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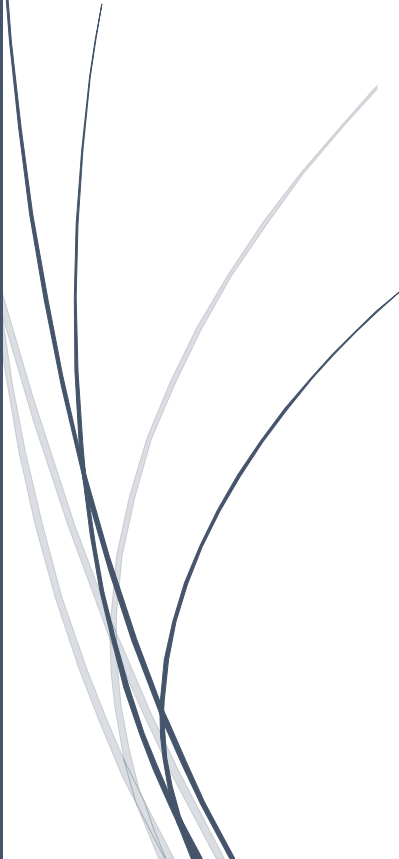
5/9/2020

Software Quality Management  
(SQM) & Software Quality Assurance  
(SQA) systems

CS591- Software Project  
Management

Course Project  
By  
Aladdin Elaballa  
Anand Reddy Sripathi

Submitted to,  
Dr. Vladimir Uskov, Ph.D.

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## Contents

1.Introduction to Quality Assurance System .....	2
2.Top 10 Systems Analyzed .....	4
3. Software Engineering Process Model .....	6
4. Scope Management .....	7
5. Time Management.....	8
6. Human Resource Management .....	10
7.Resource (material ) Management.....	13
8.Cost Management.....	14
9.Risk Management: Decision Tree with EMV.....	18
10.Risk Management .....	18
11.Procurement Management .....	22
12.Statement Of Work.....	23
13.References .....	25

## 1.Introduction to Quality Assurance System

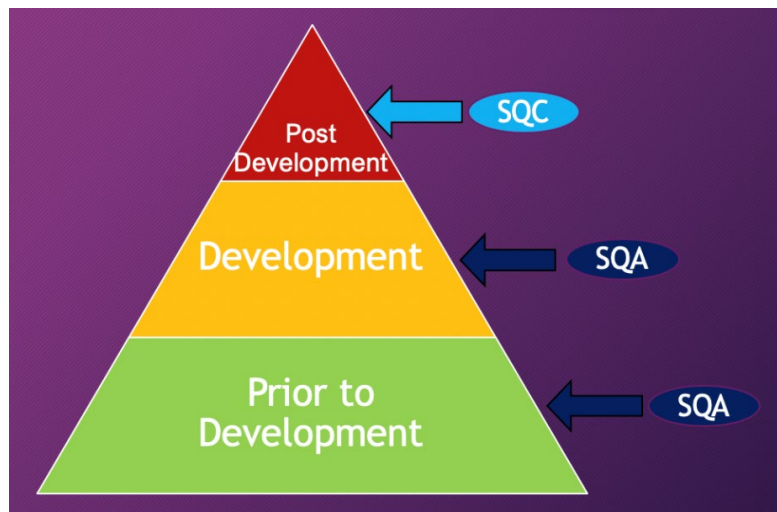
- A **Quality Management System (QMS)** is a set of:
  - ✓ Policies
  - ✓ Processes
  - ✓ Procedures
- required for planning and execution (production/development/service) in the core business area of an organization.
- A process based QMS enables the organizations to:
- Identify → Measure → Control → Improve the various core business processes that will ultimately lead to **improved business performance**.



- Software Quality Management (SQM) is a type of management process or procedure that aims to develop and manage the quality of software.
- The goal is to ensure that the product meets the quality standard assumed by the customer while also meeting any necessary regulatory and developer requirements.
- The software is required to be tested by software quality managers before it is released to the market.









- **Software Quality Assurance (SQA)** is a set of activities to ensure desired quality in software engineering process.
- It is a procedure of monitoring all the methods and activities of software development life cycle (SDLC).
- **Software Assurance Control (SQC)** is a method of maintaining and achieving the quality standards in Software Products with the assistance of testing against the predefined, standard specification.
- SQC is a reactive and corrective procedure through which an undeveloped product grows into the end product.



