Development of the All-In-One SRO Web App

Project Proposal by Group SpaceBar

Cuadra, Lea Angeli T.
Larua, Melle Jefferson
Nisay, Deidrick Jethro V.
Pagunsan, Clarence Kyle
Sacdalan, Lance Gabriel

March 11, 2025

Table of Contents

Project Definition

The project aims to develop a centralized, secure, and effective web application for the Student Relations Office (SRO) that overhauls the services they are currently providing to eliminate excess physical paperwork and unnecessary manual work. The proposed web application is an all-in-one system wherein the processing of activity requests, annual reports of organizations, and organization recognition applications — as well as the associated records — will be digitized.

Proposed System

The proposed solution is a web application designed to address the limitations of the current system. The web app will provide a secure, efficient, and user-friendly platform for requesting or managing student activity requests. Key features of the proposed system include:

- **Secure Database Integration:** Integration of a database management system using PostgreSQL.
- **User Authentication:** Ensure data confidentiality and security by restricting access based on user role (e.g., student, faculty).
- **Continued Support of Features from Previous System:** Integrate automated PDF generation of approved activities, and ease of submitting requests.
- **Added Features for Centralization:** Accomplishment of organization recognition application including booking of interviews and generation of certificates and notices of probationary status and filing of organization annual reports.

Business Need

Due to heavy reliance on physical paperwork, Google Forms, and Google Sheets, the office currently lacks a centralized submission system for student activity requests, annual reports of organizations, and organization recognition applications. While these tools are accessible and offer ease of use, they pose significant security, scalability, and efficiency issues. Sensitive data stored on Google Sheets is vulnerable to unauthorized access, and the manual processes involved in managing requests are prone to human errors and inefficiencies.

Thus, the group proposes the development of a more secure and efficient web application that will replace the existing system. This overhaul will leverage a legitimate database solution using structured query language (SQL) to ensure data integrity and enhance the overall user experience for both students and administrators.

Changes	Impact
Submission of the organization's annual report	Significant impact
Submission of organization recognition applications	Significant impact
Submission of activity requests	Moderate impact

Submission of annual reports of organizations

Similarly, annual reports, i.e., the Report on Past Activities and the Financial Report, will be accomplished and submitted through the web application in preparation for the next recognition process to address previous issues encountered, such as failure to turn over these documents by the outgoing officers. The system would also help the SRO countercheck the annual reports using a summarization function according to the categories, date conducted, and organization of each activity request through search queries.

Submission of organization recognition applications

Following the same process, organization recognition applications would also be digitized. Additionally, it would be able to address the difficulty in scheduling interviews as students would be prompted to book a scheduled interview after submission. Moreover, the generation of certificates of recognition and notices of probationary status would be automated, making it more efficient and less time-consuming for the SRO.

Submission of activity requests

The web application would considerably impact the improvement of user experience, especially for the SRO, since the records of the activity requests would be stored in a database instead of in a spreadsheet. These data will then be summarized according to their categories, date conducted, and organization through search queries.

Submitting would also be more efficient for the students filing activity requests since the submission of forms would be centralized in the web application. However, forms requiring wet signatures still have to be accomplished using physical forms, which will then be uploaded to the web application.

Additionally, activities that require cancellation or schedule and venue changes can be addressed online through the web application, making it more accessible and convenient for students.

Customer Profile and Existing System

The SRO is one of the departments under the Office of Student Affairs (OSA) of the University of the Philippines Baguio (UPB) concerned with student affiliations and student organizations and the activities and projects they are conducting. As a part of the OSA, all transactions of the SRO are monitored by the Office of the Director of Student Affairs (ODSA) and all activity requests and recognition applications require their final approval.

The submission of activity requests has already been partially digitized using Google Sheets and Google Forms. However, the current process for the annual reports of the organizations that requires summarizing the approved activities according to their categories, date conducted, and organization is tedious as it is tabulated manually due to the lack of a digital repository that houses these data.

Similarly, submitting an organization recognition application also relies on physical paperwork and Google Forms, in addition to manual booking of interview schedules (for the students) and manual generation of certificates of recognition or notices of probationary status (for the SRO). Additionally, listing all the recognized organizations is also done manually.

