



UTM
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Project 1 : Phase 1
(UniConnect)

CODE & SUBJECT : SECI 2613-07
SYSTEM ANALYSIS AND DESIGN

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1.0 Introduction

Until this day, we still can see that universities and colleges have many obstacles in effectively managing their resources and providing high-quality services to students, teachers, staff, and administrators. This poor management not only would affect student growth but also will give lecturers a hard time to effectively teach as well as they don't know what facilities is available if they want to make additional class or replace class as there is nothing to refer to to find available facilities. This lead to lecturer to resort for online class which making it hard for them to monitor their students. Other than that there are also problem with students insufficient participation in campus or university activities and event. The insufficient participation can lead to students having a hard time getting a job later on as most jobs require students to participate in extra activities to show their competence.

So in response to the realization that a holistic approach is required to handle these issues, we introduce UniConnect, an Integrated Campus Management System. UniConnect aims to address these issues by providing a centralized, integrated platform that streamlines campus management processes, enhances communication, optimizes resource utilization, and ensures data security. In short we plan to make a system that shows and manages everything that is going on in the campus all in one system. This system will give information to the user about things such as what room is available, lectures that are going on in a specific room and even what event or activities is going on in a specific place in the campus in real-time. This system also allows users to book facilities that are available instantly using the system and many more.

We hope that with this system, campus management can be enhanced to the point where all the facilities in the campus will be maximised. Other than that, we hope that this system can help students to join extra activities in the campus to increase their chance to find jobs later on. We shall outline our strategic approach to the creation and use of UniConnect in the parts that follow. Every detail, including risk mitigation plans, project schedules, and feasible analysis, will be painstakingly designed to guarantee the effectiveness and longevity of our project.

2.0 Background study

University campuses' facilities can greatly help students and lecturers to achieve max study efficiency but the poor campus management has been holding it back. It is due to lack of the use of technologies. Good campus management can assist lecturers in booking any facilities at any time thus avoiding lecturers cancelling their classes or resorting to online classes.

Other than that, lack of systematic communicative system in the campus is hindering students' potency as they lack information about any activities that could showcase their skills that are going on in the campus. This is because the current method of communication in the campus is poor. Currently students are using chat apps such as Whatsapp as a method to communicate on campus. Chatting apps like this never really highlight any important information as they are a lot of redundant chats.

3.0 Problem statements

1. **User Overwhelm with Information:** The unified dashboard may present too much information at once, overwhelming users and hindering their ability to find what they need efficiently. This can lead to frustration and decreased productivity as users struggle to navigate through the cluttered interface.
2. **Complex Facility Booking Process:** Despite the facility booking and management feature, users may encounter difficulties in understanding and navigating the booking process. This complexity could discourage users from utilizing campus facilities optimally, leading to underutilization or inefficient allocation of resources.
3. **Ineffective Event Promotion:** While the event management module allows for event creation and management, the system may lack effective tools for promoting events to the target audience. This can result in low event attendance and limited engagement, diminishing the impact of campus activities and initiatives.

4. Limited Accessibility and User Training: Some stakeholders, particularly faculty and staff, may face challenges in accessing and utilizing the system effectively due to limited technical proficiency or insufficient training resources. This could result in underutilization of the platform's features and functionalities, undermining its effectiveness in enhancing campus operations.

5. Communication Overload: Despite the communication and notification centre, the system may bombard users with excessive notifications and emails, leading to communication overload. This can cause important messages to get lost amidst the noise, resulting in missed deadlines, events, or critical updates.

4.0 Proposed Solution

1. Streamlined Dashboard Design: To address the issue of user overwhelm, we propose redesigning the dashboard interface to prioritize essential information and provide customizable widgets for personalized user experiences. This solution is operationally feasible as it leverages existing design resources and can be implemented with minimal disruption to current operations.

2. Simplified Facility Booking Workflow: By revamping the facility booking process with intuitive interfaces and guided workflows, we aim to make it more user-friendly and accessible. This solution is technically feasible as it involves enhancements to the existing booking system without requiring significant architectural changes.

3. Integrated Event Promotion Tools: To improve event promotion, we propose integrating social media sharing features, targeted email campaigns, and event analytics within the system. This solution is economically feasible as it capitalizes on existing communication infrastructure and can be implemented with minimal additional cost.

4. Comprehensive Training and Support: To address accessibility and training challenges, we propose developing comprehensive user training materials, including tutorials, guides, and helpdesk support. This solution is economically feasible as it optimizes human resource allocation by investing in training once to support ongoing system usage.