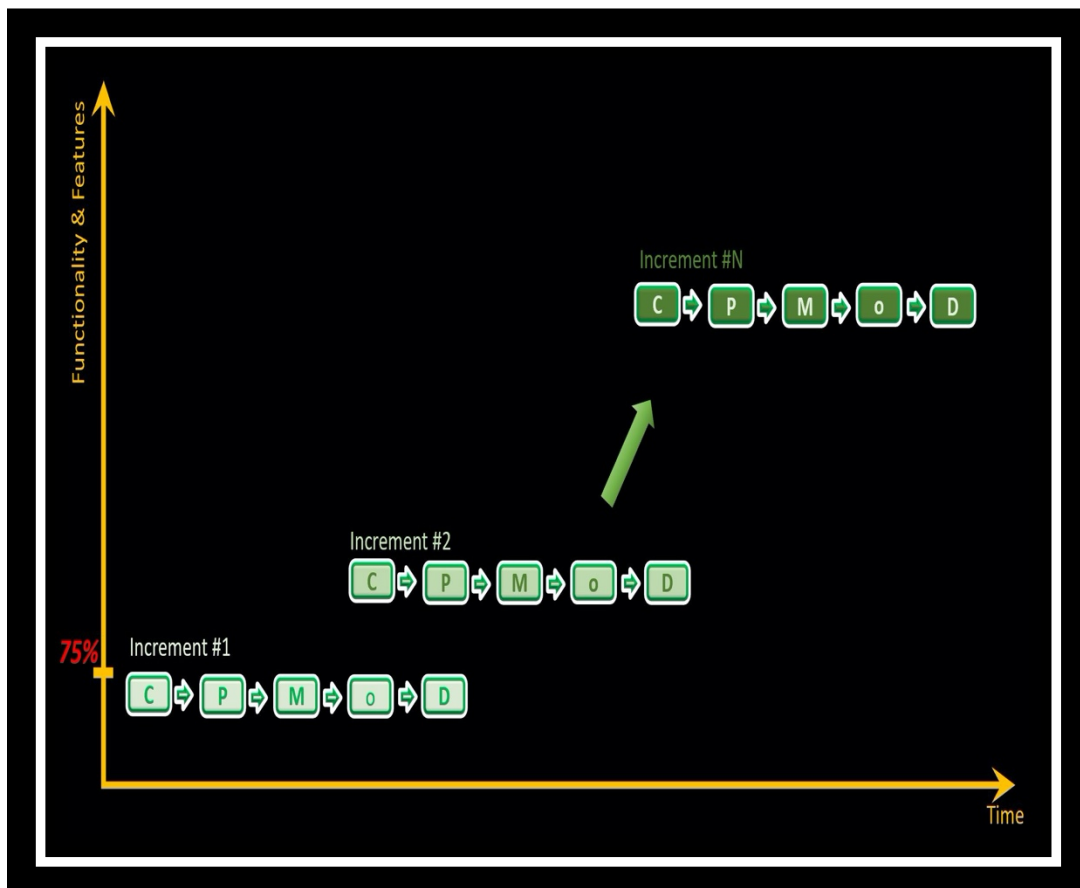
## 2.Top 10 Systems Analyzed

					
Scope	A web-based tool that helps organizations to manage the application lifecycle right from project planning, requirements gathering, until Testing & deployment.	A complete web-based test case management solution to efficiently manage, track, and organize your software testing efforts.	An umbrella project for a range of tools and libraries that enable and support the automation of web browsers.	A self-contained, open source automation server which can be used to automate all sorts of tasks related to building, testing, and delivering or deploying software.	New Relic One is an entity-centric observability platform. For engineering teams with complex environments, it empowers you to find, visualize, and understand everything you need to build more perfect software.
Main Functions	<ul style="list-style-type: none"> <li>-Release Management</li> <li>-Requirement Management</li> <li>-Test case Management</li> <li>-Test Execution Management</li> <li>-Defect Management</li> <li>-Reports Management</li> </ul>	<ul style="list-style-type: none"> <li>-Automated Testing</li> <li>-Functional Testing</li> <li>-Exploratory Testing</li> <li>-Reporting</li> <li>-Projects Tracker</li> </ul>	<ul style="list-style-type: none"> <li>-Web applications Automation</li> <li>-Web-based Administration - tasks automation</li> </ul>	<ul style="list-style-type: none"> <li>-Continuous Integration (CI) / Continuous Delivery (CD)</li> </ul>	<ul style="list-style-type: none"> <li>-Monitor code &amp; Track transaction</li> <li>-Monitor infrastructure &amp; Centralize</li> <li>-Enhance browser performance</li> <li>-Monitor mobile apps &amp; -Simulate activity</li> <li>-Collect data without an agent &amp; Build app with SDKs</li> <li>-Analyze, organize, process, and use your data.</li> </ul>
Programming Languages	Java 2 Enterprise Edition (J2EE)	JavaScript UI Script	Java Script Java C#	Java Script Java XML	Ruby
TLOC	-	-	695K	1.04M	70.9K
Technical Platform	Version 15.0.x Microsoft Windows 10 64 Bit Microsoft Internet Explorer 11 Microsoft Office 2016 32 Bit	Windows, Linux OS Internet Explorer 11 & Google Firefox Chrome, Safari, Webkit	Chrome, Mozilla Firefox Internet Explorer Opera Safari	Hardware:1 GB+ of RAM, 1 GB+ of drive space Software: Java 8 runtime environments Chrome,Mozilla Firefox Internet Explorer, Safari	Chrome, Mozilla Firefox Internet Explorer Opera Safari
Website	<a href="https://www.microfocus.com/en-us/products/quality-center-quality-management/download">https://www.microfocus.com/en-us/products/quality-center-quality-management/download</a>	<a href="https://www.gurock.com/testrail/">https://www.gurock.com/testrail/</a>	<a href="https://www.selenium.dev/">https://www.selenium.dev/</a>	<a href="https://jenkins.io/">https://jenkins.io/</a>	<a href="https://newrelic.com/">https://newrelic.com/</a>

						
