NANYANG TECHNOLOGICAL UNIVERSITY
SINGAPORE

QMePls

Risk Management Plan

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Version History

Version #	Implemented by	Revision Date	Approved by	Approval Date	Reason
1.0	Jolene	23/9/2021	Aloysius	26/9/2021	Uploaded Initial Template
1.1	Aloysius	27/9/2021	Aloysius	29/9/2021	Introduction Risk Management Procedure
1.2	Aloysius	30/9/2021	Jolene	3/10/2021	Tools and practices Key Terms
1.3	Jolene	4/10/2021	Aloysius	5/10/2021	Format and Approve Risk Management Plan

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1. Introduction

1.1 Purpose of Risk Management Plan

A risk is an event or condition that could have a positive or negative effect on a project's objectives if it occurs.
Risk management is the process of identifying, assessing, responding to, monitoring and reporting risks.
The purpose of this risk management plan is to define how risks associated with **QMePls** will be identified, analyzed and managed.
It outlines how risk management activities will be performed, recorded and monitored through the project's lifecycle and provides templates and practices for recording and prioritizing risks.

The Risk Management Plan will be created by the project manager in the Planning Phase of the CDC Unified process and is monitored and updated during the course of the project.
This report is meant for the project team, project sponsors and management team.

2. Risk Management Procedure

2.1 Process

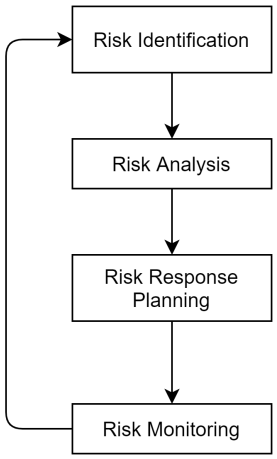

Diagram 1: Risk Management Process

The Risk Management Process will mainly be broken down into 4 parts (Risk Identification, Risk Analysis, Risk Response Planning & Risk Monitoring). The project manager who is working with the project team and project sponsors will ensure that risks are actively identified, analyzed and managed through the life of the project. Risks will be identified as early as possible so as to minimize their impact. Details for accomplishing each part of the Risk Management Process are outlined in the following sections. The Project Manager will take on the role of Risk Manager in this project.

2.2 Risk Identification

Risk identification involves the project team, appropriate stakeholders and includes an evaluation of environmental factors, organizational culture and project management plan which includes the project scope, project deliverables, constraints, WBS, cost/effort estimates, resource plan, and other key project documents.

Category	Risk
Technical	- Fully loaded database - Malicious attacks on the server - Loss of server data
Project Management	- Lack of awareness of project objectives - Mid-project changes in objectives
Resource Management	- Insufficient Budget - Time required to develop the project is underestimated
Political	- Legal obligations
Project team	- Absence of personnel holding critical roles - Poor team communications and teamwork in the team

2.3 Risk Analysis

All risks identified previously will be assessed to identify the range of possible outcomes. Qualification will be used to determine which are the top risks to pursue and respond to.

2.3.1 Qualitative Risk Analysis

The probability and impact of occurrence for each identified risk will be assessed by the project manager, with input from the project team using the following approach:

Probability

- High - Greater than 70% probability of occurrence
- Medium - Between 30% to 70% probability of occurrence
- Low - Below 30% probability of occurrence

Impact

- High - Risk that has the potential to greatly impact project cost, project schedule/performance
- Medium - Risk that has potential to slightly impact project cost, project schedule/performance
- Low - Risk that has relatively low impact on the cost, schedule or performance

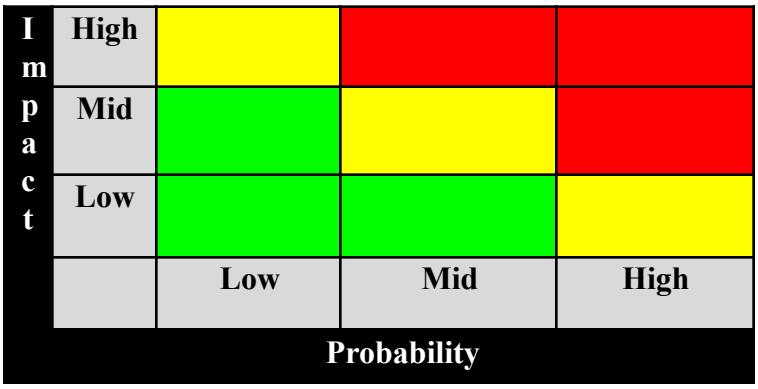

Diagram 2: Risk assessment matrix

Risks that fall within the RED and YELLOW zones will have risk response planning which may include both a risk mitigation and a risk contingency plan.

