**Feasibility Study and Project Plan**

CIS 4911 – Senior Project

**Virtual Job Fair 4.0**

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**ABSTRACT**

The Feasibility Study and Project Plan document gives an introduction to the Virtual Job Fair 4.0 System. Chapter 1 gives basic information about the Virtual Job Fair 4.0, including the problem definition, background on the problem, definition of important terms, and an overview of the document. Chapter 2, the Feasibility Study chapter, provides a description of the current system used worldwide and introduces the purpose of our system, and states the list of high-level user requirements. Finally, this chapter includes an analysis of alternative solutions to the problem.

Chapter 3, Project Plan, introduces project management concepts of the project, such as personnel organization, hardware and software resources used for the project, and a list of tasks, milestones, and deliverables. Chapter 4, the appendix, contains miscellaneous charts and information, such as a Trello board with the project schedule, a feasibility matrix, a cost matrix, and a diary of meetings. Finally, Chapter 5 contains references to external documents that have been used for reference.

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# 1.Introduction

# The introductory chapter gives some background information about the Virtual Job Fair v4.0 system. This chapter will talk about the problem that companies are facing as well some background on this problem. It will discuss the previously designed Virtual Job Fair website and its purpose. Moreover this chapter will define and explain the definitions, acronyms and abbreviations of terms that will be used later in this deliverable. Finally this chapter contains an overview of the all of the project, which explains the information contained on each chapter.

## 1.1-Problem definition

Employers looking for talent are always interested in filling out positions with the best possible people. In order to accomplish this task, the most effective method to date is to tap local talent, whether it is at universities or job fairs. Given the increasing globalization trend, and the fact that not all employers have the financial or logistical capabilities to seek for potential candidates in different locations, the current solution provided by universities and job sites is less than ideal.

Our solution to this problem, we will provide FIU Computer Science students with a user-friendly interface where students will be able to get job matches from different job search sites, and not just from the employers who register in the VJF site. This way the students do not need to go looking in different sites, he or she can find everything on our site. Also students will receive notification of jobs matching his/her saved search criteria, so that way the students will know as soon as an opportunity is available. We will also provide a way for employers to search for specific skills on the students, as well as save queries of their own which they can be notified according to whichever time they want. Therefore providing the employer and potential employee a more easy and friendly way to find their match.

## 1.2-Background

The Virtual Job Fair project was introduced by Dr. Masoud Sadjadi as one of the assigned projects for the Senior Project class in the spring of 2013. It was initially developed by a team of five students, along with the overview and guidance of Dr. Sadjadi and Juan Caraballo. Then the project was continue in the fall of 2013 by another group that were assigned with the task of improving on the existing application and of developing additional functionality that will aid in the process of interviewing prospective employees.

Every semester now students are assigned with the task of improving or providing a new features that will greatly benefit the student’ and employer user experience in the VJF website. In addition, improve the way that the system communicates with employers and students.

## 1.3-Definitions, Acronyms, and Abbreviations

**Definitions**

- **Student**: an individual who is currently enrolled in the School of Computing & Information Sciences FIU

- **Job:** an activity done in exchange for payment

- **Full-time:** requiring 40 hours or more hours per week

- **Part-time:** requiring less than 40 hours per week

- **Paid internship:** an internship for which a student will receive compensation

- **Unpaid internship:** an internship for which the student will not receive compensation

- **Benefits:** non-salaried compensation for employees, such as insurance, tuition reimbursement, and retirement benefits

- **Work authorization:** current legal work status of a student. Categories include U.S. Permanent Resident and U.S. Citizen

- **Grade point average:** a number out of 4.0 which gives a representation of a student’s grades in his/her classes throughout his/her college career

- **Salary:** a periodic payment made to an employee in exchange for services provided. Salaries are provided in yearly terms.

