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| Project Group 7 |
| VolunteerNow |
| CEN4010 Principles of Software Engineering, Summer Semester 2023 https://github.com/JonathanG77/CEN-4010-Project Version: 1.0|7/25/2023 |

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Table of Contents:

[Product Summary 2](#_Toc141918333)

[Executive Summary 3](#_Toc141918334)

[Competitive Analysis 4](#_Toc141918335)

[Data Definition 7](#_Toc141918336)

[Use Cases 9](#_Toc141918337)

[List of Functional Requirements 18](#_Toc141918338)

[List of Non-Functional Requirements 24](#_Toc141918339)

[High-level System Architecture and Database Organization 27](#_Toc141918340)

[High-Level UML Diagrams 29](#_Toc141918364)

[Key Risks 31](#_Toc141918366)

[Instructor Feedback 34](#_Toc141918367)

[Screenshots of Product 34](#_Toc141918368)

[Google Analytics 34](#_Toc141918369)

[Team Member Contribution 34](#_Toc141918370)

[Post-project Analysis 36](#_Toc141918371)

# Product Summary

Have you grown tired of trudging through multiple other volunteer sites looking for the right opportunity? Finding an opportunity after hours of searching only to discover there’s no way to apply right then and there?  Look no further than VounteerNow, the one stop site for all your needs relating to bettering your community. Both new visitors looking for their first volunteer opportunity and experienced volunteers will enjoy our suite of quality-of-life features that are all built directly into the system; no third-party app download or site redirects required. Our team is committed to making the process convenient so volunteers can spend more time doing what they love. Only at VolunteerNow, where we turn talk into action.

Key Features

* Robust search with various filters to allow for opportunities with certain attributes to be searched for. Allows users to search by location, skill needed, distance from user, etc.
* Account system that will allow users to log in and check various attributes such as opportunity schedule, organization announcements, and messages from organization leaders and other volunteers.
* Ability to allow users with an account to apply for opportunity jobs directly through the system. Application forms are able to have limited customization by organizations as needed for unique opportunities.
* Ability to send and receive messages/email from organization leaders and other volunteers who are volunteering at the same organization.

# Executive Summary

At VolunteerNow, we are designing a powerful system that functions as an all-in-one service that will benefit both potential future volunteers and the organizations that depend on them. Volunteers will have access to our powerful search that will allow them to connect with thousands of organizations across the country and be able to filter by their skills and personal preferences which maximize the possibility of finding the right organization to make a difference. Once a suitable opportunity is found, volunteers will be able to become members and apply right from the opportunity page. Even if a volunteer can’t find an opportunity to their preferences, they have the unique ability to make a post with their skills and availability included for organizations to see.

 Organizations will have access to many features that will make the normally tough task of finding suitable volunteers a breeze. Organizations will be able to browse the collection of posts made by volunteers to be able to find suitable candidates and send messages to them directly through our system. There will also be the feature to send announcements and notifications through our system to all volunteers associated with that specific organization. Members representing the organization will be able to track volunteer hours, assign them to events, and more directly through our system. This allows important volunteer organizations to spend less time managing and more time doing what matters, helping people. All sorts of organizations will benefit from this, ranging from global non-profits to local community groups and everyone in between. This is only possible at VolunteerNow, where we turn talk into action.

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# Competitive Analysis

 Research into some of the various competitor volunteer management sites out there has identified key features that our planned site features are either on the same level as or improve upon the implementation of our competitors. Since the site is planned to be both a way for volunteers to search for volunteer jobs to apply for and a place for organizations to post listings to acquire volunteers, we did not take into consideration competitors that only offer volunteer management systems. With that in mind, the following table will compare five different main features between the [site] website and our competitors. Each category will be rated on a scale from 1 to 10 with a one indicating that the feature is poorly implemented on the site and a ten indicating that the feature has an excellent implementation and presence on the site.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **VolunteerNow** | **VolunteerMatch** | **MyVolunteerPage** | **JustServe** | **International Volunteer HQ** |
| **Design** | 7 | 6 | 4 | 5 | 8 |
| **Navigation** | 8 | 7 | 3 | 7 | 8 |
| **Searching** | 8 | 8 | 2 | 8 | 7 |
| **Content** | 8 | 7 | 4 | 6 | 10 |
| **Communication** | 7 | 5 | 5 | 4 | 3 |

