CSIT-20-S3-16: FYP MANAGEMENT TOOL

FYP-20-S3-16 Project Requirement Documentation

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1. EXECUTIVE SUMMARY

With the technological advancements that have been made in recent years, automation of manual work processes has been key in improving the efficiencies of organizations. The FYP Management System that is used to allocate final-year students studying in the Singapore Institute of Management (SIM)'s University of Wollongong (UOW)'s programmes is known to be in use for several years and has been receiving complaints for its lack of efficiency in terms of updating and viewing of information that various key stakeholders require.

Our team proposes the institution to have an improved, automated FYP Management Portal. With an automated system in place, it will benefit the organization by improving its efficiency and ease the workload required to manage the FYP-related tasks.

This proposal will explain how the entire FYP management process works currently, the improvements that could be made based on our assessment and our plan to implement such changes.

2. INTRODUCTION

UOW is an Australian public research university located in the coastal city of Wollongong, New South Wales, approximately 80 kilometers south of Sydney. As of 2017, the university had an enrollment of more than 32,000 students, including over 12,800 international students from 134 countries, with an alumni base of more than 131,859 and over 2,400 staff members. In Singapore, the institution has partnered with SIM Global Education to become its only partner in Singapore for its IT degree programmes. Over 3000 degrees conferred from the UOW-SIM programmes since their partnership started in 2005.

In the UOW-SIM's IT degree programmes, when a student has met the necessary prerequisites to take the Final Year Project (FYP) module, he/she will be given a list of FYP projects to shortlist his/her preferred projects. From there, a coordinator would collect the information from students and send it to UOW, where the school will confirm the students' projects and update the coordinator, who will then group the students up based on the projects that they have selected and assign them their supervisors and assessors. However, most of the current processes are handled manually and require a large amount of time and effort to maintain and keep track, thus an automated management portal would be strongly preferred.

2.1 Target Audience

The key stakeholders of the FYP Management Tool are mainly students who have enrolled into the CSIT321 FYP module, supervisors and assessors who are tasked to supervise and assess the students' works and progress in this module, the subject coordinator, who ensures that the FYP module is working in order and facilitates the transfer of documents between UOW and SIM, Academic Program Directors (APDs) who will manage the list of available projects and conduct the allocation.

3. CURRENT WORKFLOW

Around 1 to 2 months before each FYP commences on every session, the coordinating team in charge of keeping track of the list of students who are eligible to take the FYP module will compile a list and send it over to Bernard, the coordinator in charge of the FYP, 2 Excel files of full time (FT) and part time (PT) students. The files would contain the students' SIM IDs, names, email, contact number and personal email. This is done manually with information extracted from SIMConnect, the SIM's school portal used to keep track of students' information.

Bernard will then request for the list of available projects of the APD in UOW on a PDF file, where he will then craft out an excel file template that allows students to indicate their preferred FYP choices and disseminate to all eligible students. Once students have completed filling up the form and sent it back to Bernard, he will then collate all the forms, copy the line of information on the form and collate the submissions made by all students in 1 excel sheet. He will then send it back to UOW, where they will allocate and reply Bernard with the list of allocations that they have made. In the case where incorrect information has been submitted to Bernard, he will contact the student and inform them to resubmit a new form with the valid information.

At UOW, the school would try to allocate students' their first or second choice projects if possible, unless exceptions occur, such as too many students picking the same project, or a student selects a project that no one has selected. The APD, who oversees the process of allocating students, supervisors and assessors to projects, will strive to group students with a mix where they are of different majors or gender. Supervisors will typically be allocated to projects in fields where they have the expertise and background in, where they would usually communicate with the APD on their preferences and interest areas using different communication tools, such as face-to-face meetings or emails. Each supervisor would typically manage a maximum of 4 groups per session.

Once the allocations have been completed, Bernard will then place the information on another Excel sheet and send it to students to inform them of the confirmation of their allocations and provide other information on the FYP (E.g. important dates, groupings, supervisors, assessors). Each FYP supervisor typically takes up 3 to 4 project groups, There are no prerequisites required for all the projects and the school would assume that by the final-year of University, students should be able to make the right selections for their FYP project based on their skillset and would be able to self-learn new skills if required.

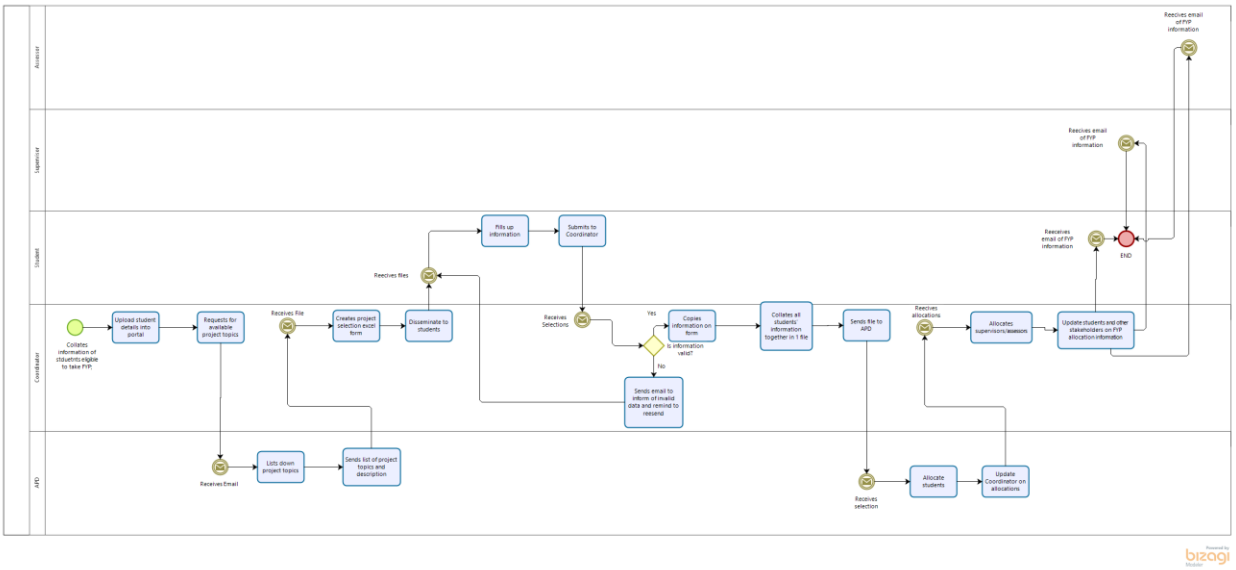
The list of roles in this project are as follows:

- Subject coordinator
    - Gathers eligible students list that can enroll in FYP
    - Gather and uploads Topics from APD
    - Disseminates information to students
    - Collates students' preferred FYP choices
    - Checks for errors in FYP Selection form collected from students
    - Handles other administrative tasks
    - Release allocation results

- Academic Program Director (APD)
    - Comes up with the approval of schedules of the FYP to ensure that it aligns with what is planned in UOW
    - Creates and collates Topics for students to choose for FYP
    - Assign students/supervisors/assessors to respective project topics groups.

- Supervisors
    - Contact students related to FYP
    - Send groups the required documents and instructions to initiate their projects

- Assessors
    - Assess students and is the overall-in-charge of marking the FYP

