

# *Recovering and Reprocessing Resources from Waste June 2019*

FIT5057 - PROJECT MANAGEMENT(SEM 2)

Clinical Waste Management System

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## Executive Summary

In general, the main purpose of our system is to solve the waste management problem of "Clinical waste handling". The foundation of this system is a cloud-based application that reduces costs and contributes to a clean, healthy environment by properly and timely collecting hospital waste, thus meeting the needs of our key stakeholders. Specific benefits for different stakeholders are as follows:

First, for Environment Protection Authority, Victoria, our system can promote sustainable environmental management in the state. Second, for hospital, our system can conduct proper waste disposal and collection system and properly manage the data. Moreover, for Employees at collection points, our system can ensure that the data at the collection point is the same as that needed by the system. Finally, for the Area Cleansing Officers, our system can check the waste collection method is correct. To sum up, these are the advantages corresponding to different stakeholders for our system

This is a cost-effective solution. The main manifestation of this is that it will also reduce the burden on the segregators by allowing them to decide whether the items need to be recycled or sent directly to landfills. The most important thing is that the solution keeps track of the items from the moment they are used to the moment they are thrown into landfills or sent for recycling to solve the problem that needs to be properly differentiated.

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## GLOSSARY:

**“Accept** - A decision to take no action against a threat. Project teams typically accept risks when they fall below risk thresholds or when the team thinks it best to act only if and when a threat occurs” (Eby, 2017).

**“Activity** - The smallest unit of work necessary to complete a project work package (which includes multiple activities). Time, resources, and finances are required to complete each activity” (Eby, 2017).

**“Administrative closure** - This refers to the set of formal requirements fulfilled to end a project. Among other things, it involves documenting the formal acceptance of deliverables and ensuring that all relevant information is sent to a project’s sponsor and stakeholders” (Eby, 2017).

**“Agile** - The agile family of methodologies is a superset of iterative development approaches aimed at meeting ever-changing customer requirements. Agile development proceeds as a series of iterations, or sprints, with incremental improvements made in each sprint. Since agile projects do not have fixed scopes, agile methodologies are adaptive, and the iterative work is guided by user stories and customer involvement” (Eby, 2017).

**“Allocation** - The assigning of resources for scheduled activities in the most efficient way possible” (Eby, 2017).

**“Baseline** - This term represent the costs and schedules approved at the start of the project. They use baselines as a basis for monitoring and evaluating performance” (Eby, 2017).

**“Budget** - The sum of money allocated for a project. The term may also refer to a comprehensive list of revenues and expenses” (Eby, 2017).

**“Business requirements** - The conditions a product must satisfy to effectively serve its purpose within a business” (Eby, 2017).

**“Change control** - Change control is the process of identifying, evaluating, approving, and implementing changes to a project. It ensures that changes are introduced in a controlled and effective manner and that any adjustments necessitated by changes are also addressed” (Eby, 2017).

**“Closing phase** - The final phase of the project management life cycle, in which all aspects of the project are officially completed and closed. This includes making sure that all deliverables have been given to the client, that the team notifies suppliers of completion, and that the team updates stakeholders regarding the end of the project and overall project performance” (Eby, 2017).

**“Communications management plan** - This plan states who will send and receive information on aspects of the project, what details are communicated, and when communications are sent. It is part of the project management plan” (Eby, 2017).

**“Constraint** - A limitation on a project. Among other things, constraints may be financial or based on time or resource availability” (Eby, 2017).

**“Cost baseline** - The sum of work package estimates, contingency reserve, and other associated costs by which project performance is assessed. A formal change control process is necessary to change the cost baseline” (Eby, 2017).

**“Cost management plan** - This plan details how project costs will be planned, funded, and controlled. It is a part of the project management plan” (Eby, 2017).

**“Critical path activity** - A scheduled activity that is part of a project’s critical path” (Eby, 2017).

**“Critical path method** – The critical path method is used to estimate the shortest length of time needed to complete a project and to determine the amount of float for activities that are not part of the critical path” (Eby, 2017).

**“Deliverable** - A final product or product component that must be provided to a client or stakeholder according to contractual stipulations” (Eby, 2017).

**“Duration** - The amount of time taken to complete an activity or task from start to finish” (Eby, 2017).

**“Effort** - The amount of labour needed to complete a task. It is measured in person-hours or similar units” (Eby, 2017).

**“Execution phase** - The execution phase begins after activity approval and is the phase in which the team executes the project plan. Execution is typically the longest and most expensive phase in the project management life cycle” (Eby, 2017).

**“Gantt chart** - A gantt chart is a type of bar chart that shows all the tasks constituting a project. Tasks are listed vertically, with the horizontal axis marking time. The lengths of task bars are to scale with tasks’ durations” (Eby, 2017).

**“Handover** - In the project life cycle, a handover is the point at which deliverables are given to users” (Eby, 2017).

**“Initiation phase** – The formal start of a new project. It involves receiving proper authorization and creating a clear definition for the project” (Eby, 2017).

**“Kick-off meeting** - The first meeting between a project team and stakeholders. It serves to review project expectations and to build enthusiasm for a project” (Eby, 2017).

**“Management** - The act of overseeing planning, personnel, and resources to achieve a goal”.

**“Milestone** - Milestones indicate specific progress points or events in project timelines. They mark progress needed to complete projects successfully” (Eby, 2017).

**“Murphy’s Law** - Murphy’s Law — “What can go wrong will go wrong.” — is cited in project management as a reason to plan adequately for contingencies” (Eby, 2017).

**“Phase** - A distinct stage in a project life cycle” (Eby, 2017).

**“Planning phase** - In project management, planning refers specifically to a phase of the life cycle that involves creating plans for management, control, and execution, as well as for what a project is meant to accomplish” (Eby, 2017).

**“Project cost management (PCM)** - The use of an information system to estimate, measure, and control costs through the project life cycle. It aims at completing projects within budgets” (Eby, 2017).

**“Project management body of knowledge (PMBOK)** - The PMBOK is a collection of project management-related knowledge maintained by the Project Management Institute” (Eby, 2017).

**“Project manager** - The person tasked with initiating, planning, executing, and closing a project, and with managing all aspects of project performance through these phases. The term is typically used for a project management professional. Project managers are able to use organizational resources for projects. They serve as contact points for sponsors, program managers, and other stakeholders” (Eby, 2017).

**“Project stakeholders** - Broadly, a stakeholder is any party which may be affected by a project. In project management, the term usually refers to parties with an interest in the successful completion of a project” (Eby, 2017).

**“Project team** - A project team is responsible for leading and collectively managing a project and its related activities through the project’s life cycle. Project teams may contain members from several different functional groups within an organization. Depending on the nature of the project, a project team may be disbanded upon completion of a project” (Eby, 2017).

**“Proof of concept** - A proof of concept is derived from a pilot project or experiment that examines whether an activity can be completed, or a concept can be realized. It shows the feasibility of an idea” (Eby, 2017).

**“Quality** - In project management, quality is a measure of a deliverable’s degree of excellence. Quality may also refer to a clearly defined set of stakeholder requirements by which results are assessed” (Eby, 2017).

**“Requirements** - A set of stipulations regarding project deliverables. They are a key element of the project scope and explain in detail the stakeholders’ expectations for a project” (Eby, 2017).

**“Risk** - The probability of occurrence of a specific event that affects the pursuit of objectives. Risks are not negative by definition. In project management, opportunities are also considered risks” (Eby, 2017).

**“Risk avoidance** - Risk avoidance focuses on avoiding threats that can harm an organization, its projects, or assets. Unlike risk management, which is geared toward mitigating the impact of a negative event, risk avoidance seeks to address vulnerabilities and make sure those events do not occur” (Eby, 2017).

**“Risk identification** - The process of identifying and examining risks and their effects on project objectives” (Eby, 2017).

**“Risk management** - A subset of management strategies that deals with identifying and assessing risks and acting to reduce the likelihood or impact of negative risks. Risk managers seek to ensure that negative risks do not affect organizational or project objectives” (Eby, 2017).

**“Risk mitigation** - Risk mitigation involves decreasing the probability of a negative risk occurring, as well as protecting project objectives from a negative risk’s impact” (Eby, 2017).

**“Risk monitoring and control** - The risk monitoring and control process uses a risk management plan to identify risks and implement appropriate risk responses” (Eby, 2017).

**“Risk owner** - A risk owner is responsible for determining and enacting appropriate responses to a specific type of risk” (Eby, 2017).

**“Risk register** - A risk register, or risk log, is a tool used to chronicle risky situations and risk responses as they arise” (Eby, 2017).

**“Schedule** - A comprehensive list of project activities and milestones in logical order, with start and finish dates for each component” (Eby, 2017).

**“Schedule baseline** - A schedule baseline is the original project schedule — approved by the project team, sponsor, and stakeholders — by which performance is assessed. Schedule baselines are generally inflexible, though alteration of a schedule baseline via a formal change control process may be allowed” (Eby, 2017).

**“Scope** - The scope of a project constitutes everything it is supposed to accomplish in order to be deemed successful” (Eby, 2017).

**“Sponsor** - A sponsor has ultimate authority over a project. They provide high-level direction, approve project funding as well as deviations from cost and budget, and determine project scope. Sponsors are typically members of the senior management and are expected to provide high-level support for a project” (Eby, 2017).

**“Sprint** - In iterative project development, a sprint is a fixed unit of time during which the project typically passes through a complete development life cycle. A sprint is usually a few weeks long” (Eby, 2017).

**“Stakeholder** - In project management, a stakeholder is any party with an interest in the successful completion of a project. More generally, the term refers to anyone who is affected by a project” (Eby, 2017).

**“Work breakdown structure (WBS)** - A work breakdown structure is a comprehensive, hierarchical model of the deliverables constituting the scope of a project. It details everything a project team is supposed to deliver and achieve. A work breakdown structure categorizes all project elements, or work packages, into a set of groups and may be used to form cost estimates” (Eby, 2017).



# SECTION 1



## 1.1 Introduction

"It is estimated that the Victorian public healthcare services generated some 42,000 tons of solid waste. Around 8,600 tons of this was recycled, 4,300 tons was clinical waste and the remainder was classified as general waste. The cost of disposing this waste was close to \$17 million, of which two-thirds was for the treatment and disposal of clinical waste." The increase in healthcare management has led to a rise in the amounts of waste generation, and "by 2021-22 it is forecast that Victorian public healthcare services could be generating as much as 52,000 tons of solid waste per annum" ("Waste management in Victorian healthcare services", 2019). Clinical or medical waste is any waste which can harm humans and this type of waste is mainly produced by hospitals and clinics. "It includes human or animal tissue, blood or other bodily fluids, excretions, drugs or other pharmaceutical products, swabs or dressings, syringes, needles or other sharp instruments" ("Waste management in Victorian healthcare services", 2019).

In order to deal with the issue of clinical/medical waste handling, a new system named the 'Bloomers Application'-clinical/medical waste management system is being developed, which is a solution for the medical waste handling issue, by improving waste management and applying waste minimization principles.

This system is a cost effective solution and will reduce the burden on segregators to decide whether the object is to be sent for recycling or directly to landfills. This solution keeps a proper track of the objects from the moment they are being used till they are dumped into landfills or sent for recycling.

We create a clinical/medical waste management system in which to get data on all the items that are being used in the hospital, which is the data entry location. These wastes are now discarded in hospital-installed bins. The system is connected to the waste collector in such a way that once the item count in the waste bin reaches 1000, the collector begins to collect the waste, then separates it and sends it for processing, again matching the data with the existing ones that have been disposed of. And the amount of data sent to process the item. Now, some waste is sent for recycling and then further used in industry and hospitals where possible. Maximizing recycling capacity is also beneficial to our economic efficiency. The remaining waste will be disposed of and sent to the landfill.

In addition, the government can log into the system and then rate each hospital's ability to manage its medical waste based on the data. The government will then reward a hospital as a "green hospital" each month based on the maximum recyclability of recyclable waste.

Furthermore, in our report, we will clearly identify the significance of technology used in the planning phase of the project life cycle and the software development lifecycle based on the developed clinical waste management system. The process will be carried out in the following way: Develop a proof of concept, Conduct a stakeholder analysis, Define the scope and its

management, Define the schedule, Network Diagram, Estimate the costs and figure out the potential risks and its measures.

## **1.2 Purpose of the Report**

The purpose of this report is to develop a project plan using the project life cycle and a suitable software development lifecycle to resolve the identified clinical/medical waste problem.

