# System and Software Architecture Description (SSAD)

**ISTARTONMONDAY**

**TEAM # 03**

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# Version History

| Date | Author | Version | Changes made | Rationale |
|------|--------|---------|--------------|-----------|
| 10/09/2011 | B.S. | 1.1 | • Section 1,2 | • Initial draft for use with Instructional ICM-Sw v1.0 |
| 10/14/2011 | B.S. | 1.2 | • Section 1,2 | • Remove Bugzilla Error<br>• Diagrams and Tables updates as per the graded document |
| 10/16/2011 | B.S | 1.3 | • Section 1,2 | • Diagrams Updated, Use Case descriptions updated |
| 10/18/2011 | B.S. | 1.4 | • Sections 1,2 | • Table 1 and 2 Updated, Use case Diagram Updates, Bugs resolved as per notified via bugzilla |
| 10/24/2011 | B.S. | 2.0 | • Section 2 updates<br>• Section 3 added | • As per comments from ARB<br>• Requirement of DC package |
| 10/28/2011 | M.V. | 2.1 | • Section 2.1.3.x -- Updated tables 3, 9,13, 15, 27,32,37,46<br>• Section 1.2 | • Win Condition text was missing and some WCs were not applicable<br>• Updated phase and version info |
| 11/07/2011 | B.S. | 2.2 | • Section 1,2 | • Status and Tables updated as per the bugs |
| 11/21/2011 | B.S. | 2.3 | • Section 1,2 | • Index updated and document changed as per the remarks in graded docment |
| 11/23/2011 | B.S. | 3.0 | • Section1, 2 | Version and naming changes |
| 11/27/2011 | B.S. | 3.1 | • Section 2 | Missing diagram in place |
| 11/29/2011 | B.S. | 3.2 | • Section 2 | Artifact diagram and use case tables updated |
| 12/05/2011 | B.S. | 3.3 | • Section 1,2 | Updated as per the comments from the ARB, process diagram updated |

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# 1. Introduction

## 1.1 Purpose of the SSAD

The purpose of the SSAD is to document the results of the analysis and design of the project ISTARTONMONDAY. This document will serve to be the base structure for the developers of the system and act as a reference to keep a check on the operational and logical flow of the system. This document will also serve as an artifact to understand the underlying mechanism of the projects functionality for the maintainers and business experts and also as a starting point if the system is planned to be evolved.

## 1.2 Status of the SSAD

The current version of the SSAD is 3.3 and is part of the Transition Readiness Review Package. The document provides an overview of the system, describes the system context, describes artifacts and information created by the system, and describes the behavior of the system.

# 2.  System Analysis

## 2.1 System Analysis Overview

The main goal of the project ISTARTONMONDAY is to make the already running project more usable and bridge the gap between the Employers and job-seekers. The project is mainly targeted to job-seekers having low-level skills. The evolved system will provide the administrator of the website with a better interface. It will create a profile management system for both employers and job seekers. Both ends will be provided with search and filtering options to view opportunities and be fit for each other in a better way. The system is also going to contain automatic and bulk notification system so that the users don't have to come to the website over and again for small updates. This will create more opportunities for job seekers and less effort on the side of employer for finding a candidate and hence satisfy the aim of this non-profit organization.