5. Personalized Communication Preferences: To mitigate communication overload, we propose implementing user-defined notification preferences, allowing individuals to customize their communication channels and frequency. This solution is technically feasible as it involves enhancements to the notification system's logic and user interface.

CBA

The project estimated to be implemented within 3 years

Estimated Cost	
Hire Programmer for System Coding	RM35,000
Hardware	RM20,000
Software	RM5,000
Maintenance	RM5,000 per year
Salary	RM25,000 per year

Estimated Benefits	
Owning Server	RM9,000 per year
Increase Sale	RM200,000 per year

Assumptions	
Discount rate	10%
Sensitivity factor (cost)	1.1
Sensitivity factor (benefits)	0.9
Annual change in production costs	7%
Annual change in benefits	5%

CRITERIA	YEAR			
	0	1	2	3
1. COST				
A. DEVELOPMENT				
Hiring Programmer for System coding	RM33,000			
Hardware	RM27,500			
Software	RM5,500			
Total Devolepment Cost	RM66,000			
B. OPERATION				
Maintenance		RM6,600	RM7,062	RM7,556
Salary		RM28,600	RM30,602	RM32,744
Total Operation Cost (Annual)		RM35,200	RM37,664	RM40,300
PRESENT VALUE (PV) $PV = \text{Payment} \times 1/(1+c)^n$		RM32,000	RM31,127	RM30,278
ACCUMULATED COST		RM98,000	RM129,127	RM159,405
2. BENEFITS				
Owning Server		RM13,500	RM13,950	RM14,322
Increase sales		RM225,000	RM231,750	RM238,702
Total Benefit (Annual)		RM238,500	RM245,700	RM253,024
PRESENT VALUE (PV) $PV = \text{Payment} \times 1/(1+c)^n$		RM216,818	RM203,057	RM190,100
ACCUMULATED BENEFIT		RM216,818	RM419,875	RM609,975
GAIN/LOSS		RM118,818	RM290,748	RM450,570
PROFITABILITY INDEX (PI)	6.83			

(b) PI value = 6.83 based on the PI value, this shows that the project ia a good investment

5.0 Objectives

1. **Streamline Operations** : UniConnect consolidates various campus management functions into a single platform, streamlining administrative processes and reducing manual efforts. This leads to increased efficiency and cost-effectiveness in managing facilities, events, academics, and student information.

2. **Enhanced Resource Utilisation** : By providing a centralised facility booking and management system, UniConnect optimizes the use of campus resources such as classrooms, labs, and auditoriums. This helps to maximize resource utilization, minimize conflicts and improve overall facility efficiency. This is also to prevent double booking of facilities and avoid booking errors of campus or university facilities.

3. **Improved Event Organization** : UniConnect empowers event organisers to efficiently plan, schedule, and manage campus events and activities. With features like event registration, promotion, and attendee management, the system facilitates seamless event organization, it will lead to enhanced engagement and participation.

4. **Academic Excellence** : The academic management capabilities of UniConnect enable administrators and faculty members to effectively manage academic programs, courses, and student enrollment. This fosters academic excellence by providing tools for curriculum management, scheduling, grading, and student tracking.

5. **Student Empowerment** : UniConnect serves as a comprehensive student information system, empowering students to manage their academic journey and extracurricular activities. Students can access their academic profiles, register for courses, view schedules, and track progress, leading to improved student engagement and success in both academic and curriculum.

6. Effective Communication : With its communication and notification centre, UniConnect facilitates seamless communication among stakeholders, including administrators, faculty, staff, and students. By delivering timely announcements, reminders, and alerts, the system enhances communication efficiency and ensures that important information reaches the intended recipients promptly.

6.0 Scope of the Project

This is the list of functions for each role in the UniConnect system :

1.Administrators :

- Full system access and configuration
- Management of user accounts and roles
- Oversight of facility bookings and resource utilization
- Coordination of event management tools and settings
- Supervision of academic management modules, including course and curriculum setup
- Control over communication and notification systems
- Access to comprehensive reporting and analytic

2.Student :

- Access to personal academic information and profiles
- Course registration and schedule viewing
- Facility booking for study sessions or group activities
- Participation in event registration and management
- Utilization of communication tools for collaboration and information retrieval
- Tracking of academic progress and extracurricular activities

3.Event Organizer :

