MONASH University
Information Technology

FIT5057 Assignment 2B: Project Plan Report

MONASH University
Information Technology

Cover Sheet

Tutorial Class ID, Day/Time:	< Tue. 16:00-18:00>
MS Team Group Number:	< 17 >

Student ID	Surname	Other Name/s
30838932	Fu	Yeh / Michael
31074960	Wang	Ke
31383033	Winnett	Claire Louise
29964903	Etyeku	Ronald

Executive Summary

Before planning the project, we first explore the project management methodology and the project governance framework that best fit our project based on academic literature. We then set up the project objectives and constraints to make the process clearer at the later stage. Based on the literature review, we decided to follow the agile approach throughout this software-related project, which gives us more resilience thus better-fit clients' requirements.

To better engage with stakeholders, we prioritized them to make sure we spend time efficiently. As for the human resource management plans, we developed it based on PMBOK (2017) to make sure we hire suitable employees and set them up with standard business induction training. In scope management, we clarified the product scope, work scope, and software requirements. Since we used the agile approach, there will be multiple sprints for each software product to better match the requirement and cope with any change of the project scope. Following this is schedule management, we put a high-level Gantt chart as the reference of the critical path. With these two elements, the project manager can monitor the process and pay more attention to the elements within the critical path so that the risk of project delay can be mitigated. Our budget plan follows the structures of all other management plans in this report to ensure our budget estimate is accurate enough. In addition, we have a risk reserve to increase the tolerance of unknown issues during the project. With respect to the risk management plan, we registered the identified risks onto the risk dashboard and visualized the risk severity so that the manager can recognize and pay more attention to the more urgent risks.

Most importantly, we specified change management plans for some sub-plan (scope, schedule, risk, and budget) in the project that help align existing resources within the organization. Moreover, it allows for implementing changes without negatively affecting the day to day running of the project. Therefore, the time needed to implement changes, and the possibility of unsuccessful changes are reduced.

In conclusion, the agile execution plans and change management approaches allow the project team to respond faster to clients' demands. Hence, the probability of big issues can be minimized and there will be more spaces for opportunities that could benefit the projects.

TABLE OF CONTENTS

The MoCAS Project Plan Report

1 Report Purpose & Planning Scope

In this project report, we revise the details of the previous plan to the MoCAS project after new requirements have been proposed. Based on the first baseline project plan, we have added details around the interaction between the national data warehouse and the Australia Genomics Patient Archive Platform system. Thus, updating the original project planning to meet the scope change. This project plan report contains 5 major sub-plans that encompass the PMBOK (2017) knowledge areas of human resource, stakeholders, scope, schedule, budget, and risk management.

2 Part 1 – The Underlying PM Concepts

2.1 Project Plan Sections

Our project plan report contains 5 major sub-plans which encompass the PMBOK (2017) knowledge areas of human resource, stakeholders, scope, schedule, budget, and risk management.

Our People Management Plan contains information relating to 2 PMBOK knowledge areas – human resource and, more predominantly in this report, stakeholders. In this section we define what is meant by stakeholder, create a data analysis table, use data representation (via power/influence grid) and a salience model to better understand the relevant stakeholders to our project. We then list our stakeholder engagement plan, with a breakdown of what elements are important to each shareholder and how best to communicate with them. By understanding these elements, we are better equipped to communicate effectively with our stakeholders and how to manage their expectations effectively. As found by Beringer et al. (2013), both research and practice show that stakeholders that have influence on projects play a key role in the successful management of projects (Aaltonen, 2011; Assundani & Kloppenborg, 2010; Wang & Huang, 2006). Many scholars also cite that stakeholder management and performance are strongly related (Donaldson & Preston, 1995), and that as their interests may be affected by projects and project outcomes, it is crucial to ensure that stakeholders are being communicated with and that project managers work with stakeholders to meet their needs and expectations. The importance of this is reflected in some definitions of project success (Freeman et al., 2007; Turner, 2009). In the latter sections of our People Management Plan, we also discuss our team's human resource plans which entails the recruitment, selection and training of the necessary personnel for the team. Training in project management is an essential task to aid the success of a project, the importance of which being cited by numerous scholars (Barker et al., 1988; Belout, 1998; Thamhain, 1991). Success in projects and organisations cannot be obtained without qualified and motivated staff, and Hubbard (1990) emphasises that major project failures are usually due to sociological issues such as employing unqualified staff, inexperienced managers, giving/receiving inadequate training, etc. Thus, the selection, training and personal development of staff also plays an important role in the smooth progression of a project.

Our Scope Management Plan covers the knowledge area of scope, utilising a Business Process Model and Notation (BPMN) conceptual process model, an entity class data model, and Agile System Development Life Cycle (SDLC) methodologies. A properly defined and managed scope leads to delivering a quality product, with lack of understanding or definition of project and product scope being cited as one of the biggest contributions to project failures (Mirza et al., 2013). Scope itself refers to all the required work needed to complete a project successfully. In project management, there is reference to both product and project scope. Product scope and project scope may have different needs, goals, objectives, and stakeholders. Mizra et al. summarises the differences between the two scopes as:

> "While the product will be driven by the project scope, there will be other drivers as well. A project scope deals with the required work to create the project deliverables. The scope of the project is specific to the work required to complete the project objectives. A product scope, on the other hand, is the attributes and characteristics of the deliverables in the project creation. The product scope is measured against requirements, while the project scope is measured against the project plan." (Mizra et al., 2013)

In our scope management plan, we also identify the functional and non-functional makeup of our product, present a Requirement Traceability Matrix to enhance the scope management process, and Work Breakdown Structure (WBS).

Our Schedule Management Plan covers the knowledge area of Time, outlining how and when our project will deliver the products, services and results defined in our project scope (PMBOK, 2017). Having a finite time is what Atkinson (1999) states could possibly be what "differentiates project management from most other types of management". We can utilise the WBS, which will act as a backbone to the schedule, as well as show the progress of the project whilst we are in the execution stage (Kuehn, 2010). This section of our report also contains a Program Evaluation and Review Technique (PERT) Network Diagram – a graphic representation of a project's tasks in the form of a timeline. It is an essential tool which helps to calculate buffer times for every activity (Pozewaunig et al., 1997). From this, we create the Critical Path, and our GANTT Chart.

Our Budget Management Plan covers the knowledge area of Cost, defined in PMBOK (2017) as payment for work done or acquiring a resource. For this project, our WBS becomes a dual-purpose tool, utilising for both the financial and operational hierarchy of our project. We define how project costs are estimated and budgeted, and how they will be managed, monitored, and controlled. By maintaining cost there will be improved efficiency at an organisational level, and more satisfied users at the stakeholder community level (Atkinson, 1999).

Our Risk Management Plan covers the knowledge area of Risk, where we define and determine which risks may affect our project, and document the individual characteristics of each (PMBOK, 2017). We have utilised the risk probability and impact assessment, through a PESTLE analysis approach, stated the estimated probability of each as well as their potential impacts to the project. Risk response and delegation arrangements have also been described to help monitor and mitigate any potential risk occurrences via a live risk register dashboard. We have also defined the elements that will be captured via the risk register dashboard and database system. Risk management is a key management process that accompanies the

project from its initiation through the planning, execution, monitoring and controlling phases, up to its completion and closure (Raz & Michael, 2001).

A table summary of the sub-plans and their relevant knowledge areas can be seen in Table 1 below.

Table 1: *Summary of Sub-Plans, Knowledge Areas, Purpose, Methods & Techniques Applied*

Project Plan	Definition (PMBOK))	Purpose (Why)	Methods & Techniques Applied
People Management Plan (Stakeholder + Human Resource)	Identifying individuals or groups who are impacted by or can impact the project in positive or negative ways, and their expectations (stakeholder) + recruitment, selection and training of team members (human resource)	- Better equipped to communicate efficiently with stakeholders (who can influence our project) - Able to effectively manage stakeholder's expectations - Successful projects need qualified and motivated staff (HR)	- Data Analysis - Data Representation - Salience Model
Scope Management Plan (Scope)	Ensuring all the work required, and only the work required, needed to complete a project successfully is accomplished	- Establishes control factors which allow managers to stay on track - Helps to avoid common issues such as constantly changing requirements, exceeding budget, missing project deadlines, unexpected final outcome, etc	- BPMN Conceptual Process Model - Entity Class Data Model - Agile SDLC Methodologies
Schedule Management Plan (Time)	How and when our project will deliver the products, services and results defined in the project scope - the timely completion of the project	- Deviation from schedule can impact on cost and scope - Effective time management can reduce increase of stress and frustration in project managers and team members	- PERT Network Diagram - Critical Path Method -Gantt chart
Budget Management Plan (Cost)	Planning, estimating, budgeting, financing, funding, managing, and controlling costs so that the project can be completed within the approved budget	- All projects start with a budget and their success can be based on how they manage it - If Project Cost exceeds Project Profit, can be considered a project failure	- Bottom-up Estimation Method - Parametric Estimation Method
Risk Management Plan (Risk)	Identifying and analysing which risks may affect the project, and planning responses and control methods for potential risks	- Ready to response to unexpected events if they arise - Identifying, mitigating, or avoiding problems plays a key role in the overall success of a project	- Risk Probability and Impact Assessment - Strategies for Negative Risks or Threats

2.2 Project Integration Overview

2.2.1 Project Integration Definition

The concept of integration is present in many different fields today, appearing in numerous forms in areas such as business, programming, psychology, mathematics, and so on. A general definition of 'integration' provided by Webster's revised unabridged dictionary (1913) can be found as "Integration is the act or process of making something whole and entire". Furthermore, Kirsilä et al. (2007) finds that similar words to integration found in academic literature are unite, combine, organise, systematise – thus showing integration to mean "bringing or joining together a number of distinct things so that they move, operate and function as a harmonious, optimal unit".

According to PMBOK (2017), Project Integration relates to identifying, defining, combining, unifying, and coordinating the multiple processes and activities within the Project Management Process Groups – Initiating, Planning, Executing, Monitoring and Controlling, and Closing. It is one of the ten orthogonal knowledge areas for project management, with an emphasis on planning and change control. Stuckenbruck (1988) states that project integration is related to "the essence of management-coordination, or the purpose of management is the achievement of harmony of individual effort toward the accomplishment of group goals", calling on the ideas of Koontz & O'Donnell (1972).

Although projects may vary in size, urgency, and complexity, one key common factor in all projects is that they must be integrated (Struckenbruck, 1988). Project Integration Management is the cooperative effort to coordinate changes across all knowledge areas, including addressing any organisation change management issues since this area drives project scope, schedule, cost, quality, risk, and procurement (Hornstein, 2015). It consists of project plan development, project execution, and integrated change control (Kirsilä et al., 2007).

Managers are to look at all the processes that are being utilised within a project and ensure they are coordinated with each other. This can be done through making trade-offs and decisions around resource allocation (PMBOK, 2017). An overview of the processes (Figure 1) found in Project Integration Management as explained by PMBOK is:

> "1. Developing Project Charter—The process of developing a document that formally authorizes the existence of a project and provides the project manager with the authority to apply organizational resources to project activities.
>
> 2. Develop Project Management Plan—The process of defining, preparing, and coordinating all subsidiary plans and integrating them into a comprehensive project management plan. The project's integrated baselines and subsidiary plans may be included within the project management plan.
>
> 3. Direct and Manage Project Work—The process of leading and performing the work defined in the project management plan and implementing approved changes to achieve the project's objectives.
>
> 4. Monitor and Control Project Work—The process of tracking, reviewing, and reporting project progress against the performance objectives defined in the project management plan

5. Perform Integrated Change Control—The process of reviewing all change requests; approving changes and managing changes to deliverables, organizational process assets, project documents, and the project management plan; and communicating their disposition.

6. Close Project or Phase—The process of finalizing all activities across all of the Project Management Process Groups to formally complete the phase or project."

(PMBOK, 2017)

Figure 1. Project Integration Management Overview. Source: PMBOK, 2017, p. 65.

These processes, phases and each of their key deliverables can be seen simplified and summarised in Table 2 below.

Table 2: *Project Integration Management Summarised*

Process	Project Phase	Key Deliverables
Develop Project Charter	Initiating	- Project Charter
Develop Project Management Plan	Planning	- Project Management Plan
Direct and Manage Project Work	Execution	- Deliverables
Monitor and Control Project Work	Monitoring and Control	- Change Requests
Perform Integrated Change Control	Monitoring and Control	- Change Requests - Status Updates
Close Project or Phase	Closure	- Final Product

2.2.2 Data Integration Overview

Many of the different knowledge areas have the potential to or commonly do overlap with each other. A basic example of this would be analysing the Triple Constraint (please see Figure 2), the iron triangle of Time, Cost, and Scope. Balancing the triple constraint is key during the initiation and planning process of a project (Kuehn, 2010).

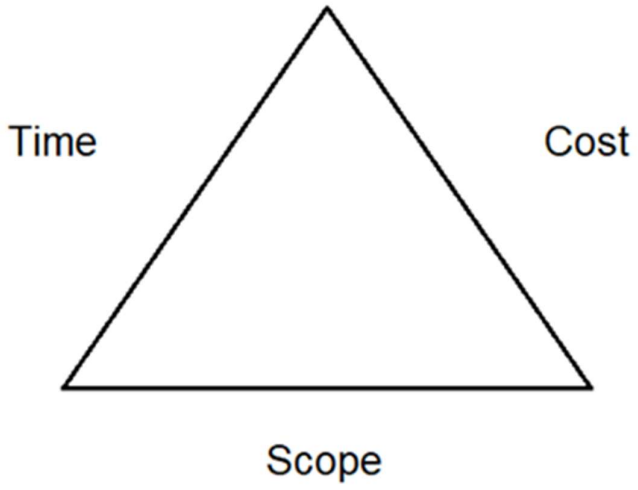

Figure 2. The Triple Constraint.