## 2.1.1  System Context
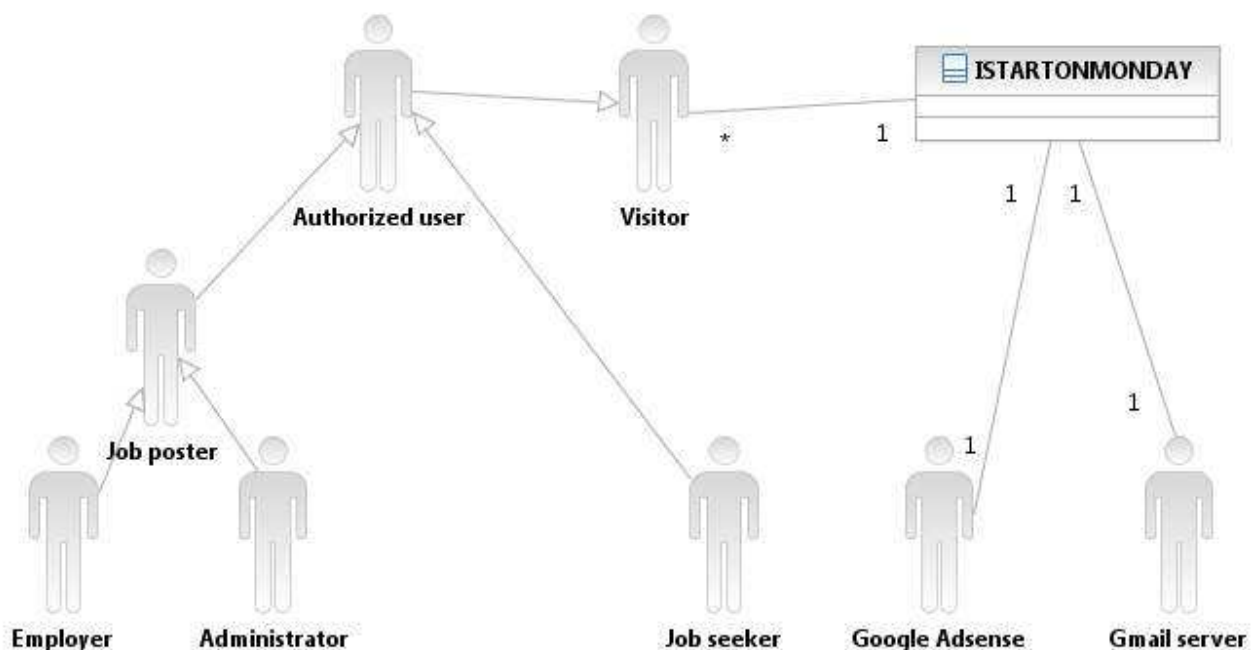


**Figure 1: System Context Diagram**

**Table 1: Actors Summary**

| Actor | Description | Responsibilities |
|---|---|---|
| Visitor | Any general internet user who comes on the website | • Browse the website<br>• Search job opportunities<br>• Subscribe to email notification<br>• Register on the website with a specific role |
| Authorized User | A user who is registered with the website and hold a username and password | • Browse Website<br>• Search Jobs<br>• Login<br>• Logout |
| Job Seeker | A website user who has a profile of a job seeker | • Authorized User functionalities<br>• Manage Subscriptions<br>• Manage Job-Seeker Profile |
| Job Poster | A website user who can post jobs on the website | • Authorized User Functionalities<br>• Post a job |
| Employer | A job poster who is registered as an employer to the website | • Job Poster Functionalities<br>• Manage employer profile<br>• Search candidates for a job requirement |
| Administrator | A job poster with administrator privileges | • Job Poster Functionalities<br>• Manage Advertisement<br>• Manage sponsors<br>• Send email notification<br>• Manage Website Content |
| Gmail | Email service by Google | • Manage an email account for all notification sent via email |
| Google Adsense | Advertisement service by Google | • Provide publish ready advertisements |