With this, although the system is being developed mainly for the SRO, the students, specifically the student organization leaders, and the director of student affairs (ODSA), would also benefit from the system as it would improve the efficiency of the department, especially when filing for organization recognition applications and activity requests. Thus, a wide population would utilize the web application regardless of location, including student organization leaders, ODSA and SRO staff, and students aspiring to create an organization. Its user teams include the developers as super administrators, the SRO as administrators, and the students as users.

The system is expected to be online 24/7 as it is a required medium for submission of student organizations. However, students and staff may opt to access the web application outside working hours, thus making it convenient to submit and process forms.

Critical Constraints

The web application would only be a semi-digitalization of the functionalities of the SRO due to the need for wet signatures for processing forms and requests. Hence, all forms have to be scanned, submitted through the web application, and saved to a Google Drive to prevent overloading the database. As a cloud storage platform, Google Drive provides a sustainable option to store and retrieve files without the risk of losing data

especially in cases of local server crash and malfunction. Moreover, the usage of Google Drive eliminates the need for the SRO to learn how to use a new digital storage system.

The system is expected to be completed within a **minimum of three (3) months** and a **maximum of nine (9) months** from the approval of this proposal. Its development and implementation will not affect the current operations of the SRO as it serves as an external upgrade.

Due to the goal of providing a 24 hours a day, 7 days a week service, the system will have development, staging, and production environments to ensure the maintenance of the web application. The system is designed to last for at least **one (1) year**, with developers providing maintenance and bug fixes for only **one (1) school year** following the completion of the project. Requests for additional updates beyond this period will be at the discretion of the development team.

Project Deliverables

At the end of the project, several deliverables will be handed over to the SRO to measure the success of the project. These deliverables are divided into the software and hardware components.

1. Software Deliverables

a. A **web application** with a completely functional system for processing activity requests, organization annual reports, and organization recognition applications will be developed.
b. A **database** containing the information and records of all organizations within UPB will be created.
c. A copy of the **digital documentation** of the system and a step-by-step **instruction manual** will be provided for administrators and developers, specifically those who will take over the maintenance and further development of the system a year after the initial deployment.

2. Hardware Deliverables

a. A hardcopy of a step-by-step **instruction manual** will be provided for administrators and developers, specifically those who will take over the maintenance and further development of the system a year after the initial deployment.

3. Other Deliverables

a. The developers will provide an **orientation** on the usage and features of the web application to the student body.

Preliminary Requirements

To define the scope and foundation of the project, the following conditions, constraints, and specifications are established to ensure that the project aligns with the expectations of the SRO and that the project is technically feasible. These requirements outline the essential functionalities, resources, and limitations that must be considered before the development and implementation of the project.

Functional Requirements

The following functional requirements define the specific behaviors, features, and operations that the system must perform as an all-in-one web application for the SRO. These would serve as a blueprint for the development of the web application.

1. Users

To improve the overall functionality of the SRO system, the client has requested three main functions: submission of activity requests, submission of the annual report of organizations, and submission of organization recognition applications. These are the three main functionalities that users, specifically the **student organization representatives**, can utilize inside the web application.

For activity requests:

- Maintain the same flow as the system currently being implemented.
- Add an item that asks the organization to categorize the requested activity. The categories are as follows:
    - A: Charitable
    - B: Service (within UPB)
    - C: Service (outside UPB)
    - D: Contest (within UPB)
    - E: Contest (outside UPB)
    - F: Educational (forum, seminar, exhibits, etc.)
    - G: Income-Generating Project
    - H: Mass Orientation/General Assembly
    - I: Booth (membership, registration, ticket payment, etc.)
    - J: Rehearsals/Preparation
    - K: Special Events (anniversary, concert, etc.)

