

Web 2.0 + FOSS: Building Undergraduate Project Management System on Cloud

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Abstract—This paper describes a methodology to build undergraduate educational/research project management system on Cloud by combining the technology of Web 2.0 and FOSS (Free and Open Source Software). Specifically, by adopting the free technologies such as Google Sites, Google Docs, Google Talk, Facebook, Twitter, RSS, widgets and OSS (Open Source Software) phpBB and WordPress, we show how these technologies can be embedded to provide appropriate web services to satisfy the needs of an educational or research project management. Two sample websites are introduced to show how these embedded web services are used to provide the actual project management: (1)one is designed for a summer research program using Google site as a base; (2)another is designed for a service-learning project to collect free or low cost technology and serve the community. The features of the major applicable web platforms are also compared and discussed for better application upon individual needs.

Keywords: Web 2.0, Free and Open Source Software, Project Management, Web service

1. Introduction

FOSS (Free and Open Source Software), as defined in [1], [2], is a very valuable resource that is often overlooked. It has become a major movement in the modern software industry [3], [4]. However, in the education area, other than numerous endeavors [5], [6], [7] to study how to get the students involved in FOSS projects, most educators did not become aware of this valuable low cost resource.

This paper describes a methodology to build undergraduate educational / research project management system on Cloud by combining the technology of Web 2.0[8] and FOSS (Free and Open Source Software). It provides a free/low cost solution for undergraduate educational / research program to monitor and manage their projects. It also shows an example of an undergraduate research project on FOSS.

Specifically, through Web 2.0, we allow users to collaborate with each other in various dimensions, including blogs, forums, social networking sites, etc. Through FOSS, we take the benefits of the freedom of using software in free / low cost and capability of accessing the possible source code. This undergraduate research project adopts free technologies such as Google Sites / Docs / Chat, Facebook, Twitter, RSS, widgets and OSS (Open Source Software) phpBB and

WordPress, etc. We show how these technologies can be embedded to provide appropriate web services to satisfy the needs of an educational or undergraduate research project management. Two sample websites are given to show how these embedded web services are used to provide actual project management: (1) The first website is designed to manage a summer research program - Advanced Computing 2010 and 2011 using Google site as a base; (2) The second website is designed to collect free or low cost technology in education based on FOSS and serve the community through online tutorial. The features of the major applicable web platforms are also compared and discussed for better application upon individual needs.

2. Project Management System on Cloud

2.1 Overview

An overview of the undergraduate educational / research project management system is described in Figure 1. It shows the general approaches to combine the technology of Web 2.0 and FOSS.



Fig. 1: Project Management System Overview

2.2 Key Components with Embedded Services

For a project management system, we will need to have the following key components supported by the related embedded web services:

Project Planning: We need to define the project goals, scope and determine the appropriate methods for completing the project. This research adopts the free website platforms such as Google site and WordPress to do the project planning

by describing the central idea, structuring the objectives and drafting related tasks, etc. A sample website is in Figure 2.

Organizing / Managing Resources: To facilitate the organization and management of the related project resources, we use RSS, plugins, gadgets or widgets to centralize the resources on the provided website platforms. For example, we can embed resources from different blogs and news by using RSS, and embed desirable services by using plugins / gadgets / widgets, such as calendars, announcements, file cabinet, videos, slideshows, presentations, etc.

Progress Tracking: To monitor and track the project progress, we use blog updates to record the project progress; spreadsheet with chart in google docs to show the progress; and various collaboration tools such as online chat / "contact me" function to facilitate collaborations in a project. We also use free online service Dropbox and shared google docs to enhance the collaboration.

Evaluation: It is very important to collect related data to evaluate a project. This research provide multiple ways to evaluate the project, such as, the embedded online survey form based on the form function in google docs, blog rating and feedback system provided by WordPress, etc.

Security: Considering different levels of security, Google docs and sites provide the sharing functions to (1) keep it private; (2) share with limited collaborators with viewable only or editable authority, or (3) make it public.

As page limits, some embedded web services are marked in Figure 2 (1).



Fig. 2: Resulted Sample Websites

3. Resulted Sample Websites

There are 2 resulted websites as in Figure 2: (1) is designed to manage a summer research program - Advanced Computing 2010 and 2011 using Google Sites; (2) is designed for a service-learning project to collect free or low cost technology and serve the community, other than this forum using phpBB, we also adopt WordPress to centralize different resources and provide multiple functions for collaboration.

4. Website Platforms Comparison

There are three major website platforms that have been considered in our research. The major features are compared as in the following Table 1. According to individual needs, a user can choose the desired website platform and embedded services for a project. In our resulted sample websites, we prefer WordPress and Google Sites because of the flexibility to embed different services.

Table 1: Comparable Website Platforms

Usage	WordPress	Google Sites	phpBB
Easy to use / setup	√	√	√
No html coding required	√	√	√
Themes / templates	√	√	√
Website URL	Short	Long	Short
Open Source	√	×	√
Extended functionality with plugins / gadgets / widgets or coding	Best	Good	Limited
Connection with twitter / facebook	Automatically	Manually, Limited	×
Sharing files	×	√	×
Rating / comments / feedback	√	Sign in required	Sign in required
Capability to install on user's server	√	×	√
The best feature	Blog	Multifunctions	Forum
Cost	Free	Free	Free

5. Conclusions

This undergraduate research provides a methodology to build project management system on Cloud by combining the technology of Web 2.0 and FOSS. It provides a free/low cost solution for undergraduate educational / research program to monitor and manage their programs.

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