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|  | **2011** |
|  | APSCUF-KU  Kenneth Rohlfing James Fody |

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| **[Software Project Plan]** |
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# Revision History

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| --- | --- | --- |
| Date | Action | Editor |
| 9/9/2011 | Created basic document structure. | Kenneth Rohlfing, James Fody, Jeremy Nagy, Adam Blank, Ralph Sharp, Aaron Higgins |
| 9/10/2011 | Applied template to document. | Kenneth Rohlfing |
| 9/11/2011 | Populated initial introduction, major functions, management and technical restraints, staff organization and appendix. | Kenneth Rohlfing |
| 9/22/2011 | Updated formatting, Introduction, Major Functions, Hardware, and Acronyms. Populated initial Risk Management, Project Schedule and Tasks. | Kenneth Rohlfing |
| 10/23/2011 | Moved Revision History to front of Document. Updated the Project Scope, Performance Issues, Management and Technical Restraints, Estimates, Appendix, Hardware, Software, Languages, Risk Management, and Project Tasks. | Kenneth Rohlfing |
| 11/15/2011 | Updated Major Functions, Performance Issues, Project Estimates, Project Resources, Team Structure, Management Reporting and Communication, Tracking and Control Mechanisms, Project Tasks | Kenneth Rohlfing |
| 12/8/2011 | Updated task list. | Kenneth Rohlfing |

# Introduction

This system will be created for the purpose of handling the voting process for APSCUF-KU. The clients include: Joo Tan, a member of the Nominations and Elections Committee; Karen Epting, the Office Manager of APSCUF-KU; and KunioMitsuma, APSCUF-KU’s webmaster.

## Project Scope

The entailed system shall handle the voting process of the APSCUF-KU election system. This will include a secure account creation and login system, account management, nominations, willingness to serve forms, creation of ballots and sending them to faculty. The system will manage functionality and display it based on the phase of a current election. The system must then report the tallied votes to the Nominations and Elections Committee, which will need to approve on the results. Finally, these results must be delivered to the APSCUF-KU president.

## Major Functions

### Administrator

* The administrator will enter faculty members into the system.
* The administrator will verify eligibility of nominees.
* The administrator will approve election results.
* The administrator will perform the coin toss if necessary.

### Nominations and Elections Committee (NEC)

* The NEC will approve the nominee slate.
* The NEC will sign off on the election results.

### Faculty

* Faculty will be required to create a password.
* Faculty will be able to nominate other users or himself.
* If a faculty member wishes to run for office, they must complete a willingness to serve form and have their eligibility verified.
* Faculty will be able to petition a nomination.
* Faculty will be able to vote anonymously.

## Performance Issues

### Speed

We have experienced some issues with the hosting site (ARVIXE.COM) having random latency spikes and server outages.

### Errors

We have experienced loss of code from a datacenter outage with the hosting site (ARVIXE.COM). They keep backups for every 24-hour period, and all development from that day was lost. The database information was not damaged.

## Management and Technical Restraints

### Time

Less than thirteen weeks of planning, analysis, design, and development before client acceptance test. Also, team members schedules only align one day per week, making the number of possible meetings limited.

### Experience

Developers with little ASP.NET experience and knowledge have learned the language well, and are developing the system in a time efficient manner.

# Project Estimates

## Historical data used for estimates

Experience with different web-hosting services, and their prices.

## Estimates

If APSCUF-KU does not have an available server to host the machine on, the estimated cost of web hosting is around $100.00 USD annually.

## Project Resources

### People

Seven computer science majors will collaborate on the completion of this system. In addition, there are three client contacts. We lost one team member at the end of phase 2 sprint 2.

### Hardware

Web-based service from ARVIXE.Exact hardware unknown.

### Software

In order to run an ASP.NET application on the web, Microsoft's IIS must be installed on the host machine. The development environment used is Microsoft Visual Studio using the MVC 3 framework.

### Languages

The system will be primarily written using ASP.NET using the MVC3 model. The code files will be written in C#. Web-based languages will also be used such as AJAX, HTML, CSS, and JavaScript.