VolunteerMatch(<https://www.volunteermatch.org/>):

         Design is simple but effective, having the search bar front and center with results based on your last search and a few images. Navigation is covered by the header bar with clearly labeled sections. Search allows filtering by group, skills needed, and cause of the opportunity and displays both opportunities and organizations. The opportunity listings go into detail about important factors such as location, skills needed, and information about the organization. Site passes on your email and phone number when applying which allows companies to contact the volunteer.

MyVolunteerPage (<https://app.betterimpact.com/Login/Volunteer>):

         The design is overall bland with only a few shades of gray and text boxes to greet visitors with profile overview pages having some color once logged in. There are no navigation buttons or headers without being logged in. Once logged in, there is a navigation header. The search bar on the homepage does not let you filter and gives inconsistent results. The content is dependent on the organization as some of them have blank pages when searched for and opportunities don’t show unless signed in and with an organization. There is the option to send and receive emails from administrators as well as text messages.

JustServe(<https://www.justserve.org/>):

         Design is simple but effective with the search bar on top of the home page and various images and recommended opportunities as it scrolls down. The site has simple navigation that works between the header bar and defined buttons. Searches can be done with a variety of different inputs are able to be filtered by various categories such as skills, schedule, interests. Opportunities have details about the skills needed, location, dates, and contact info.  Communication with organizations is mainly done through email.

International Volunteer HQ(<https://www.volunteerhq.org/>):

         Design strikes a good balance between simple and cluttered with a good variety of pictures and different sections showing off awards, featured trips, reviews, etc. All buttons, drop down menus, and options clearly state their purpose and where they link to. The search uses two selector menus instead of a text-box input field, but there is still filtering for parameters such as accommodations and locations. Opportunity listings go in depth with the details for the opportunity going over travel accommodations, daily schedule, housing, price, requirements, and more. Communication is lacking since there is one company that handles all of the opportunities and thus there are only emails or messages from employees.

Advantages:

         Our site allows all potential volunteers, regardless of if they are registered or not to browse for opportunities using our advanced search that allows filtering by skills, location, type of job, and more. The clean interface and fast search make finding potential opportunities a breeze that can be freely catered to the user’s preference with opportunities that have all of the important details such as schedule, skills, and location clearly listed in the description. Once a volunteer is ready to sign up, they’ll find that everything is done through the site so organizations will be able to send messages and reminders directly through the site, so all communications are handled in one place.

# 

# Data Definition

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Meaning | Usage | Comment |
| volunteer | actor | Use case scenarios | Person looking to volunteer |
| user | actor | Use case scenarios | Definition of volunteer |
| member | actor | Use case scenarios | Volunteer registered in the system |
| Non-member | actor | Use case scenarios | Volunteer not registered in the system |
| organization | data | Searchable place | Represents the place where a member will volunteer |
| post | data | Searchable member | Represents the member’s information shared in the system |
| account | data | Use case scenarios | Store volunteer’s information |
| Skills | data | Use case scenarios | Store volunteer’s skills |
| availability | data | Use case scenarios | Store volunteer’s availability |
| Search | service | Site user service | Allow user to find organizations based on their skills |
| navigator | Service | Site user service | Allow visitor to navigate the web page |
| Volunteer list | service | Site user service | Allow organizations to find volunteers. |
| Organization list | services | Site user service | Allow volunteer to find organization |
| filter | Service | Site user service | Help user be more specific on their search |
| Log in | service | Site user service | Allow user to create a post or to find an organization whose needs matches the volunteer’s skills. |
| Web site | User interface | User interface | Front end display for user interaction |
| Home page | User interface | User interface | First page that appears to user. |

# 

# Use Cases

**Use Case- Registration**

The volunteer: our user, comes to the home page and proceeds to press on the registration tab. The system follows up by showing all the required information the user needs to enter in order to create an account.

**1.     Description:**

Use case describes the process of how a user registers to the volunteer management system.

