AUT UNIVERSITY
NEW ZEALAND

COMP704 Research and Development Project

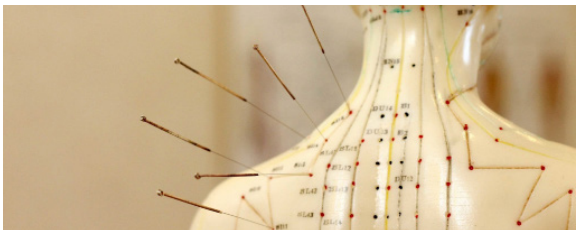
VN01 3D acupuncture healthcare data management and treatment system

Project Charter

Supervisor: Dr Nhan Le Thi

Team Members:

21142643	Chuong Pham Dinh
21142377	Nhan Nguyen Cao
21142355	Tan Le Tran Ba
21142358	Trang Ho Ngoc Thao



Version: 2.0

Date: 20th April 2023

TABLE OF CONTENTS

DOCUMENT VERSION CONTROL

1. DOCUMENT INFORMATION

Document code	**PC**
Document title	**Project Charter**
Version	**2.0**
Authors	**Nhan Nguyen Cao, Tan Le Tran Ba**
Distributed by	**Project VN01 team**
File name	**PC_Project Charter_2.0.pdf**
Release definition	**Only released as a finished document**

2. DOCUMENT SIGN-OFF

ID	Member	Role	Signature	Timestamp
21142355	Tan Le Tran Ba	Project Manager		21 Apr 2023 08:33

3. DOCUMENT VERSIONS

Version	Timestamp	Description	Responsible members
1.0	19 Oct 2022 15:45	First version of the Project Charter document, with all basic fields about the Project completed.	**Nhan Nguyen Cao** *(21142377)* **Tan Le Tran Ba** *(21142355)*
2.0	20 Apr 2023 20:15	Update the Project Charter document with the new approach for the Project.	**Nhan Nguyen Cao** *(21142377)*

I. EXECUTIVE SUMMARY

The purpose of this Project Charter document is to document the high-level information for the project, covering the basic fields to make sure that the project team and related parties are in understanding of the basic information about the project, and that the project is ready to be kicked off.

Some main sections of basic information included in this Project Charter document include:

- **Project Definition**: Cover some basic information about the Vision of the Project, the Project's Goals and Objectives, the Scope of the Project and list of Deliverables defined for the Project.
- **Project Organization**: Stating the Clients, the related Stakeholders of the Project, and the definition of Roles and Responsibilities of the Project.
- **Project Plan**: Brief plan about the schedule for implementing the project, until the summing up date.
- **Project Considerations**: State some details that should be considered in implementing the project, including the Estimated Cost, Constraints and evaluation of possible Risks of the project.

The document would then come up with a Conclusion whether with all the defined information and statements, the Project is ready for kicking off and implementing.

II. PROJECT DEFINITION

II.1. PROJECT VISION

The long history of the development and preservation of the ancient Chinese people has made Traditional Chinese Medicine (TCM) one of the most fascinating subjects to research. The main representation of the field has traditionally been acupuncture, which involves inserting needles into certain points on the skin of a person to release energy flows known as Qi.

Our project vision is to use advanced technology (which is our major) to build a software product that could be used as a companion to to assist the learners, students or inexperienced acupuncturists to learn about the meridians and acupuncture points more visually and more effectively, through interactions with the 3D model.

II.2. PROJECT GOALS & OBJECTIVES

Our detailed goals and objectives for the project of the 3-D acupuncture healthcare data management and treatment system include:

- Acquire an understanding of acupuncture, the basic concept, and principles of the technique in healing pain and treating common diseases.
- Acquire an understanding of the findings of existing experiments on advanced technology to the scope of acupuncture, as an inspiration for the project.
- Being able to come up with proposals about applying advanced technology in acupuncture modeling, to better the functionalities and resolve the problems of some existing solutions in the market.
- Provide a 3-D model of a cut-off human body, with acupuncture points marked and related internal organs, and components included to guide and instruct the implementation of acupuncture treatment.
- Provide a data-based management and information system about acupuncture and knowledge involved within the field, such as the locations, functionalities, injection methods of the points, or the important meridians of human body.

