CAPSTONE PROJECT PROPOSAL

Centralized Compliance Monitoring System

Final Year Project (FYP) Proposal

A. General Information

Project Title: **CENTRALISED COMPLIANCE MONITORING SYSTEM**

Points of Contact

List the principal individuals who may be contacted for information regarding the project.

Position	***Title/Name/Organization***	***Phone***	***E-mail***
Project Sponsor	Smart Glove Holdings 1. Ahmad Faizi Mohd Kamil 2. Vincent Lim	03 3291 6100	1. faizi@smartglove.com.my 2. vincent.lim@smartglove.com.my
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Supervisor Signature ***Industry Client Signature***

Executive Summary

In two or three paragraphs, provide a brief overview of this project and the contents of this document.

This Capstone Project aims to design a system named "Centralized Compliance Monitoring System", requested by Smart Glove Holdings.

Centralized Compliance Monitoring System (CCMS) is a centralized system that will assist users to perform the processes of document monitoring and handling. This system will act as a comprehensive solution of handling documents in an efficient and appropriate manner within the organization. In addition, required actions such as renewal of contracts and licenses will be managed punctually. CCMS has a big role in providing visibility and greater controls for all processes within each part of the organization.

As CCMS allow every key information to be accessed in one location, it will enable better management processes and communication among users as well as increasing the work efficiency. To provide greater controls, CCMS consist of an automatic reminder feature that will be utilized to notify the accountable parties regarding the contracts' validities, due dates and to facilitate compliances. By having a digital centralized system, human errors such as oversights and lapses will be minimized.

In this document, in-depth explanation regarding the goals, objectives, approaches, scopes and other important components which the CCMS will undergoes and achieved throughout this project will be discussed.

B. Project Purpose

Explain the business reason(s) for doing this project. The Project Purpose (the Business Problem and Project Business Objectives) is in the Project Proposal, Section B.

1. Problem Statement

The problem statement is a question, issue, or situation, pertaining to the organization, which needs to be answered or resolved. State in specific terms the problem or issue this project will resolve.

The Centralized Compliance Monitoring System (CCMS) is required to resolves the issues faced within the Smart Glove Holdings (SGH). SGH is an organization that consist of multiple subsidiaries which are separated into different groups that is operated at various levels and complying to various types of regulations. The issues faced by SGH can be pinpointed to:

1) Lack of effective monitoring

   The current management procedures used in SGH is called the decentralized document management system where the employees from each department will record every documents manually. Decentralized monitoring and management system for documents is cumbersome as editing and share operations cannot be done easily. There is also no standardization of management as each department might has their own system and method to store and manage the documents which will then lead to incoordination of records. Thus, confusion might appear and cause interruptions regarding the management tasks.

2) Failure in renewing documents (contracts, licenses, related approvals)

   As stated previously, SGH has various regulations that are regulated by various authorities. Those regulations have different requirements, validity/expiry dates and renewal processes along with legal contracts with external parties that needed to be renewed periodically. If such licenses or contracts has failed to be renewed or managed properly, the contractual obligations or law that have been acknowledged by involved parties of those legal contracts might be breached which might lead the company to face the penalties.

3) Low work efficiency

   Among the disadvantages found in the decentralized management system currently used by SGH, low efficiency in the work environment may be the primary disadvantage of

this system. Decentralized document management system can be very time-consuming to be accessed, it might take from minutes to hours for locating some files in a large documenting system. In addition, manual recording and editing of each document are also one of the few causes for productivity in the workspaces to drop. The low efficiency in the system will become the source of decrement in work quality as most time has been taken to locate the documents as well as manually managing each document.

4) Data redundancy

Redundancy of data regarding the documents is also an important issue found within the decentralized document managing system. Data redundancy occurs when same data are being stored in different places as the structure of the decentralized system makes it complicate for data to be combined from different sources. Inconsistence of data will also exist from data redundancy as conflicting or different versions of the same data might appear in different places. Moreover, redundancy may also cause data anomalies where a field value has been forcefully changed in multiple different locations as not every redundant data has made the required changes successfully.