Adjustment on one of these three components can affect another or both other components. For example, increasing time may cause the increase of cost and even scope. Whereas reducing scope may reduce time and cost. However, the actual effect these adjustments will depend on the status and situation of the specific project. Kuehn (2010) has stated that "controlling the cost and schedule of a project is an integrated process of balancing the scope to the budget over the time", further emphasising the connection and overlap between these knowledge areas.

Delving further into time management, the construction of a schedule revolves around a proper approach to how it is developed, starting from the development of the WBS. When the WBS has not been properly established, it can affect the layout of the schedule. Conversely, if the WBS is developed well it acts as a backbone for a proper and well-organized schedule (Jones, 2009). The critical path method also acts as a framework to analyse the trade-off

between time and cost. However, the quality of the final product may be affected by attempting to 'crash' the completion time (Kerzner, 2017; Badiru & Pulat, 1995). The terms 'quality' and 'resources' are noted as being linked to the balancing act of the triple constraint (Kuehn, 2010). As seen in Khang & Myint's (1999) research case study, a three inter-related linear programming model developed by Babu & Suresh (1996) was utilised to help the management of the integration and connectedness of these three areas – the project cost, the quality measure, and the project completion time. In this study, Khang & Myint (1999) found that this model was able to provide insightful information that could aid managers in making trade-off decisions.

Moving into the knowledge area of cost, whilst planning cost management, project managers may create a Project Cost Breakdown Structure (CBS) to represent the costs of the components shown in the WBS. For projects without a CBS, the WBS is utilised as a dual-purpose tool (PMBOK, 2017). As projects frequently suffer from the planning fallacy phenomenon – that is, the estimation around the time it would take to accomplish a task (as well as resource, cost and performance) display an optimism bias, thus underestimating the actual time, cost and resources needed – it affects not only the time but also can result into extra costs that were not originally budgeted for (Meyer, 2016). Hence, it is paramount that the WBS is broken down properly to show the true size of work involved, as it has the potential to crossover and affect other non-scope-related areas (i.e. time and cost). The WBS is one of the most important project management tools, singlehandedly integrating scope, cost, and time baselines to ensure that project plans are in alignment.

Furthermore, it is not only the WBS within scope that has the capacity to impact other knowledge areas. The use of the RTM can enhance and smoothen the scope management process, but it is also noted to assist with quality management. As stated by Requirements Traceability Matrix – RTM (2018), it is the process of "documenting the connection and relationships between the initial requirements of the project and the final product or service produced".

2.3 Overview of standards applied in your project management

PMBOK (2017) defines an extensive set of project management tools and techniques (i.e. practices) that are seen to be valuable and applicable many projects (Besner & Hobbs, 2006). However, it is necessary for the project manager to be able to adapt practice to the situation by correctly utilising appropriate tools and techniques in the differing contexts. Common practice standards that support project planning include critical paths such as Gantt charts, PERT charts, and the creation of timelines (Jones, 2004). Besner & Hobbs conducted a survey focusing on project management practice standards with over 750 experience project practitioners, over 50% of whom were project managers, regarding the regular use of each standard. The survey results can be seen in Figure 3 below.

From Limited to Extensive Use	From Very Limited to Limited Use	Less Than Very Limited Use
Progress report	Contingency plans	Life cycle cost (LCC)
Kick-off meeting	Re-baselining	Database of contractual commitment data
PM software for task scheduling	Cost/benefit analysis	Probabilistic duration estimate (PERT)
Gantt chart	Critical path method and analysis	Quality function deployment
Scope statement	Bottom-up estimating	Value analysis
Milestone planning	Team member performance appraisal	Database of risks
Change request	Team-building event	Trend chart or S-curve
Requirements analysis	Work authorization	Control charts
Work breakdown structure	Self-directed work teams	Decision tree
Statement of work	Ranking of risks	Cause and effect diagram
Activity list	Financial measurement tools	Critical chain method and analysis
PM software for monitoring of schedule	Quality plan	Pareto diagram
Lesson learned/post-mortem	Bid documents	PM software for simulation
Baseline plan	Feasibility study	Monte-Carlo analysis
Client acceptance form	Configuration review	
Quality inspection	Stakeholders analysis	
PM software for resources scheduling	PM software for resources leveling	
Project charter	PM software for monitoring of cost	
Responsibility assignment matrix	Network diagram	
Customer satisfaction surveys	Project communication room (war room)	
Communication plan	Project Web site	
Top-down estimating	Bid/seller evaluation	
Risk management documents	Database of historical data	
	PM software multiproject scheduling/leveling	
	Earned value	
	PM software for cost estimating	
	Database for cost estimating	
	Database of lessons learned	
	Product breakdown structure	
	Bidders conferences	
	Learning curve	
	Parametric estimating	
	Graphic presentation of risk information	

Figure 3. 70 Project Management Tools and Techniques in Decreasing Order of Average Use. Source: Besner & Hobbs, 2006.

Respondents to the survey were also asked in which phases of the project would these standards be most involved in, and many indicated more than one process phase. Planning/Development ranked the highest with 83% of respondents indicating this was the phase with a high level of tool and technique utilisation. Following this was the Execution/Implementation process with 77%; then the Closure process with 54%; and finally, the Initiation process with 52%. Note that Monitoring/Controlling was not a given option for this survey but could have thought to have been closely linked to the Execution/Implementation process potentially.

Following the idea of good practices, Salapatas (2000) list nine elements are being the "best practices" necessary for successful project implementation. He lists nine elements defined by Salapatas (2000) can be seen in Figure 4 below.

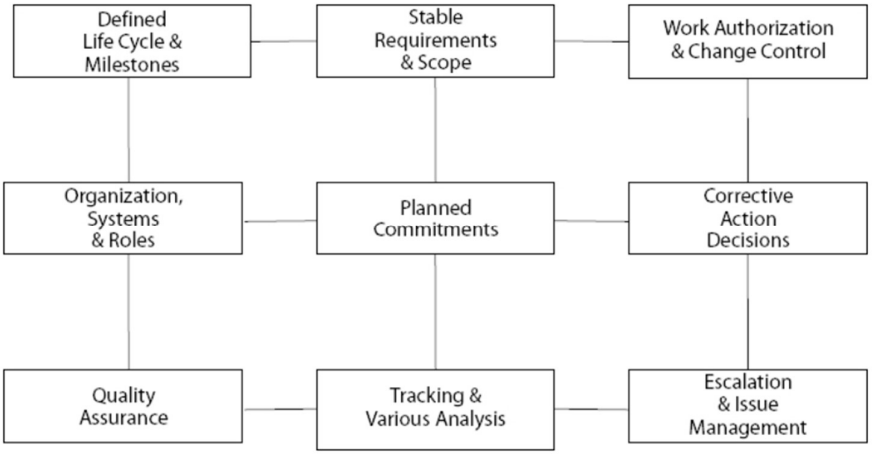

Figure 4. Nine Elements to Success. Source: Salapatas, 2000.

We can draw out common tools between these two sources and find which are most relevant to our specific project – thus finding the "best" practice standards to support our project planning.

The Work Breakdown Structure will play a strong role in our project planning, most notably as we will be without a CBS, the WBS will need to play a dual function in our project planning. Both Salapatas (2000) and Besner & Hobbs (2006) list this as one of the key tools in project planning, with the former categorising it under the element of 'Stable Requirements & Scope', and the latter listing it as one of the top seven tools that appeared in both the list of most often used tools and the list of tools with the "greatest potential to contribute to improved project performance".

The Gantt chart can also be seen as a key tool in our project planning, also being noted by both sources as being highly utilised and recognised as a good performing practice – Salapatas (2000) notes the use of the scheduling resources under his 'Planned Commitments' element.

A Communication Plan is also a vital aspect within our project planning, Salapatas (2000) listing its use under the 'Organisation, Systems & Roles' element, and Besner & Hobbs' (2006) survey results showing it to be in the highest category of use as selected by project management professionals.

3 Part 2 – A Project Plan for Monash University

3.1 Project term of reference

3.1.1 The MoCAS case summary

The Australian CovidSafe app is a COVID-19 tracing phone-app to record the user's contact with other users through a digital handshake. When the user has a positive test result for COVID-19, the user will be asked to consent to upload the digital handshake information to the National COVIDSafe Data Store. The user's close contacts will be traced and informed about what to do. (COVIDSafe app, 2020)

However, the current CovidSafe app does not include data analysis function. In order to generate standard reports for a better data analysis purpose, the MoCAS project is expected to expand the current functions of the CovidSafe app and extract data from the CovidSafe app database. A new data warehouse will be created to store the de-identified COVID-19 test data to allow desktop end-users on different computing platforms to generate analysis reports. The information exchanges from all states and end-users are real-time.

Moreover, the Australian Genomics Patient Archive Platform requires the identifiable patient records and test results data to assist in COVID-19 tracing for states. Therefore, the MoCAS project needs to provide a proper solution to transfer the data to this national genomics database and protect the sensitive data from being exposed to cybersecurity risks.

3.1.2 The PM Methodology

According to the PMBOK (2017), project management methodology is a system of practices, techniques, procedures, and rules used on a project. Based on this definition, project management methodology provides the project manager a standard framework to follow when conducting project management.

Charvat (2003) defines project management methodology as a set of guidelines and principles which can be tailored and applied to a specific situation. The guidelines could be a task list or some defined tools and techniques to project. Therefore, the guidelines and principles will vary from different projects and can be adjusted to fit in specific conditions.

Similarly, according to the definition from Introna & Whiley (1997), project management methodology is a structured set of techniques and tools that can be used to solve specific problems. This definition indicates the goal of applying project management methodology is to solve the project's issues and increase the probability of successful delivery. It also corresponds to another comprehensive explanation from Cockburn (2003). He defines the project management methodology as any principle the project team can rely on to deliver project results successfully.

To summarise, project management methodology is a set of methods, procedures, rules, and templates used on a project to achieve the project's success. This project report will apply the agile software development methodology with the framework and templates from PMBOK as the project management approach.

3.1.3 Project Governance Framework

According to Volden & Andersen (2018), Project Governance refers to the processes, systems, and regulations that the project owners must have in place to ensure that relevant and sustainable project alternatives are chosen and delivered efficiently. Therefore, it is a system of appropriate checks and balances that enables transparency, accountability, and defined roles in the project as well as supports project managers in delivering their objectives. We developed a diagram below that specifies the project governance types and their purposes based on the information from Alie (2015).

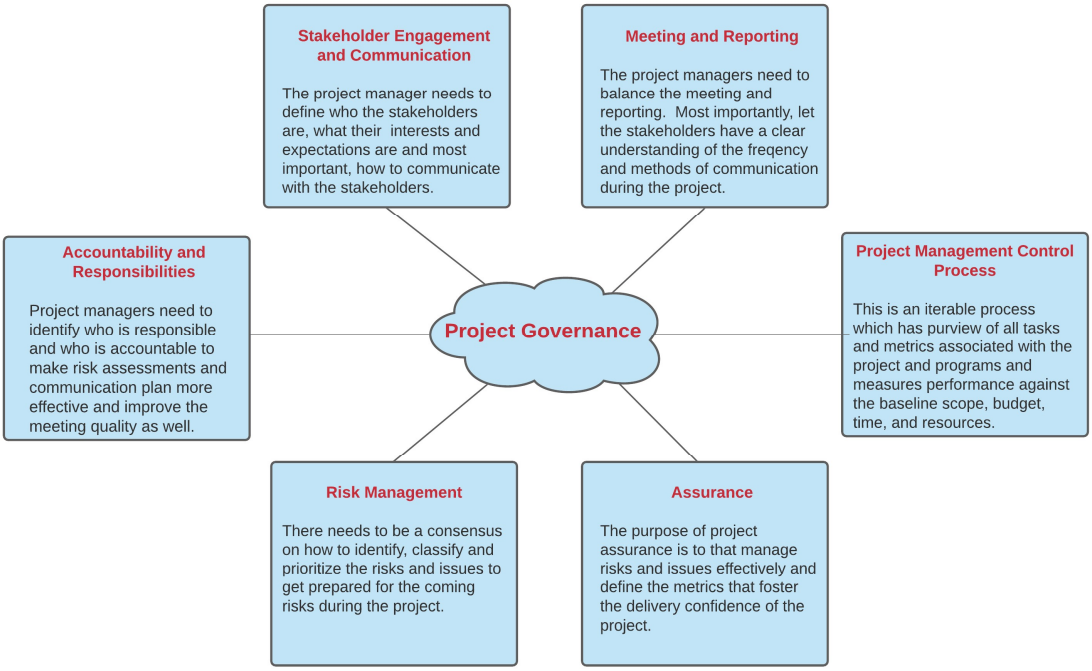

Figure 5. Project Governance Types and Purposes

With the knowledge from the diagram above, we further developed a project governance framework below to support our definitions.

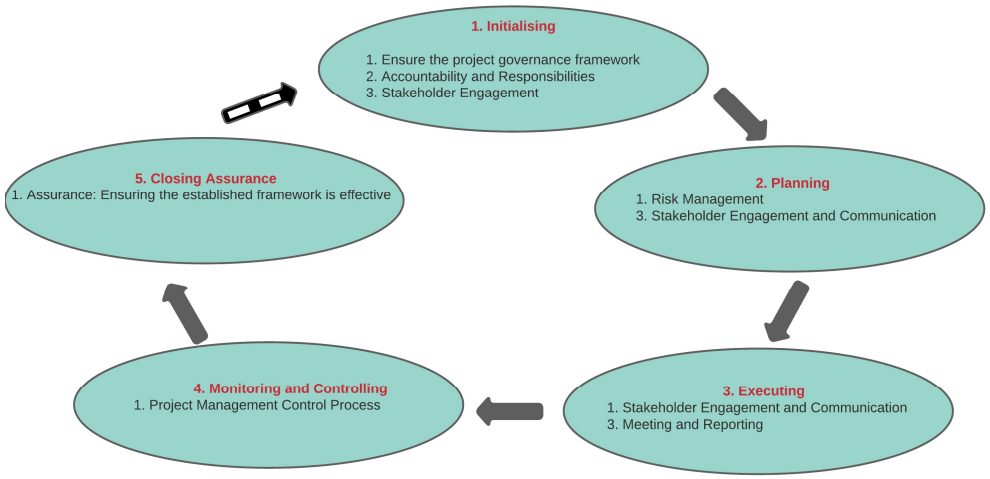

Figure 6. Project Governance Framework

As can be seen in the diagram, we used an iterative project governance framework to optimize the flexibility during the project. There are five steps in total, and we specified the tasks to be done under each step. During the last step, closing assurance, we review our management framework based on the current project situation then made necessary changes during the next cycle.