- Access to event management tools
- Facility booking for event locations
- Coordination of event schedules and attendee management
- Use of communication features for promoting events and sending updates
- Integration with academic calendar for conflict-free scheduling

4.Staff :

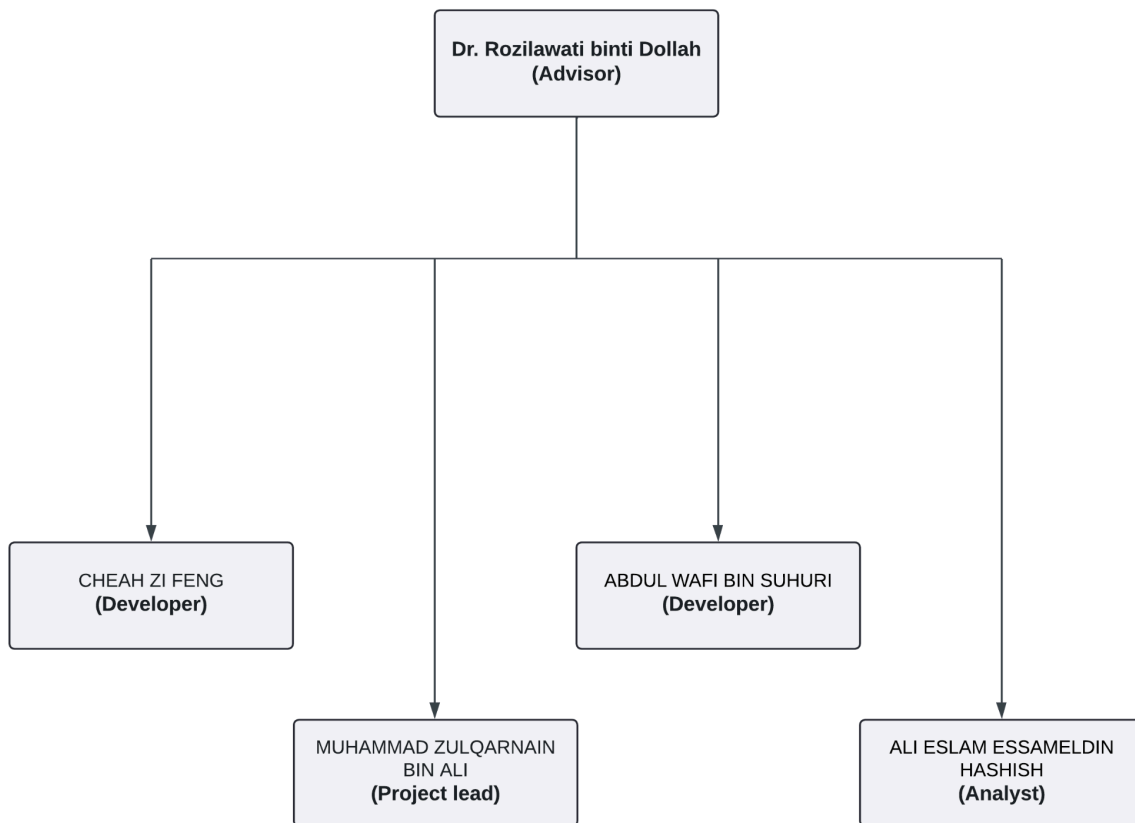
- Limited access to administrative functions relevant to their roles
- Management of specific facilities or resources
- Assistance in event organization and logistics
- Access to communication tools for internal coordination
- Involvement in academic support tasks as needed

5.Faculty Member :

- Management of course content and academic schedules
- Facilities booking for classes, labs, and seminars
- Involvement in event planning related to academic programs
- Use of communication tools for student advisement and announcement
- Tracking and grading of student performance and attendance