5) Lack of adequate control over the key documents

With the current organizational system in SGH, clear supervision and monitoring is unavailable as the actions taken by each employee couldn't be tracked or traced. Although the chances could be slim, there are possibilities where employees might copy the documents for personal uses which can be consider as an insider threat. However, as stated, current SGH is unable to track employees' actions, those malicious acts might have been overlooked since the threats won't be noticeable. Besides that, management team and operational person-in-charge (PICs) is unable to track and monitor each and every compliance while also ensuring the processes for renewing, applying or complying has been taken accordingly to the specified time and regulations.

6) High occurrence rate of human error

As most operations that exist in the current system used by SGH are being done manually by the employees, human errors will eventually occur. Errors such as missing the due dates/expiries, mistake in document recordings, document being organized

wrongly and so on. There are many factors that contribute to human errors which also include distractions, fatigue, stress, work pressure, insufficient supervision and inadequate procedures. From time-to-time, employees will resign which will cause the documents to go missing or not being handed properly to the next person as a proper system is not in place. Human errors are inevitable and unavoidable as long as the main operations are done by humans regardless if the errors made are small or big.

7) Lack of security

In SGH, there are separation of departments and groups, where each employee is only allowed to access the documents that are only applicable to their own scopes with the exception of the management team. Although all documents and departments have been separated, there are no guarantees that none of the employees from a department have accessed the documents from another department which is an unauthorized access and a clear malicious act. With the current SGH managing system where there are no clear supervision and monitoring, this might had occurred without anyone noticing. Security may also be referring to the confidentiality of the key documents which with the current SGH's system, it might be below the standard level of confidentiality. To increase the confidentiality level of SGH, a proper system that can control and monitor the accessibility of any confidential documents will be needed.

2. Project Objectives

Define the specific objectives of the project that correlate to the strategic initiatives or issues identified in Strategic Plan.

Project Objectives

1. To manage document handling.
2. To search and retrieve a specific document.
3. To send reminders regarding documents' due dates or expiries.
4. To allow only authenticated users into the system.
5. To allow access of documents based on the users' authorization levels.
6. To provide report handling features.
7. To monitor the actions taken by the users.
8. To access the system through web browsers.

No.	Proposed Functionality	Problem Solved / Opportunities
1.	Document Handling (View, Add, Create, Search, Retrieve, Edit/Update, Download) - To allow users to manage documents in only one location.	• Lack of effective monitoring (1) • Low work efficiency (3) • Work redundancy (4)
2.	Report Handling (Generate, View, Print, Download) - To allow users to generate reports of the documents efficiently.	• Lack of effective monitoring (1) • Low work efficiency (3) • Work redundancy (4)
3.	Alerts sent via email - To provide reminders regarding documents due dates/expiries.	• Failure in renewing documents (2) • High occurrence rate of human error (6)
4.	Access Authentication (Log-In, Log-out) - Only users that have been added into the system is able to access.	• Lack of security (7)
5.	Access Authorization (Level of access allowed for each level of users) - Users will be separated into 3 levels, clerical, person-in-charge (PIC) and Management, each level will have different features allowed to be use.	• Low work efficiency (3) • Lack of security (7)
6.	Access Logging - To log the system access by each user.	• Lack of adequate control over the key documents (5)
7.	Local Web-Hosting - To allow access to the system through workstation browsers and mobile browsers that are connected to the same network with the server.	• Low work efficiency (3) • Lack of security (7)

D. Assumptions

Assumptions are statements taken for granted or accepted as true without proof. Assumptions are made in the absence of fact.

1) It is assumed that records of existing data and information will be given to properly execute the system.
2) CCMS is assumed to only be used internally within the organization.
3) CCMS is assumed to only be accessible from the machines (computers, mobile) located inside the company.
4) It is assumed that CCMS will not be shared and used outside of the organization and associated parties.

E. Project Description, Scope and Management Milestones

1. Project Description

Describe the project approach, specific solution, customer(s), and benefits.

The Centralized Compliance Monitoring System (CCMS) will be developed with the main intention of smoothing and improving the working environment of the current Smart Glove Holdings (SGH). The main benefits of implementing CCMS can be pinpointed to:

1) Ensuring legal compliances to regulatory requirements and contractual obligations.
   Within an organization, it is important to ensure that there are no lapses in complying with the granted conditions of the licenses and the obligations stated in a contract. In addition, those contracts will need to be reviewed before the expiries to avoid losing it rights or breaching any contractual obligations or laws. Using CCMS, these issues can be minimized as the system allow the users to monitor each document while reminders will also be sent for any documents that are nearing any deadlines/expiries.

