System and Software Architecture Description (SSAD)

Women at Work Website Redesign

Team 14

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Version History

Date	Author	Version	Changes made	Rationale
10/12/14	Dinesh Yeduguru Srikanth Madhava	1.0	• Various diagrams for system context, use case, behavior have been inserted • Have written description for each section	• Initial draft version 1.0 of SSAD • To fulfill exit condition of Draft FC package
10/19/14	Dinesh Yeduguru	1.1	• Added Diagrams using Visual Paradigm	• Earlier version did not use the tool
11/29/14	Dinesh Yeduguru	2.0	• Changed the system context diagram and use case diagram • Added the section about technology specific system design	• Feedback from TA • New sections to be added

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1. Introduction

1.1 Purpose of the SSAD

The purpose of this document is to show the results of the object oriented analysis and design of the system being developed. The developer as reference to the system architecture uses the SSAD. The website and the solution being developed should be faithful to the architecture specified in the SSAD. Furthermore, the SSAD is used by the maintainer and clients to help understand the structure of the system once the proposed website is delivered.

1.2 Status of the SSAD

This version is the second version of SSAD. The major changes include

1) The naming of actors is made consistent through out the document.
2) The diagrams are drawn using visual paradigm.

2. System Analysis

2.1 System Analysis Overview

The primary purpose of the Women at Work web site being developed is to provide more efficient registration and user feedback of the client's using their services. The system allows online registration and feedback at the user's convenience. The system allows the user to check-in when they arrive at the WaW site for services. The web site provides secure document sharing for the WaW board members and report generation to collect user statistics. The web site provides a capability for blogging and social media integration for wider outreach

