One Solution for Project Management

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ABSTRACT
In this paper, I will describe the project management tool that we have developed to track student work on projects. This project management tool is a web-based database using Cold Fusion.

General Terms
Management, Measurement, Documentation, Performance, Design, Human Factors, Standardization.

Keywords
Student Management, Project Management, Web Design.

1. INTRODUCTION
The major pitfall to using available project management tools is that the software presumes that the workers work normal workdays, i.e. 8 hours a day and 5 days a week. Those of us employing student labor know that students do not work normal workdays. In order to manage a fee-based web design and development service, it is necessary to track how many hours a student works to perform specific HTML coding and programming tasks.

Web Services, a unit of the Office of Information Technology at the University of Maryland, offers a fee-based website design and development, template coding, and HTML editing for the maintenance of existing sites. This service is offered to any university-associated element at a reasonable cost. As with any web development activity, the pace of work increases exponentially as each year passes. The activities of my unit have expanded past the point of being able to track what each student is doing what without some kind of electronic assistance. This paper will describe the project management tool that we have developed to track student work on projects and the benefits that have evolved attendant with this implementation

2. TECHNICAL INFRASTRUCTURE
During the summer of 1999, the Enterprise Infrastructure Services unit of the Office of Information Technology conceptualized and developed a web-hosting infrastructure. This infrastructure was designed to provide a web-server environment to units at the university, while leveraging the cost. The service allows the unt to tailor their web server, based on needed services. As part of the expansion of services, web-enabled database platforms were evaluated. The capability to create web-based interfaces to online databases is an add-on service to the web-hosting service. The infrastructure is the Allaire Cold Fusion server interfaced with an Oracle database.

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3. MANAGING STUDENTS AND WEB PROJECTS

3.1 Managing Students
The management of students can be especially challenging. Students have a non-traditional workweek and may work from one hour a day to eight hours. They may be in at different hours during the week. They disappear during mid-terms and finals. A forty-hour project may take over a month to accomplish because of the students schedule. It can be very challenging to the manager to work with the academic needs of the student, while meeting the needs to the customer. Luckily, many of the customers also have challenging times during specific periods of the academic year.

3.2 Managing Web Projects
The goal of Web Services is to provide a responsive and professional service to customers. We were not.

(1) Projects took far too long to complete. Some projects never seemed to go away.

(2) Students would disappear for a week to do a paper and not leave any information on where they were in the development process.

(3) Iterations of work could not be identified.

(4) Verbal instructions had to be given to many students many times, increasing the manager's workload.

(5) Written instructions would be taken by the student and left at home.

(6) Customers became dissatisfied and the cost to the customer reduced accordingly to reflect the quality of service.

(7) The manager spent many non-working hours doing the actual work itself.

(8) Students failed to keep track of hours spent on specific projects.

(9) Students spent too much time doing various activities, but it was not possible to identify what they were doing or why it was taking so long.

3.3 A Manager's Nightmare

The management of the Web Services unit soon became a nightmare. Of the duties assigned, the web design and development service should have occupied 20% of the manager's time, but was taking more than 80%. The primary responsibility of Web Services is to support the approximately 1300 content developers on the Campus Wide Information System (http://www.inform.umd.edu) and the content and administration of the Office of Information Technology server, (http://www.oit.umd.edu). We desperately needed some way to manage the student activities support the inform server, the OIT server, and the design and development services.

4. WEB PROJECTS DATABASE

The implementation of the Cold Fusion Server offered us the capability to develop an online database that could capture and display information and track the activities of the unit. One of the students agreed to learn how to code for Cold Fusion applications and the projects database was the designated initial project. The primary purpose of the database is to track student activities and capture data about projects.

5. SCREENS

5.1 Manager's Screen

Figure 1 displays the information that a manager can administrate.

Change an Employees Password	Change a Projects Password	
Insert New Billing Type	Update Billing Type	
Insert New Project	Update Project	View Projects
Insert New Employee	Update Employee	View Employees
Insert New Meeting	Update Meeting	View Meetings
Log Time Worked	Edit an Incorrect Time Log	View Time Logs
Make Comments on a Project	Delete Comments	View Comments
Assign Tasks for a Project	View Tasks for a Project	

Figure 1. Web Services Project Database – Manager's Screen

5.2 Student Screen

Figure 2 displays The students' screen allows them the ability to view projects, log and edit time worked, make comments on a project and view project tasks.

Change Password		
		View All Projects
	Update Employee Information	View all Employees
Insert New Meeting	Update Meeting	View Meetings
Log Time Worked	Edit an Incorrect Time Log	View Time Logs
Make Comments on a Project		View Comments
	View Tasks for a Project	

Figure 2. Web Services Project Database – Student's Screen

5.3 Billing Screen

Billing types currently include database development, web site maintenance, usability studies, web design, web site architecture,

Compact disk burning, and other. Charges vary based on the services provided.