As for software development lifecycle, we chose scrum method of agile model, because it has several advantages. The first advantage is that it assures the customer by providing the deliverables of the system quickly. The second advantage is having faster turnaround times. The third advantage is this method promotes customer feedback, which means it is easier for customer to change the requirement to adapt changing environment. The last advantage is the issues in the project can be detected and fixed quickly. (Wyosocki, 2011)

To begin with, the software we developed is in order to address waste management issue of clinical waste handling. By identifying the requirement of customers, we can gain an understanding of customer issues. Once the requirements of customers are met, all the necessary tasks and deliverables would be outlined in order to resolve the issue. Then, according to the outlined tasks and deliverables, the project team can also define schedules, costs, and risks in turn. It can ensure strategic control and keeps a track of the project from the start to the end of the life cycle.

In addition, this software is a cloud-based application that satisfies the needs of our major stakeholders by reducing the costs and contributing to cleaner, healthier surroundings by proper and timely collection of waste from the hospitals.

## **1.3 Historical Background**

Clinical waste disposal has recently become a serious problem. There are several aspects of the historical background leading to this problem.

Clinical waste is discarded as mixed waste without distinction, which leads to a lot of environmental problems. Hospital staff and patients are the main sources of waste, and they throw away the medical waste without distinction, because they do not realize that it will affect the recycling of the medical industry and the harm to the environment. As mentioned in “The Environmental Hazards of Medical Waste”, it says that in developing countries, clinical waste is often mixed together and burned in the open air, releasing large amounts of carbon dioxide and toxic gases that lead to environmental pollution and other related environmental problems. Moreover, it also mentioned that “poor management of health care waste potentially exposes health care workers, waste handlers, patients and the community at large to infection, toxic effects and injuries, and risks polluting the

environment. It is essential that all medical waste materials are segregated at the point of generation, appropriately treated and disposed of safely" ("Health-care waste", 2018)

Waste not being collected at regular intervals for further treatment may be a potential hazard. As mentioned in "Clinical waste — a major environmental burden", it says that residues in clinical waste can be a potential threat: "The situation can be more complex and dangerous when this waste includes cytotoxic contamination waste from hospital/clinic oncology services." (Clare, L. et al, 2019)

Clinical waste collection also mentioned in "How do NHS hospitals dispose of clinical waste?", it says that "Sharp waste can't be put into bags and has to go into plastic containers. Anatomical waste, such as body parts, organs and surgical waste, is also placed into separate plastic containers." (Mohdin, 2018). Therefore, it is not only necessary to collect clinical wastes, but also to further distinguish and manage such wastes.

The benefit and contribution of clinical waste recycling to society. In addition to the fact that the mixture does not distinguish between the various wastes and the dangerous residue that remains in the appliance, the recycling of clinical waste is also one of the problems that deserve our great attention. "Typical recycling processes are for it to be segregated, picked up by a contractor, repacked or relabeled, sent to a commodity broker and then turned into new things. Recycling is even more optimal in certain regions, as some states have extremely limited landfill space. In New York City, for example, there is no landfill for metro area waste and it is all trucked somewhere else" ("Solid and Liquid Medical Waste: Where Does It Go?", 2008)

In order to seek a long-term development, we'd better recycle the clinical wastes that can be reused, such as plastics, metals, etc, so as to reduce the waste of resources and at the same time obtain a part of the income of fund. As a result, rational distribution and proper monitoring and controlling of the medical waste is the key to solve the above problems. Our system is based on finding a background to distinguish clinical waste, and to separate hazardous and recyclable waste for treatment, which can not only recycle resources, but also deal with environmental pollution problems.



# SECTION 2

## 2.1 Proof of Concept

1. What waste management issue are you wanting to manage and explain the importance of the waste issue? (For this question research must be presented to support your decision.)

"It is estimated that the Victorian public healthcare services generated some 42,000 tons of solid waste. Around 8,600 tons of this was recycled, 4,300 tons was clinical waste and the remainder was classified as general waste. The cost of disposing this waste was close to \$17 million, of which two-thirds was for the treatment and disposal of clinical waste."

The increase in healthcare management has lead to a rise in the amounts of waste generation, and "by 2021-22 it is forecast that Victorian public healthcare services could be generating as much as 52,000 tons of solid waste per annum" ("Waste management in Victorian healthcare services", 2019). Clinical or medical waste is any waste which can harm humans and this type of waste is mainly produced by hospitals and clinics. "It includes human or animal tissue, blood or other bodily fluids, excretions, drugs or other pharmaceutical products, swabs or dressings, syringes, needles or other sharp instruments" ("Waste management in Victorian healthcare services", 2019).

Hospital waste i.e. the clinical/medical waste management is important to increase the safety of employees and reduce any mis-happenings. This heap of waste can have disposable syringes that are usually polluted by blood and different bacteria or it can have materials that can be reused or recycled.

Waste not being collected at regular intervals for further treatment may be a potential hazard. "Traditionally transported medical waste ends up in landfills. It poses an immediate risk to those in the area. But it also leaches harmful substances into the air, land, and water. Without proper medical waste disposal, medical waste works its way into the water supply. It soaks through the soil to enter the groundwater" (Biomedical, 2017)

Enhancing the waste management and waste treatment techniques can help in optimising the overall costs and produce a span of environmental, economic and social benefits (Environment Protection Regulations, 2009).

2. Outline what system/product you want to develop to support the waste issue you have identified in 1. above.

We want to create a BLOOMERS application, in which the data of all the items being used in the hospitals is taken which is the data entry position. Now, this waste is disposed in the bins installed in the hospitals. The bins are installed with sensors which captures the image of the object being dumped and categorises it based on our database.

The system is connected in such a way with the waste collectors that as soon as the count of the items in the bin is full, the collectors come to pick up the waste after which it is segregated on the basis of our categorisation and sent for treatment where again the data is matched with the data already present regarding the quantity of the items disposed and sent for treatment. Now some of the waste is sent for recycling and then can be further used in industries and hospitals where possible. Maximising the recycling capacity is also beneficial for the efficiency of our economy. The rest of the waste is disposed and sent to landfills.

The government can log into the system and check the scores of each hospital based on its ability to manage its clinical wastes. The government will then monthly reward a hospital as "Green Hospital" on the basis of the maximum reusability of the recycled waste items.

3. Explain the usefulness of the system to the stakeholders. (NB: remember the KISS principle.)

1. Instead of the waste being collected at fixed intervals, a notification is sent to the waste collection department whenever the bins are full.
2. Hospitals can keep a track of how much waste is being produced and how much is being treated by a proper system for waste disposal and collection and properly managed data
3. Government can keep a check on the hospital's whether the waste being generated is handled properly.
4. To compare a hospitals' current waste management records with its previous years' recorded data.
5. Stores the record for the amount of waste treated and recycled and incidents occurred (if any)
6. Sensors installed in the bins helps in classification of the object/item dumped.
7. Records the images of the waste being disposed and classifies the objects being disposed.
8. The area cleansing officers can keep a check using our application whether proper methods of waste collection are followed.

4. a. Identify and describe the software development lifecycle (in brief) you will use and explain why your team chose this lifecycle.

AGILE scrum method is used to oppose the constraint of those who cannot oblige and take care of the environment. This perspective is based on repetitive and progressive processes. This method makes sure that the customer is satisfied with all the deliverables provided. The cycles through which the system is delivered are called sprints. This approach focuses on delivering a working software while ensuring customer collaboration.

We chose this life-cycle because it has several advantages:

1. It delivers a fully – functioning software for the use of the customer
2. The changeover is very fast and quick
3. Promotes customer feedback
4. Easily adapts to changes in requirements
5. If any bugs are found, they are detected and settled quickly

- b. At each phase on the SDLC explain what part of the system will be developed. (In brief)

1. **Analysis:** All the appropriate information is gathered from the stakeholders to develop a product and a document stating their functional and non-functional requirements is obtained.
2. **Design:** The collected requirements of the stakeholders are now used as an input and the architecture of the software that is going to be used for implementing system development is designed.
3. **Implementation:** An application is designed keeping in mind the requirements of the stakeholders. The hardware and software is designed by the developer according to the requirement analysis. The Software design is translated into source code. All the modules

are coded in this phase using Python. All the software components are applied and implemented in this phase

4. **Testing:** This phase i.e. testing starts when the entire implementation and coding process is complete and all the segments are released for testing. In this phase, the software which has been developed is tested in depth and any bugs or defects if found are assigned to developers to get them fixed.
5. **Deployment:** Once the product testing is completed, it is deployed in the working environment and if the customer finds the application as expected and required, then an accomplishment is provided by the customer to go live.
6. **Maintenance:** After the product has been deployed on the working environment, the maintenance of the product is to be taken care of by the developers.

5. Describe how the waste issue you have identified for your project (from 1. Above) will be managed by the new system/product. (This can be as simple as numbered points clearly outlined.)

- It's an application which is designed by using Python Programming Language.
- A cloud-based application so that data is never lost even in the case of hard-disk getting crashed.
- Stores the image of the object being dumped and categorises it based on our database.
- The record of the type of items being dumped is stored as an image using the sensors installed in the bins.
- It checks the statistics of the waste collected, segregated and treated.
- Sends notification to the waste collector once the bin exceeds its limit.
- Ranks each hospital according to proper dumping and maximum reusability of the recycled products.

## 2.2 Stakeholder Analysis

### 2.2.1 Stakeholder Management

Stakeholders – “individuals and organizations who are actively involved in the project, or whose interests may be positively or negatively affected as a result of project execution or successful project completion” (PMI, 1996). “Individuals, groups, or organizations who may affect, or be affected by, or perceive themselves to be affected by a decision, activity or outcome of a project. Stakeholders can be internal or external” (PMBOK 6th ed, 2004).

Sometimes it becomes very tough and inconvenient to understand the requirements of the customer in a documented format, so the customer must be informed to give clear requirements (Smith, 2000).

Stakeholder analysis, the first step in Stakeholder management is an integral process of managing stakeholders who help them in making sure that their project will be successful.

Stakeholder analysis typically refers to the “range of techniques or tools to identify and understand the needs and expectations of major interests inside and outside the project environment. Understanding the attributes, interrelationships, interfaces among and between project advocates and opponents, assists us in strategically planning our project. Herein lies a large portion of our project risk and viability, and ultimately the support that we must effectively obtain and retain” (Smith, 2000).

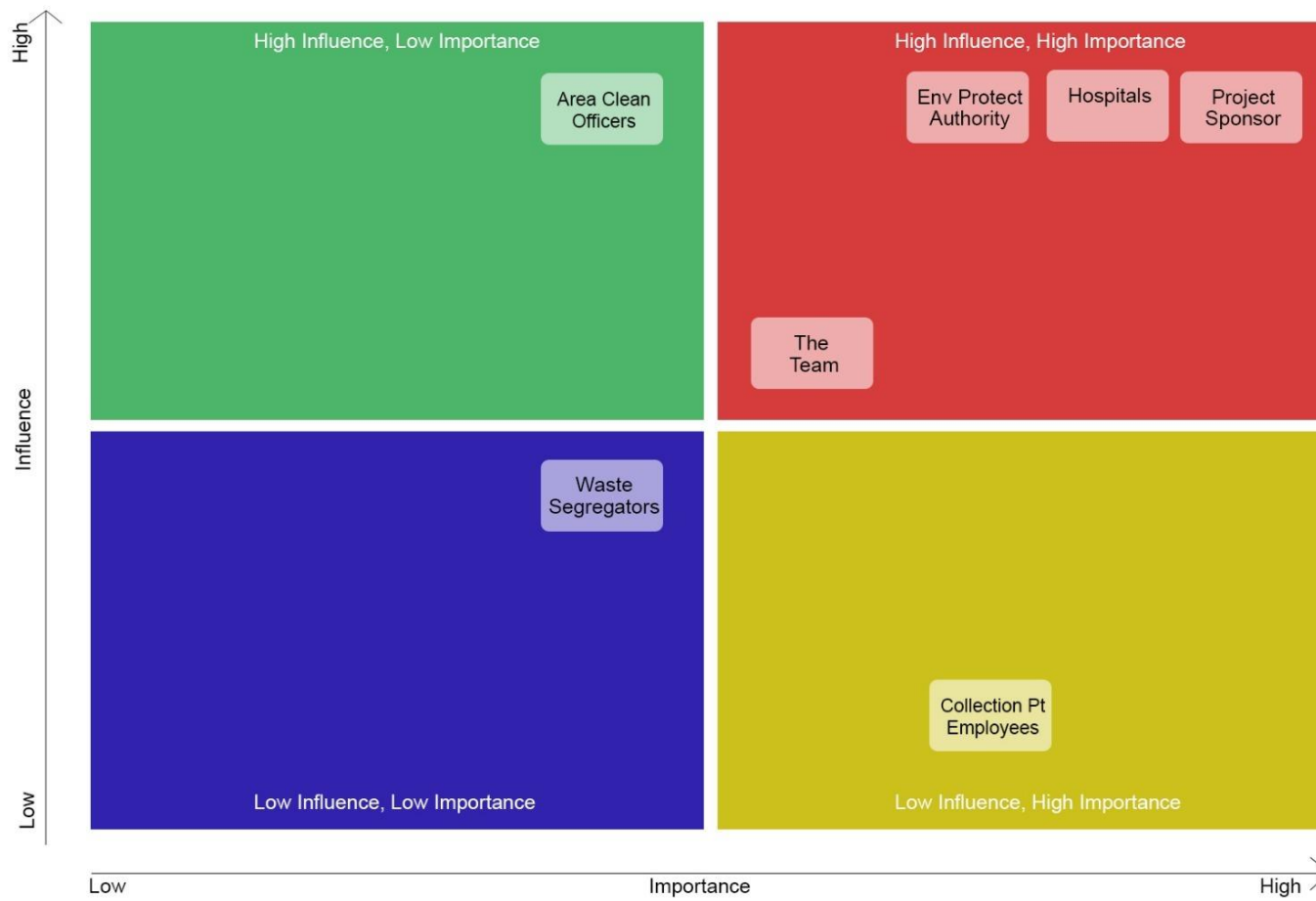
Stakeholder Analysis can be used to know the requirements and the needs of the major stakeholders at an early stage. By communicating with the stakeholders early and frequently, it can be ensured and verified that they have understood and interpreted the project and its benefits. Stakeholders are the people who give our project hands-on as well as financial support. Even a little blunder in identifying the correct stakeholders for the project and their requirements can lead to project failures. Therefore, a lot of time should be spent in the initiation and planning phase of a project (Rabinowitz).