<b>Scope</b>	Is a website and cloud-based service that helps developers store and manage their code, as well as track and control changes to their code.	Is a terminal multiplexer. It lets you switch easily between several programs in one terminal, detach them (they keep running in the background) and reattach them to a different terminal.	Is a collaboration platform for API development. Postman's features simplify each step of building an API and streamline collaboration so you can create better APIs—faster.	Is a Codeless Automation Testing Tool for Software, Web, Mobile, Database, Cloud, Web Services and API testing.	Is designed to solve the everyday problems faced by the testers. It is uniquely tester-centric in its design and functionality.	<b>It empowers testers with a complete toolset for end-to-end testing of desktop, web and mobile applications in a single license. Automate tests on a Windows desktop, and then execute them locally or remotely, on real iOS or Android mobile devices or on simulators/emulators.</b>
<b>Main Functions</b>	(CI) /(CD) Secure SW Development Code Review Hosting For Code & Documentation Project Management Tools	tmux is a terminal multiplexer: it enables several terminals to be created, accessed, and controlled from a single screen.	API-First Development Application Development Automated Testing Exploratory Testing Developer Onboarding Developer Portals	Regression Testing Web Application Testing Cross-Browser Testing Database Testing Web Services Testing Mobile Application Testing	Simple and Powerful APIs Automatic Waits Object Spy and Recorder Business Friendly Frameworks Automatic Logging and Reporting Parallel and Distributed Playback Continuous Integration	Functional Testing GUI Testing Tools Regression Testing Tools Keyword-Driven Testing Data-Driven Testing
<b>Programming Languages</b>	Java XML XML Schema	C C++	Java Script	Java Eclipse RCP Groovy Java script	Java Script Java HTML	Microsoft's .NET platform.
<b>TLOC</b>	393K	49.7K	38.4K	-	50.5K	-
<b>Technical Platform</b>	Chrome, Mozilla Firefox Internet Explorer Opera Safari	Chrome Mozilla Firefox Internet Explorer Opera Safari	macOS 10.9. Linux Windows 7 and above	Platforms: Windows XP, 7, 8, 10, Server 2008 & Server 2012 Protocols: Http, Https, FTP, SFTP, SOAP, XML, REST, AJAX & Applets	Internet Explorer 6, Mozilla Firefox 2 Google Chrome 6, Safari 5, Opera 9 and up PhantomJS, Microsoft Edge 25 and up	Processor: 2 GHz dual core, Memory: 1 GB Windows 7 SP1 and up MS Windows Installer 3.1 MS Visual C++ 2017 Microsoft .NET Framework 4.6.2 Internet Explorer 11
<b>Website</b>	<a href="https://github.com/">https://github.com/</a>	<a href="https://github.com/tmux/tmux/wiki">https://github.com/tmux/tmux/wiki</a>	<a href="https://www.postman.com/">https://www.postman.com/</a>	<a href="https://www.testingwhiz.com/">https://www.testingwhiz.com/</a>	<a href="https://sahipro.com/">https://sahipro.com/</a>	<a href="https://www.ranorex.com/">https://www.ranorex.com/</a>

