

PROJECT MANAGEMENT ON RISK MANAGEMENT SYSTEM SOFTWARE



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STUDENT : JASWANTH SUNKARA

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1. General Project Information

Introduction (Project Scope).

The Merriam-Webster dictionary describes risk as "the danger of loss or injury" and "someone or something that suggests or creates a risk. Risk identification, risk assessment, and risk Before a hazard has an impact on software development, assessment, risk analysis, and risk mitigation processes should be used. Gilb's "controlling risk as" idea serves as an example of the necessity for software risk management.

In every project, there is a great deal of uncertainty and the potential for plan deviation. Risk cannot be totally eliminated.

However, you may record it, prepare for it through planning and design, accept it, quantify it, and lower it to acceptable levels.

Risk doesn't want to avoid you, despite your best efforts to do so.

Software risks arise in various domains that are analyzed prior to be contained effectively. The top five software project risks as summarized by Mike Griffiths from the Waltzing with Bears: Managing Risk on Software Projects include:

- 1. Inherent Schedule Flaws:** the intangible nature and the uniqueness of the software makes it inherently difficult to estimate and schedule
- 2. Requirements Inflation:** additional features that were not identified in the beginning of the project might emerge that threaten and alter the timelines
- 3. Employee Turnover:** key personnel leave the project taking critical information with them that significantly delays or derails the project
- 4. Specification Breakdown:** when coding and integration begin, it becomes apparent that the specification is incomplete or contains conflicting requirements.
- 5. Poor Productivity:** The sense of urgency to work in earnest is absent in long project timelines, resulting to lost time that cannot be regained

Project goal.

While the primary purpose of the prototype risk management system is to manage IT and Software related risks, a system that integrates other types of risks such as enterprise and operational risks is found to be effective in collaboration of all threats in one framework.

Project objectives.

1. Identifies and Evaluates risks
2. Reduce and eliminate harmful threats
3. Support Efficient use of Resources
4. Better Communication of Risks within the organization
5. Reassurance to stakeholders
6. Support Continuity of the organization

Expected advantages.

- Easy identification of troubled spots
- Improved communication
- Enhanced budgeting
- Focus on Success
- Reduce business liability
- Frame regulatory issues
- Definite structure of escalations

2. Market Analysis

2.1 Top 10 systems in the domain :

- 1.Archer - [Integrated Risk Management | Archer \(archerirm.com\)](https://archerirm.com)**
- 2.Metricstream - [GRC | Governance, Risk and Compliance Software Solutions \(metricstream.com\)](https://metricstream.com)**
- 3.LogicManager - [LogicManager | Enterprise Risk Management Software & GRC Solutions](https://logicmanager.com)**
- 4.Diligent - [Diligent Corporation | A Modern Governance Company](https://diligent.com)**
- 5.Servicenow - [Risk Management – GRC – ServiceNow](https://servicenow.com)**
- 6.Sai360 - [ESG, GRC & EHS&S Software & Learning for Risk & Compliance– SAI360](https://sai360.com)**
- 7.Resolver - [Resolver | Discover The Value Of Risk Intelligence](https://resolver.com)**
- 8.OneTrust - [Third-Party Risk | OneTrust](https://onetrust.com)**
- 9.Riskconnect - [Risk Management Software Solutions - Riskconnect Inc.](https://riskconnect.com)**
- 10.LogicGate - [LogicGate Risk Cloud | GRC Software | Enterprise Risk, Governance + Compliance Solutions](https://logicgate.com)**

2.2 COMPARATIVE ANALYSIS

RMS SOFTWARE	ARCHER	METRICSTREAM	DILIGENT	RESOLVER	ONETRUST
SCOPE	Archer provides holistic integrated risk management on a single, configurable platform that manages multiple dimensions of risk.	Built on the MetricStream Platform, the solution cuts across organizational silos by standardizing risk and control taxonomies and enabling stakeholders to effectively coordinate and unify risk management activities across all business functions.	Identify, assess and remediate risk in a comprehensive, unified platform. Save time and resources by implementing automated workflows	Resolver gathers all risk data and analyzes it in context—revealing the true business impact within every risk.	Streamline every stage of your third-party lifecycle by automating workflows for vendor onboarding, assessment, risk mitigation, reporting, monitoring, and offboarding.
MAIN FUNCTIONS	Third-party Governance Risk Quantification Audit Management	Enterprise Risk Management Compliance Management Internal Audit	Unified Platform Streamline risk Manage vulnerabilities	Risk & Audit Security Operations Incidents & Investigations	Third-part risk management Audit Management Compliance
PROGRAMMING LANGUAGES	Html & JS, Java, PHP	JavaScript, Html, PHP, C#	API's – JS, java, PHP, XML	JavaScript, Html, PHP, C#	API's – JS, java, PHP, XML
LINES OF CODE	50-75k	35-50k	60-80K	50-55k	45-57k
TECHNICAL PLATFORMS	Windows, Linux, Unix, Browsers	Windows, Linux, Unix, Browsers	Windows, Linux, Unix, Browsers	Windows, Linux, Unix, Browsers	Windows, Linux, Unix, Browsers
WEBSITE	(archerirm.com)	Metricstream.com	Diligent.com	Resolver.com	Onetrust.com