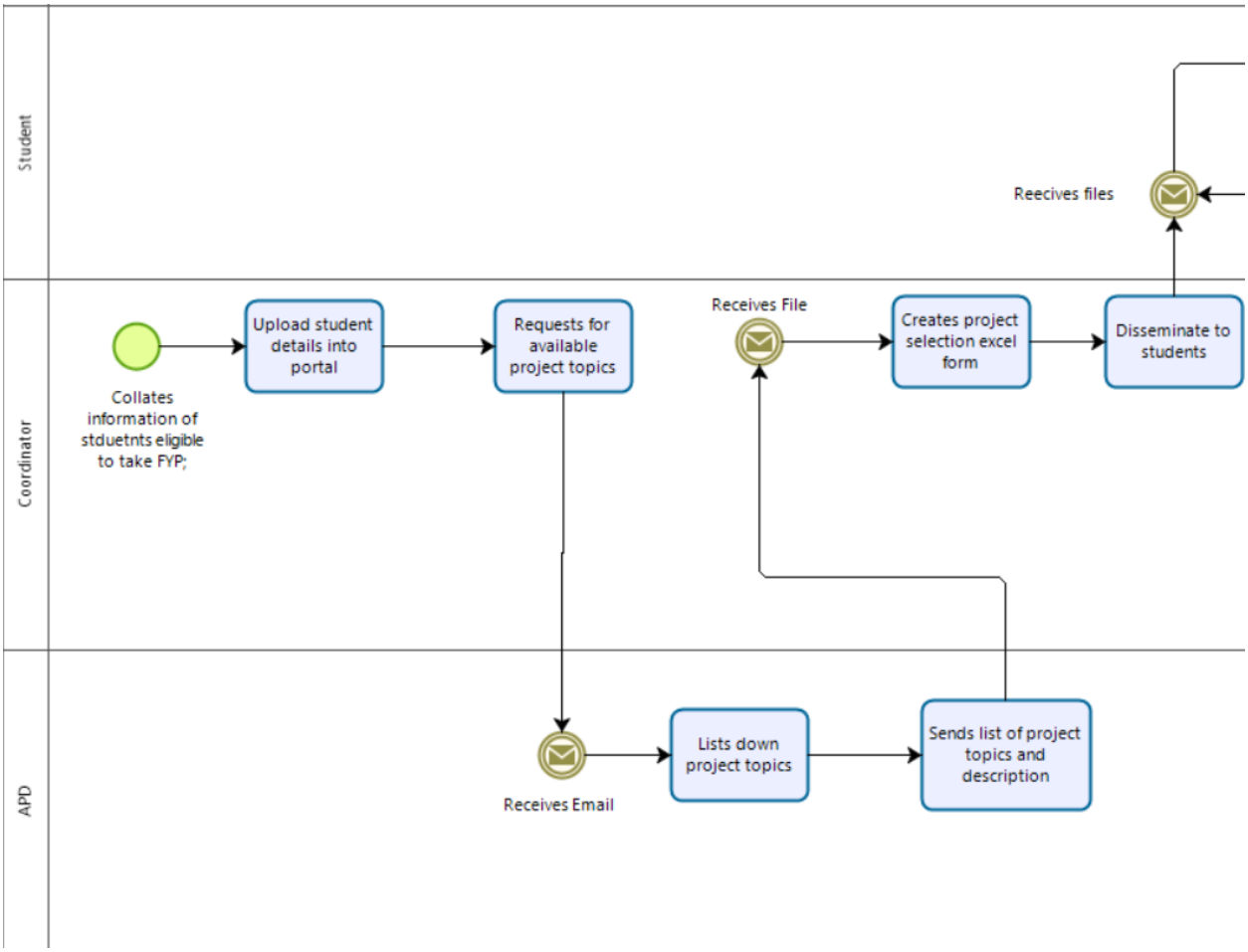


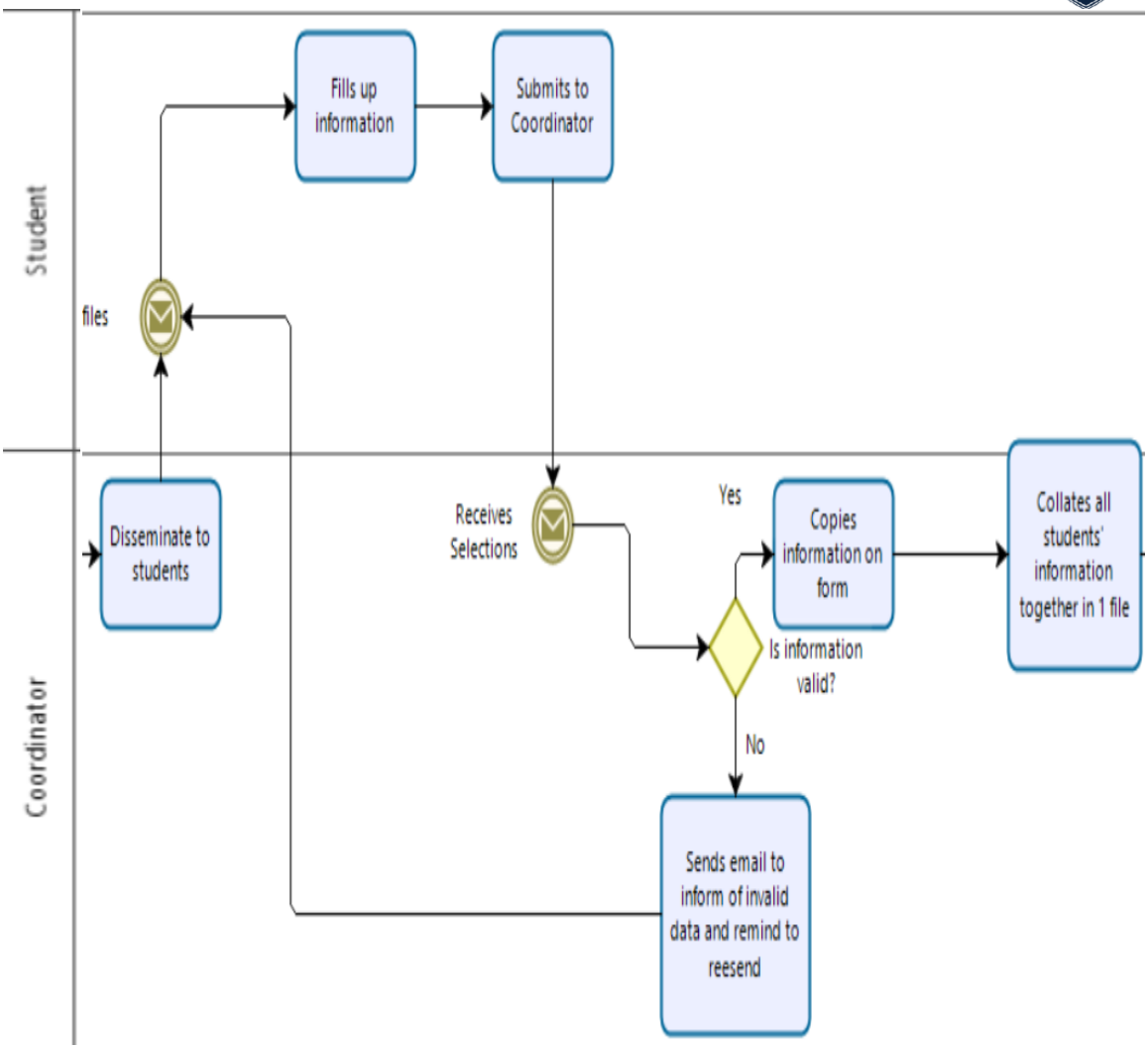
The diagram above illustrates the process flow diagram of the current process of various stakeholders.

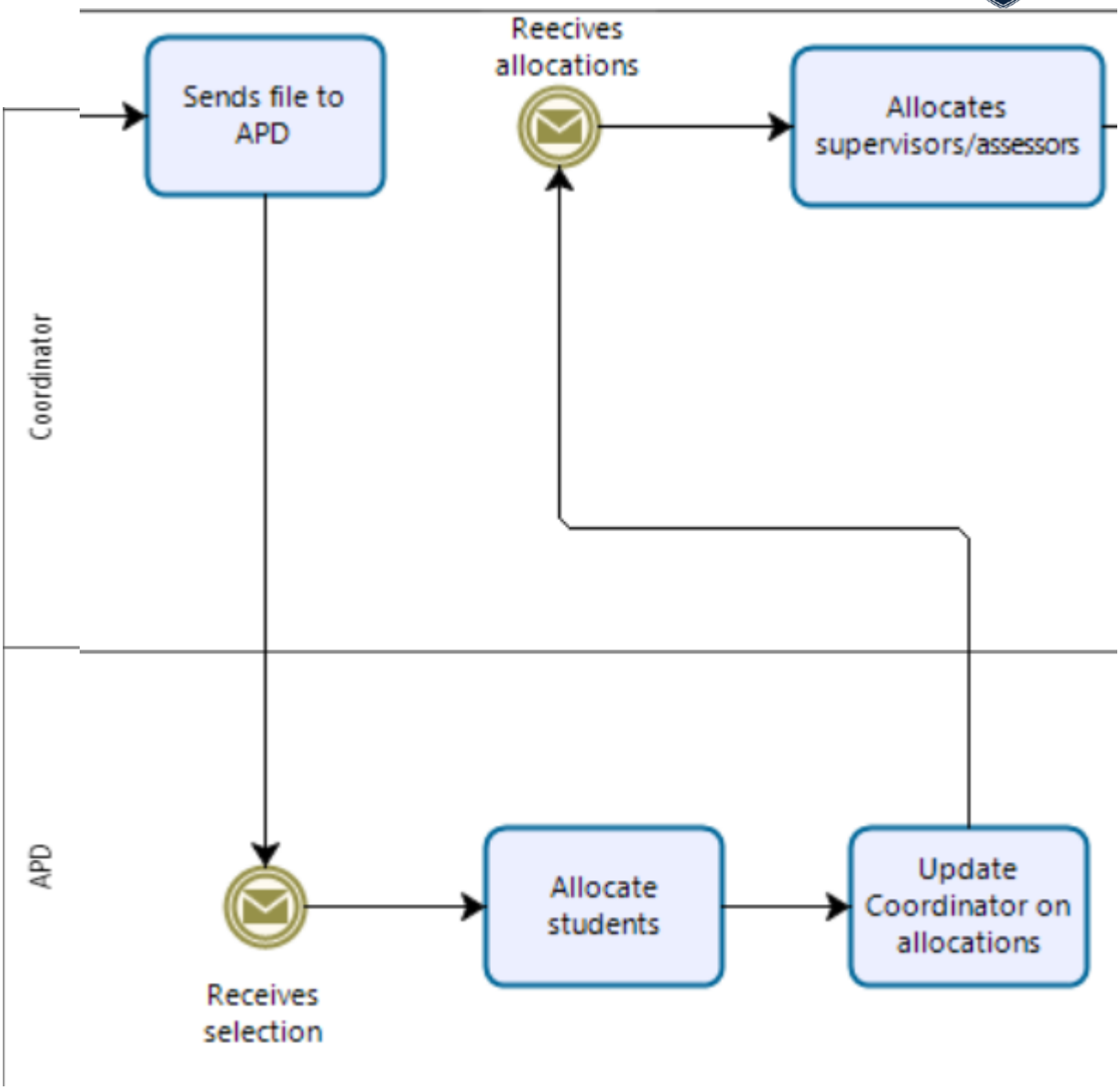
https://drive.google.com/file/d/1vmwLKwQqUL_rqF8slFQsoFFRYHFMQNFw/view?usp=sharing

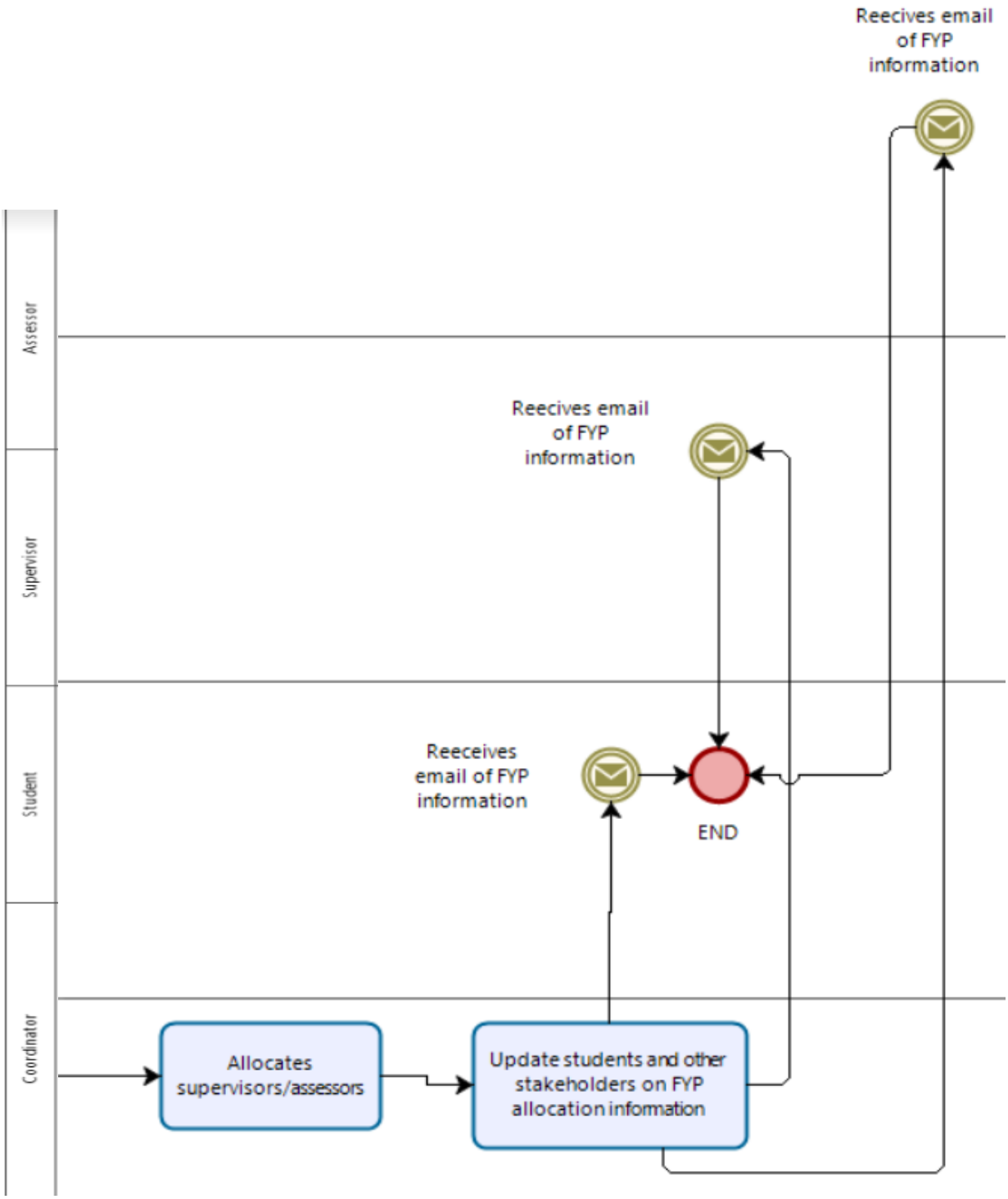
Image can also be found on the above link and zoomed for a better viewing experience

The following images are the breakdown from the current process and are continuous:




Student
Coordinator
Fills up information
Submits to Coordinator
files
Disseminate to students
Receives Selections
Yes
Copies information on form
Collates all students' information together in 1 file
Is information valid?
No
Sends email to inform of invalid data and remind to reesend


Coordinator
APD
Sends file to APD
Reecives allocations
Allocates supervisors/assessors
Receives selection
Allocate students
Update Coordinator on allocations


Assessor
Supervisor
Student
Coordinator
Reecives email of FYP information
Reecives email of FYP information
Reeceives email of FYP information
END
Allocates supervisors/assessors
Update students and other stakeholders on FYP allocation information

4. COMMON FYP MANAGEMENT TOOLS

4.1 NTU Studentlink

NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE

As part of NTU's curriculum, all final year students are required to undertake FYP, supervised by one or two academic staff members. The Final Year Project spans over two-semester of the academic year.