2.1.1 System Context

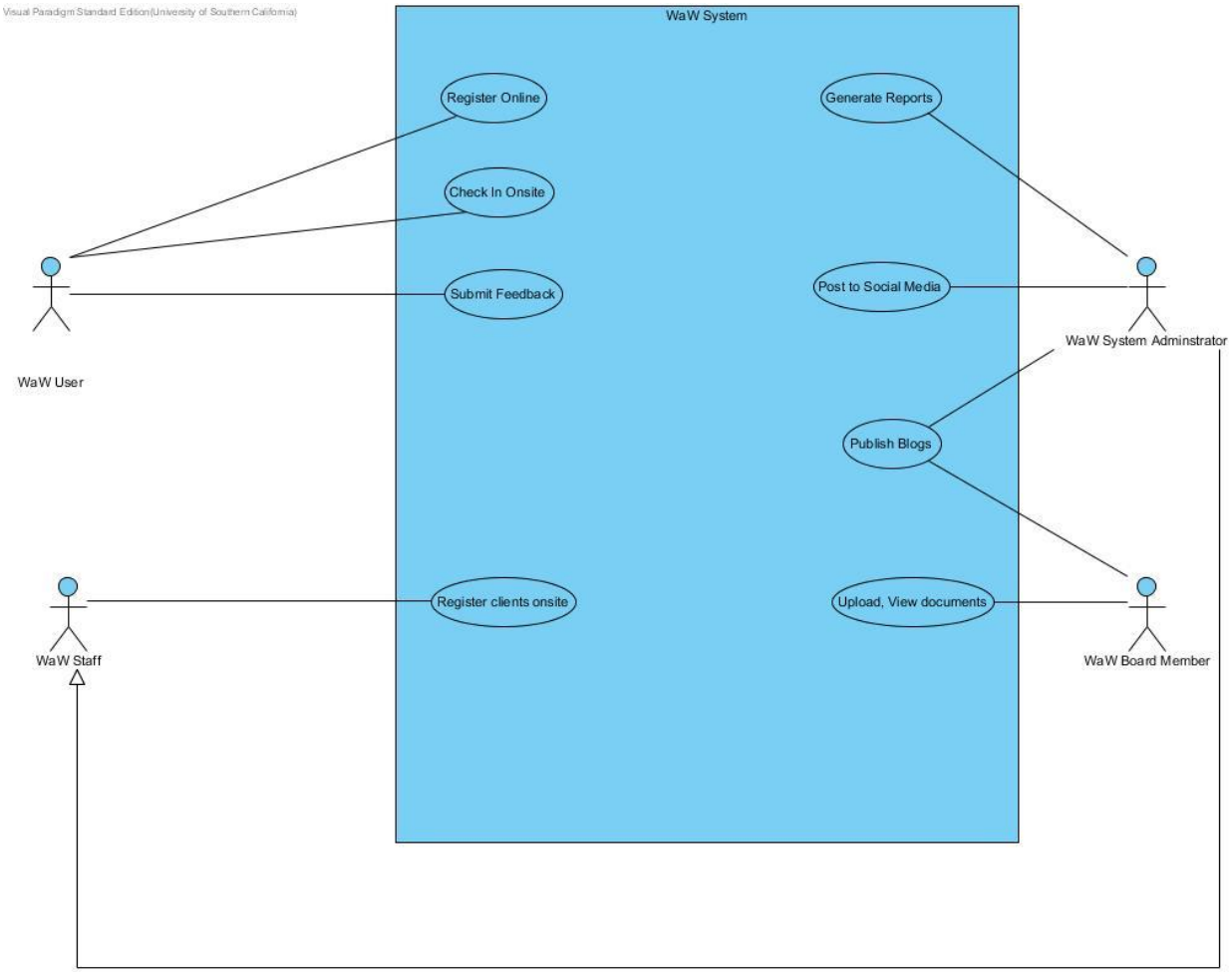

Figure 1: System Context Diagram

Table 1: Actors Summary

Actor	Description	Responsibilities
WaW Staff	WaW staff includes front desk staff	• Help users with registration • Help users with check-in • Help users with getting appointment with counselor • Point of contact for the users who arrive at the location
WaW User	WaW users are the clients who sign up for the programs	• User shall register in order to attend the programs • User shall check-in before attending a program • User shall submit feedback about the progress
WaW Board Member	These include the directors, presidents and secretaries of the organization	• Raise funds for the organization • Manage the organization • Board members shall use the portal for document management • Board members shall publish blogs in the website
WaW System Administrator	This include the system administrators and database administrators at WaW	• Maintain the IT infrastructure • Troubleshoot issues • Generate Reports • Add articles to the website through WordPress blogging engine • Publish blogs in the website

Requirements Grid

ID	Documentation
CR-1	Automated user registration through the online form
CR-2	Automated User Check-in
CR-3	Automated User Feedback
CR-4	Secure Data Management Portal
CR-5	Report generation
CR-6	Social Media Integration