### 2.2.2 Stakeholder Analysis



Sr No.	STAKEHOLDER NAME	IMPACT	INFLUENCE	WHAT IS IMPORTANT TO THE STAKEHOLDER?	CONTRIBUTION	HOW COULD HE BLOCK THE PROJECT?	STRATEGY FOR ENGAGING THE STAKEHOLDER
1	Environment Protection Authority	High	High	Environmental management for sustainable development in the state.	Coordination, supervision and regulation of environmental management	Rejecting the product and scope of the project.	Meetings every 6 months to get their feedback.
2	Hospitals	High	High	Proper system for waste disposal and collection	Follow the bio-medical rules requirements	Not following the rules for disposal	Keep a check if the waste is being managed properly.
3	Employees at collection points	Medium	Low	To ensure that data at the collection point is same as that required by the system.	To give us actual and real updates of medical waste at the collection point.	By not effective and proper usage off the system	Provide adequate training to the employees and give incentives to the ones who attend.
4	Area Cleansing Officers	Medium	High	Proper methods of waste collection are followed.	They keep a check on the employees at the collection points and make sure that the waste is collected properly and adequate methods thereafter are being used.	Going on strike	Monthly discussions about the management System.

5	Waste Segregators	Medium	Medium	Waste is properly dumped	Segregation of the waste i.e. the general waste, recyclable waste, the pharmaceutical waste.	Not doing their job properly/ Not coming for work	Providing proper training to the people who segregate the waste.
6	Project Sponsor	High	High	Project delivered on a timely basis within the given budget.	Approval of the scope and budget	Reject the project scope	Weekly feedback sessions with the project team.
7	The Project Team	Medium	High	Completing the project on time within the set budget	Working together with one another and delivering the work timely.	Conflicts within the team	Encourage teamwork and promote a healthy working environment.



### 2.2.3 Communication Plan

“Nothing is more important to the success of a project than effective communication. *More effective communication = Better project management* is obviously known to everyone in project management, but we do face difficulties in implementing it due to various factors like the nature of the project, structure of the organization etc.” (Rajkumar, Sivasankari, 2010).

**Communications Management** “includes the processes that are required to ensure timely and appropriate planning, collection, creation, distribution, storage, retrieval, management, control, monitoring, and the ultimate disposition of project information. Project managers spend most of their time communicating with team members and other project stakeholders, whether they are internal (at all organizational levels) or external to the organization. Effective communication creates a bridge between diverse stakeholders who may have different cultural and organizational backgrounds, different levels of expertise, and different perspectives and interests, which impact or have an influence upon the project execution or outcome.” (PMBOK 6th ed, 2004)

Ineffective communication within the team or with the stakeholders can cause a huge monetary loss to the company. It is always true that high-performing businesses have a very strong and effective communication plan than their low-performing counterparts (Team, 2018)

A project management communication plan keeps the project on track as it is a written document that can be referred to as and when required and delivers the chance for the stakeholders to give their opinions at an early stage which results in low amount of work getting wasted and an increased productivity. The communication plan enhances the team’s integrity and leads to lesser confusions during the entire process.

- For the stakeholders:

Sr No.	What (Communication Purpose)	Who (Sender)	Whom (Receiver)	When (Communication Schedule)	How (Communication Channel)
1.	Kick-off Meeting	The PM team	The other stakeholders	At the start of the project	Meeting
2.	Gather the information and details from the major stakeholders	Hospitals	The PM team	Twice a week	Interview/ Meeting
3.	Confirm the budget and the cost plan	The PM team	Government/ Environment Protection Authority	Weekly	Meeting
4.	Identify any changes in the requirements	The PM team leader	The Scrum team/ Project Sponsor	Weekly	Email/Meeting
5.	Functionalities of the software	The Scrum leader	The PM team leader	As and when required	Face to Face meeting
6.	Working of the software	The PM Team	The Waste Collectors	Weekly	Training programmes
7.	Task progress updates	The PM team leader	Government/ Environment Protection Authority	Fortnightly	Meeting
8.	Discuss the software issues	The Scrum leader	The PM team leader	As and when required	Email/ Meeting

- For the project team :

Sr No.	What (Communication Purpose)	Who (Sender)	Whom (Receiver)	How (Communication Channel)	When (Communication Schedule)
1.	Introduce the PM team and the project.	PM team	All the stakeholders	Team meeting	At the beginning of the project
2.	Feedback of the software	PM team	IT Consultant	Email	Weekly
3.	Functional Requirements	PM team	IT Consultant/ Scrum team	Email/Call	Weekly
4.	Budget and cost plan	PM team	Government/Environment Protection Authority	Meeting	Fortnightly
5.	Review the project status	PM team	Project Sponsor/ Government/Environment Protection Authority	Meeting (Face to Face)	Weekly
6.	Key Deliverables	PM team	Project Sponsor	Meeting	Monthly
7.	Perform adjustments according to the demands	PM team	Scrum team	Meeting/Email	As per requirements

### **2.2.4 Summary**

Project stakeholders are the ones who pay a lot of heed to the end-result of the project. Irrespective of the role of the stakeholder in the project, “all of the stakeholders matter, and managing stakeholders effectively can make a big difference to the success of your project”. The key responsibility of the project manager and the team is to comprehend who can be the potential stakeholders for the project, and why their needs are important to the success of the project. That is the reason why proper communication of the project team with the stakeholders and within the team also is needed for a well-functioning project.

## 2.3 Scope Management Plan

### 2.3.1 Definition

The process of documenting and defining stakeholder requirements to achieve goals of a project is called requirement gathering. Scope definition is the process of describing the details of a project while developing. Scope management is crucial because if we do not define the scope of project, it will be really difficult to approximate and guess the total cost and the time needed for the completion of the project. In addition, if the scope is changed often, it will lead to the increase of cost and disruption of schedule of project.

The purpose of scope management is to ensure that all the required work is included, and project scope management refers to the “process of ensuring that all the work needs to be completed in the project and mapping the scope of the project” (Brewer and Dittman, 2013).

### 2.3.2 Stakeholder Requirements

1. Environment Protection Authority, Victoria: “EPA Victoria is responsible for regulating the storage, transport, treatment and disposal of clinical and related wastes in Victoria under the Environment Protection (Industrial Waste Resource) Regulations 2009”. It is important for them that medical waste is appropriately segregated, packaged, labelled, handled and transported so that it can reduce any risk to waste handlers and the people. For EPA, Victoria, environmental management for sustainable development in the state is their key priority. (EPA, 2019).

2. Hospitals : According to the Victorian Auditor-General’s Office, Victoria’s public health system is highly unprotected to cyber attacks (VAGO, 2019). A significant reason for this is that the knowledge of the staff about data security is very low and healthy services do not even consider protecting the data as important (VAGO, 2019). In Victoria, there is a lack of properly managed data. So a proper system for waste disposal and collection and a properly managed data with high security is required.



3. Employees at collection points: For them it is important to ensure that data at the collection point is same as that required by the system i.e. data integrity is maintained. They come to the collection points at their fixed times, which can sometimes result in waste overflow in the bins so they need a proper notification of when the waste needs to be collected from the bins.

4. Area Cleansing Officers: For them, whether proper methods of waste collection are followed or not is a priority. So for this requirement they need a proper managed data where they can keep a track of items and the disposal methods being followed by the hospitals.

5. Waste Segregators: It becomes a big burden for the segregators to decide what is to be done with item when they receive a heap of mixed waste. So there should be a technique which helps the segregators in deciding what is to be done with it.

#### **INNOVATIVE IT SOLUTION:**

- In order to solve the issues that have been identified for each of the stakeholders, we have proposed a – “Bloomers Application”.
- It’s an application which is designed by using Python Programming Language.
- The record of the type of items being dumped is stored as an image using the sensors installed in the bins.
- It checks the statistics of the waste collected, segregated and treated.
- Sends notification to the waste collector once the bin exceeds its limit.
- Ranks each hospital according to proper dumping and maximum reusability of the recycled products.

### 2.3.3 Functional and Non-Functional Requirements

Stakeholder	FR/NFR	Description
Environment Protection Authority	1. Register & Log In	Govt. body needs to register through email, set password and add basic information when they use the app for the first time. They can then use their email and password for logging in every time
	2. Check stats of each hospital	Check the waste generated and recycled status of each hospital
	3. Checks stats of waste collectors	Check total amount of waste collected by waste collectors
	4. Checks stats of waste segregators	Check total amount of waste treated and recycled by the waste segregators
	5. Scores each hospital	Approves or modifies scores for each hospital for recycling and safe disposal of clinical waste

	6. Rewards a hospital	Rewards a hospital as “Green Hospital” on the basis of maximum reusability of recycled items
Hospitals	1. Register & Log In	A hospital needs to register through email, set password and add basic information when they use the app for the first time. They can then use their email and password for logging in every time
	2. Registers items	The quantity of all the items being used in the hospital is recorded
	3. Allocates sensored Bins	Registers ID of each bin used by the hospital to dump wastes
	4. Checks previous recorded data	It can check data for the amount of waste previously generated and recycled
	5. Checks score	Check the current score for their reusability of recycled waste
Employees at collection point	1. Register & Log In	A collection point employee needs to register through email, set password and add basic information when they use the app for the first time. They can then use their email and password for logging in every time
	2. Scan a bin ID	The ID of a bin has to be scanned to be matched with the relevant hospital

	3. Records weight of each bin	Enters the recorded waste of each bin
	4. Sends a notification for Collection	As the quantity of waste reaches 1000, the waste collectors are notified.
Area Cleansing Officers	1. Register & Log In	An area cleansing officer needs to register through email, set password and add basic information when they use the app for the first time. They can then use their email and password for logging in every time in the app.
	2. Records Incident	Monitors any incident of improper waste management and keeps a record of the incident on the app for the hospital
Waste Segregators	1. Register & Log In	A waste segregator needs to register through email, set password and add basic information when they use the app for the first time. They can then use their email and password for logging in every time
	2. Records Treated Waste	Amount of waste treated from each hospital is weighted and recorded in the app

	3. Records Recycled Waste	Amount of waste sent for recycling from each hospital is weighted and recorded in the app
Project Team	1. Manage all accounts	The team manages all the accounts of govt. agency, hospital, waste collectors and segregators and view details
	2. Monitors Collected Data	The team has access to track all the data at every entry and exit points in the system
	3. Modify Records	The team can add, delete or modify the data collected at each point as per requirement

### 1. Functional Requirements

- a. Clinical Waste Management System must use cloud-based database to store data.
- b. The system should maintain a log of changes made in the database for data security and recovery
- c. The system must save and show status of each hospital
- d. Employees at collection points must record the actual weight of medical waste at the collection point
- e. Waste Segregators must correctly record waste treated and recycled
- f. The system must store the image of the item dumped and categorize it based on our database

### 2. Non-Functional Requirements

- a. Clinical Waste Management System must be secure from external modifications/attacks.