3.2 Project Team Structure.

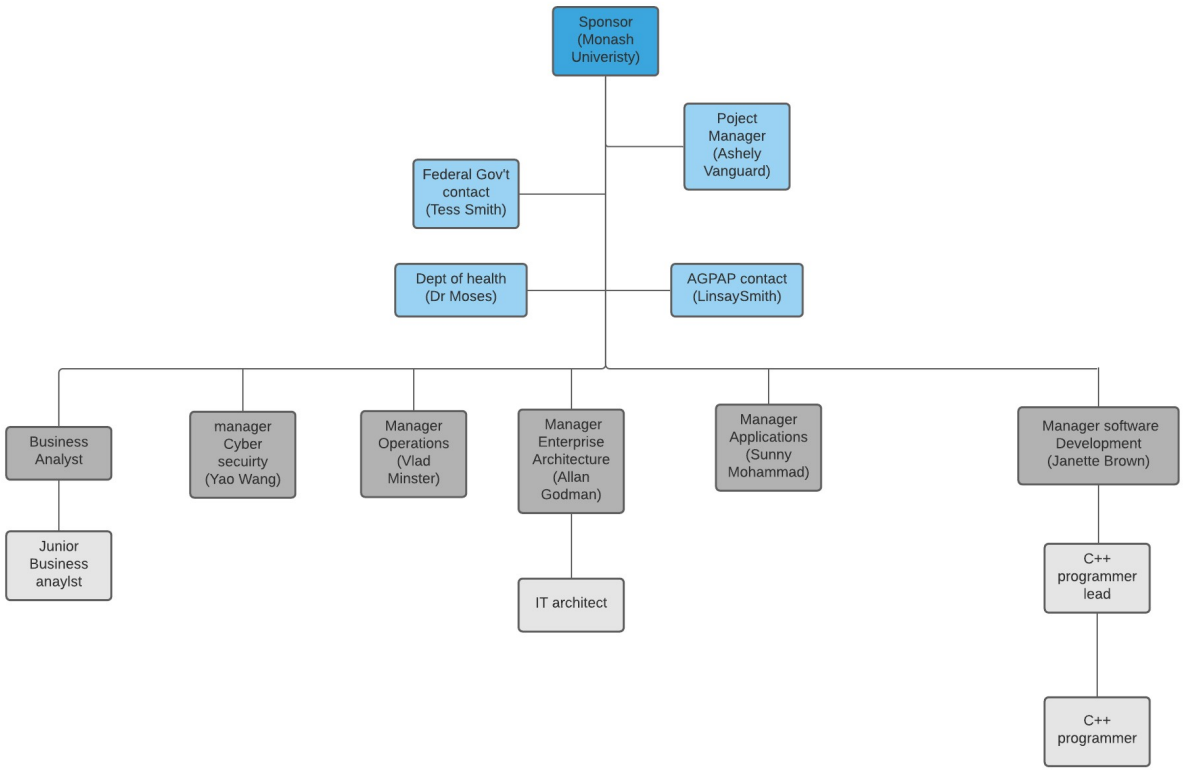

Figure 7. Project Team Structure

In the organisation structure, all team members have a role and responsibilities, and in order to achieve the overall goal of the project, the project manager needs to consider some design principles in order to structure a team that will deliver.

Work specialization is always the first element that decides who is suitable to join the team, and clearly states all the work specializations of the different members on the structure.

Departmentalization and compartments, often team members are grouped according to categories such as functional and non-functional in software design this helps place team members in their respective departments that always have a head of the department that manages them.

Chain of command is usually illustrating who reports to who in an organization in a hierarchical structure.

The span of control usually considers the capacity of the team members based on the chain of command, for example, the managers who oversee their juniors and supervise them.

3.3 Project Objective/s & Business Constraints

Business Objectives

In our case, the main goal of the project is to expand the current capabilities of the Australian Federal Government's Covidsafe app to enable real time extraction of de-identified data to enable more efficient contact tracing and curb the spread of Covid-19, the Federal Government also requires identified patients data to be moved to the national genomics database and cyber security measures implemented to safeguard the data. Goals tell the story of where you are going. Objectives are the plan you put in place to make sure you get to your goal. Each objective should be clear and measurable so the project team can track the process and make changes where appropriate during the development (Wakeman, 2017). Based on the given goal above, we set up six main objectives for our project as listed below.

1. Product 1 - Data out to new national data warehouse
2. Product 2 - New national data warehouse with identifiable patient's data
3. Product 3 - Data out to application software and Australian Genomics Patient Archive Platform
4. Product 4 - Desktop application and SPSS statistics software on different computing platforms
5. Testing Sign-off
6. Implementation Sign-off

Software developing companies face challenges to remain competitive in their business market, and that depends, amongst other issues, on their commitment to satisfy customers (Pedroso & de Oliveira, 2013). Therefore, we identified six trackable steps during the project to make the project easier to monitor by managers. The project managers can discuss with the clients based on these business objectives and adjust according to clients' needs.

Business Constraints

1. Business time to market deadlines: The deadline is 29/12/20 according to the Gantt chart indicated in section 3.6.5
2. Budget limits: Total budget is $469,623 (including reserve and allowance) as specified in section 3.7.3 and 3.7.4
3. Freedom of recruitment: Can recruit new team members based on the recruitment plan specified in section 3.4.6.1

3.4 People Management Plans

3.4.1 Planning Assumptions, Constraints & Dependencies

Resource Assumptions:

1. The project teams within the project have all the access including human and material to complete their parts of the work.
2. All the project team members will have enough hardware and software resources to finish their jobs on time.
3. The workers can access all the data needed when retrieving the data.
4. The sponsors will finance the project as expected.

Budget Assumptions:

1. Regular personnel costs will remain the same throughout the project.
2. The hardware and the software cost will remain the same throughout the project.
3. All the hardware will work normally throughout the project.
4. The average daily cost of the project will not change.

Scope Assumptions:

1. The scope of the project will remain the same throughout the whole life cycle.

Constraints：

1. There could be a limited budget to work with to successfully complete the project.
2. The project could overlap the time designated for project closure.
3. There could be a shortage of resources to successfully complete the project.

Dependencies：

1. The software development team can only start doing the implementation after the technical requirements are finished by the department of health.
2. The software development team can only start doing the cyber security implementation after the requirements are finished by the cyber security lead in Monash University.

3.4.2 Methods & Techniques Applied

1. **Data Analysis:** Created a table containing the information such as positions in the organization, roles on the project, "stakes," expectations, attitudes (their levels of support for the project).
2. **Data Representation:** In this case, the power/influence grid is included.
3. **Salience Model**

3.4.3 Stakeholder Analysis

Definition of stakeholder: According to PMBOK (2017), a stakeholder is the one who is impacted by or can impact the project in a positive or negative way. A stakeholder may have strong or limited ability to influence the project's work or outcomes. Traditionally, the stakeholders are employees, suppliers, and shareholders within a project. It is now expanded to include groups such as regulators, lobby groups, environmentalists, financial organizations, the media, and those who perceive that they will be affected by the outcome of the project.

Table 3: *Stakeholder Analysis Table*

Stakeholder Name	Position	Responsibility	Contribution
Tess Smith	Federal Govt Contact	The contracted point of contact for the Australian Federal Govt.	Clarify the government requirement for this project
Sunny Mohammad	Monash Uni Applications Manager	Project sponsor for project	Provision of funds

Yao Wang	Monash Uni Cyber security Manager	Monash Uni Cyber security lead who will provide the cyber security requirements	Provision of cyber security requirements
Allan Godman	Monash Uni Enterprise Architect	Responsible for EA role on this project	Provision of human resources that can help with business analysis
Janette Brown	Monash Uni Software Development Manager	Responsible for software development on this project	Implementation of the software and cyber security requirements.
Vlad Minster	Monash Uni IT Operations Manager	Responsible for IT operations at Monash Uni	Provision of technical human resources to help finish the implementation regarding software and cyber security
Dr Moses Tibble	Dept of Health	Responsible for Technical requirements on Covidsafe app reporting project	Provide the technical requirements of the project
Ashley Vanguard	Project Manager	Manage the Mocas project	Manage other project team members to ensure the success of the project
Linsay Smith	AGPAP Contact	Provide requirements for the integration with AGPAP database system.	Clarify the requirements for implementation of new national data warehouse.

We have chosen to do data analysis because it shows us a clear map of who is responsible for what and who is contributing to which parts of the project. Moreover, we put it as the first technique so that we could conduct the data representation based on these basic knowledges. In conclusion, the data analysis helps us have a basic understanding of the stakeholders.

1. **Data representation - Power / Influence Grid**

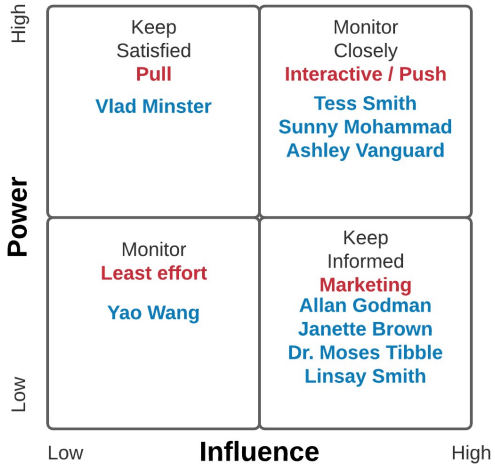

Figure 8. Power/Influence Grid

The reason that we used a power / influence grid is because it helped us analyse the stakeholders deeper based on the knowledge from the data analysis table. Using the power / influence grid, we were able to identify the importance of each stakeholder based on their power and influence on this project.

2. **Salience Model**

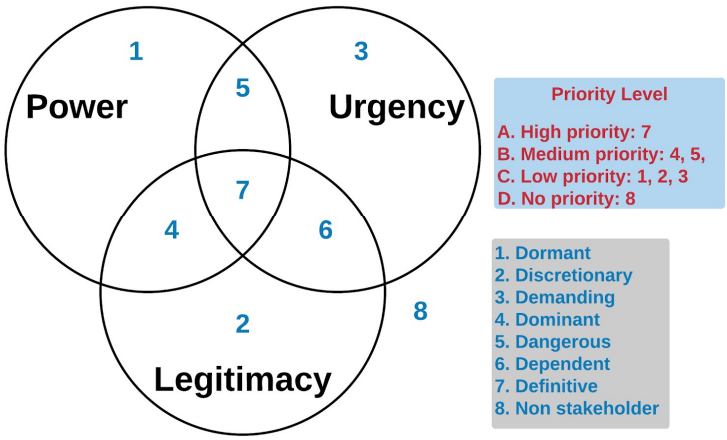

Figure 9. Salience Model

4: Yao Wang

5: Vlad Minster, Ashley Vanguard

6: Allan Godman, Janette Brown, Dr. Moses Tibble, Linsay Smith

7: Tess Smith, Sunny Mohammad

We used a salience model to conclude the priority level for each stakeholder because this model is clear and easy to understand. The salience model helped us recognize who possesses a stake in this project, what kind of stake they possess, and how much attention we should give to their stake.

Stakeholder analysis findings and management approach

According to the stakeholder analysis above, we found out that there are two stakeholders with high priority and six stakeholders with medium priority, and there is no low-priority and non-priority stakeholder in this case. For the stakeholders with high priority, we will prioritize them in the stakeholder engagement plan and communicate with them regularly. For those with medium priority, we will develop the engagement plan based on their responsibility and the current situation of the project. For instance, if we are currently implementing the cyber security requirement parts of the project, we will communicate with Yao Wang more frequently because he is responsible for providing the cybersecurity requirements. Therefore, for the stakeholders with medium priority, whether to communicate regularly with them depends on their responsibility and the current progress of the project.

3.4.4 Stakeholder Engagement Plan

3.4.4.1 Stakeholder Engagement Methodology Overview

At the beginning of planning a stakeholder engagement process, we need a framework to specify and investigate the stakeholders' participation during the project. Take IPA2 as an example, this framework defines different levels of engagement such as "Inform", "Consult", "Involve", "Collaborate", and "Empower". The stakeholders' impact on the decision increases gradually from "Inform" to "Empower". A project manager can build an engagement strategy based on the information from IPA2.

3.4.4.2 Stakeholder Engagement Strategies

According to PMBOK (2017), the stakeholder engagement strategy is a plan that identifies the strategies and actions required to promote productive involvement of stakeholders in decision making and execution. For example, we use columns such as "What is important to stakeholder" and "Engagement & communication methods and timing/frequent use" to figure out what each stakeholder cares about and how to communicate with them. With the engagement plan in hand, we can interact with our stakeholders more effectively, hence, improve the fluency of the project execution.