2.1.2 Artifacts & Information

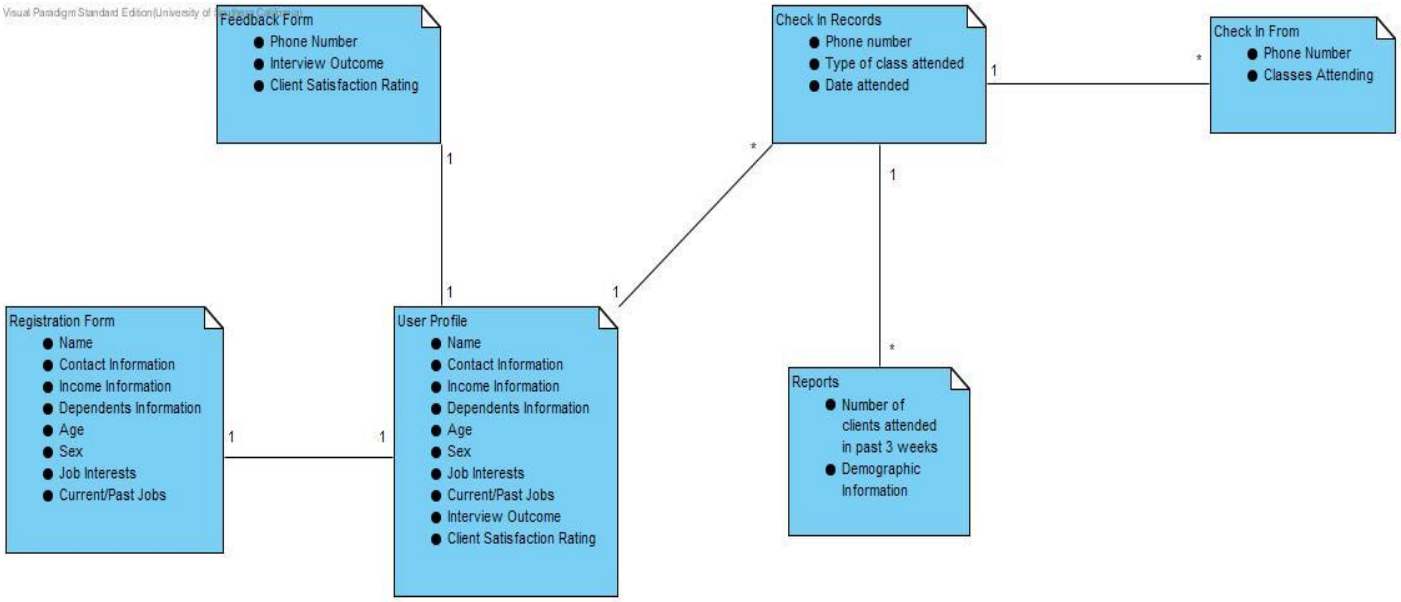

Figure 2: Artifacts and Information Diagram

Table 2: Artifacts and Information Summary

Artifact	Purpose
Registration From	Used by the user to register
User Profile	Information about the user is stored here
Check-In records	The user check-in information
Check-In form	Used by user to check-in
Feedback form	Used by user to submit feedback
Blogs	Blogs posted by WaW System Administrator
Board Member Documents	Documents uploaded for sharing by the WaW Board members
Website Articles	Articles added to the website
Reports	Reports generated from the check-in information

2.1.3 Behavior

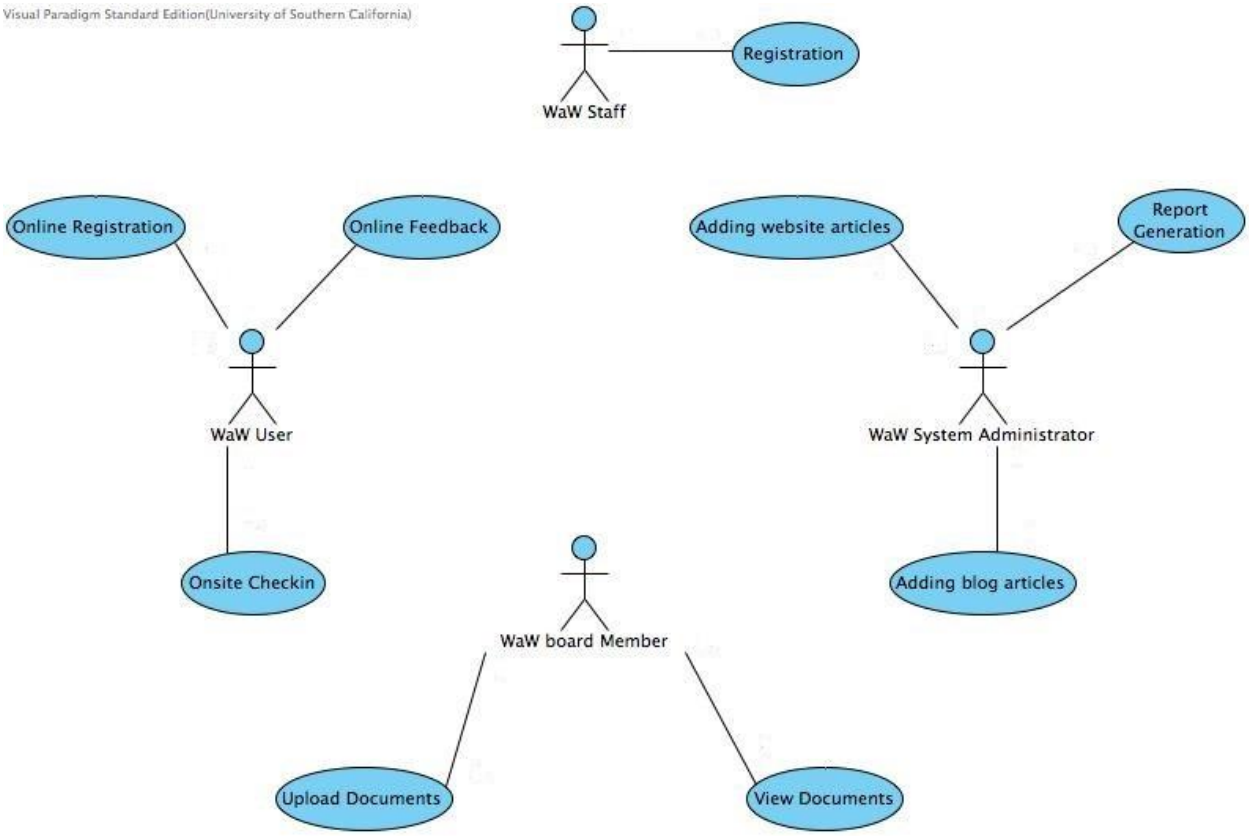

Figure 3: Process Diagram

2.1.3.1 Registration Capability

2.1.3.1.1 Online Registration Process

Table 3: Online Registration Process Description

Identifier	UC-1: Online Registration
Purpose	For the user to register with WaW. This replaces the paper