**2.     Actors:**

2.1 User

2.2 System

**3.     Preconditions:**

3.1 User has good internet connection

3.2 System is available

**4.     Primary flow of events:**

    4.1. User arrives on home page

              4.2. User tabs on the registration button (Use case Registration)

              4.3. User gets moved to a registration display

              4.4. User enters name

                   4.4.1. If numbers or non-letter characters are entered go to alternative flow 5.2

              4.5. User enters phone number

     4.5.1. If non-number characters are entered go to alternative flow 5.2

              4.6. User enters e-mail

                    4.6.1. If e-mail doesn’t exist or is not registered go to alternate flow 5.3

              4.7. System saves User’s information, and an account is created.

              4.8. Terminate Use Case: Registration

**5.     Alternate Flows of events:**

**5.1 User enters wrong format on name bar**

                    If in step 4 user enters numbers or non-letter characters on the name bar.

1.     Web page notifies user that characters aren’t allowed.

2.     Return to step 4.4

**5.2 User enters wrong format on phone number bar**

If in step 4 user enters letter characters on the number bar.

1.     Web page notifies user that characters aren’t allowed.

2.     Return to step 4.5

**5.3 User enters a non-registered email**

 If in step 4 user enters a non-registered email on the e-mail bar.

1.     Web page notifies the user that the email doesn’t exist.

2.     Return to step 4.6

**Use Case – User’s Profile**

After the registration process, the user will be able to add their skills and availability into their profile. The system will update their profile with this information.

**1.     Description:**

This use case allows the registered user to add a skill and availability, so it is shown in the user’s profile.

**2.     Actors:**

2.1 User

2.2 System

**3.     Preconditions:**

3.1 User has good internet connection

3.2 System is available

3.3 User has an active account

3.4 User is logged into the system

**4.     Primary flow of events:**

4.1 User has created an account (Use case Registration)

4.2 System checks if user is logged in

4.2.1 If user isn’t logged in go to alternative flow 5.1

4.3 User fills the information regarding their skills

4.4 User fills the time available to volunteer.

4.5 System saves skills and availability into the user's profile.

4.6 Terminate Use case – User’s Profile

**5.     Alternative Flows of events:**

**5.1. User is not logged in from (Primary Flow of events 4.2.1)**

           5.1.1 System ask user to enter login information

                5.1.1.1 If user doesn’t have an account, go to alternative flow 5.2

           5.1.2 User enter their login information

           5.1.3 System validates login information

                5.1.3.1 If login information is wrong or doesn’t exist, return to 5.1.1

           5.1.4 End alternative Flow 5.1- return to primary flow step 4.3

**5.2 User doesn’t have an account on the system**

           5.2.1 Return to Use case- registration

           5.2.2 End alternative flow 5.2 return to primary flow, step 4.3

           5.2.3 System end use case- User’s profile

**Use case – Search**

User come to the page to search for an organization they can volunteer into, after an account is created the user will be able to login and post their skills and availability on the system to find organizations which are looking for volunteers that fits those skills and the time needed.

**1.     Description:**

Use case describes the process of how a user searches for an organization based on their skills and time availability.

**2.     Actors:**

2.1 User

2.2 System

**3.     Preconditions:**

3.1 User has good internet connection

3.2 System is available

3.3 User has an active account

3.4 User is logged into the system

3.5 User has filled their skills and time availability on the user’s profile.

**4.     Primary flow of events:**

4.1 User has created an account (use case- registration)

4.2 User has filled in the information in the profile. (Use case- User’s profile)

4.3 User enters search criteria based on user’s availability and skills.

4.4 Systems receives request and proceeds to search for an organization.

4.5 If the systems finds a match will display the organization(s)

4.5.1      If the system doesn’t find a match go to alternative flow 5.1

4.5.2      If the system states there are no organizations available, go to alternative flow 5.2.

4.6 User selects organization.

4.7 System saves the volunteer request volunteer

**5.     Alternative flow of events:**

5.1 System doesn’t find a matching organization for user

If the web page doesn’t find an organization matching the user’s skills or availability, the user must modify availability or skills. (Primary flow 4.5.1)

5.1.1      Web page notifies user there are no matching organizations.

5.1.2      User proceeds to change their skills and availability (use case – User’s profile)

5.1.3      Return to primary flow events 4.4

**5.2. System shows there are no organizations available and will allow user to make a post.**

                     If the web page displays no organizations at all, the user will be allowed to create a post with their profile.