    - L: Others (please specify, e.g., interview process, final rites)

- Integrate functions that provide the following:
    - **A summary of all approved activities by type.** This table shows the total number of activities approved for each type.
    - **A summary of all approved activities for each organization, sorted according to the most recently conducted activity.** This would be similar to Form D and help the SRO cross-check the Form Ds to be submitted by organizations, eliminating the need to review individual approval slips. The information needed includes the following:
        - Name of Activity
        - Nature and Purpose of Activity
        - Type
        - Inclusive Dates
        - Venue
        - Approval Date
- Add a function allowing students to submit requests for schedule and venue changes or cancellations of their approved activities. The requesting student, adviser, and/or venue approver must sign the form. Only the SRO needs to approve the request.

For the organization's annual report:

- Submission of the following forms in preparation for the next recognition process:
    - Revised OSA Form D: Report on Past Activities, including partnerships (form, still to be updated)
    - Financial Report (Form F), AY 2024-2025

For the organization recognition applications:

- Submission of the following forms:
    - Revised OSA Form A: Application for Student Organization Recognition (to be revised~renamed)
    - OSA Form B1: Officer Roster
    - OSA Form B2: Member Roster
    - OSA Form C: Officer Data
    - Revised OSA Form E: Proposed Activities for AY 2025-2026
- Integrate a function that prompts organizations to book an appointment for the interview upon submission of the forms

2. Administrators

Administrators are responsible for overseeing and managing the SRO system to ensure its smooth operation. Their main functions also include reviewing and processing submitted activity requests, verifying annual organization reports, and approving organization recognition applications. Additionally, administrators maintain the database of the system, manage user access, and ensure compliance with organizational policies. The functionalities of the ODSA and SRO vary from one another according to their administrative power. However, as administrators, both the ODSA and the SRO are capable of viewing the pending and approved submissions and the annual reports. These are summarized accordingly:

- **A summary of all activities by type.** This table shows the total number of pending and approved activities for each type.
- **A summary of all approved activities for each organization, sorted according to the most recently conducted activity.** This would be similar to Form D and help the SRO cross-check the Form Ds to be submitted by organizations, eliminating the need to review individual approval slips. The information needed includes the following:
    - Name of Activity
    - Nature and Purpose of Activity
    - Type
    - Inclusive Dates
    - Venue
    - Approval Date

- **SRO:**

  Every submission is required to have approval from the SRO, thus the functionalities accessible by the SRO revolve around the pending submissions and ensuring that the digital records are complete.

  Updating the digital records of transactions

  The features accessible by the SRO are similar to those of the other users, who can submit and upload forms for activity requests, annual reports, and organization recognition applications. However, as administrators, this feature would be used to update the system in cases of organizations physically submitting forms. Additionally, they would be prompted to input the date and time of the physical submission, as recorded through a physical logbook, to maintain the time-sensitivity of each submission.

Approval of requests and applications

Each submission will be organized into their respective pages according to their submission type: activity request, annual report, and organization recognition application. These are only visible to administrators and not users. They could accept or reject activity requests, including cancellations and changes in venue and/or schedule, and approve organization recognition applications through these pages. This action could also be completed using the dashboard, where all submissions are summarized in a table. Additionally, they would be able to generate approved activity request slips that will be printed out and given to each respective requesting organization.

Post-recognition process

After the recognition process, the SRO could use a function that generates certificates of recognition or notices of probationary status for each organization approved by the SRO. This will be restricted to administrators only and will not be sent out to the recipients.

In addition, the SRO would have access to a summary of all organizations approved by the office as organized by type. The summary must also include the names and emails of the chairs and advisers, as well as the email addresses of the organizations.

- **ODSA**

Since the SRO is still under the OSA, the submissions approved by the SRO require the final approval of the ODSA. Hence, the functionalities of the ODSA as an administrator is limited to this.

Approval of requests and applications

Similar to the administrator functionalities of the SRO, the ODSA can approve and reject the applications and requests once they are approved by the SRO through their respective pages according to their submission type and through the dashboard.

3. Super Administrators

Super administrators, specifically the **developers**, would be able to access all features and functions of the web application for troubleshooting and development purposes.

