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USING WEB-BASED MANAGEMENT SYSTEM FOR SUCCESSFUL MANAGING OF THE INTERNATIONAL PROJECTS

The paper is devoted to the consideration of the main features and the description of the experience of using WEB-oriented project management system such as Redmine to organise collaborative teamwork among Universities from different country within an international projects. The main Redmine features (task identification, issue tracking, discussion board, calendar view, news, documents & files management, email notification, time tracking) allow you to manage complicated international design flexibly that ensures the successful achievement of its objectives.

Keywords*: flexible project management, workflow management, bug-tracking tool, web-based application, Gantt chart, deadlines, task assignment.*

Introduction

The task of managing the project can be an extremely complex one, drawing on many personal, team, and organizational resources. The success of the project is dependent on the process in which the project is completed. Especially this applies to international projects which participants are in different countries. Time delays in such projects and low productivity tend to fall right to the bottom line. Recently, the evolution of project management tools for projects have been accelerating at a rapid pace, and the number of available products have grown significantly. There are many project management tools and software being developed everyday to help managers to automate the administration of individual projects or groups of projects during their life-cycle. This paper presents a short description of the popular software project management tool as Radmine and features of its using for the management of an international project.

After experimenting with several agile bug-tracking tools (Trac, Jira, Pivotal Tracker), we settled on Redmine because of its extensible and customizable framework. We've been able to seamlessly integrate our other project management tools, including Google Docs and Git, into Redmine to ensure that we have a comprehensive and inclusive way of tracking our project's development.

Redmine.org is a free and open source project written using the Ruby on Rails framework [1; 2; 3]. That is a web-based project management tool that also tracks bugs and system issues. Using different calendars and Gantt charts, it displays project information, deadlines, and task assignments. It is part of the Bitnami app library and features comprehensive control and monitoring options. All employees can have different roles in public and private projects, both of which can be presented in a customized way. Subprojects can also be added. Redmine lets administrators define roles and limit access for users depending on their position in the hierarchy. Managers can create custom statuses and define types of issues, writing protocols for each type. Through graphic presentation employees can better visualise their workflow and have an accurate view of the big picture. Managers can track how much time an employee or a team takes to handle a ticket or complete a entire project. Redmine presents the information in concise reports. Moderators can submit different issue information – date, related section, text, boolean, with other custom fields available. They can further post messages, share files or even make wikis for the project to further clarify items. Redmine can browse through repository content and search change sets. It supports SCM (Subversion, CVS, Mercurial, Darcs, Bazaars, and Git) and can view Diff and annotate.

Main part

In modern conditions remote and collaborative project management is already getting widespread.

ERASMUS + Projects have an additional specificity, which is quite difficult to implement using popular and free project management systems (Trello, Bitrix, Zoho). This is due to the numerous recommendations of the Project Management ERASMUS + and accepted rules (restrictions) the organization of interaction of participants of the project, which are reflected in the application form, the handbook, the agreement between the parties. Therefore, an urgent task for the Universities in the framework of their activities in the ERASMUS + is the formalization and the practical implementation of the interaction mechanism for participants, clarifying their roles and the project workflow.

Thus, the aim of the article is to describe the experience to build a complex project management

mechanism for a large number of teams participating (Universities), in an environment where teams have a cluster structure (use different role), and have the right to decompose the problem to the level of work for a single artist.

In order to understand the ERASMUS + project management complexity, the following global requirements are to be met:

1. The project is being developed according to plan WP (applications), which includes 6 packages (tracks). Control points of the project objectives are stated in the terms of WP and the application form.

2. The draft is regulated by the basic roles of participants (category 1 project managers, category 2 teachers, 3 – technicians, 4 –- other administrative staff).

3. Project activities are performed in parallel according to the package (tracks). For example, the work of dissemination of the package can be carried out simultaneously with the work on the development package.

4. Accounting for labor costs should be done as the project is being carried out by the tasks (by day, under the categories of performers).

5. Accounting of actual costs is conducted by the team manager (University), and agreed with the coordinator of the project (labor).

