BICYCLERP

TEAM AYESICK (#11)

RISK MANAGEMENT PLAN

Version *2.0*

02/23/2021

VERSION HISTORY

Version #	Implemented By	Revision Date	Approved By	Approval Date	Reason
1.0	*Omar Salahddine; Yu Xiang Zhang*	*01/27/2021*			Initial Risk Management Plan draft
2.0	*Yu Xiang Zhang*	*02/22/2021*			Update risk register; reassessed all the risks; update Risk Response Planning (section 2.4)

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1 INTRODUCTION

1.1 PURPOSE OF THE RISK MANAGEMENT PLAN

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

The Risk Management Plan is created by the project manager in the Planning Phase of the CDC Unified Process and is monitored and updated throughout the project.

The intended audience of this document is the project team, project sponsor, and management.

The purpose of this document is to provide a complete layout of the risk management plan for the Enterprise Resource Management project. This paper will fully define how the plan will be executed, by who, and when. Additionally, we will show the outcomes of the risk identification and analysis processes and how they will be reported to the stakeholders.

2 RISK MANAGEMENT PROCEDURE

2.1 PROCESS

The project manager working with the project team and project sponsors will ensure that risks are actively identified, analyzed, and managed throughout the life of the project. Risks will be identified as early as possible in the project so as to minimize their impact. The steps for accomplishing this are outlined in the following sections. The project manager will serve as the Risk Manager for this project.

2.1.1 First Step: Risk Planning

Risk planning will be performed from the beginning to the end of the ERP project development. At early stages of the project development, initial risks are identified. Techniques such as brainstorming are used to identify the risks. The risks are prioritized and their severity is estimated by the stakeholders. The Project Manager maintains the Risk Register and updates it accordingly. During the conceptual phase at the end of each sprint of the project, potential risks are identified and their impact and likelihood of occurrence are estimated by the stakeholders, such as the Software Developers, and reported to the Project Manager. Appropriate risk management strategies will be identified as the risks are being assessed along with Contingency Planning for higher-impact risks.

2.1.2 Second Step: Risk Resolution

Risk resolution will be performed throughout the ERP project development. The Risk Management Team, which is a group of Junior Software Developers is assigned an equal amount of initial risks to find resolutions for. As the risks are being assessed, depending on the impact of the risk, a deadline is set for them which is likely at the end of a specific sprint by the Project Manager. The team comes up with risk management strategies such as acceptance, avoidance, risk transfer, and mitigation for specific risks by defect tracking and code refactoring. The risk management strategies are reported to the Project Manager at the Risk response planning, where the Project Manager and Product Owner selects the right risk response for risk resolution by using statistical risk analysis such as decision tree analysis. Statistical measurement and analysis of the system are performed by the Risk Management Team to keep track of the success of the resolution and stay aware of potential risks that need to be resolved.

2.1.3 Third Step: Risk Monitoring & Control

Risk Monitoring and Control is performed throughout the ERP project development. This prevents the occurrence of potential risks that are not important. The Project Manager performs a project risk response audit bi-weekly, to keep track of all the ongoing activities of the risk management plan and sets a clear format and objective for the stakeholders. The project risk response audit helps in analyzing the risk response strategies using techniques such as root cause analysis. The bi-weekly risk response planning is conducted to select and monitor the risk management strategies. The maintenance and the overall quality of the system are discussed among the stakeholders as well. The bi-weekly risk review meetings inform the stakeholders about the overall progress of the risk management plan and notifies any risk that needs to be prioritized by qualitative analysis. The probability and impact matrix will help with the prioritization of risks. The Project Manager assigns a member of the Risk Management Team to look over the progress of the prioritized risk as it leans toward resolution. This ensures the system to be well prepared for potential risks in the future.

2.2 RISK IDENTIFICATION

Risk identification will involve the project team, appropriate stakeholders, and will include an evaluation of environmental factors, organizational culture, and the project management plan including the project scope. Careful attention will be given to the project deliverables, assumptions, constraints, WBS, cost/effort estimates, resource plan, and other key project documents.

A Risk Management Log will be generated and updated as needed and will be stored electronically in the project library located at https://bit.ly/3ppAc0P.

We decided on using two methods for now, with more to come if needed. For the upcoming sprints, the risk management team will be using brainstorming and root cause analysis.

2.2.1 Method 1 - Brainstorming

Brainstorming is the method that will be used for identifying risks. Using brainstorming as a strategy for risk assessment offers a free and transparent approach that promotes involvement from all the stakeholders in the risk management plan. Initially, a facilitator is selected, which in this project is the Project Manager. The Project Manager manages all the activities of risk planning and documents them accordingly. The Product Owner, a team of Software Engineers students, and the Project Manager will identify risks and ensure that the brainstorming session concludes promptly.