### Operating Systems

Since the system will be written in ASP.NET, the operating system must be Windows-based.

# Risk Management

|  |  |
| --- | --- |
| Risk | Mitigation |
| Password email not received. | Notify Administrator after two weeks with no response. |
| User unable to login. | Password recovery options. |
| Incorrect user data entered. | Administrator can edit user data. |
| User leaves union or retires. | Administrator can delete user records. |
| Administrator deletes user that is logged in. | Create concurrent user table, so that a user cannot be deleted while logged in. |
| SQL Injection | Protected input fields with ASP.NET regular expression validators. |
| Administrator selects wrong option when approving eligibility. | Keep eligibility modifiable until that stage of the election passes. |
| Malicious user attempts to recover user password. | Malicious user would require access to the victim’s email account in order to change the password. |
| NEC selects wrong option when approving nominations. | Keep nomination approval modifiable until that stage of the election passes. |

# Project Schedule

|  |  |
| --- | --- |
| Phase | Activities |
| 0 | Team Organization  Initial Client Meeting  Set weekly meeting time and place  Set up project in TeamLab  Analyze Procedures Document  Create initial Software Project Plan  Requirements Elicitation  Begin Planning and Design for Phase 1 |
| 1a | Meet Karen Epting  Revise requirements  Set up web server  Finish SRS for phase 1b  Begin development goals for phase 1b |
| 1b | Implement user creation system  Implement login system  Implement password creation component  Create use-case diagrams  Create test cases  Test system  Present Prototype |
| 2, Sprint 1 | Plan, Design, Implement and Test Eligibility Approval Form, Nomination system and willingness to serve system. Present Prototype. |
| 2, Sprint 2 | Plan, Design, Implement and Test Election system. Present Prototype. |
| 3 | Client Acceptance Test  Prepare System and User Manuals  Ensure system can be installed from DVD |