                   5.2.1 Web pages notifies users there is no organizations available

                   5.2.2 Web pages notifies users the option to create a post

                   5.2.3 User creates a post (use case- Volunteer post), return to 4.7

                   5.2.4 System terminate use case- search.

**Use case – Post**

User comes to the page to search for an organization they can volunteer into, after no finding any available organization or no organizations at all. System will allow user to create a post that will be visible to any organization looking for volunteers.

**1.     Description:**

Use case describes the process of how a user creates a post with their profile information and list in on the system to be visible to organizations.

**2.     Actors:**

2.1 User

2.2 System

**3.     Preconditions:**

3.1 User has good internet connection

3.2 System is available

3.3 User has an active account

3.4 User is logged into the system

3.5 User has filled their skills and time availability on the user’s profile.

3.6 There are no organizations available for user or none at all.

**4.     Primary flow of events:**

4.1 User has created an account (use case- registration)

4.2 User has filled in the information in the profile. (Use case- User’s profile)

4.3 User enters search criteria based on user’s availability and skills.

4.4 System couldn’t find any organization for user or there is none available

4.5 User is offered the option to create a post

4.5.1 If user don’t want to create a post go to alternative flow 5.1

4.6 User fills post with their profile information and post it

4.7 System saves post into the web page

4.8 Organizations can find volunteers’ posts at any time.

**5.     Alternative Flow of events:**

5.1 If user doesn’t want to create a post

If the user doesn’t want to create a post, they will be allowed to go back and modify their profile or exit web page.

5.1.1      After the user declines to create a post system will offer the option to modify users’ profile. Return to case- user’s profile

5.1.1.1 If user doesn’t want to modify profile, user may exit the web page

                   5.1.2.   User modify profile and return to use case- Search

                   5.1.3 System terminate case - Post

# List of Functional Requirements

1. User Registration and Profile Management:

         Volunteers that are interested in volunteering and joining are able to join by creating accounts and providing necessary information such as their name, skills they would like to use, and their contact information. After creating their profiles/accounts, the volunteers should be able to edit and modify their online profiles at any given time after signing up or add any details, to be able to improve their profile and chances of finding volunteer opportunities that are a good fit. Due to the user- friendly profile management system, the volunteers will have the ability to make simple adjustments to their profile as needed.

Priority: 1

2.                  Volunteer Opportunity Listing:

         There will be a list of volunteer opportunities by category that are available together with information on all of the different events. There will be information on dates, times, qualifications needed, as well as the number of volunteers needed for the event. By providing this information when signing up, volunteers can easily go through the opportunities and make decisions based on their preferences and availability. Detailed descriptions of the opportunities ensure that volunteers can quickly find and select the opportunities that fit their skills and interests.

Priority: 1

3.                  Volunteer Opportunity Sign-up:

Volunteers will have the option to look through a volunteer opportunity list and choose volunteer activities and events that interests them. They will have many options to choose from, and they can have their skills in mind when choosing an opportunity so it can fit their abilities. The volunteers can then sign up for the tasks or activities they can participate in (with their availability in mind) and get confirmation for their involvement. Volunteers will receive confirmation of their participation quickly, allowing them to manage their calendars accordingly.

Priority: 1

4.                  Task Assignment and Tracking:

 Ensure effective use of volunteer resources and information by enabling administrators or organizers to allocate volunteers to certain tasks and events in these volunteer opportunities by tracking their involvement in activities and tasks. Administrators can maximize volunteers’ abilities by monitoring volunteers' participation in various opportunities and volunteering duties. Using this tracking approach, organizers may monitor the status of opportunities.

Priority: 1

5.                  Volunteer Hour Tracking:

 Volunteers will have a way to record and monitor their volunteering schedule, as well as start and end times. By having these details on their account, they can create statements and records on their schedules and hours volunteering. They can use that information for their own personal use, or in case they need to show their volunteering schedule and volunteering hours.