7.0 Project Planning

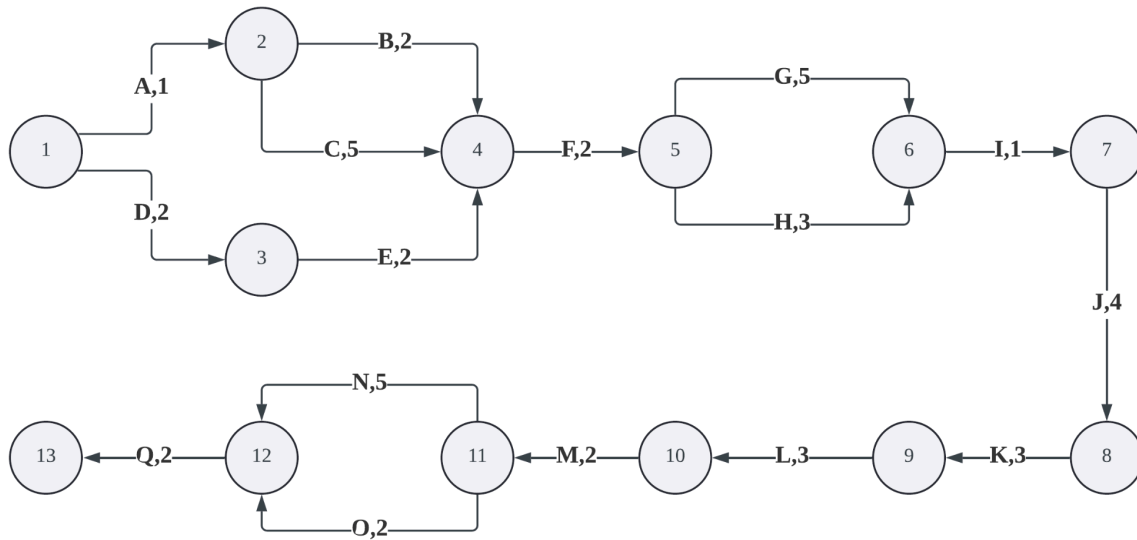
7.1 Human resources



7.2 Work breakdown structure(WBS) :

Label	Activity	Predecessor	Duration
A	Analyze similar system technologies	None	1
B	Determine technology stack needed for the system	A	2
C	System architecture and design	A	5
D	Determine user requirements by interviewing	None	2
E	Determine security measures	D	3
F	Calculate system financial needs	B,C,E	2
G	Prepare system models	F	5
H	Determine the management for each model	F	3
I	Calculate management costs	G,H	1
J	Implement system models	I	4
K	Support and Maintenance	J	3
L	Develop system prototype	K	3
M	Present system prototype	L	2
N	Gather and analyze data flow	M	5
O	Conduct cost benefit analysis	M	2
P	Prepare system proposal	N,O	3
Q	Present system proposal	P	2

7.3 Pert chart (based on WBS) :



Path 1: A – B – F – G – I – J – K – L – M – N – Q

Length: $1+2+2+5+1+4+3+3+2+5+2 = 30$ Days

Path 2: A – B – F – G – I – J – K – L – M – O – Q

Length: $1+2+2+5+1+4+3+3+2+2+2 = 27$ Days

Path 3: A – B – F – H – I – J – K – L – M – N – Q

Length: $1+2+2+3+1+4+3+3+2+5+2 = 28$ Days

Path 4: A – B – F – H – I – J – K – L – M – O – Q

Length: $1+2+2+3+1+4+3+3+2+2+2 = 25$ Days

Path 5: A – C – F – G – I – J – K – L – M – N – Q

Length: $1+5+2+5+1+4+3+3+2+5+2 = 33$ Days

Path 6: A – C – F – G – I – J – K – L – M – O – Q

Length: $1+5+2+5+1+4+3+3+2+2+2 = 30$ Days

Path 7: A – C – F – H – I – J – K – L – M – N – Q

Length: $1+5+2+3+1+4+3+3+2+5+2 = 31$ Days

Path 8: A – C – F – H – I – J – K – L – M – O – Q

Length: $1+5+2+3+1+4+3+3+2+2+2 = 28$ Days

Path 9: D – E – F – G – I – J – K – L – M – N – Q

Length: $2+2+2+5+1+4+3+3+2+5+2 = 31$ Days

Path 10: D – E – F – G – I – J – K – L – M – O – Q

Length: $2+2+2+5+1+4+3+3+2+2+2 = 28$ Days

Path 11: D – E – F – H – I – J – K – L – M – N – Q

Length: $2+2+2+3+1+4+3+3+2+5+2 = 29$ Days

Path 12: D – E – F – H – I – J – K – L – M – O – Q

Length: $2+2+2+3+1+4+3+3+2+2+2 = 26$ Days

Most critical path:

