

SOEN390 - Software Engineering Team Design Project
Team 6 - Deliverable 4

Risk Assessment and Management Plan (RMP)

Winter 2024

Done by:

Hoang Minh Khoi Pham 40162551
Michaël Gugliandolo 40213419
Jessey Thach 40210440
Mahanaim Rubin Yo 40178119
Vanessa DiPietrantonio 40189938
Ahmad Elmahallawy 40193418
Clara Gagnon 40208598
Khanh Huy Nguyen 40125396
Jean-Nicolas Sabatini-Ouellet 40207926
Mohamad Mounir Yassin 40198854

Professor Junqiu Yang
Department of Computer Science and Software Engineering
Gina Cody School of Engineering and Computer Science

Concordia University

Risk Assessment and Management Plan (RMP)

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 Condo Management software 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.

Risks and assessments were identified by looking at the distribution of the workload, staffing, process, design, supplier, resources, and dependencies. Additionally, the team monitors test results as it pertains to failures and keeps an eye on the progress rate of different user stories and tasks. Reviewing potential shortfalls against expectations, and analyzing negative trends concerning the different technologies used.

Quantification of Impact

Impact	Quantification
Low	Low impact represents risks that would take 0-15 hours to resolve if it occurred. It would have minimal impact on project objectives or resources.
Medium	Medium impact represents risks that would take 16-30 hours to resolve if it occurred. It would have a Moderate impact on project objectives or resources, manageable with some effort.
High	High Impact represents risks that would take over 30 hours to resolve if it occurred. Significant impact on project objectives or resources, requiring immediate attention and extensive effort to mitigate.

Quantification of Probability

Probability	Quantification
Low	Low probability means the risk has a 0 -25% of occurring. Unlikely to occur or rare occurrence.
Medium	Medium probability means the risk has a 26-50% chance of occurring. Reasonable chance of occurrence, not uncommon.
High	High probability means the risk has over a 50% chance of occurring.

In order to determine the total risk score of a risk we chose to multiply the metrics for both impact and probability. For example: RiskExample has a probability of 51% and an impact of 24 hours. Its risk score would be $20 \times 51 = 1020$. 1020 is above 900 so that risk would be categorized as high. We used this risk score to help us determine which category to place the overall risk (Low-green, Medium-yellow, High-red).

Overall Risk Scores:

Low: 0-450

Medium: 451-900

High: over 900

Quantification of Figure 1

Impact	Probability	Quantification of each category
Low	Low	The risk impact is below 15 hours, the probability is below 25% and the risk score is below 450.
Low	Medium	The risk impact is below 15 hours, the probability is between 26% and 50% and the risk score is below 450.
Medium	Low	The risk impact is between 16 and 30 hours, the probability is below 25% and the risk score is below 450.
Low	High	The risk impact is below 15 hours, the probability is above 50% and the risk score is between 451 and 900.
Medium	Medium	The risk impact is between 16 and 30 hours, the probability is

		between 26% - 50% and the risk score is between 451 and 900.
High	Low	The risk impact is above 30 hours, the probability is below 25% and the risk score is between 451 and 900.
Medium	High	The risk impact is between 16-30 hours, the probability is above 50 % and the risk score is above 900.
High	Medium	The risk impact is above 30 hours, the probability is between 26%-50% and the risk score is above 900.
High	High	The risk impact is above 30 hours, the probability is above 50 % and the risk score is above 900.

Risk Assessment

1. Schedule Risk

- Probability: 30%
- Impact: If it occurs, it could delay the project by approximately 10 hours.
- Explanation: We arrived at this evaluation by analyzing past project schedules and considering potential factors that could lead to delays.
- Risk Score: $30 \times 10 = 300$. LOW

2. Scope Creep

- Probability: 40%
- Impact: Scope creep could result in additional development efforts, leading to well over 40 hours of extra effort.
- Explanation: Scope creep was identified based on the tendency of requirements to evolve during the development process, leading to increased complexity and workload.
- Risk Score: $40 \times 40 = 1600$ HIGH

3. Narrow Knowledge of the Technology Used

- Probability: 55%
- Impact: Insufficient knowledge of the technology could lead to an approximate delay of 20 hours due to learning curves and potential errors in implementation.
- Explanation: The probability is based on the level of familiarity team members have with the technology stack. Impact assessment considers the time required for on-the-job learning and potential setbacks in development.