5.4 Project Information

The information captured about the project includes a name, description, URL, project priority, point of contact information and billing type. The screen also allows the assignment of employees and associated tasks. Figure 3 is a snapshot of the project information, Figure 4 the employee assignment, and Figure 5 the point of contact information.

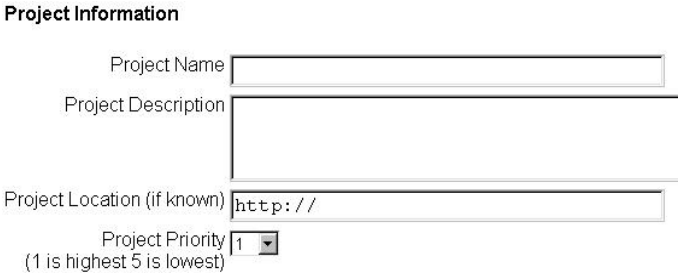

Figure 3. Web Services Project Database – Project Information Screen

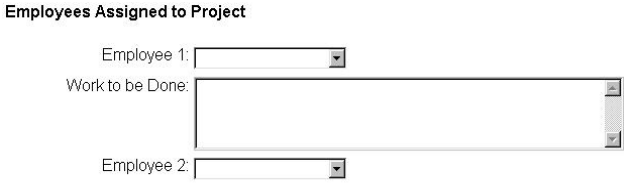

Figure 4. Web Services Project Database – Project Information Screen – Employee Assignment

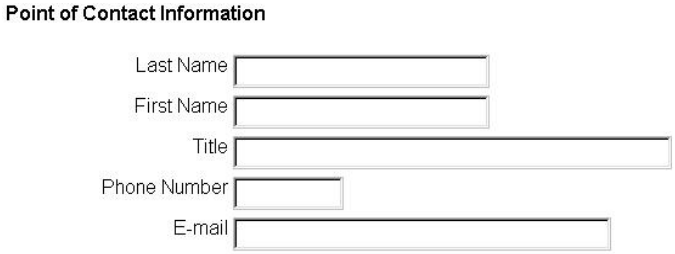

Figure 5. Web Services Project Database – Project Information Screen – Point of Contact

5.5 Meeting Information Screen

The Meeting Information screen, Figure 6, inserts information on who the meeting was with and the purpose of the meeting. This allows students to keep the manager informed when they meet with any customer.

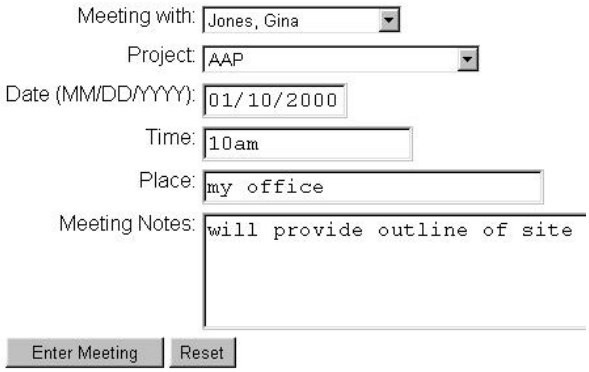

Figure 6. Web Services Project Database – Meeting Information Screen

5.6 Task Screens

The Task Screens allow the manager to electronically assign a task to a specific student and review those tasks. When the task is assigned, the student receives an email that a task has been assigned by the manager. Figure 7 shows the task assignment screen.

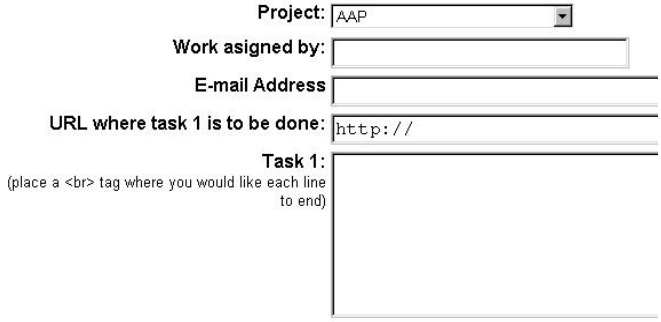

Figure 7. Web Services Project Database – Insert Task Assignment Screen

Figure 8 allows the manager to view all tasks associated with a project

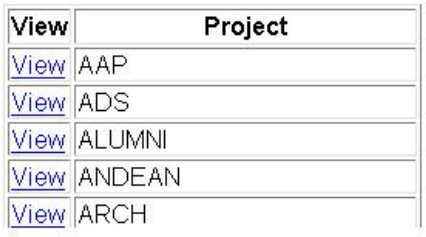

Figure 8. Web Services Project Database – Select Task Assignment Review by Project

Figure 9 lists all the tasks that have been assigned to a specific project and allows for updating and deleting the task.