## 2.1.2  Artifacts & Information
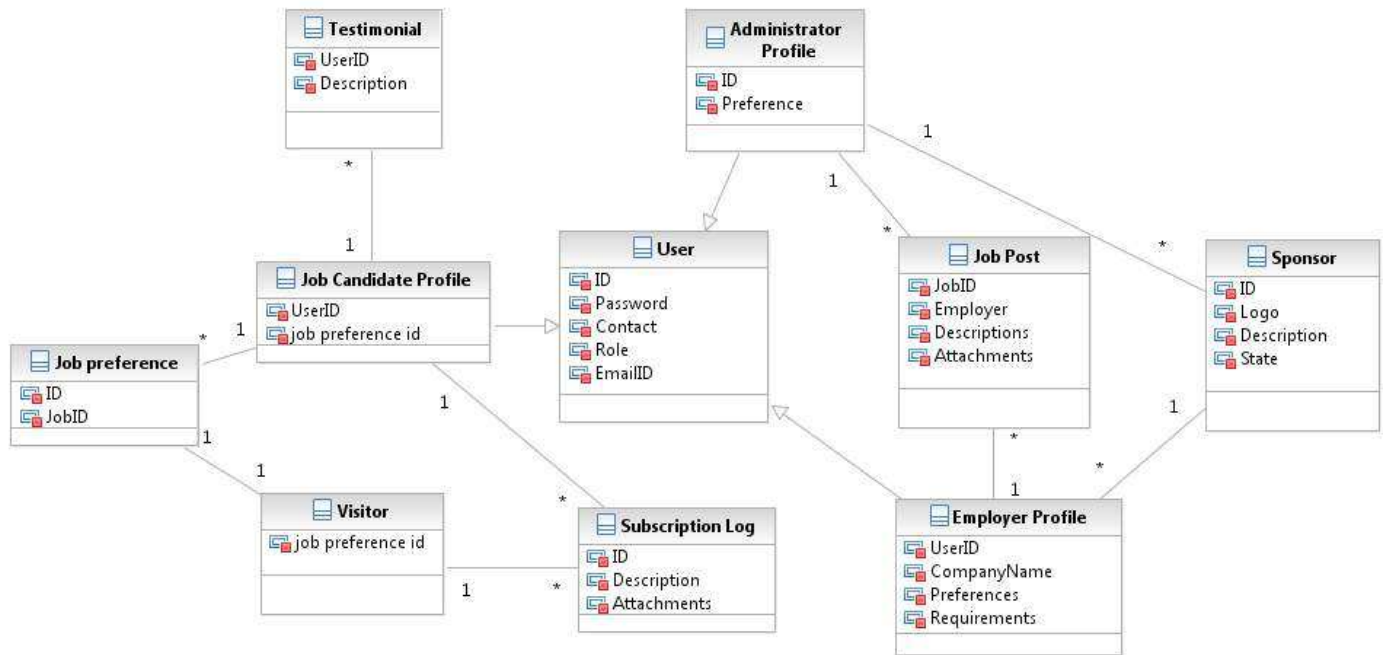


**Figure 2: Artifacts and Information Diagram**

**Table 2: Artifacts and Information Summary**

| Artifact | Purpose |
|---|---|
| User | A user of the website |
| Job Candidate Profile | Profile of the job seeker containing the preferences and personal information |
| Subscription Log | Records subscriptions of job seekers and visitors of the website |
| Testimonial | Feedback from the job seekers |
| Employer Profile | Profile of the employer posting the job containing all the details regarding the employer |
| Job Post | A post on the website containing the description of the job opportunity and requirements and the procedure to apply for it |
| Administrator Profile | The person who controls and moderates the website and its activities |
| Sponsor | All the companies sponsoring the cause of the website or acting as major employers in the website |