6. Each task manager validates an appropriate package WP and the project coordinator. The quality assessment is carried out as part of the work as a package.

Requirements for the organization and management of educational project MASTIS:

1. Participating teams from 15 universities in Europe, Ukraine and Montenegro, which involves collaborative and remote management and monitoring of the project.

2. The work plan (top-level) is fixed and is reflected in the application form. The date for the work may be changed (corrected) by the coordinator after holding appropriate meetings with the project managers.

3. The one and same WP project work can be carried out in each organization. For example, a pilot training for a group of students will be carried out at each university.

4. For each package (tracks) defined package leaders who are responsible for the results and quality of the package results.

5. Responsibility for the actual implementation of the tasks is on the manager of the organization (university). The results of validating tasks is carried out by the leader of the corresponding package. Closing the task is carried out by the project coordinator.

6. Managing tasks decomposition and allocating tasks within the university team is organized by the University manager.

The solution has been obtained on the basis of using Redmine version 3.0.3, Ruby version 2.0.0-p645 (2015-04-13) [x86_64-linux], Rails version 4.2.1, Database adapter Mysql2, SCM:. Cvs 1.12.13, Git 1.9.5.

For the organization of packages (tracks), track adjustment mode was used (fig. 2), which has been selected under the administration of the project (fig. 1).

Accordingly, the structure of the tasks is determined for the project (for each member) within the package (fig. 3).

Fig. 1. Selection the settings and packages for the project

Fig. 2. Setting up a package (tracks)

Fig. 3. The structure of the objectives for the organization packets P10

For a description of the planned tasks using a form with additional fields and lists (fig. 4). Additional (non-standard) fields are: artist Role list, the organization category (EU – European University, PC – University partner countries), internal problems in terms of the number of artist (for internal sorting capabilities). A feature of project planning is to delegate tasks to organizations, rather than a specific artist.

The actual performers may be assigned tasks after decomposition is done by the organization manager (University). To be able to assign tasks to groups of system has been used by organizations that setup is implemented in the form of Fig. 5.

Each group includes artists who have standard roles, the setting of which is implemented in fig. 6, 7 shows the manager's authority in carrying out the project.
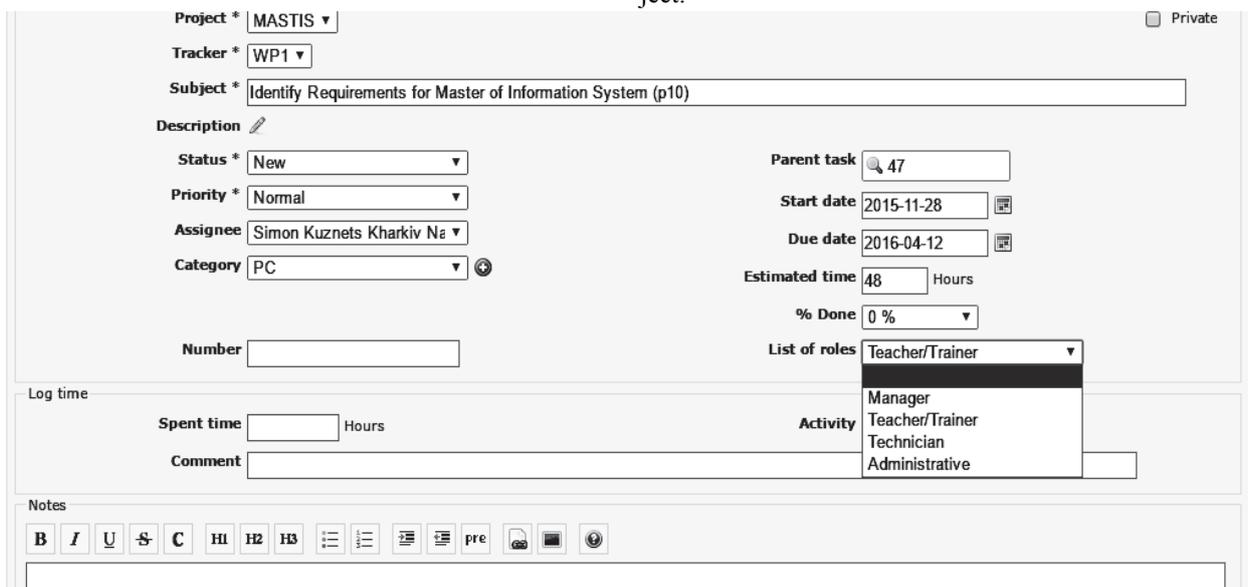
Fig. 4. Form describing the characteristics of the planned objectives of the project