II.3. PROJECT SCOPE

The research phase includes upskilling and acquiring useful knowledge and information related to acupuncture, such as the acupuncture points, the meridians, etc, from trustful sources suggested by the specialist consultants. The final product includes a 3-D model platform for acupuncture exploration and learning, with the acupuncture points, 14 meridians (including 12 main meridians and 2 extraordinary meridians) and a human body model displayed.

II.3.1. WHAT IS TO BE INCLUDED – IN SCOPE?

- A research about the experiments of applying advanced technologies into the field of acupuncture treatment.
- Collection of domain knowledge data about Acupuncture points and Meridians, in both Vietnamese and English, from medically trusted books and presentation slides, provided and suggested by the acupuncturists.
- A 3-D interactive human body with 362 acupuncture points and 14 meridians (12 main meridians and 2 extraordinary meridians).
- An Acupuncture Domain knowledge Search system, allowing searching about basic information of 362 acupuncture points and 14 meridians.
- Quiz and Personal Learning Progress feature to support Medical University Students (main users of the project) with their learning progress about Acupuncture using the system.

II.3.2. WHAT IS NOT TO BE INCLUDED – OUT OF SCOPE?

- Advanced 3-D animation for the display of acupuncture points and meridians.
- Anatomy mode for the 3-D model, of internal organs and internal anatomy structure (Excluded later during the project due to lack of budget).
- Inclusion of deep medical knowledge of the internal organs and blood vessels, as well as explain or provide information about how they can be beneficial from acupuncture treatment from an advanced point of view.

II.4. PROJECT DELIVERABLES

The planned deliverables of the Project during the implementation include the following main items:

Table 1 - Project Planned Deliverables

Deliverable	Type	Description	Quality Criteria
Project Proposal	**Document**	A document defining the goals, and objectives for the project and justifying the approach used to deliver the project outcomes.	The document provides enough details and propose enough trustfulness for the project to be approved by the coordinators.
Requirements Specification	**Document**	A document with details about the requirements for the project at different abstract levels, and different types of requirements.	The requirements should be planned in detailed, and feasibility should be carefully considered, making sure they are completable within the scope and duration of the project.

Prototype	**Design**	Design of the basic layouts and pages within the final system.	Design should be verified from the Client and should be upgraded based on feedback from the Supervisor.
Project Plan	**Document**	A document about the detailed plan of the project, including the timeline of the project and planned technology stack of the project.	Plan should be clear, and should match with the conditions of the project. Plan should take into account the possible risks of the project.
Data for the Final system	**Resource**	Database of acupuncture points' information, acupuncture treatments for common diseases, which are gathered using different data collection techniques and from research results.	Should include data about all acupuncture points and meridians. For evaluation purpose, it is suggested that data should be collected in both Vietnamese and English.
3D Human Body model for the Final system	**Resource**	3D model of human body that would be integrated into the final system for production.	The model should be realistic and has a good body ratio, shape to show all the acupuncture points and meridian flows. Texture of human skin color is a must-have for the 3D model
Final System – Version 1.0	**Product**	First version of the Website, also built to be sent to the target users as the Interactive Prototype for Collecting Feedback	The layouts for basic screens of the project must be completed. The 3D model is not required to be implemented at this version.
Final System – Version 2.0	**Product**	The second version of the website with the 3D model, acupuncture points and meridians and basic interactions added.	At least the model is available for the website, with some basic interactions available. The model should also be marked with the basic acupuncture points and meridians.
Final System – Version 3.0	**Product**	The final version of the website with API integrated and UX flows improved.	All proposed features, dynamic flows should be included in the final system, and tested in development environment and through manual testing. The

			website at this version is ready for production.
Testing Document	**Document**	A document including the procedures, agreement levels, detailed descriptions of test plans, and test cases for the final product.	The document should describe in detailed about the plan for testing, results of testing (different methods) and the detailed defined process for Bug Tracking.
Project Infographic	**Resource**	Final poster for the project, that would be used as the Infographic Poster about the project during the Final Defense presentation	Poster must cover the basic information: Project Description, Architecture Design, Features List, Stakeholders, Timeline and can state some basic information about Pains and Gains, etc.

