Software Project Plan

Version 3.0

iVote System

APSCUF-KU

Spring 2012

4/6/2012

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Table of Contents

Revision History

Version	Date	Action	Editor
1.0	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
2.0	2/1/2012	Changed font, cover sheet and theme colors; revised the following sections: • Project Scope; • Performance Issues; • Management and Technical Restraints; • Project Resources: People, Languages, Operating Systems; • Risk Management; • Project Schedule / Activities; • Team Structure; • Management Reporting and Communication; • Tracking and Control Mechanisms; and • Appendix.	Nancy Rothermel

Version	Date	Action	Editor
2.1	2/10/2012	Updated Project Schedule / Activities table; Appendix, page numbers.	Nancy Rothermel
2.2	2/17/2012	Corrected version number, added additional functions for administrator and faculty under Major Functions section, updated Project Schedule / Activities table, added descriptive sentences under Team Structure and Acronyms and Abbreviations sections, removed Milestone Evaluation page.	Nancy Rothermel
2.3	3/23/2012	Updated date for Version 2.2, added descriptive sentence under “Major Functions” section, updated Project Schedule / Activities table, updated “Tracking and Control Mechanisms” section.	Nancy Rothermel
3.0	4/6/12	Updated Project Schedule / Activities table, “Performance Issues” and “Management and Technical Restraints” sections updated, added context diagram and system architecture diagram.	Nancy Rothermel

Introduction

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

Project Scope

The entailed system is based on the *Procedures of the APSCUF-KU Nominations and Elections Committee of Kutztown University*. It 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 electronic delivery 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 the results. Finally, these results must be delivered to the APSCUF-KU president.

Major Functions

This section provides a high-level description of each user's functions.

Administrator

- The administrator will enter faculty members into the system.
- The administrator will verify eligibility of nominees.
- The administrator will view election results.
- The administrator will approve election results.
- The administrator will submit 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.
- Faculty will be able to view election results.

Performance Issues

- Articulate records will be kept to keep track of bugs and other issues.
- As the project progresses, these bugs and issues are being resolved.

Management and Technical Restraints

- The project has a deployment deadline of April 30, 2012.
- All members of the team must work together in order to reach this deadline.

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 two client contacts.

Hardware

Virtual server from VPSPort with 1GB RAM.

Software

In order to run an ASP.NET application on the web, Microsoft's IIS and MySQL must be installed on the host machine. The development environment used is Microsoft Visual Studio 2010 using the MVC 3 framework. .NET 4, IIS 7 and MySQL 5.5 were used for development and testing.

Languages

The original language of the system is ASP.NET and C#. The project will be expanded using these languages as well as web-based languages such as AJAX, HTML, CSS, and JavaScript.

Operating Systems

Microsoft Windows will be used as the operating system since the program is written in ASP.NET.

Risk Management

See Risk Management Plan, version 1.2, authored by Matthew Basta, dated March 23, 2012.

Project Schedule / Activities

Below is a table outlining each phase, a short description of the task, estimated duration, date due, and resource(s), meaning the person(s) responsible for completing the task.

Phase	Task	Est. (Days)	Due	Resource(s)
0 – Planning	Client Meeting (Dr. Tan)	1	1/27	All
	Client Meeting (Karen Epting)	1	2/1	All
	Define Problem	1	2/2	:basta, :nroth
	Team Follow-up, Project Initiation	1	2/8	All
	Work Breakdown Structure	1	1/27	:basta
1 – Analysis and Design	Build SRS (Software Requirements Specification)	4	2/2	:rgrof, :bfair
	Build SPP (Software Project Plan)	7	2/3	:nroth
	Build IGR (Information Gathering Report)	3	2/4	:rgrof, :bfair
	Build Risk Management Plan	7	2/6	:basta, DV
	Build Quality Assurance Plan	5	2/7	TBD
	Business Requirements	7	2/9	:bfair, :julio
	Architectural Design	4	2/12	:rgrof
	Use Case Diagram	2	2/11	:rgrof
	System Sequence Diagram	2	2/11	:rgrof