## 2.1.3  Behavior
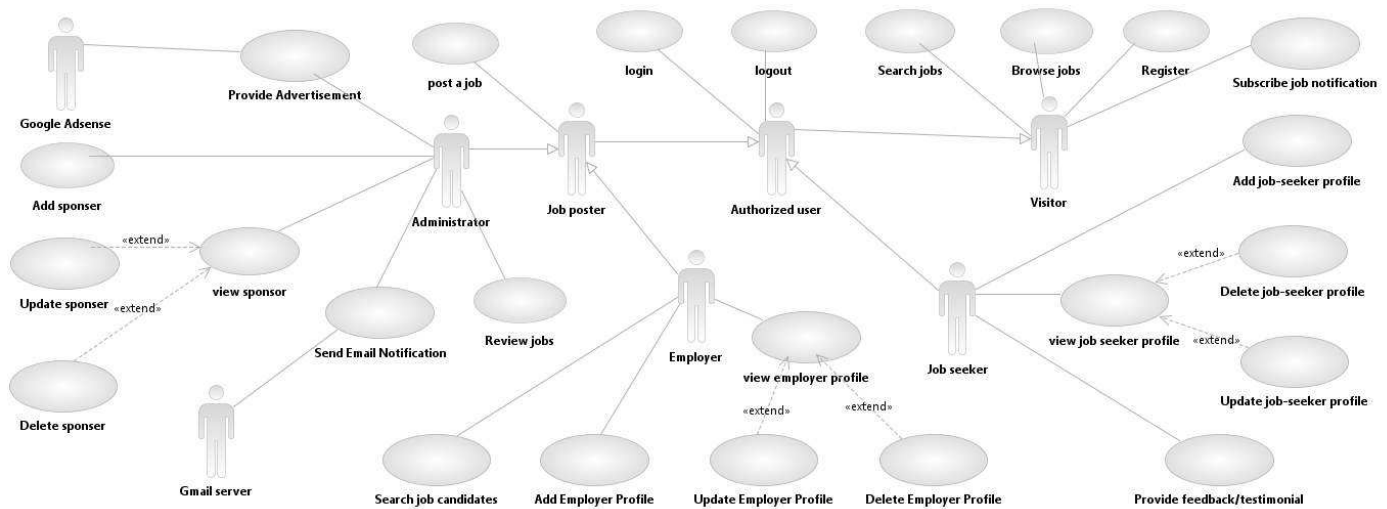


**Figure 3: Process Diagram**

## 2.1.3.1 Visitor

### 2.1.3.1.1 Browse Jobs

**Table 3: Process Description – Browse Jobs**

| Identifier | UC-01 : Browse Jobs |
|---|---|
| Purpose | Enable any person coming on the website to look for job opportunities |
| Requirements | WC_442 - Display a list of employers and their application documents<br>WC_460 The site should display employers'/organizations' logos<br>WC_450 Simple and intuitive UI<br>WC_453 The site should be usable on mobile devices<br>WC_438 Job postings should be categorized.<br>WC_1031 The main page should resemble the current site: it should contain a list of general job postings and announcements |
| Development Risks | Sorting preferences need to be discussed, Exception handler should be there |
| Pre-conditions | Job should be posted and stored in the database |
| Post-conditions | Website is displayed showing all Job opportunities |

**Table 4: Typical Course of Action – Browse Jobs**

| Seq# | Actor's Action | System's Response |
|---|---|---|
| 1 | Click on "Home" | |

| 2 | | Retrieve all job posts from database |
| 3 | | Display all posts in most recent first order |

**Table 5: Alternate Course Of Action – Browse Jobs**

| Seq# | Actor's Action | System's Response |
|---|---|---|
| 1 | | Send subscribed user an email about latest posts |
| 2 | Click on the link in the email | |
| 3 | | Direct user to the job post |
| 4 | | Display details about the job |

## 2.1.3.1.2 Search Jobs

**Table 6: Process Description – Search Jobs**

| Identifier | UC-02 : Search Jobs |
|---|---|
| Purpose | Enable unregistered general users to search for jobs and look at the categories of the jobs |
| Requirements | WC_458 - Allow key word searches on any match in the job listing. The results could pop-up any references in the job listing. |
| Development Risks | Algorithms not yet finalized |
| Pre-conditions | Jobs database should be ready |
| Post-conditions | Search results should be displayed |

**Table 7: Typical Course of Action – Search Jobs**

| Seq# | Actor's Action | System's Response |
|---|---|---|
| 1 | Type Keyword | |
| 2 | Press Search Button | |
| 3 | | Validate keyword |
| 4 | | Sort search result in categories as per given by employer |
| 5 | | Display Search Result |

**Table 8: Exceptional Course of Action – Search Jobs**

| Seq# | Actor's Action | System's Response |
|---|---|---|
| 1 | Type Keyword | |
| 2 | Press Search Button | |
| 3 | | Validate keyword |
| 4 | | Notify missing and erroneous fields |
| 5 | | Display the page again for entering a |

| | keyword |
|---|---|

## 2.1.3.1.3 Register

**Table 9: Process Description - Register**

| Identifier | UC-03 Register |
|---|---|
| Purpose | Enable a user to create a role and profile |
| Requirements | WC_465  The site should have a sign-up/registration page for employers<br>WC_606 The site should have a login page.<br>WC_1030 Employers register with an account |
| Development Risks | Should be collaborated with the wordpress database |
| Pre-conditions | User should fulfill all requirements for becoming a memebr |
| Post-conditions | User should be registered |

**Table 10:Typical Course of Action - Register**

| Seq# | Actor's Action | System's Response |
|---|---|---|
| 1 | Click on register button | |
| 2 | | Register form displayed |
| 3 | Fills out the registration form | |
| 4 | Clicks Submit | |
| 5 | | Validates the form |
| 6 | | Logs in the user |
| 7 | | Sends and email notification of the new user account created |

**Table 11: Alternate Course of Action - Register**

| Seq# | Actor's Action | System's Response |
|---|---|---|
| 1 | Click on register button | |
| 2 | | Register form displayed |
| 3 | Fills out the registration form | |
| 4 | Clicks Submit | |
| 5 | | Validates the form |
| 6 | | Notify erroneous fields |
| 7 | | Present the form again showing invalid fields |