Figure 3. comparison table

2.3 SPREADSHEET VS RMS SOFTWARE:

SPREADSHEET SOFTWARE	RISK MANAGEMENT SOFTWARE
Data Collection	
MANUAL Risk data must be manually brought together from numerous spreadsheets kept by different departments – then it must be standardized and reformatted before any analysis can happen.	AUTOMATED Data is captured consistently and thoroughly with standard templates, intuitive forms, auto-filled fields, and more – and can be seamlessly integrated with multiple internal and external sources.
Data Quality	
UNCERTAIN The more data that must be entered manually, the greater the potential for human error. Even a small error that goes undetected can spell disaster if that information is used to make critical business decisions.	ACCURATE Data is validated as it's entered. Any missing or incorrect information is flagged so it can be addressed immediately. And once data is in the system, it automatically flows through to every place it's needed.
Risk Visibility	
SILOED When risk data is kept in disparate spreadsheets, emails, and documents, it's almost impossible to connect the dots for a big-picture view of risk – which severely impedes decision-making abilities since risk rarely exists in isolation.	EXPANSIVE All risk data is together in one source of truth so you can understand your risks, how they interrelate, and the cumulative impact on the organization.
Reporting	
TIME CONSUMING AND COMPLICATED Manually extracting information from numerous spreadsheets to create meaningful reports can take hundreds of hours. And you have to start from scratch every time the numbers change or someone wants a different report.	FAST AND EASY A couple of clicks is all it takes to create highly visual reports that make incredibly complex risk data both understandable and actionable.
Security	
UNSECURE Spreadsheets are designed to be easy to copy and share. And access restrictions typically live outside of the tight controls of the IT department, which can lead to all sorts of trouble. Changes also aren't usually documented or tracked, making it tricky to know who changed what or why.	SECURE Access is strictly limited to authorized users. A clear audit trail documents every change or update. And all risk data is protected in secure, cloud-based data centers with encryption, audit logs, and firewalls.
Scalability	
LIMITED Spreadsheets are simply not designed to handle enormous amounts of data and sophisticated analysis required to manage today's risks. As your organization grows, so do the risks – and the amount of data needed to effectively manage those risks. At some point, spreadsheets themselves may end up being your biggest risk of all.	UNLIMITED Cloud-based risk management software is infinitely scalable. You choose the applications that fit your needs today – and add more as your business grows and priorities change.

Figure 4. spreadsheet vs software

2.4 Software Engineering Process Model:

INCREMENTAL MODEL:

Incremental Model is a process of software development where requirements divided into multiple standalone modules of the software development cycle. In this model, each module goes through the requirements, design, implementation and testing phases. Every subsequent release

of the module adds function to the previous release. The process continues until the complete system achieved.