Fig. 5. Organizing groups (teams in Universities)

Fig. 6. Setting up the roles in the team

Fig. 7. The authority of the project manager within the organization (University)

Workflow management is realized on the implementation of control functions to describe the level of responsibility within the framework of a package of problems (fig. 8). For example, the organization manager for the Service Pack 1 (fig. 8) can not create new problems for the whole project (this does coordinator), but can create problems within their sub-project and decompose the tasks that are assigned to his organiza-tion. The project tasks, he only notes the performance and availability of a task, but can not close a task until it is validated (feedback) pack leader. For those subtasks that manager has created (for example, details of the planned tasks within the organization), he can open it yourself, validate, close.

The actual run time is determined by the task manager in the form on fig. 9.

Fig. 8. Implementing workflow for each role within the framework of the package of tasks

Fig. 9. Enter the actual time of the tasks the organization manager in the framework of the activity of the task or assessment

Setting for each artist assumes his appointment to the project belongs to the specified group and the ability to select different modes of alerts, both in its objectives and in the project events (fig. 10)

For more informative progress and consolidation of the results of the project several modes were connected: documents describing the project (fig. 11), the file vault (fig. 12) and offline mode (fig. 13).

Fig. 10. Setting the parameters for the executor of the project

Fig. 11. Description of project documents

Fig. 12. Project Files Storage

Fig. 13. Forum and project news

In this way, the main requirements for the Erasmus project may be implemented within Redmine ideology. The project home page gives a quick overview of the project. It lists open issues on the left hand side and members on the right hand side. Each member is assigned one or more types of role. A common user will be assigned a role of "Teacher/Developer" while the support staff will be assigned the role of "Manager" or "Teacher". The top bar (fig. 6) lists various tabs associated with this project. Here is a short description of each tab. Overview – Project overview. Activity – Lists recent activity under this project. Issue – List of all reported issues under this project. This list can be filtered based on various criteria such as priority, open, closed, in progress, rejected. Users can search through this list to find if similar issues have been previously reported and resolved. New Issue – Create a new issue here. Gantt – Gantt chart of proposed activity. Calender – Use the calender for meetings, scheduled activity etc. News – Any project related news items announced by project manager. Documents – Supporting documents. Wiki – Common wiki items. Files – Files related to project. Only manager can create a new issue as follows.

Summaries

Before to start looking for the project management software the project managers must choose an appropriate set of tools with necessary features among many tools found in the market to optimise performance. Especially this applies to international projects ERASMUS +, the main characteristic of which there are a large number of participants, longer implementation period and the impossibility of carrying out operational meetings. Redmine project management web application tool was introduced during the MASTIS ERASMUS+ Project , which helps the team and captures the requirement. The main Redmine features are [4; 5; 6; 7]:

Task identification. Where's in other tools, representing the task with ID and attribute for description the same is done in Redmine in terms of ticket.

Issue tracking. Define you own statuses and issue types Workflow transitions can be set up for each issue type and role through the web-based administration interface (a default configuration can be loaded when installing the application).

Discussion board. Discussion of multiple people of the same project can be facilitated through the discussion board.

Calendar view. Calendar based on issues start and due dated an automatic Gantt chart can be generated.

News, documents and files management. Any files can be shared easily with the opportunity of posting messages with the file also.