**Table 12: Exceptional Course of Action - Register**

| Seq# | Actor's Action | System's Response |
|---|---|---|
| 1 | Click on register button | |
| 2 | | Register form displayed |
| 3 | Fills out the registration form | |

| 4 | Clicks Submit | |
|---|---|---|
| 5 | | Validates the form |
| 6 | | Username already exists |
| 7 | | Present the form again showing the message "username already exists" |

### 2.1.3.1.4

### Subscribe Job Notification

**Table 13: Process Description – Manage Subscription**

| Identifier | UC04 – Subscribe |
|---|---|
| Purpose | Allows visitors to subscribe to newsletter and job posts |
| Requirements | WC_462 - The site should allow users to subscribe or unsubscribe from email notifications |
| Development Risks | Need to decide on the types of subscription offered and email service integration needs to be worked out |
| Pre-conditions | User should be on the home page |
| Post-conditions | Subscription changes should be reflected in the database |

**Table 14: Typical Course of Action – Manage Subscription**

| Seq# | Actor's Action | System's Response |
|---|---|---|
| 1 | Click "subscription" | |
| 2 | | Display subscription page |
| 3 | Provide email address | |
| 4 | Click subscribe or unsubscribe | |
| 5 | | Update records for the user in the subscription table |
| 6 | | Display notification saying subscribed or unsubscribed |

## 2.1.3.2 Authorized User (Registered)

### 2.1.3.2.1 Login

**Table 15: Process Description - Login**

| Identifier | UC05 – Login |
|---|---|
| Purpose | Authenticate User |
| Requirements | WC_606  The site should have a login page.<br>WC_714  Role based authentication and authorization for using the website |
| Development Risks | How secure the system should be ?? |

| Pre-conditions | User should be on the home page of the website |
|---|---|
| Post-conditions | The user should be authorized and a session is created |

**Table 16: Typical Course of Action - Login**

| Seq# | Actor's Action | System's Response |
|---|---|---|
| 1 | Click Login Link | |
| 2 | | Display Login Form |
| 3 | Provide username and password | |
| 4 | Click Login | |
| 5 | | Validate and Check username and password |
| 6 | | Check Role of the Valid User |
| 7 | | Authorizes user to the website |

**Table 17: Alternate Course of Action - Login**

| Seq# | Actor's Action | System's Response |
|---|---|---|
| 1 | Click Login Link | |
| 2 | | Display Login Form |
| 3 | Provide username and password | |
| 4 | Click Login | |
| 5 | | Validate and Check username and password |
| 6 | | Display Invalid User |
| 7 | | Present Login Form Again |

**Table 18: Exceptional Course of Action - Login**

| Seq# | Actor's Action | System's Response |
|---|---|---|
| 1 | Click Login Link | |
| 2 | | Display Login Form |
| 3 | Provide username and password | |
| 4 | Click Login | |
| 5 | | Validate and Check username and password |
| 6 | | Display Invalid User |
| 7 | | Present Login Form Again |
| 8 | User clicks forgot password | |
| 9 | | Check user ID |
| 10 | | Emails the User the password |
| 11 | | Displays notification saying the new password has been sent as an email |

## 2.1.3.2.2 Logout

**Table 19: Process Description - Logout**

| Identifier | UC06-Logout |
|---|---|
| Purpose | Log out the user from the system |
| Requirements | WC_606 - The site should have a login page. |
| Development Risks | Session timer not decided |
| Pre-conditions | The user should already be logged in<br>The user should be in a session |
| Post-conditions | The Session should be terminated<br>The User should be logged out of the system |

**Table 20: Typical Course of Action - Logout**

| Seq# | Actor's Action | System's Response |
|---|---|---|
| 1 | Click on logout link | |
| 2 | | Terminate session |
| 3 | | Display page saying logged out |

## 2.1.3.3 Job Seeker

## 2.1.3.3.1 Manage Job Seeker Profile

**Table 21: Process Description – Manage Job Seeker Profile**

| Identifier | UC07-Manage Job Seeker Profile |
|---|---|
| Purpose | Maintain the details of a job seeker |
| Requirements | WC_713 - Job seekers have the ability to edit their job preferences: add new ones or delete existing. |
| Development Risks | Database schema should work in sync with wordpress database |
| Pre-conditions | User should be logged in as a job seeker |
| Post-conditions | Profile Updated |

