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<*ENTERPRISE RESOURCE PLANNING*>

**RISK MANAGEMENT PLAN**

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Version <1.0>

<02/03/2021>

Team 2

## VERSION HISTORY

*[Provide information on how the development and distribution of the **Risk Management Plan** up to the final point of approval was controlled and tracked. Use the table below to provide the version number, the author implementing the version, the date of the version, the name of the person approving the version, the date that particular version was approved, and a brief description of the reason for creating the revised version.]*

Version #	Implemented By	Revision Date	Approved By	Approval Date	Reason
1.0	<Yasaman Fahm, Vithura Muthiah, Neerujah Ledchumanan, Stella Ngyuen>	<01/29/21>	<Carlin Lee>	<02/03/21>	Initial Risk Management Plan draft
1.1					

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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 Planning system 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 and product owner.

## **2 RISK MANAGEMENT PROCEDURE**

### **2.1 PROCESS**

The project manager working with the project team and sponsors will ensure that risks are actively identified, analyzed, and managed throughout the life of the project. In addition to identifying and planning for potential risks, the ability to act upon a risk as early as possible minimizes the impact it has on the project. The goal of this section is to elaborate on the benefits of risk management. The project manager and the front-end development team will take on the role of Risk Manager as a unit. Risk identification and risk analysis are processes that need constant reassessment for each sprint.

Risk assessment consists of risk identification, risk analysis and risk planning. First step in the process of risk assessment is risk identification. Three main categories of risk will be taken into consideration for this project: technical risks, management risks and operational risks. To do so, the team will be using different techniques as mentioned in section 2.2. The second step in the process is risk analysis where the likelihood of occurrence and the level of impact will be analyzed. Impact matrix will be used for qualitative analysis, and risk exposure and risk reduction leverage will be used for quantitative analysis. Last step in risk assessment is risk prioritization which will be done by ranking the risk exposures.

Risk control consists of risk planning, resolution and risk monitoring. Risk responses strategies include acceptance, avoidance, transference and mitigation. Each identified risk will be associated with an appropriate strategy. Acceptance is when the project manager has decided to not modify the project plan to deal with a risk or cannot identify a suitable response strategy. Avoidance is defined as changing the project plan to eliminate the risk. Transference involves shifting the consequence of a risk to a third party. Mitigation involves identifying ways to reduce the probability or the impact of the risk. Finally, Jira will be used for risk monitoring.

### **2.2 RISK IDENTIFICATION**

Risk identification will involve the project team and will include an evaluation of environmental factors, organizational culture and the project management plan including the project scope. A Risk Management Log will be generated and updated as needed and will be stored electronically in the project library.

The techniques used for risk identification are brainstorm meetings, document analysis, checklist analysis and SWOT analysis. Brainstorm meetings consist of project team members meetings where they generate ideas that can be developed into potential risks. Document analysis is a technique that consists of analyzing requirements documents that describe the ERP system. Checklist analysis consists of identifying potential risks that are relevant to the system. SWOT analysis is a technique that separates strengths, weaknesses, opportunities and threats of the project.

During the brainstorming process, the team has identified the main categories of risks:

**1. Technical Risks:**

- 1.1. Developing the wrong requirements of the software
- 1.2. Complexity of product implementation
- 1.3. Change in requirements
- 1.4. Unexpected change of project scope
- 1.5. Poor quality code

**2. Management Risks:**

- 2.1. Time distribution
- 2.2. Poor time estimation
- 2.3. Time not properly allocated to specific functionalities
- 2.4. Communication within team members and product owner

**3. Operational Risks:**

- 3.1. No proper resource planning
- 3.2. Poor productivity

A SWOT analysis was also done by the team as shown in the table below.