- **Résumé:** a document which describes a student’s qualifications, skills and education

- **Cover Letter:** a document which is used by students to introduce themselves to the companies that they are applying to. It usually goes together with a résumé

**Acronyms**

- **VJF**: Virtual Job Fair

- **FIU:** Florida International University

- **GPA:** Grade point average

- **SCIS:** School of Computing & Information Sciences

## 1.4-Overview of document

The Feasibility Study and Project Plan covers several aspects of the Virtual Job Fair 4.0 project. In Chapter 1, general information such as problem statement, background information on this specific project and definitions is found. Chapter 2 contains the actual feasibility study, with description and limitations of the current system, and an overview of the system that will be implemented. Also, alternatives are analyzed and discussed. Moreover, in Chapter 3, project organization is detailed, with specific roles for each of the members assigned. Moreover, hardware and software requirements are specified. Chapter 4 contains the Appendix, in which miscellaneous information, such as charts and tables, are specified. Finally, Chapter 5 contains works used as references.

# 2.Feasibility Study

The feasibility study chapter explores the idea of a virtual job fair from a practical point of view. Firstly, it considers the limitations of the current system, which was the project developed last spring and improve on summer 2014. Also, it explains the purpose of the Virtual Job Fair, explaining how the features of VJF will improve on current problems. Then, high-level user requirements are described. Moreover, alternatives to certain aspects of VJF are considered and analyzed, with quantitative data used to support the fact that these alternatives were not used.

## 2.1-Description of Current System (Limitations and Constraints)

The current system was modified in the summer 2014. As it is, it allows students to search for jobs, and get emails with jobs based on their skills. The current system also allows employers to post jobs for students to browse and apply. Moreover, it offers a messaging system, through which employers and students can communicate privately. It also allows users to save their search queries as well as lets them get a notification every day, week or month.

The current system also has standard functionality, allowing users to login and logout, to register in the system, to edit their profiles, to change their passwords and to retrieve forgotten passwords.

**Limitations and Constraints**

As implemented, the current system has the following limitations/constraints:

**- Aimed towards FIU Computer Science students**: the scope of the system is geared towards students who are both FIU students and Computer Science majors. However any Computer Science student can greatly benefit from this site.

**- Limited FIU Seniors:** even though the current system does not restrict any user from signing in, an easy way to register should be given to FIU Seniors, given that this project was born from an FIU SCIS Senior course and it is has been strongly suggested by the faculty to include this feature in the system.

- **Student limitation:** the system lack a way to guide the student when he try to register with an e-mail that is already in the system. In addition; the student should be told that the e-mail is already in the system, and provide the student with some option of what to do next.

- **Inability for student to merge accounts:** the current system lacks a feature that allow student to merge two accounts into one.

**- Students search for job is restricted:**The current system only provides search by skills or search by company and job type.

**- Student job email notification based on skills:** student will only get notified of jobs matching their skills.

**- Job posting limited to registered employers:** job posting are only available from registered employers only.

- **Limited student job notification:** the current system do not provide the student’s user with job’s notifications base on their skillset.

- **Limited admin setting notification:** the current system does not allow the admin to toggle between enable/disable notifications globally.

- **Limited employer notification:** the current system does not allow employers to receive notification of students matching job posting description.

-**Creation of account for administrator:** the current system does not allow creating of new account from the administrators account.

**-Limited employer queries:** the current system does not allow the employer to save their own queries.

**-Limited employer searc**h: The current system does not allow the employer to search student by skill.

-**Predefined notification dates:** The current system has pre-defined notification dates that could be dynamic.

- **Limited admin API management:** the current system lacks to allow administrators to control all aspects of the implemented VJF API through an intuitive interface.

- **Limited admin interface:** the current system lacks an administrative interface to bulk import jobs from the FIU SCIS CareerPath system, using a provided CareerPath API endpoint.

**- Limited interview functionality:** the system lacks for video interviews and live chat, limiting the interaction between students and employers to a very basic level.

**- Limited Document Collaboration functionality:** the current system has a very limited collaboration ability. It lacks the ability to have users of the system collaborate on documents in real-time which is a crucial part of an interview process.

**- Inability to share images between students and employers:** the current system lacks an image-sharing feature which allows students and employers to exchange pictures which can enhance the interview experience.