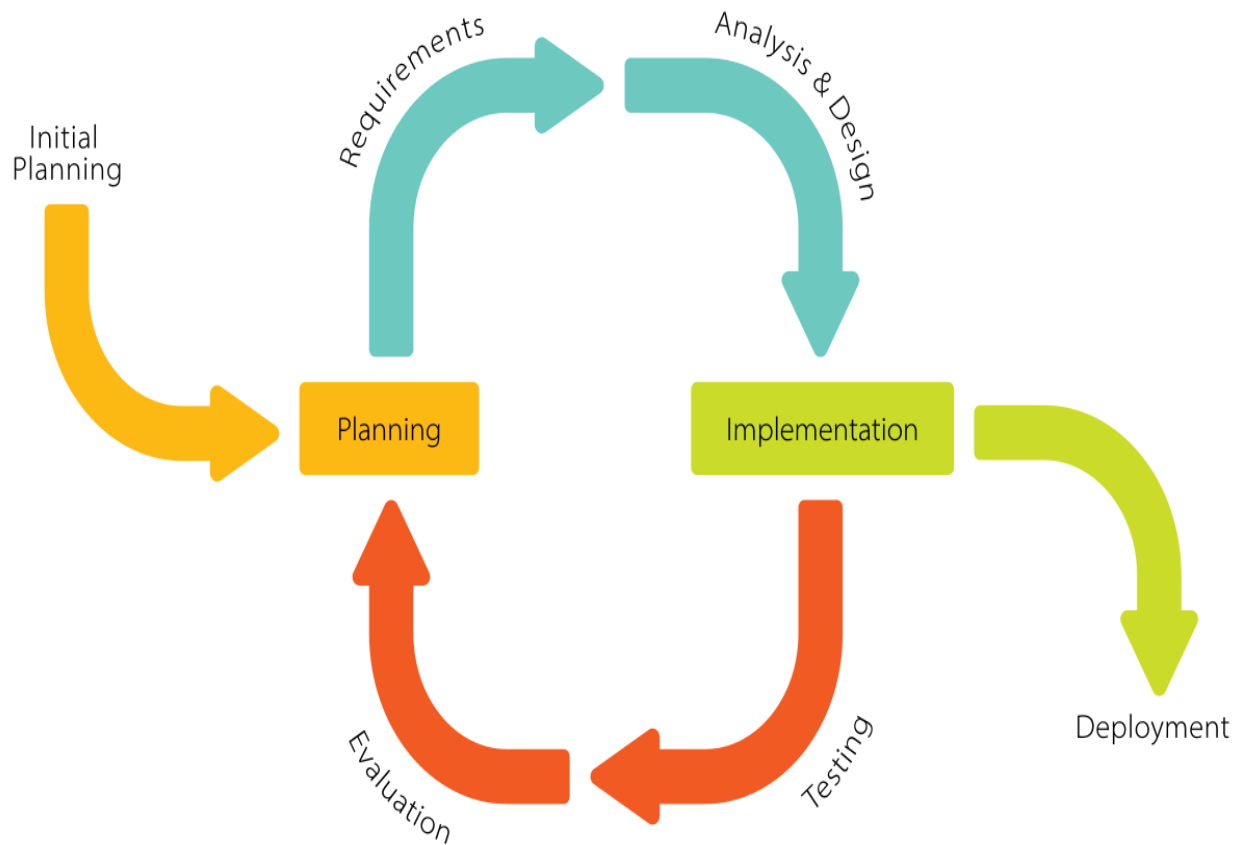


Figure 5. Incremental Model

2.5 Functional Requirements:

- Log risk data
- Track and manage risks
- Track changes
- Risk register
- Reviewing risks and treatment plans
- Control access of risk data
- Risk report

2.6 Non-Functional Requirements:

- Usability
- Reliability
- Performance
- Security
- Data integrity

2.7 Requirements:

Database Server: SQL Server for database.

Programming Languages: JS, Java, C#, html & CSS, XML.

Supported Operating Systems: Windows, Mac OS X, Linux, UNIX.

IDE tools: VISUAL STUDIO, Oracle.

Software: MS-excel, MS-Project.

3. Human Resources Management

WBS		Task	Task Name
1			RMS_PROJECT
1.1			Project Initiation
1.1.1			Develop project charter
1.1.2			Develop Statement Of Work
1.1.3			Develop preliminary scope development
1.1.4			Develop preliminary architectural model
1.1.5			Project initiation complete
1.2			Project plan
1.2.1			Develop scope management plan
1.2.2			Develop change management plan
1.2.3			Develop initial descriptive budget
1.2.4			Develop schedule
1.2.5			Develop quality management plan
1.2.6			Develop human resource plan
1.2.7			Develop risk management plan
1.2.8			Project plan complete





















1.3		Project Execution
1.3.1		Release 1
1.3.1.1		Analysis phase
1.3.1.2		Design phase
1.3.1.3		Construction phase
1.3.1.4		Validation phase
1.3.1.5		Deployment phase
1.3.1.6		Closeout
1.3.1.7		Release 1 Complete
1.3.2		Release 2
1.3.2.1		Analysis phase
1.3.2.2		Design phase
1.3.2.3		Construction phase
1.3.2.4		Validation phase
1.3.2.5		Deployment phase
1.3.2.6		Closeout
1.3.2.7		Release 2 Complete
1.3.3		Execution complete
1.4		Project Closeout
1.5		Project Complete

Figure 6&7. HR-Management Plan

3.1 List of required Human Resources:

Resource Name ▼	Type ▼	Material ▼	Initials ▼	Group ▼	Max. ▼	Std. Rate ▼
Type: Work	Work				1,100%	
Project Manager1	Work		P		100%	\$65.46/hr
Project Manager2	Work		P		100%	\$48.90/hr
Risk Analyst1	Work		R		100%	\$50.00/hr
Risk Analyst2	Work		R		100%	\$43.78/hr
Risk Analyst3	Work		R		100%	\$37.86/hr
Developer1	Work		D		100%	\$55.67/hr
Developer2	Work		D		100%	\$45.32/hr
Tester1	Work		T		100%	\$36.36/hr
Developer 4	Work		D		100%	\$29.55/hr
Project Manager 3	Work		P		100%	\$45.45/hr
Risk Analyst 4	Work		R		100%	\$38.64/hr