III. PROJECT ORGANIZATION

III.1. CLIENT

The initial client for this project is Dr. William Liu, a Senior Lecturer in the Department of Computer Science and Software Engineering (CSSE), School of Engineering, Computer and Mathematical Sciences (SECMS) at the Auckland University of Technology (AUT), New Zealand.

Figure 1 – Dr. William Liu

However, in the later half of the project, Dr. William Liu dropped out of the project due to personal reasons. As we do not have enough time to find a new Client to replace Dr. William Liu, we decided and agreed with the Supervisor and the Project Coordinators to progress the project forwards as a free project, with no Client.

III.2. PROJECT STAKEHOLDERS

The list of Stakeholders involved within the project include:

Person	Role	Relation to the Project
Dr. William Liu	**Client**	Define the overall idea of the project, approving the progress of the project and hold the position of the owner of the final product for the project. *Updated: Dr. Liu was only available in the first half of the project, and dropped out in the second half.*
MSc. Petteri Kaskenpalo	**Project Coordinators**	Guide the team through different stages of the project and support with some difficulties or sudden incidents / unexpected changes. From the academic perspective, the Project Coordinators are involved in the final Council for Defense Ceremony of the project.
Dr. Vu Lam Quang		

Dr. Nhan Le Thi	**Project Supervisor**	Be involved with the team in the whole progress, guide the team with specific steps through weeks and checking the progress of the project, making the project is on time and on track.
MMed. Minh Ma Hoang	**Specialist Consultants**	Involved in the project to represent the Specialized Side, consulting and providing information, resources about the specialized knowledge involved within the project.
MMed. Van Le Thi Tuong		
Medical University students at Ho Chi Minh City Medicine and Pharmacy University	**Target Users**	The group of 5 students served as the main users for the project. They would be the main ones for collecting feedback and giving feedback for the project, based on their experience of using the system and the level of satisfaction in supporting the students in learning about Acupuncture.
Tan Le Tran Ba	**Project Manager**	Manage the project, ensuring the progress of the project and distribute the tasks between Project Development Team Members
Nhan Nguyen Cao	**Project Development Team Member**	Involved in the development and implementation of the project, as the main human resource. Support all the flows within the implementation of the project, from Research to Development.
Trang Ho Ngoc Thao		
Chuong Pham Dinh		

III.3. ROLES & RESPONSIBILITIES

There would be a more detailed document about the Skills Analysis among members of the Project Development Team. This section would simply state the responsibilities of Project Development Team members, in form of Responsibility Assignment Matrix chart:

Project Responsibilty	Project Manager	Project Development Team Member		
	Tan Le Tran Ba	**Nhan Nguyen Cao**	**Trang Ho Ngoc Thao**	**Chuong Pham Dinh**
Complete Prototype	A	C	I	I
Manage Database and Data storage	I	C	A	I
Collect Domain Knowledge Data	R	A	R	R
Build Front-end layouts and pages	I	A	C	I

Build Back-end API endpoints	I	C	A	I
Perform Technical testing for the project	I	A	R	I
Perform Manual testing for the project	I	I	C	A
Complete required documents for Portfolio of the project	A	R	R	R
Deliver the Final presentation	R	A	R	R

Note: **R – Responsible**: Does the work to complete the task
A – Accountable: Main one to be responsible for the task, be the last one to review and approve the task before delivery.
C – Consulted: Support for the implementation of the task, lower responsibility level than R
I – Informed: Related to the task and is informed about the task and its result, but not directly spent efforts on the task