An invitation email that includes a link of a web portal on their project selection will be sent to students who are eligible for FYP.

The functionalities that are used for NTU's FYP are as follow:

Student

Express Interest in Project	Eligible students can express their interest in projects (up to 10 projects)
Search for Projects	Students can search for projects based on keywords
View Project Details	Students can view the project details on the portal
Form Project Group	FYP is done individually at NTU
Appealing against project/group change	Appeals are not allowed at NTU
Withdrawal of Project	Withdrawal of project can be done via the school portal
Upload Submission	Students will also be making submissions of their various FYP documents via Studentlink

Coordinator/APD

Import Student Information	Information of eligible students can be imported into the system and allowed access to their own data
Manage Student Project Allocation	Project Allocation is done via a computer program, where factors such as project preference, number of choices will be factored in
Manage Supervisor Project Allocation	As projects are created by supervisors themselves, the coordinator would allocate them into their respective projects

Upload Project Information	Coordinator would upload project information up to Studentlink before students are allowed access

4.2 NUS Project Administration System

Final Year Project (FYP) is assigned only when students have attained 70% of the total modular credits for their respective degree and satisfied the CAP threshold of the proposed projects. The Final Year Project spans over a period of two semesters, with workload of approximately 400 hours.

Students are required to bid for projects that are available during their semester and email to the respective FYP Coordinator their details.

The functionalities that are used for NUS's FYP are as follow:

Student

Express Interest in Project	Eligible students can bid for the projects and rank them accordingly from most interested to least.
Search for Projects	Students can search for projects from the list of projects available.
View Project Details	Students can view the project details on the portal
Form Project Group	FYP is done individually at NUS or allocated based on the project chosen.
Appealing against project/group change	Appeals are not allowed at NUS
Withdrawal of Project	Withdrawal of project can be done via submission of withdrawal form.

Upload Submission	Students will also be making submissions of their various FYP documents via NUS's' Digital Library

Coordinator/APD

Import Student Information	Information of the eligible students will be updated in the system.
Manage Student Project Allocation	Project Allocation is done via a computer program, factoring in project preference, number of choices and degree programs.
Manage Supervisor Project Allocation	As projects are overseen by the supervisors, the coordinator would allocate them into their respective project groups.
Upload Project Information	Coordinator would upload project information up to the Digital Library before students see the allocation results.

4.3 UOS Sydney Student

The FYP module is a requirement for the degree of all students who major in liberal studies. In collaboration with a major industry partner and an academic lead, students will work in a group with other students from a range of disciplinary backgrounds. Project supervisors will allocate the groups to ensure an interdisciplinary mix of students. Together students will research, analyse and present solutions to real world problems set by the external partner organisation. Students will then engage with and learn from industry experts and present their recommendations and ideas to the industry partner.

The functionalities that are used in UOS' Sydney Student portal are as follow:

Student

Express Interest in Project	Yes	Projects will be assigned based on a first-come-first-serve basis
Search for Projects	Yes	Students can search for projects based on keywords
View Project Details	Yes	Students can view the project details on the portal
Form Project Group	No	Project supervisors will allocate project groups to ensure an interdisciplinary mix of students
Appealing against project/group change	Yes	Appeals can be done via email
Withdrawal of Project	Yes	Withdrawal of project can be done via the school portal
Upload Submission	Yes	Students will also be making submissions of their various FYP documents via the Sydney Student portal

Coordinator

Import Student Information	Once eligible students have successfully enrolled to the module, the school's coordinating team will be updated with a list of all students to update the Sydney Student portal
Manage Supervisor Project Allocation	Coordinating team would allocate a Academic Supervisor that is equipped with the necessary skills to the respective project group
Upload Project Information	Coordinator would upload project information up to Sydney Student portal before students are allowed access

Project Supervisor

Manage Student Project Allocation	Project Allocation will be done by Project Supervisors to ensure that there is an interdisciplinary mix of students

Below are our comparisons of the various FYP Management Tools that we have analysed, and our team's implementation plan:

Functions	NUS	NTU	UOW	UOS
Ability to express their interest	✔	✔	✔ (manual)	✔
Manage student project allocation	✔	✔	✔ (manual)	✔
Manage supervisor project allocation	✔	✔	✔ (manual)	✔
Upload Project Information	✔	✔	✘	✔
Withdrawal of project	✔	✔	✔ (manual)	✔
Import Student Information	✔	✔	✘	✔
Search for projects	✔	✔	✘	✔
View projects details	✔	✔	✔ (manual)	✔
Upload project submission	✔	✔	✘	✔
Forming of project group	✔	✘	✘	✔
Appealing against project/group change	✔	✘	✘	✔

Functions	To Implement?	Rationale
Ability to express their interest	Yes	Students should be able to express their interest of up to 3
Automated Student Allocation	Yes	System will automatically sort students into groups with consideration of their interests of topics
Automated Supervisor Allocation	Yes	System allocates Supervisors based on Project groups created automatically with certain number of students in each group
Automated Assessor Allocation	Yes	System Allocates Assessors based on preference indicated by Supervisors
Automated Email Notifications	Yes	Systems send out alerts by email for necessary alerts
Import Student Information	Yes	Subject Coordinator should be able to import all eligible students into the system
Upload Project Information	Yes	Subject Coordinator should be able to upload information of the project topics
View projects details	Yes	Students should be able to view all relevant information on the project
Search for projects	No	Project topics and details are already shown, and prerequisites are not included for the topics
Withdrawal of project	No	Students should be allowed to withdraw from the FYP module
Upload project submission	No	FYP submission will not be done on this portal.
Forming of project group	No	Students are not allowed to form project groups on their own
Appealing against project/group change	No	UOW does not entertain any project/group changes, unless exceptions occur (E.g. incorrect project assigned/selected)

5. SUGGESTED IMPROVEMENTS TO CURRENT WORKFLOW

Based on the current workflow of the FYP Management System, our team would like to propose it to leverage on technology to automate the current processes in place in managing the FYP.

A web portal could be introduced to provide a one-stop platform for different project stakeholders to access the different information that they require for FYP. Different types of access rights can be given to different types of users to ensure that each type of user can only assess the information that they need. This would be more convenient for all the stakeholders as it can be a more streamlined process, where they can find the information that they need readily on the portal itself instead of finding it on various platforms or communication channels.

Under this portal, different features could be available to different types of users. Some features that could be introduced would include allowing the coordinator to upload students' information onto the portal, allowing the APD to upload the list of available projects, allowing students to view and indicate their preferred projects.

As many of the processes are currently handled manually, including the project allocation process that is done by the APD, it is not very efficient for such a manual process as a lot of time and effort is spent on these processes. Thus, there could be a system in place to match students with projects based on different criteria, such as his/her skillset, major and gender to ensure that there is a mix of students in different backgrounds. With such a system in place, it would greatly reduce the time taken in this process.

In addition, based on the feedback that our team has gathered based on our interviews with several stakeholders, we have found out that supervisors would usually express their interest regarding the project preferences only during face-to-face meetings or other digital communication channels such as emails. As there is no official communication channel for them to express their interest, there could be an option for supervisors to indicate their interest on the available projects, so that the APD and coordinator can factor that in as one of the considerations when assigning the projects. In this way, the supervisors would be able to view and indicate their preferences on the available projects based on their expertise in a field or specialisation and reduce the possibility of supervising an area where he/she may not be familiar with. For example, a supervisor that has a background in IT consulting could prefer to supervise an e-business or mobile application related project with his/her background instead of a project that's in the Game Development field, where he/she has no experience in.

6. PROJECT MOTIVATION

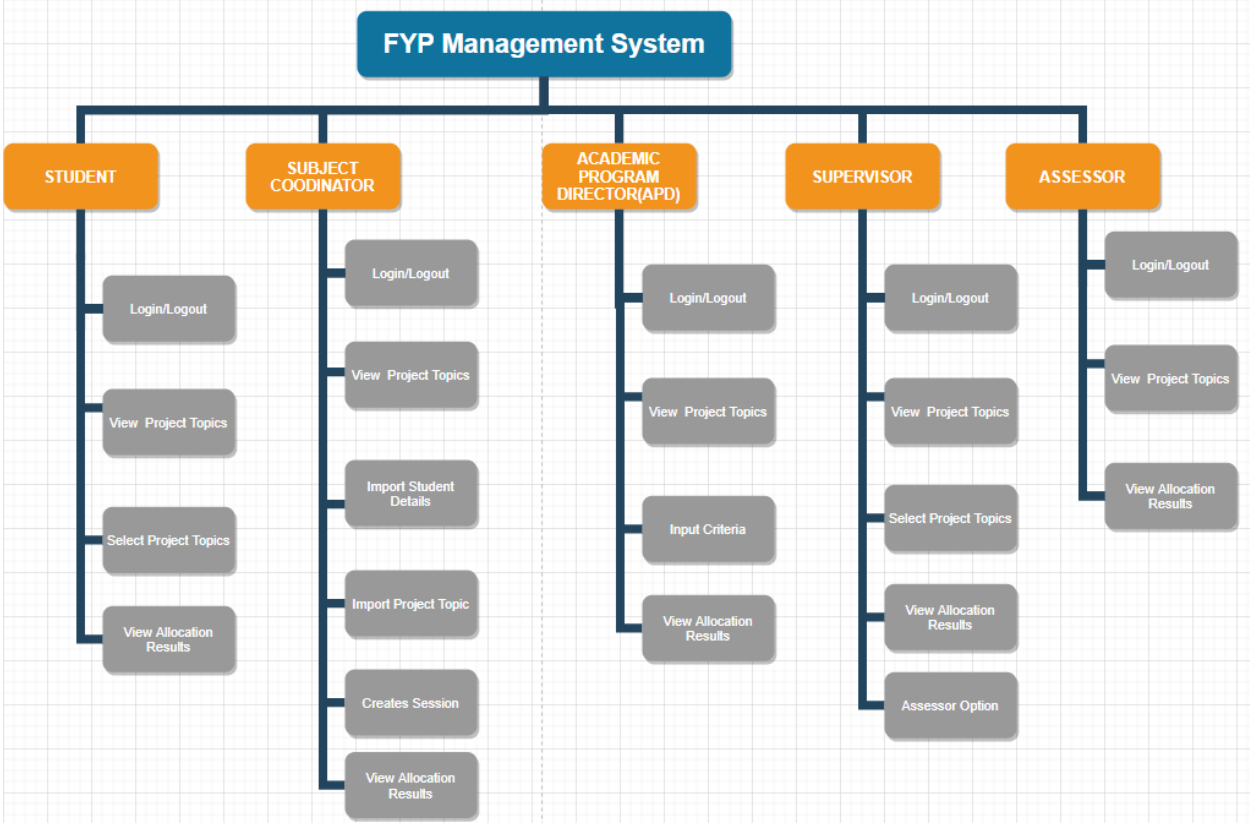
Currently, several of the school's FYP Management System's work processes are handled manually on different files, such as the sharing of available projects to students, collecting of students' project selections and assigning of students to projects. Handling several tasks manually to a large student population has resulted in an increase in man hours required to process such large amounts of information. Furthermore, some of the students' project selections could contain invalid data, where the staff would need to screen through each file to validate each student's information and project selection and conduct the necessary action to rectify the invalid selection form.