- Risk Score: $55 \times 15 = 1100$ HIGH

4. Ambiguous Requirements

- Probability: 35%
- Impact: Ambiguous requirements may necessitate an additional 20 hours of project duration for clarification and adjustments.
- Explanation: The probability is derived from historical data on requirement clarification requests. Impact assessment accounts for the time needed to resolve ambiguities and potential rework caused by misunderstandings.
- Risk Score: $35 \times 20 = 680$ MEDIUM

5. Privacy Leaks

- Probability: 20%
- Impact: A privacy leak incident could require approximately 30 hours to investigate, mitigate, and address legal implications.
- Explanation: Probability assessment considers the frequency of similar incidents in the industry. Impact assessment accounts for the time and resources needed to address the breach and its consequences.
- Risk Score: $20 \times 30 = 600$ MEDIUM

6. Poor Code Quality

- Probability: 15%
- Impact: Poor code quality might lead to an additional 12 hours of debugging and refactoring efforts.
- Explanation: Probability is based on past experiences with code quality issues. Impact assessment considers the time required to identify and rectify defects, as well as the potential impact on project timelines.
- Risk Score: $15 \times 12 = 180$ LOW

7. Lack of Communication Among Team Members

- Probability: 20%
- Impact: Ineffective communication could result in a 35 hours in project duration due to misunderstandings and coordination issues.

- Explanation: Probability assessment considers team dynamics and the complexity of communication channels. Impact assessment accounts for the time lost in clarifications and rework caused by miscommunication.
- Risk Score: $20 \times 35 = 700$. MEDIUM

8. Database Performance

- Probability: 15%
- Impact: Database performance issues may lead to an approximate delay of 8 hours for troubleshooting and optimization.
- Explanation: Probability assessment is based on the complexity of the database architecture. Impact assessment considers the time needed to diagnose and address performance bottlenecks.
- Risk Score: $15 \times 8 = 120$. LOW

9. Low Productivity from Team Members

- Probability: 35%
- Impact: Low productivity could result in an approximate delay of 20 hours due to missed deadlines and increased workload on other team members.
- Explanation: Probability assessment considers factors affecting team motivation and morale. Impact assessment accounts for the time lost in addressing productivity issues and redistributing tasks.
- Risk Score: $35 \times 20 = 700$. MEDIUM

From the above metrics we can place the risks in this chart as such:

Impact	Low (0-15h)	Medium (16-30h)	High (>30h)
Probability			
Low(<25%)	R6, R8	R5	R7
Medium (26-50%)	R1	R4, R9	R2
High (>50%)		R3	

Figure 1: Risk management chart

Risk ID	Risk Type and Description	Risk Score	Resolved in Sprint	Strategy and Effectiveness
R1	Schedule: Schedule Risk	LOW	1	Avoidance: Develop Project Plan and break the team into smaller teams to allow easier scheduling.
R2	Management: Scope Creep	HIGH	1	Acceptance: Breakdown the project into smaller manageable tasks.
R3	Technical: Narrow knowledge of the technology used	HIGH	1	Mitigation: Have the team members familiarize themselves with the technology used outside the scope of the project.
R4	Management: Ambiguous Requirements	MEDIUM	1	Mitigation: Incremental development
R5	External: Privacy leaks	LOW	N/A	Avoidance: Encrypting users credentials and conducting security tests for the software.

R6	Technical: Poor code quality	LOW	2	Avoidance: Continuously reviewing, testing, and refactoring the code
R7	Management: Lack of communication among team members	MEDIUM	1	Acceptance: Develop daily communication channels
R8	Technical: Database performance	LOW	N/A	Mitigation: Use a more reliable option
R9	Management: Low productivity from team members	MEDIUM	4	Acceptance: Setting achievable deadlines would help prevent burnout and increase motivation.

Table 1: List of identified risks