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- b. Govt. Agencies, Hospitals, Waste Collectors, Waste Segregators and Area Cleansing Officers must have an ID and password to access the system.
- c. The system should have a user-friendly interface for the app and web portal.
- d. The system can be down for updates and maintenance for at least 3 hours once a week.
- e. A back-up system can be made so that the system will function normally during maintenance.

#### **2.3.4 Work Breakdown Structure**

##### **1.0 BLOOMERS APPLICATION**

- 1.1 Initiation
  - 1.1.1 Proof of Concept
- 1.2 Panning
  - 1.2.1 Stakeholder Analysis
  - 1.2.2 Scope Management Plan
  - 1.2.3 Schedule Baseline
  - 1.2.4 Network Diagram
  - 1.2.5 Cost Management Plan
  - 1.2.6 Risk Management Plan
- 1.3 Execution
  - 1.3.1 Hardware
    - 1.3.1.1 Requirement Analysis
    - 1.3.1.2 Designing Hardware
      - 1.3.1.2.1 Installation of sensors in the bins at the hospital
    - 1.3.1.3 Procurement

- 1.3.1.3.1 Tender
    - 1.3.1.3.2 Estimation of the tender
    - 1.3.1.3.3 Give the contract
- 1.3.2 Software
  - 1.3.2.1 Design
    - 1.3.2.1.1 Gather requirements
    - 1.3.2.1.2 Basic design
    - 1.3.2.1.3 Network design
    - 1.3.2.1.4 Activity Diagram
    - 1.3.2.1.5 Logical Design
  - 1.3.2.2 Development
    - 1.3.2.2.1 Create a Database regarding the items used in the hospitals
    - 1.3.2.2.2 Registration page for registering and logging in
    - 1.3.2.2.3 Read images using the sensors installed in the bins
    - 1.3.2.2.4 Classify the object based on the data stored in the database
    - 1.3.2.2.5 Store records of the recycled waste and treated waste
    - 1.3.2.2.6 Check the status of the waste generated and recycled.
    - 1.3.2.2.7 A notification prompt for the waste collector
    - 1.3.2.2.8 A scorecard for each hospital
    - 1.3.2.2.9 Merge all the phases into one
  - 1.3.2.3 Testing
    - 1.3.2.3.1 Unit test case preparation
    - 1.3.2.3.2 Unit testing all the cases
    - 1.3.2.3.3 Units' model improvement
    - 1.3.2.3.4 Final debugging
    - 1.3.2.3.5 Final product testing
  - 1.3.2.4 Finalize
    - 1.3.2.4.1 Configure software
    - 1.3.2.4.2 Configure hardware
    - 1.3.2.4.3 Configure the components together

1.4 Monitoring and Controlling

1.4.1 Performance Control

1.4.2 Scope verification

1.4.3 Cost control

1.4.4 Schedule control

1.4.5 Risk mitigation

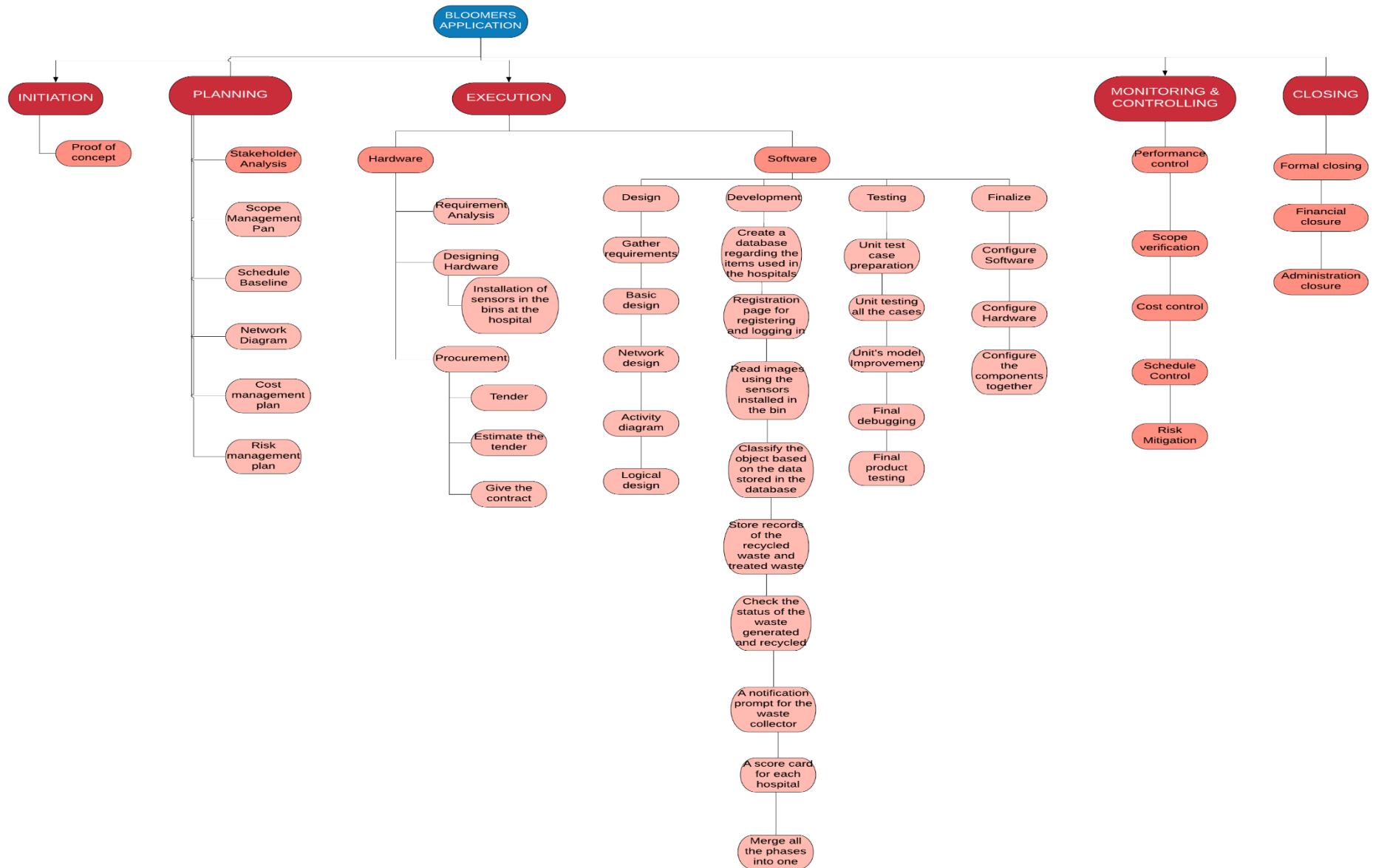
1.5 Closing

1.5.1 Formal closing

1.5.2 Financial closure

1.5.3 Administration closure





### 2.3.5 Summary

Scope management makes sure that the project scope is well-defined and enables the project manager to allocate enough labour and the costs necessary to complete the project on time. It is “the work that needs to be accomplished to deliver a product, service, or result with the specified features and functions” (PMBOK. 5th ed, 2008). In this section we have determined the requirements of each stakeholder and have addressed our waste management issue of “Clinical Waste Handling” by developing a “Bloomers application”. The functional and non-functional requirements of the system in accordance with the stakeholders has been presented.

## 2.4 Schedule Baseline

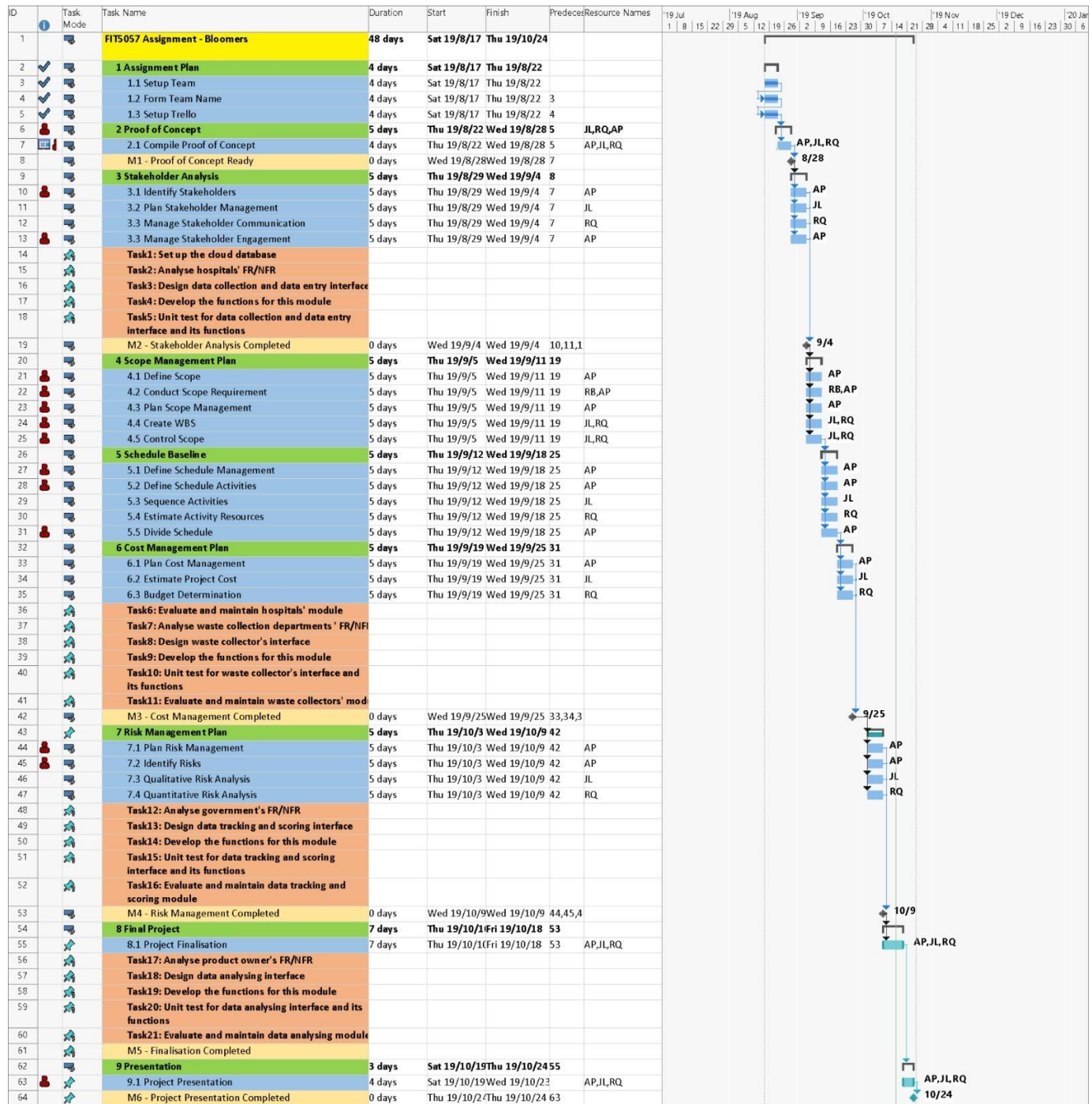
### 2.4.1 Schedule management and its importance

Project time management involves the process of ensuring that the project is completed on time. The key to good time management is not to work more, but to work more efficiently (Tran, 2015). To a large extent, the acceleration of progress is directly reflected in the improvement of productivity. For example, if a power plant can generate electricity one day earlier, it will be able to pay interest on the loan one day earlier. If our project BLOOMERS is put into use in advance, it means that customers can enjoy the products and services more conveniently, which will generate better expectations for us than our competitors and bring more profits. Therefore, whether a project can be completed within the scheduled time has become one of the major goals for project management.

Managing the project schedule can be one of the most formidable parts of project management. That's why the Project Management Body of Knowledge's (PMBOK, 5th ed, 2017). Schedule Management knowledge area contains the following 6 processes: Schedule Management Plan, describe the activities, line up the activities sequentially, estimate activity durations, develop schedule and control schedule. Project schedule management is the management of all the work that has to be done to ensure that the project is completed properly on time. The main target of project schedule management is to work out a logical and a feasible schedule within the specified time, and then check whether the actual one is in line with the planned schedule during the execution to make sure that the project is completed on time.

