

Software Process Improvement Through Teamwork Management

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Abstract. In modern organizations teamwork is considered a key factor for succeeding in business. A growing emphasis on team culture culminates with a great number of articles analyzing different aspects to improve teamwork practises. Since software development projects are normally team efforts, teamwork improvement in software organizations should also be considered essential. In these companies, software process improvement programs based on international maturity standards are current issues in software engineering investigation. In this article, we firstly establish the teamwork key factors for succeeding in software development projects. Secondly, these key factors are analysed taking the ISO/IEC 15504 as a reference improvement framework.

1 Introduction

Nowadays, teamwork has become popular as a solution to a great number of companies main goal: producing to the lowest cost. Considering employees as the most important resource of an organization, teamwork is revealed as the most efficient way to achieve this objective. Modern organizations have expectations over their employees that go beyond work realisation to contribute to business success. As numerous articles demonstrate, there is a growing interest on team culture which refers to the ability of working successfully in a work team [1]. However, although the majority of companies consider teamwork ability as an important skill to measure to select their employees, a lot of work is still necessary to create a real teamwork culture.

Mother Nature provides us teamwork models, like ants and bees communities, where the final goal is achieved joining individual efforts. These natural organizations are good examples to follow that show that interdependence between team members is a key characteristic of successful teams [2]. However, this natural predisposition towards teamwork seems not to be as evident in the case of human beings. Teamwork is a work style that not all people are prepared to accept. Sometimes, individualistic work spirit can be an important obstacle to remove. One of the biggest problems in all companies is bringing together a group of people to accomplish a business goal, since all of them have different needs, interests, knowledge, experiences, expectations and motivations.

Although, we should not consider teamwork as the panacea, investigation on work groups formation and performance has been the centre of attention of different

specialists during the last two decades. This fact can be justified considering the important role that teams can play by performing effective tasks in an organization. Accordingly to Dr. Charles J. Margerison who states that "it is on the competency and effectiveness of teams that we depend", a lot has been said and written about individual competencies at work in contrast to the issue of team competency that has received little attention. Individual competencies are important, but they need to be seen in the context of what a team requires to perform well [3].

2 Teams in Software Projects

In software companies, the big demand on new systems together with the increment in their complexity make software development process to be considered a team activity. Thus, in these organizations in particular, interest on teamwork should not be an exception.

Some works demonstrate that this subject has not gone unnoticed. In [4], it is stated that coordination and communication in a software team are key aspects to be considered. In the same way, social interaction is also considered an important point for succeeding in software projects. In [5], its author, being in line with other articles also considered in this work, highlights that "it appears the human aspects of software development are more important than the technological aspects for better performance". To analyse this statement, the before mentioned article presents an investigation to explore the effects of personality on team productivity. In particular, the study seeks to determine the effect of the project leader's personality and the effect of team members' personalities on team performance.

Considering the human aspects as a key factor to control in a software development team as well, it is possible to find other publications. In [6] it is demonstrated that team roles described by R. Meredith Belbin [7] are useful to improve the effectiveness of software development teams. In this article, three software development teams working in different environment are analysed using the Belbin's questionnaire as instrument to gather data from individuals to analyze the teams. In [8] their authors present an experiment to demonstrate the utility of forming teams based on Belbin's team roles. The overall research focuses on the utility of Belbin's roles for team performance improvement. This experiment explores Belbin's Plant, who adds innovation and new ideas to teams. The specific conclusion is that Belbin's questionnaire is useful to identify characteristics of team members that can be used to make teams perform better.

In [9] its author points out that the majority of problems in software projects "are due to people problems, not technical ones". Although producing quality software is a technical activity, software is produced by people. Different maturity models and process models have been proposed, but problems still continue.

The different investigations mentioned in this section state of one or another way that it is necessary to consider specific teamwork aspects to be successful in a software development project.