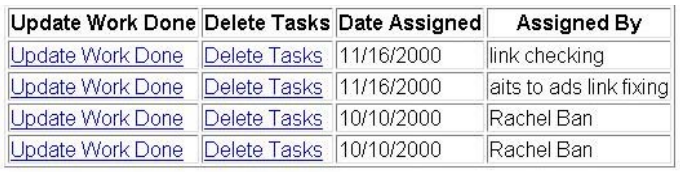

Figure 9. Web Services Project Database – View Project Task Assignment

Figure 10 outlines what was done, who did it and if it was completed.

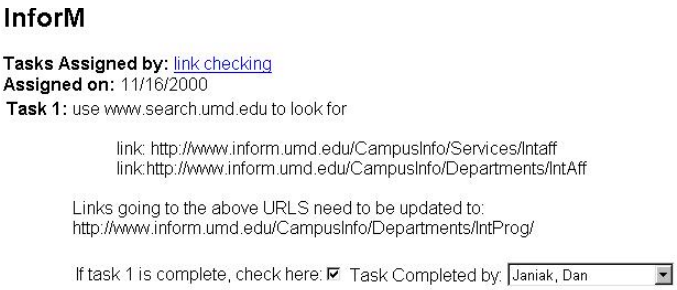

Figure 10. Web Services Project Database – Insert Task Assignment Screen

5.7 Time Log Screens

The Time Log Screens are the most important part of the database and it really depends on the students capturing their activities accurately and in a timely fashion. Figure 11 is the screen that the students are required to complete for every project that they work on during the day. They can consolidate all tasks for any one project.

Figure 11. Web Services Project Database – Time Logged Screen

Students may edit their own time logs and the manager can edit all timelogs on the Edit an Incorrect Time Log Screen (Figure 12).

Update	Delete	Employee	Date	Project
Update	Delete	Heacock, Elizabeth	12/30/2000	InforM
Update	Delete	Heacock, Elizabeth	12/28/2000	InforM
Update	Delete	Heacock, Elizabeth	12/26/2000	InforM
Update	Delete	Heacock, Elizabeth	12/25/2000	InforM
Update	Delete	Heacock, Elizabeth	12/23/2000	InforM
Update	Delete	Heacock, Elizabeth	12/21/2000	InforM

Figure 12. Web Services Project Database – Edit an Incorrect Time Log

Student Time Logs can be viewed in 2 ways. Either by time log entry, Figure 13, or by project. Time log entry is a chronological listing of all time log entries made by the student.

Time Logs for James Melzer

WebMail

Date: 9/25/00

Project Worked On: Graduate Catalog

Hours: 2

Location of Work: http://

Description of What was Done:
info arch design for next version, set up tables, navigation

Figure 13. Web Services Project Database – Student Time Logs

Figure 14 shows information about the student and then specific work activities associated with a project for that student.

James Melzer

Date of Birth: 05/14/73

Email: jmelzer@info.umd.edu

Employee Since: 08/01/1999

Projects Worked On:

- UNION Time Logs for this Project
- Web Hosting Time Logs for this Project
- CNI Time Logs for this Project
- Grad Research Time Logs for this Project
- NERA Time Logs for this Project
- Training Time Logs for this Project

Figure 14. Web Services Project Database – Student Information

Figure 15 displays all work done by the student for a specific project. It auto totals the number of hours on a project, then sequentially lists all of the time log entries.

Work done by James Melzer on Grad Research

Total Hours Worked on this Project: 32.25

Date: 01/24/2001

Hours: .75

Location of Work: http://

Description of What was Done:
meeting with client

Figure 15. Web Services Project Database – Student Time Logs by Project

5.8 Comment Screen

The Comment Screens functionality, Figure 16, has not been implemented yet, but the intention is to allow the customer to view work that has been done and make comments, corrections or design instructions on this screen.

Name:
Project: AAP
Comments:
(put a
 where you would like each line to end)
Submit Comments! Reset

Figure 16. Web Services Project Database – Comment Screen

5.9 Project Checklist Screen

The Project Checklist Screen provides for a final review of projects completed. Figure 17 reviews the design requirements.

1. Provide New Design Yes No
Main Pages Completed By Elizabeth and Fang
Secondary Pages Completed By Elizabeth and Fang
2. Provide WebSpinner Styles Yes No
Completed By Fang

Figure 17. Web Services Project Database –Checklist Review – Design Requirements

Figure 18 shows the review for specific content requirements review.

