COMP39/9900 Computer Science/IT Capstone Project
School of Computer Science and Engineering, UNSW

Project Number: P22

Project Title: CSE HDR student travel tracking system

Project Clients: Arjun Radhakrishnan

Project Specializations: Software development; Computer Science and Algorithms.

Number of groups: 2

Background:

This proposal outlines the development of a Travel tracking software system designed to streamline and optimize the travel processes involved for the traveling HDR students in the CSE. The primary objective is to create an intuitive, efficient, and scalable solution that ensures identification of bottlenecks and changes to travel policies in the future while meeting user needs and preferences. CSE expects an outcome in this project whereby we receive a software that provide a streamlined and easy solution to get budget approval, track expenses and record remaining balance of student funds as they initiate the travel plans through the UNSW travel partner (FCM Travels).

Project goals

• Travel Tracking: Develop a system to track the process of students getting the travel itineraries prior to the budget approval from the supervisors.
• Budget Management: Implement a budgeting module to identify the fund code associated with the student, record the amount allocated, monitor, and manage the remaining balance available within their budget for each student. The same applies to a travelling academic.
• User-Friendly Interface: Create an intuitive interface for travelers, managers, and administrators to easily manage travel plans and budgets.
• Integration Capabilities: Ensure the software integrates with existing financial systems, HR systems, and can have capabilities to share the same information to the school as well as the travel booking platform if need be.
• Reporting and Analytics: Provide comprehensive reporting and analytics tools to help CSE monitor travel expenses, segregate them within each supervisor, and make informed decisions.

Requirements and Scope:

An easy to access tracking system that will help track the budget allocation and funds availability for HDR students.

In Scope

- CSE HDR students

Scope of Work and deliverables

3.1. Requirements Analysis

• Stakeholder Interviews: Conduct interviews with potential users to understand their needs and preferences.

- Use Case Development: Develop detailed use cases to capture functional and non-functional requirements.

- Technical Feasibility Study: Assess the technical requirements and feasibility of integrating with existing systems.

3.2. System Design

- Define the system architecture, including data flow diagrams, plans to integrate database with existing database if needed, develop prototype focusing on ease of use and accessibility for users with a range of technical capabilities.

- Consider constraints like travel policies, budget availability, etc.

3.3. Development

- Backend Development: Implement the server-side logic, database management, and API integrations.

- Frontend Development: Develop the user interface that can be easily integrated to existing university systems and that requires minimal upgrades.

- Integration: Integrate the system with existing tools such as finance systems, and travel management systems 3.4. Testing

- Unit Testing: Test individual components for functionality and reliability.

- System Testing: Conduct end-to-end testing to ensure all components work seamlessly together.

- User Acceptance Testing (UAT): Engage with a sample group of end-users to validate the system's functionality and usability.

3.5. Deployment

- Stage 1: Deploy the system final testing and validation by users (CSE Admin).

- Stage 2: Launch the system for all users to use once testing is final.

- Training & Documentation: Provide comprehensive training sessions and documentation for end-users (CSE admin team).

3.6. Maintenance and Support

- Training: Provide access and training for select staff to manage the system.

- Updates and Enhancements: Provide a detailed document on possible updates the system may need to undergo for the next five years. Include CSE staff to supervise the documentation.

Required Knowledge and skills:

Technical Skills

Software Development

Programming Languages

- Proficiency in languages such as Python, Java, JavaScript, or similar.

- Web Development: Knowledge of HTML, CSS, and JavaScript frameworks (e.g., React, Angular, Vue.js).

Backend Development

- Server-Side Languages: Proficiency in languages such as Node.js, Django (Python), Ruby on Rails, or similar.
- Database Management: Skills in SQL and experience with databases like MySQL, PostgreSQL, MongoDB, or similar.
- API Development: Experience in developing RESTful and/or GraphQL APIs.

Frontend Development

- UI/UX Design: Skills in creating intuitive and user-friendly interfaces.
- Frontend Frameworks: Experience with frameworks like React, Angular, or Vue.js.
- Integration
- API Integration: Experience with integrating third-party services and APIs (e.g., Google Calendar, Microsoft Outlook).
- Middleware: Knowledge of middleware technologies for smooth integration.

Expected outcomes/deliverables:

- The finished product is expected to be utilised for the long-term hence the knowledge of the source code shall be shared with the UNSW central IT team or CSE team.

- Training resources for staff/ training to select staff who could train the rest of the team

Supervision:

Arjun Radhakrishnan

Additional resources: