

Chapter 6.8

Project Management in Enterprises: IT Implementation Based on Fuzzy Models

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ABSTRACT

The article discusses how the knowledge of management and artificial intelligence can be used for controlling the budgets and schedules of software projects. The first part of this paper gives an outline of the problems involved in software project management regarding the planning and control of processes and project teams. Next, an overview of changes in management is presented, followed by a description of a method for how these ideas can be used to solve software engineering problems. Consequently, an example is presented of a decision-support system, designed to aid project-team managers in planning and controlling budgets and schedules and helping the team members to adjust.

INTRODUCTION

In this paper, suitable methods for *Software Project Management (SPM)* are discussed. New possibilities of modelling SPM processes are indicated as well as an example concerning the issue of building a fuzzy model of a project team is presented. The scope of our research has been focused on specific project implementation performed by international project consortia. Such an ensemble can consist of several or more *project teams*, understood as those “distinguished from the structure of the organisation, commissioned for a defined period and consisting of specialists from various fields, whose knowledge and experience have a bearing on the problem” (Stoner, 1994, p. 143).

PROBLEMS OF MODELLING SPM

With the purpose of building on an SPM knowledge-based model, an appropriate *state of the art* has been established. The knowledge obtained in this way concerns the management techniques used by managers to support a project implementation and, based on process models, to allow for suitably assessing the states of both project processes and human teams (Figure 1). The consequences of these issues can be found in the budget, deadlines, and functionality of the project.

Expert Knowledge of Project Management

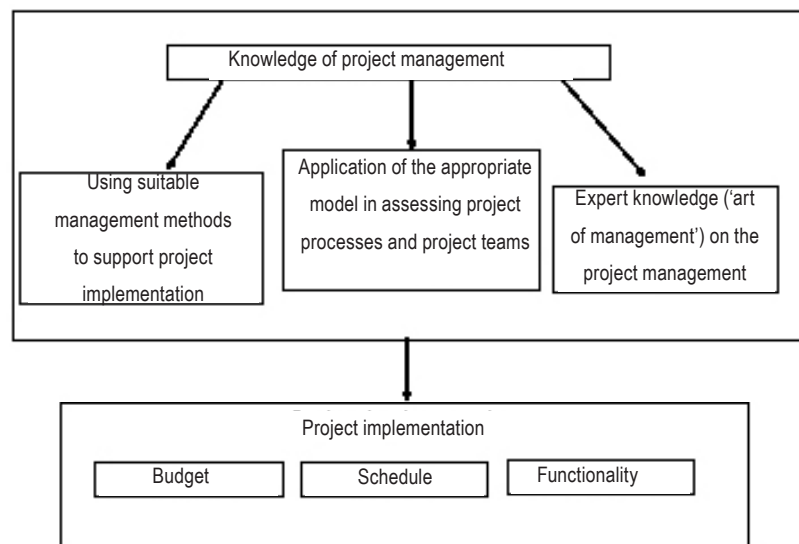
According to the SPM experts, scope, time, communication between team members, and risks of project changes are inter-related management knowledge factors. “Recycling” such knowledge in new projects is difficult. Those difficulties often

result from an incomplete documentation of the project processes and from the lack of adequate knowledge, both on the factual project management mechanisms and way of describing SPM. They are also conditioned by the commercial nature of the projects (concerning the knowledge about implementations and their management). For given project experts (managers), the source of knowledge may be placed in the know-how of implementing previous projects. It is clear that such knowledge depends both on the specific characteristics of the performed projects and on the manager’s ability to make suitable predictions, for example, to make use of this experience in implementing new projects.

Methods of Supporting Management Processes

Apart from expert knowledge, an important source of the education on project management can be found in the spectrum of the methods applied

Figure 1. Relationships between the knowledge of project management and project implementation



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