2) Efficient business operations.
   As all documents will be centrally located within one location, CCMS helps in actively encouraging efficient operations which leads to an immense decrease of the time taken by employees for any data retrieval. Data locating can be done easily as the documents will be orderly stored and indexed. CCMS will be able to eliminates any unnecessary storage spaces while backups and processes for data recovery can be simplified for compliance and due diligence.

3) Eliminates data loss due to human error.

   In the current SGH system, accidental data loss or deletion is far too common as each data are within a decentralized system. However, this issue can also be solved by using CCMS which is a centralized repository to store the data while users' log-in and log-out actions can be completely monitored by the management team hence the risks of losing any important data due to human errors can be prevented. Although it cannot completely eliminate the risk, it could minimize the risk of data loss or deletion.

4) Enhanced data security.

   Using the role-based access control in CCMS that is separated by three levels, Clerical, Person-In-Charge (PICs) and the Management, will be able to prevent any unauthorized access toward the data. Each of the level will have different kinds of features. Each employee is only capable of accessing the documents that are assigned to them by the management teams.

2. Scope

The project scope defines all of the products and services provided by a project, and identifies the limits of the project. The project scope addresses the who, what, where, when, and why of a project.

Centralized Compliance Monitoring System (CCMS) will be mainly developed to be working on web browsers that should be accessible from both mobile browsers (Safari, Chrome, Opera) or workstations browsers (Google Chrome, Firefox, etc.) as long as the devices are connected to the same network with the host/server. CCMS will only be used by the employees that have been authorized from the Smart Glove Holdings (SGH).

There will be a total of 4 primary roles associated with this system which is:

a) System Administrators

   People who have the authorities of controlling and managing the system itself. Although this role will not be associating with other roles, they will be tasked to add/create new users while also observing the system's access logging. Other than that, system administrators are responsible in installing, upgrading and configure the system while

monitoring the system performances along with troubleshooting issues. The security and the system efficiency will also be maintained by the administrators.

b) Management Team

This role will be the high-level access where everything happening within the system can be seen regardless of the departments or groups. This role has the ability to utilize all of the features found in the system, however they are not tasked to create, edit and delete any data or documents. This role will be mainly monitoring the data that have been inputted and edited by the PICs and Clerical employees including access logging.

c) Person-In-Charge (PICs)

This role has the mid-level access that could utilize most features in the system. Although they could search and view all documents within the system, the actions that they are unable to take will be adding, edit and delete document from another department. This role will be mainly managing the data that have been inputted and edited by the clerical employees in their own scopes.

d) Clerical

This is the low-level access provided to the SGH employees where only limited features are allowed to be operated. Clerical main tasks will be creating and editing documents within their own departments. This role is unable to access any data or documents from other departments.

The development of CCMS could be separated into five parts, which are the following:

a) Front-end

Refers to the user interface that will be mostly used by SGH's employees. The languages that will be mainly used for front-end development will be HTML, CSS and JavaScript.

b) Back-end

Refers to server, database and the codes that are working behind the scene to deliver information to the users. The language and software that are planned to be used for back-end development along with the database will be PHP, MySQL and JavaScript.

c) Version Control

System versioning will be done with the use of GitHub to track any changes done by each contributor while preventing any conflicts in concurrent works and to ensure that everyone is working off with the latest version of the system. All codes, files and assets will be version controlled in GitHub to allow collaboration within the development team. Other than that, Vision Studio Live Share, a real-time collaboration tool, will also be used to prevent any overwriting of source codes along with encouraging the team to collaborate with each other.

d) Local Web-Hosting

Web-hosting refers to the service that allow the system to be accessible from the internet. The CCMS system will be implemented on a physical server (host) which will be located inside the company. Any mobile browsers and workstation browsers that are within the same network with the host should be able to reach the system by accessing the "localhost" server. The server will be used to store the website files including the codes and assets while the internet browsers is used as a communication method in delivering the website to the users. The hosting tool that is planned to be used to host the system's website are XAMPP.