IV. PROJECT PLAN

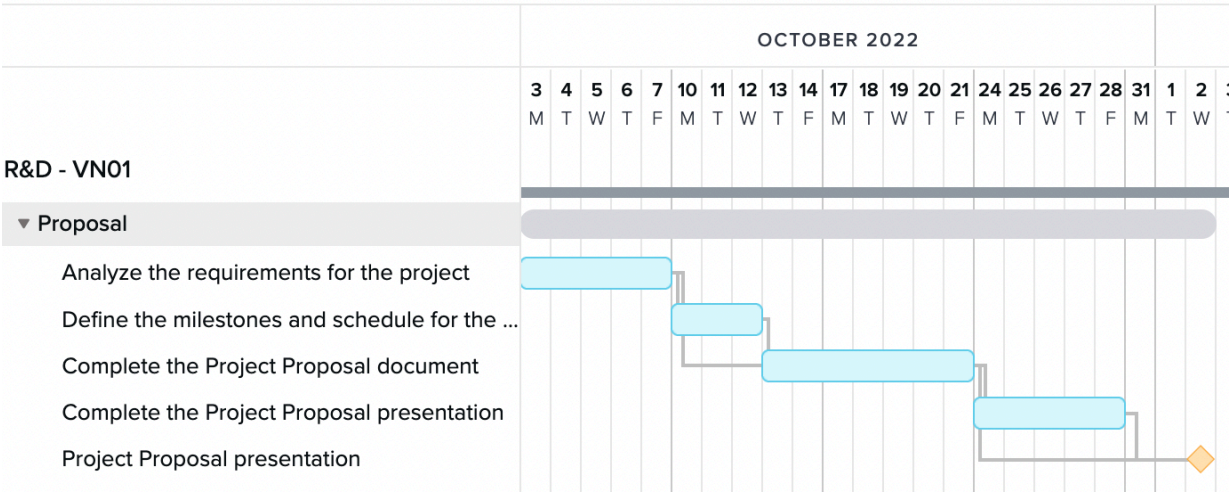


Figure 2 - Gantt Chart (Phase 1)