	registration form.
Requirements	CR-1: Automated User Registration
Development Risks	None
Pre-conditions	1. Neon CRM is in a working condition 2. User should have access to a computer with browser capability and connected to Internet
Post-conditions	If user enters valid data, the data is stored into Neon CRM. Otherwise, an error is displayed to the user

Table 4: Typical Course of Action

Seq#	Actor's Action	System's Response
1	[WaW user] clicks Register Online button	Redirects user to registration page
2	[WaW user] enters registration details and submits	System makes an REST Call with Registration details to Neon CRM.
3	[Neon CRM] validates data	
4		[valid] Inserts registration data into the Neon CRM.

Table 5: Alternate Course of Action

Seq#	Actor's Action	System's Response
1-3		Refer to the typical course of action
4		[invalid] Displays an error message to the user with the corresponding error code.

2.1.3.2 Feedback Capability

2.1.3.2.1 Online Feedback Process

Table 6: Online Feedback Process Description

Identifier	UC-2: Online Feedback
Purpose	For the user to give feedback to WaW. This replaces the telephonic feedback process.
Requirements	CR-3: Automated User Feedback

Development Risks	None
Pre-conditions	1. User should be registered 2. User should be willing to give feedback
Post-conditions	If user enters valid data, the data is stored into Neon CRM. Otherwise, an error is displayed to the user

Table 7: Typical course of action

Seq#	Actor's Action	System's Response
1	[WaW user] Users navigates to the feedback page	
2	[WaW user] Clicks the submit feedback button	redirects to the feedback form
3	[WaW user] enters the feedback and submits	System makes an REST Call with Feedback details to Neon CRM.
4	[Neon CRM] Validates the feedback data	
5		[valid] Inserts feedback data into the Neon CRM.

Table 8: Alternate course of action

Seq#	Actor's Action	System's Response
1-4		Refer to the typical course of action
5		[invalid] Displays an error message to the user with the corresponding error code.

2.1.3.3 Onsite User Check-in

2.1.3.3.1 Onsite User check-in process

Table 9: On-line check-in process description

Identifier	UC-3: Onsite User Check-in
Purpose	For the user to check in at WaW location so as to keep track all the users visited.
Requirements	CR-2: Automated User Check-in
Development Risks	None
Pre-conditions	1. User should be registered 2. User should arrive at the location
Post-conditions	If user enters valid data, the data is stored into MySQL DB. Otherwise, an error is displayed to the user

Table 10: Typical course of action

Seq#	Actor's Action	System's Response
1	[WaW user] user selects all the options that apply to him	
2	[WaW user] Clicks the submit button	System makes an REST Call with user details to Neon CRM
3	[Neon CRM] Verifies if user is registered	
4		[valid] Inserts check-in data into the MySQL DB.

Table 11: Alternate course of action

Seq#	Actor's Action	System's Response
1-3		Refer to the typical course of action
5		[invalid] Displays an error message to the user with the corresponding error code.

2.1.3.4 Secure File Management

2.1.3.4.1 Secure File Management upload process

Table 12: Secure File management upload process description

Identifier	UC-4: Secure Document Management
Purpose	For the board members to provide secure document management portal to share the confidential documents.
Requirements	CR-4: Secure Data Management Portal
Development Risks	None
Pre-conditions	1. Board members should be registered 2. Board members should have access to a computer with browser capability and connected to Internet
Post-conditions	The uploaded documents can be accessed from a secure third party data portal

Table 13: Typical course of action

Seq#	Actor's Action	System's Response
1	[WaW user] Board members will login as Board from WaW website	
2	[WaW user] Clicks the upload link to upload the document	System redirects the user to upload page
3	[WaW user] Uploads the document	
4		[valid] The document is stored in the secure data management portal.

Table 14: Alternate course of action

Seq#	Actor's Action	System's Response
1-3		Refer to the typical course of action

5		[invalid] Displays an error message to the user with the corresponding error code.

