

Project : Phase 2

SECD2523 - SYSTEM ANALYSIS AND DESIGN SEMESTER I, SESSION 2022/2023

Lecturer: Dr. Maliif

|  |  |
| --- | --- |
| Name | Matric No. |
| DANIEL TRI HENDARTO TANRA | A23CS4040 |
| PHANG SENG SOON | A21EC0220 |
| TAN CHUN MING | A21EC0229 |
| TOH KANG LUN | A21EC0234 |
| MA ZEJUN | A21EC4009 |

Section: 02

Table of Contents

[1.0 Overview of project 3](#_bookmark0)

[2.0 Problem Statement 4](#_bookmark1)

[3.0 Proposed Solution 7](#_bookmark2)

**1.0 Project Overview**

This project should develop an advanced system that would greatly enhance the current process of supervising postgraduates in colleges and universities; the project will be aimed at enhancing interaction between the postgraduates and their supervisors. The inefficiencies and associated problems with the current manual coordination system in use shall be rectified. Comprehensive requirements shall therefore be collected and the use of various methodologies for an understanding and design of the most optimum solution applied.

It will be easy to engage the stakeholders in seeking the detailed information since our Google Forms have nominal and scale questions to that effect, all meant to collect information on the people, goals, data, and procedures. Doing this will ensure that we obtain various views capturing the right information about people, goals, data, and procedures. Therefore, this information is a basis on which to build our understanding of business functions/processes in postgraduate supervision.

Some of these inefficiencies are fixed schedules by supervisors, the lack of an interface for scheduling communication between the center or centralized system and the supervisors, and lack of systematic feedback in case of rejection of requests by supervisors leading to delays and uncertainty. This may, in turn, perhaps overload the supervisors and result in a drop in the quality of supervision.

For the purpose of business flow, we will show the existing system using Data Flow Diagrams only. We will start our explanation with the high-level context diagram. This context diagram shows the flow of information between the business system of the college and all the external entities, such as students, supervisors. It shall lay down the basis for all the more detailed parent and child diagrams to show the flow of external entities and data along with information stores and the functions. Then, the function in the parent diagram will be exploded into a child diagram at the end to keep the integrity of the inputs and outputs.

After doing this, we shall proceed to draw the ERDs that will show the relationships in the system. Be reminded also, the existence of concepts of data requirements and transaction requirements because they imply how data is used, as they provide the examples of data usage. With such a structured analysis, we will have brilliant coverage of the current systems and the flow of information.

At the end of the project, we would have developed a background understanding of the existing system, to be represented using data flow diagrams, entity relationship diagrams, and information requirements. This background will guide in developing an advanced system that caters to the inefficiencies and enhances the postgraduate supervision process.

**2.0 Problem Statement**

**2.1 Scheduling manual inefficiency of human-based coordination and scheduling**

The current postgraduate supervision set-up creates a high level of dependency on manual coordination between the student and the supervisor. The scheduling of supervisory sessions is fixed and students are expected to arrange the meeting within these constraints. It is a time-consuming process and normally results in delays, missed appointments, and inefficiency in time utilization by students and supervisors. This makes the scheduling inefficient in the sense that the assignment of schedules is often characterized by much back-and-forth communication, a scenario which discourages better productivity in academics.

**2.2 Lack of a Centralized Platform for Communication and Management**

As a result, central scheduling of appointments, deadlines, and communication between student and supervisor is lacking. This makes the whole process scattered and ineffective. Therefore, most important information sits in these scattered places, be it email inboxes, paper records, or personal notes that should be kept in order to not miss deadlines, miscommunicate, or generally have disorder in postgraduate supervision management.

**2.3 Lack of Transparency in Rejection Feedback:**

This is to say that rejection of an application for supervision would not occur through any systematic process whereby the students get feedback and are left guessing what was wrong. This would in turn rob them a chance to improve their profiles or even approach other supervisors with a better strategy. This apparently creates frustration and an undefined fear in them of how to progress forward in their academic pursuits.

**2.4 Overloading of the supervisor and quality of the supervision:**

Such an arrangement in the system does not limit the number of students that one supervisor can hold, hence overloading some of them. Supervision is adversely affected regarding quality, since overworked supervisors may have inadequate time and the much-needed attention that suffices to give an elaborate and satisfactory response to every student. Without this even distribution of the supervisory duty, disparities are realized in the quality of academic guidance among the students and hence affect their academic performance and other experiences.