## Project Tasks

|  |  |  |
| --- | --- | --- |
| Task | Description | Assigned To |
| Watch MVC3 Framework Tutorial | Watch the videos on the Model View Controller framework for ASP.NET. | Adam Blank, Ralph Sharp, Tommy Kauffman |
| Analyze Procedures Document | Analyze the procedure document for requirements. | Full Team |
| Review Legacy Documentation | Review the legacy documentation to discover if legacy system is worth using. | Kenneth Rohlfing, Aaron Higgins, Jeremy Nagy, James Fody, Rebecca Loux |
| Review Legacy Code | Review the legacy code to discover if legacy system is worth using. | Adam Blank, Ralph Sharp, Tommy Kauffman |
| Schedule Client Meeting | Schedule meeting with Karen Epting. | Kenneth Rohlfing |
| Set Developers Up on ASP.NET Host | Set up ftp accounts on the ASP.NET host for developers. | Kenneth Rohlfing |
| Interview Client | Interview Karen Epting to discover requirements. | Kenneth Rohlfing, Jeremy Nagy, James Fody |
| Create Initial SPP | Create the initial Software Project Plan | Kenneth Rohlfing |
| Create Initial SRS | Create the initial Software Requirements Specification | James Fody, Kenneth Rohlfing |
| Implement Login System, Password Creation, and Create User forms. | Fulfill the implementation goals of phase 1b. | Adam Blank, Ralph Sharp, Tommy Kauffman |
| Create Test Cases | Create the test cases based off of the SRS. | Rebecca Loux, Jeremy Nagy, James Fody |
| Phase 1B Presentation | Every team member must be prepared with a 5 minute 30 second presentation about their work on the system. | Full Team |
| Weekly Planning (Meeting) | Planned for the implementation of the approve eligibility, change password, and recover password functionalities. | Full Team |
| Use-case table | Create the use-cases for approve eligibility, change password, and recover password. | James Fody |
| Sequence Diagrams | Sequence Diagrams for Approve Eligibility, Change Password, and Recover Password. | Aaron Higgins, Jeremy Nagy, Kenneth Rohlfing |
| Implement Eligibility, Change Password, and Recover Password forms. | Implement these forms based off of the sequence diagrams created by the system designers. | Adam Blank, Ralph Sharp, Kenneth Rohlfing |
| Create System Test Cases | Create the test cases based off of the use-cases. | Rebecca Loux, James Fody, Kenneth Rohlfing |
| System Testing | Performed by other team. Errors and suggestions had to be taken into consideration. | RebbecaLoux, Adam Blank, Kenneth Rohlfing |
| Fix Errors from System Testing | Fix the errors that were found and confirmed from the system testing. | Tommy Kauffman |
| Weekly Planning (Meeting) | Began UI design discussion. Planned Willingness to Serve form. | Full Team |
| Use-Case table | Create the use-case for the Willingness to Serve form. | James Fody |
| Database Design | Design tables for the willingness to serve and eligibility approval processes. | James Fody, Kenneth Rohlfing |
| Sequence Diagrams | Sequence Diagram for the Willingness to Serve procedure. | Aaron Higgins, Kenneth Rohlfing |
| Initial UI Design | Draft an initial UI design. This design will not be present in testable prototypes, as it is being kept secret from the other team. | Jeremy Nagy |
| Implement Willingness to Serve | Implement all required forms, database tables, and SQL queries in order to make Willingness to Serve functional. | Adam Blank, Ralph Sharp, Kenneth Rohlfing |
| Create and Update Test Cases | Create the test case for willingness to serve, and update old test cases as required. | Rebecca Loux, James Fody |
| System Testing | Performed by other team. Errors and suggestions had to be taken into consideration. | Rebecca Loux, Kenneth Rohlfing |
| Weekly Planning (Meeting) | Discussed first draft of UI. Planned the nomination, nomination petition, and NEC approve nomination processes. | Full Team |
| Use-Case table | Create use cases for nomination, nomination petition, and NEC approve nomination processes. | James Fody |
| Sequence Diagrams | Create sequence diagrams for nomination, nomination petitions, and NEC approve nomination processes. | Aaron Higgins, Kenneth Rohlfing |
| UI Design, Second Draft | Create the second draft of the UI. | Jeremy Nagy |
| Database Design | Set conventions for database. Design new and altered tables to support the nomination, nomination petition, and NEC approve nomination process. | James Fody, Adam Blank, Kenneth Rohlfing. |
| Implement nomination process | Implement nomination form, and petition nomination form. | Adam Blank, Ralph Sharp |
| Phase 2 Sprint 1 Presentation | Every team member must be prepared with a 5 minute 30 second presentation about their work on the system. | Full Team |
| Alpha Testing | Internal testing of the system by team. | Rebecca Loux, Jeremy Nagy, James Fody, Kenneth Rohlfing |
| Testing Revisions | Any errors found fixed on spot. | Adam Blank, Ralph Sharp, Kenneth Rohlfing |
| Vote: Fire Tommy Kauffman | Anonymous Vote with 6 in favor, 0 opposed, and 1 abstained. Tommy Kauffman fired. | Full team |
| Weekly Planning (Meeting) | Planned the election object, timeline object, and the views. Reviewed acceptance criteria. Laid out all of the election phases, and the functionality available to each role in those phases. | Full team |
| Diagram design | Design sequence diagrams for the management of views, and design-class diagrams for the election, timeline, and view objects. | Aaron Higgins, Kenneth Rohlfing |
| UI Design | Third increment of the UI design | Jeremy Nagy |
| Implementation | Fine-tuning components and preparing them to be used in views. | Adam Blank, Ralph Sharp |
| Beta Testing | Other team tested system scenarios. Many failed due to the state of the system being broken up into components to be reorganized into views. | Both Teams |
| Developer Meeting | Discussed database design, straightened out any misconceptions of design, mapped out remaining work | Adam Blank, Ralph Sharp, Kenneth Rohlfing |
| Design and Implement View Pages | Implement roughly 16 view pages based off of phase and role. (Two-week task) | Kenneth Rohlfing |
| Weekly Planning (Meeting) | Led by Adam Blank. Discussed results of developer meeting, and planned for the upcoming presentation. | Full team minus Kenneth Rohlfing |
| Changes to bylaws (Document) | Assigned task | Aaron Higgins, Ralph Sharp, James Fody |
| Future Changes and Additions to System (Document) | Assigned task | James Fody, Ralph Sharp, Rebecca Loux |
| Implement Views, Voting | First increment of views implemented. Voting fully functional. | Adam Blank, Ralph Sharp, Kenneth Rohlfing |
| Phase 2 Sprint 2 Presentation | Sell system. Discuss design and implementation decisions on all different types of functionality. | Full team |
| Implementation | System Reset, Results, Approval, and Acceptance phases, email notifications, Results component | Kenneth Rohlfing, Adam Blank, Ralph Sharp |
| Error Fixes | Nomination Acceptance/Denial | Ralph Sharp |
| Page Validation | Add page validators to the create election room. | Adam Blank |
| Alpha Testing | Tests conducted on 11-25-2011 | Jeremy Nagy, Rebecca Loux |
| Suggest Changes to Bylaws | Create a document suggesting any changes to the bylaws for the system. | James Fody, Aaron Higgins |
| Suggest Future Changes to System | For handing off to the next team. | Aaron Higgins, Ralph Sharp, James Fody |
| Fine tune system for acceptance testing | Full Acceptance | Full Team |
| Create System Manual | System manual for the system. | Ralph Sharp, Kenneth Rohlfing, Rebecca Loux, Aaron Higgins |
| Create User Manual | Create a manual for faculty members on how to use the system. | Jeremy Nagy |
| Create Installation Guides | Create a set of guides on how to set up the system environment | Jeremy Nagy, James Fody |
| Client Installation | Assist the client in installing the system | Any available team members. |