Risk	Probability	Impact	Consequences
Fully loaded database	Medium	Medium	- Slow fetching times - Inability to add new Patient Users/Clinics
Malicious attacks on the server	Medium	High	- Disclosure of confidential information
Loss of server data	Low	High	- Loss of confidential information - Loss of functionality of system
Lack of awareness of project objectives	Medium	Medium	- Project does not meet business requirements - Miscommunication and confusion within the team
Mid-project changes in objectives/management	Medium	Medium	- Waste of time and effort - Schedule of project must be revised
Insufficient Budget	Low	High	- Inability to continue with project - Cut costs from other areas
Time required to develop the project is underestimated	Medium	Medium	- Loss of Client's trust and support - Further costs incurred
Legal obligations	Low	High	- Project has to be changed to meet regulations - Schedule of project must be revised - Cost estimate must be revised
Absence of personnel holding critical roles	Low	High	- Specific component of project put on hold - Delay project schedule

Poor team communications and teamwork	Medium	Medium	- Delay Project schedule - Failure to meet project requirements
Change in stakeholders direction/objectives	Low	High	- Change in the bosses directions mean that the whole project could be halted or have a change in direction - Months of work could be lost

2.3.2 Quantitative Risk Analysis

Analysis of risk events that have been prioritized using the qualitative risk analysis process and their effect on project activities will be estimated, a numerical rating will be applied to each risk based on the analysis. Finally the risks will be documented in this section of the risk management plan.

Risk	Numerical Risk Value (1-10)
Fully loaded database	5
Malicious attacks on the server	8
Loss of server data	9
Lack of awareness of project objectives	5
Mid-project changes in objectives/management	6
Insufficient Budget	7
Time required to develop the project is underestimated	7
Legal obligations	5

Absence of personnel holding critical roles	6
Poor team communications and teamwork	5
Change in stakeholders direction/objectives	5

2.4 Risk Response Planning

Each major risk (risks that fall into the Red and Yellow categories) will be assigned to a project team member to monitor. This will ensure the risk will not "fall through the cracks".

For each major risk, one of the following approaches will be chosen to address it:

- **Avoid** - Eliminate the threat by eliminating the cause
- **Mitigate** - Identify ways to reduce the probability/impact of the risk
- **Accept** - Nothing will be done
- **Transfer** - Transfer the responsibility of the risk to another party (e.g. Buying insurance, outsourcing, etc.)

Risk	Approach	Strategy
Fully loaded database	Mitigate	- Set warning notifications when server capacity is about 80% loaded - Subscribe and acquire more server data space from Google Cloud Services
Malicious attacks on the server	Avoid/ Mitigate	- Administrative credentials to the database server should only be held by Project Manager - 'Least Privilege' Access - Networks between server and client to be encrypted
Loss of server data	Transfer	- Engage in third party cloud service provider to store a

		separate copy of server data
Lack of awareness of project objectives	Avoid	- Weekly reporting of tasks and responsibilities - Project Manager to check up on individual teammate's progress every week
Mid-project changes in objectives/management	Avoid/ Mitigate	- Review and validate requirements during weekly meetings - Follow change management logs in the event of a change
Insufficient Budget	Mitigate	- Budget within the limits and set aside an emergency fund for issues that might have not been expected.
Time required to develop the project is underestimated	Mitigate	- Weekly meetings to include task fulfilment based on project timeline - Re-assess project timeline at an early stage if really needed
Legal obligations	Avoid	- Ensure project abides by industrial standards - Identify any potential grey areas in terms of legality
Absence of personnel holding critical roles	Avoid	- Weekly updating of tasks by different roles in the team - Ensure every single member is up to task based on project timeline
Poor team communications and teamwork	Avoid	- Team bonding activities - before/during project timeline to build cohesiveness - Buddy system to check on another team member
Change in stakeholders direction/objectives	Accept	- Constant updates on the progress to stakeholders/bosses - Align their goals to the current project's goals

2.5 Risk Monitoring, Controlling and Reporting

The levels of risk on the project will be tracked, monitored and reported throughout the project lifecycle.

A “Top 10 Risks list” will be generated and maintained by the project team and reported as a component of the project status reporting process for this project.

A Standard Operating Procedure (SOP) document will be released, detailing the steps that should be taken to mitigate selected risks.

There will be a quarterly risk assessment for new potential risks and current risks will be reassessed for any changes.

Management will be notified of important changes to risk statuses as a component of the Executive Project Status Report.

3. Tools and practices

A Risk Log will be maintained by the project manager, this log will be reviewed as a standing agenda item for project team meetings.

Risk Management Plan Approval

The undersigned acknowledge they have reviewed the **Risk Management Plan** for the QMePls project. Changes to this Risk Management Plan will be coordinated with and approved by the undersigned or their designated representatives.

Signature:	
Name:	Jolene Tan
Role:	Project Manager

Date:	4/10/2021

Appendix A: Key Terms

This table provides definitions for terms relevant to the Risk Management Plan.

Term	Definition
Budget	The approved estimate cost for the breakdown of individual components in the project
Change Management Log	Documentation to record all the change requests by stakeholders
Deliverable	An element of output within the scope of the project
Project Management Plan	Documentation that dictates the plan for execution, monitoring and controlling of the project
Quantitative Analysis	Analysis of the effect of risk events by assigning a numerical rating to each of the risks.
Qualitative Analysis	Analysis of risks by using probability of occurrence and impact on objectives to

	determine if risk is High, Medium or Low.
Standard Operating Procedure (SOP)	A list of actions to be taken in response to an event
Risk	Effects of uncertainty on objectives
Risk Management	A set of coordinated activities to direct and control the organisation in an event of a risk occurrence
Risk Response Planning	Process of developing solutions to reduce the probability of risk occurrence or its impact on project objectives.
Risk Log	A tool used by project teams to document and monitor resolution of issues