- **No drawing feature:** the current system does not have any type of drawing feature that may allow students and employers to brainstorm, exchange drawings or jot down ideas while interviewing.

**- Reminder system:** the current system lacks a way of reminding students or employers of upcoming interviews.

**- Users are not allowed to delete their accounts:** once registered, students and/or employees are not allowed to remove themselves from the system’s database.

**- Employers are not able to contact students through other means other than by email:** The current implementation makes it very hard to keep both students and employers connected outside of it.

**- Students and employers are not reminded of important deadlines:** The current system does not have any functionality that alerts users of new events.

## 2.2-Purpose of New System

Given the fact that not all employers have the financial or the time capabilities to be registering on every website to seek for potential candidates in different locations. Also, given that current solution provided by universities and job sites is less than ideal.

This new system, we will provide FIU computer science students with an easy to use interface where students will be able to get job matches from different job search sites, and not just from the employer who are register in the VJF site. This way the students don’t need to go looking in different sites he or she can find everything on our site. The website will allow the employers to post their jobs as well as search for students depending of the student skills. The employers will also be able to store their queries and receive notifications.

**New System’s Features**

The following functionality will be added to the system:

**Employer Advanced Search:** Provide a way for employers who have account on the system to save queries. Search for those in skill sets.

**Account Creation:** Allow the creation of accounts from administration menu.

**Dynamic notifications:** Allow users to set custom time intervals for notifications, not predefined ones.

**Administrative Dashboard:** expand on the administrative interface, add dashboard with site statistics. How many jobs active, posted, total, students active.

**Stored Search:** make it possible to run saved search queries straight from the advanced search form, so the user doesn’t have to type the query again. There shouldn't be any limit on saved queries.

**Webmaster email:** have webmaster email, and if anyone has any comment email them there.

**Expand Job Search Sources:** students will be able to get job results from StackOverflow.com, Monster.com, and jobs.GitHub.com

**Navigation Search Bar Algorithm**: search will return more precise results on entered keyword.

## 2.3-High-level Definition of User Requirements (must include security/privacy requirements)

**Current System’s User Requirements**

The current system…

Requires users and employers to register

Requires users and employers to validate their account

Allows users and employers to edit their profile

Allows users and employers to participate in a video interview

Allow students to upload a resume and video resume

Allows users and employers to interact with a text chat tool

Allows students to include LinkedIn profiles

Allow students and employers to upload an image for their profile

Allow students to associate skills to their profile

Allows employers to search for candidates based on skills

Allows employers to view candidate profiles

Allows employers to send messages candidates

Requires Administrators to validate employers

Requires user name and password to log in

Allows users to reset forgotten passwords if validation challenge is successful

Requires login to view user profiles

Hashes and salts passwords prior to storing in database

Sanitizes SQL queries to prevent SQL injections

Allow users to create a new shared document.

Allow students and employers to start using the whiteboard functionality

Allow students and employers to upload an image to share during an interview

Allow students to view images uploaded by the other party in an interview

Allow students and employers show or restore a whiteboard session

Allow students and employers to select an image to upload to the server for sharing purposes

Allow students and employers to draw using the whiteboard

Allow students and employers to change the color of the drawing pencil tool

Allow students and employers to type text into the whiteboard

Allow students and employers to clear the drawings of the whiteboard

Allow students and employers to partially erase drawings from the whiteboard

Allow users to create a new document.

Allow users to invite another user to a shared document.

Allow users to delete a shared document.

Allow users to import a document.

Allow users to export a document.

Allow users to rename a document.

Allow users to save a shared document.

Maintain access boundaries between non-collaborating accounts.

Allow FIU Computer Science Seniors to login using their FIU SCIS credentials.

Allow students and employers to share their screens

Allow student and employers to view each other’s screen.

Allows employers to contact students through SMS

Allow FIU Computer Science Seniors to login using their FIU SCIS credentials

Allow FIU student to login using their FIU credentials

Allow student to login using their Google credentials

Allow student to login using their LinkedIn credentials

Allow students to search for jobs based on skills, company name, job type, and position on navigation bar.