Priority: 1

6.                  Communication and Notifications:

There will be use of messaging and communication tools for the purpose of communication between different administrators and organizers, as well as between them and the volunteers. With the use of this tool, administrators will be able to forward important information regarding volunteer opportunities, including updates and instructions. Additionally, volunteers will receive information from the organizations they are volunteering for regarding their sign-ups, volunteering assignments, and any changes to their schedule. This system of communication makes sure that everyone stays informed throughout the whole process.

Priority: 2

7.                  Reporting and Analytics:

There will be a tool to produce reports on the volunteer’s participation, volunteering hours, and other indicators on their participation that can be used for the reports. It will be used to analyze the volunteers' work and assist the organizations by providing this important information and analytics that they can use for their advantage. Organizations are able to understand the advantages of volunteer involvement by optimizing their volunteer management procedures thanks to the reporting and analytics function.

Priority: 2

8.                  Administrator Dashboard and Management:

Provide administrators and organizers with a dashboard where they may manage the events, tasks, volunteer opportunities and personal information of the volunteers. The administrators and organizers will be offered choices for the configurations that compose the system, the management of users and their accounts, and administrative controls. Through the dashboard, organizers may monitor the status of volunteer opportunities, assign responsibilities, and get in touch with volunteers. Administrators will have the ability to successfully supervise and develop the volunteer search system because of the user-friendly interface and administrative management tools.  
Priority: 1

9.              Integration and Customization:

To improve functionality, there will be integration with other programs or resources, such as communication and messaging tools. There will also be the option for system customization in order to meet the requirements of organizations and their brand. Organizations will have the opportunity to update their requirements based on the organization's needs. This ability to customize enables organizations to adapt the system to their own requirements, guaranteeing an ideal experience for both volunteers and organizations. To adjust to changing demands, organizations are able to update and revise their requirements as needed.

Priority: 2

10.         Feedback:

Allow volunteers to provide feedback for the volunteer opportunities and their overall experience. Give organizations a way to receive and view the said feedback and be able to use it to improve that overall experience and utilize it to improve their volunteering work and goals.

Priority: 3

11.           Volunteer Community and Social Tools:

  Give volunteers the tools they need to communicate and exchange experiences. The volunteer search system will give volunteers access to social and communal tools to encourage interaction and sharing. The system will create a sense of connection among volunteers by offering these social tools, improving their entire volunteering experience.

Priority: 2

12.           Volunteer Training and Resources:

The volunteer search system will provide access to training materials, manuals, and other resources to assist in the growth and development of volunteers. These tools will enable volunteers to learn new abilities and skills. This will also allow organizations to post and upload volunteer-specific training resources. Through the system, volunteers have direct access to these resources, allowing them to develop their skill sets, and learn more about the volunteer opportunities and the tools needed to volunteer at them.

Priority: 3

13.                System Backup and Recovery:

   Create a recovery strategy to get the system back up in case of a serious disruption.

The volunteer system will have a strong backup and recovery plan to prevent data loss and system disruptions. All data, including volunteer profiles and volunteer opportunities will be routinely and automatically backed up by the system. In order to ensure that data can be restored in the case of hardware failures or other disruption.. The system will also have a clear recovery strategy. In the case of a disruption, this plan will define the procedures required to return the system to full functionality.

Priority: 2

# List of Non-Functional Requirements

1.      Performance

a)      The system must be responsive and work within a reasonable amount of time to engage our audience. Unit testing must be performed to keep track of efficiency and the load up time of the landing page should be no more than 8 seconds.

b)      Monitor the system’s resources such as memory and CPU to keep track of usage. The entire system should be no more than 5 GB with 1.5 GB allocated towards persistent volume.

2.      Usability

a)      The system will be built with a responsive design to engage end users across different devices such as mobile and desktop.

b)      The interface must be simple and engaging to interact with volunteers and organizers to use the system productively. It should be directed towards productively and end users completing their purpose.

c)      Must be able to understand or troubleshoot any area of the system within a reasonable time from proper and concise documentation throughout the different parts of the project. The same should be reflected for end users and there includes help or “tip” sections at the more complex parts of the system.

d)      Must be accessible to the top 3 languages in North America

3.      Accessibility

a)      Should be portable to run on the 4 most popular web browsers.