### 2.4.2 Schedule baseline

# FIT5057 – PROJECT MANAGEMENT – BLOOMERS



### **2.4.3 Summary**

Project schedule management, like investment control and quality control, is one of the key controls in project construction. Among the three objectives of project construction control, quality is the fundamental, investment is the key, and schedule progress is the centre. Thus, the status of progress control is extraordinary, it should and must be paid attention to. Therefore, the establishment of a reasonable schedule plan, especially the implementation of dynamic control of schedule plan in construction, is the deciding factor to confirm that the project is on schedule or whether the monetary and social benefits are needed much early in advance.

## 2.5 Network diagram activity

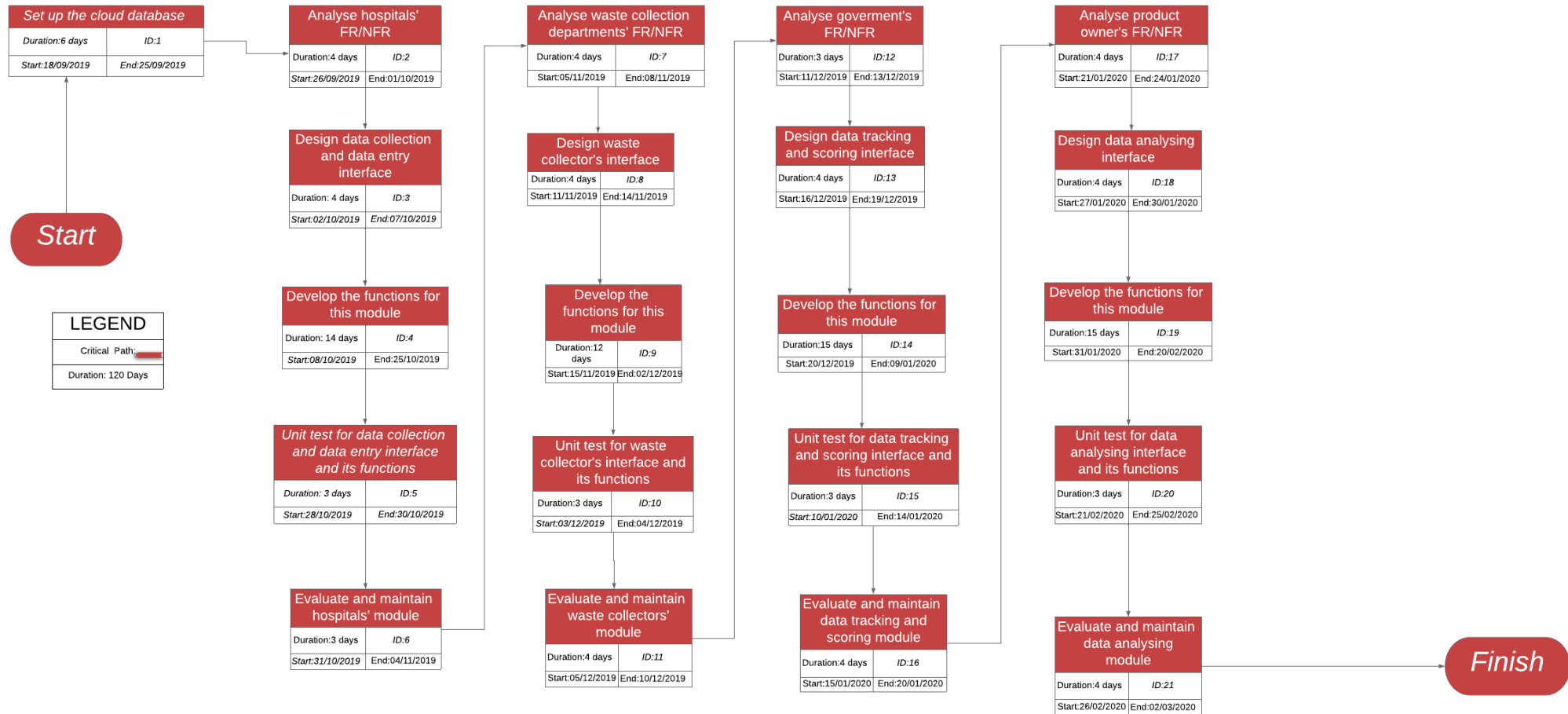
### 2.5.1

Project network diagram is a schematic way of representing the logical relationships among project activities and their sequences (Schwalbe K. , 2019).It is an effective means to show the sequence of activities. It is a network diagram of project progress or a technical diagram of plan review.

The importance of network diagram is as follows:

- 1.The whole project is divided into smaller, independent units.
2. These small units are linked with the participating organizations and contract out the work to be done by these organizations.
3. Make detailed time and cost estimates for each unit, and form progress and cost targets.
4. Determine the work content, quality standards and the sequence of work to be completed for the project, and establish the project quality control plan.
5. The cost of the whole process of the project is approximated and the project cost control plan is established.
6. Estimated the completion time of the project and established the project progress control plan (Schwalbe K. , 2019).

## 2.5.2



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**2.5.3 Dependencies**

Symbol	Activity	Duration	Predecessors
A	Set up the cloud database	6 days	None
B	Analyze hospitals' FR/NFR	4 days	A
C	Design data collection and data entry interface	4 days	B
D	Unit test for data collection and data entry interface and its functions	14 days	C
E	Evaluate and maintain hospitals' module	3 days	D
F	Analyze waste collection departments' FR/NFR	4 days	E
G	Design waste collector's interface	4 days	F
H	Develop the functions for this module	12 days	G



I	Unit test for waste collector's interface and its functions	3 days	H
J	Evaluate and maintain waste collector's module	4 days	I
K	Analyze government's FR/NFR	3 days	J
L	Design data tracking and scoring interface	4 days	K
M	Develop the functions for this module	15 days	L
N	Unit test for data tracking and scoring interface and its functions	3 days	M
O	Evaluate and maintain data tracking and scoring interface and its functions	4 days	N
P	Analyze product owner's FR/NFR	4 days	O
Q	Design data analyzing interface	4 days	P
R	Develop the functions for this module	15 days	Q

S	Unit test for data analyzing interface and its functions	3 days	R
T	Evaluate and maintain data analyzing module	4 days	S

#### 2.5.4 Critical Path

Critical Path is a sequence of stages where you figure out what the least amount of time is necessary to complete a task with the least amount of slack. So, the critical path is really the longest length of time it will take to complete the project tasks and the activities along this path are called the critical activities (as shown in the fig. 2.5.2 above). The activities are called critical because they cannot be delayed. Any delay in a critical activity will delay the completion of the whole project (Ray, 2018)

#### 2.5.5 Summary

In the innovative software solution project, it can also be combined with the cost plan. In the network, we can see the planned progress and actual progress of each process, as well as the comparison between planned cost and actual cost, so that we can clearly see the direction of controlling the progress and cost in the future. Therefore, network diagram is an advanced representation of project progress diagram which is widely used in projects.

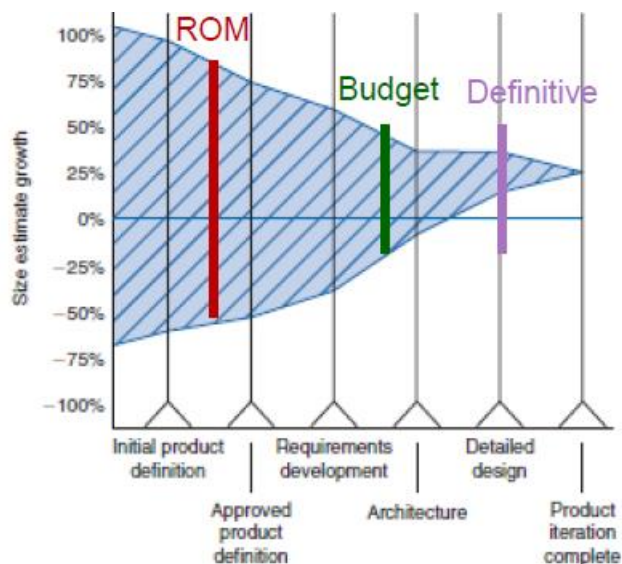
## 2.6 Cost Management Plan

### 2.6.1 Importance of a cost management plan

The purpose of cost management is the process to “estimate, allocate, and control costs of a project”. In fact, the failure of some projects is not due to lack of funds but mainly resulting from poor cost management. If we do not have a well-prepared cost management plan, the project is likely to fail during the development phase. Therefore, cost management plan is indispensable part of project management. “Cost planning is an integral part of project management, because it allows for the planning, estimating, budgeting and controlling of costs of project resources needed to complete 100 percent of the activities of the project.” (Brewer and Dittman, 2013)

For our project, we will continue to improve the cost estimate, and they can be managed at each stage of the project lifecycle to obtain the most accurate cost estimates.

In the initial phase of project, a rough estimate of the project is recorded. In the planning phase of the project, a cost baseline will be established and compared continuously to actual costs. At the end of the implementation phase, the cost estimate will become more accurate and the uncertainty will shrink.



(Brewer and Kevin, 2013)

### 2.6.2

## FIT5057 – PROJECT MANAGEMENT – BLOOMERS

	Unit/Hrs	Cost/Unit/Hrs	Subtotals	WBS Level 2 Totals	% of Total
WBS Items					
<b>1 Project Management</b>				\$115,000	23%
1.1 Project manager	600	\$50	\$30,000		
1.2 Project team members	1200	\$50	\$60,000		
1.3 Contractors			\$25,000		
<b>2 Hardware</b>				\$30,000	6%
2.1 Handheld devices	100	\$200	\$25,000		
2.2 Cloud services	5	\$1,000	\$5,000		
<b>3 Software</b>				\$200,000	40%
3.1 Licensed software	200	\$200	\$40,000		
3.2 Software development			\$160,000		
<b>4 Testing</b>			\$25,000	\$25,000	5%
<b>5 Training and support</b>				\$75,000	15%
5.1 Trainee cost	100	\$300	\$30,000		
5.2 Travel cost	10	\$900	\$9,000		
5.3 Project team members	1200	\$30	\$36,000		
<b>6 Reserves</b>			\$55,000	\$55,000	11%
<b>Total project cost estimate</b>				\$500,000	

Table: the cost estimates

# FIT5057 – PROJECT MANAGEMENT – BLOOMERS

WBS Items	1	2	3	4	5	6	7	8	9	10	11	12	Totals
1 Project Management													
1.1 Project manager	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$30,000
1.2 Project team members	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$60,000
1.3 Contractors			\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$25,000
2 Hardware													
2.1 Handheld devices				\$12,500	\$12,500								\$25,000
2.2 Cloud services				\$2,500	\$2,500								\$5,000
3 Software													
3.1 Licensed software					\$25,000	\$15,000							\$40,000
3.2 Software development				\$25,000	\$25,000	\$30,000	\$30,000	\$25,000	\$25,000				\$160,000
4 Testing								\$25,000					\$25,000
5 Training and support													
5.1 Trainee cost									\$30,000				\$30,000
5.2 Travel cost									\$9,000				\$9,000
5.3 Project team members							\$6,000	\$6,000	\$6,000	\$6,000	\$6,000	\$6,000	\$36,000
6 Reserves			\$2,000	\$2,000	\$5,000	\$5,000	\$9,000	\$9,000	\$9,000	\$6,000	\$4,000	\$4,000	\$55,000
Totals	\$7,500	\$7,500	\$12,000	\$52,000	\$80,000	\$70,000	\$55,000	\$70,000	\$84,000	\$22,000	\$20,000	\$20,000	\$500,000

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## FIT5057 – PROJECT MANAGEMENT – BLOOMERS

	SYSTEM CHARACTERISTICS	Scale(0-5)						
1	Will the system run in an existing, heavily utilized operational environment?	4						
2	Is data communication required?	3						
3	Are there distributed processing functions?	1						
4	Does the system need backup and recovery?	3						
5	Is performance critical?	5						
6	Does the system require on-line data entry?	4						
7	Does the on-line data entry require the input transaction to be built over multiple screens or operations?	1						
8	Can the master files be updated and accessed on-line?	4						
9	Are the inputs, outputs, files or inquiries complex?	2						
10	Is the internal processing complex?	2						
11	Are conversion and installation included in the design?	2						
12	Is the code reusable?	4						
13	Is the application designed to facilitate change?	3						
14	Is the system designed for multiple installations at different sites?	4						
	TOTAL:	42						
	0-NO EFFECT      1-INCIDENTAL							
	2-MODERATE     3-AVERAGE							
	4-SIGNIFICANT   5-ESSENTIAL							
		SIMPLE	weights	AVERAGE	weights	COMPLEX	weights	
		7 x3		8 x4		4 x6		77
	Number of user inputs	8 x4		20 x5		9 x7		195
	Number of user outputs	2 x3		15 x4		7 x6		108
	Number of user inquiries	12 x7		25 x10		3 x15		379
	Number of files	5 x5		19 x7		8 x10		238
	Number of external interfaces							
							count=	997
	function point=count-total * [.65+.01*sum Fi]Ⓜ							
	=997[.65+0.01*42] = 1066.79							
	Effort required= 1066.79 x 3 = 3200.37							
	Cost = effort x hourly rate= 3200.37x50 = \$160018.5							

Table: function points

### **2.6.3 Function points : A useful software costing method**

Function Point Analysis (FPA) refers to the “practice of using function points to measure and estimate the cost of work on systems”. Function Points evaluate the degree of business functionality a system provides to its users, approximate the cost required to develop a system and its features based on its function points (Adams, 2019).