Table 4: *Stakeholder Engagement Strategies*

Stakeholder Group/individual name	**Contact person & contact details**	**Impact rating (H, M, L)**	**Influence rating (H, M, L)**	**What is important to stakeholder**	**How do Stakeholders contribute to a project?**	**How can the stakeholder block the project?**	**Engagement type (IAP2 Levels)**	**Engagement & communication methods and timing/frequent use**
Tess Smith (Federal Govt Contact)	Tess Smith: tess.smith@vic.gov	H	H	Ensure the applications curb the spreading of the pandemic	Sponsor the project	Terminate the contract, stop sponsoring	Consult	Consult regularly, have consolations
Sunny Mohammad (Monash Uni Applications Manager)	Sunny Mohammad: sunny.mohannad@monash.edu	H	H	Fulfill requirements, and manage budget	Sponsor the project	Terminate sponsorship	Involve	Weekly consultation to track budget
Yao Wang (Monash Uni Cyber security Manager)	Yao Wang: yao.wang@monash.edu	M	M	Security of the application	Implement the non-functional section of the application	Not apply security measures correctly	Consult	Weekly meetings to ensure security guidelines are in place
Allan Godman (Monash University Enterprise Architect)	Allan Godman: allan.godman@monash.edu	M	M	The consistency of the enterprise Architecture	Manages the enterprise Architecture	Bring to light the Consistency And compliance issues.	Involve	Weekly discussions on the direction of the project in terms of compliance with the enterprise architecture
Janette Brown (Monash University Software Development Manager)	Janette Brown: janette.brown@monash.edu	M	H	Software development	For the development of the actual software/application	Stop developing the software.	Involve	Have frequent discussions and meetings with the developing team
Vlad Minster (Monash University IT Operations Manager)	Vlad Minster: vald.minster@monash.edu	H	M	Create data warehouses as well as maintain them	Operations of IT projects	Block access to the data warehouses and infrastructure	Involve	Discussions and meetings regarding the implementations of the software

Dr Moses Tibble (Dept of Health)	Dr Moses Tibble: moses.tibble@healthdept.gov	H	M	How the spread of the pandemic is going to be controlled using the application	Providing technical details and requirements from the health perspective	Not providing the right information regarding the pandemic	Consult	Weekly discussions
Ashley Vanguard (Monash University)	Ashley Vanguard: ashley.vanguard@monash.edu	H	H	The current progress of the project	Manage the Covidsafe App reporting project	Stop monitoring the progress of the project	Involve	Weekly meetings to report the current situation of the project.
Linsay Smith (AGPAP Contact)	Linsay Smith: linsay.smith@agpap.com.au	H	H	Ensure the integration of new national data warehouse and AGPAP database is on the right track	Clarify the requirements for implementation of new national data warehouse.	Not provide the right information for integrating the new national data warehouse with AGPAP database	Consult	Consult regularly when building the new national data warehouse

3.4.5 Stakeholder Communications Plan

stakeholder communication

Ronald Etyeku | October 13, 2020

Stakeholder	Position	Deliverable	Frequency	Owner	Priority	Preferred way to deliver	Notes and attachments
Tess Smith	Federal Govt Contact	Update on the federal Governement requirements	weekly	Monash university	Medium priority	email	updates
Sunny Mohammad	Monash Uni Applications Manager	update/review on the sposorship	weekly	Monash university	Medium priority	confrence call	updates
Yao Wang	Monash Uni Cyber security Manager	update on cyber security requiremnets and control measure	Daily	Monash university	Hgh Priority- must provide report daily	email	updates
Allan Godman	Monash Uni Enterprise Architect	provide sufficient updates on the EA	provide Every 3 days	Monash university	Medium priority	confrence call	updates
Janette Brown	Monash Uni Software Development Manager	update on development of software	Daily	Monash university	Hgh Priority- must provide report daily	confrence call	updates
Vlad Minster	Monash Uni IT Operations Manager	weekly update/review	Daily	Monash university	Hgh Priority- must provide report daily	confrence call	updates
Dr Moses Tibble	Dept of Health	update/review of technical requirements	Twice a week	Monash university	Hgh Priority- must provide report daily	confrence call	updates
Ashley Vanguard	Project Manager	update/review of project progress	Daily	Monash university	Hgh Priority- must provide report daily	confrence call	updates
Linsay Smith	AGPAP Contact	update/review of new genome Dataware house	Twice a week	Monash university	Hgh Priority- must provide report daily	confrence call	updates

Figure 10. Stakeholders Communication Plan

3.4.6 Project Team's HRM Plan

3.4.6.1 Recruitment Plan

IT Project Resources Staffing Plan Worksheet:

Project Title:	**MoCAS**		**Project Number:001**				
Project Leader/ Manager:	Ashley Vanguard		**Anticipated Project Start Date:**	**17/09/2020**			
Project Sponsor:	Monash		**Date Prepared:**	01/09/2020			
Resource Position	**Skill Level or Material Quality**	**Duration Required (Days, Weeks, or Hours)**	**Available Time Periods (Dates)**	**Availability (High, Medium, or Low)**	**Job Description**	**Experience**	**Cost/ Per day**
Business analyst	• Technology • Research • Data Review/Statistical Analysis • Financial Planning • Documentation/Organization • Problem Solving • Decision Making • Managerial Skills • Communication • Negotiation	3 weeks	9am to 5pm Daily	Medium	Business Analyst is responsible for Data Review/Statistical Analysis, Financial Planning and Decision making of the project from the start to the end of the project.	1 year	AUD 900

C++ programmer Lead	• Competent and knowledgeable in C++ programming and related languages, and has good leadership skills. • flexible and innovative • Agile	3 weeks	9am to 5pm Daily	High	Implementing the functional and non-functional requirements of the software requirements	5 years	AUD 900
C++ programmer	• Competent and knowledgeable in C++ programming and related languages. • flexible and innovative • Agile	3 weeks	9am to 5pm Daily	High	Implementing the functional and non-functional requirements of the software requirements	2 years	AUD 700

3.4.6.2 Training Plan

Project Staff training needs:

Project Title:	MoCAS	**Project Number:**	001
Project Leader/Manager:	Ashley Vanguard	**Anticipated Project Start Date:**	17/09/2020
Project Sponsor:	Monash	**Date Prepared:**	01/09/2020
Staff Resource		**Position:**	**Training Needed:**
Abraham Holmes		Business analyst	Standard business induction
Pearl Mcfarland		C++ programmer & Team Lead	Standard business induction
Roger Arnold		C++ programmer	Standard business induction

Project Staff training schedule

Staff Resource	Position:	DEP Course	Target start Date	Target completion Date
Abraham Holmes	Business analyst	Standard business induction	7/9/20	11/9/20
Pearl Mcfarland	C++ programmer & Team Lead	Standard business induction	7/9/20	11/9/20
Roger Arnold	C++ programmer	Standard business induction	7/9/20	11/9/20

3.5 Scope Management Plan

3.5.1 Planning Assumptions, Constraints & Dependencies

Scope Assumptions:

1. The MoCAS project will develop the new National "storage" Data warehouse in-house and outsource the desktop report generator software and buy the SPSS software package.
2. The MS Windows will be used as computing platforms.
3. C++ will be the programming language to develop the Data warehouse.
4. The scope of the project will not change throughout the project. If there is a scope change, the project will follow a control approval process to change the scope.
5. The previous cybersecurity design is still adequate after including data transferring to Australian Genomics Patient Archive Platform into the MoCAS project.

Constraints:

1. The software development process will follow the Australian Cybersecurity Policy & Guidelines.
2. The MoCAS system will comply with the Monash University governance policy and Australian government laws.
3. The source data are all from the CovidSafe app database, and the MoCAS system will focus on data analysis and ensure data security.

Dependencies:

1. The main milestone products follow a sequence to be developed. Some products are dependent on the others.

3.5.2 Methods & Techniques Applied

1. BPMN conceptual process model based on EA analysis and design specifications.

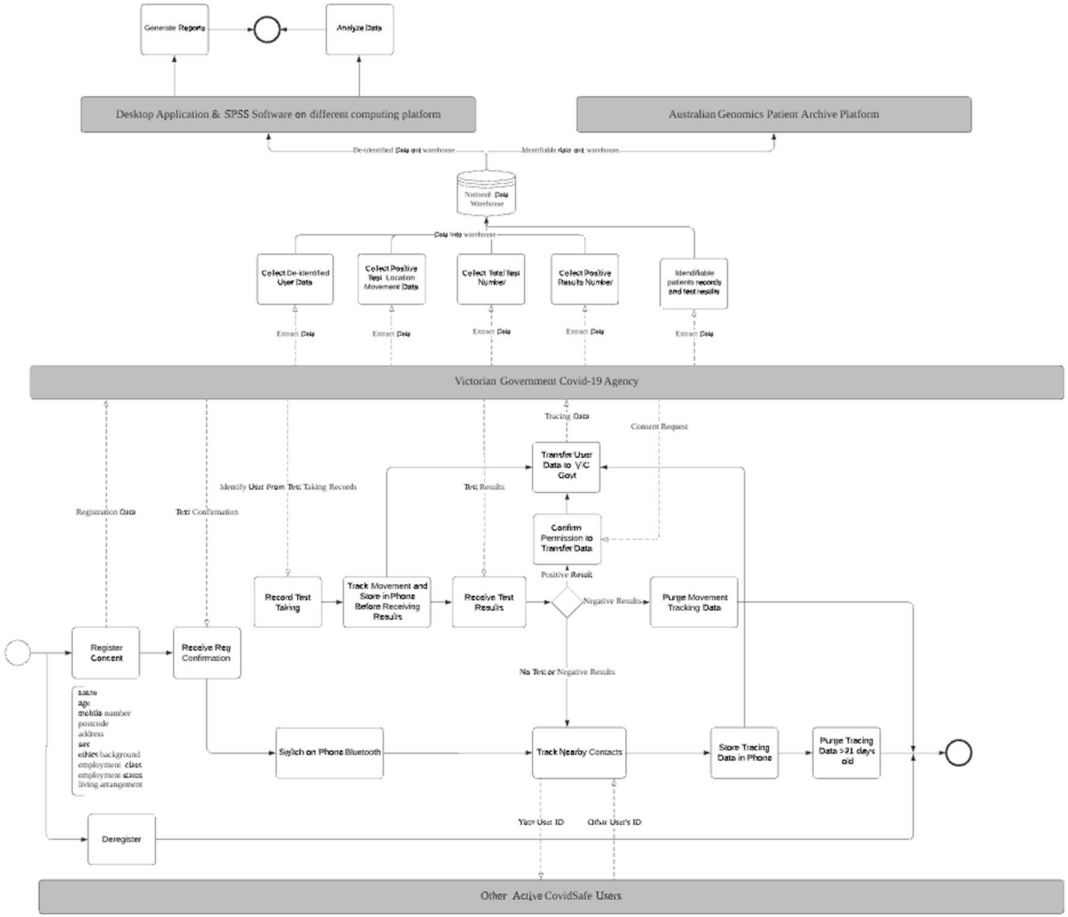

Figure 11: BPMN Conceptual Process Model

2. Entity class data model based on EA analysis and design specifications

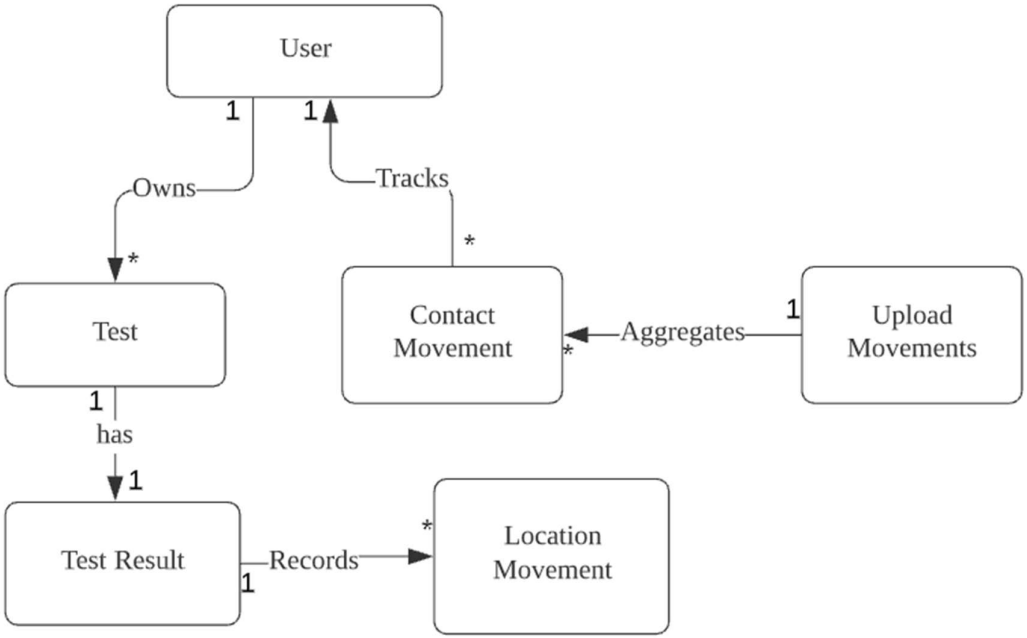

Figure 12: Conceptual Data Model

3. Agile SDLC Methodologies. For each main product in the project, three models (process model, data model, screen model) will be included. The process model and data model will focus on the software development, and the screen model is designed for the IT operation maintenance and integration. Each model will contain several sprints.

3.5.3 Product Scope

The software design approach includes process modeling and data modeling methods. The process model identifies system functions. It also helps to identify the number of UI screens and determine how to implement cybersecurity measures in the process. The data modeling approach identifies the data classes and thereby identifies the data class relationships in this system.

Functional requirements:

1. The system shall have the ability to track the movement of positive result individuals between and test date and result date.
2. The system shall have the ability to transfer the selected data from the CovidApp database to the National database warehouse (work control milestone).
3. The system shall have the ability to de-identify the CovidSafe app user data in the National database warehouse.
4. The system shall have the ability to transfer the identifiable patient COVID-19 records and test results (positive and negative) from the National database warehouse to the national genomics research database (work control milestone).
5. The desktop report generator software and SPSS software shall have the ability to extract data from the National storage data warehouse (work control milestone).
6. The report generator software and SPSS software shall have the ability to generate standard reports on different computing platforms (work control milestone).

Non-function requirements:

1. The system shall be secure from inside and outside the organization.
2. User will need an ID and password for access to the system.
3. User roles will be set up within the system to assign different authorities.
4. The system shall be able to manage real-time information exchanges from all states and desktop end-users.
5. The system shall support end-users on different computing platforms (Apple, MS Windows, Linux, blockchain, AWS, etc.)
6. The system shall support more than 40 end-users at the same time.

