WEB 2.0 TECHNOLOGIES SUPPORTING PROJECT MANAGEMENT NEEDS

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Abstract

With the rising number and importance of projects in different business and other areas, the need to support persons in charge of or working on projects is becoming more and more topical. Accurate and timely data about project plans, actual progress and costs, proposed solutions etc. are of vital importance for project managers and consequently for assuring the project's success. Appropriate information systems and technologies need to be at hand for project managers and project team members. While special solutions, developed for project oriented environments in the past, offered a great support for project managers, some new and still insufficiently recognized opportunities for improving projects' efficiency arise from web 2.0 technologies. The paper presents some of the functions deriving from different web 2.0 products usable for project management needs, as well as some of the web 2.0 technologies that can be useful for project management.

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1. INTRODUCTION

The World Bank's 2008 data indicate that investments (i.e., investment projects) account for 21% of the world's gross domestic product. In addition, numerous other projects are being carried out that do not have investment significance, but are vital for the survival and further development of business and other systems as well as people's social environments. This has resulted in multiple projects that, according to some estimates, represent close to one third of the world's business and business-related activities. The number of projects is increasing, and a very complex multi-project environment is being established in all social and business arenas, as well as in other environments.

As projects grow and diversify, questions about what a successful project actually is, are becoming more and more topical. Research into the efficiency of project implementation has questioned whether resources are used and distributed rationally in order to achieve success in reaching project goals. According to Standish Group (2009), almost 25% of all implemented projects are never finished, while 45% are finished but with aberrations from their original goals; only 30% can be described as efficiently implemented.

Reasons for relatively meager project implementation efficiency results are numerous, among which we can also detect insufficient use of appropriate IT equipment when dealing with projects.

Information systems to support project management needs and work (the so-called Project Management Information Systems - PMIS) are relatively expensive and organizations often choose not to introduce them until the scope of project work is almost unmanageable without adequate IT support. Since project processes in organizations are often perceived and treated as a "closed system" - as some kind of parallel or additional processes to the fundamental processes of the organization, introduced PMIS usually luck sufficient integration with the organization's Business Information System (BIS). The absence of appropriate PMIS on the one hand and the need for IT support to help managing projects on the other, force project managers and project team members to use different information systems, whose primary purpose is not to support project management needs, but are developed for other functionality (for example, using excel sheets for preparing and presenting project plans, etc.).

The development of IT technology and software has been extremely rapid in the last decade. With the recent emergence of web 2.0 technologies new solutions are

arising, applicable also in the field of project management. These opportunities are still quite unrecognized and currently used primarily by experts. Potentials of the existing and soon to follow solutions enabled by web 2.0 technologies, represent an important potential to increase the efficiency of project management and with that, the success of the projects themselves.

In the paper's following sections information needs of project managers are analyzed and possibilities of using some existing web 2.0 products in the field of project management are presented.

2. PROJECTS AND PROJECT MANAGEMENT

All creation processes performed in contemporary organizations can be divided into (Hauc, 2007:18):

- processes of continuing creation – ongoing operations,
- processes of unique creation – projects

The typical representative of continuing creation processes is mass production in high- or low-rate series performed in various profit organizations, and similarly, but with some specifics, in non-profit organizations – such as public administration, institutes, hospitals, schools, social services, etc. (Hauc, 2007:18).

On the other hand, a project is "a time and cost constrained operation to realize a set of defined deliverables (the scope to fulfill the project's objectives) up to quality standards and requirements", (IPMA, 2006:13). It is a venture that creates a unique product, service or result (PMI, 2011:5). According to Radujković (2012:17), a project is every single human endeavor with a clearly defined goal, performed in stages at any given time, using (up) a large number of diverse and limited available resources. Kerzner (2001:2) defines a project as any series of activities and tasks that have clear objectives, defined beginning and end, limited funding, use limited material, human and other resources and are implemented through several functional lines.

Many other definitions of a project can be found, mostly emphasizing similar characteristics; together with the above mentioned definitions, they can be summarized into the following: 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.

Project management is part of the organization's general management and is responsible for the execution of projects deriving from business strategies or external project orders, guiding their implementation until their completion. Project management is also responsible, depending on the project, for achieving planned direct, indirect or other economic effects, which will be ensured with the use of project results (Hauc, 2007:180). Omazić and Baljkas (2005:43-44) state that project management indicates applied knowledge, skills, tools and techniques in project activities in order to achieve the objectives and requirements set before the project by influential interest-groups. The core of project management includes planning, organizing, monitoring and controlling all aspects of the project as well as motivating all the people involved in achieving project objectives in a safe manner, within planned budget, time and other parameters of the performance. Taking into account the nature of projects, it is possible to derive another definition of project management: it is management that deals exclusively with managing exceptions, since all the activities in a project are exceptions because, as such, they never happened before.

3. INFORMATION SUPPORT FOR PROJECT MANAGEMENT

Project management as a dynamic and complex process in today's business naturally requires the use of an appropriate information system, which will assist in project management in all the phases of its life cycle.

Project Management Information System (PMIS) is a system of tools and techniques used in project management to deliver information. A project manager uses these tools and techniques for collecting, storing, processing and distribution of information by electronic and manual means (PMI, 2011:431; Archibald, 2010 by Buble 2010: 174).

PMIS as a central system for managing projects is the key place for storing information about projects. The main beneficiaries of this system are the immediate members of the project team, led by project managers and planners who are the biggest beneficiaries. In comparison to other IT systems, PMIS is characterized by the need for constant adaptation and change; since projects are distinctive and unique, PMIS system must keep pace with the organization's development and abilities to carry out its projects (Radujković et al, 2012:349-350).