Allow students to search for jobs based on skills, company name, job type, position, and location on the advanced search.

Allow students to search for jobs based on skills, company name, job type, position, and location on the advanced search.

Allow job search results from Indeed.com.

Allow job search results from CareerBuilder.com.

Allow students to receive email notification with expanded job search results.

Prompt student to enter name for query to be save.

Allow students to save queries to their profiles.

Allow students to active / deactivate saved queries.

Allow students to delete saved queries.

Allow FIU Computer Science Seniors to login using their FIU SCIS credentials.

Allow FIU student to login using their FIU credentials.

Allow students to link their third party accounts into one

Allow students to choose between their current information and the information coming in from their third party accounts when linking accounts.

Guide the students to recover his or her password; when trying to register with an e-mail that is already in the system.

Allows external sources (SCIS CareerPath) to push job postings into the VJF system.

Allow administrators to control all aspects of the implemented VJF API through an intuitive interface.

Provide an administrative interface to bulk import jobs from the FIU SCIS CareerPath system, using a provided CareerPath API end-point.

Allow administrators to maintain the system’s job skills database.

Allow an interface for administrators to manage users.

Allow an interface for administrators to manage job postings.

Allow the administrator to manage the notification system.

Allow students to enable/disable if he/she is looking for jobs.

Allow admin users to enable/disable notifications globally.

Allow students to receive jobs notification based on saved custom job search queries to third party job websites.

Allow students to receive jobs notification based on their skill set.

Allow employers to receive notification of students matching job posting description.

**New System’s User Requirements:**

The new system shall…

Allow employers to provide a way for employers who have account on the system to save queries.

Allow the administrators to create accounts from administration menu.

Allow users to set custom time intervals for notifications, not predefined ones.

Allow the administrator to see a dashboard with site statistics. How many jobs active, posted, total, students active.

Allow all users to run saved search queries straight from the advanced search form, so the user doesn’t have to type the query again.

Retrieve search results (jobs postings) from StackOverflow.com

Retrieve search results (jobs postings) from Monster.com

Retrieve search results (jobs postings) from GitHubJobs.com

Allow employer navigation search bar return more precise results.

## 2.4- Alternative Solutions

Below, alternative implementations for this project are mentioned and discussed.

### 2.4.1-Description of Alternatives

**New System’s Features Alternatives:**

* **Expand Job Search Sources**

Make use of other available APIs, RSS feeds that will bring more job posting

**Alternative 1**

Make use of Rest API from StackOverflow.com (RSS Feed)

**Alternative 2**

Make use of Rest API from Monster.com (RSS Feed)

**Alternative 3**

Make use of Rest API from GitHubJobs.com (JSON)

**Alternative 4**

Implement Multithreading algorithm to call all APIs that retrieve job results to speed up loading process.

* **Navigation Search Bar Algorithm:**

**Alternative 1**

Make a simpler algorithms that fulfils the basic requirement of more intuitive search. Returns more precise results.

**Alternative 2**

Use of a Web Service or Search API that will filter the search query result.

* **Stored Search**

**Alternative 1**

In the employer view create an Advanced Search Window/Dashboard and with use of radio option button save last used search queries.

OR

Have a popup window that displays saved queries, so user could click on them and get the same results.

* **Administrative Dashboard:**

**Alternative 1**

Make use of Google Analytics API to implement site statistics.

* **Student Advanced Search:**

**Alternative 1**

Implement an external API that allow to save queries and retrieve them back.

### 2.4.2-Selection Criteria (Briefly describe the feasibility criteria used in the analysis component)

The criteria that we used for the consideration of the environment software suite alternatives are operational feasibility, technical feasibility, organizational feasibility, and economic feasibility. Each of these criteria is described below:

● **Operational Feasibility**

Deals with the ability of the users, developers and those involved with the project to use and support the proposed system.