Requirement Traceability Matrix

Project Title: MoCAS System Date Prepared: 30/09/2020

Requirement Information					Relationship Traceability			
ID	Requirement	Source	Priority	Category	Business Object	Deliverable	Verification	Validation
1	Track the movement of positive result individuals between and test date and result date	Federal Gov	Must have	Functional	CovidSafe App	Individual's movement summary report	The movement tracking data is expressed in locations geographically every 15mins and the maximum collection time should be set at 14 days	When individual's current location is greater than 200 meters from the residential location, it will be recorded and shown on the report
2	Transfer the identifiable patient COVID-19 records and test results (positive and negative) to the national genomics research database	Australian Gov	Must have	Functional	Victorian Database	Patient diagnosis and knowledge exchange	Patients' identifiable information and all the test results, including positive and negative results, are transferred	All the required data are transferred safely and protected from cybersecurity attack
3	De-identify the CovidSafe app user data	Dept of Health	Must have	Functional	Victorian Database	De-identified individual's location report	No names, street numbers or contact details for the de-identified individual	De-identified individuals' data can be extracted in real-time
4	Transfer the de-identify data, the daily testing data, daily positive results data, and positive result individuals' movement data to a National storage data warehouse	Federal Gov	Must have	Functional	National storage data warehouse	Four kinds of standard reports	Data can be extracted and transferred in real- time	All the required information for standard reports is extracted
5	Extract data from the National storage data warehouse to desktop report generator software and SPSS software	End-user	Must have	Functional	National storage data warehouse	Four kinds of standard reports	The information exchange is in real-time	All the required information for standard reports is extracted
6	Generate standard reports on different computing platforms	End-user	Must have	Functional	Desktop report generator software and SPSS software	Four kinds of standard reports	More than 40 users can operate at the same time	End-users on different computing platforms can do the operation
7	User will need an ID and password for access to the system.	End-user	Must have	Non-functional	MoCAS system	-	Only authenticated user can access the database and generate reports	Every user will assign a specific account to access the system

3.5.4 Work Scope

To develop each product iteratively and more flexibly, the Agile SDLC Methodology is adopted for this project. When scheduling the WBS activities, it is necessary to determine the SDLC methodology for the whole project in advance, identify the software functional and non-functional components based on the related stakeholders' requirements.

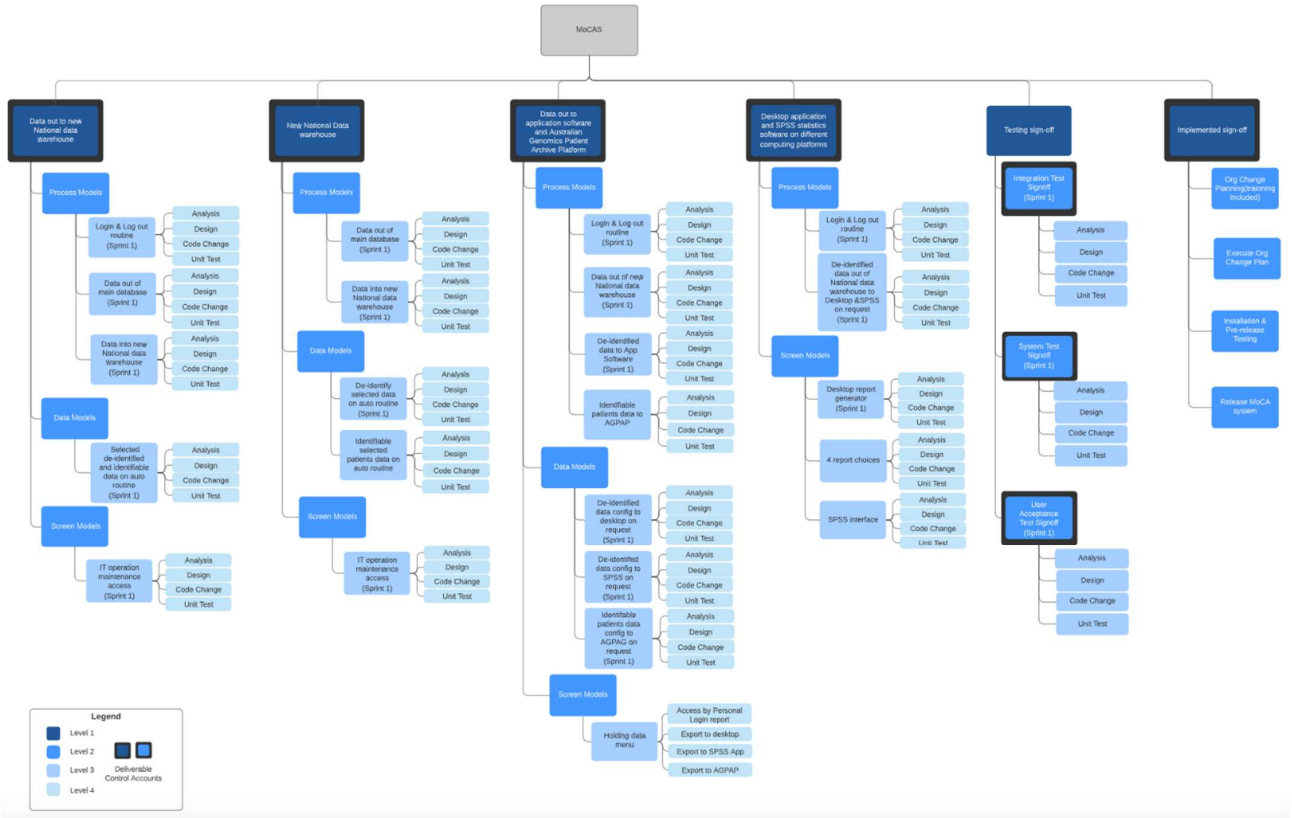

Figure 13: MoCAS Project WBS

3.5.5 Accuracy of Product & WBS Scope

The product work planning is 85% accurate as the WBS has covered the project's main deliverables. However, due to the unpredictable risks and the uncertainty of the COVID-19 situation, it is probable to make some adjustments to the current project scope.

3.5.6 Change Management Approach

Change Management control comprises of 2 parts: organisational change, and integrated change control management. In this report, we focus on the latter. Integrated change control is a repeated process that can continues throughout the lifespan of a project. PMBOK (2017) defines it as "a collection of formal documented procedures that define how project deliverables and documentation will be controlled, changed, and approved". Although projects may vary in size and complexity, it is important for managers to maintain a change log and regularly manage any requested changes (CDC Unified Process, 2006). This change log serves as a historical record of changes to the project that have been requested since its initiation.

The main purpose of this change management process system is to provide a process for the submission, documentation and reviewing of changes. It will define which

stakeholders have the authority to approve requested changes, and establishes an orderly and effective procedure for "tracking the submission, coordination, review, evaluation, categorisation, and approval for release of all changes to the project's baseline" (CDC Unified Process, 2006).

As noted by Arumugam (2018), the types of approved changes may fit into one of the following categories:

> "Preventive action (an intentional activity that ensures the future performance of the project is aligned with the project management plan);
>
> Corrective action (an intentional activity that realigns the future performance of the project with the project management plan);
>
> Defect repair (an intentional activity that modifies a non-conforming product or product component) or;
>
> Updates (changes to formally controlled project documents)" (Arumugam, 2018)

A diagram of how a general project wide change management process system works can be seen in Figure 14 below.

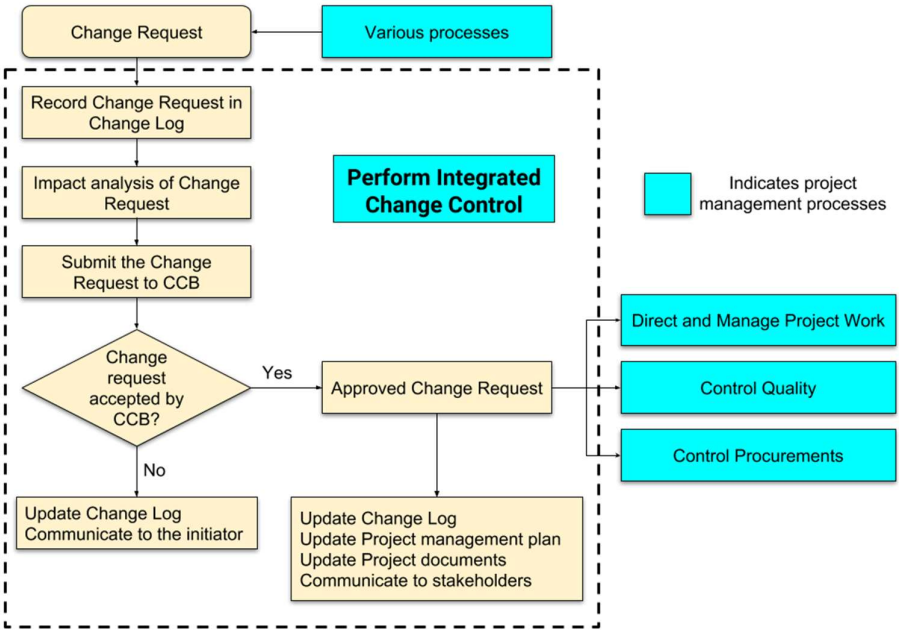

Figure 14. Change Control Sequence. Source: Arumugam, 2018.

In relation to the area of scope specifically, if a project stakeholder were to request a change to the scope of the project, the following steps would be taken (as described by Arumugam, 2018):

Management will receive the change request, which can be made by any project stakeholder. The request of the change must clarify the need for change and fill out a formal change request document, an example of which can be seen in Figure 15 below.

Standard Change Request Template:

Change Request	
Project:	**Date:**
Change Requestor:	**Change No:**
Change Category (Check all that apply): ☐ Schedule ☐ Cost ☐ Scope ☐ Requirements/Deliverables ☐ Testing/Quality ☐ Resources	
Does this Change Affect (Check all that apply): ☐ Corrective Action ☐ Preventative Action ☐ Defect Repair ☐ Updates ☐ Other	
Describe the Change Being Requested:	
Describe the Reason for the Change:	
Describe all Alternatives Considered:	
Describe any Technical Changes Required to Implement this Change:	
Describe Risks to be Considered for this Change:	
Estimate Resources and Costs Needed to Implement this Change:	
Describe the Implications to Quality:	
Disposition: ☐ Approve ☐ Reject ☐ Defer	
Justification of Approval, Rejection, or Deferral:	

Change Board Approval:		
Name	**Signature**	**Date**

Figure 15. Standard Change Request Template. Source: ProjectManagementDocs.com

To use an example, if an end-user (i.e. the customer of the product) wished to request a change to the scope during the execution process, as they are also considered as stakeholders in the project, they can fill out this template with their detailing and reasoning, ticking the 'scope' category specifically. Once completed, this change request will be recorded officially in the change log.

The manager then evaluates the impact of the requested change on the numerous project objectives, paying particular attention to the knowledge areas of time (will the change affect the schedule?), cost (will the change incur additional costs if implemented?), and risk (will the change introduce new risks?) (Arumugam, 2018). All these factors are to be written up in an analysis report, along with the project manager's recommendation of action to the Change Control Board (CCB).

The change request, analysis report, and project manager's recommendation are then submitted to the CCB for review. It then is in the CCB's hands as to whether the change request will be approved, deferred, or rejected. Dependent on the level of authority given to the project manager, they may also form a part of the CCB.

Whether the outcome is an approval, deferral, or rejection, the project manager must update the change log with the CCB's final decision. If approved, they must also update any other components of the management plan/documents that the change affects and communicate these changes to all relevant stakeholders. From here, the changes can be

implemented and integrated into the project plan to be monitored periodically by the project manager. If the change request is rejected, the change log must still be updated with this record, and the original requester of the change (in this case, the end-user) must be notified of the outcome.

Note that in cases where they are not part of the CCB, customer or sponsor approval may be necessary before CCB approval can be given if the change is highly relevant to their interests in the project.

3.6 Schedule Management Plan

3.6.1 Planning Assumptions, Constraints & Dependencies

Assumptions:

1. All Holidays will be accounted for as part of the sprint planning process.
2. All scheduled sprints are subject to change depending on the amount of resources available and budget
3. If the project exceeds the planned deadline, there is an allowance of time given to be able to finish up the remaining sprints.
4. All sprints should be followed up to ensure they are on track with the program schedule

Constraints:

1. All resources are limited to working only 8 hours per day and only weekdays

Dependencies:

1. The development of product three can only be started when the product one is completed.
2. The development of product four can only be started when product two is completed.
3. The testing sign-off can only be started when the four products are all finished.
4. The implementation of sign-off can only be started after the testing sign-off is done.

3.6.2 Methods & Techniques Applied

In our case, we used PERT chart and Gantt chart to visualize projects from beginning to end, along with the individual tasks associated with them, so the manager can track the workflow during the project and pay more attention on the critical path.

1. **PERT chart**

   With a PERT chart, project managers can define all tasks and activities required for the project, then develop a realistic timeframe for project completion. In our case, we developed a high-level PERT chart to clarify the critical path in our project.

2. **Gantt chart**

   A Gantt chart, named for Henry Gantt who developed the tool back in 1910, is used to visually display every task required by a given project in a linear fashion. This timeline view makes it easy to see exactly how long each task (as well as the overall project) is expected to take (Jeremy McAbee, 2020). We developed a Gantt including the tasks from level one to level four (kindly refer to the .mpp file) then extracted the high-level Gantt (level one and level two) chart to put into the report so the brief project workflow can be represented.

3.6.3 PERT Network Diagram

The Program Evaluation and Review Technique (PERT) diagram's purpose is to visualise the tasks of a project as a network, showing how all the tasks are linked, which guide the project manager on figuring out the path/route that will take the longest to complete the project, this is called the critical path. Pert diagrams are usually helpful at every stage of the project right from the start of the project guiding on which tasks to begin with.