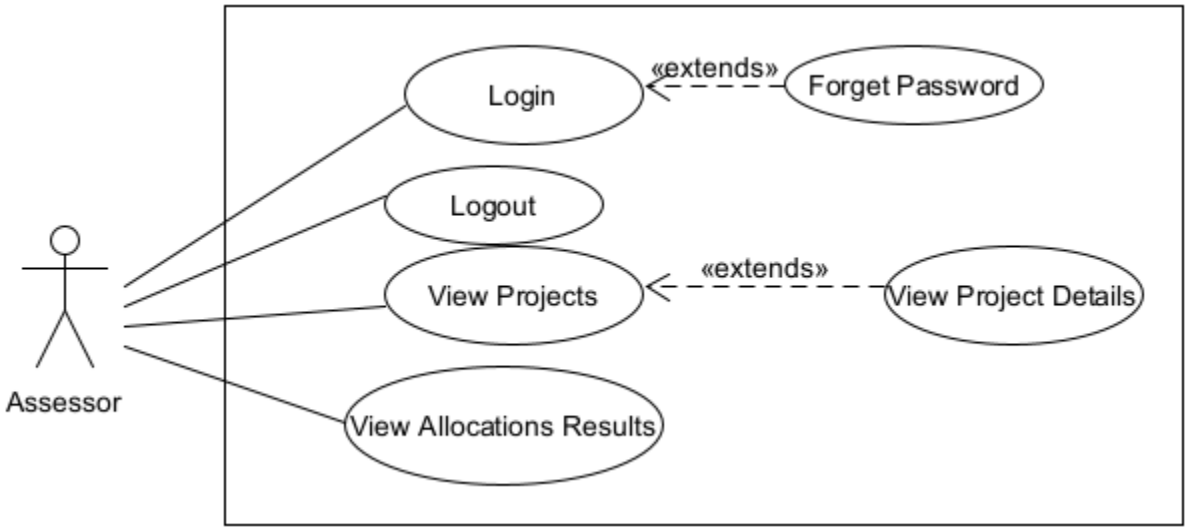
These tasks could easily be automated with the help of technology, where many of the manual tasks can be automated. With the help of technology to automate certain processes, we could potentially:

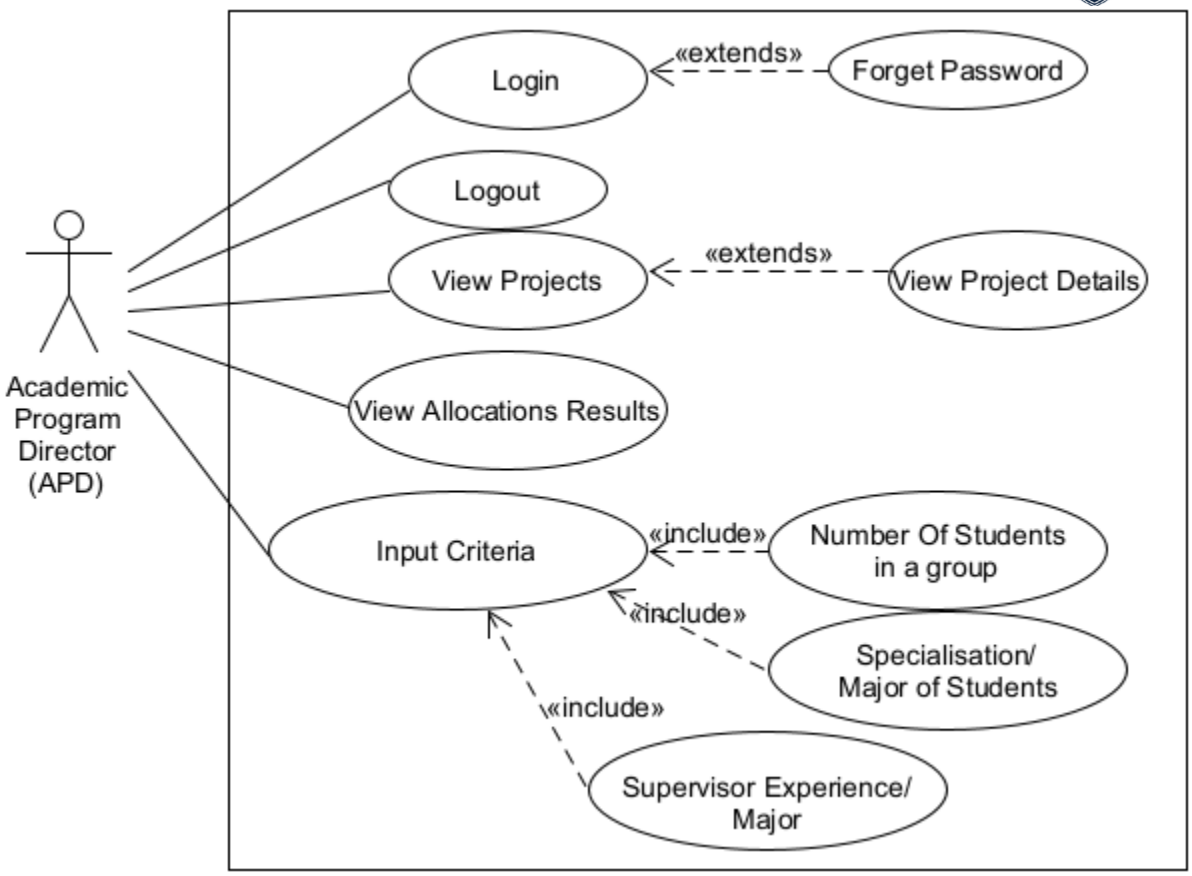
- Improve efficiency of FYP processes
- Reduce the time required to allocate resources (Students, Supervisors, Assessors) to different projects
- Provide a more streamlined process

Based on the case studies of the 'Common FYP Management Tools' and 'Suggested Improvements' we would like to automate the current workflow to facilitate the management of the final year projects at SIM. To implement features that aid students in navigating the project list and selecting their projects. At the same time, optimising the projects creation and allocation for the subject coordinator.

7. FUNCTIONAL REQUIREMENTS






Login
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Forget Password
Logout
View Projects
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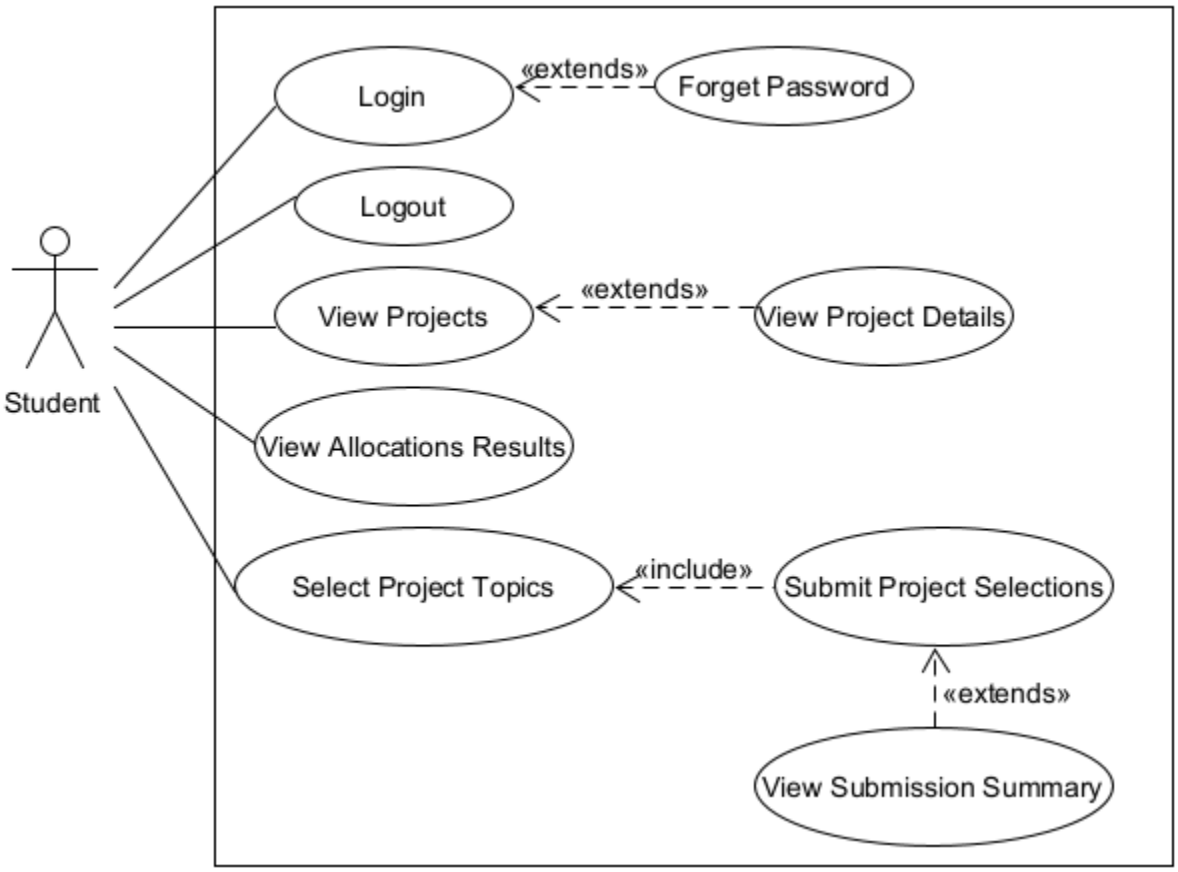
View Project Details
Academic Program Director (APD)
View Allocations Results
Input Criteria
«include»
Number Of Students in a group
«include»
Specialisation/ Major of Students
«include»
Supervisor Experience/ Major


Login
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Logout
View Projects
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View Project Details
Student
View Allocations Results
Select Project Topics
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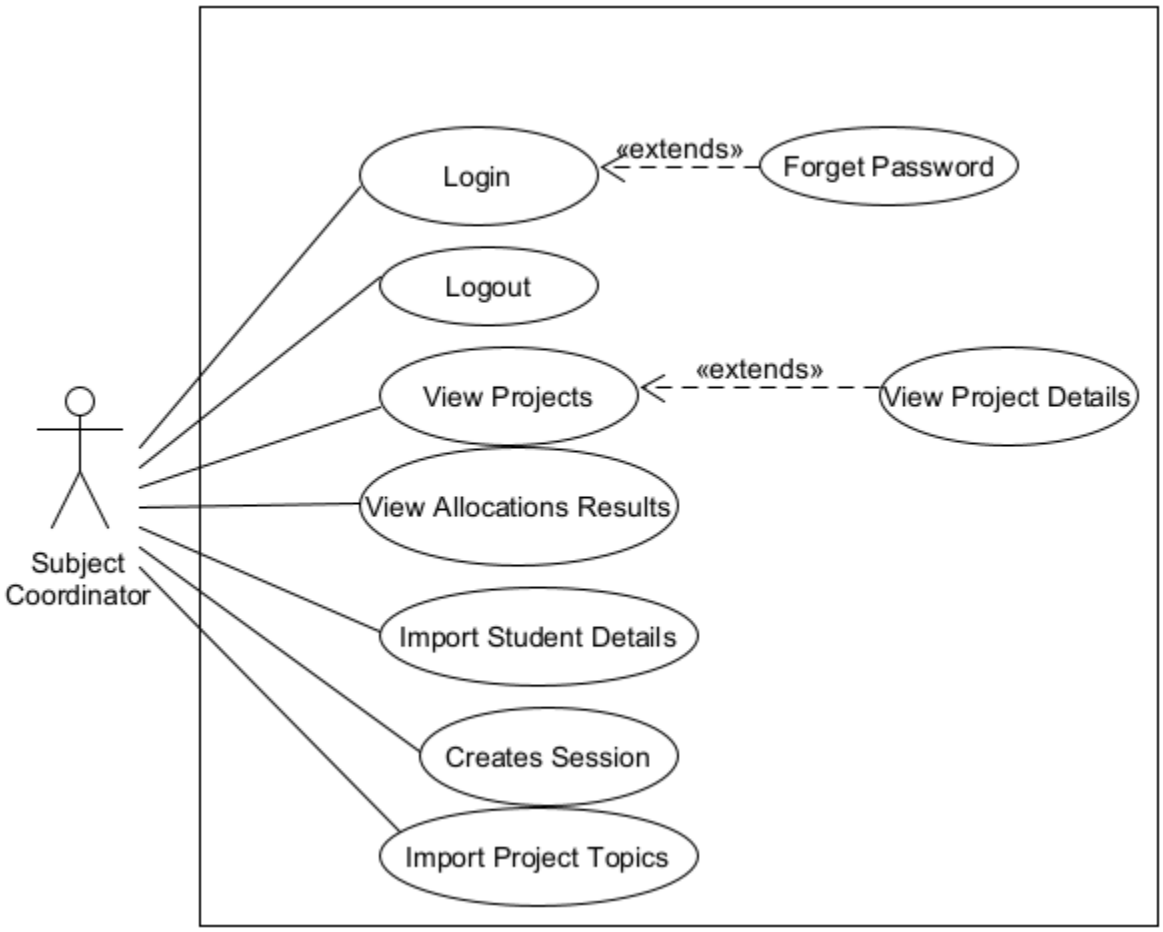
Submit Project Selections
«extends»
View Submission Summary