● **Technical Feasibility**

Deals with the reliability of the software and hardware and its capability to provide the intended functionality of the system

● **Organizational Feasibility**

Deals with the system’s ability to support the goals of the organization

● **Economic Feasibility**

Deals with the ability of the system to cover its development and maintenance costs after its completion

## 2.5-Recommendations

**New System Feature Analysis**

* **Expand Job Search Sources**

The following section contains analysis of the Expanded Job Search Sources alternatives that were proposed during Summer 2014 and which have been revised at several points throughout the lifetime of the project

**Alternative 1-3**

These alternatives have been selected that because free APIs are provided with free registration on sites StackOverflow.com, Monster.com, GithubJobs.com. Alternative 3 is selcted to make API calls concurrent and not sequential. Thus, it’ll speed up the page load and make system overall more efficient.

* **Navigation Search Bar Algorithm:**

**Alternative 1**

Implementing algorithm gives more understanding of the flow and logic in the system. Therefore, it’ll be easier to fix bugs, rather than dependency on the

**Alternative 2**

Use this alternative if Alternative 1 will not work or will be inefficient: Use of a Web Service or Search API that will filter the search query result.

* **Stored Search**

**Alternative 1**

This alternative will provide an intuitive way to save queries inside the advanced search window.

* **Administrative Dashboard:**

**Alternative 1**

Implement the ways so administrator could easily manipulate data on the site. Make use of Google Analytics API, if necessary, to implement site statistics.

* **Student Advanced Search:**

**Alternative 1**

Replicate from employer’s view Advanced Search Dashboard algorithm.

OR

Why do it again if it’s been already done before: get an external API, that’ll do the job.

# 3. Project Plan

The project plan chapter introduces VJF from a project management perspective. Firstly, the project organization is described, with the roles for each member listed. Then, hardware and software requirements for the development of the project will be listed. After that, milestones, tasks, and deliverables will be listed.

## 3.1-Project Organization

For this particular project each of the two members will be adding some major functionality to the Virtual Job Fair that will show off our skills as programmer.

Erick Arenas will be responsible for developing a way for employers who have account on the system to save queries and search for those in skill sets. He will also be in charge of adding a function so that the administrator can add new users. He will also modify the current notification system so that instead of predefined ones all the users will get dynamic intervals. Erick will also add to the admin page a dashboard with site statistics showing how many jobs are active, posted, total, and the total number of students active. Last but not least he will work on making it possible to run saved search queries straight from the advance search form.

Artiom Tiurin will be responsible for developing a new search algorithm of Navigation Search Bar on the employer side. It should refine search to make it more intuitive to search of the students with related skills. Also Artiom will integrate and implement more APIs: StackOverflow.com (RSS feed), Monster.com (RSS feed) and GitHubJobs.com (if time allows) that will bring more job postings to the site. Additionally Artiom will work on existing bugs from previous versions.

### 3.1.1-Project Personnel Organization

|  |  |  |
| --- | --- | --- |
| Team Member | Primary Task | General Task |
| Erick Arenas | Developer | Documentation/Implementation |
| Artiom Tiurin | Developer | Documentation/Implementation |

### 3.1.2-Hardware and Software Resources

**Hardware**

In order to start developing the project, our team will need computers with at least the following specifications:

**- Processing Power:** Pentium IV 2.0 GHz processor or better

**- RAM Memory:** 1GB 133MHz SDRAM

**- Available space on hard drive:** 5GB

**Other Devices**

- **Input devices**

a) Standard wired/wireless K120 keyboard

b) Standard wired/wireless trackball/optical mouse

- **Output devices**

a) Standard VGA/DVI/HDMI monitor display

**Software**

**1) Google Chrome 30.8:** last, most updated version of the Chrome browser that will be used to test Virtual Job Fair.

**2) StarUML:** UML software platform that will be used to create diagrams for the document

**3) Yii Framework 1.1.14:** last, most updated version of Yii Framework, an MVC-based, PHP framework used for development. It will be used to develop the front-end and back-end of Virtual Job Fair.