Phase	Task	Est. (Days)	Due	Resource(s)	Status
2 – (Sprint 1) Detail Design	Design Review	1	2/15	All	Completed
	Class Diagram	2	2/13	:bfair	Completed
	Design Modeling/Low-level Design	4	2/11	:bfair	Completed
	Development Plan	3	2/12	:abash, :julio	Completed
	Build test cases (TDD) for Sprint 1 goals	14	2/21	:basta, :rob	Completed
Development/ Testing	DB modeling and prototyping	7	2/21	:bfair	Completed
	Logic/Controller modeling and prototyping; refactoring of legacy code for new back-end design	7	2/28	:julio, :bfair	Completed
	Development of functional test suite based on system design	7	2/28	:basta, :rgrof	Completed
	Development/implementation of automated testing framework	5	3/2	:basta, :abash	Completed
	First Testable Prototype Completion	-	3/2	All	Completed

Phase	Task	Est. (Days)	Due	Resource(s)	Status
2 – (Sprint 2) Design/ Development/ Testing	Development of basic WTS flow	4	3/6	:bfair, :rgrof	Completed
	Development of election initiation and voting flow; "unrectified" election results	7	3/14	:abash	Completed
	Development of WTS eligibility filter	4	3/14	:bfair	Partially completed
	Development of election conflict detection	4	3/21	:bfair, :abash	Partially completed
	Development of preliminary conflict rectification interface	7	3/28	:abash	Partially completed
	Implementation of test cases as automated tests	14	3/14	:basta, :rob	Completed
	Code average analysis	4	3/20	:basta, :rob	Completed
	Development of additional test cases	7	3/27	:basta, :rob, :rgrof	Completed
	Second Prototype Completion	-	3/28	All	Completed

Phase	Task	Est. (Days)	Due	Resource(s)	Status
2 – (Sprint 3) Implementation	Release Testing	7	4/9	:basta, :rob	
	Bug fixing, refactoring	14	4/12	DV	
	Final Product Completion	-	4/13	All	
	Packaging and final documentation gathering	7	4/10	DV	
	Code Coverage Analysis	4	4/9	:basta, :rob	
	Final Code Quality Analysis	7	4/9	:basta, :rob	
3 – Project Deployment	Inspection Walkthrough Meeting	1	4/9	All	
	Prototype Due	7	4/10	DV	
	Acceptance Testing	5	4/27	All	
	Deploy Project using CD	20	4/30	All	

Team Structure

The structure of the team consists of one Project Leader, one Project Manager, Systems Analysts, System Designers, System Developers, and System Testers. Team members may take on other roles as needed. However, no team member may be both a System Developer and System Tester.

Team Member	Role(s)
Matthew Basta	Project Leader, System Tester
Nancy Rothermel	Project Manager, System Tester
Andrew Bashore	System Designer, System Developer
Brian Fairservice	Systems Analyst, System Developer
Lee Fehrs	System Tester
Ryan Groff	Systems Analyst, System Designer
~~Julio Ingar~~	~~System Developer~~ (dropped class)
Roberto Rodriguez	System Designer, System Tester

Management Reporting and Communication

Our communication tool is Google Groups. This tool allows the group to organize discussion by topic and post reminders about upcoming deadlines and meetings.

Google Docs is used to manage documentation relating to the project. Legacy as well as current documentation can be found here.

The tool used to build the program code is GitHub. According to Wikipedia, GitHub is a web-based hosting service for software development and uses the Git revision control system (http://en.wikipedia.org/wiki/GitHub).

Tracking and Control Mechanisms

Quality Assurance and Control

- Quality assurance and control will be achieved in the following ways:
    - Reliable, automated testing of the system.
    - Managing risk and insuring there are mitigation procedures in place.
    - Frequent communication with client.
    - Managing day-to-day activities of the team.
    - Insuring integrity and honesty in reporting (i.e., hours worked, documents written).

Change Management and Control

- Change management and control will be achieved in the following ways:
    - The numbering system for document revisions must be consistent.
    - The revision history for a certain document must be updated whenever changes are made.
    - The team, especially the leader and manager, must be informed of any major project changes that take place.