Login
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Forget Password
Logout
View Projects
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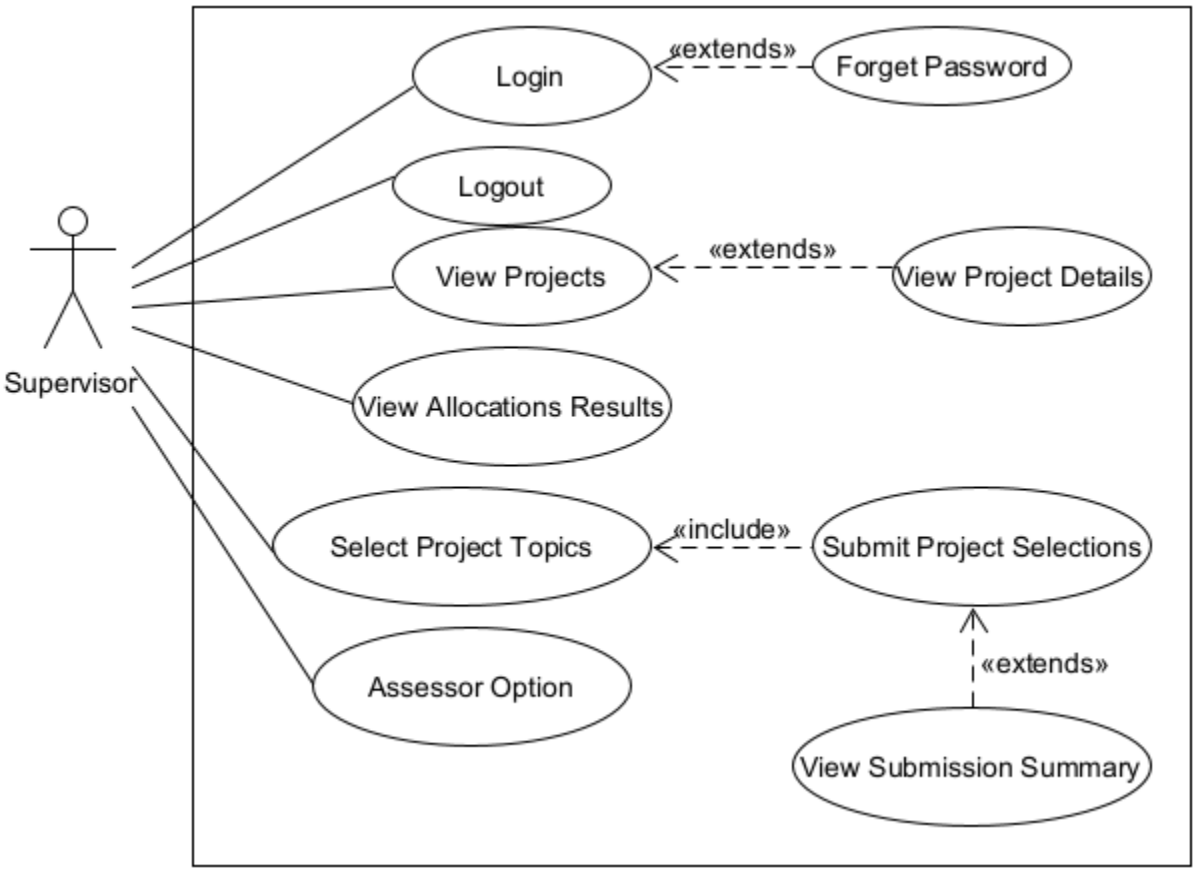
View Project Details
View Allocations Results
Subject Coordinator
Import Student Details
Creates Session
Import Project Topics


Login
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Forget Password
Logout
View Projects
«extends»
View Project Details
Supervisor
View Allocations Results
Select Project Topics
«include»
Submit Project Selections
Assessor Option
«extends»
View Submission Summary

Name: View Projects Topics	**ID: #001**
Goals: Users able to view all Project topics	
Description: Users can view all the Project topics uploaded to the system and its associated identification number	
Stakeholders: Academic Project Director, Student, Subject Coordinator and Supervisor	
Triggers: Nil	
Normal Flow: 1. User logins to the application and Clicks the View Projects button 2. System will redirect to the page where Project Topics and ID is displayed 3. Users view all available project topics. 4. End	
Sub-Flow: When user clicks View Project Details, Project Title, ID and Description are displayed	
Alternate:	

Name: Create Session	**ID: #002**
Goals: User able to Create sessions	
Description: User able to create 2 sessions per year for the module	
Actors: Subject Coordinator	
Triggers: Nil	
Normal Flow: 1. User logins to the application and Clicks Create Session button 2. System will redirect to session creation page 3. User enter details for the session and clicks create 4. System redirects to created sessions' page 5. End	
Sub-Flow: None	
Alternate: System Informs user to upload file only in the specified format if other formats were used to import	

Name: Import Student Details	**ID: #003**
Goals: User able to Import details to the application	
Description: User imports students details from a specified external file format	
Actors: Subject Coordinator	
Triggers: Nil	
Normal Flow: 6. User logins to the application and Click the Import button 7. System will redirect to Import page 8. User clicks Import Students Button 9. System enables import 10. User view number of imported details 11. End	
Sub-Flow: None	
Alternate: System Informs user to upload file only in the specified format if other formats were used to import	

Name: Import Project Topics	**ID: #004**
Goals: User able to Import Project Topics into the application	
Description: User imports project topics from a specified external file format	

Actors: Subject Coordinator
Triggers: Nil
Normal Flow: 1. User logins to the application and Click the Import button 2. System will redirect to Import page 3. User clicks Import Project Topics Button 4. System enables import 5. User views number of imported project topics 6. End
Sub-Flow: None
Alternate: System Informs user to upload file only in the specified format if other formats were used to import

Name: Select Project Topics	**ID: #005**
Goals: Users able to indicate their preference on Project Topics	
Description: Students and Supervisors select their top three choices from all the Project Topics available in the system.	
Stakeholders: Students and Supervisors	
Triggers: The supervisors can only indicate their preference after student's allocation process	
Normal Flow: 1. User logins to the application and clicks Submit Project Topics 2. System redirects to Project Topics Selection page 3. User indicates their top three choices of project topics and clicks submit 4. System redirects to Submission Summary page that displays their selections 5. End	
Sub-Flow: None	
Alternate:	

Name: Login	**ID: #006**
Goals: Users with registered account able to Login successfully	
Description: Users able to have access to the application with their registered credentials	
Stakeholders: Academic Project Director, Student, Course Admin and Supervisor	
Triggers: Nil	
Normal Flow: 1. System prompts username and password 2. User enter credentials and clicks login 3. System validates user and allows user into the application 4. User views successful login message with their username displayed 5. End	
Sub-Flow: User clicks forgot password and gets email authentication for new password to log into system	
Alternate:	

Name: Logout	**ID: #007**
Goals: Users able to logout successfully	
Description: Users able to end their current session successfully by logging out of their own account	
Stakeholders: Academic Project Director, Student, Course Admin and Supervisor	
Triggers: Nil	
Normal Flow: 1. System prompts username and password 2. User enter credentials and clicks login 3. System validates user and allows user into the application 4. User views successful login message 5. End	
Sub-Flow:	
Alternate:	

Name: Input Criteria	**ID: #008**
Goals: User able to optimize the allocation process with certain rules	
Description: User able to input his special criteria to be included for the allocation process of both students and supervisors (E.g. Number of students belonging to a certain specialization to be included in each group)	
Stakeholders: Academic Project Director	
Triggers: Nil	
Normal Flow: 1. User logins and clicks Optimization 2. System redirects to Optimization page 3. User views successful login message 4. End	
Sub-Flow: User clicks forgot password and gets email authentication for new password to log into system	
Alternate:	

Name: View Allocation Results	**ID: #009**
Goals: User able to view Allocation results	
Description: User able to view the groups and project topics they are allocated to.	
Stakeholders: Assessor, Supervisor and Student	
Triggers: Three days before the commencement of module email notification would be sent	
Normal Flow: 1. User logins and clicks Results 2. System redirects to Allocation Results page 3. User views their name, groups and project topics allocated. 4. End	
Sub-Flow:	
Alternate:	

Name: Assessor Option	**ID: #010**
Goals: User to choose if he/she wants to be an Assessor	
Description: User can indicate the choice to volunteer as an assessor	
Stakeholders: Supervisor	
Triggers: After they have indicated their choice of project topics	
Normal Flow: 1. User logins to the application and clicks Submit Project Topics 2. System redirects to Project Topics Selection page 3. User indicates their top three choices of project topics and clicks submit 4. System redirects to Assessor Option page 5. User selects/deselects option to be an Assessor 6. System redirects to Submission Summary page 7. End	
Sub-Flow:	
Alternate:	

Name: Student Allocation	**ID: #011**
Goals: System allocates students into groups	
Description: System has groups created according the Project Topics selected. Allocation of students will be automated by sorting them into these groups	
Stakeholders: -	
Triggers: The allocation can only be done after the topic selection cut-off date	
Normal Flow: 1. System allocates the students into groups based on their most prioritized selected topic 2. End	
Sub-Flow: None	
Alternate: System will allocate the students based on their second or third selected topics	

Name: Supervisor Allocation	**ID: #012**
Goals: System allocates Supervisors to groups	
Description: System allocates Supervisors into groups containing students in their respective project topic	
Stakeholders: -	
Triggers: The supervisor allocation can only be done after students are allocated into groups	
Normal Flow: 1. System allocates the supervisors into groups considering their abilities, experience and interests indicated. 2. End	
Sub-Flow: None	
Alternate: System will allocate the students based on their second or third selected topics	

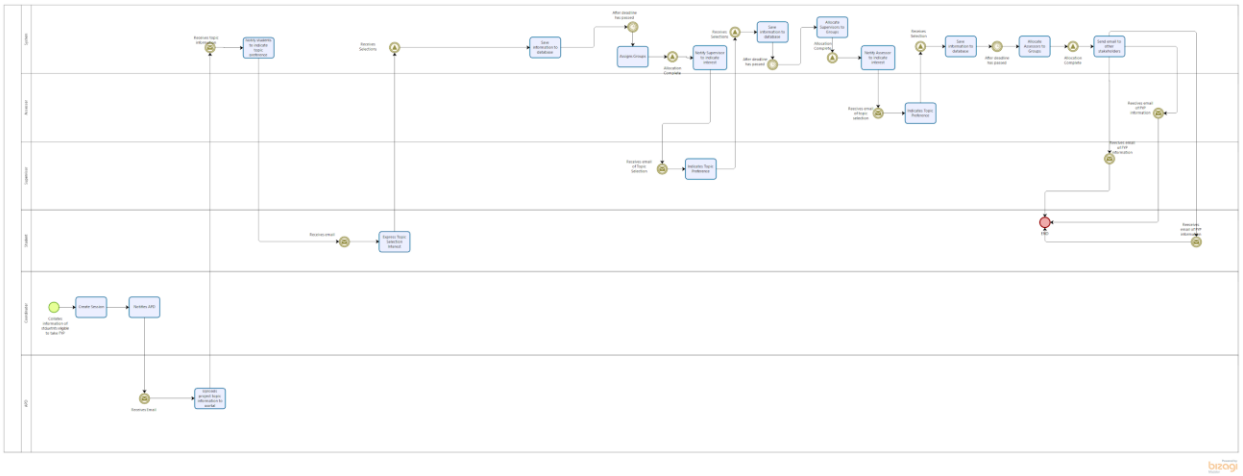
8. PROPOSED PLAN

Based on the research that our team has done on the other FYP Management Portals that are used by other institutions, our team proposes SIM-UOW to have a FYP Management Portal is a web portal that aids the subject coordinator in managing the students and projects that are active. It will also help students to view what projects are available to help with their decision on which projects to partake in. This portal would provide easy loading of students by extracting their data from external files. This is a useful tool as it cuts down the amount of time needed to key in all these data to help make the process of applying and managing projects more efficient.