<b>S</b> <b>STRENGTHS</b>	<b>W</b> <b>WEAKNESSES</b>	<b>O</b> <b>OPPORTUNITIES</b>	<b>T</b> <b>THREATS</b>
Improving customer service	Cost and maintenance	Developing new strategies	Training required for employees
Modern IT infrastructure	Employees not fully understanding the new system	Constant control on workflow data	Security
	Financial issues		Change in technology

**Table 1: SWOT analysis**

## 2.3 RISK ANALYSIS

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

Risk analysis' purpose is to measure the importance of the risks. In other words, this is the step where the identified risks are evaluated to examine the outcomes and goals that may change due the impact of a risk. The risks are then analysed to see if they have a qualitative or quantitative impact on the project. This process helps in evaluating which risks are serious, and possibly volatile, for the project. In addition, the risk manager must give a quantitative assessment, numerical value, for each risk using the researched data. The qualitative techniques that will be used for the risk analysis and risk probability and impact matrix.

### 2.3.1 Qualitative Risk Analysis

An impact matrix is based on probability and impact and it will show the hierarchy of different risks. In order to complete the analysis, it is important to define the scale of each risk for the probability and impact. In fact, if the probability and impact of a risk are unknown, it is difficult to determine the importance of the risk.

In this case, anything above 5% of the estimated cost and allocated time will be considered to have a very significant impact as shown in Table 1.

		Impact		
Scale	Probability	Time	Cost	Quality
Very High	> 90 %	> 5 %	> 5 %	Very significant impact on overall functionality
High	70%-89%	4-5%	4-5%	Significant impact on overall functionality
Medium	50%-69%	2-4%	2-4%	Moderate impact in key functional areas
Low	20%-49%	1-2%	1-2%	Minor impact on overall functionality
Very Low	1%-19%	0-1%	0-1%	Very minor impact on overall functionality

**Table 2: Scale of Risk of the ERP system**

Probability	Threats				
Very likely to occur 0.90	0.045	0.09	0.18	0.36	0.72
Likely to occur 0.70	0.035	0.07	0.14	0.28	0.56
50% chance of occurring 0.50	0.025	0.05	0.1	0.20	0.40
Unlikely to occur 0.25	0.0125	0.025	0.05	0.10	0.20
Very unlikely to occur 0.10	0.005	0.01	0.02	0.04	0.08
	0.05	0.10	0.20	0.40	0.70
	Very Low	Low	Medium	High	Very High

**Table 3: Risk Probability and Impact Matrix**

### 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. The chosen techniques for quantitative risk analysis are risk exposure calculation and reduction leverage (RRL) method. Risk reduction leverage is the ratio of the reduction in risk exposure of the cost of the reduction.

$$RRL = \frac{RE_{before} - RE_{after}}{\text{cost of risk reduction}}$$

Risk exposure is determined by multiplying risk probability with the impact of a risk. The following table shows the risk exposure of each category.

Risk Categories		Probability	Impact	Risk Exposure
Technical Risks	Developing the wrong requirements	Very unlikely	Very high	0.80
	Complexity of product implementation	Likely	High	0.28
	Poor quality code	Likely	High	0.28
	Continuous change in requirements	50% chance of occurring	High	0.20
Management Risks	Unexpected change of project scope	Unlikely	Low	0.025
	Time not properly allocated to specific functionalities	Unlikely	High	0.10
	Key personnel turnover	Likely	Medium	0.14
	Communication within team members and product owner	Likely	Medium	0.14
Operational Risks	No proper resource planning	Unlikely	Medium	0.05
	Responsibilities not resolved properly	Unlikely	Medium	0.05

**Table 4: Risk Exposure for each Category**

### 2.3.3 RISK RESPONSE PLANNING

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



**Mitigate** – Identify ways to reduce the probability or the impact of the risk

**Accept** – Nothing will be done

**Transfer** – Make another party responsible for the risk (buy insurance, outsourcing, etc.)

For each risk that will be identified, the project team will identify ways to prevent the risk from occurring or reduce its impact or probability of occurring as shown in the table below.