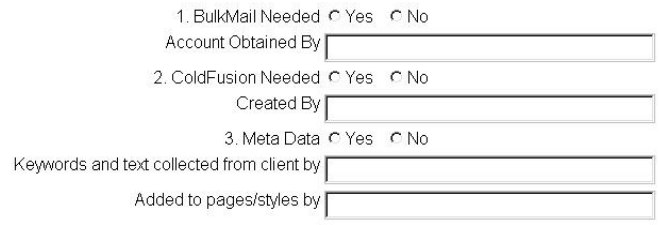

Figure 18. Web Services Project Database –Checklist Review – Content Review for Requirements

Figure 19 shows the various elements that are tested before implementation. This includes an accessibility testing using Bobby, spell-checking, code-checking, link-checking, forms testing and university guideline check.

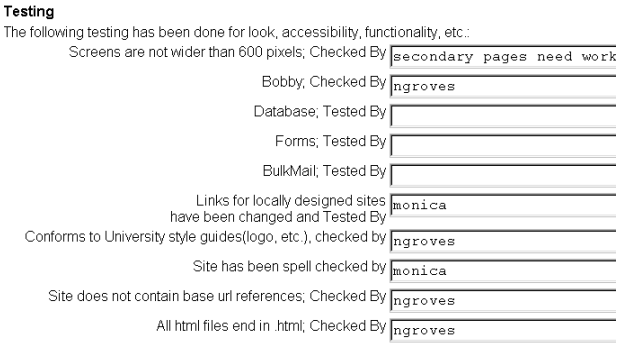

Figure 19. Web Services Project Database –Checklist Review – Testing

Figure 20 provides a header and footer check for correctness of information.

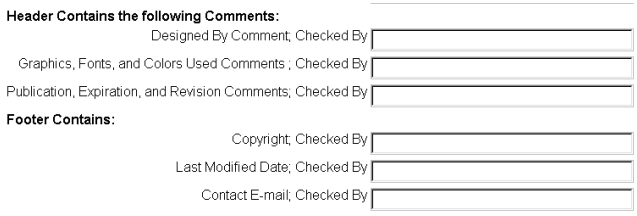

Figure 20. Web Services Project Database –Checklist Review – Header and Footer Check

Figure 21 shows the requirement for browser checks.

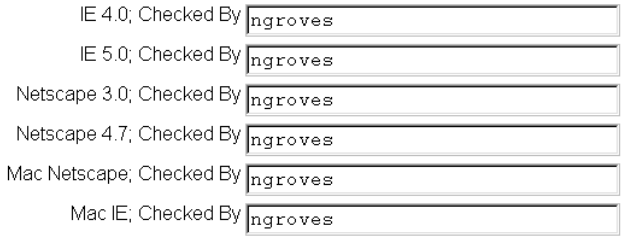

Figure 21. Web Services Project Database –Checklist Review – Browser Check

Figure 22 shows the remaining administrative items that may be required to launch the site and manage the web services process.

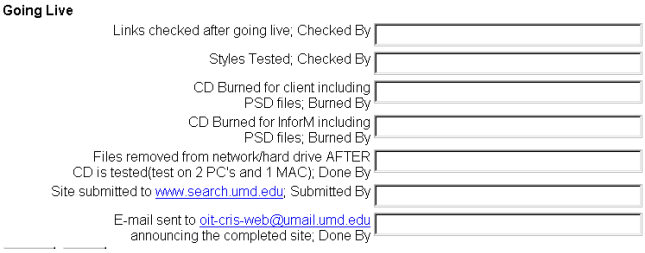

Figure 22. Web Services Project Database –Checklist Review – Going Live

6. WEB SERVICES PROJECT DATABASE REVIEW

6.1 Benefits

The database has been a positive enhancement to the management of the Web Services student staff and overall fiscal administration.

6.1.1 Office of Information Technology (OIT) Web Site

The database has allowed for tracking of activities required for maintaining the OIT web site during 2000-2001. During the budget development phase, Web Services requested additional funding to support the web site based on an activity level of 895 hours spent during the previous year.

6.1.2 Student Work Problems

The database has allowed for review of student work activity and monitoring of the length of time that it takes individual students to complete tasks. This has provided Web Services with the capability of identifying problem areas for students and assignment to follow-on training.

6.2 Issues

Maintaining the database is the key to having good data. Training students to enter the data is time consuming, but worthwhile, especially for identifying costs and time it takes to complete projects. This provides the key to our project management and positive cashflow.

6.3 Enhancements

Future enhancements include completing the customer portion as well as making some screens more user friendly.