2.1.3.4.2 Secure File Management view process

Table 15: Secure File management view process

Identifier	UC-5: Secure Document Management
Purpose	For the board members to provide secure document management portal to view the confidential documents.
Requirements	CR-4: Secure Data Management Portal
Development Risks	None
Pre-conditions	1. Board members should be registered 2. Board members should have access to a computer with browser capability and connected to Internet
Post-conditions	The uploaded documents can be accessed from a secure third party data portal

Table 16: Typical course of action

Seq#	Actor's Action	System's Response
1	[WaW user] Board members will login as Board from WaW website	
2	[WaW user] Clicks on document which needs to be viewed	
3		[valid] System redirects the user to the document

Table 17: Alternate course of action

Seq#	Actor's Action	System's Response
1-2		Refer to the typical course of action
3		[invalid] Displays an error message to the user with the corresponding error code.

2.1.3.5 Report Generation

2.1.3.5.1 Report Generation process

Table 18: Report generation process

Identifier	UC-6: Report Generation
Purpose	To collect various statistics by generating reports to make better business decisions.
Requirements	CR-5: Report generation
Development Risks	None
Pre-conditions	WaW System Admin should have access to a computer with browser capability and connected to Internet
Post-conditions	Downloaded reports can be accessed by any text editor that supports .csv file format

Table 19: Typical course of action

Seq#	Actor's Action	System's Response
1	[WaW System Administrators] Navigates to report generation module	
2	[WaW System Administrators] Selects the dates between which the reports are to be generated	MySQL runs various queries to generate reports and dumps it into Excel

2.1.3.6 Social Media Integration

2.1.3.6.1 Process of sharing articles to social media

Table 20: Process of sharing articles to social media

Identifier	UC-7: Social Media Integration
Purpose	To share articles added to website to social media
Requirements	CR-6: Social Media Integration
Development Risks	None
Pre-conditions	1. Article must be added to the website
Post-conditions	None

Table 21 Typical Course of action

Seq#	Actor's Action	System's Response
1	[WaW System Administrators] Navigates to article to be shared	
2	[WaW System Administrators] Clicks share button of the desired social media	Shares the article to the desired website

2.1.3.7 Blog

2.1.3.7.1 Process of Adding articles to blog

Table 22 Process of Adding articles to blog

Identifier	UC-8: Blogging Capability
Purpose	To add blog articles to the website
Requirements	CR-6: Social Media Integration
Development Risks	None
Pre-conditions	None
Post-conditions	None

Table 23 Typical Course of Action

Seq#	Actor's Action	System's Response
1	[WaW System Administrators] Logs into WordPress Admin Interface	
2	[WaW System Administrators] Navigates to add article section	
3	[WaW System Administrators] Submits an article to Blog category	System adds the article to blog