Today, project management information systems are designed trying to fulfill the following objectives and functionality (Radujković et al, 349): project plan

management, resource management, scope management, case management, document management, risk management, quality management, communications management, metrics management, work in multiuser environment, work in multiproject environment, collaboration, data security, web access (internet or intranet), integration with other business systems, etc.

The existing commercial solutions developed for needs of project managers offer best-in-class capabilities focused on projects, programs and portfolios for different industries like engineering & construction, discrete and process manufacturing, public administration, financial services and others. They enable enterprise agility, team productivity, portfolio predictability and overall project management efficiency, minimizing costs and risks and delivering results to key stakeholders.

Here we speak about solutions such as MS Project, Primavera, CA super project and many others.

4. WEB 2.0 TECHNOLOGIES AS SUPPORT FOR PROJECT MANAGEMENT

Web 2.0 is the network as platform, spanning all connected devices; web 2.0 applications are those that make the most of the intrinsic advantages of that platform delivering software as a continually-updated service that gets better the more people use it, consuming and remixing data from multiple sources, including individual users, while providing their own data and services in a form that allows remixing by others, creating network effects through an "architecture of participation," and going beyond the page metaphor of Web 1.0 to deliver better user experiences (O'Reilly, 2005).

The emergence of new web concepts and technologies has led to changing trends in personal and business plans. Among different opportunities that web 2.0 products enable for project management needs, we can define the following functions (Orehovački et al, 2010) :

- Searching - intranet as a business platform has to enable efficient searching of key information and documents as well as web browsers
- Linking - the emphasis is placed on creating a connection between the information and documents on the business platform in order to classify them according to importance

- Authoring - one of the most important aspects of Web 2.0, where employees through the exchange of information and experience contribute to the creation of new knowledge
- Tagging - give employees the possibility of categorizing information, documents and sites of special interest
- Extending - automation categorization and pattern matching interests of employees, all with the purpose to access content that is aligned with these interests
- Signaling - technology that notifies employees when there is new or changed content on the site which is the subject of their interest

The basic advantages of many web 2.0 technologies (in the project management field) are to increase project's effectiveness and efficiency.

When we talk about web 2.0 and open source solutions for project management support, there are many free tools as alternatives to mentioned commercial softwares. Some of them are: ProjectPier, ProjectHQ, Collabtive, eGroupWare etc.

Web 2.0 is the term used to describe a variety of web sites and applications that allow anyone to create and share online information or material they have created. The key element of the technology is that it allows people to create, share, collaborate & communicate. Web 2.0 differs from other types of websites as it does not require any web design or publishing skills to participate, making it easy for people to create and publish or communicate their work to the world. There are numbers of different types of web 2.0 applications including wikis, blogs, social networking, podcasting & content hosting services. Many of the most popular websites are Web 2.0 sites such as Wikipedia, YouTube, Facebook, MySpace, Flickr (University of Melbourne, 2013).

Some of the web 2.0 technologies that can be useful for project management are:

- *RSS – Really Simple Syndication* is a family of web feed formats used to publish frequently updated works such as blog entries, news headlines, audio, and video in a standardized format. An RSS document (which is called a "feed", "web feed", or "channel") includes full or summarized text, plus metadata such as publishing dates and authorship. Main feature of RSS is decartelization of content, way of connecting web content using feed of content that is consistent of XML document.

- *SOCIAL BOOKMARKING* allows users to storage, classification, search and share websites that interest them. Tools allow registered users on a remote computer to save bookmarks, tagging whole or only parts of the website, add notes, share them with other users in the network and view bookmarks saved by other users.
- *PODCASTING*; basic purpose of podcasting is creating your own multimedia files, which can be easily published on the web. Using podcasting in business makes possible to convert business meeting, professional conference or job offer into multimedia format, which can be accessed by each employee or business partner.
- *DOCUMENT MANAGEMENT SYSTEM*; organizations are leaving a paper form manipulation of documents and transferring to a digital control system. In this way, it reduces the risk of data loss, reduce the need for space, facilitating the management of documents and finding them because system uses its mechanisms for navigation and research of indexed documents that are centrally available.
- *SOCIAL NETWORK*; a social networking service is an online service, platform, or site that focuses on facilitating the building of social networks or social relations among people who, for example, share interests, activities, backgrounds, or real-life connections. Project teams can establish quality communication through social network service that will connect them and create a better working environment. SME can through these services create their own profile and present their business offer to potential clients or business partners.
- *MIND MAPS* are diagrams created by the radial reflections that are used for the presentation of generated ideas. Mind maps can be used in all areas of business planning, organization, negotiation, project management etc. The basic advantages of these types of diagrams are the development of new knowledge, saving resources, and effective problem solving.
- *E-PORTFOLIO* is a digital database on the web in which employees store their knowledge and experience in the form of multimedia data, with the goal of sharing this information with others. In this way, companies can better take advantage of a complete inventory of knowledge and experience of their em-

ployees and present themselves in a much better way to potential customers, business partners and investors.

5. CONCLUSION

Web 2.0 has a major role in the project environment where the information is of great importance. Of course, not all Web 2.0 technologies are applicable in all aspects of each project. We must carefully define and plan their implementation in the project environment, so the whole process of implementation would not result in failure. Web 2.0 technologies provide great benefits to business and great usability, bringing greater connectivity to employees, making it easier to create new knowledge, etc., but the great advantage of Web 2.0 technologies and applications based on Web 2.0 technologies is that they are free or cost little.

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