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Procedia Computer Science 100 (2016) 171 – 178

Procedia Computer Science

Conference on ENTERprise Information Systems / International Conference on Project MANagement / Conference on Health and Social Care Information Systems and Technologies, CENTERIS / ProjMAN / HCist 2016, October 5-7, 2016

Analysis and Design of a Project Management Information System: practical case in a consulting company

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Abstract

Nowadays, due to globalization, business diversification and a growing number of different business projects, the need to support people involved in tasks related to project management is becoming increasingly important. Timely and accurate data about projects' plans, their progress and related costs, are extremely important for project managers and consequently for assuring the success of the project. In this context, Project Management Information Systems (PMIS) are commonly viewed as an important tool for project management. However, this kind of Information Systems (IS) is relatively expensive and therefore out of reach for many small and medium enterprises (SME) that often choose not to use them. As a way to overcome this situation many consulting companies decide to invest in the development of their own PMIS. This paper presents the design process of an Information System for Project Management, whose main purpose is to manage investment projects throughout their life cycle. The system supports all the application process for incentive programs, as well as the documentation and procedures required, and helps to manage the project itself, when it is approved. This solution will thus contribute to the improvement of the performance of the Projects & Incentives' division of the consulting company, but can also be replicated by other companies that have similar needs.

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Peer-review under responsibility of the organizing committee of CENTERIS 2016

Keywords: Information Systems; Project Management; Analisis and Design; UML; Consulting Company

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Peer-review under responsibility of the organizing committee of CENTERIS 2016
doi:10.1016/j.procs.2016.09.137

1. Introduction

In certain areas, globalization allied with the markets' competiveness has been a challenge for most companies, leading them to expand their business portfolio. Additionally, the current growing number of incentive programs initiatives, like, for example, the H2020 program, has contributed to an increasing interest of consulting companies for this new business area. This type of companies work with their clients helping them to build their application for European funds, as well as following the project's evolution, when they are approved.

A project is defined in PMBOK Guide[1] as "a temporary endeavour with definitive beginning and end, undertaken to create a unique product, service, or result". Nonetheless, although projects may lead to specific outcomes (products and/or services), a large amount of the tasks required for their development are the same regardless of the project. Those tasks and the inherent processes can then be structured into procedures and managed accordingly (project management).

Project management is thus characterized as an effort that results from the use of knowledge, skills, tools, and techniques applied to a set of project activities in order to meet the project objectives, taking into account the established and predefined resources[1]. Managing a project implies planning and monitoring its execution (tasks), helping to achieve the predefined objectives[2].

In this context, Information Systems (IS) are very important tools that can contribute to the project's success, in the sense that they can help plan the work, facilitate the control and tracking of the tasks, promote the supervision of every activity and, above all, potentiate the execution of the work within the established deadlines, involving the right people, and reducing deviations from the budget.

According to Vre *et al*.[3] Information Systems to support the needs and work of project management, usually so-called Project Management Information Systems (PMIS), are relatively expensive and organizations often choose not to use them.

In order to overcome this difficulty many consulting companies choose to invest in the development of their own PMIS. This work describes the experience of developing an IS for Project Management, to help manage project's life cycle, as well as all the documentation and associated resources. The final goal was to improve the performance of the Projects & Investments division of a consulting company.

This paper is structured as follows: section two presents the theoretical foundation of this article, based on review of existing approaches regarding project, project management and PMIS. A brief description of the practical case, more specifically the analysis and design of an IS in a consulting company are provided in section three. Section four outlines the main conclusions.

2. Foundation and related work

2.1. Project and project management concepts

Project can be characterized as a set of activities that aims to achieve specific results, using a set of available resources. Typically, a project is related to the production of a product or the supply of a service, with a predefined implementation period and a stipulated budget[1]. There are different approaches to characterize the concept of project, but considering the perspective of Vre *et al.*[3] all definitions have a common ground: "a project is a goal oriented, time limited and unique process, always introducing something new, having particular complexity, limited budget, certain legal and organizational status, content which is determined by the product or the result of the project, its own structure and temporarily available resources."

The cost, time and quality are the key pillars of a project, being referred by Atkinson[4] as the *Iron Triangle* of project management. The cost determined by the available and necessary resources must be incorporated in a pre-established financial plan. Time defines the schedule of tasks to be performed and consequently the timetable of the project. The quality pillar is the required success factor for the satisfaction of the stakeholders, assuming that the two previous aspects (cost and time) are fulfilled. However, some authors[4] report that these criteria are not enough to ensure the success of a project, presenting a list of critical factors that can lead to the failure of projects.

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