Figure 8. Human Resources

3.2 List of required Material Resources:

Resource Name ▼	Type ▼	Material ▼	Initials ▼	Group ▼	Max. ▼	Std. Rate ▼
4 Type: Material	Material					
Laptop1	Material		L			\$2,000.00
Laptop2	Material		L			\$1,600.00
Laptop3	Material		L			\$1,200.00
Laptop4	Material		L			\$1,000.00
Laptop5	Material		L			\$800.00
PDA1	Material		P			\$220.00
PDA2	Material		P			\$150.00
Cellphone1	Material		C			\$200.00
Cellphone2	Material		C			\$150.00
Cellphone3	Material		C			\$120.00
Cellphone4	Material		C			\$80.00
Cellphone5	Material		C			\$50.00
Desktop1	Material		D			\$1,000.00
Desktop2	Material		D			\$700.00
Desktop 3	Material		D			\$2,500.00
Desktop 4	Material		D			\$2,100.00
Laptop 6	Material		L			\$2,000.00
Laptop 7	Material		L			\$2,000.00
Cellphone 6	Material		C			\$500.00
Cellphone 7	Material		C			\$500.00

Figure 9. Material Resources

3.3 Roles & Responsibility Matrix:

WBS	Project Manager 1	Project Manager 2	Risk Analyst	Risk Analyst 2	Risk Analyst 3	Risk Analyst 4	Developer 1	Developer 2	Developer 4	Tester 1	Project Manager 3
1											
1.1	R		C				I				
1.1.1	R			C				I			A
1.1.2		R			C				I		
1.1.3						C	I				R
1.1.4		R		C					I		
1.1.5	R		C		C			I			
1.2											
1.2.1		R				C			I		A
1.2.2	R			C	C		I				
1.2.3		R	C			C		I	I		
1.2.4	A			C	C		I				R
1.2.5	R					C			I		A
1.2.6		A	C	C			I				R
1.2.7	R		C		C			I			
1.2.8	A	R		C		C			I		
1.3											
1.3.1											
1.3.1.1	R		C			C	A		I		
1.3.1.2				C		C		A	I		R
1.3.1.3		R			C		A	I			
1.3.1.4	R			I				C	C	A	
1.3.1.5	R		I				A			C	
1.3.1.6	R	I									I
1.3.1.7		R								I	
1.3.2											
1.3.2.1	R		C			C	A		I		
1.3.2.2				C		C		A	I		R
1.3.2.3		R			C		A	I			
1.3.2.4	R			I				C	C	A	
1.3.2.5			I				A			C	R
1.3.2.6	R	I									I
1.3.2.7		R									A

Figure 10. R&R Matrix

4. TIME MANAGEMENT

WBS	Task	Task Name	Duration	Start	Finish	Predecessors
1		RMS_PROJECT	129 days	Fri 6/10/22	Wed 12/7/22	
1.1		Project Initiation	17 days	Fri 6/10/22	Mon 7/4/22	
1.1.1		Develop project charter	4 days	Fri 6/10/22	Wed 6/15/22	
1.1.2		Develop Statement Of Work	7 days	Thu 6/16/22	Fri 6/24/22	3
1.1.3		Develop preliminary scope development	2 days	Mon 6/27/22	Tue 6/28/22	3,4
1.1.4		Develop preliminary architectural model	4 days	Wed 6/29/22	Mon 7/4/22	5
1.1.5		Project initiation complete	0 days	Mon 7/4/22	Mon 7/4/22	3,4,5,6
1.2		Project plan	20 days	Tue 7/5/22	Mon 8/1/22	
1.2.1		Develop scope management plan	3 days	Tue 7/5/22	Thu 7/7/22	2
1.2.2		Develop change management plan	5 days	Fri 7/8/22	Thu 7/14/22	2,9
1.2.3		Develop initial descriptive budget	12 days	Fri 7/15/22	Mon 8/1/22	9,10
1.2.4		Develop schedule	4 days	Fri 7/15/22	Wed 7/20/22	9,10
1.2.5		Develop quality management plan	4 days	Tue 7/5/22	Fri 7/8/22	2
1.2.6		Develop human resource plan	5 days	Fri 7/15/22	Thu 7/21/22	9,10
1.2.7		Develop risk management plan	4 days	Fri 7/15/22	Wed 7/20/22	9,10
1.2.8		Project plan complete	0 days	Mon 8/1/22	Mon 8/1/22	9,10,11,12,13,14,1