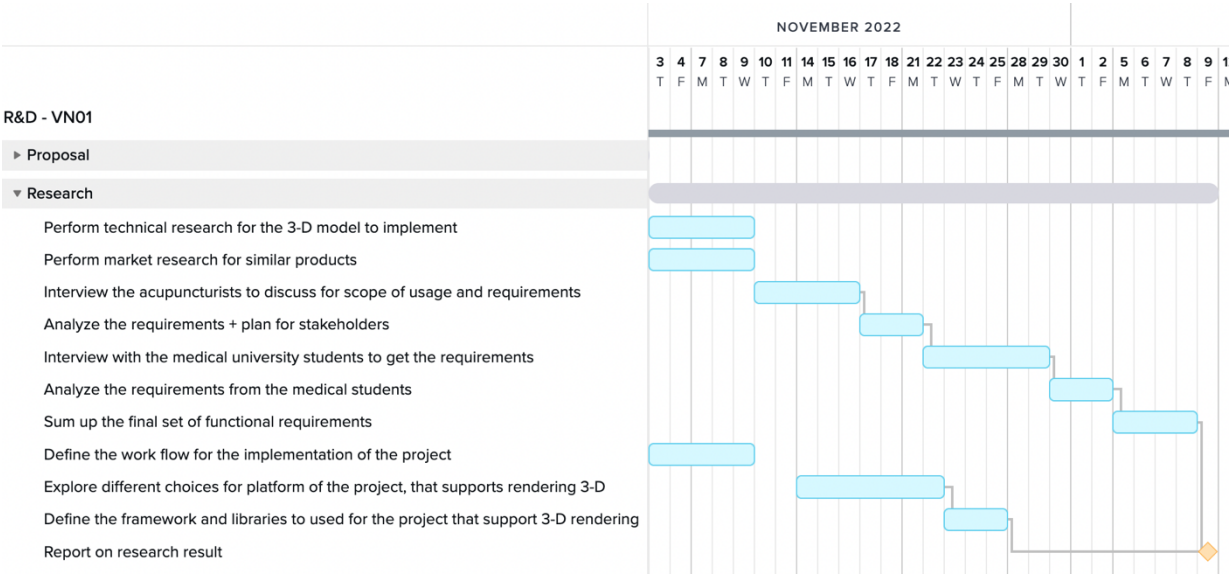


Figure 3 - Gantt Chart (Phase 2)

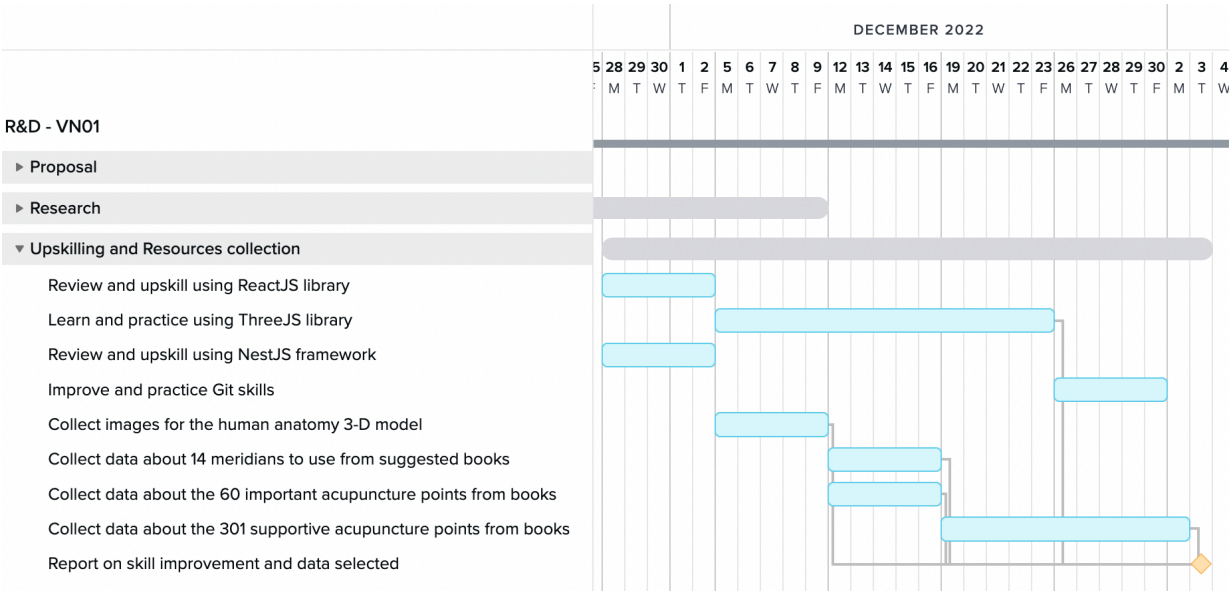


Figure 4 - Gantt Chart (Phase 3)