**4) phpMyAdmin:** a DBMS (integrated into Yii) that will be used to manually manipulate the database when necessary

**5) PhpStorm (IDE):** software platform for front-end design that will be used to create backbone of the user interface.

**6)** **VMWare:** virtual machine software that will be used for the deployment of the software.

**7)** **NetBeans(IDE)**: software that will be used to implement logical aspect of the project

**8)** **WAMP/XAMP** server: server to host locally a project.

## 3.2-Identification of Tasks, Milestones and Deliverables (work breakdown)

|  |  |  |
| --- | --- | --- |
| Week 1 | 8/25/14 | Introduction: Course, Projects, Students, Groups |
| Week 2 | 9/1/14 | Project Requirement |
| Week 3 | 9/8/14 | Feasibility Study and Project Plan |
| Week 3 | 9/8/14 | VM running and github set up |
| Week 4 | 9/19/14 | Requirement Document |
| Week 4 | 9/19/14 | Fix bugs of current system |
| Week 5 | 10/1/14 | Test current system |
| Week 5 | 10/1/14 | Design Document |
| Week 6 | 10/7/14 | Feature 1: Employers search queries |
| Week 6 | 10/7/14 | Allow the creation of accounts for admin |
| Week 7 | 10/15/14 | Expand user advance search |
| Week 8 | 10/22/14 | Dynamic Notifications |
| Week 9 | 10/29/14 | Site statistics and debugging |
| Week 10,11, | 11/6/14 | Debugging and Testing, Code Refining |
| Week 12 | 11/20/14 | Final Document |
| Week 13 | 12/1/14 | Presentation |

# 4.Appendix

## 4.1-Appendix A - Project schedule (Gantt chart or PERT Chart)

## 

## 4.2-Appendix B – Feasibility Matrix

|  |  |
| --- | --- |
| Operational Feasibility | The scope of the proposed system covers each of the problems outlined in section 1.1. Each feature of the overall solution is specifically targeted to one of the outlined problems. This observation, together with the mentors’ validation of the proposed system, makes it operationally feasible. |
| Technical Feasibility | All the resources needed to develop the proposed system (refer to section 3.1.2) are available to the project team. Furthermore, the practicality of the technologies used (e.g., php, MySQL) has been proven based on their widespread use both in industry and academia, in small and large enterprise projects. |
| Schedule Feasibility | Due to graduation requirements, it is not possible to extend the project deadlines; they have to be met. The project team and the mentors have agreed on the feasibility of the proposed system based on the time requirements. |
| Economic Feasibility | There will be no development costs to the team given the open sourced nature of the technologies that are going to be used. |

## 

## 4.3-Appendix C – Cost Matrix

|  |  |
| --- | --- |
| **Item** | **Item Cost** |
| Yii Framework | $0.00 |
| Twitter Bootstrap | $0.00 |
| Easy RTC | $0.00 |
| Hardware | $1200.00 |
| Development | $0.00 |
| Testing | $0.00 |
| Contingencies | $240.00 (~20% of total cost) |
|  | **Total:**$1200.00 |

## 4.4-Appendix D - Diary of Meetings

Meeting 1:

Date: 9/5/2014

Start Time: 10:50

End Time: 11:20

 On this day we met with Jaime Zuniga for 30 minutes from 10:50 to 11:20 and discussed the requirements of the project.

Meeting 2:

Date: 9/11/2014

Start Time: 10:50

End Time: 11:20

Meeting 9/11/2014 Met with both professor and they gave me the guidelines on what do and guide me in the direction they want the project to be going.Also gave me instruction for trello board, github, and the virtual machine.

Meeting 3:

Date: 10/2/2014

Start Time: 18:00

Meeting with new member of the project, Artiom Tiurin. Getting Artiom up to speed with the project and with general requirements.

End Time: 19:00

Meeting 4:

Date: 10/6/2014

Start Time: 14:00

Meeting with Masoud Sadjadi and Juan Caraballo to find and reassure a significant input to the project.

End Time: 15:00

# 5. References

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