Diagrams

Context Diagram

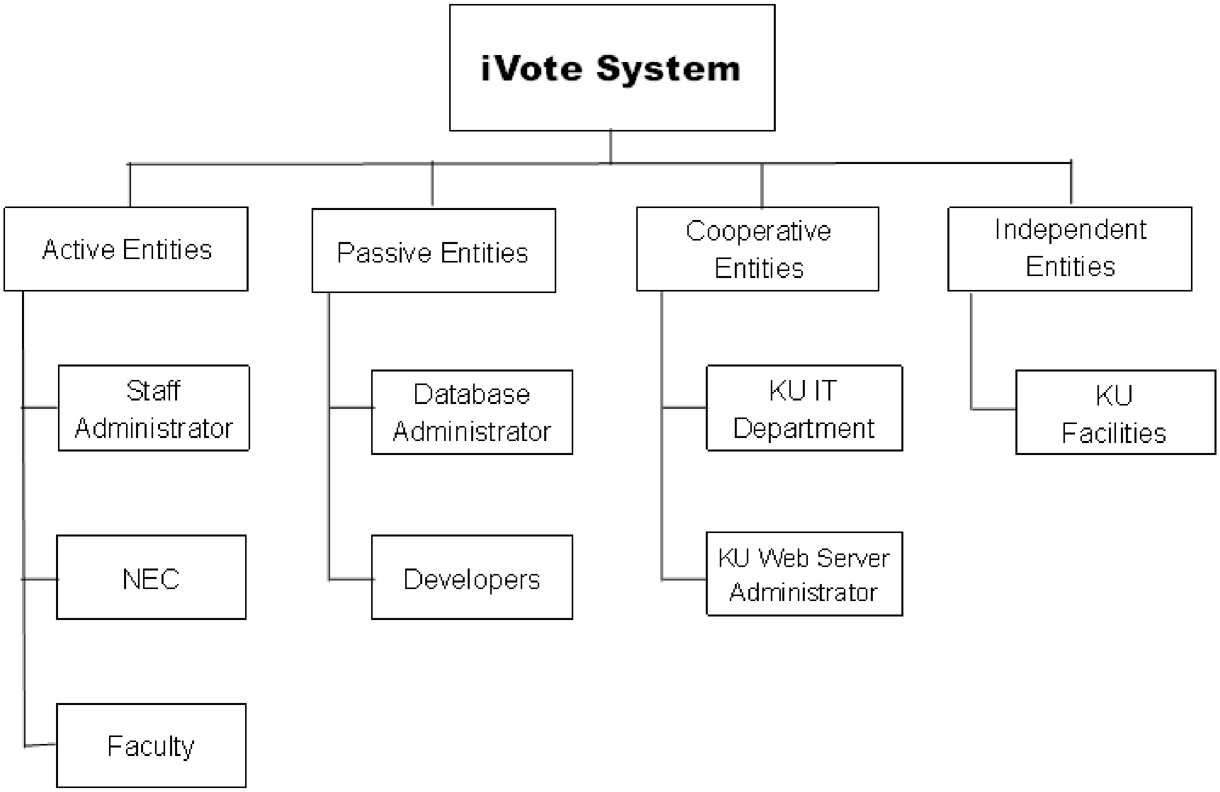
A context diagram[1] for the iVote system is shown on the following page. This diagram can be interpreted as follows:

- There are four different groups of entities that may directly or indirectly interact with the iVote system.
    - *Active entities* are those actors which interact with the system on a regular basis, such as staff administrators (APSCUF-KU secretary), NEC (members of the Nominations and Elections Committee), and faculty.
    - *Passive entities* are those who may interact with the system on an infrequent basis, such as database administrators or developers.
    - *Cooperative entities* may affect the system on a predictable basis, such as the KU IT Department and the KU Web Server Administrator.
    - *Independent entities* affect the system indirectly, such as the KU Facilities Department (i.e., in the event of a power outage or natural disaster).

[1] "System Context Diagram." Wikipedia, 4 Mar. 2012. Web. 5 Apr. 2012.

<http://en.wikipedia.org/wiki/System_context_diagram>.