The FYP Management Portal also caters to the subject coordinator needs of being able to specify additional criteria and optimisation objectives for each project to define the group distribution based on the students' program and major.

The FYP Management Portal would also grant students the ability to search and view projects that are available. After which it will allow them to select three projects of their choice and record the choices.

Lastly, it will also aid in the allocation progress based on the information on the students' preference, additional criteria, and optimisation objectives.

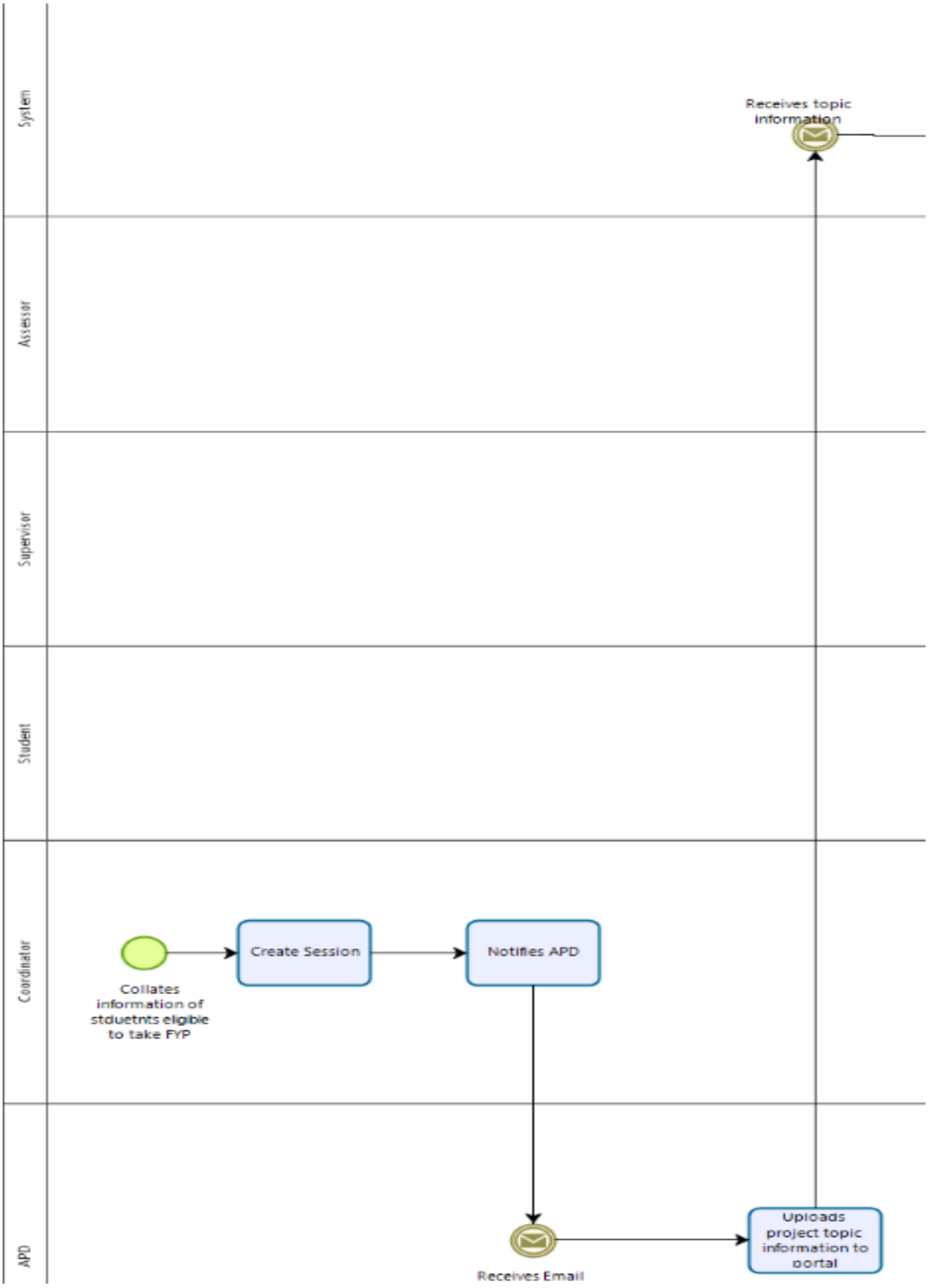


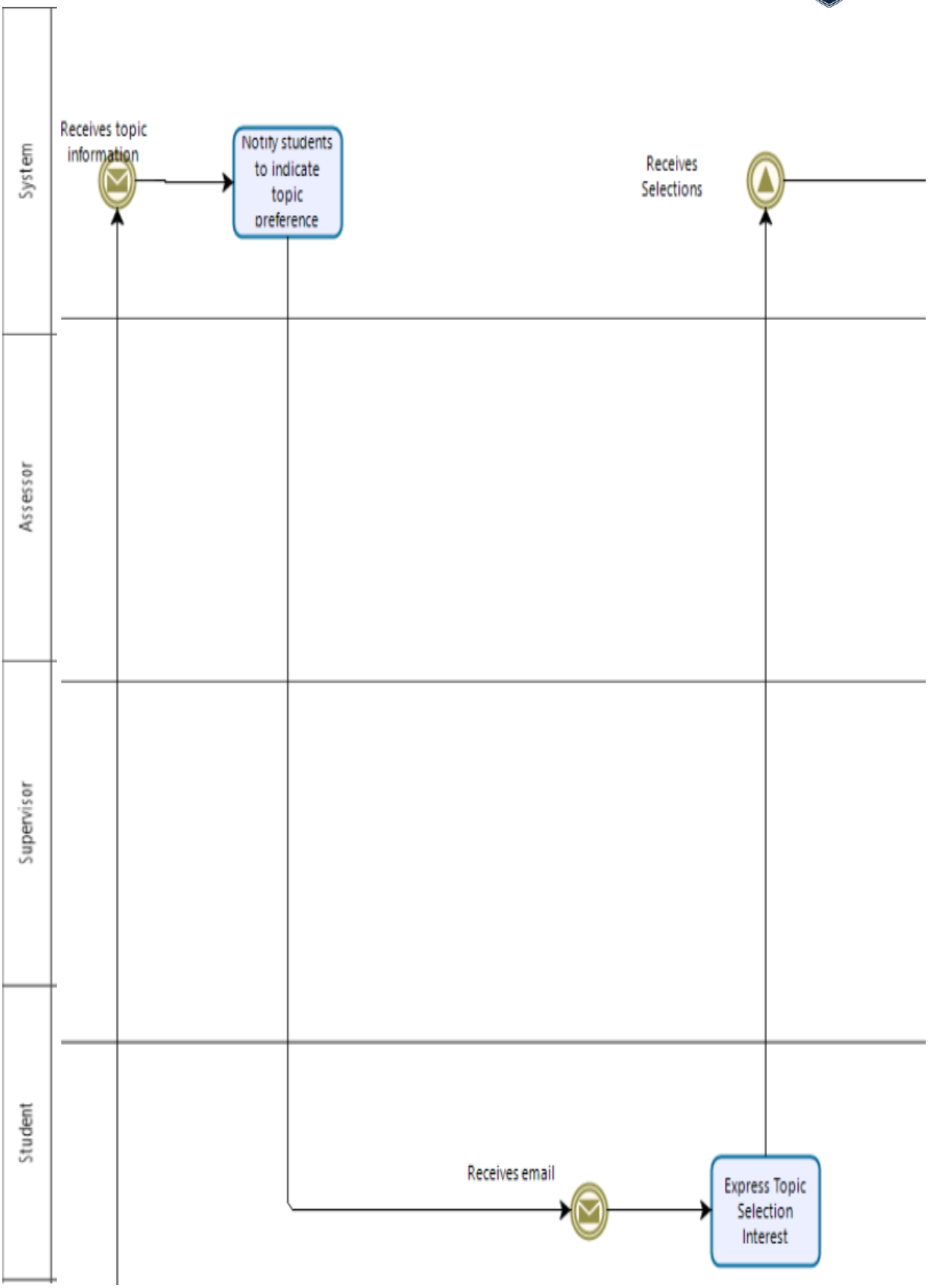
Our team's proposed process would be as follow:

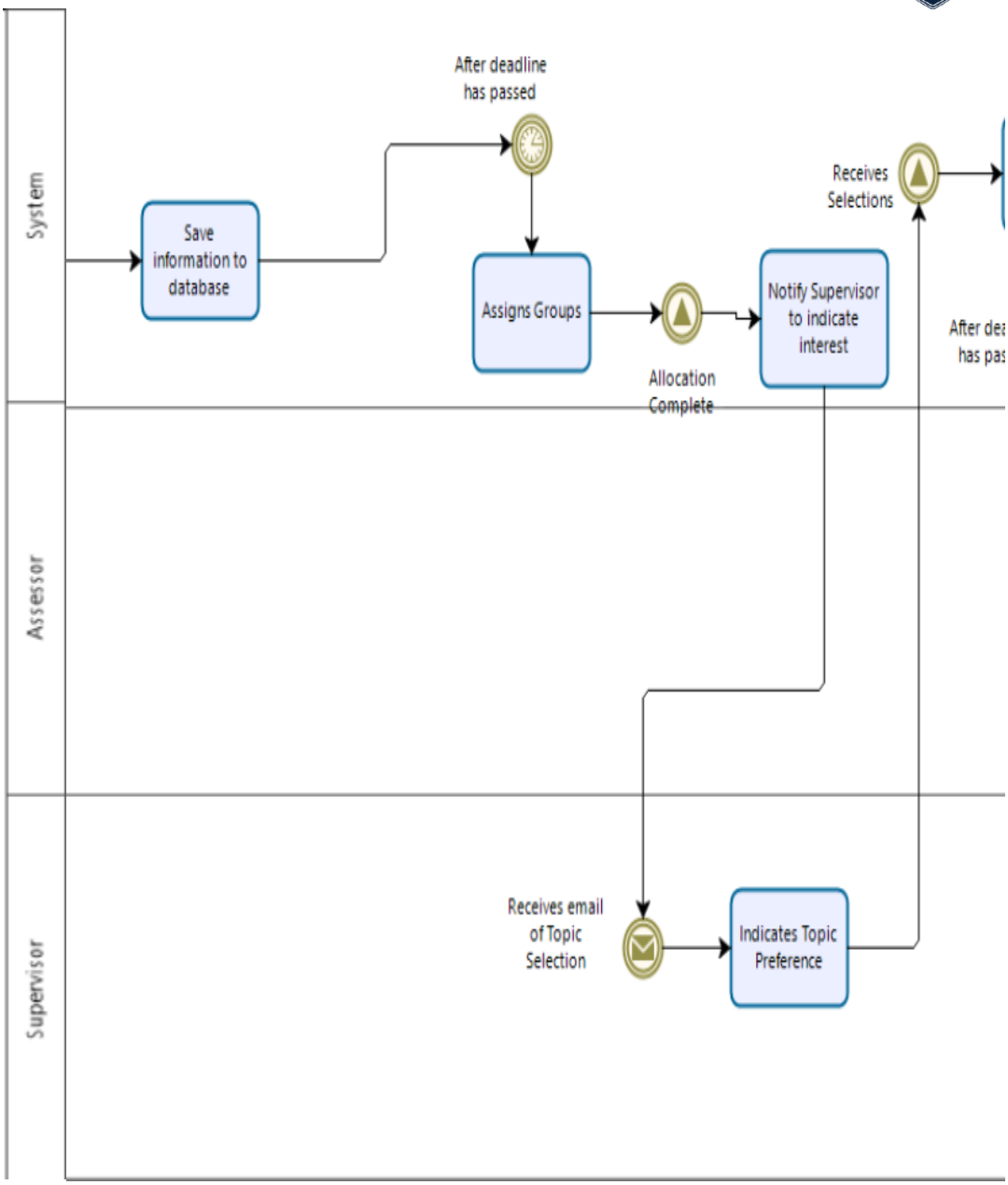
https://drive.google.com/file/d/1A8sin9Br3ScqbH9SO8Rk5Kf25YNb_XiR/view