### **2.6.4 Summary**

Project Cost Management, therefore, is referred to the collective tasks of estimating, allocating and controlling the costs of an underlying project. It involves monitoring the costs during the entirety of the project, as per the approved budget. It also curbs the extra or unwanted expenditure. It supplies the planning and design structure necessary to control the costs and stay within the budget. Hence, it is an important and very crucial for any project.

## 2.7 Risk Management Plan

### (a) Importance of identifying risks and using a risk register

It is important for a project to have risk management plan, because risks have a high impact on all the constraints. Therefore, by identifying the relevant risks and making plans based on the level of risk for control and monitoring, the negative impact and potential risk can be minimized.

According to Blackburn in 2016, “risk refers to the possibility of loss (or, less popular, income): the magnitude of the risk is measured by the probability of loss and its probability”. Risk identification is the first step of risk management and the basis of risk management as well as. The appropriate and productive methods to deal with risks can be used only when the risks have been correctly identified by the risk manager. risks they faced, they can choose appropriate and effective methods to circumvent or deal with risks (Discenza, R. & Forman, J. B., 2007). Failure to correctly identify the risk, sometimes in addition to the failure of the project, can even cause huge losses to the organization, this phenomenon is also known as the black swan (Flyvbjerg and Budzier, 2011). In addition, identification of risk early can help organizations gain a competitive advantage. Therefore, identifying risk is very important in project management progress.

A risk register is a document used as risk management tool and to fulfill regulatory compliance acting as a repository for all risks identified and includes additional information about each risk, e.g. nature of the risk, reference and owner, mitigation measures.

There are six major risks that associated the project with a clear explanation of what they are, how do they happen, how they will affect the project if they happen, what is the risk control measures and risk monitoring, and who is responsible to take ownership of the risk. The risk register is developed to enable the project manager to refer to any risk as it occurs, and certain aspects of the ongoing revision of the project may introduce or eliminate risk throughout the life of the project.

### (b) Risk factors

1. **Poor managing strategy and stakeholders:** It is one of the most common risk factors that are often neglected in the hands of managers who focus on schedule targets and budgets. Cost overruns can be avoided by creating a vigorous business case and focusing on business strategies. A good stakeholder management involves circumspection when vendors are to be selected and contracts are to be negotiated with them. In our project good strategy and responsible stakeholders are essential for the success (Thamhain, Hans., 2013)
2. **Mastering technology and content:** It is another key factor, presence of a right team which understands both technical and business concerns, this is why companies should invest on experienced and high performing people. People with expertise can increase the performance and efficiency of a



company by 100% through their judgement skills and capability to understand the data (Bloch et al, 2012). With reference to our project, an efficient team which is very well versed with the technical skills is essential.

3. **Inadequate Change Management:** It is not completely technical, it requires the operational modification of an organization. Underestimating any effort in the change management may lead to project failure especially in the beginning (Aloini, 2007). This risk factor can be explained by referring to the case of Levi Strauss whose management decided to revamp its IT system as it was country specific. The management decided to hire a team of consultants from Deloitte and wished switching to a single SAP system. Initial budget was \$5 Million, but due to a major customer Walmart which required the supply chain management system in the interface, budget went really high.
4. **Inadequate methods for internal controls and financial reporting:** Due to this risk factor Levi Strauss was pushed to reiterate annual and quarterly results. Levi was unable to fill the orders during this switchover as three of its distribution centers had to be closed for a week. Company had to take a charge of \$192.5 million from the earnings to compensate for the mishandled project, as a result it's CIO was fired (Flyvbjerg and Budzier, 2011). It is an essential factor for the successful implementation of our project.
5. **Poor Leadership:** This is probably the most important risk factor for our project. It arises if people at senior level are not committed to solving the problems and providing the correct directions to the employees. Commitment to the leadership, open and honest communication, empowering the implementation team will be the factors which are essential to build a strong leadership and thus, a successful company (S. Sarker, 2003).
6. **Lack of communication:** Communication is an important skill for leaders and top-level management. Proper communication ensures that the team understands the project and its requirements very well to achieve a positive result and a successful project.

**(c) Likelihood Probability**

<b><i>Rating</i></b>	<b><i>Description</i></b>	<b><i>Occurrence Probability</i></b>
1	Rare	This risk has a very low probability and occurs rarely.
2	Unlikely	Event has as a very minor chance of occurrence.
3	Possible	There are fine chances for occurrence of this event based on the past records.
4	Likely	This event has potentially good possibility for occurrence based on the similar events in the past.
5	Highly Likely	There is no uncertainty for this event and has a very high probability of occurrence based on the past records.

● Risk Matrix

	Probability	1	2	3	4	5
	Impact	Rare	Unlikely	Possible	Likely	Highly likely
5	Severe	Medium	Medium High	High	Very High	Very High
4	Major	Low	Medium	Medium High	High	Very High
3	Moderate	Low	Medium	Medium	Medium High	High
2	Minor	Low	Low	Medium	Medium	Medium High

1	Trivial	Low	Low	Low	Low	Medium
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### 2.7.1 Risk Register

“ Risk Register is a document that contains all the results of risk analysis and where risk response plans are recorded” (PMBOK, 2004). “To collect the possible risks that can show up when managing a project requires a systematic approach to make sure you’re as thorough as possible. The project risk register is a system, which can then track that risk if it in fact appears and then evaluate the actions you’ve set in place to resolve it” (Ray, 2017).

Risk registers are aimed to record all the information of individual risks identified. Result of planning and implementation of risk response, performing qualitative risk analysis and risk monitoring are captured and are noted on the risk register, review of it is done at regular interval to monitor the progress. Risk registers can have details mentioned in brief or extensive way depending on factors like size and complications in a project. A typical risk register may include but not limited to:

1. A list of risks which are identified: The identified risks are assigned an identifier and explanation of each one is done in detail ensuring that same meaning is being delivered to every individual and are unambiguous.
2. Risk owners: Identification of the risk owner is done. A risk owner is an accountable point of contact in an organization at some senior level whose role involves coordination of efforts to manage and minimize the risks and mitigate with individuals who own parts of the risk.
3. Risk responses list: Risk response involve ways to deal with risks if they occur in reality, a list of such responses is made (Lavanya, N. & Malarvizhi, T. , 2008)

Risk no	Risk Name	Risk Description	Likelihood	Impact	Total risk score	Risk class (see legend)	Risk control measure	Risk monitoring	Impact to triple constraint	Risk owner
1	Lack of communication  This risk is a critical factor in any project	Communication is an important skill for leaders management. Communication ensures that the team members interpret and support not only where the team is now but also what they want to be. Lacking of communication will cause project failure.	5	5	5x5=25	Extreme	Often communicate with team member.	To verify project progress with team members frequently	Time: lacking of communication can cause team waste time so that leads to project overtime	Ananya Pandey  (Project team leader)
2	Lack of top management support	Top management does not provide any vision and support for the new project	5	5	5x5=25	Extreme	Discuss with top management.  Make a strategy plan to ensure this happens.	Meet with management regularly to discuss progress	Increase time if resource is not enough.	Ananya Pandey  (Project team leader)
3	Lack of training	Training needs to be considered  No training and	5	5	5x5 = 25	Extreme	Give members enough training in	Check the knowledge of each member whether or	Cost and time: members who had no	Ruolin Qiao  (Project team)

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		experience will cause the project failure.					order to reach the requirement level.	not reach the requirements level	training will waste time during project and training them need money.	member)
4	Bad Organizational Structure	Organizational structure gives the ability to predetermine the way employees work. An organization's structure and processes are beneficial when their design's role matches the environment and have a positive effect upon the strategies of the organization.	4	5	4x5 = 20	High	To improve a organization's performance by successfully solving problems that is causing dissatisfaction for internal or external customers we need focus on Elimination of Root Cause problems.	Through the structured problem solving, identifying the root cause and implement a solution that prevents recurrence and contributes to quality continuous improvement.	Time and cost: requirements bad organization al structure means the leader need more time to organize his group and need more money to rebuild a better group	Ruolin Qiao (Project team member)
5	Poor change management	Scope is likely to change, with change new risks may arise or current risk probabilities may vary, therefore it is	4	4	4x4=16	High	Review scope changes and re-identify risks.	Monitor and Control all current and new risks	Major impacts to the scope time, cost and or quality objectives	Li Jiao(project team member)

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		critical to go through the control process								
6	Poor allocation of tasks within the project team	Team members becoming unavailable due to working on other projects or other unforeseen reasons	3	4	3x4=12	Low	<p>Project manager to allocate project work schedule accordingly.</p> <p>Project manager to obtain all project team members schedules and current working projects</p>	Regular meetings with team members	Moderate impacts to the scope time, cost and or quality objectives	Li Jiao(project team member)

### **2.7.3 Summary**

The most demanding and taxing part of managing any software project is risk management. It is true that we cannot foresee the future with certainty, but we can apply a simple and an efficient risk management process to predict any shortcomings that may arise and minimize the impact of that shortcoming.

Risk management is an efficient tool that not only helps in avoiding any emergency conditions but also helps in making you learn from your previous mistakes. This can improve the possibility of completing the project successfully and reduces the effects of those risks(Lavanya, N. & Malarvizhi, T. , 2008).



## Overall summary

To sum up, the main purpose of our system is to solve the waste management problem of "clinical waste disposal". The system is based primarily on a cloud-based application that meets the needs of our key stakeholders through appropriate and timely collection of clinical waste produced from hospitals, statistical data, rational distribution, treatment and recycling. This project makes an appropriate contribution to cleaning and protecting the environment, while its recycling features also reduce our costs.

Project schedule management is an indispensable part of our project. Like investment control and quality control, it is one of the key controls of project construction. In this section, we used schedule baseline to show the details of tasks from the beginning to the end of our project, the start and end times, and the work details assigned by each member of our group. Therefore, the establishment of a reasonable schedule plan, especially the implementation of dynamic control of schedule plan in construction, is the decisive factor to ensure the project on schedule or to give play to economic and social benefits in advance.

The reason we use network diagrams is to break the entire project into relatively independent and manageable units. In the network, we can see the planned progress and actual progress of each process, as well as the comparison between planned cost and actual cost, so that we can clearly see the direction of controlling the progress and cost in the future. Therefore, network diagram is an advanced representation of project progress diagram, which should be widely used in information system projects.

So, in this project we have analyzed, generated and transmitted knowledge and skills to design an innovative IT waste management system responding to a current waste management issue identified in Victoria by presenting team project deliverables in a collaborative manner.

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## APPENDIX

- **Agendas and Minutes**

### AGENDA FOR MEETING 1:

1. Discussion for the team name and the team lead.
2. Set up the Trello Board .
3. The Gantt Chart.

### MINUTES

**Team Name: BLOOMERS**

**Meeting No: 1** (Week 3)

**Meeting Date:** 14<sup>th</sup> August 2019

**Location:**Outside MPA

**Attending:** AP, RB, RQ, LJ

**Apologies:** NONE

**Meeting start time:** 4:00 pm

### Outcome of meeting:

Issue	Discussion in brief	Outcome	Action: Name and Timeline
Name of our team	Various ideas were given by all the team members	BLOOMERS	
Who will be the project lead		Ananya- The project leader	
Trello board	The tiles that need to be put in the trello board and what all will be our deliverables on it	It was set up	Ananya Pandey
Gantt Chart	How and what all is to be included in the gantt chart	Started working on it	RB, RQ, LJ, AP

**Actions in brief:** Team was formed and we started working on the first deliverable

**Meeting closed at:** 5:30 pm

**Next Meeting time, date and location:** 4:00 pm, 19/08/2019, MPA

**AGENDA FOR MEETING 2:**

1. Gantt chart

**MINUTES**

**Team Name:** *Bloomers*

**Meeting No:** 2

**Meeting date:** 19<sup>th</sup> August 2019

**Location:** MPA

**Attending:** RQ, LJ, AP, RB

**Apologies:** NONE

**Meeting start time:** 4:00 pm

**Matters arising from Previous minutes:** YES NO ✓

Issue raised from previous minutes	Discussion	Outcome (Resolved?)