Context Diagram

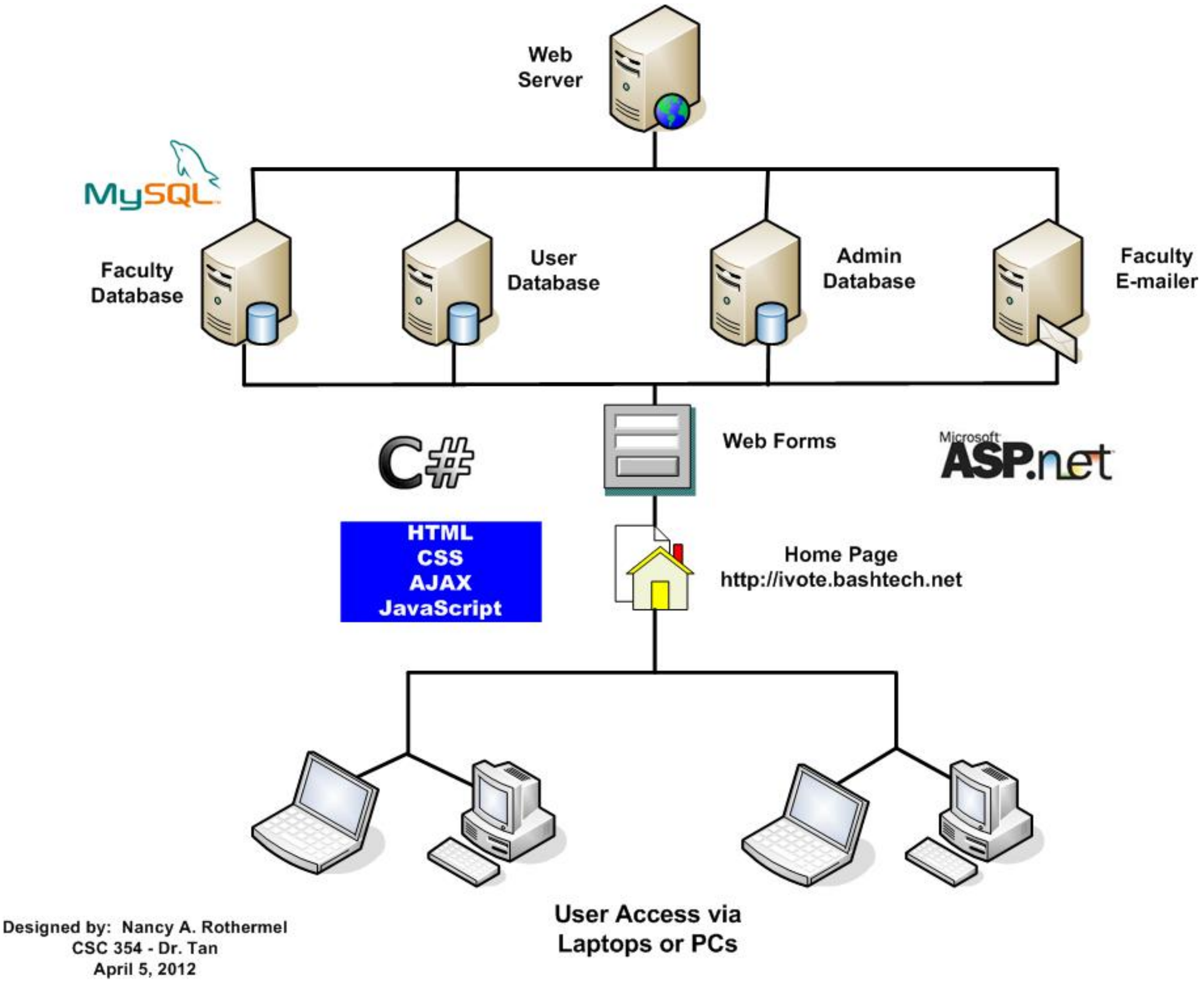


Designed by: Nancy A. Rothermel
CSC 354 – Dr. Tan
April 5, 2012

System Architecture Diagram

A client/server system architecture diagram for the iVote system is shown below. It can be interpreted as follows:

- Clients access the home page via laptops or PCs.
- From the home page, various web forms are accessed depending on what the client wants to do.
- Transmission of the web forms accesses information from databases or faculty e-mailer.
- All of the above generate requests to the web server.
- The web server then responds back to the client.



Appendix

Acronyms and Abbreviations

Below is a table listing some of the common acronyms and abbreviations pertaining to team structure and project development.

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.
DV	Developer
HTML	HyperText Markup Language, used for structuring web pages.
IGR	Information Gathering Report
PL	Project Leader
PM	Project Manager
SA	Systems Analyst
SD	System Designer
SRS	Software Requirements Specification
SPP	Software Project Plan
ST	System Tester
WBS	Work Breakdown Structure
WTS	Willingness-to-Serve
XML	eXtensible Markup Language