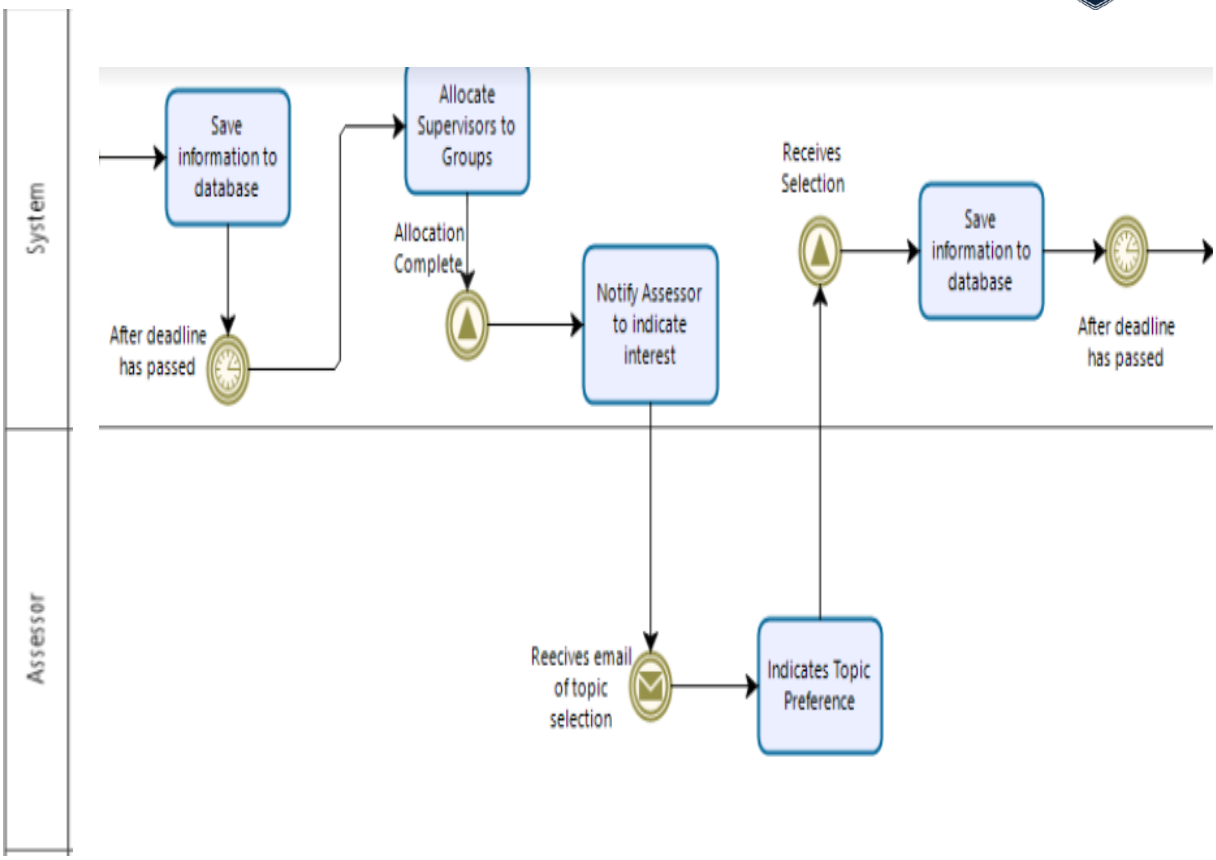
Image can also be found and zoomed for a better viewing experience.

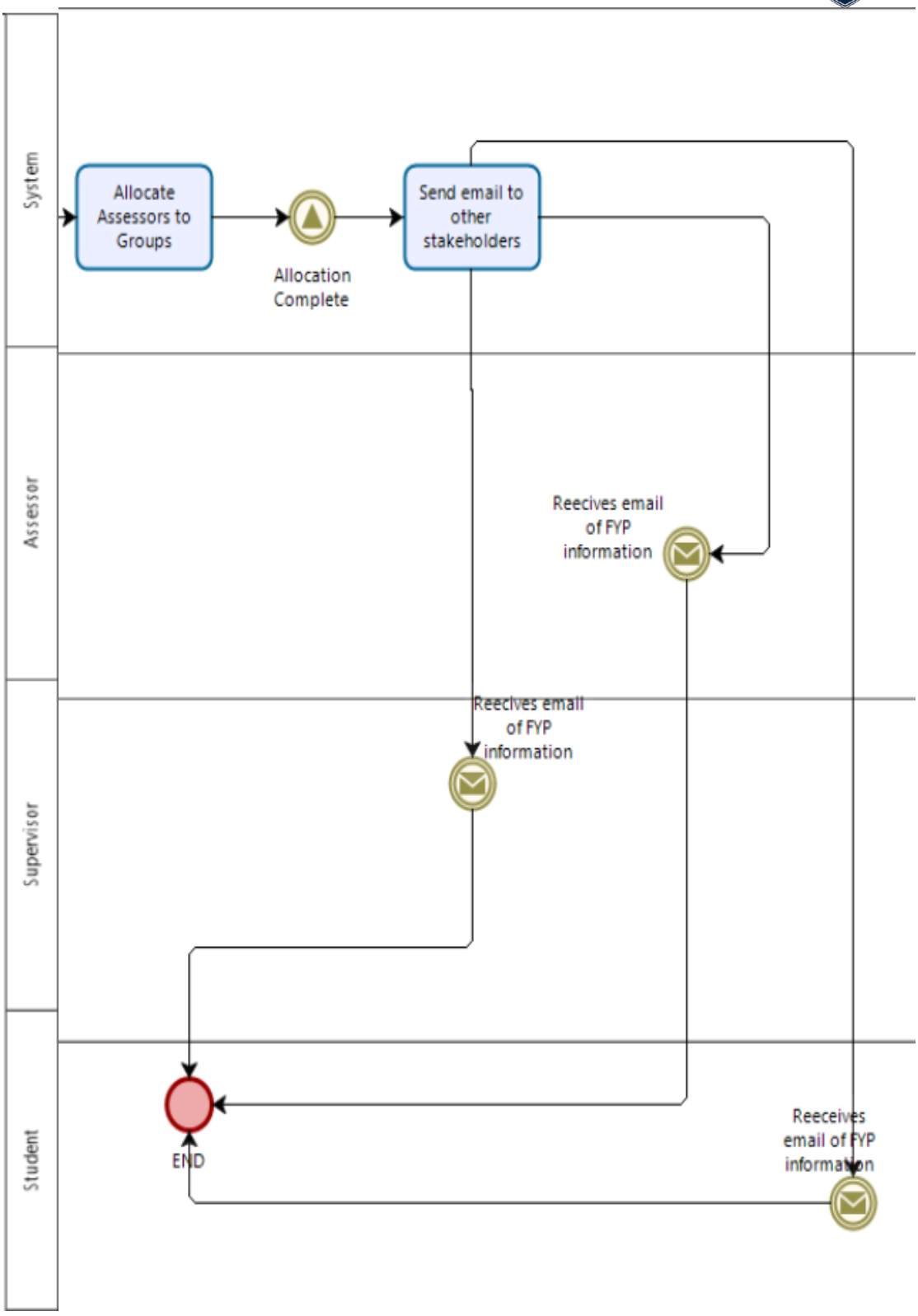
The following images are the breakdown from the proposed process and are continuous:




System
Assessor
Supervisor
Student
Receives topic information
Notify students to indicate topic preference
Receives Selections
Receives email
Express Topic Selection Interest


System
Assessor
Supervisor
Save information to database
After deadline has passed
Assigns Groups
Allocation Complete
Notify Supervisor to indicate interest
Receives Selections
Receives email of Topic Selection
Indicates Topic Preference


System
Assessor
Save information to database
Allocate Supervisors to Groups
Allocation Complete
Notify Assessor to indicate interest
Receives Selection
Save information to database
After deadline has passed
After deadline has passed
Reecives email of topic selection
Indicates Topic Preference


System
Assessor
Supervisor
Student
Allocate Assessors to Groups
Allocation Complete
Send email to other stakeholders
Reecives email of FYP information
Reecives email of FYP information
END
Reeceives email of FYP information

8.1 Execution Strategy

Based on our team's experience of software development projects, we would like to incorporate the following software development methodologies to provide a highly responsive approach in managing the deliverables. Listed below are the description of the methods that we would be applying, how the approach will be applied, the proposed timeline of our events and our rationale on why we chose to apply such an approach in this project.

8.2.1 Technical/Project Approach

Our team suggests using Agile as our approach, after analysing the different software development methodologies such as the Waterfall, Prototyping and Kanban methodologies. Agile is an iterative software development methodology approach to the project based on the feedback from the client/stakeholder instead of delivering it all at once near the end. Scrum is a framework of the Agile methodology used to manage complex projects.

The reasons why our team decided on Scrum was down to the following reasons.

Firstly, even though the Waterfall model is a simple model that most could easily understand, it is also referred to as a linear-sequential life cycle model where every phase must be completed before the start of the next phase. This thus makes it a very rigid model where the project team could find it hard to make changes, as any change would affect the rest of the events in the project's timeline. Stakeholders are also not very involved in the various stages of the project; hence the deliverables of the project may not meet the stakeholders' requirements.

Secondly, though the Prototyping model regularly ensures that it meets the stakeholders' requirements by prototyping the product by making improvements to it regularly, it is often used when customers do not know the exact project requirements beforehand. It would then collect the project requirements, produce quick designs and build prototypes repeatedly to present to clients. However, in our case, it would be very time consuming in developing the product by prototyping and regularly ensure that stakeholders are satisfied. Stakeholders could be encouraged by suggesting large and frequent changes, resulting in many requirements and thus further increasing the complexity and scale of the project. These factors could in turn extend the project scope.