3. Technology Specific System Design

3.1 Design Overview

3.1.1 System Structure

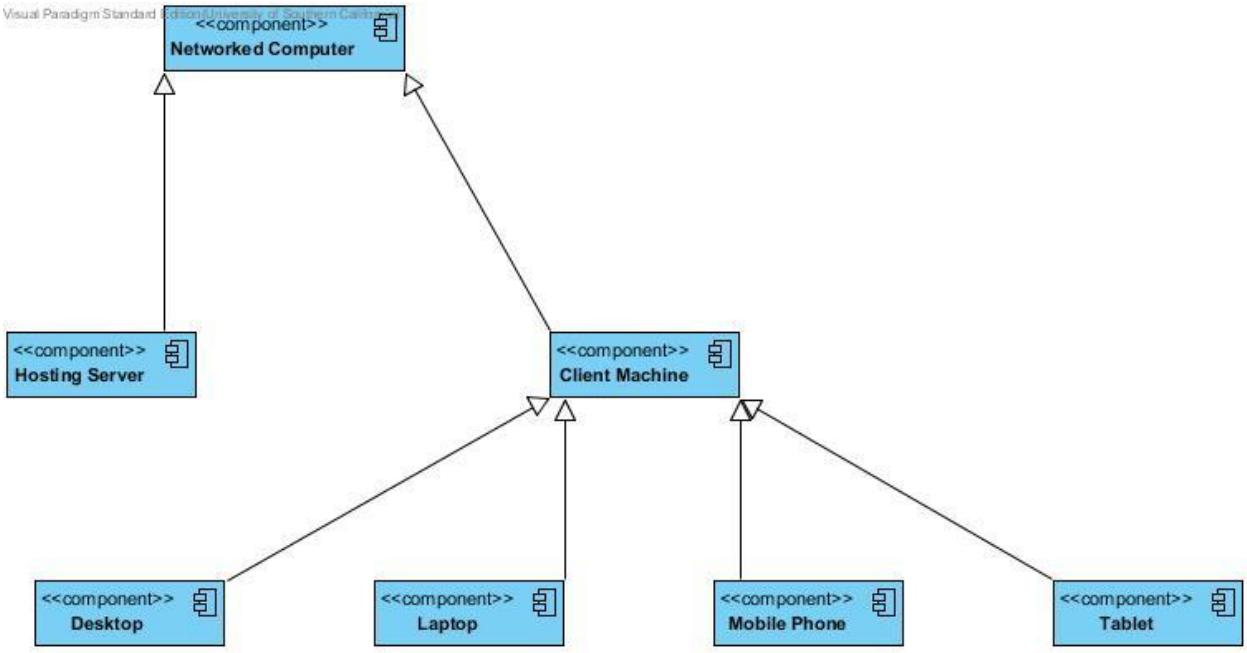

Figure 4 Hardware Component Class Diagram

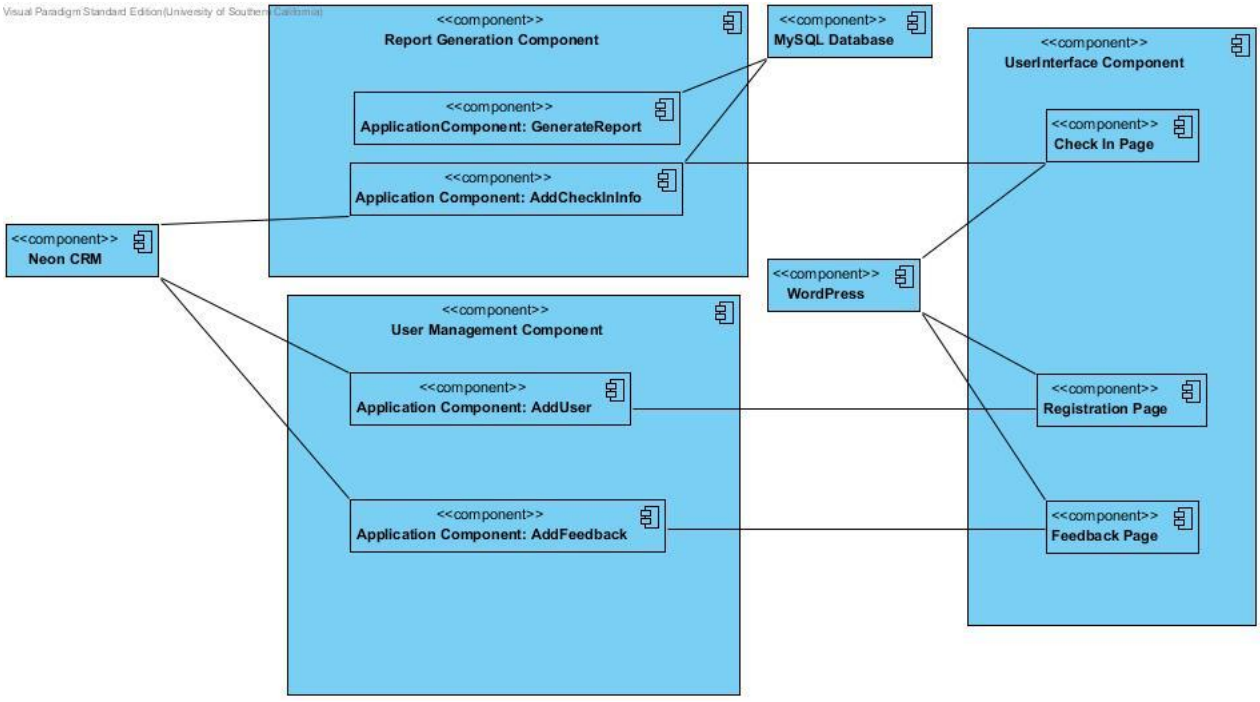

Figure 5 Software Component Class Diagram

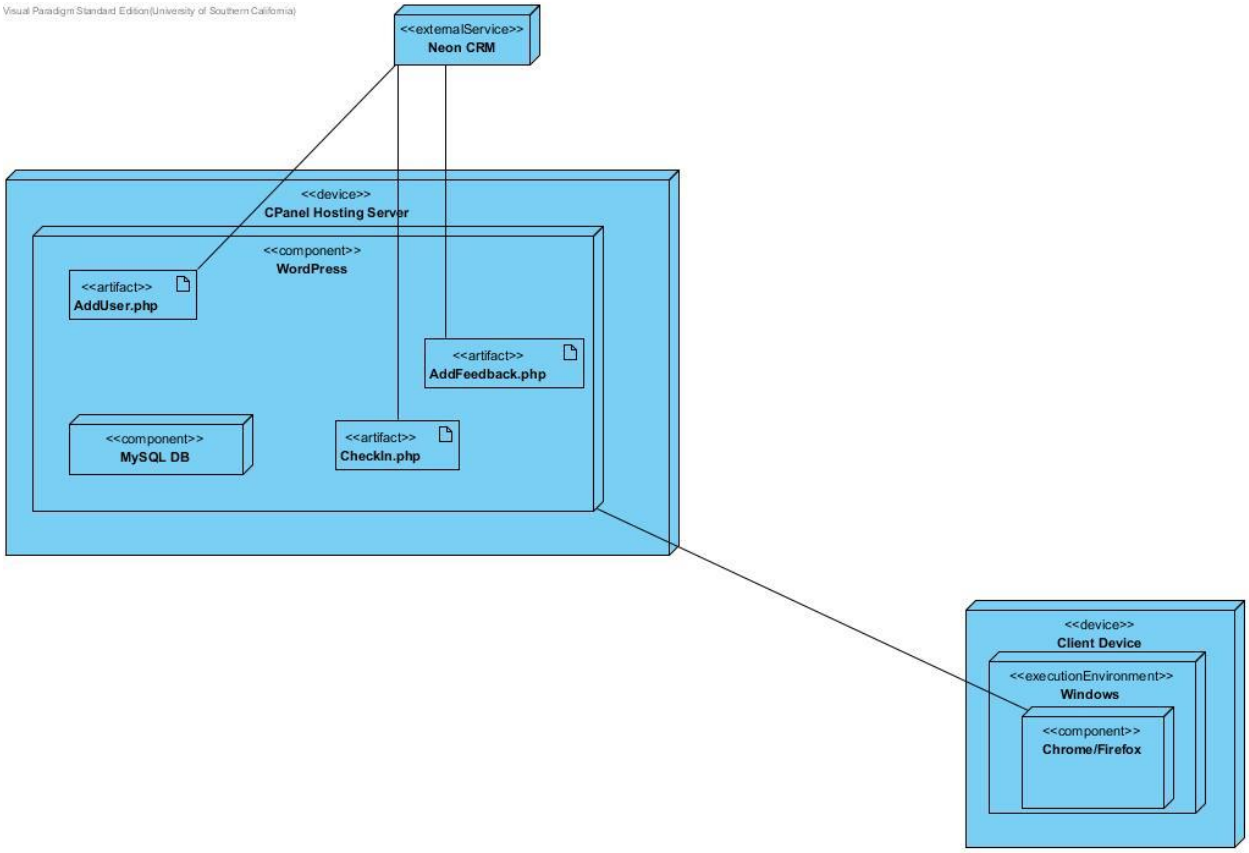

Figure 6 Deployment Diagram

Hardware Component	Description
Networked Computer	A computer that is connected to other networked computers through the internet.
Hosting Server	The CPanel server which hosts Wordpress
Local Server	The server which runs the WAMP server
Client Machine	Desktops/Laptops/Mobiles/Tablets which can run a browser and are connected to the internet

Software Component	Description
Report Generation Component	The component which checks in the clients attending classes and maintains this information to generate reports
User Management Component	This component registers new users and accepts feedback from existing users
UserInterface Component	This component is responsible for displaying the data to users and to collect data from users and will be the main point of interaction