Risk Response Strategy	Risk Item	Risk Response Planning
<b>Mitigate</b>	Developing the wrong requirements	Hold frequent meetings to ensure the team is on the right track. Go over the requirements after developing each functionality. Quality assurance ensuring the implemented functionality satisfies the use-case. Frequent releases.
	Poor quality code	Code review. Use specific coding standards. that the entire team agrees on. Testing.
	Unexpected change of project scope	More frequent meetings with the Product Owner.
	Key personnel turnover	Frequent meetings to discuss potential problems.
	Continuous change in requirements	Double checking the requirements with the product owner before the start of each new sprint. More frequent meetings to discuss the change in requirements with the product owner to communicate and set more realistic expectations.
	No proper resource planning	Adding necessary resources.
	Communication within team members and product owner	Hold more frequent short meetings that are efficient. Ask questions whenever needed. Host sprint planning sessions.
<b>Transference</b>	Complexity of product implementation	Use languages and frameworks that the majority of the team is familiar with.

<b>Acceptance</b>	Time not properly allocated to specific functionalities	Set deadlines within the team for each functionality before the meeting with the Product Owner.
	Responsibilities not resolved properly	Document responsibilities of each team member for every sprint.

**Table 5: Risk Response Planning for every Identified Risk**

## **2.4 RISK MONITORING, CONTROLLING, AND REPORTING**

The level of risk on a project will be tracked, monitored and reported throughout the project lifecycle. A “Top 10 Risk List” will be maintained by the individuals assigned to the risk manager role 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 to the project risks.

The document analysis technique will be used for risk monitoring, controlling and reporting. A table will be presented in the documentation which will categorize the elements needed to evaluate the risk in an appropriate manner. Every row will identify the risks’ name, description, assessment and priority level. Management department will be notified of important changes to risk status as a component to the Executive Project Status Report.

The team will use Jira to keep track of risk. This will allow every team member to identify current risks and their current status. The project manager will review the risks constantly to ensure that all of them are still valid and up-to-date. Team project members will have access to the team’s Jira page which has a risk dashboard. This will allow the team to monitor and control each risk. They can also have access to a more in-depth look at all the risks. Using Jira, the project manager will generate a risk report to share it with the product owner during the meetings. The report will be in Excel and additional information, such as explanations, can also be added to the report.

## **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.

Jira will be used by the project manager to generate risk reports to share it with the product owner.

## 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:	MN	Date:	2021/01/25
Print Name:	Muhamad Zubair Nurie		
Title:	Back-end Team Leader		
Role:	monitors back-end team		
Signature:	SN	Date:	2021/01/25
Print Name:	Stella Nguyen		
Title:	Front-end Team Leader		
Role:	monitors front-end team		
Signature:	AS	Date:	2021/02/01
Print Name:	Ayman Shehri		
Title:	Back-end Developer		
Role:	Participate in the entire application lifecycle, focusing on coding and debugging		
Signature:	NL	Date:	2021/01/25
Print Name:	Neerujah Ledchumanan		
Title:	Project Manager		
Role:	plan, control, monitor project		

## APPENDIX A: REFERENCES

The following table summarizes the documents referenced in this document.

Document Name and Version	Description	Location
Lecture Notes of Dr. Rodrigo Morales on Risk management	Notes explaining different aspects of Project risk management.	<i>&lt;<a href="https://moodle.concordia.ca/moodle/course/view.php?id=129693">https://moodle.concordia.ca/moodle/course/view.php?id=129693</a>&gt;</i>

## APPENDIX B: KEY TERMS

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

Term	Definition
Project manager	Plays the role in planning, monitoring and controlling the project.
Product owner	Project's key stakeholder.
Impact matrix	Visual representation of results from risk probability and impact assessments.
Sprint	3 week period to complete a specific amount of work.
ERP	Enterprise resource planning
RRL	Risk reduction leverage
SWOT	strength, weakness, opportunities, threats
Jira	Software to plan, track and manage software development projects.