Path 5: A – C – F – G – I – J – K – L – M – N – Q

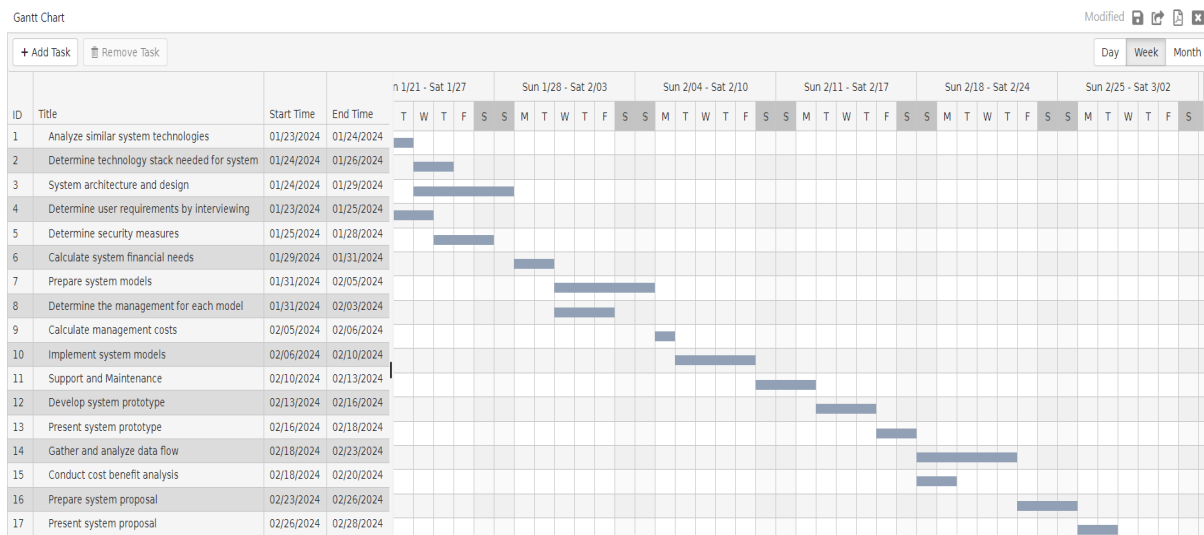
Length: $1+5+2+5+1+4+3+3+2+5+2 = 33$ Days

Shortest path:

Path 4: A – B – F – H – I – J – K – L – M – O – Q

Length: $1+2+2+3+1+4+3+3+2+2+2 = 25$ Days

7.4 Gantt chart:



8.0 Benefit and Overall Summary of Proposed System

In conclusion, UniConnect offers a complete solution to the long-standing problems faced by universities and colleges in managing their resources and improving campus experience for everyone involved including students, faculty, staff and administrators. UniConnect aims to address these issues by providing a centralized, integrated platform that streamlines operations, optimize resource utilization, improve event management, achieve academic excellence, empower students, and facilitate effective communication. The proposed solution addresses important issues such as user overwhelm, complex facility booking process, ineffective event promotion, limited accessibility and communication overload. This is done through a strategic approach that focused on streamlined dashboard design, simplified workflows, integrated promotion tools, comprehensive training and support and lastly personalized communication preferences.

Summarizing it up, based on the feasibility studies, firstly the technical feasibility of simplifying the facility booking workflow involves enhancing the existing booking system through intuitive interfaces and guided workflows. Another example is user-defined notification preferences, that allow individuals to customize their communication channels and frequency. For operational feasibility, Streamlined Dashboard Design solution leverages existing design resources and can be implemented with minimal disruption to current operations. For economic feasibility, the Integrated Event Promotion Tools solution capitalises on existing communication infrastructure and can be implemented with minimal additional cost and Comprehensive Training and Support optimizes human resource allocation by investing in training once to support ongoing system usage.

Moreover, referring to the project planning, the human resources part consists of 5 positions that are administrators who are responsible to manage system settings, user accounts, facility bookings, events, academic modules, communication, and access reports. Students who will access academic information, register for courses, book facilities, participate in events, communicate, and track academic and extracurricular activities. Event Organizers who need to organize events, book facilities, manage event schedules and attendees, communicate event

details, and integrate with the academic calendar. Staff that assist in administrative tasks, manage specific facilities, support event organization, communicate internally, and provide academic support as needed. Lastly, faculty members that will manage course content and schedules, book facilities for academic activities, participate in event planning, communicate with students, and track student performance and attendance. This system is a profitable investment because the PI value is more than 1 based on the CBA calculations. From the gantt chart and the PERT diagram, the estimation time for completion of the systems is about 14 weeks, which is rather short but still manageable to develop a system that satisfies the stakeholders. Ultimately, UniConnect aims to transform campus management by offering a centralized platform that improves collaboration, efficiency, and transparency in every area of university operations. With the backing of stakeholders and a dedication to excellence, we believe that UniConnect will bring about positive change.