Email Notification. An email can be sent and notify for project activity, change set, news, issues, issue changes for showing the availability of atom feeds.

Time tracking. Time can be entered at project or ticket level a simple report can be generated to view the time per user, issue type, category or activity.

References

1. Overview – Redmine [Електронний ресурс]. – Режим доступу до ресурсу: http://www.redmine.org.

2. Operating Systems And Applications For Embedded Systems [Електронний ресурс]. – Режим доступу до ресурсу:http://etacar.put.poznan.pl/mariusz.naumowicz/SOiA SW/OSAES_lec2.pdf.

3. Redmine as a Web-Based Collaboration Tool in Engineering Design Courses [Електронний ресурс]. – Режим доступу до ресурсу: https://www.asee.org/public/ conferences/20/papers/7960/download.

4. Hasliza Md Sarkan, Tengku Puteri Suhilah Ahmad, Azuraini Abu Bakar "Using JIRA and Redmine in Requirement Development for Agile Methodology", IEEE 5th Malaysian Conference in Software Engineering (MYSEC), ISBN: 978-1-4577-1530-3, December 2011. – P. 408-413.

5. Christelle Scharff "Guiding Global Software Development Projects using Scrum and Agile with Quality Assurance", 24th IEEE-CS Conference on Software Engineering Education and Training, ISBN: 978-1-4577-0349-2, 2011. – P. 274-283.

6. Keisuke Fujiwara, Yoshinari Nomura, and Hideo Taniguchi "A Mailing List Management System Mashing-up withWeb Services", IEEE 2010 International Conference on Broadband, Wireless Computing, Communication and Applications (BWCCA), ISBN: 978-1-4244-8448-5, November 2010. – P. 695-700.

7. Jerry Clarke, et at. "A Common Computational Science Environment for High Performance Computing Centers" IEEE 2010 DoD High Performance Computing Modernization Program Users Group Conference (HPCMP-UGC), ISBN: 978-1-61284-986-7, June 2010. – P. 442-449.

ВИКОРИСТАННЯ WEB-СИСТЕМИ УПРАВЛІННЯ ДЛЯ ЗАБЕЗПЕЧЕННЯ УСПІШНОГО МЕНЕДЖМЕНТУ МІЖНАРОДНИХ ПРОЕКТІВ

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Стаття присвячена розгляду основних особливостей і досвіду використання WEB-орієнтованої системи управління проектами Redmine для спільної роботи команд з різних університетів в рамках виконання міжнародних проектів. Основні інструменти Redmine (визначення завдань, відстеження питань, дошка обговорення, перегляд календаря, новини, управління документами і файлами, повідомлення по електронній пошті, відстеження часу, проектні вики та форуми) дозволяють управляти складним міжнародним проектом гнучко, що забезпечує успішне досягнення цілей проекту.

Ключові слова: гнучке управління проектами, управління документообігом, інструмент відстеження помилок, веб орієнтований додаток, діаграма Ганта, терміни виконання, призначення завдань.

ИСПОЛЬЗОВАНИЕ WEB-СИТЕМЫ УПРАВЛЕНИЯ ДЛЯ ОБЕСПЕЧЕНИЯ УСПЕШНОГО МЕНЕДЖМЕНТА МЕЖДУНАРОДНЫХ ПРОЕКТОВ

С.В. Знахур, Е.Б. Плохая

Статья посвящена рассмотрению основных особенностей и описанию опыта использования WEB-ориентированной системы управления проектами Redmine для совместной работы команд из разных университетов в рамках выполнения международных проектов. Основные инструменты Redmine (определение задач, отслеживания вопросов, доска обсуждения, просмотр календаря, новости, управление документами и файлами, уведомления по электронной почте, отслеживание времени, проектные вики и форумы) позволяют управлять сложным международным проектом гибко, что обеспечивает успешное достижение целей проекта.

Ключевые слова: гибкое управление проектами, управление документооборотом, инструмент отслеживания ошибок, веб ориентированное приложение, диаграмма Ганта, сроки выполнения, назначение задач.