Figure 11. Time Management Schedule

WBS	Task	Task Name	Duration	Start	Finish	Predecessors
1.2.8		Project plan complete	0 days	Mon 8/1/22	Mon 8/1/22	9,10,11,12,13,14,15
1.3		Project Execution	91 days	Tue 8/2/22	Tue 12/6/22	
1.3.1		Release 1	61 days	Tue 8/2/22	Tue 10/25/22	
1.3.1.1		Analysis phase	18 days	Tue 8/2/22	Thu 8/25/22	8
1.3.1.2		Design phase	15 days	Fri 8/26/22	Thu 9/15/22	19
1.3.1.3		Construction phase	12 days	Fri 9/16/22	Mon 10/3/22	20
1.3.1.4		Validation phase	12 days	Tue 10/4/22	Wed 10/19/22	21
1.3.1.5		Deployment phase	3 days	Thu 10/20/22	Mon 10/24/22	22
1.3.1.6		Closeout	1 day	Tue 10/25/22	Tue 10/25/22	23
1.3.1.7		Release 1 Complete	0 days	Tue 10/25/22	Tue 10/25/22	24
1.3.2		Release 2	30 days	Wed 10/26/22	Tue 12/6/22	
1.3.2.1		Analysis phase	9 days	Wed 10/26/22	Mon 11/7/22	18
1.3.2.2		Design phase	7 days	Tue 11/8/22	Wed 11/16/22	27
1.3.2.3		Construction phase	6 days	Thu 11/17/22	Thu 11/24/22	28
1.3.2.4		Validation phase	6 days	Fri 11/25/22	Fri 12/2/22	29
1.3.2.5		Deployment phase	1 day	Mon 12/5/22	Mon 12/5/22	30
1.3.2.6		Closeout	1 day	Tue 12/6/22	Tue 12/6/22	31
1.3.2.7		Release 2 Complete	0 days	Tue 12/6/22	Tue 12/6/22	32
1.3.3		Execution complete	0 days	Tue 12/6/22	Tue 12/6/22	18,26
1.4		Project Closeout	1 day	Wed 12/7/22	Wed 12/7/22	17
1.5		Project Complete	0 days	Wed 12/7/22	Wed 12/7/22	35

Figure 12. Time Management Schedule

4.1 Total Project Time:

Phases	Start Date	Final Date	Duration-Days
1.1 project initiation	6/10/22	7/4/22	17
1.2 project plan	7/5/22	8/5/22	24
1.3.1 Release 1	8/8/22	10/31/22	61
1.3.2 Release 2	11/1/22	12/12/22	30
Overall Project	6/10/22	12/13/22	133

Figure 13. Project Duration

5. COST ESTIMATION:

WBS		Task	Task Name	Cost
1			▸ RMS_PROJECT	\$142,618.88
1.1			▸ Project Initiation	\$20,384.16
1.1.1			Develop project charter	\$4,514.72
1.1.2			Develop Statement Of Work	\$7,651.68
1.1.3			Develop preliminary scope development	\$3,236.24
1.1.4			Develop preliminary architectural model	\$4,981.52
1.1.5			Project initiation complete	\$0.00
1.2			▸ Project plan	\$36,342.88
1.2.1			Develop scope management plan	\$3,991.04
1.2.2			Develop change management plan	\$3,320.00
1.2.3			Develop initial descriptive budget	\$12,714.40
1.2.4			Develop schedule	\$2,480.96
1.2.5			Develop quality management plan	\$5,945.76
1.2.6			Develop human resource plan	\$2,364.40
1.2.7			Develop risk management plan	\$5,526.32
1.2.8			Project plan complete	\$0.00
1.3			▸ Project Execution	\$83,600.64
1.3.1			▸ Release 1	\$52,501.12
1.3.1.1			Analysis phase	\$8,520.00

Figure 14. Cost estimation

WBS		Task	Task Name	Baseline Cost	Remaining Cost	Actual Cost	Cost Variance	Cost
1			RMS_PROJECT	\$142,618.88	\$59,522.68	\$83,096.20	\$0.00	\$142,618.88
1.1	✓		Project Initiation	\$20,384.16	\$0.00	\$20,384.16	\$0.00	\$20,384.16
1.1.1	✓		Develop project charter	\$4,514.72	\$0.00	\$4,514.72	\$0.00	\$4,514.72
1.1.2	✓		Develop Statement Of Work	\$7,651.68	\$0.00	\$7,651.68	\$0.00	\$7,651.68
1.1.3	✓		Develop preliminary scope development	\$3,236.24	\$0.00	\$3,236.24	\$0.00	\$3,236.24
1.1.4	✓		Develop preliminary architectural model	\$4,981.52	\$0.00	\$4,981.52	\$0.00	\$4,981.52
1.1.5	✓		Project initiation complete	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
1.2	✓		Project plan	\$36,342.88	\$0.00	\$36,342.88	\$0.00	\$36,342.88
1.2.1	✓		Develop scope management plan	\$3,991.04	\$0.00	\$3,991.04	\$0.00	\$3,991.04
1.2.2	✓		Develop change management plan	\$3,320.00	\$0.00	\$3,320.00	\$0.00	\$3,320.00
1.2.3	✓		Develop initial descriptive budget	\$12,714.40	\$0.00	\$12,714.40	\$0.00	\$12,714.40
1.2.4	✓		Develop schedule	\$2,480.96	\$0.00	\$2,480.96	\$0.00	\$2,480.96
1.2.5	✓		Develop quality management plan	\$5,945.76	\$0.00	\$5,945.76	\$0.00	\$5,945.76
1.2.6	✓		Develop human resource plan	\$2,364.40	\$0.00	\$2,364.40	\$0.00	\$2,364.40
1.2.7	✓		Develop risk management plan	\$5,526.32	\$0.00	\$5,526.32	\$0.00	\$5,526.32
1.2.8	✓		Project plan complete	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
1.3			Project Execution	\$83,600.64	\$57,231.48	\$26,369.16	\$0.00	\$83,600.64