**Confirmation of minutes from last meeting:** YES ✓ NO

**Outcome of meeting:**

Issue	Discussion in brief	Outcome	Action: Name and Timeline
Gantt Chart	Using MS-Project	Understood its functions	RB and AP
Trello Board	Updated		AP, RQ and LJ

**Actions in brief:** Worked on the Gantt chart and updated our trello board

**Meeting closed at:** 6:00 pm

**Next Meeting time, date and location:** 4:00 pm, 22/09/2019, MPA

**AGENDA FOR MEETING 3:**

1. Gantt Chart
2. Proof of Concept

**MINUTES**

**Team Name:** *BLOOMERS* **Meeting No:** 3

**Meeting Date:** 22<sup>nd</sup> August, 2019

**Location:** MPA

**Attending:** ALL

**Apologies:** NONE

**Meeting start time:** 4:00 pm

**Matters arising from Previous minutes:** YESv NO

Issue raised from previous minutes	Discussion	Outcome (Resolved?)
Key deliverables to be included in the Gantt chart	Made some changes in the gantt Chart	YES

**Confirmation of minutes from last meeting:** YESv NO

**Outcome of meeting:**

Issue	Discussion in brief	Outcome	Action: Name and Timeline
Proof of Concept	What is it and why is it made	Divided the various parts of it among us	AP, RB, RQ, LJ
Software development Life Cycle	What is it and what are the various splints	Discussed about it	LJ
Product	What all will it be doing i.e. its key features	Basic discussion about the product	AP

**Actions in brief:** What does the proof of concept mean and what all details are included in the proof of concept.

**Meeting closed at:** 6:00 pm

**Next Meeting time, date and location:** 4:00 pm, 26<sup>th</sup> August,2019, Library

**AGENDA FOR MEETING 4:**

1. The product
2. Software development life cycle
3. Agile approach

**MINUTES**

**Team Name: BLOOMERS**

**Meeting No:** 4

**Date:** 26<sup>th</sup> August,2019

**Location:** Library

**Attending:** ALL

**Apologies:** NONE

**Meeting start time:** 4:00 pm

**Matters arising from Previous minutes:** YESv NO

Issue raised from previous minutes	Discussion	Outcome (Resolved?)
Product	Added some more key functionalities of the product	YES

**Confirmation of minutes from last meeting:** YESv NO

**Outcome of meeting:**

Issue	Discussion in brief	Outcome	Action: Name and Timeline
SDLC	Various splints and the processes to be managed in each	Made a record for it	RQ
The lifecycle	Agile approach was discussed		AP, RQ, LJ, RB
Trello board	Updated our trello board		AP, LJ

**Actions in brief:** Discussed about the software development life cycle and its various approaches and the approach that we are going to use in our project.

**Meeting closed at:** 6:00 pm

**Next Meeting time, date and location:** 4:00 pm, 29<sup>th</sup> August, 2019, Library



**AGENDA FOR MEETING 5:**

1. The key deliverables for the project
2. The product and its usefulness
3. Proof of Concept
4. Stakeholders

**MINUTES****Team Name: BLOOMERS****Meeting No:** 5**Meeting Date:** 29<sup>th</sup> August, 2019**Location:** Library**Attending:** ALL**Apologies:** NONE**Meeting start time:** 4:00 pm**Matters arising from Previous minutes:** YES✓ NO

Issue raised from previous minutes	Discussion	Outcome (Resolved?)
Key deliverables to be included in the Gantt chart	Finalized the gantt Chart	YES

**Confirmation of minutes from last meeting:** YES✓ NO**Outcome of meeting:**

Issue	Discussion in brief	Outcome	Action: Name and Timeline

Importance of the selection of the project including the key deliverables		Gantt Chart was finalised	AP, RB
Stakeholders	Who are stakeholders	Listed some potential stakeholders	AP, RQ
SDLC	Refined the SDLC	The steps were discussed	LJ
Communication with the stakeholders	How will we communicate with our stakeholders	Started working on the communication plan	AP

**Actions in brief:** The first deliverable was prepared and submitted through Moodle, started working on stakeholder analysis and communication plan.

**Meeting closed at:** 5:45 pm

**Next Meeting time, date and location:** 4:00 pm, 2<sup>nd</sup> September, 2019, MPA

#### **AGENDA FOR MEETING 6:**

1. Review Communication management
2. Review Stakeholder Analysis
3. Scope management

#### **MINUTES**

**Team Name: BLOOMERS**

**Meeting No:** 6

**Meeting Date:** 2<sup>nd</sup> September, 2019

**Location:** MPA

**Attending:** ALL

**Apologies:** NONE

**Meeting start time:** 4:00 pm

**Matters arising from Previous minutes:** YES    ✓                      NO

Issue raised from previous minutes	Discussion	Outcome (Resolved?)
Stakeholders	Importance of identifying the correct stakeholders for the project	YES
Communication plan	Made some changes	Yes

**Confirmation of minutes from last meeting:** YES✓                      NO

**Outcome of meeting:**

Issue	Discussion in brief	Outcome	Action: Name and Timeline
Scope Management	What is scope management and what all is done in it		AP, RQ
Functional Requirements	Discussion about the functional Requirements of the product		AP, LJ, RB

**Actions in brief:** Started working on the scope management and the functional requirements of the product

**Meeting closed at:** 6:00 pm

**Next Meeting time, date and location:**4:00 pm, 5<sup>th</sup> August 2019, Library

## AGENDA FOR MEETING 7

1. Review Software development life cycle
2. Functionality of the product
3. WBS

## MINUTES

**Team Name: BLOOMERS**

**Meeting No:** 7

**Meeting Date:** 5<sup>TH</sup> Sept, 2019

**Location:** Library

**Attending:** ALL

**Apologies:** NONE

**Meeting start time:** 4:00 pm

**Matters arising from Previous minutes:** YES    ✓    NO

Issue raised from previous minutes	Discussion	Outcome (Resolved?)
Functional requirements	Whether a functionality is a FR or NFR	Yes

**Confirmation of minutes from last meeting:** YES✓    NO

### **Outcome of meeting:**

Issue	Discussion in brief	Outcome	Action: Name and Timeline
Product	The fuctionalities of the product	Were able to describe the	AP and RB

		working of our product.	
Non functional requirements	What are the NFR's of the product		LJ and RQ

**Actions in brief:** The discussion on the various issues mentioned above went well and quite a few problems were solved which will lead to a clearer Proof of Concept.

**Meeting closed at:** 5:30 pm

**Next Meeting time, date and location:** 4:00 pm, 9<sup>th</sup> Sept, 2019, MPA

#### **AGENDA FOR MEETING 8:**

1. Review WBS
2. Schedule Baseline

#### **MINUTES**

**Team Name:** *Bloomers*

**Meeting No:** 8

**Meeting date:** 9<sup>th</sup> Sept, 2019

**Location:** MPA

**Attending:** ALL

**Apologies:** NONE

**Meeting start time:** 4:15 pm

**Matters arising from Previous minutes:**

YES√

NO

Issue raised from previous minutes	Discussion	Outcome (Resolved?)
Product	Functionalities of the product	Yes

**Confirmation of minutes from last meeting:**

**YES ✓ NO**

**Outcome of meeting:**

Issue	Discussion in brief	Outcome	Action: Name and Timeline
WBS	What it is and how it is to be made		AP
Tabular format	The team developed a tabular format of the WBS		LJ,RQ,RB,AP
Pictorial view	Developed a pictorial view		RQ
Schedule baseline	What is to be done in it		LJ

**Actions in brief:** Started working on the WBS and discussed about the schedule baseline

**Meeting closed at:** 6:00 pm

**Next Meeting time, date and location:** 4:00 pm, 12<sup>th</sup> Sept, 2019, Library

**AGENDA FOR MEETING 9:**

1. Schedule Baseline
2. Review the WBS

## MINUTES

**Team Name: Bloomers**

**Meeting No:** 9

**Meeting date:** 12<sup>th</sup> Sept, 2019

**Location:** Library

**Attending:** ALL

**Apologies:** NONE

**Meeting start time:** 4:00 pm

**Matters arising from Previous minutes:**

YES✓

NO

Issue raised from previous minutes	Discussion	Outcome (Resolved?)
WBS	Whether the item in level 4 is showing the functionality of the product or not	Yes

**Confirmation of minutes from last meeting:**

YES ✓ NO

**Outcome of meeting:**

Issue	Discussion in brief	Outcome	Action: Name and Timeline
WBS	Added certain features to our tabular format of WBS		AP, RB, RQ, LJ
Pictorial view	Changes were made to this as well		LJ
Schedule baseline	Changes were made in the gantt chart		RB

**Actions in brief:** Reviewed the WBS and made changes to the pictorial and the tabular format.

**Meeting closed at:** 6:00 pm

**Next Meeting time, date and location:** 4:00 pm, 16<sup>th</sup> Sept, 2019, MPA

**AGENDA FOR MEETING 10:**

1. Review WBS
2. Cost estimate table
3. Cost baseline table
4. Function points

**MINUTES**

**Team Name:** *Bloomers*

**Meeting No:** 10

**Meeting date:** 16<sup>th</sup> Sept, 2019

**Location:** MPA

**Attending:** AP, RQ, LJ

**Apologies:** RB

**Meeting start time:** 4:00 pm

**Matters arising from Previous minutes:** YES NO v

Issue raised from previous minutes	Discussion	Outcome (Resolved?)



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**Confirmation of minutes from last meeting:**

**YES ✓ NO**

**Outcome of meeting:**

<b>Issue</b>	<b>Discussion in brief</b>	<b>Outcome</b>	<b>Action: Name and Timeline</b>
<b>WBS</b>	<b>Reviewed it</b>		<b>The team</b>
Cost management	How is cost managed in projects		AP
Cost estimate	The costs were decided for each need		RQ
Cost baseline			LJ
Function points			AP
Absence of Rihel from the meeting and not communicating with any member		Tried contacting him but got no response	LJ, RQ, AP

**Actions in brief:** Started working on the cost management tables and the function points

**Meeting closed at:** 6:00 pm

**Next Meeting time, date and location:** 4:00 pm, 20<sup>th</sup> Sept, 2019, Library

#### **AGENDA FOR MEETING 11:**

1. Review cost estimate and cost baseline tables
2. Review the function point table
3. Change cost estimate and cost baseline tables according to function points

## MINUTES

**Team Name: Bloomers**

**Meeting No:** 11

**Meeting date:** 20<sup>th</sup> Sept, 2019

**Location:** Library

**Attending:** RQ, LJ, AP

**Apologies:** RB

**Meeting start time:** 4:00 pm

**Matters arising from Previous minutes:**

**YES**

**NO ✓**

Issue raised from previous minutes	Discussion	Outcome (Resolved?)

**Confirmation of minutes from last meeting:**

**YES ✓ NO**

**Outcome of meeting:**

Issue	Discussion in brief	Outcome	Action: Name and Timeline
Cost estimate	Reviewed it		AP, RQ
Cost baseline	Reviewed it		LJ

Function points	Incorporated the function points in the cost estimate table		AP and RQ
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**Actions in brief:** Reviewed the cost estimate and the cost baseline table and discussed further about the function points

**Meeting closed at:** 6:00 pm

**Next Meeting time, date and location:** 4:00 pm, 23<sup>rd</sup> Sept, 2019, MPA

#### **AGENDA FOR MEETING 12:**

1. Risk management strategy to be used
2. Risk register

### **MINUTES**

**Team Name: Bloomers**

**Meeting No:** 12

**Meeting date:** 23<sup>rd</sup> Sept, 2019

**Location:** MPA

**Attending:** RQ, AP, LJ

**Apologies:** RB

**Meeting start time:** 4:00 pm

**Matters arising from Previous minutes:**

**YES**

**NO ✓**

Issue raised from previous minutes	Discussion	Outcome (Resolved?)