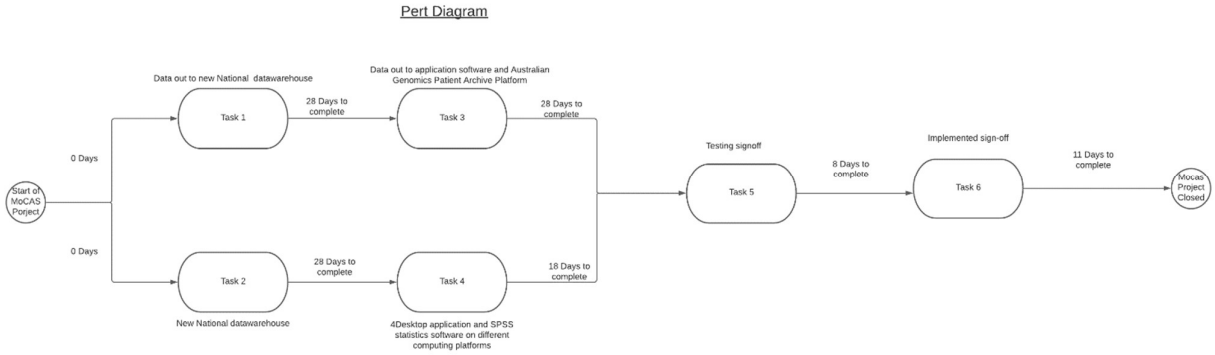

Figure 16. Pert Diagram

3.6.4 Critical Path Discussion

According to PMBOK, the Critical Path is the sequence of activities that is the longest activity path, which determines the shortest duration. The purpose of the critical path is to find the least amount of time to complete all the essential tasks for a project. The critical path maps out WBS element, which must be performed to ensure the project's success, and estimates the duration of them. Most importantly, the critical path determines these tasks' sequence and sets priorities to lessen the slack. Therefore, the critical path helps to keep the project on track to meet the baseline schedule.

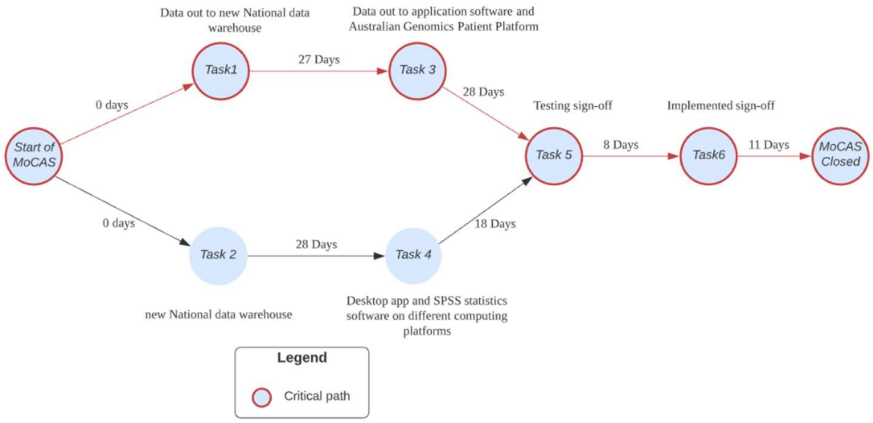

Figure 17. Critical Path

Critical Path Calculation:

Task 1 → Task 3 → Task5 → Task6

27+ 28 + 8 + 11 = 74 days

3.6.5 GANTT Chart Overview & Attachment

The orange lines on the right side of the chart indicate the process in level 1 while the grey lines indicate the process based on the tasks from level 2. As can be seen from the right part of the chart, there are seven main milestones in throughout this project. The first one and the last one is the start point and the end point of the project respectively. The five milestones in the middle indicate the end point for each level-1 task.

The table on the left shows the information of task name and the specific period, we will use the level one and level two information shown in the table to build our high-level budget planning. The budget plan will have two patterns, one is based on the development of the products, the other is based on the timeframe. Each pattern will follow the Gantt chart below.

	Task Mode	Task Name	Duration	Start	Finish	Predecessors
1		MoCAS Version5	74 days	Thu 17/09/20	Tue 29/12/20	
2		MO - Project Start	0 days	Thu 17/09/20	Thu 17/09/20	
3		1 Product - Data out to data warehouse	27 days	Thu 17/09/20	Fri 23/10/20	
4		1.1 Process Models	13 days	Thu 17/09/20	Mon 5/10/20	
20		1.2 Data Models	7 days	Tue 6/10/20	Wed 14/10/20	
26		1.3 Screen Models	7 days	Thu 15/10/20	Fri 23/10/20	4,20
32		M1 - End Product 1	0 days	Fri 23/10/20	Fri 23/10/20	26
33		2 Product - New national data warehouse	28 days?	Thu 17/09/20	Mon 26/10/20	
34		2.1 Process Models	14 days?	Thu 17/09/20	Tue 6/10/20	
45		2.2 Data Models	7 days?	Wed 7/10/20	Thu 15/10/20	34
56		2.3 Screen Models	7 days?	Fri 16/10/20	Mon 26/10/20	34,45
62		M2 - End Product 2	0 days	Mon 26/10/20	Mon 26/10/20	57
63		3 Product - Data out to application software and Australian Genomics Patient Archive Platform	28 days?	Mon 26/10/20	Wed 2/12/20	3
64		3.1 Process Models	14 days?	Mon 26/10/20	Thu 12/11/20	
85		3.2 Data Models	7 days?	Fri 13/11/20	Mon 23/11/20	75
101		3.3 Screen Models	7 days?	Tue 24/11/20	Wed 2/12/20	64,85
107		M3 - End Product 3	0 days	Wed 2/12/20	Wed 2/12/20	102
108		4 Product - Desktop application and SPSS statistics software on different computing platforms	18 days	Tue 27/10/20	Thu 19/11/20	33
109		4.1 Process Models	9 days	Tue 27/10/20	Fri 6/11/20	
120		4.2 Screen Models	9 days	Mon 9/11/20	Thu 19/11/20	109
136		M4 - End Product 4	0 days	Thu 19/11/20	Thu 19/11/20	131
137		5 Testing Signoff	8 days	Thu 3/12/20	Mon 14/12/20	3,33,63,108
138		5.1 Integration Test Signoff	8 days	Thu 3/12/20	Mon 14/12/20	
143		5.2 System Test Signoff	8 days	Thu 3/12/20	Mon 14/12/20	
148		5.3 User Acceptance Test Signoff	8 days	Thu 3/12/20	Mon 14/12/20	
153		M5 - Testing sign-off completed	0 days	Mon 14/12/20	Mon 14/12/20	148
154		6 Implemented sign-off	11 days	Tue 15/12/20	Tue 29/12/20	137
155		6.1 Org Change Planning (trainning included)	5 days	Tue 15/12/20	Mon 21/12/20	
156		6.2 Execute Org Change Plan	2 days	Tue 22/12/20	Wed 23/12/20	155
157		6.3 Installation & Pre-release Testing	3 days	Thu 24/12/20	Mon 28/12/20	156
158		6.4 Release MoCA system	1 day	Tue 29/12/20	Tue 29/12/20	157
159		M6 - Implemented sign-off completed	0 days	Tue 29/12/20	Tue 29/12/20	158
160		MF - Project Closed	0 days	Tue 29/12/20	Tue 29/12/20	158

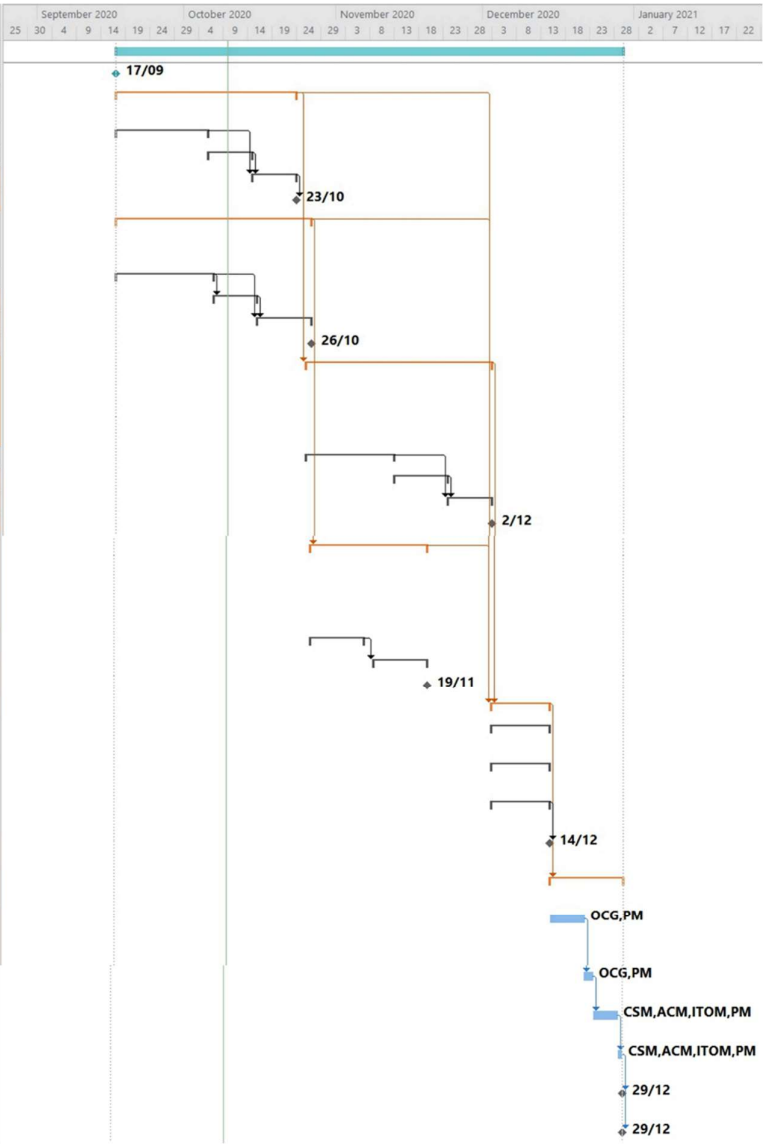

Figure 18. High Level GANTT Chart

*For the more detailed Gantt chart, kindly refer to the file Team17_Gantt_Chart_V10.mpp

3.6.6 Accuracy of Schedule Plan

The accuracy is 80% in our case. We used agile approach throughout the project, as can be seen in the chart, during the product development, we will build two products simultaneously, therefore, the time impact between each product can be reduced. However, the testing and the implementation should be in order, which means they are going to affect each other in terms of time. For instance, if there is a delay during testing due to technical issues, then the schedule of implementation will be postponed as well. Thus, the 15% of uncertainty comes from the procedure of testing and implementation. In addition, executing an agile approach does not mean that there will be no delay for the project since it does not eliminate all the risks that can delay the development of products. If there is a delay from any product, the schedule will still be delayed, but the agile approach will optimize the situation. Therefore, we assigned 5% of uncertainty to the development of the four products which is lower than testing and implementation because of the agile approach.

3.6.7 Change Management Approach

A diagram of how a general project wide change management process system works can be seen in Figure 14. The process of schedule change requests also follows the same process as described by the example in 3.5.6. PMBOK (2017) states that a "schedule variance analysis, along with review of progress reports, results of performance measures, and modifications to the project scope or project schedule may result in change requests to the schedule baseline". Preventive actions may include change requests that may be able to reduce or outright eliminate the likelihood of negative schedule variances.

3.7 Budget Management Plan

3.7.1 Planning Assumptions, Constraints & Dependencies

Cost assumptions:

1. All the project team members are hired in Australia.

2. The unit human labour charge rate will remain the same throughout the project

3. The overall cost of day-to-day activity remains the same throughout the project.

4. The weekly rental, utility bills, accommodation, and parking expenditure will not significantly fluctuate throughout the project.

5. All the hardware and software costs are only incurred at the time of purchase.

6. The estimated cost to expand the National data warehouse to have extra segment for identifiable patients' data is $15K.

7. The estimated cost to develop the login system for exporting data to Australian Genomics Patient Archive Platform is $5K.

Constraints:

1. The project deliverables need to be developed under a limited budget. All the funding for running the project is from the sponsor.

2. The project should be completed within the limited available resources.

Dependencies:

1. The main milestone products follow a sequence to be developed. The first product must complete before the second product can start.

2. The software development team can only start doing the implementation after the technical requirements are finished by the department of health.

3. The software development team can only start doing the cyber security implementation after the requirements are finished by the cyber security lead in Monash University.

Position Title	Experience Level	Metric	Metric
Business analyst	Senior	$900	Per man day
Junior Business analyst	Junior	$650	Per man day
Project manager	Senior	$850	Per man day
C++ programmer lead	Senior	$900	Per man day
C++ Programmer	Junior	$700	Per man day
Testing	Senior	$600	Per man day
Cyber security manager	Senior	$1100	Per man day
IT Architect	Senior	$1250	Per man day
IT operation manager	Senior	$1100	Per man day
Org Change Consultant	Senior	$900	Per man day

3.7.2 Costing methods & techniques

1. Bottom-up estimation method: For this project, we use the WBS structure to break down the labour costs and non-labour costs based on different WBS items and add them together to get the sum cost to estimate the budget for the whole project.
2. Parametric estimation method: In the assumption, we have mentioned there will be no significant fluctuation for the labour and day to day costs. Therefore, we use this approach to calculate the total cost based on each element's known unit rate and the estimated duration (number of units) in this project.