3.1.2 Process realization

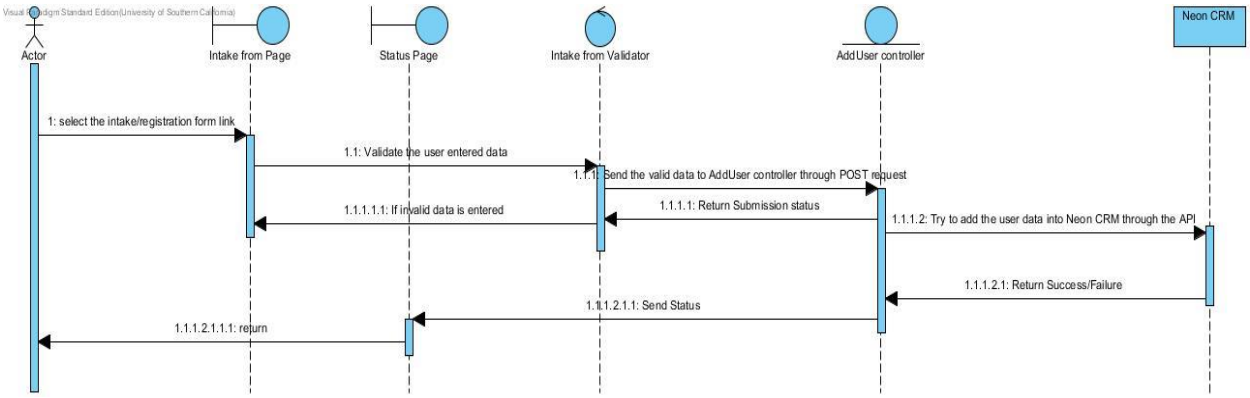

Figure 7 Registration Sequence Diagram

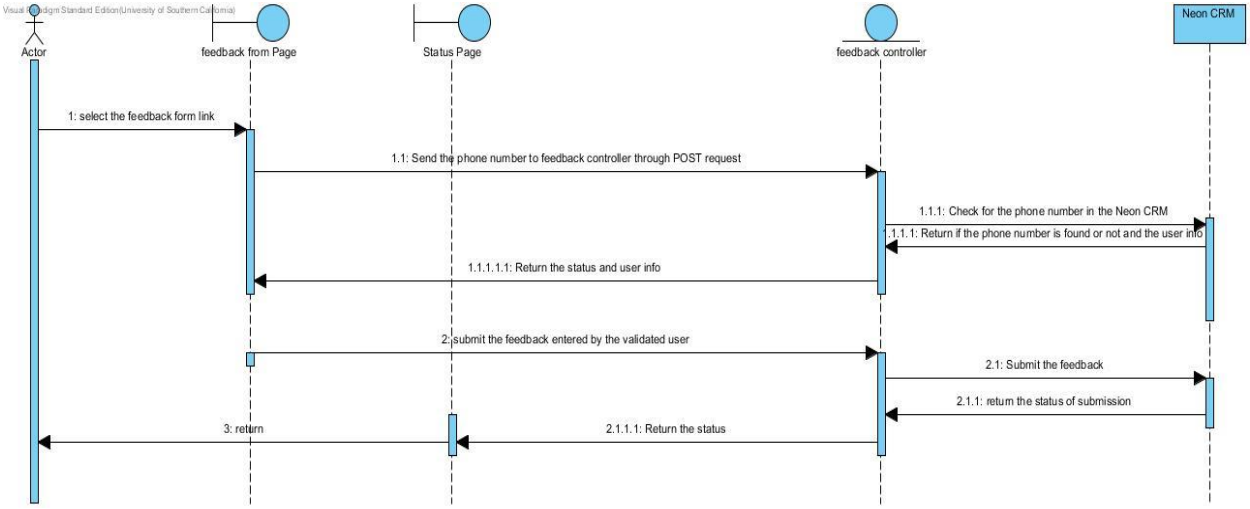

Figure 8 Sequence Diagram for submitting feedback

3.2 Design Rationale

In order to make the registration and feedback system accessible over the web, a web based solution was chosen. For the check in component, since it should be only accessible with in the WaW office, a local machine running WAMP server is chosen. WAMP bundles MySQL, PHP and Apache web server into a convenient package which is easy to install.

Since report generation mainly involved simple CRUD operations, MySQL database is chosen.

PHP is chosen for the server side scripting as Neon CRM's API library was written in PHP.

To make system more flexible and open to future changes three-tier architecture pattern was chosen. This pattern allows us to separate three layers of the system:

- User interface (web pages)
- Business logic (controls that implement study plan construction and other use cases)
- Data layer (date base, which store persistent information).

In order to make application simpler and more service oriented we chose REST architecture style for interaction with the system.