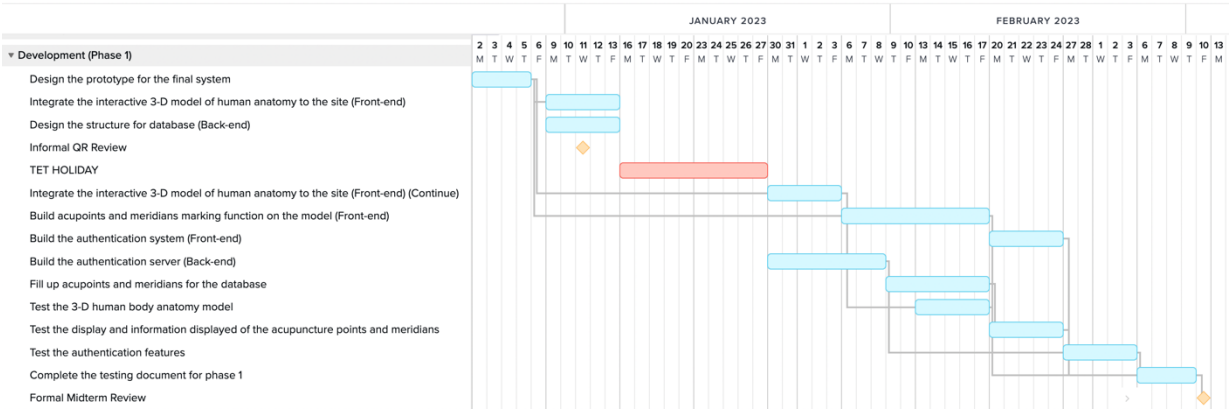


Figure 5 - Gantt Chart (Phase 4)

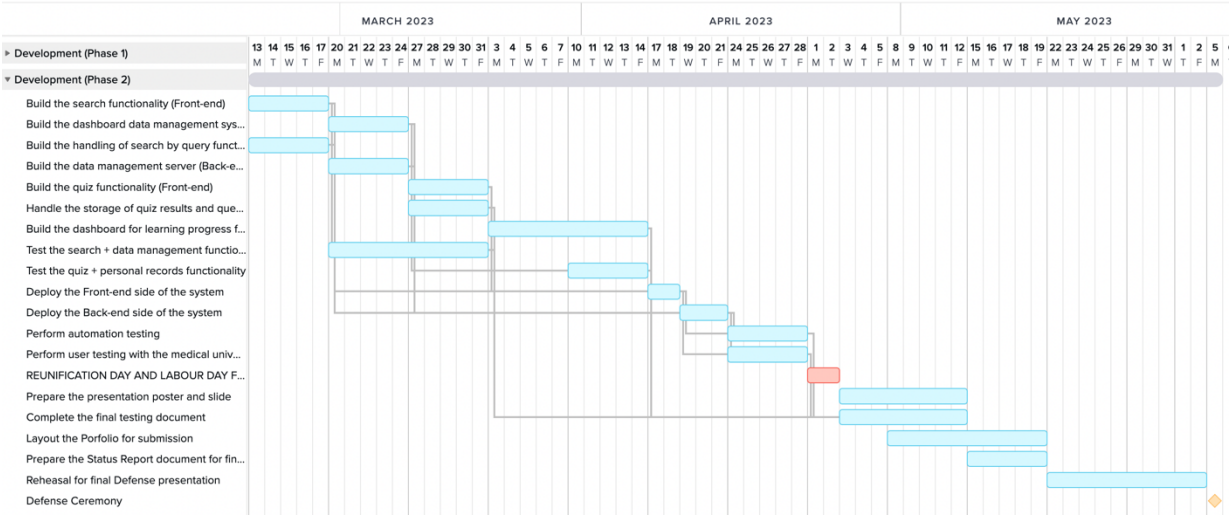


Figure 6 - Gantt Chart (Phase 5)

V. PROJECT CONSIDERATIONS

V.1. ESTIMATED COST

In actual, our project has no fundings, after the first meeting for discussing with our Client. So in general, our estimation for the cost of the project is 0$.

However, as a method to practice estimating real cost for project, which could be a vital task involved in the work flow of our future career, we listed out some of the items that could make up the total estimated cost for the project, if it was funded.