3.7.3 Budget Overview

Level number	Product Number	Product name	L 2 Component	Resources	L2 Total	L2 Total %	Product Total	Product Total %
L1	P 1	Data out to New National Data warehouse					53050	12.43%
			Process Models	ITAx9.75day, SBAx4.75day, BAx7.5day, PMx4.15day, Tx5.5day, ITOMx1.25day, SDx6.25day	33915	7.94%		
			Data Models	ITAx2.25day, SBAx1.25day, BAx1.5day, PMx1.3day, Tx2.25day, ITOMx0.25day, SDx2.75day	9567.5	2.24%		
			Screen Models	ITAx2.25day, SBAx1.25day, BAx1.5day, PMx1.3day, Tx2.25day, ITOMx0.25day, SDx2.75day	9567.5	2.24%		
L 1	P 2	New National Data warehouse					74187.5	17.37%
			Process Models	ITAx8.25day, SBAx5.5day, BAx4.5day, PMx4.65day, Tx4.75day, ITOMx1day, SDx4.5day	30387.5	7.12%		
			Data Models	ITAx6day, SBAx5day, BAx2day, PMx4.5day, Tx4day, ITOMx1day, SDx8day	26225	6.14%		
			Screen Models	ITAx5day, SBAx4.5day, BAx2day, PMx2.5day, Tx2day, ITOMx0.5day, SDx3day	17575	4.12%		
L1	P 3	Data out to application software and Australian Genomics Patient Archive Platform					101560	23.79%
			Process Models	ITAx11.25day, SBAx8.25day, BAx6day, PMx7.35day, Tx8.5day, ITOMx1.5day, SDx13day	47485	11.12%		
			Data Models	ITAx9day, SBAx7.5day, BAx3day, PMx6.75day, Tx6day, ITOMx1.5day, SDx12day	39337.5	9.21%		
			Screen Models	ITAx6day, SBAx5day, BAx2.5day, PMx3.5day, Tx2.25day, ITOMx0.5day, SDx2.5day	14737.5	3.45%		
L1	P 4	Desktop application and SPSS statistics software on differentcomputing platforms					71352.5	16.71%
			Process Models	ITAx8day, SBAx7day, BAx3day, PMx4.75day, Tx4.5day, ITOMx1day, SDx7day	30987.5	7.26%		
			Screen Models	ITAx11.75day, SBAx8day, BAx6.5day, PMx5.15day, Tx6day, ITOMx1.25day, SDx7day	40365	9.45%		
	5	Testing Sign Offs					39195	9.18%
			Integration Test Sign off	ITAx2.25day, SBAx1.25day, BAx1.5day, PMx1.3day, Tx2.25day, ITOMx0.25day, SDx2.75day	9567.5	2.24%		
			System Test sign off	ITAx2day, SBAx2.25day, BAx2.5day, PMx1.4day, Tx2day, ITOMx0.5day, SDx2day	10490	2.46%		
			User Acceptance Test Sign Off	ITAx4.5day, SBAx3.25day, BAx2.5day, PMx3.25day, Tx2.5day, ITOMx1.25day, SDx4.75day	19137.5	4.48%		
	6	Implementation Sign Off					16430	3.85%
			Org Change Planning (Inc Gtraining)	OCG x 5 days, PM x 1 day	5350	1.25%		
			Execute Org Change Plan	OCG x 1 day, PM 1 day	1750	0.41%		
			Installation & Pre release testing	CSM x 1 day, ACM x 3 days, ITOM x 1 day, PM x 2 days	7200	1.69%		
			Release MoCA system	CSM x 0.5 day, ACM x 0.3 days,ITOM x 0.75 day, PM x 0.5 days	2130	0.51%		
	7	Reserves (20% of total estimate)	N/A	N/A	71155	16.67%	71155	16.67%
				Total project cost estimate :	426930	100.00%	426930	100.00%
				Total project cost estimate with 10% Accuracy Tolerance	469623			

Figure 19. Budget Overview

3.7.4 Budget By Time Period View(s)

Product number	L 2 Component		Month						
		September	Octobor	November	December	Product Total	Product Total %	Product Accumulative Total	Product Accumulative Total %
Product 1						53050	14.91%	53050	14.91%
	Process Models	29500	4415						
	Data Models		9567.5						
	Screen Models		9567.5						
Product 2						74187.5	20.85%	127237.5	35.76%
	Process Models	25462.5	4925						
	Data Models		26225						
	Screen Models		17575						
Product 3						101560	28.55%	228797.5	64.31%
	Process Models		16650	30835					
	Data Models			39337.5					
	Screen Models			9612.5	5125				
Product 4						71352.5	20.06%	300150	84.37%
	Process Models		19337.5	11650					
	Screen Models			40365					
Testing Sign Offs						39195	11.02%	339345	95.38%
	Integration Test Sign off				9567.5				
	System Test sign off				10490				
	User Acceptance Test Sign Off				19137.5				
Implementation Sign Off						16430	4.61%	355775	100.00%
	Org Change Planning (Inc Gtraining)				5350				
	Execute Org Change Plan				1750				
	Installation & Pre release testing				7200				
	Release MoCA System				2130				
Total Mothly Cost		**54962.5**	**108262.5**	**131800**	**60750**	**N/A**	**N/A**		
Total %		**15.45%**	**30.43%**	**37.05%**	**17.08%**	**N/A**	**N/A**		
Accumulative Total		**54962.5**	**163225**	**295025**	**355775**	**N/A**	**N/A**		
Total %		**15.45%**	**45.88%**	**82.92%**	**100.00%**	**N/A**	**N/A**		
						Total Budget Cost	**355775**		
					Reserve(20% of total)		71155		
					Total Budget Cost With Reserve		**426930**		
				Total Budget Cost With Reserve And 10% Allowance			469623		

Figure 20. Time Period Budget Breakdown

3.7.5 Accuracy of Budget Plan

The accuracy of our budget plan is 75%. As indicating in the previous parts, the accuracy of scope and schedule are 85% and 80% respectively. The budget plan accuracy is the lowest one among the three plans which means the uncertainty of the budget plan is the highest. It is known that when there is something change in either scope plan or schedule plan, the budget plan will be affected. Additionally, the risk plan accuracy is 90% showing that most of the risks are identified beforehand and under controlled, so the budget plan should not be affected too much from the risk plan and that most of the uncertainties come from scope and schedule. In the budget overview, we prepare the additional 20% of total budget cost by project itself as budget reserve for the coming risks, furthermore, we add 10% of allowance from total budget cost (with reserve) to increase the risk tolerance in our project. Thus, it is rational to give budget plan an accuracy of 75% which is slightly lower than the combination of scope accuracy and schedule accuracy, but it is high for the budget score itself.

3.7.6 Change Management Approach

A diagram of how a general project wide change management process system works can be seen in Figure 14. The process of schedule change requests also follows the same process as described by the example in 3.5.6. PMBOK (2017) states that an analysis of project performance can result in a change request to the cost baseline.

3.8 Risk Management Plan

3.8.1 Planning Assumptions, Constraints & Dependencies

Planning Assumptions

1. All the risks mentioned in the risk dashboard are measurable and identifiable.
2. The Covid-19 pandemic will keep affecting Australians working situation during the project.

Constraints

1. The risk reserve is limited as mentioned in the budget overview (3.7.3 & 3.7.4).
2. There are still unknown risks that can happen during the process, and we will treat them as the project issues if they arise.

Dependencies

1. The start of the environmental risk can lead to the economic risk. For instance, the Covid-19 pandemic affects the sponsors' economic situation extremely so that they cut the budget of the project.
2. The start of the social risk (Employees may be insider criminals or foreign spies) can lead to the start of technology risk. For example, if the employee is the insider, he or she may cause the confidential data leak, additionally, it may further cause the information security loophole.

Different definitions for risks and issues (include the reasons)

The risks are threats or opportunities that have not happened while the issues are threats or opportunities that have happened or are happening during the project. More specifically, the threats can disrupt or even terminate the project whereas the opportunities can benefit the project. According to the definition mentioned above, the risks can be managed because we are aware of them before they happen, however, we can only respond to the issues since they are not identified beforehand (Antony, 2019). In conclusion, the main reason that we need to treat risks and issues separately is that the risks are manageable whereas the issues are not manageable.

3.8.2 Risk Management Methodology, including details of methods & techniques

To identify the risks within the project, we used risk probability and impact assessment provided in PMBOK (2017). The process aimed to identify the risks in terms of PESTLE category and find the impact to the schedule, cost, quality, or performance of the project, additionally. The risk impacts could be negative for threats and positive for opportunities, however in our case, we focused on the negative impacts to better control the project. After identifying the impacts and probabilities, we defined severity for each risk by considering the two aspects.

In the next stage, we assigned the identified risks to those who should be responsible for. We created a table that integrates the risk managers' name and risk ID as well as risk management availability.

In the last stage, we use all the knowledge from the previous stages to build a risk register table with a legend table to better visualize the severity of each risk. The project manager will use the table to manage those risks throughout the projects. It is not surprising that the planned risks will change, or even new risks will appear during the process, so we will also provide the change management approach to keep updating the risks when executing the project.

3.8.3 Risk Severity Findings

PESTLE category	Risk Statement	Probability	Impact
Technology Risks	Data hacking of identified genomic records of users, and personal details of users	According to ACSC annual cyber threat report (2020), more than 2000 cybersecurity incidents occurred in the recent financial year. 10% of the incidents are related to data exposure, theft, or leak. Moreover, state governments were the most frequent targets among the reported incidents. Therefore, the probability of data hacking for MoCAS project is high.	1.Privacy compromised 2. User's future health might expose to potential bioweapons uses
Social Risks	Inadequate BPR – BA fails to collect business requirements and end-user requirements	Several junior business analysts are recruited in this project. The BRP is conducted by the experienced senior business analyst with assists from junior business analysts. Every process is monitored and reviewed with multiple project members. The probability is low.	1.Leads to incorrect project scope 2.Project fails to meet all the user requirements
	Employees may be insider criminals or foreign spies	The junior-level project team members are recruited as contractors without detailed background investigations. The possibility of this risk is high.	1.Sensitive project data leak 2.Users' privacy compromised; The project is exposed to various attacks.
Political Risks	The conflict between China and the USA, including Australia, worsens	The US-China trade war is intensifying under the COVID-19 situation. Because of China's new tariff on Australia, the trade relationship between China and Australia also tensions. The probability of conflict is high.	1.Increase the cyber supply chain risk because the uncertainty on the supply chain grows; Influence the supply of ordered hardware in terms of increasing the cost of ordered hardware. 2.Delay the project schedule due to the reasons mentioned above
Economic Risks	The sponsor cuts the budget of the MoCAS project	Since the COVID-19 pandemic will continue for a relatively long period, and the government needs to control the epidemic through analysis reports. This project is still of great significance at this stage, so the possibility of this risk is low.	1.Terminate the project. 2.The project fails
Environmental Risks	Some project team member infects with CoVID-19	All the personnel for this project are hired within Australia, and the conduct of the project complies with the state government's health and health policies. However, the movements and the close contacts of each project member are unpredictable. The probability of this risk is medium.	Delay the project schedule

3.8.4 Risk Response & Delegation Arrangements

Name	Risk ID	Risk Management Role and Responsibility	Risk Management Availability(%)	Contact Details
Yao Wang	R001, R002, R003	Cyber security risk manager: Protect the project from various cyber-attacks and ensure cyber security throughout the project	60%(R001), 50%(R002), 50%(R003)	yao.wang@monash.edu
Janette Brown	R001, R003,	System risk manager: build various protection approaches when developing the system to ensure system security	20%(R001), 40%(R003)	janette.brown@monash.edu
Vlad Minster	R001, R005	Operation risk manager: monitor the risk during the system operation process	20%(R001), 20%(R001)	vald.minster@monash.edu
Allan Godman	R002, R003, R004, R005, R006	Project risk manager: Control the overall external and internal risks to the project	50%(R002), 10%(R003), 50%(R004), 10%(R005), 100%(R006)	allan.godman@monash.edu
Andre Costa	R005	BPR risk manager: Conduct the BPR, identify all the business requirements, and ensure the scope of the project is comprehensive	70%(R005)	andre.costa@monash.edu
Sue Buttle	R004	Internal risk manager: Assist with IT architect to control the risk within the project organization to ensure the process of the project	50%(R004)	sue.buttle@manash.edu

3.8.5 Risk Register Dashboard Elements

During the execution of the project, the risk owner is responsible for the assigned risks. If the risk occurs, the corresponding risk response strategy will be executed. The risk owner will update the content on the risk register according to the strategy's actual effect. The project manager will obtain relevant information from the risk owner and manage the impact of this risk on the whole project. If necessary, the project manager will report the updated risk management progress to the related stakeholders.