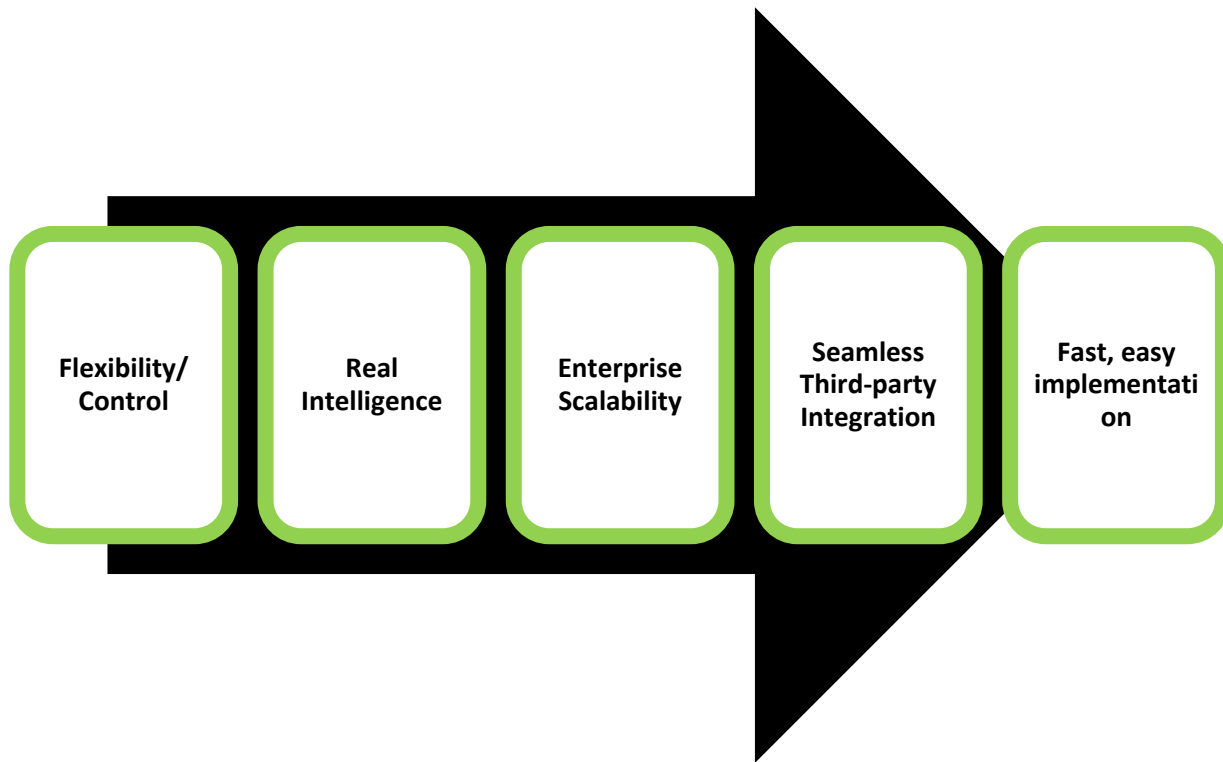
### 3. Software Engineering Process Model

- The Incremental Process Model will be adopted.
- SW has a Medium level of complexity.
- SW requires average number of developers.
- Evolutionary type of SW.
- Feedback from customer is required for enhancements.
- Customer Might feel the need to add more functionality to the SW in between iterations.
- First iteration will deliver the core of the SW with about %60



## 4. Scope Management

- The scope of this project is to create a quality management system that ensures the quality standards assumed by our customer and meets all necessary regulatory requirements.
- Achieved by providing more quality and compliance solutions:
  - System adaptability to the organization's existing IT and business environments.
  - System ability to deliver critical QMS requirements.