Figure 15. Cost Management

5.1 Project Budget :

Phases	Total Project Cost(\$)	Actual Cost(\$)	Remaining Cost(\$)
1.1 Project Initiation	20,384.16	20,384.16	0.00
1.2 Project Plan	36,342.88	36,342.88	0.00
1.3.1 Release 1	52,501.12	23,369.16	26,131.96
1.3.2 Release 2	31,099.52	0.00	31,099.52
Overall Project	1,42,618.88	83,096.20	59,522.68

Figure 16. Budget

6. RISK MANAGEMENT:

6.1 Types of Risks:

Type of risks	Key	Explained
Integration	Number of integration points	Projects that attempt to integrate everything at once, sometimes called “the big bang approach,” are prone to adverse results due to the extreme complexity and large number of interdependencies.
Scope	Changing Requirements	When the use case has been poorly thought through, requirements can change frequently and create chaos in an ERP integration project.
Time	Impossible Schedules	Aggressive schedules are fine but impossible schedules must be avoided. Set realistic expectations by establishing an accurate estimate of the integration efforts required for your project.
Cost	New Business Processes	Brining in new Scripts and using new and unproven technologies will give rise the new problems
Quality	Inadequate testing plans	Test plans should introduce testing early and often. Test scripts and automated testing may be able to help ensure accelerated and more complete discovery of problems early in the ERP integration project.
Human Resource	Lack of Staff and Management Experience.	ERP integration may be new territory for your IT staff and management.
Communication Management	Communication with the end-user, client and the developer	Possible with agile methodology
Procurement Management	Staff Turnover	Changes in project management, business analysts, developers, and stakeholders can complicate completion of a project.

Figure 17. Risks

6.2 Risk Management Plan:

Case #	Project Total Cost	Risk Factor	Duration (Days)	Probability	Expected Value
	(Data will be obtained during Lab 3)	(Data must be calculated before the Lab 3)	(Data will be obtained during Lab 3)	(Data will be given by Instructor before Lab 3)	(Data will be calculated during Lab 3)
0	\$142,618.88	1.62	133		\$0.00
1 (Remove 1 expert (8-9 yrs exp) - 1SA)	\$142,498.88	1.9	133	Partial Failure (35%)	(\$42.00)
2 (Remove 2 experts(8-9 yrs exp) 1SA, 1 Devloper)	\$139,575.20	2.2	151	Complete Failure (30%)	(\$913.10)
3 (add experts - 1tester, 1developer)	\$144,403.52	0.94	127	Complete Success (15%)	\$267.70
4(add beginners - 1PM, 1SA, 1tester, 1 developer)	\$158,894.00	1.28	120.5	Partial Success (20%)	\$3,255.02
				EMV	\$2,567.62
				Total EMV	\$145,186.50

