DEVELOPING A DECISION SUPPORT SYSTEM FOR PROJECT MANAGEMENT IN UNIVERSITIES

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ABSTRACT: Decision making is a complex and continuous process of correlation and harmonization of the project objectives with the organizational goals and all kinds of the resources available for projects carried out in universities (regardless of their source of funding). At an academic institution that can run simultaneously a large number of projects, using a Decision Support System (DSS) contributes to increase both transparency of decision and reaction rate of the decision makers. This paper presents a very useful DSS: POMADESUS – PrOject MA nagement DE cision SUport System. This DSS can be used to increase the efficiency of the Projects Implementation Unit from the University. POMADESUS is also a useful tool for all personnel involved in the implementation and the management of the projects.

Keywords: Project Management, Knowledge Management, Decision Support System, Dreamweaver, SQLyog.

1. INTRODUCTION

The decision support systems (DSS) form a distinct class of information systems. In very general terms, a decision support system (DSS) is a system that supports technological and managerial decision making by assisting in the organization of knowledge about ill-structured, semi structured, or unstructured issues. DSS are defined as an interactive computer-based systems that help people use computer communication, data, knowledge, and models to solve problems and make decisions [1]. In the process of decision-making in the projects that are carried out in universities, decision makers combine different types of data (e.g., internal data and external data) and knowledge (both tacit knowledge and explicit knowledge) available in various forms in the organizations.

The general architecture for a DSS [1], [2], [3] is shown in Figure 1.

A proper integration of DSS and KMS will support the required interaction and will present new opportunities for enhancing the quality of support provided by each system in managing the projects in universities. In this paper is presented a DSS realized in Lucian Blaga University of Sibiu: POMADESUS (PrOject MA nagement DE cision SUport System). POMADESUS can be used both to have an evidence of the finished and on-going projects in University and to develop a knowledge database as a tool for the project teams and for the management.

2. POMADESUS COMPONENTS

POMADESUS, like other DSS [7], consists in software modules for databases management, for dialog management and for models and knowledge management. We can say that POMADESUS is a knowledge based DSS. Decision support and knowledge management must be two interrelated and interacting processes in managing projects carried out in universities. POMADESUS is a framework that attempts to integrate DSS and KMS. This integration is expected to result in several benefits that cannot be realized with any of the two systems. The POMADESUS databases structures is shown in Figure 2.

2.1. The main database

The main database consists in a series of predefined tables for group of processes, action type, knowledge area, classes of problems, root causes, responsible, experts. (Figure 3).
2.2. The knowledge database

This database contains all the 42 project management processes grouped by knowledge areas. The processes are detailed according to PMBOK®[4]: the process name, the code and the belonging group, the process description, the inputs and outputs of the process and the tools and techniques used to transform the inputs in the expected and compliant outputs. An extract from this table is shown in Figure 4. A complex and comprehensive graphical description for all the project management processes was included in this database to facilitate holistic approach of the projects. (Figure 5)
The main window used to update the knowledge database is shown in Figure 6.

Figure 6. The knowledge database update

2.3. The Models Database

In the models database are included the solutions for the problems encountered during the various projects. The solutions are structured as follows:

- the problem identifier;
- the identified solution (s);
- the solution(s) author (s);
- the solution(s) implementer;
- the type of the action (preventive or corrective);
- the impact of the action (on the project cost, on the project quality, on the project duration, or on the project scope)

2.4. Databases management

POMADESUS was developed using Adobe Dreamweaver for WEB based user interface creation and SQLyog to manage the databases. Using these tools is motivated by the following:

- Dreamweaver can use third-party "Extensions" to extend core functionality of the application, which any web developer can write (largely in HTML and JavaScript). Dreamweaver is supported by a large community of extension developers who make extensions available (both commercial and free) for most web development tasks from simple rollover effects to full-featured shopping carts [5].
- SQLyog MySQL GUI is the most powerful MySQL manager and admin tool, combining the features of MySQL Administrator, phpMyAdmin and other MySQL Front Ends and MySQL GUI tools. [6]

The databases management can be accessed from the main menu of the application (Figure 7).

Figure 7. POMADESUS - The Main Menu

From the administration menu we can update the content of knowledge database: we can add projects, problems, root causes etc. (Figure 8).
3. CONCLUSIONS

The application is in testing phase now. The identified benefits of using the proposed solution are:

- Improves personal efficiency.
- Speeds up the process of decision making.
- Increases organizational control.
- Encourages exploration and discovery on the part of the decision maker.
- Speeds up problem solving.
- Facilitates interpersonal communication.
- Promotes learning or training.
- Reveals new approaches to thinking about the problem space.
- Helps automate managerial processes.

POMADESUS is not meant to replace the final decision maker, who takes a solution and approves its submission to execution. Its role is limited to supporting decision making activities. There is no question of a fully automated system. DSS control remains entirely in the hands of the user.

Decision problems arising in the management of projects developed at a university considered to be resolved by POMADEUS are not so trivial, that could be solved only on the basis of simple reasoning and judgment and cannot be properly structured to could be solved with other classes of systems.

POMADESUS can turn the teamwork in a competitive advantage for the University. Using this application, project managers at the University have the opportunity to intervene directly in decision making, assessing and understanding the consequences of their actions, and improving knowledge and practices of the institution.

In this way, application users will be able to acquire appropriate solutions through their own approach rather than imposed by the system. This will contribute significantly to expanding acceptance and understanding of collaborative work. Collaborative work is so taken as part of the project’s team based on the implicit assumption that team work is directed towards a common goal shared by all members.

4. REFERENCES