**2.5 Security and Data Management Issues**

The manual system is very prone to a high level of risk in security and hence very hard to manage the sensitive data dealing with academics. This raises issues related to the integrity and confidentiality of records for students, supervision notes, and any other important information. Poor security measures make the system vulnerable and susceptible to security threats of data leakage and unauthorized access, therefore compromises privacy and trust between these parties.

Taken together, these problems point out inefficiencies, lack of transparency, and finally issues with scalability in the current system of postgraduate supervision. There is a need to address them against the background of quality enhancement in academic supervision and attaining an efficient, clear, and secure process for stakeholders concerned.

**3.0 Proposed Solutions**

To overcome the identified issues, we propose the following features and functionalities in a comprehensive, automatically driven system:

**3.1 Automated Scheduling and Calendar Integration:**

Like the Google Calendar, it will have an advanced scheduling tool to view the availability of supervisors, respectively, to get appointments. This will eliminate totally the need for manual coordination, which most often proves to be a source of delays as one has to engage the other in order to schedule a meeting. Time availability for the supervisor is done by being keyed into the system, and then a student selects an appropriate time that fits into a student's days. Automatic reminders and notifications ensure that no appointment goes by the wayside. This leads to better time management and productivity.

**3.2 A central platform for communication and management.**

The new system will be the main centralized place where scheduling, deadline management, and communication take place. Such a unified system will facilitate the process, making it much easier for students/supervisees to keep track of important dates, deadlines, and the quantity of interaction. The system will also entail dashboards that the student and supervisors can view for upcoming appointments, deadlines, and the history of previous communication. This is also going to give transparency and centralize all the critical information.

**3.3 Feedback Mechanism for Rejected Requests:**

Since all this would be in place, it should be systematic feedback so that the student knows exactly why his or her request was not accepted. For this, the supervisors will feed reasons for rejection of the request from a predefined set of reasons or with custom feedback in the system. The same will be conveyed automatically to the student. This will thus make sure that the student does not remain in an uncertain, helpless, and frustrating state but can rather take corrective action for effective profiling.

**3.4 Manager Capacity Management:**

The system should be able to allow the supervisor to set voluntary limits over the number of students to be supervised in order to avoid supervisor overload. This will ensure supervision of quality at all levels and that the supervisors are not overwhelmed. The supervisor will set the maximum number of supervisees available in a profile, and the system will track the number of supervisees for each supervisor. Notifications shall be sent when limits are getting close in order for supervisors to manage workload effectively.

**3.5 Messaging Features and other Communications:**

It is going to implement a messaging feature that allows students to communicate with supervisors directly. In fact, this feature will allow real-time messaging and help share documents to a great extent. The messaging feature will be available from the main dashboard so that the users can send messages, share files while at it, or even view notifications on the status of new messages sent. The archive will be made available on request in the future to hold the history of the communications so as to ensure that all the sets of interactions are documented and can easily be retrieved.

**3.6 Strongly Secure:**

Some of the technical measures to be incorporated within the system include password hashing and risk assessment protocols to guarantee security and integrity. It will hash every user's password to be stored in the database. Assurance against identification of possible vulnerabilities is through regular security audits. The system will comprise of some features in both user authentication and authorization, which are controls of access to sensitive information hence ensuring privacy and trust.

**3.7 Development and maintenance are economical:**

The development will go for the free software tools to control the cost within estimations effectively. This selection of technology will offer a strong base for system development besides keeping the budget within the estimated range of 40k—50k. The development team will apply Laravel for back-end development, which is coupled with a favorable framework for front end development. Interns will be involved in developing routine updates and maintaining the system post-development to make the system functional properly within a low budget.

**3.8. Adoption Support and Training:**

Support and training shall be put in place fully to understand the possible difficulties that may arise in moving over the system from the current means into the new system through, but not limited to, video tutorials and detailed documentation and involving the students in the training. Continuing education will be done on the platform, where there will be webinars and workshops guiding the use of the system. The support system comprises a help desk to assist the user in case of any problem, making it a smooth transition and having the best user adoption rates.

The system is intended to address, among other things, all inefficiencies and inconsistencies in the current postgraduate supervision process: lack of transparency and scalability. This advanced system will offer the interface that fosters a better and smooth experience in the postgraduate supervision procedure to the students and the supervisors at large, thereby facilitating the many ways toward betterment in the academic outcome and research development. This system will ensure effective scheduling, transparency in the communication process, easy ways to handle supervisor loads, and most importantly, security in the postgraduate supervision process.

# 