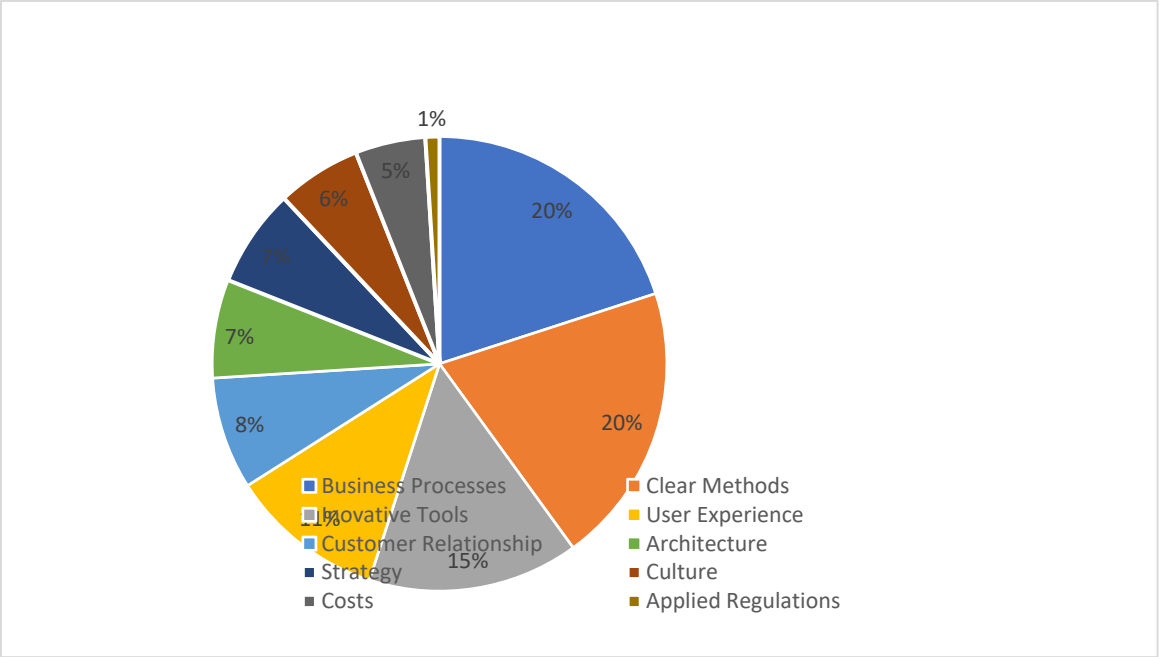

Fig. 4. Organizational changes - IT Agile adaptation

Regarding long-term goals of IT Agile adaptation process, the most important ones described in my paper are: decreasing a product lifecycle as much as possible by frequently software delivery, increasing project efficiency, accuracy of project planning and expectation of client's needs. There are two essential knowledge management goals to achieve the Agile transformation: creating knowledge depository and learning organizational culture shown in Figure 5.

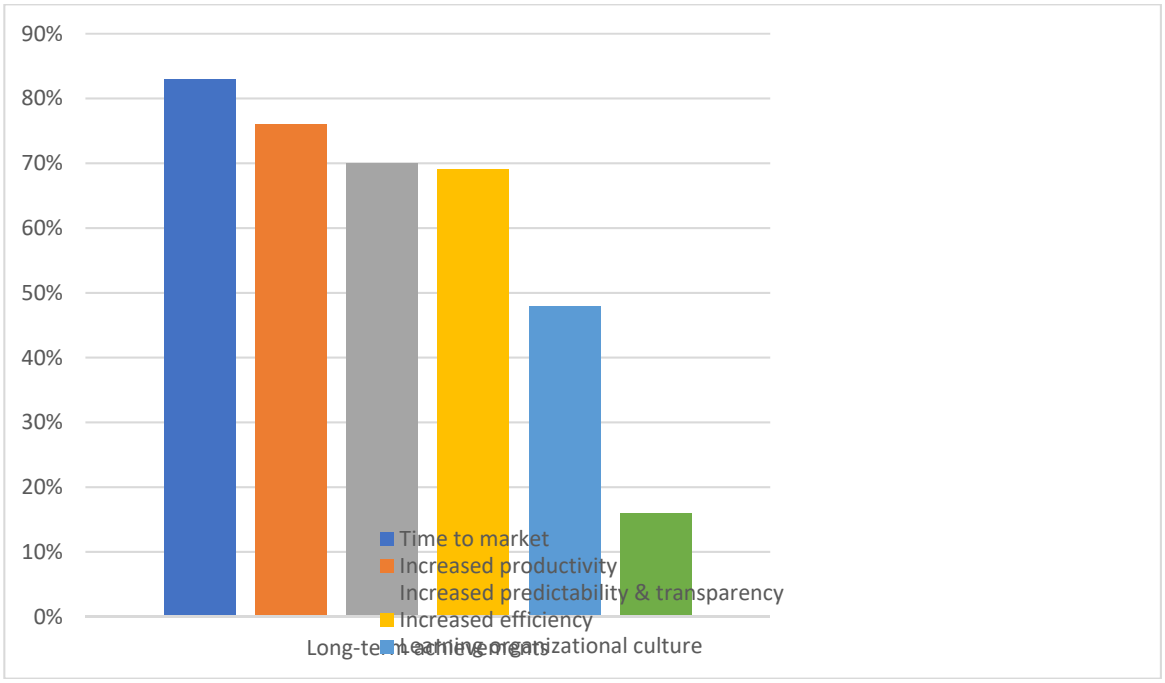

Fig. 5. Long-term achievements into IT Agile transformation

In Figure 6 are shown recommended activities that should be implemented when a process of Agile transformation is running. In the below chart, about 75% of the case studies placed trainings and increased learning on top, these two actions being very important for a

process' success. To complete these two artefacts of knowledge management actions, there are quite many activities, e.g.: planning, retrospectives, prioritization, definition of done, grooming, demos.

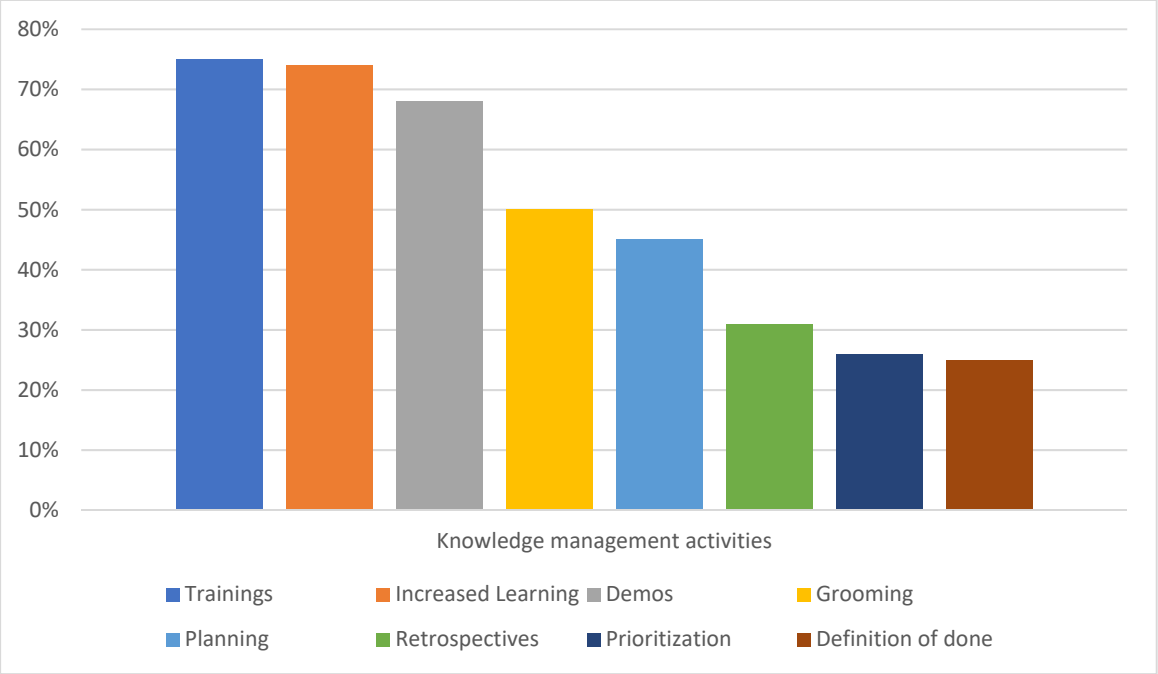

Fig. 6. Knowledge management activities into IT Agile transformation

5 Summary of findings

The observed case study results illustrated in this paper, revealed that an efficient knowledge management is an important former and coordinator of a success IT Agile transformation process.

Problems, challenges and useful factors presented in the research study highlighted some important aspects regarding knowledge management which need to be consigned, together with: organizational culture, workshops, training, coaching and Agile experts. It is also very important to take into consideration the community of practice where you can find solved problems and discussions about a specific subject you have to solve.

In a context of a successful migration from traditional to Agile, I found complementary points mentioned by other research studies [7][8][9][12].

It had been proved by some other research analysis [13][14][15], that organizational culture and repeated learning process represent a must to any IT Agile transformation process, specifically when the involved companies are project-based [16].

6 Conclusions

Any organization can face a transformation to become agile, but it is very important to know that agility represents the means to a broader purpose, because it requires sacrifices and ambition, starting from bottom to top in the company organigram. To make a successful transformation we replaced the formal meetings, complicated planning and traditional hierarchy to informal networks and entrusted teams. To become a challenging organization, it is very important to make mistakes and learn from them, otherwise failure will defeat success. Our main purpose in the last years was to improve the customer experience, as I said in section three. In order to make this happen the board chose to invest more in employees' commitment which helped the company to reduce production impediments and also to be quicker than they

thought to market. Implementation of Scrum methodology was related to improvement in our IT department development process concluded in: fewer bugs, better and efficient communication, faster delivery, better quality of software etc. Even if results of existing researches have proved that can be lots of problems in the project team that may cause to an unsuccessful implementation of the methodology, my conclusion is that preparation of the involved team is representing a must before implementation of the new agile PM methodology.

Case study within this paper represents the evaluation of the proposed method, whose limitations consist of: small teams, meaning 10-16 members who cooperate easily in order to achieve the target and a chosen base agile project management methodology. By using this method is possible to evaluate the team structure and to adapt the agile roles, artefacts, processes and practices that are more suitable for the project team in order to accomplish the project requirements. The proposed method reused different existing solutions and some experts' knowledge about agile roles, artefacts, processes and practices during implementation to be sure that we will have a successful transformation from traditional to agile.

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