Confirmation of minutes from last meeting:

YES ✓ NO

Outcome of meeting:

Issue	Discussion in brief	Outcome	Action: Name and Timeline
Risks	Discussed about the various risks that can arise		AP, RQ, LJ
Risk management strategy	The strategies to be used to be used to try and overcome the risks		AP, RQ, LJ
Risk register	With the various inputs from the team, a basic structure of the register was created		AP

**Actions in brief:** Risks that can arise in this project and the strategy to manage those risks.

**Meeting closed at:** 6:00 pm

**Next Meeting time, date and location:** 4:00 pm, 26<sup>th</sup> Sept, 2019, Library

#### AGENDA FOR MEETING 13:

1. Review the risks and the risk management strategies
2. Review the risk register

## **MINUTES**

**Team Name: Bloomers**

**Meeting No:** 13

**Meeting date:** 26<sup>th</sup> Sept, 2019

**Location:** Library

**Attending:** RQ, LJ, AP

**Apologies:** RB

**Meeting start time:** 4:00 pm

**Matters arising from Previous minutes:**

**YES**

**NO ✓**

Issue raised from previous minutes	Discussion	Outcome (Resolved?)

**Confirmation of minutes from last meeting:**

**YES ✓ NO**

**Outcome of meeting:**

Issue	Discussion in brief	Outcome	Action: Name and Timeline
Risk management strategy	Made changes in it with further discussion		AP,RQ,LJ
Risk register	Made certain adjustments and changes to it		AP

**Actions in brief:** Reviewed the risk register and the strategy to be used to manage the risks

**Meeting closed at:** 6:15 pm

**Next Meeting time, date and location:** 4:00 pm, 7<sup>th</sup> Oct, 2019, MPA

**AGENDA FOR MEETING – 14**

- Review the risk register
- Finalize the risk management plan

**MINUTES**

**Team Name:** *Bloomers*

**Meeting No:** 14

**Meeting date:** 7<sup>th</sup> Oct, 2019

**Location:** MPA

**Attending:** AP, LJ, RQ

**Apologies:** RB

**Meeting start time:** 4:00 pm

**Matters arising from Previous minutes:** YES NO ✓

Issue raised from previous minutes	Discussion	Outcome (Resolved?)

**Confirmation of minutes from last meeting:** YES ✓ NO

**Outcome of meeting:**

Issue	Discussion in brief	Outcome	Action: Name and Timeline
Risk register	Certain risks revolved around scope, time and budget	Changed those risks	LJ, AP
Risk management Plan	How to format the document and the points to be mentioned		AP, RQ

**Actions in brief:** The risk management plan was finalized.

**Meeting closed at:** 6:00 pm

**Next Meeting time, date and location:** 4:00 pm, 10<sup>th</sup> Oct, Library

**AGENDA FOR MEETING – 15**

- Discussion about the final report and how we are going to go about it
- The presentation that is to be made in week 12

**MINUTES**

**Team Name:** *Bloomers*

**Meeting No:** 15

**Meeting date:** 10<sup>th</sup> Oct, 2019

**Location:** Library

**Attending:** AP, LJ, RQ

**Apologies:**RB

**Meeting start time:** 4:00 PM

**Matters arising from Previous minutes:** YES NO ✓

Issue raised from previous minutes	Discussion	Outcome (Resolved?)

**Confirmation of minutes from last meeting:** YES ✓ NO

**Outcome of meeting:**

Issue	Discussion in brief	Outcome	Action: Name and Timeline
Presentation for week 12	What is to be included in the presentation	Ananya will make the presentation	AP
Final Report	Divided the deliverables among the three of us	Ananya will combine and finalize the report	LJ, RQ, AP

**Actions in brief:** Work was divided for the final report and the presentation.

**Meeting closed at:** 5:45 pm

**Next Meeting time, date and location:** 4:00 pm, 17<sup>th</sup> Oct, 2019, MPA

#### **AGENDA FOR MEETING – 16**

- Finalize the presentation
- Discussion for the report



## MINUTES

Team Name: *Bloomers*

Meeting No: 16

Meeting date: 17<sup>th</sup> Oct, 2019

Location: MPA

Attending: AP, LJ, RQ

Apologies:RB

Meeting start time: 4:00 PM

Matters arising from Previous minutes:

YES

NO ✓

Issue raised from previous minutes	Discussion	Outcome (Resolved?)

Confirmation of minutes from last meeting:

YES ✓ NO

Outcome of meeting:

Issue	Discussion in brief	Outcome	Action: Name and Timeline
Presentation	Ananya showed the presentation to the team and it was finalized.	Finalized the presentation	AP
Final Report	Discussed about referencing and Ananya made changes according to the needs of the report	Made some progress in the report	LJ, RQ, AP

**Actions in brief:** The presentation for week 12 was finalized and some progress was made in the report.

Meeting closed at: 6:00 pm

- Individual Timesheets

## FIT5057 - TIMESHEET

Team member's Name: Ananya Pandey  
 Project Team Name: BLOOMERS  
 Project team leader: Ananya Pandey  
 Team Supervisor: Katherine Ma

Date	Task Description – Describe what activity you have been working on.	Actual Hours Spent	Running Total
14 August, 2019	Started researching on the topic we chose as our waste management issue	2	2
15 August, 2019	Presented and mailed the topic to Katherine so that she could go through it and tell the flaws which could be corrected.  Got the topic approved!	1	3
16 August, 2019	Creating first Gantt Chart with team	2	5
16 August, 2019	Set up Trello Board and share email to tutor	0.5	5.5
18 August, 2019	Updating Trello and Gantt Chart	2	7.5
19 August 2019	Team meeting regarding gantt chart	1	8.5
20 August, 2019	Researching the topic background	1	9.5
22 August, 2019	Team meeting for PoC	2	11.5
25 August, 2019	Submission of Gantt Chart	0.5	12
25 August, 2019	Drafting Proof of Concept	2	14
26 August, 2019	Team Meeting for PoC	1	15
27 August, 2019	Editing PoC and Updating Trello	1	16
29 August, 2019	Researching on Stakeholders, Communication Plan and PoC	2	18
29 August, 2019	Team Meeting for Stakeholders	3	21
31 August, 2019	Review Stakeholder and Comm Plan and Making a draft of scope	2	23
2 Sept, 2019	Editing the Scope and Updating the Team	1	24
2 Sept, 2019	Team Meeting and Scope Discussion	2	26

5 Sept,2019	Finalized the stakeholder and communication plan	1.5	27.5
5 Sept, 2019	Team meeting regarding the scheduling	2.5	30
9 Sept, 2019	Review the WBS	1	31
12 Sept, 2019	Editing the WBS as per Katherine's review	2	33
14 Sept, 2019	Reviewing the lecture notes on cost management and its implementation in our project	2.5	35.5
16 Sept,2019	Finalize the WBS	2	37.5
20 Sept,2019	Team meeting for cost management	1	38.5
21 Sept, 2019	Setting up the cost estimate and cost baseline table	2	40.5
23 Sept, 2019	Team meeting regarding function points	2.5	43
25 Sept,2019	Review Function points and cost estimate table	3	47
27 Sept, 2019	Review and correct the cost baseline table	2	49
2 Oct, 2019	Research on risk management	1	50
4 Oct, 2019	Updating the team regarding risk management	1.5	51.5
6 Oct, 2019	Review the risk factors	2	53.5
7 Oct, 2019	Team meeting for risk management	2	55.5
8 Oct, 2019	Review and correct the risk register	2	57.5
10 Oct, 2019	Team meeting for finalizing the risk management plan	2.5	60
11 Oct, 2019	Reviewed the proof of concept and stakeholder analysis	3	63
12 Oct, 2019	Review the scope management plan	2	65
15 Oct, 2019	Made the presentation on our waste management issue	4	69
17 Oct, 2019	Team meeting regarding the final report	1.5	70.5
20 Oct, 2019	Submission of the presentation	.5	71
21 Oct, 2019	Review and correct the section 2 of the report	3	74
23 Oct, 2019	Complete the introduction and purpose of the report	2	76
24 Oct, 2019	Review the entire report	3	79
26 Oct, 2019	Merge the entire report properly	4	83

#### FIT5057 - TIMESHEET

Team member's Name: Li Jiao

Project Team Name: Bloomers

Project Team Leader: Ananya Pandey

Team Supervisor: Katherine Ma

Date	Task Description	Actual Hours Spent	Running Total
14 August, 2019	Started researching on the topic we chose as our waste management issue	2	2
15 August, 2019	Topic Selection	1	3
16 August, 2019	Creating first Gantt Chart with team	2	5
16 August, 2019	Setting up Trello Board and send email to tutor	0.5	5.5
18 August, 2019	Updating Trello and Gantt	2	7.5
20 August, 2019	Researching the topic background	1	8.5
25 August, 2019	Submission of Gantt Chart	0.5	9
25 August 2019	Work on Proof of Concept	2	11
26 August,2019	Team Meeting for PoC	1	12
27 August, 2019	Editing PoC and Updating Trello	1	13
29 August, 2019	Researching on Stake holders, Communication Plan and PoC	2	15
29 August, 2019	Team Meeting for Stake Holders	3	18
31 August. 2019	Review Stake holder and Making a draft of scope	2	20
2 Sept, 2019	Editing the Scope	1	21
5 Sept, 2019	Finishing the stakeholders analysis	2.5	23.5
5 Sept, 2019	Discussion about team schedule	3	26.5
9 Sept, 2019	Review WBS	3	29.5
12 Sept, 2019	Editing WBS according to the feedback	2	31.5
16 Sept, 2019	Finishing WBS	1.5	33
20 Sept, 2019	Team Meeting for discussion of cost management	3	36
21 Sept, 2019	Working on cost estimate and cost baseline table	2.5	38.5

23 Sept, 2019	Team Meeting about making function points	2	40.5
25 Sept, 2019	Review cost estimate and cost baseline table	2	42.5
27 Sept, 2019	Review the function points	2.5	45
2 Oct, 2019	Research on risk management	1.5	46.5
4 Oct, 2019	Finish 3 risk factors about risk management	2	48.5
6 Oct, 2019	Research on network diagram	1.5	50
8 Oct, 2019	Finish network diagram	1.5	51.5
10 Oct, 2019	Doing research about cost management	2	53.5
14 Oct, 2019	Discussed with team member about the outline of risk management	2	55.5
19 Oct, 2019	Finish risk management	1.5	57
21 Oct, 2019	Have a discussion with team members about section 1 of the report	1	58
24 Oct, 2019	Finish the Introduction and purpose of report	1.5	59.5
26 Oct, 2019	Doing content page and summary	1.5	61

### FIT5057 - TIMESHEET - TEMPLATE

Team member's Name Ruolin Qiao

Project Team Name: BLOOMERS

Project team leader: Ananya Pandey

Team Supervisor: Katherine Ma

Date	Task Description – Describe what activity you have been working on.	Actual Hours Spent	Running Total
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14.8.2019	Begin to research on waste management	2	2
15.8.2019	Topic selection	1	3
16.8.2019	Develop Gantt chart	2	5
16.8.2019	Set up trello and contact tutor	1	6
20.8.2019	Update trello and gantt	3	9
20.8.2019	Continue research on topic	2	11
25.8.2019	Submit gantt	2	13
25.8.2019	Work on poc draft	1	14
25.8.2019	Research the relations about topic	2	16
26.8.2019	Group meeting about poc	1	17
27.8.2019	Edit poc and update trello	2	19
29.8.2019	Team meeting	3	22
29.8.2019	Research on stake holders	2	24
31.8.2019	Continue research on stake holders	1	25
2.9.2019	Edit the scope and research	2	27
3.9.2019	Team discuss about scope	1	28
5.9.2019	Team discuss about the scheduling	1	29
5.9.2019	Decided stakeholder and communication plan	1	30
9.9.2019	Work on WBS progress	1.5	31.5
12.9.2019	Continue did WBS	1	32
14.9.2019	Did cost management and implementation about BLOOMERS	1.5	33.5
16.9.2019	Completed WBS	1	34.5
20.9.2019	Team discuss about cost management	2	36.5

21.9.2019	Finish cost estimate and cost baseline table	2.5	39
23.9.2019	Team discuss about function points	2	41
25.9.2019	Work on cost estimate table	1.5	42.5
27.9.2019	Work on cost baseline tables	1.5	44
2.10.2019	Research on risk management	1.5	45.5
4.10.2019	Continue research about risk management	2	47.5
6.10.2019	Research 3 risk factors and finish analysis	1	48.5
8.10.2019	Finish network diagram	1.5	50
10.10.2019	Team discuss about the risk management	2	52
10.14.2019	Finish risk management	3	55
10.16.2019	Finish the summary of schedule baseline	2	57
10.19.2019	Research on network diagram	2.5	59.5
10.21.2019	Finish the summary of network diagram	3	62.5
10.24.2019	Write historical background about our project	1.5	64
10.26.2019	Write overall summary	2	66