4.      Expected Load:

a)      Incorporate load testing identity performance limitations.

b)      For now, the system will be able to handle 10 users at a time.

5.      Security Requirements:

a)      The system needs to have secure user authentication and authorization functionalities. These methods may include encryption techniques, role-based access and monitoring of data transmissions. Specifically input validation and sanitization to protect against SQL injections.

b)      System dependencies must be kept organized and updated to reduce security threats.

6.      Storage:

a)      Allocated space for persistent volume is 5 GB.

7.      Availability:

a)      The system must be available 100% of the time during business hours otherwise it should be available at least 70% of the time.

8.      Reliability:

a)      If a page or request from the system fails there needs to be a way to mitigate around the issue and return to the index page.

b)      If the server fails, debug output needs to be recorded and the last few requests should be captured.

c) If there is a system failure, a job to correct it should not run longer than 10 minutes.

9.      Scalability:

a)      The system will be relatively small and run directly on a single server.

# High-level System Architecture and Database Organization

1. Programming Languages:
   * Backend: Python
   * Frontend: JavaScript, HTML, CSS
2. Frameworks and Libraries:
   * Backend: Flask (Python Micro web framework)
   * Frontend: React.js (JavaScript library), Bootstrap (CSS)
3. Database Management System:
   * MongoDB: A no SQL document-oriented database program.
4. Authentication and Authorization:
   * User Models and routing within the Flask server
5. Mapping and Location Services:
   * Google Maps API: Integrating maps and geolocation features to display event locations and directions.
6. Version Control and Collaboration:
   * Git: A distributed version control system for managing codebase and facilitating collaboration among team members.

o GitHub: GitHub is a code hosting platform for version control and collaboration

* Trello: Project management space for assigning tasks and visualizing workflows among team members.

1. Deployment and Hosting:
   * Heroku: A cloud-based platform for deploying and hosting web applications.
   * Amazon Web Services (AWS): Utilizing AWS services like Amazon S3 for storing static assets or media files.
2. Licensing:
   * Django: Released under the Django license (BSD-3-Clause).
   * React.js: Licensed under the MIT License.
   * Flask: Licensed under the BSD license

# High-Level UML Diagrams

Class Diagram:

A diagram of a computer program

Description automatically generated

Component Diagram:

A diagram of a software company

Description automatically generated

Deployment Diagram: A diagram of a software application

Description automatically generated

# Key Risks

1. Skills risks:  
   Some members of the team may lack or have less experience with certain technical skills that are required to develop the software as committed. As everyone is at different levels of knowledge, what may be easy for one dev might leave another confused for multiple days.  
   Resolution: Our group will work together to figure out the capabilities of each member of the team and make sure that if a developer is lacking in any particular frame of design that the problem is minor rather than severely hindering them from continuing with their part of the development. Whether the developer in question on the team needs practice, to further study and broaden their capabilities, or work alongside another more experienced developer to develop iterations of prototypes we will work towards our planned end goals. We will take pride in each other's work as if it were our own and bounce implementation ideas around the metaphorical room to find the best fit process for each development as well as the best fit developer.
2. Schedule risks:  
   The project currently does not have a firm deadline, but the team is prone to schedule slip due to existing commitments, jobs, other classes, etc. In order to fulfill all of our committed goals, the team as a whole has to be more organized scheduling wise especially since the main method of communication is online.   
   Resolution: There will be more meetings and notices of milestone deadlines delivered through our online communication to combat this schedule slip. We will also be making sure to be constantly aware of the development status and state of our most important features on the website and prioritize edits on these parts of the website to make sure our software has the promised features we committed.
3. Technical risks:  
   The team could potentially have issues with integration of external APIs and services that are crucial to the normal operation and use of the system. Failing to integrate these services would result in the user experience being much worse and will most likely break several features of the project.   
   Resolution: As stated previously, in the other sections, we will be working to plan out and have a deep understanding of the structure that we want to create inside of the system to be better suited to face the difficulty that lies within implementation of APIs and other processes. We will also be making sure the team will be within a setting where we will have enough time to research other prototypes as well as test our own implementations in order to create appropriate and strong APIs and services. We will make sure to do this in a timely manner in order to find any bugs or errors that pop up and fix them before release.
4. Teamwork risks:  
   There will most definitely be instances where team members find themselves being extremely busy, having internal or external conflicts, or find themselves within a collaboration setting that may hinder project progress and effectiveness. Splitting big tasks into parts is the standard for big projects but a problem with a team member can result in delays, possible missed due dates, and a worse final product.  
   Resolution: The team will resolve these issues by creating a space for open communication as well as developing a set of rules for team members and team leaders to adhere to while working for the team. This will allow all team members despite their status within the team to feel as though their voice is heard and remind everyone that they are all working towards one common goal. Any problems with a team member will be solved by first attempting to talk to them about it then by escalating the issue and observing what the possible options are.