- 
- Constraints on technical Platform
  - Operating Systems:
  - Front-end: HTML, JavaScript, CSS, JAVA
  - Backend : JAVA , NodeJS
  - Database : Cassandra
  - IDE tools: Notepad, Notepad++
  - Server : Apache Tomcat,
  - Hardware Requirements
  - Processor: 64 bit
  - Memory: 8 GB
  - Hard disk: 120 GB
  - Functional Requirements:



- Web Browser : google Chrome
- Adobe Flash player or plugin

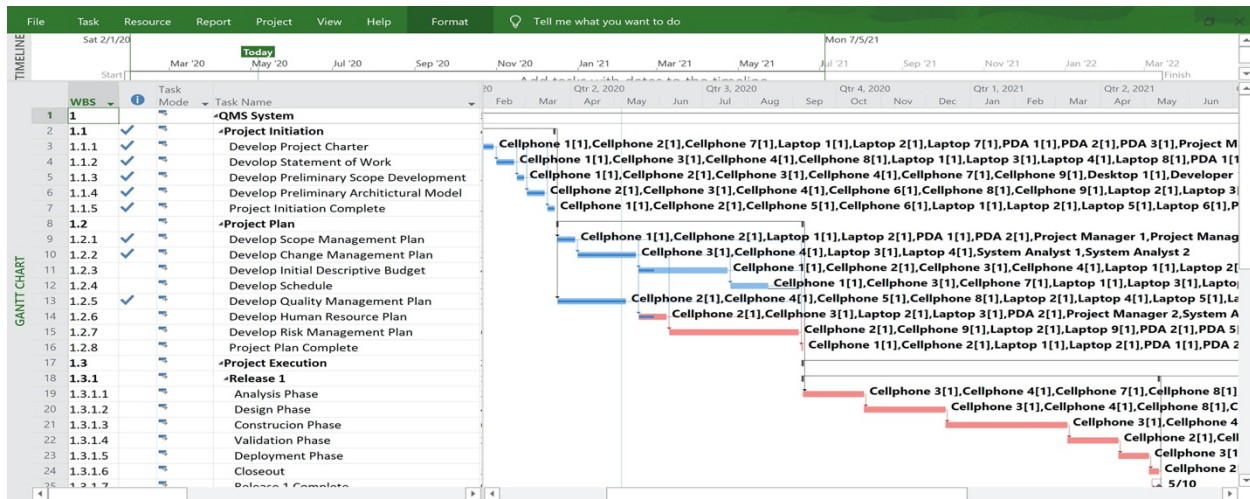
## 5. Time Management

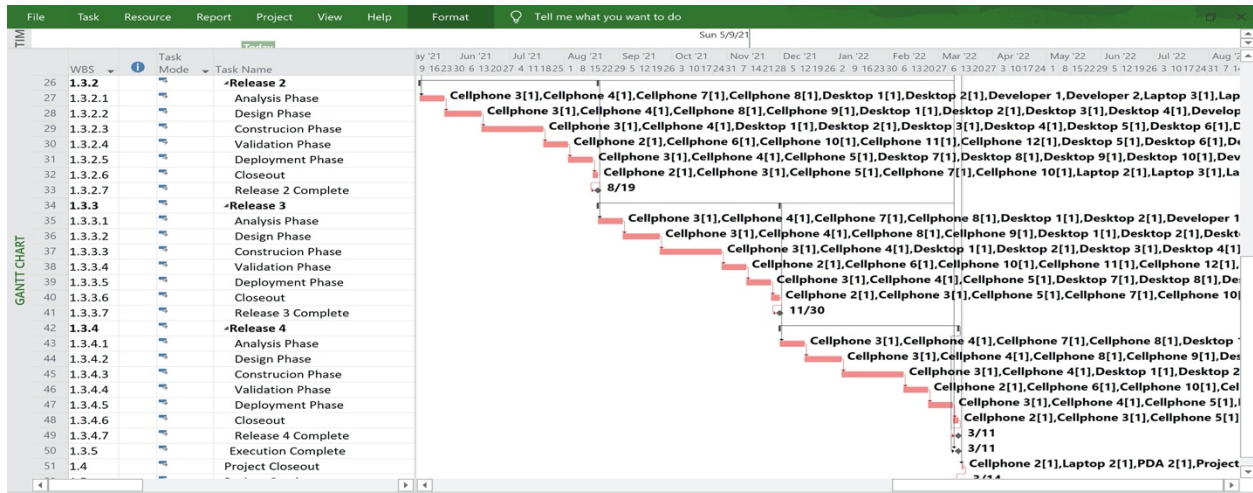
### WBS -Detailed Diagram

ID	WBS		Task Mode	Task Name	Duration	Start	Finish
1	1			<b>QMS System</b>	<b>556 days</b>	<b>Mon 1/27/20</b>	<b>Mon 3/14/22</b>
2	1.1			<b>Project Initiation</b>	<b>40 days</b>	<b>Mon 1/27/20</b>	<b>Fri 3/20/20</b>
3	1.1.1			Develop Project Charter	10 days	Mon 1/27/20	Fri 2/7/20
4	1.1.2			Develop Statement of Work	10 days	Mon 2/10/20	Fri 2/21/20
5	1.1.3			Develop Preliminary Scope Development	5 days	Mon 2/24/20	Fri 2/28/20
6	1.1.4			Develop Preliminary Architectural Model	10 days	Mon 3/2/20	Fri 3/13/20
7	1.1.5			Project Initiation Complete	5 days	Mon 3/16/20	Fri 3/20/20
8	1.2			<b>Project Plan</b>	<b>121 days</b>	<b>Mon 3/23/20</b>	<b>Mon 9/7/20</b>
9	1.2.1			Develop Scope Management Plan	10 days	Mon 3/23/20	Fri 4/3/20
10	1.2.2			Develop Change Management Plan	30 days	Mon 4/6/20	Fri 5/15/20