Table 2 – Project Estimated Costs

Element	Unit cost	Total cost
Transport	50$ / member	200$ (4 members)
Academic material (research articles, papers, etc.)	1.5$ / private paper	75$ (est. 50 private papers)
Supplies (Stationaries, Printing, etc.)	20$	20$
Salaries	100$ / month / member	2,800$ (est. 7 months, for 4 members)
Infrastructure (3rd party services, hosts, platforms, domain, etc.)	150$	150$
3-D model of human body anatomy	100$	100$
Mentor's hour	142$ / hour	7,952$ (2 hours/week, est. 7 months)
Utility consumption (electricity, water, etc.)	Free	Free
Interview and experience acupuncture treatment for further information collection	10$ / treatment of 1 hour	800$ (4 team members + supervisor, each target 5 acupuncturists and participate in 4 treatment for each, one of which lasts for about 1 hour)
Total		**12,097$**

V.2. PROJECT CONSTRAINTS

Some basic constraints for this Research & Development project include:

- **Fixed duration of the Project**: The project must followed the timeline defined by paper of COMP704 – Research & Development Project. Because of that, the plan and scope of the project should be planned in association with this, make sure that there would be no conflicts.
- **No fundings for the Project**: All required assets, services and platforms for the implementation throughout the Project cycle should be based on free plan or tier provided for students. The project should be constrained to the budget of 0$.
- **Client & Users satisfaction**: Features should be developed with frequent updates to Client and the Target Users (Medical University Students), to make sure that the satisfaction level of both parties during the implementation of the project is maintained.

V.3. PROJECT RISKS

Table 3 - Project Risk and Response Plan

Risk ID	Risk Description	Risk Likelihood	Risk Impact	Preventative Actions	Mitigation Actions
1	Scope and requirements mismatch	3 – Medium	4 – High	Discuss and understand the requirements with the client clearly at the initial meetings Continuously verify the requirements during the sprints	Contact the client to verify the requirements again and make changes to the following sprints
2	Scheduling problem: conflicts in the schedule between the project implementation and the school schedule	3 – Medium	3 – Medium	Divide the working time for each week for both: school works and the R&D project Consider the schedule of school tasks, and exams when planning the sprints the for R&D project	Reorganize and replan the process, prioritize the tasks based on the allocated time for the R&D project
3	Illness problem: team member(s) are infected with diseases and have to pause the assigned tasks for some time	2 – Low	4 – High	None (considered emergency)	Select the critical tasks from the infected member(s) and divide them among the others, the remaining tasks will be pushed to a later sprint, when the infected member(s) has recovered.
4	Tools problem: deprecated library or service run out	3 – Medium	4 - High	Select multiple alternatives at the beginning to swap in case of depreciation.	Move to the prepared alternative libraries and services. Re-plan the sprints, including reperforming the tasks affected by the problem

5	Communication problem: lost contact with the client	4 – High	5 – Critical	None (considered emergency)	Note multiple contact gateways to be able to reach the client if the main contact method is inaccessible. Prepare an alternate plan of how to proceed with the project during the period of not being able to contact the client.
6	Skills problem: lack of required skills or skill levels to perform a task	3 – Medium	4 – High	Plan at the first step set of tools and skills used during the project, to come up with an early plan for upskilling. Prioritize tools that are more familiar during the	Consider moving temporarily to a more familiar tool, and discuss with the client to reduce the scope based on the range of the new tool.
7	Members drop out: a member withdraws from continuing with the project	1 – Very low	5 – Critical	During the sprints, the team should discuss risks that may happen during the next sprints, especially emphasizing the intention of withdrawal to be able to early prepare if there exists the probability.	Redefine the scope and requirements of the project, and reduce and modify to match the new team size. Discuss with the client immediately about the new set of requirements and scope, mentioning the reduction in team size.
8	Schedule problem: team member(s) failed to catch up with the planned schedule	4 – High	4 – High	Keep track of each member's progress and identify the failure to catch up with the schedule early	Help the team member(s) to resolve any problems existing, and note the strong and weak points for better task division during the later sprints.

VI. CONCLUSION

With all of the information provided in this document of Project Charter, our team agreed that the Project is in ready state to be kicked off. Further analysis is required during the implementation of the project, but the project basically fulfilled all minimum requirements, with detailed plans and considerations of related parties evaluated carefully. Therefore, our team concluded that our Research & Development Project is ready for kick-off.