2.2.2 Method 2 - Root Cause Analysis

Root cause analysis is the method that will be used for finding the main cause of the risk and searching for its resolution. For root cause analysis we have to find answers to questions such as what, how, why this risk occurred and what actions can be taken to stop the risk from occurring again during risk monitoring. This will allow us to develop a logical approach towards the resolution of the risk. This method contributes to developing a system that has a strong base which attempts to prevent any potential risks from happening and improves the software quality.

2.3 RISK ANALYSIS

All risks identified will be assessed to identify the range of possible project outcomes. The qualification will be used to determine which risks are the top risks to pursue and respond to and which risks can be ignored.

Probability

Level	Likelihood	Probability of Occurrence
5	Nearly certain	~90
4	Very likely	~70
3	Likely	~50
2	Less likely	~30
1	Unlikely	~10

The probability scale is laid out in 5 levels ranging from Unlikely to Nearly certain, each denoting an evenly-spaced number ranging from 10 to 90 percent of probability of occurrence.

Impact

IMPACT					
Level	1	2	3	4	5
Technical Performance	Minimal or no impact	Low effect	Some effect	Major consequence	Project failure
Schedule		Delay < 1 sprint	Delay ~ 1 sprint	Cut down features	Project failure
Cost	-	-	-	-	-

The impact is scaled over 5 levels as well. Their effect on the schedule is detailed in the table above.

The probability and impact scales are used to produce the following risk management matrix.

PROBABILITY					
5	5	10	15	20	25
4	4	8	12	16	20
3	3	6	9	12	15
2	2	4	6	8	10
1	1	2	3	4	5
	1	2	3	4	5
	IMPACT				

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

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 above approach.

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 applied to each risk based on this analysis, and then documented in this section of the risk management plan.

2.4 RISK RESPONSE PLANNING

The risks that are colored with Yellow and Red are major risks. Every major risk will be assigned to a team member or a group of team members to ensure that the risk is properly traced and acted upon.

For each major *adverse* risk, the following strategies may be used:

- **AVOIDANCE** – Changing the project management plan to eliminate the threat, to isolate the project objectives from the risk's impact, or to relax the objective that is in jeopardy, such as extending the schedule or reducing scope.
- **MITIGATION** – Reducing the probability or the impact of the risk is often the best option because it can reduce the damage to a minimum before it occurs.
- **ACCEPTANCE** – The consequences will be dealt with as they happen, typically with a contingency reserve of resources (e.g. time, money, personnel).
- **TRANSFER** – Outsource the threat, the impact and/or the response to a third party. The latter will be responsible to manage the transferred risk, typically for a premium associated with the risk.

Common ways of mitigation include prototyping, adding tasks to the project schedule, adding resources, etc. To minimize risk impacts, the contingency reserve may also define a course of action if the consequences do occur.

2.5 RISK MONITORING, CONTROLLING, AND REPORTING

The level of risk on a project will be tracked, monitored, and reported throughout the project lifecycle. A list of risks, the Risk Register, will be maintained by the project team and will be reported as a component of the project status reporting process for this project. All project change requests will be analyzed for their possible impact on the project risks.

3 TOOLS AND PRACTICES

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

The team currently decided on 3 tools and practices regarding risk management, while still being open to other options as the sprints go by. The ones we chose are Excel,

Sci-understand, and the prioritization techniques.

3.1 Tool 1 – Risk Register

Using an Excel Spreadsheet, the risk register keeps track of the risks and their status. It contains the sources of risk information and keeps a record of changes made in order to find a resolution. Report formatting such as risk matrix, probability and impact matrix, risk assessment charts are all created using an excel spreadsheet. It is the tool used to store all data related to the risk management plan.

3.2 Tool 2 – Prioritization Techniques

After the identification and analysis of risk likelihood and impact, risks should be prioritized in order to determine which risk mitigation strategies to use. For instance, for risks that are unlikely to occur, or for risks that have a lower impact, their priorities should be set lower. On the contrary, a risk with a higher likelihood of occurring or a risk that could have a severe impact on the project should be given a high priority in terms of planning. The priority should be determined using a quantitative technique, which combines the values for both likelihood and impact for each risk.

RISK MANAGEMENT PLAN APPROVAL

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

Signature:

Signature:	Kevin Zhong Hao Li	Date:	02/23/2021
Print Name:	Kevin Zhong Hao Li		
Title:			
Role:	Project Manager		

Signature:		Date:	
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Title:			
Role:			

APPENDIX A: REFERENCES

The following table summarizes the documents referenced in this document.

Document Name and Version	Description	Location
Risk Register (Risk Management Log) 2.0	The spreadsheet tracks all risks and their counter measures and is updated regularly in each sprint.	https://bit.ly/3ppAc0P