e) Testing

Four types of testing will be done during the development of this system which are, unit testing, integration testing, system testing and acceptance testing. Unit testing is the first stage of testing where each feature within the system will be tested for its' functionality and capacity. Integration testing are the test to verify the features in both separately and in a group to check whether two or more components could individually or combined to execute the functions. System testing is a very significant environment simulation of the final product to ensure the system will be meeting the requirements while testing if the integrated components are showing the optimal performance levels or not. User acceptance testing (UAT) will be the test undertaken by the end-users which in this case will be the SGH employees to ensure that the system is working accordingly to its maximum capability and capacity. UAT will be done by using a virtual VPN server that could be accessed by multiple devices simultaneously to allow genuine SGH employees

to test on the system. If in any cases that virtual VPN server is not preferable or unavailable, the system could be implemented directly on a workstation that have been selected to become the host server located inside the company for conducting the UAT.

In summary, this project will be **inclusive** of:

i) Document Handling (View, Add, Create, Search, Retrieve, Edit/Update, Download)
ii) Report Handling (Generate, View, Print, Download)
iii) Alerts/Reminders sent through emails
iv) Access Authentication (Login, Logout)
v) Access Authorization (Users' access level)
vi) Access Logging
vii) Local Web-hosting
viii) Documentation (User Manual, Implementation Guide)
ix) Employee training and system monitoring for a fixed period of time

The **exclusion** of this project development will be:

i) The system developed will not cover any features beyond the scope stated above.
ii) The integration of CCMS system to a cloud-server will not be performed.
iii) System support will not be given beyond the timeline fixed beforehand.

3. Summary of Milestones and Deliverables

Provide a list of milestones and deliverables with estimated date and duration.

Milestone No.	Milestone	Person Responsible	Duration (days)	Targeted Completion Date
001	Requirement Analysis	All member	8	30st August 2021
002	Project Research	All member	16	5th September 2021
003	Project Proposal	All member	9	15th September 2021
004	Development Phase • Front-End • Back-End • Unit Testing • Integration Testing	All member	100	3rd January 2022
005	Final Testing • System Testing	All member	6	9th January 2022
006	Documentation	Izzrin	7	10th January 2022
007	Training and Monitoring	Pong Kien Yiep, Chan Vei Hao, Goh Chang Jun	21	2nd February 2022

Below table is the Timeline approved by client and supervisor.

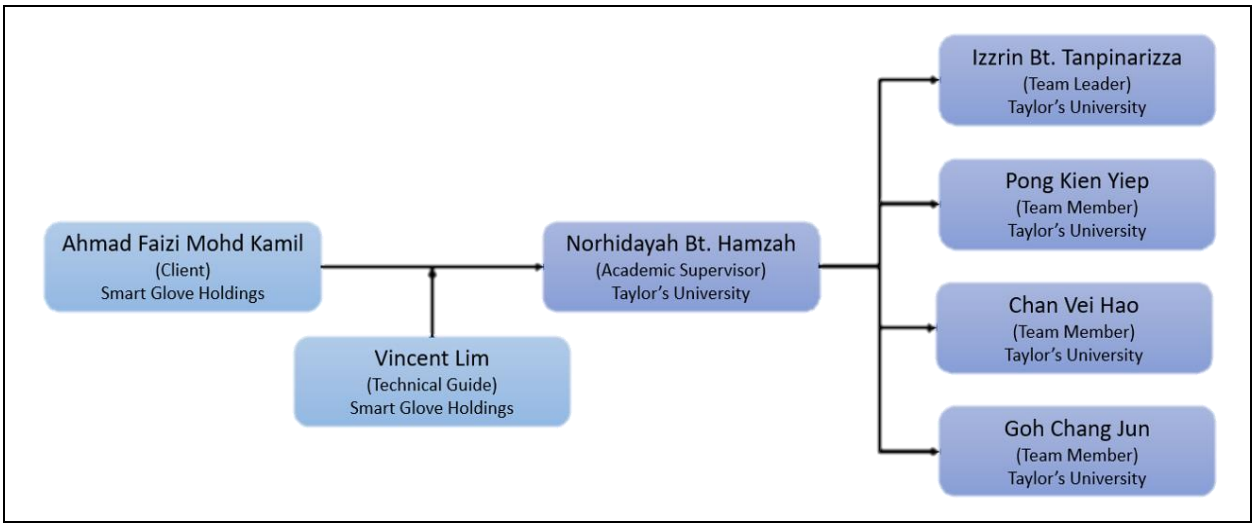
	DATE	KEY MILESTONES	Days
CAPSTONE 1	6 September 2021 ~ 15 September 2021	Provide the system proposal for client to approve the system concept.	9
	16 September 2021 ~ 22 November 2021	Developing partial of the system while conducting Unit Testing. Roll-out Phase I of the system *(System should be overall 40% completed.)* Features expected to be done: • Document handling • Report handling	65
	23 November 2021	First User Acceptance Testing	-
CAPSTONE 2	29 November 2021 ~ 3 January 2022	Developing the final version of the system while conducting Integration Testing. Roll-out Phase II of the system *(System should be overall 80% completed.)* Features expected to be done: • Alerts/reminders through emails • User Authentication • Access Authorization • Local Web-hosting	35
	4 January 2022 ~ 9 January 2022	Final testing (System Testing) taking place. Finalizing the documentation.	6
	10 January 2022	System security, controls and admin accepted and handed over to client. Documentation (user manual, implementation guide) provided.	-
	11 January 2022	Second / Final User Acceptance Testing	-
	12 January 2022	Official launch / Full system implementation for Smart Glove Group.	-
	13 January 2022 ~ 2 February 2022	SGH's employee training and system monitoring period.	21
	3 February 2022	Full sign-off / hand over to client	-