**Table 22: Typical Course of Action – Manage Job Seeker Profile**

| Seq# | Actor's Action | System's Response |
|---|---|---|
| 1 | Click on "my info" link | |
| 2 | | Profile update page displayed |
| 3 | Change field as required | |
| 4 | Click on update | |
| 5 | | Validates field |

| | | Notifies profile updates |
|---|---|---|
| 6 | | |

**Table 23: Exceptional Course of Action – Manage Job Seeker Profile**

| Seq# | Actor's Action | System's Response |
|---|---|---|
| 1 | Click on "my info" link | |
| 2 | | Profile update page displayed |
| 3 | Change field as required | |
| 4 | Click on update | |
| 5 | | Validates field |
| 6 | | Display error and shows in valid fields |

## 2.1.3.3.2 Testimonials

**Table 24: Process Description – Testimonials**

| Identifier | UC08-provide Feedback/testimonial |
|---|---|
| Purpose | Feedback from job seekers |
| Requirements | WC_470 - Job seekers can provide testimonials once they get the job. Users will be able to access a page where they can post comments/testimonials via a web form. |
| Development Risks | None |
| Pre-conditions | Job Seeker should successfully get a job through the website |
| Post-conditions | Testimonial Posted on the testimonial page |

**Table 25: Typical Course of Action – Testimonials**

| Seq# | Actor's Action | System's Response |
|---|---|---|
| 1 | Click on "feedback/testimonials" | |
| 2 | | Testimonial page displayed |
| 3 | Fill the fields | |
| 4 | Click on post testimonial | |
| 5 | | Validates field |
| 6 | | Saves in database |
| 7 | | Display the testimonial page with the recent added first |

**Table 26: Exceptional Course of Action – Testimonials**

| Seq# | Actor's Action | System's Response |
|---|---|---|
| 1 | Click on "write testimonial" | |
| 2 | | Testimonial page displayed |
| 3 | Fill the fields | |
| 4 | Click on post testimonial | |
| 5 | | Validates field |
| 6 | | Notifies errors in fields |

## 2.1.3.4 Job Poster

### 2.1.3.4.1 Post a Job

**Table 27: Process Description – Post a job**

| Identifier | UC09-Post a Job |
|---|---|
| Purpose | Post new job opportunities |
| Requirements | WC_444  Employers have the ability to post jobs on the site. WC_438  Job postings should be categorized. WC_426  The site should have the functionality to send email updates. WC_417 Default 30 day expiration for job postings but the time value is also changeable on a per post basis. WC_452 The UI should allow the user to easily search for jobs. Jobs should be sorted into categories. |
| Development Risks | Should work for admin and authorized emplyers |
| Pre-conditions | The user should be logged in as an admin or a employer |
| Post-conditions | Job posted and displayed on the page |

**Table 28: Typical Course of Action – Post a Job**

| Seq# | Actor's Action | System's Response |
|---|---|---|
| 1 | Click on "Post Job" | |
| 2 | | Displays Post Job page |
| 3 | Fill all required fields (including expiration date) | |
| 4 | Click on Post | |
| 5 | | Validate entered fields |
| 6 | | Save job to the database |
| 7 | | Posts the job on the website |
| 8 | | Displays the job on the Jobs page |
| 9 | | Sends email notification to the users who have taken the subscription |

**Table 29: Alternate Course of Action – Post a Job**

| Seq# | Actor's Action | System's Response |
|---|---|---|
| 1 | Click on "Post Job" | |
| 2 | | Displays Post Job page |
| 3 | Fill all required fields (including expiration date) | |
| 4 | Click on Post | |

| 5 | | Validate entered fields |
| 6 | | Show notification for missing and wrong fields |

## 2.1.3.5 Employer

### 2.1.3.5.1 Search Candidates

**Table 30: Process Description – Search Candidates**

| Identifier | UC10-Seacrh Candidates |
|---|---|
| Purpose | Filter candidates as per requirements |
| Requirements | WC_711 - Employers should be able to search the job preference data of job seekers. For example, employers should be able to find job seekers that are interested in a specific job category |
| Development Risks | Algorithm to be decided |
| Pre-conditions | The user should be logged in as an employer |
| Post-conditions | Candidates short-listed as per criteria |