Figure 18. Risk Management

6.3 Project Risk Graphs:

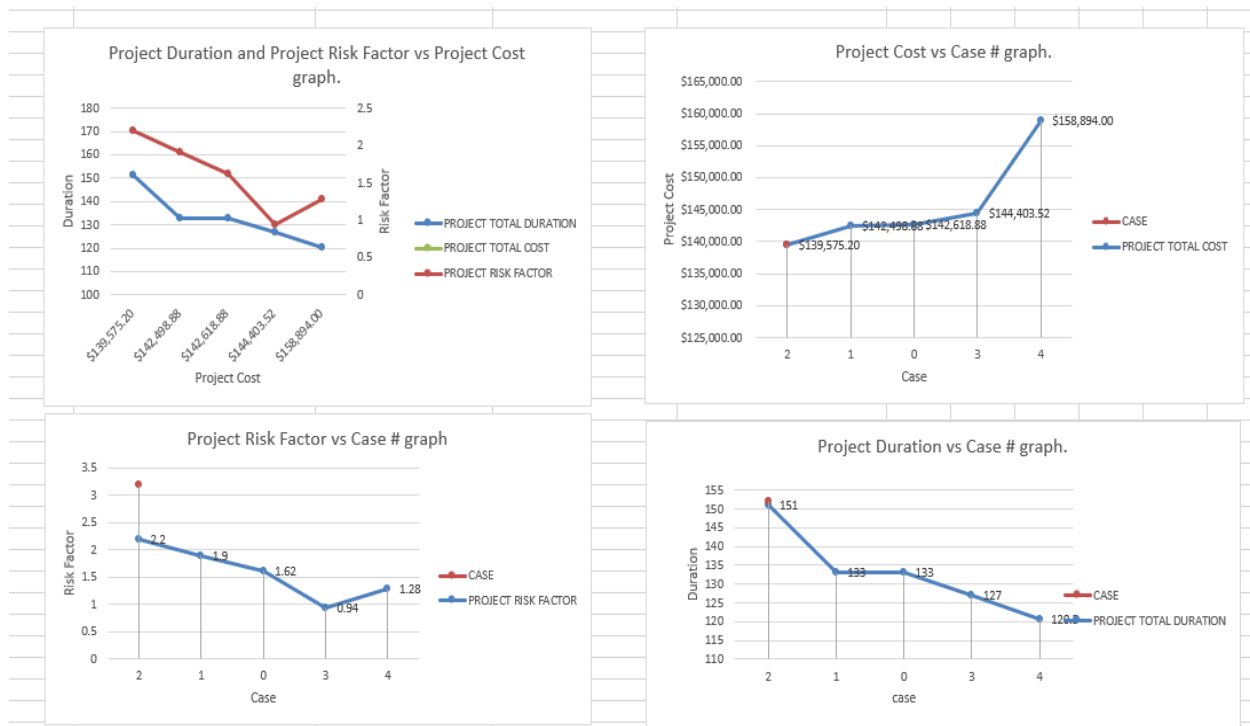


Figure 19. Graphs

6.4 Risk Exposure Table:

Risk No.	Risk Drivers	Description	Risk Probability (RP)	Risk Impact (RI)	Risk Exposure (RP * RI)
1	Expeience and Teaming	Limited software experience in the project office. Software staff not included in early palnning and design decisions.	Medium (0.5)	Medium High (0.7)	0.35
2	Requirements and Design	Systems decisions made withoutaccounting for impact on software.Poor scope definition.	Medium (0.5)	High (0.9)	0.45
3	Planning	Lack of appropriate planning detail with insufficient reviews. Unclear SOW and WBS.	Medium Low (0.3)	Medium Low (0.3)	0.09
4	Testing	Plan to convert SW test documents not due till very late in the life-cycle.developers into test team late in life-cycle.	Medium High (0.7)	Medium High (0.7)	0.49
5	Tools	Limited test analysis tools. Unproven design tools selected with limited time for analysis.	Low (0.1)	Medium Low (0.3)	0.03
6	Schedule	Schedule changes - with the possibility of scope changes and other issues, schedule changes may also be needed.	Medium High (0.7)	Medium Low (0.3)	0.21
Total Risk Adjustment Factor					1.62