Legend

Probability	Impacts				
	Very low (1)	Low (2)	Medium (3)	High (4)	Very high (5)
Very high (5)	5	10	15	20	25
High (4)	4	8	12	16	20
Medium (3)	3	6	9	12	15
Low (2)	2	4	6	8	10
Very low (1)	1	2	3	4	5

RISK Management Plan Summary							Risk Occurance Management					
Risk ID	Risk Statement	Risk Owner	Risk Probability	Risk Impact	Risk Score	Risk Response Strategy	Revised Risk Probability	Revised Risk Impact	Revised Risk Score	Risk Responce actions	Risk Status	Comments
R001	Technology Risks: Data hacking of identified genomic records of users, and personal details of users	1. Yao Wang 2. Janette Brown 3. Vlad Minster	5	5	25	1. Encypt the user identifcation data; 2. Make use of authentication and authorization in data warehouse(Shetty et al. , 2017) 3. Implement strict password and account management policies and practices 4. Perpare procedures and policies in place to ensure fast deactivation of accounts and access(MacKinnon et al.2013)	4	5	20	1. Monitor the database actively; 2. Ensure cyber security requiremnenbrts are implemented in software development; 3. Testing plan for cyber securoity is coinducted and reported to EA. 4. Cyber security test results revised and accpeted by EA; 5. Follow up penetration testing conducted as part of general IT Ops routine;	Active	Leave on risk register and monitor
R002	Political Risks: The conflict between China and the USA, including Australia, worsens	1. Allan Godman 2. Yao Wang	4	4	16	1. Investigate the supplier's background 2. Evaluate cyber supply chain risks to select the right vendors accordingly	2	4	8	Ensure the local government of all the vendors and service providers have no interest conflict with the Australian government	Monitor	Leave on risk register and monitor
R003	Social Risks: Employees may be insider criminals or foreign spies	1. Allan Godman 2. Yao Wang 3. Janette Brown	4	4	16	1. Take detailed background investigation to all the new recuits and suppliers 2. Limit authority to access the sensitive data according to the position in the project 3. Log,monitor and audit project team member online actions	1	4	4	1. Ensure all the background investigation are conducted properly 2. Assign authority to every member in the project to access the data based on the job position	Ongoing exposure	Leave on risk register and monitor
R004	Environmental Risks: Some project team member infects with CoVID-19	1. Allan Godman 2. Sue Buttle	3	4	12	1. Ensure the conduct of the project complies with the state government's health and health policies 2. Encourage work from home 3. Check project team members' wellbeing on a weekly basis	1	4	4	1. Ensure the conduct of the project complies with the state government's health and health policies 2. Work from home	Unlikely to reoccur	Remove from Risk Register.
R005	Social Risks: Inadequate BPR - BA fails to collect business requirements and end user requirements	1. Andre Costa 2. Allan Godman 3. Vlad Minster	3	4	12	Ensure the BRP is conducted by the experienced senior business analyst with assists from junior business analysts and needs to be reviewed by Enterprise Architect, PM and IT Ops manager for acceptance before used in project	1	4	4	1. Ensure SBA conducts adaquate BPR review and requirements develoopment. 2. Review of BPR by EA, IT Ops Man and PM to accepot prior to use in project.	Closed	Remove from Risk Register.
R006	Economical Risks: The sponsor cuts the budget of the MoCAS project	Allan Godman	1	5	5	1.Terminate the project until find a new sponspor 2. Persuade the original sponsor to proceed the project	1	5	5	1. Ensure the project products have covered all the business requirements 2. Adjust the scope of the project promptly if new reqiurements are proposed	Unlikely to reoccur	Remove from Risk Register.

Figure 21. Risk Register

3.8.6 Accuracy of Risk Management Plan

The accuracy of risk planning is 90% for this project. We have identified most of the significant risks and proposed strategies to mitigate the impact on the whole project. However, risks are the uncertainties that have not occurred. Not every risk can be adequately predicted; therefore, we acknowledge the existence of unforeseen risks when running the project and assign 10% uncertainty to them. The overall estimation amount to execute the risk management plan is $25k, including daily monitoring, reporting, and resource procurement costs.

3.8.7 Change Management Approach

When one or more identified risks occur, the corresponding risk responses will be exercised. Risk managers will evaluate the effect of the risk responses, and if it is not ideal, new strategies will be proposed and updated in the risk register. Based on the risk's actual impact on the project, the risk owner will change the risk occurrence management plan and give a newly revised risk score in the risk register to keep it up to date. In addition, as the project progresses, new risks may be identified. Therefore, to manage these risks positively, the project manager will appoint new risk owners to manage them and record relevant risk data elements on the risk register.

3.9 Project Planning Conclusion

In this project report, we followed the processes specified on the PMBOK (2017) to conduct people, scope, schedule, budget, and risk management plan. The assumptions, constraints, and dependencies listed in each sub-plan align with the overall business constraints and determine the necessary procedures to achieve the project objectives.

We identified stakeholders and the needed human labor in the people management plan based on the project team structure. Stakeholders' impact is visually analyzed by the power/influence grid and salience model. According to their positions and influence, we developed engagement strategies and communication plans to maintain the relationship with them. As for the recruited personnel, the recruitment and training plan specifies the required skills to ensure competence. The people management plan clarifies the responsibility for each project team member and stakeholder so that it can be used to trace the duty and promote efficient communication within the project.

In the scope management plan, all the business requirements are categorized into functional requirements and non-functional requirements. We identified the work control milestone from these requirements and built the WBS with the adopted Agile SDLC methodology. The WBS specifies the main products and the process models, which helps the related stakeholders have a better understanding of the project and plan the schedule and budget of the project accordingly. Besides, we developed a change management approach to standardize the procedures when changes occur during the project. The scope management plan supports the project goal and breaks it down into several elements to fulfill.

The schedule management plan is made according to the WBS in the scope management plan. It estimates each main product's duration and calculates the critical path to indicate the length of the project. We used the GANTT chart to visually explain the development sequence and the priority of each product. With the provided information in this sub-plan, it will be more efficient to monitor the progress of the project in the implementation stage.

The estimated total cost for running this project is calculated in the budget management plan. It is calculated based on the available human labor resources from the recruitment plan and the potential reserve and allowance. In line with the schedule management plan, we also presented the budget breakdown views monthly to monitor the budget spending during each time period to ensure the cost transparency. Referencing this budget management plan, the project sponsor can prepare the required fund beforehand and dynamically trace the cost.

The risk management plan indicates the overall risk level of the project. In the risk management plan, we identified the potential risks and assigned corresponding risk owners to control the impact on the project. Additionally, we used a quantified risk score to indicate the risk severity and proposed response strategies respectively. All the risk data elements are presented in the risk register and can be used for further risk analysis.

Finally, we specified the change management instructions at the end of the specific sub-plan (scope, schedule, risk, and budget) to implement the agile plan more precisely. Therefore, if there are changes required by the end-users during the project, the manager can follow this guidance and lead the project team to respond to them smoothly so that the re-planning process of the project can be optimized.

To sum up, this project plan provides detailed information of the MoCAS project from different aspects and covers several knowledge areas of project management. All the analysis and explanation in this plan will help the project manager manage the project more effectively and increase the chance of project success. The next step will be conducting the recruitment process to prepare for the start of the project.

3.10 Reference List (APA)[1]

Aaltonen, K. (2011). Project stakeholder analysis as an environmental interpretation process. *International journal of project management*, *29*(2), 165-183.

Alie, S. S. (2015). Project governance: #1 critical success factor. Paper presented at *PMI® Global Congress 2015*—North America, Orlando, FL. Newtown Square, PA: Project Management Institute. https://www.pmi.org/learning/library/project-governance-critical-success-9945

Antony, D. P. (2019). Risks and Issues – The Differences. Retrieved from https://pmtips.net/article/risks-and-issues-the-differences

Assudani, R., & Kloppenborg, T. J. (2010). Managing stakeholders for project management success: an emergent model of stakeholders. *Journal of general management*, *35*(3), 67-80.

Arumugam, M. (2018, November 11). *Perform Integrated Change Control*. PM Drill. https://www.pmdrill.com/change-control-step-by-step/

Atkinson, R. (1999). Project management: cost, time, and quality, two best guesses and a phenomenon, it's time to accept other success criteria. *International journal of project management*, *17*(6), 337-342.

Australian Cyber Security Centre. (2020). *ACSC Annual Cyber Threat Report July 2019 to June 2020.* Retrieved from https://www.cyber.gov.au/acsc/view-all-content/reports-and-statistics/acsc-annual-cyber-threat-report-july-2019-june-2020

Babu, A. J. G., & Suresh, N. (1996). Project management with time, cost, and quality considerations. *European journal of operational research*, *88*(2), 320-327.

Badiru, A. B., & Pulat, P. S. (1995). *Comprehensive project management: Integrating optimization models, management principles, and computers*. Prentice-Hall, Inc.

Barker, J., Tjosvold, D., & Andrews, I. R. (1988). Conflict Approaches of Effective and Ineffective Project Managers: A Field Study in a Matrix Organization [1]. *Journal of Management Studies*, *25*(2), 167-178.

Belout, A. (1998). Effects of human resource management on project effectiveness and success: toward a new conceptual framework. *International Journal of Project Management*, *16*(1), 21-26.

Beringer, C., Jonas, D., & Kock, A. (2013). Behavior of internal stakeholders in project portfolio management and its impact on success. *International Journal of Project Management*, *31*(6), 830-846.

Besner, C., & Hobbs, B. (2006). The perceived value and potential contribution of project management practices to project success. *Project management journal*, *37*(3), 37-48.

CDC Unified Process. (2006, November 30). *CDC Unified Process Practices Guide: Change Management*. CDC UP. https://www2a.cdc.gov/cdcup/library/practices_guides/CDC_UP_Change_Management_Practices_Guide.pdf

Charvat, J. (2003). *Project Management Methodologies: Selecting, Implementing, and Supporting Methodologies and Processes for Projects. Hoboken*, NJ: John Wiley & Sons, Inc.

Cockburn, A. (2003). *People and Methodologies in Software Development*. Doctoral Dissertation. University of Oslo, Oslo, Norway.

COVIDSafe app. (2020). Australian Government Department of Health. Retrieved from https://www.health.gov.au/resources/apps-and-tools/covidsafe-app

Dave Wakeman (2017). How to Set Business Objectives in a Project. Retrieved from https://www.projectmanager.com/blog/set-business-objectives-project

Donaldson, T., & Preston, L. E. (1995). The stakeholder theory of the corporation: Concepts, evidence, and implications. *Academy of management Review*, *20*(1), 65-91.

Freeman, R. E., Harrison, J. S., & Wicks, A. C. (2007). *Managing for stakeholders: Survival, reputation, and success*. Yale University Press.

Galbraith, J. R. (1973). *Designing complex organizations*. Addison-Wesley Longman Publishing Co., Inc.

Hornstein, H. A. (2015). The integration of project management and organizational change management is now a necessity. *International Journal of Project Management*, *33*(2), 291-298.

Hubbard, D. G. (1990). Successful utility project management from lessons learned. *Project Management Institute,* 11(3), 19–23.

Introna, L. D. & Whitley, E. A. (1997). Against method–ism: Exploring the limits of method. *Information Technology & People*, 10(1), 31–45.

Jeremy McAbee (2020). PERT Charts vs. Gantt Charts – What are the Differences? Retrieved from https://www.wrike.com/blog/pert-vs-gantt-charts/

Jones, C. (2004). Software project management practices: Failure versus success. *CrossTalk: The Journal of Defense Software Engineering*, 17(10), 5-9.

Jones, E. F. (2009). *Scheduling 101—the basic of best practices*. Paper presented at PMI® Global Congress 2009— North America, Orlando, FL. Newtown Square, PA: Project Management Institute.

Kerzner, H. (2017). *Project management: a systems approach to planning, scheduling, and controlling*. John Wiley & Sons.

Khang, D. B., & Myint, Y. M. (1999). Time, cost and quality trade-off in project management: a case study. *International journal of project management*, 17(4), 249-256.

Kirsilä, J., Hellström, M., & Wikström, K. (2007). Integration as a project management concept: a study of the commissioning process in industrial deliveries. *International Journal of Project Management*, *25*(7), 714-721.

Koontz, H., O'Donnell, C. (1972). *Principles of Management: An Analysis of Managerial Functions.* McGraw-Hill. New York, p. 46.

Kuehn, U. (2010). *Integrated cost and schedule control in project management*. Berrett-Koehler Publishers.

MacKinnon, L., Bacon, L., Gan, D., Loukas, G., Chadwick, D., & Frangiskatos, D. (2013). Cyber security countermeasures to combat cyber terrorism. In *Strategic intelligence management* (pp. 234-257). Butterworth-Heinemann.

MERRIAM, W. G., & Merriam, C. (1913). Websters Revised Unabridged Dictionary. *New York, The Century Co*.

Meyer, W. G. (2016). *Estimating: the science of uncertainty*. Paper presented at PMI® Global Congress 2016—EMEA, Barcelona, Spain. Newtown Square, PA: Project Management Institute.

Mirza, M. N., Pourzolfaghar, Z., & Shahnazari, M. (2013). Significance of scope in project success. *Procedia Technology*, *9*(1).

Parker, D., Charlton, J., Ribeiro, A., & Pathak, R. D. (2013). Integration of project-based management and change management. *International Journal of Productivity and Performance Management*.

Pedroso, S. L., & de Oliveira, L. R. (2013). Measurement process of software development projects for supporting strategic business objectives in software developing companies. *Journal of Information Systems & Technology Management*, *10*(2), 357+. https://link.gale.com/apps/doc/A438752812/AONE?u=monash&sid=AONE&xid=89b6cbfc

Pozewaunig, H., Eder, J., & Liebhart, W. (1997, September). ePERT: Extending PERT for workflow management systems. In *Proceedings of the First East-European Symposium on Advances in Databases and Information Systems 1* (pp. 1-13).

Project Management Institute. (2017). A guide to the project management body of knowledge (PMBOK guide) (Sixth ed.).

Raz, T., & Michael, E. (2001). Use and benefits of tools for project risk management. *International journal of project management*, 19(1), 9-17.

Requirements Traceability Matrix - RTM. (2018, October 3). Project-Management.Com. https://project-management.com/requirements-traceability-matrix-rtm/

Salapatas, J. N. (2000). Best practices—the nine elements to success. In *Project Management Institute Annual Seminars & Symposium, Houston, TX. Newtown Square, PA: Project Management Institute*.

Shetty, S. S., Shetty, R. R., Shetty, T. G., & D'Souza, D. J. (2017, September). Survey of hacking techniques and it's prevention. In *2017 IEEE International Conference on Power, Control, Signals and Instrumentation Engineering (ICPCSI)* (pp. 1940-1945). IEEE.

Stuckenbruck, L. C. (1988). Integration: The essential function of project management. *Project management handbook*, 2, 56-81.

Thamhain, H. J. (1991). Developing project management skills. *Project Management Institute,* 12(3), 39–44.

Turner, J. R. (2009). *The handbook of project-based management: leading strategic change in organizations*. McGraw-hill.

Volden, G. H., & Andersen, B. (2018). The hierarchy of public project governance frameworks. International Journal of Managing Projects in Business, 11(1), 174–197. https://doi.org/10.1108/IJMPB-04-2017-0040

Wang, X., & Huang, J. (2006). The relationships between key stakeholders' project performance and project success: Perceptions of Chinese construction supervising engineers. *International journal of project management*, 24(3), 253-260.