**The blank between 23rd November 2021 and 29th November 2021 is the final week of the students' semester. This week is for the students to complete the assessments while getting ready for presentations and final examinations.*

F. Project Organization

1. *Project Organization Chart*

Provide a graphic depiction of the project team. The graphical representation is a hierarchal diagram of the project organization that begins with the project sponsor and includes the project team and other stakeholders.



2. Organization Description

Describe the type of organization used for the project team, its makeup, and the lines of authority.

The project team were organized using the functional organization type whereas the team members are grouped by the areas of specialization.

Smart Glove Holdings (SGH) are the client for this project, which are in-charged for supplying the necessary project requirements and deliverables. SGH are one of the leading innovative glove manufacturers in Malaysia that have been globally recognized. The team's technical guide from SGH, Mr. Vincent Lim, is responsible in guiding the team concerning the system requirements along with overseeing the system implementation from a technical perspective.

As the academic supervisor, Norhidayah Bt. Hamzah is in-charged of monitoring the development process while providing guidance and advices to the team.

Every member within the team including the leader is in-charged of all coding-related work including the system implementation and testing. The team leader has the responsibility in providing the client with documentation such as user manual and implementation guide. As requested by the client, the team will also be tasked for system monitoring along with the training of the SGH technical team within the specified period of time.

3. Roles and Responsibilities

Describe, at a minimum, the roles and responsibilities of all stakeholders identified in the organizational diagram above.

Names	Roles	Responsibilities
Ahmad Faizi Mohd Kamil	Industry Client (Smart Glove)	To provide information regarding the project to the team, including project's deliverables and requirements. To supply learning materials if needed to be used within the project.
Vincent Lim	Technical Guide (Smart Glove)	To provide guidance regarding the system requirements and oversee the system implementation from the technical perspective
Norhidayah Binti Hamzah	Academic Supervisor (Taylor's University)	To provide support to the team along with giving advices and guidance in the matter of suggestions, opinions and clarifying concerning the overall view of the project. To recommend improvements for achieving the project objectives.
Izzrin Binti Tanpinarizza	Team leader Programmer and Tester (Taylor's University)	To lead and motivate the team while also managing project development time. To develop and test the mechanics of the proposed system features and database. To provide documentation such as user manual and implementation guide.
Pong Kien Yiep	Programmer and Tester (Taylor's University)	To develop and test the mechanics of the proposed system features and database. To provide training and system monitoring within a fixed period of time.
Chan Vei Hao	Programmer and Tester (Taylor's University)	To develop and test the mechanics of the proposed system features and database. To provide training and system monitoring within a fixed period of time.
Goh Chang Jun	Programmer and Tester (Taylor's University)	To develop and test the mechanics of the proposed system features and database. To provide training and system monitoring within a fixed period of time.

G. Appendices

Include any relevant appendices, if applicable. (You may include relevant research papers, or guiding articles that has become the basis of your research/work)