Figure 20. Risk Exposure

6.5 EMV DECISION TREE:

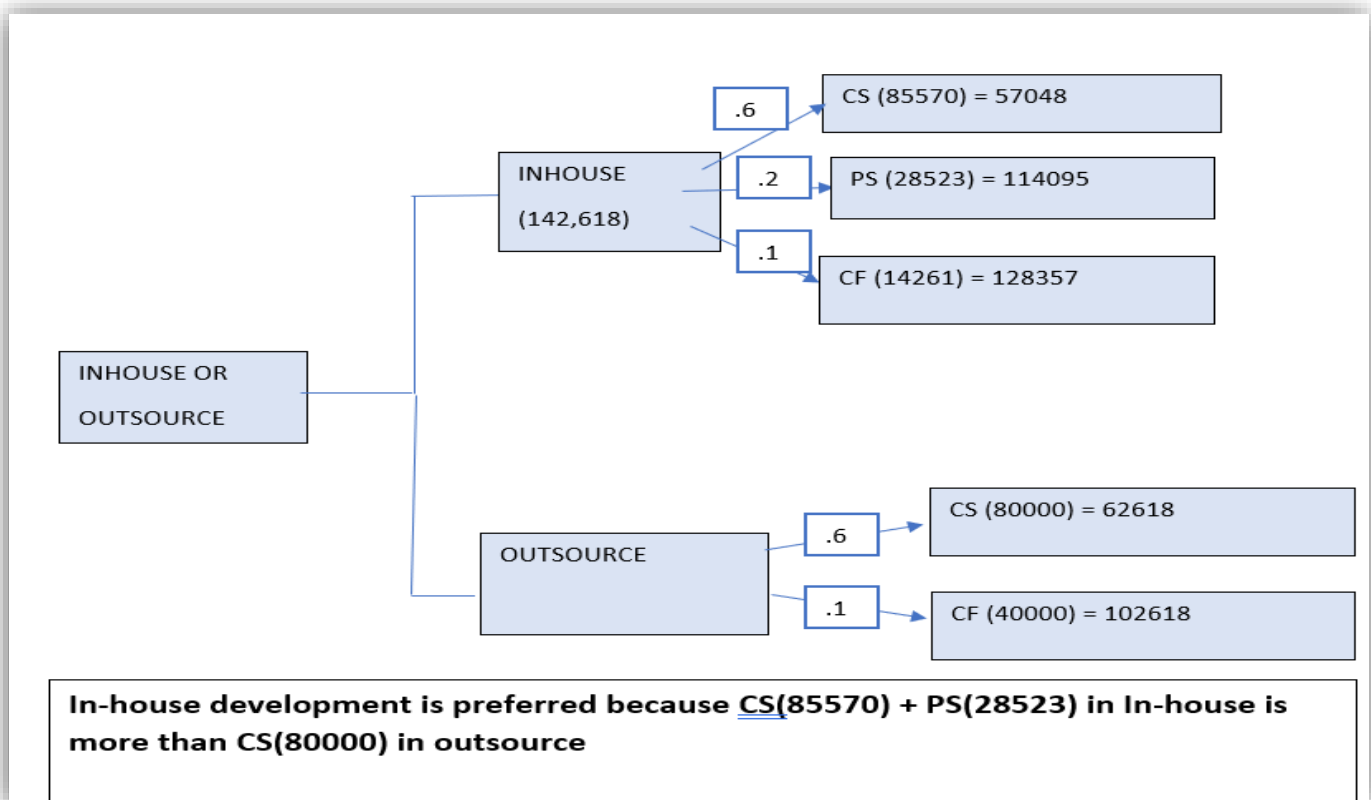


Figure 21. EMV decision tree

7. FUNCTION-POINT BASED COST ESTIMATION:

CATEGORY	LOW	WEIGHT_L	AVERAGE	WEIGHT_A	HIGH	WEIGHT_H	TOTAL(T)
USER INPUTS	32	3	15	5	3	6	189
USER OUTPUTS	30	4	13	5	5	7	220
USER INQUIRES	25	2	18	6	4	6	182
FILES STRUCTURES	21	10	10	10	3	15	355
EXTERNAL INTERFACE	15	5	15	10	5	10	275
UNADJUSTED TOTAL(UT):							1221
COST PER FUNCTIONAL POINT:							1367
TOTAL:							143726

Figure 22. FP-Based Estimation

8. LINES-OF-CODE BASED ESTIMATION:

FUNCTIONS	PAGES	LINES OF CODE PER-PAGE	TOTAL LINES OF CODE -(TLOC)
User Interface for Static Pages	18	210	3780
User Interface for Dynamic Pages	10	90	900
Code behind for Static Pages	7	82	574
Code behind Dynamic Pages	6	98	588
Data Base –SQL Stored Procedures	8	210	1680
Business layer-Logical Pages	3	149	447
Other Layer-Logical Pages	6	141	846
TOTAL			8815
TOTAL PROJECT COST			141040

Figure 23. LOC estimation

9. STATEMENT OF WORK

TITLE:

RISK MANAGEMENT SOFTWARE SYSTEM

INTRODUCTION:

Risk management software helps you identify, assess, and document risks associated with running various business processes and IT assets, communicate about risks, and efficiently manage risk mitigation tasks.

OBJECTIVES:

Main objectives of rms system are to predict, monitor, review and track the risks of the on-going project and report the risks as required.

MILESTONES:

Phases	Start Date	Final Date
1.1 project initiation	6/10/22	7/4/22
1.2 project plan	7/5/22	8/5/22
1.3.1 Release 1	8/8/22	10/31/22
1.3.2 Release 2	11/1/22	12/12/22
Overall Project	6/10/22	12/13/22

Project schedule:

- Project start date: 6/10/22
- project end date: 12/13/22

Work requirements:

- define tasks & delegate resources
- analyze risks and provide solutions

Critical success factors:

- System performance
- Risk predictions and reporting

- tracking risk changes

10. REQUEST FOR PROPOSAL:

Background:

Essential rms is a software company which provides risk management software to various industries and keeps up with the new risks and market changes.

Project goal:

The purpose of rms is to review and report risks as soon as possible and continuously monitor the workflow to minimize delays and issues during development.

Schedule:

BIDS SHALL BE FIRM OFFERS AND REMAINS VALID FOR ACCEPTANCE 60 DAYS FOLLOWING RFQ.

STATEMENT OF WORK:

DETAILS ENCLOSED IN STATEMENT OF WORK

TECHNOLOGY CONSTRAINTS:

DETAILS ENCLOSED IN STATEMENT OF WORK

ELEMENTS OF PROPOSAL:

Experience of minimum 5yrs in risk management

knowledge on Risk management and reduction

Additional options:

you can integrate new rms into development system and can propose alternate solutions for implemented methods.

Evaluation criteria:

Proposals will be evaluated based on previous experience in risk management systems, time to completion and price.

Vendor reference:

Vendors should provide their contact for further processes.

11. Conclusions:

The following conclusions can be made:

- Project required technological resources:

Technological resources required includes the following for the development of the prototype:

HTML, CSS, PHP, MySQL, JavaScript.

- Project size in LOC and FP: about 8815 LOC or about 1221 FP;
- Project cost: about \$142000 - 145000

The bottom line: In general, the proposed software system is doable. (A note: Due to the obtained high values of preliminary project efforts and project cost estimates, a more accurate analysis of proposed project activities, tasks, risks, expected outcomes and coding/testing is recommended).