Lastly, Kanban was another alternative that our team had been considering implementing in this project. Like Scrum, both adopts the Agile methodology, where Kanban emphasises heavily on having continuous delivery while not overburdening the development team and a process to gradually improve whatever you do. However, Kanban does not place any time frame on the project and its tasks. With time management being an important factor in ensuring that our team can meet its goals, our team decided against adopting the methodology.

The Scrum approach mainly revolves around three areas:

- Product backlog – a repository where number of requirements (user stories) to be completed for each release with top priority requirements positioned at the top.
- Sprints – time of each working phase on certain requirements
- Sprint backlog – holds requirements to be completed during a Sprint

Using Scrum methodology, our team can split the tasks that have been assigned in each sprint and aim to split our resources evenly to build and test after an initial review. Each sprint we would focus on one or two Users of the system. We plan to split each sprint into 2 weeks as seen from our timeline. In the first week we will implement the user interface, individual classes and functions for the user and the following week we will integrate the classes and functions with testing done for them too. That would conclude 1 sprint. Our first review would be the Prototype demonstration, with this methodology we could provide working applications with the basic functions and interactions for future users and get the feedback in earlier stages to work on the remaining product. Scrum methodology fits perfectly to our schedule and for delivery of our product in portions to be integrated at last for a fully functional Web Portal for the FYP Management Tool.

Risk Analysis

		Risk Elements		
Risk Category	Identified Risk	Impact	Probability	Risk Rating
Communication	There should be consistent communication between the team and the stakeholders.	H	L	M
Resources	Portal should be compatible on various platforms that different stakeholders use	L	L	L
Technical	Portal should be optimised to fit the screens of different sizes	L	M	L
User	Stakeholders' requirements must be analysed and interpreted correctly to ensure that it meets their requirements	H	L	M
Maintenance	System should be free of bugs	M	L	H
Security	System must not be compromised, and user information must be stored safely	M	M	H

7.2.2 Resources

Our team plans to develop The Portal using Visual Studio platform with C# as our programming languages and .NET as our framework.

Microsoft Visual Studio is an integrated development environment (IDE) from Microsoft. It is used to develop computer programs, as well as websites, web apps, web services and mobile apps. It can produce both native code and managed code. Other built-in tools include a code profiler, designer for building GUI applications, web designer, class designer, and database schema designer. These are some of the key features that were the reasons for selecting visual studio as the platform as it can aid our Web Portal with the simplicity of creating class diagrams and databases without looking for separate tools to integrate and run into compatibility issues.

Visual Studio includes a live sharing feature which allows multiple users to work on the code concurrently, which significantly reduces the time taken for integration and minimises error. Visual Studio also supports C# which will be the development language used for the web application.

Our main reason for selecting C# as it is a general-purpose, multi-paradigm programming language, lexically scoped, imperative, declarative, functional, generic, object-oriented (class-based), and component-oriented programming discipline. Each of the Users such as APD and Subject Coordinator will have special functions to themselves for our proposed plan, will act mainly as separate entities in which C# will provide a leveled transition to the visual and code integration instantaneously.

C# enables us to implement our functions easily with the rich libraries and community support it has and with .Net framework, the web application can be easily ported over to other existing systems without the need of much additional resources or changes. C# also has existing support with MySQL, this not only shortens the need for additional implementation for the database and saves the misfortune of non-tabular databases that could be disastrous for the subject coordinator to view and manage details stored but also offers the extraction and import features for our Web Portal to be loaded into the MySQL database without any hassle given that the formats are in proper order.

Development Platform	Visual Studio
Coding Language	C#
Framework	.Net Framework

Pros

- Full stack web development
- Good Debugging tool
- Code completion/ checking
- Live share
- Rich class library
- Cross-platforms
- Support for distributed system
- Object-oriented
- Many open-source functions and projects available for reference
- Better Integration

Cons

- Learning curve can be daunting
- Recompilation for every single change
- Framework will need to be updated to the latest version

Application Name	MySQL Workbench
Coding Language	MySQL
Pros	
• Of Industry Standard that is often used by many companies • Open-source, easy to find any resources if required • Support is readily available when necessary • Easy to use platform	
Cons	
• It has a few stability issues • Development is not community driven • Developers may find some of its limitations frustrating	

8.2.3 Project Deliverable Timeline

https://drive.google.com/file/d/1gN_Q0JLPBWm3-2aNdVjzulfc2UzFY_oy/view?usp=sharing

Timeline can also be found on the above link for a better viewing experience.

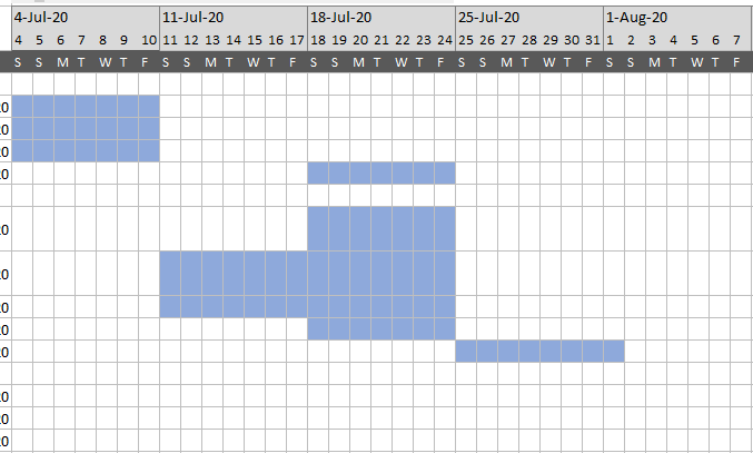
FYP MANAGEMENT TOOL

FYP-20-S3-16

PROJECT START: Sat,4-Jul-2020

DISPLAY WEEK 1

TASK	START	END
PROJECT PLANNING		
Scope Planning	4/7/2020	10/7/2020
Scheduling	4/7/2020	10/7/2020
Project Website	4/7/2020	10/7/2020
Resource Planning	18/7/2020	24/7/2020
Research on Project Topic		
Requirements gathering from stakeholders	18/7/2020	24/7/2020
Research on existing tools and platforms	11/7/2020	24/7/2020
Identifying functions from existing tools	11/7/2020	24/7/2020
Software Development Methodologies	18/7/2020	24/7/2020
Use Cases	25/7/2020	1/8/2020
Project Requirements		
Functional features for Application	9/8/2020	22/8/2020
Non-functional featues	9/8/2020	22/8/2020
Security Requirements	9/8/2020	22/8/2020



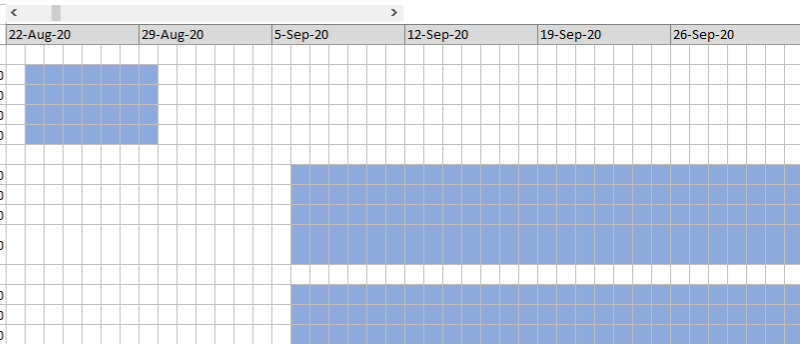
FYP MANAGEMENT TOOL

FYP-20-S3-16

PROJECT START: Sat,4-Jul-2020

DISPLAY WEEK 8

Analysis and Design		
User Interface Design	23/8/2020	29/8/2020
Systems Design	23/8/2020	29/8/2020
Database Design	23/8/2020	29/8/2020
Prototype Design	23/8/2020	29/8/2020
Application Implementation(Agile Scrum)		
User Interface	6/9/2020	12/11/2020
Class and Base Functions	6/9/2020	12/11/2020
Database Creation	6/9/2020	12/11/2020
Linkning Classes and functions and Database	6/9/2020	12/11/2020
Test of Application		
Unit Testing	6/9/2020	12/11/2020
Integration Testing	6/9/2020	12/11/2020
System Testing	6/9/2020	12/11/2020



FYP MANAGEMENT TOOL

FYP-20-S3-16

			14-Nov-20	21-Nov-20
PROJECT START:	Sat,4-Jul-2020			
DISPLAY WEEK	20			
Deliverables/Documentations				
Project Requirements	8/8/2020	8/8/2020		
Project Prototype Slides	19/9/2020	19/9/2020		
Project Progress Report	19/9/2020	19/9/2020		
Final Product and Documentations	14/11/2020	14/11/2020		
Reflective Diary	14/11/2020	14/11/2020		
Final Presentation slides	21/11/2020	21/11/2020		

FYP MANAGEMENT TOOL

FYP-20-S3-16

PROJECT START:	Sat,4-Jul-2020
DISPLAY WEEK	6

TASK	START	END
PROJECT PLANNING		
Scope Planning	4/7/2020	10/7/2020
Scheduling	4/7/2020	10/7/2020
Project Website	4/7/2020	10/7/2020
Resource Planning	18/7/2020	24/7/2020
Research on Project Topic		
Requirements gathering from stakeholders	18/7/2020	24/7/2020
Research on existing tools and platforms	11/7/2020	24/7/2020
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Project Progress Report	19/9/2020	19/9/2020
Final Product and Documentations	14/11/2020	14/11/2020
Reflective Diary	14/11/2020	14/11/2020
Final Presentation slides	21/11/2020	21/11/2020

8.2.4 Roles and Responsibilities

Name	Roles and Responsibility
Muhammad Mubeen Bin Abdul Latheef	Team Leader, Documenter, Developer, Analyst
Lau Lit Han	Technical Lead/ Developer, System Integrator, Analyst
Lew Jian An	Analyst, Tester
Lim Hwa Seng	Developer, Analyst, Documenter
Lur Bing Huii	Tester, Documenter

Name	Developer	Tester	Analyst	Documenter
Muhammad Mubeen Bin Abdul Latheef	✔		✔	✔
Lau Lit Han	✔		✔	
Lew Jian An		✔	✔	
Lim Hwa Seng	✔		✔	✔
Lur Bing Huii		✔		✔

9. EXPECTED RESULTS

Our team expects that with the use our proposed solution, it would provide the following results to the users:

Higher efficiency of FYP processes

With automation tools in place for various processes in the FYP, our team expects that it would result in a higher efficiency for the coordinating team in handling the FYP-related tasks that have previously been handled manually by reducing both time and error. They can then focus on more critical areas of their work and result in better work performance and efficiency.

Reduce the time required to allocate resources (Students, Supervisors, Assessors) to different projects

Based on what our team has gathered from the feedback of various stakeholders, we have found out the bulk of effort and time spent on the FYP-related tasks has been on the allocation of resources to different projects. It is known to be a very tedious, manual process of screening through the eligibility of each individual student, requesting and retrieving the list of projects that each student prefers, assigning the students to their projects and ensuring that different requirements are met.

Thus, with an automation tool in place, it would greatly reduce the amount of time required on most of the tasks, since most of these tasks are currently handled manually.

Provide a more streamlined process

Currently, many of the tasks that are done during the FYP allocation and assigning process are handled in different ways by different stakeholders, such as emails, excel and PDF files, resulting in large amounts of data that are being shared around with different stakeholders.

Hence, with an automated system where all stakeholders can place the FYP-related information on the portal, it would result in a more streamlined and efficient work process where all stakeholders can access the portal to keep track of the different tasks that they have been placed in charge of.

10. CONCLUSION

Our team looks forward to working with SIM-UOW to improve the business processes in managing the FYP with a more streamlined process to improve the efficiency and reduce the time required in managing FYP-related tasks. We are confident that our proposed plan would make the entire process simpler and reduce the possible complications that you would face.

Thank you for your consideration.

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