11	1.2.3			Develop Initial Descriptive Budget	45 days	Mon 5/18/20	Fri 7/17/20
12	1.2.4			Develop Schedule	20 days	Mon 7/20/20	Fri 8/14/20
13	1.2.5			Develop Quality Management Plan	35 days	Mon 3/23/20	Fri 5/8/20
14	1.2.6			Develop Human Resource Plan	15 days	Mon 5/18/20	Fri 6/5/20
15	1.2.7			Develop Risk Management Plan	65 days	Mon 6/8/20	Fri 9/4/20
16	1.2.8			Project Plan Complete	1 day	Mon 9/7/20	Mon 9/7/20
17	1.3			<b>Project Execution</b>	<b>394 days</b>	<b>Tue 9/8/20</b>	<b>Fri 3/11/22</b>
18	1.3.1			<b>Release 1</b>	<b>175 days</b>	<b>Tue 9/8/20</b>	<b>Mon 5/10/21</b>
19	1.3.1.1			Analysis Phase	30 days	Tue 9/8/20	Mon 10/19/20
20	1.3.1.2			Design Phase	40 days	Tue 10/20/20	Mon 12/14/20
21	1.3.1.3			Construction Phase	60 days	Tue 12/15/20	Mon 3/8/21
22	1.3.1.4			Validation Phase	25 days	Tue 3/9/21	Mon 4/12/21
23	1.3.1.5			Deployment Phase	15 days	Tue 4/13/21	Mon 5/3/21
24	1.3.1.6			Closeout	5 days	Tue 5/4/21	Mon 5/10/21
25	1.3.1.7			Release 1 Complete	0 days	Mon 5/10/21	Mon 5/10/21
26	1.3.2			<b>Release 2</b>	<b>73 days</b>	<b>Tue 5/11/21</b>	<b>Thu 8/19/21</b>
27	1.3.2.1			Analysis Phase	10 days	Tue 5/11/21	Mon 5/24/21
28	1.3.2.2			Design Phase	15 days	Tue 5/25/21	Mon 6/14/21
29	1.3.2.3			Construction Phase	25 days	Tue 6/15/21	Mon 7/19/21
30	1.3.2.4			Validation Phase	10 days	Tue 7/20/21	Mon 8/2/21
31	1.3.2.5			Deployment Phase	10 days	Tue 8/3/21	Mon 8/16/21