**Legal/content risks:**  
There is a potential risk that finding content for use in our system could have one of the developers accidently use licensed content on some page in the system. Even open-source material and systems often have license conditions that have to be adhered to in order for legal use of them in the system.  
Resolution: To be prepared for any instance we will be making sure that everyone on the team understands the licenses that open-sourced content has and what the different licenses mean to us. There are various reasons as to why open-source code can be licensed and various conditions associated with each license therefore it is more important for our team to make sure to adhere to the conditions rather than knowing each license by heart. We should be making sure that we are following all guidelines to the best of our abilities or developing our own in-house version of the service if there are no alternatives due to license conditions.

# Instructor Feedback

Milestone 3: Added priorities to the list of functional requirements according to instructor feedback. Expanded high-level system architecture section.

Milestone 4: No instructor feedback.

# Screenshots of Product

# Google Analytics

# Team Member Contribution

Jonathan Garcia:

* Team Leader and Back-End Developer.
* Owner of both the project GitHub and the group chat
* Final reviewer and editor before submitting milestones
* Contributed to: All Milestones, Software back and front end
* GitHub Commits: 8

Ernesto Benavides:

* Front-End Dev
* Worked on HTML and CSS for the sites’ frontend
* Contributed to: All Milestones
* GitHub Commits: 1

Jacob Campbell:

* Front-End Dev
* Worked on HTML and CSS for the sites’ frontend
* Contributed to: All Milestones
* GitHub Commits: 21

Tivvon Cruickshank:

* Back-End Dev
* Creator of the Vertical Prototype
* Set up local server for vertical prototype and cloud server
* Contributed to: All Milestones, Software back-end
* GitHub Commits: 2

Kareen Godder:

* Front-End Dev
* Contributed to: All Milestones
* GitHub Commits: 0

# Post-project Analysis

As the team leader of the project, the main challenges that the group encountered over the course of the project were a lack of communication and a varying level of skill between the members of the group. Despite having a group chat with notifications and mentions, members would only reply sparingly and often multiple hours or even days later than when the original message was sent. Some of this lack in communication was due to other members’ life happenings such as work and other classes which just needed to be worked around. Even so, the consequences of this lack of communication were felt during the course of the project as work would often not get started until close to or on the due date. I attempted to solve this issue with reminders, pinned messages, and mentions but dealing with it wore away at me so I gave up at some point on the reminders and just stuck to the latter two and hoped my group members would do it.   
 The other challenge I delt with was a difference in skill level between the various members of the group. Compared to me, there was one member whose skill level I would say was overall higher than mine, one member who had an overall worse skillset, and two members who hadn’t done any coding at the time of writing this, so their skill levels are unknown. This disparity was a source of trouble especially considering the front-end team had most of the people whose skill levels were generally weaker. As such, tasks that I knew how to do would cause them more time to do making the resulting product come out subpar when combined with the procrastination that the lack of communication caused. I tried to lessen the impact of this problem by being open to questions and answering at a decent pace but there was only so much I could do. Often times, I opted to just do the task/fix the issue myself which only put more on my plate. Overall, this project showed the problems someone can encounter when working together with other people and that everyone needs to take the project seriously for it to succeed.