**Table 31: Typical Course of Action – Search Candidates**

| Seq# | Actor's Action | System's Response |
|---|---|---|
| 1 | Go on search | |
| 2 | | Display search page with filtering option |
| … | Apply filters | |
| n | Click "search" | |
| | | Match filters to Job seeker profile |
| | | Display search result |

### 2.1.3.5.2 Manage Employer Profile

**Table 32: Process Description – Manage Employer Profile**

| Identifier | UC011-Manage Employer Profile |
|---|---|
| Purpose | Maintain the details of a Employer |
| Requirements | WC_711  Employers should be able to search the job preference data of job seekers. <br> WC_714  Role based authentication and authorization for using the website <br> WC_1030  Employers register with an account |

| Development Risks | Database schema should be able to integrate with wordpress |
|---|---|
| Pre-conditions | User should be logged in as an employer |
| Post-conditions | Profile Updated |

**Table 33:Typical Course of Action – Manage Employer Profile**

| Seq# | Actor's Action | System's Response |
|---|---|---|
| 1 | Click on "my profile" link | |
| 2 | | Profile update page displayed |
| 3 | Change field as required | |
| 4 | Click on update | |
| 5 | | Validates field |
| 6 | | Notification displayed "Updated user profile" |

**Table 34: Exceptional Course of Action – Manage Employer Profile**

| Seq# | Actor's Action | System's Response |
|---|---|---|
| 1 | Click on "my profile" link | |
| 2 | | Profile update page displayed |
| 3 | Change field as required | |
| 4 | Click on update | |
| 5 | | Validates field |
| 6 | | Display error and shows in valid fields |

## 2.1.3.6 Administrator

### 2.1.3.6.1 Manage Advertisement

**Table 35: Process Description – Manage Advertisement**

| Identifier | UC12-Manage Advertisement |
|---|---|
| Purpose | Manage advertisement on the website |
| Requirements | WC_469 - Maintain Google AdSense ads from current website. |
| Development Risks | Compatibility and features of the third party application |
| Pre-conditions | User should be logged in as an administrator |
| Post-conditions | Provide advertisement manager panel |

**Table 36: Typical Course of Action – Manage Advertisements**

| Seq# | Actor's Action | System's Response |
|---|---|---|
| 1 | Click on "manage ads" | |
| 2 | | Display wordpress widget manager for |

| | | google adsense |
|---|---|---|

### 2.1.3.6.2 Manage Sponsors

**Table 37: Process Description – Manage Sponsor**

| Identifier | UC13-Manage Sponsors |
|---|---|
| Purpose | Add, remove and set priority of sponsors |
| Requirements | WC_467   Maintain links to other job-related sites as shown on current website.<br>WC_460  The site should display employers'/organizations' logos |
| Development Risks | Make work less on client's part |
| Pre-conditions | User logged in as administrator |
| Post-conditions | Sponsors updates |

**Table 38: Typical Course of Action – Manage Sponsor**

| Seq# | Actor's Action | System's Response |
|---|---|---|
| 1 | Click "Sponsors" | |
| 2 | | Open sponsor page |
| 3 | Click on add | |
| 4 | Click Update | |
| 5 | | Redirect to wordpress widget manager |

### 2.1.3.6.3 Send Email notification

**Table 39: Process Description – Send Email notification**

| Identifier | UC14-Send email notification |
|---|---|
| Purpose | Alert users about important information |
| Requirements | WC_426 - The site should have the functionality to send email updates. |
| Development Risks | Configuring to external email system |
| Pre-conditions | User should be logged in as an administrator |
| Post-conditions | Email sent to the users |

**Table 40: Typical Course of Action – Send Email Notification**

| Seq# | Actor's Action | System's Response |
|---|---|---|
| 1 | Click "email users" | |
| 2 | | Show email notification page |
| 3 | Set filters | |

| 4 | Fill email form | |
|---|---|---|
| 5 | Click send | |
| 6 | | Validates form |
| 7 | | Forwards request by passing parameter to GMAIL server |
| 8 | | Receives response from the server |
| 9 | | Display email notification page with the status of the email. |