ID	WBS	Task Mode	Task Name	Duration	Start	Finish
32	1.3.2.6		Closeout	3 days	Tue 8/17/21	Thu 8/19/21
33	1.3.2.7		Release 2 Complete	0 days	Thu 8/19/21	Thu 8/19/21
34	1.3.3		Release 3	73 days	Fri 8/20/21	Tue 11/30/21
35	1.3.3.1		Analysis Phase	10 days	Fri 8/20/21	Thu 9/2/21
36	1.3.3.2		Design Phase	15 days	Fri 9/3/21	Thu 9/23/21
37	1.3.3.3		Construcion Phase	25 days	Fri 9/24/21	Thu 10/28/21
38	1.3.3.4		Validation Phase	10 days	Fri 10/29/21	Thu 11/11/21
39	1.3.3.5		Deployment Phase	10 days	Fri 11/12/21	Thu 11/25/21
40	1.3.3.6		Closeout	3 days	Fri 11/26/21	Tue 11/30/21
41	1.3.3.7		Release 3 Complete	0 days	Tue 11/30/21	Tue 11/30/21
42	1.3.4		Release 4	73 days	Wed 12/1/21	Fri 3/11/22
43	1.3.4.1		Analysis Phase	10 days	Wed 12/1/21	Tue 12/14/21
44	1.3.4.2		Design Phase	15 days	Wed 12/15/21	Tue 1/4/22
45	1.3.4.3		Construcion Phase	25 days	Wed 1/5/22	Tue 2/8/22
46	1.3.4.4		Validation Phase	10 days	Wed 2/9/22	Tue 2/22/22
47	1.3.4.5		Deployment Phase	10 days	Wed 2/23/22	Tue 3/8/22
48	1.3.4.6		Closeout	3 days	Wed 3/9/22	Fri 3/11/22
49	1.3.4.7		Release 4 Complete	0 days	Fri 3/11/22	Fri 3/11/22
50	1.3.5		Execution Complete	0 days	Fri 3/11/22	Fri 3/11/22
51	1.4		Project Closeout	1 day	Mon 3/14/22	Mon 3/14/22
52	1.5		Project Complete	0 days	Mon 3/14/22	Mon 3/14/22

## Gantt Chart





## Total Project Time

Phases	Start Date	Final Date	Duration (Days)
1.1 Project Initiation	1/27/2020	3/20/2020	40
1.2 Project Plan	3/23/2020	9/7/2020	121
1.3.1 Release 1	9/8/2020	5/10/2021	175
1.3.2 Release 2	5/11/2021	8/19/2021	73
1.3.3 Release 3	8/20/2021	11/30/2021	73
1.3.4 Release 4	12/1/2021	3/11/2022	73
Overall Project	1/27/2020	3/14/2022	556

## 6. Human Resource Management

### RRM Matrix

VBS	Task Name	Project Manager 1	Project Manager 2	System Analyst 1	System Analyst 2	Software Engineer 1	Software Engineer 2	Software Engineer 3	Quality Engineer 1	Quality Engineer 2	Testing Engineer 1	Testing Engineer 2	Testing Engineer 3	Developer 1	Developer 2	Developer 3	Developer 4	Developer 5	Developer 6	Developer 7	Developer 8	Developer 9	Developer 10
1	IMS System																						
1.1	Project Initiation																						
1.1.1	Develop Project Charter	A	H																				
1.1.2	Develop Statement of Work	A	H	C	H																		
1.1.3	Develop Preliminary Scope Development	A	H	C	H																		
1.1.4	Develop Preliminary Architectural Model	A	H	C	H																		
1.1.5	Project Initiation Complete	A	H																				
1.2	Project Plan																						
1.2.1	Develop Scope Management Plan	A	H	C	H																		
1.2.2	Develop Change Management Plan	A	H	C	H																		
1.2.3	Develop Initial Descriptive Budget	A	H	C	H																		
1.2.4	Develop Schedule	A	H	C	H																		
1.2.5	Develop Quality Management Plan	A	H	C	H																		
1.2.6	Develop Human Resource Plan	A	H	C	H																		
1.2.7	Develop Risk Management Plan	A	H	C	H																		
1.2.8	Project Plan Complete	A	H																				
1.3	Project Execution																						
1.3.1	Release 1																						
1.3.1.1	Analyst Phase	A	H	C	H																		
1.3.1.2	Design Phase	A	H	C	H																		
1.3.1.3	Construction Phase	A	H	C	H																		
1.3.1.4	Validation Phase	A	H	C	H																		
1.3.1.5	Deployment Phase	A	H	C	H																		
1.3.1.6	Closure	A	H	C	H																		
1.3.1.7	Release 1 Complete	A	H	C	H																		
1.3.2	Release 2																						
1.3.2.1	Analyst Phase	A	H	C	H																		
1.3.2.2	Design Phase	A	H	C	H																		
1.3.2.3	Construction Phase	A	H	C	H																		
1.3.2.4	Validation Phase	A	H	C	H																		
1.3.2.5	Deployment Phase	A	H	C	H																		
1.3.2.6	Closure	A	H	C	H																		
1.3.2.7	Release 2 Complete	A	H	C	H																		
1.3.3	Release 3																						
1.3.3.1	Analyst Phase	A	H	C	H																		
1.3.3.2	Design Phase	A	H	C	H																		
1.3.3.3	Construction Phase	A	H	C	H																		
1.3.3.4	Validation Phase	A	H	C	H																		
1.3.3.5	Deployment Phase	A	H	C	H																		
1.3.3.6	Closure	A	H	C	H																		
1.3.3.7	Release 3 Complete	A	H	C	H																		
1.3.4	Release 4																						
1.3.4.1	Analyst Phase	A	H	C	H																		
1.3.4.2	Design Phase	A	H	C	H																		
1.3.4.3	Construction Phase	A	H	C	H																		
1.3.4.4	Validation Phase	A	H	C	H																		
1.3.4.5	Deployment Phase	A	H	C	H																		
1.3.4.6	Closure	A	H	C	H																		
1.3.4.7	Release 4 Complete	A	H	C	H																		
1.3.5	Execution Complete	A	H																				
1.4	Project Closeout																						
1.5	Project Complete																						