## Team Structure

|  |  |
| --- | --- |
| Team Member | Role(s) |
| Kenneth Rohlfing | Project Leader, Project Manager |
| James Fody | Systems Analyst |
| Jeremy Nagy | System Designer, System Tester |
| Aaron Higgins | System Designer |
| Adam Blank | System Developer |
| Ralph Sharp | System Developer |
| ~~Tommy Kauffman~~ | Fired - System Developer |
| Rebecca Loux | System Tester |

## Management Reporting and Communication

Our management and collaboration tool is an open-source, ASP.NET web-platform named TeamLab. This system gives access to milestone management, task delegation, discussion boards, document hosting, and team management.

Despite TeamLab hosting document management, Google Docs is being used as the primary document management system. Google Docs allows in-browser editing and the ability to easily share collections of documents with the client.

During phase 2 sprint 1, the team decided to use Skype as an instant messaging service for communication. Skype has built-in chat logs, and both video and voice calling.

At the end of phase 2 sprint 1, TeamLab was abandoned. While it was rich with functionality, the team members did not understand, or were not motivated to use it. Adam Blank created a Google site to manage tasks and the modification request report.

# Tracking and Control Mechanisms

## Quality Assurance and Control

In addition to implementation-time unit testing, we perform weekly alpha testing, as well as frequent beta testing.

## Change Management and Control

Weekly release notes are written by the developers, and a modification request record is kept by the system testers.

# Appendix

## Acronyms and Abbreviations

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| Acronym/Abbreviation | Full Text |
| AJAX | Asynchronous JavaScript and XML |
| APSCUF-KU | Association of Pennsylvania State College and University Faculties at Kutztown University |
| ASP.NET | Active Server Pages using Microsoft's .NET platform |
| C# | Pronounced "C Sharp," it is a programming language for the Microsoft Windows platform. |
| CSS | Cascading Style Sheets, used for formatting web pages. |
| HTML | HyperText Markup Language, used for structuring web pages. |
| IIS | Internet Information Server |
| MVC | Model View Controller |
| SRS | Software Requirements Specification |
| SPP | Software Project Plan |
| XML | eXtensible Markup Lanaguage |

# Milestone Evaluation