User Interface

The user interface will be made similar to the current AMIS student information system to make the onboarding process easier for users due to familiarity with the AMIS user interface. The idea is not to duplicate the design of the AMIS system but to keep in line with the brand consistency of the university containing these colors: maroon (UP Maroon), forest green, and yellow (to approximate gold). Also, simplicity is to be achieved by maintaining the high discoverability of the web application and focusing on readability for all users. With this, the developers will ensure the creation of easy-to-understand defined navigations for better accessibility. For typographies, the typefaces that will be used are these serif and sans-serif typefaces (including Padayon, Optima, Palatino, Avenir/Helvetica). The language of the web app will use English as its primary language; in case of translation and text-to-speech option, it will be up to the browser used by the user. Furthermore, the UI will be made accessible for desktop and mobile view. Overall, the user interface will implement a less-is-more approach in closely following the branding in accordance with the UP Visual Identity Guidebook and an inclusive design accessible for most users.

Target Environment

The system aims to be an efficient and accessible medium for submitting and processing forms; thus, the system must be available 24 hours a day, 7 days a week. Because of this, the web application must have three environments: development, staging, and production.

Development Environment

The development of the backend and frontend side of the web application will be conducted within the development environment. This includes the user interface, the base features and all the other features or functionalities that will be added to the system after the initial deployment.

The following tools will be used for the development of the system:

- **PostgreSQL** as the database management system (DBMS);
- **Node.js** as the runtime environment for the backend development;
- **Tailwind CSS** as the utility-first CSS framework;
- **React.js & Vite** as the frontend library and build tool, respectively;
- **Radix UI** for the accessible and unstyled UI components;
- **Shadcn** as the component library built on Radix UI; and
- **Figma** for the UI/UX design tool.

Staging Environment

Within the staging environment, the features and functionality that were developed in the previous environment will be tested for quality assurance and debugging. The system would also undergo test runs in different web browsers in different devices such as mobile phones, tablets, laptops, and desktops to ensure compatibility and responsiveness.

The following tool will be used to test the system:

- **Docker** as a platform for container deployment for local testing and
- **Vercel** as a cloud hosting platform.

Production Environment

After being developed in the development environment and tested in the staging environment, the web application will be deployed to the production environment, which is already accessible to the public. The target is that it can be run on any device connected to the internet with at least one Chromium-based web browser on its latest version, with its response time expected to be within web application standards (i.e. the response time is within one to 10 seconds). Chromium-based web browsers include but is not limited to the following:

- Chrome (version 131 and higher)
- Opera (version 114 and higher)
- Edge (version 131 and higher)

The following tool will be used to deploy the system for public use:

- **Vercel** as a cloud hosting platform, similar to the staging environment.

Summary of Customer Priorities and Expectations

The system aims to maintain the same flow of the current activity-requesting system. This is to avoid confusion amongst the students and staff since the semi-digitized system has only recently been pushed to production. Additionally, the system aims to add more functions to the activity request flow, such as activity categorization and summarization of activities for each organization. This assists the SRO Officer in managing and creating their annual reports. It also includes a function to cancel approved activities and add changes to the schedule and venue.

Furthermore, the system aims to digitize other SRO duties, specifically organization recognition applications and annual reports. This includes submitting reports on past activities and financial reports, in addition to the requirements to be submitted during the

recognition application. Additionally, the integration of interview appointment booking and certificate of recognition and notice of probationary status generation would be implemented. This is to further centralize the duties of the SRO into a single place, further reducing the use of paper and utilizing modern file management systems.

Approvals

This project proposal for the *Development of the All-In-One SRO Web App* is noted and approved by the following parties:

Group SpaceBar. CMSC 128

Cuadra, Lea Angeli
UI/UX Designer, Documentation

Larua, Melle Jefferson
Lead Developer (Full Stack)

Nisay, Deidrick Jethro
Lead Frontend Developer, UI/UX Designer

Pagunsan, Clarence Kyle
Lead Backend Developer

Sacdalan, Lance Gabriel
Project Manager, Backend Developer

Ms. Mary Chezka Ann Sinco
Instructor, CMSC 128

Mr. Friedrich Andres Aquino
Student Relations Officer, Office of Student Affairs

Ms. Liezel M. Magtoto, Ph.D.
Director, Office of Student Affairs