**Table 41: Alternate Course of Action – Send Email notification**

| Seq# | Actor's Action | System's Response |
|---|---|---|
| 1 | Click "email users" | |
| 2 | | Show email notification page |
| 3 | Set filters | |
| 4 | Fill email form | |
| 5 | Click send | |
| 6 | | Validates form |
| 7 | | Displays error and shows invalid fileds |

# 3. NDI/NCS Interoperability Analysis

## 3.1 Introduction

The project is going to use an NDI "Wordpress" for the management all the content on the website and also provide the base framework for some of the client's personalized development needs. To deliver the functionalities we will be utilizing 2 NCS. For email notification we are going to use GMAIL and for advertisement we are going to use Google Adsense

### 3.1.1  COTS / GOTS / ROTS / Open Source / NCS

**Table 42: NDI Products Listing**

| NDI/NCS Products | Purposes |
|---|---|
| Wordpress | A content management system for the website |
| Gmail | For serving email notifications |
| Google Adsense | For getting revenue generating ads on the website |

### 3.1.2  Connectors

- In this project, we use PHP/MySQL Connector to enable the PHP web application to retrieve and query data from the database
- WP Mail SMTP for connecting wordpress to Gmail servers
- Embedding  HTML code provided by Google Adsense to the website for advertisements

### 3.1.3  Legacy System

All services in this project should be working with Wordpress  as the whole website is based on that and more-over the client is already using it
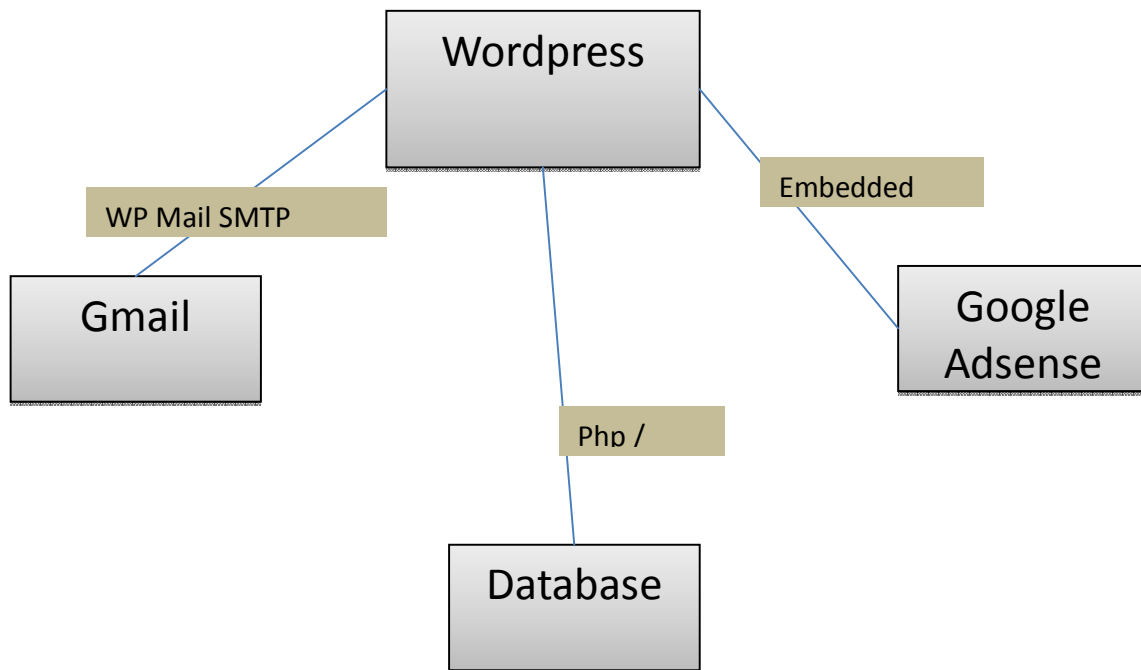
## 3.2 System Structure



**Figure 4: System Structure**

## 3.3 Evaluation Summary

**Table 43: NDI Evaluation**

| NDI / NCS | Usages | Comments |
|---|---|---|
| Wordpress | Content Management System | - User friendly, one of the key feature that the client is looking for<br>- Is free, which is better for a non profit organization<br>- Client is already familiar with the system |
| Gmail | Email service | - Reliable and fast |
| Google Adsense | Providing Advertisements | - Good reputation in market<br>- Client already familiar with using it |