## Human and their material Resources

Human Resources	Material Resources	Human Resources	Material Resources
Project Manager1	Laptop1,PDA1,Cellphone1	Testing Engineer3	Laptop12, Cellphone12
Project Manager2	Laptop2,PDA2,Cellphone2	Developer1	Desktop1
System Analyst1	Laptop3,Cellphone3	Developer2	Desktop2
System Analyst2	Laptop4,Cellphone4	Developer3	Desktop3
Quality Engineer 1	Laptop5, Cellphone5	Developer4	Desktop4
Quality Engineer 2	Laptop6, Cellphone6	Developer5	Desktop5
Software Engineer1	Laptop7, Cellphone7, PDA3	Developer6	Desktop6
Software Engineer2	Laptop8, Cellphone8, PDA4	Developer7	Desktop7
Software Engineer3	Laptop9, Cellphone9, PDA5	Developer8	Desktop8
Testing Engineer1	Laptop10, Cellphone10	Developer9	Desktop9
Testing Engineer2	Laptop11, Cellphone11	Developer10	Desktop10

## Project Phases Resources



[illegible]

Position	Salary	Experience(Years)	Hourly Rate
Project Manager 1	\$176,000	8-10	\$80.00
Project Manager 2	\$146,360	5-8	\$66.53
System Analyst 1	\$143,000	8-10	\$65.00
System Analyst 2	\$138,600	5-8	\$63.00
Quality Engineer 1	\$136,400	5-8	\$62.00
Quality Engineer 2	\$111,620	3-5	\$50.74
Software Engineer 1	\$132,000	8-10	\$60.00
Software Engineer 2	\$110,000	5-8	\$50.00
Software Engineer 3	\$103,620	3-5	\$47.10
Testing Engineer 1	\$66,000	5-8	\$30.00
Testing Engineer 2	\$63,800	3-5	\$29.00
Testing Engineer 3	\$63,800	3-5	\$29.00
Developer 1	\$121,000	5-8	\$55.00
Developer 2	\$121,000	5-8	\$55.00
Developer 3	\$83,600	3-5	\$38.00
Developer 4	\$83,600	3-5	\$38.00
Developer 5	\$83,600	3-5	\$38.00
Developer 6	\$83,600	3-5	\$38.00
Developer 7	\$83,600	3-5	\$38.00
Developer 8	\$83,600	3-5	\$38.00
Developer 9	\$83,600	3-5	\$38.00
Developer 10	\$83,600	3-5	\$38.00

## 7.Resource (material ) Management

Material Resources	Price	Material Resources	Price
Laptop 1	\$1,961.99	Cellphone 9	\$763.00
Laptop 2	\$1,885.69	Cellphone 10	\$763.00
Laptop 3	\$1,885.69	Cellphone 11	\$654.00
Laptop 4	\$1,743.99	Cellphone 12	\$654.00
Laptop 5	\$1,743.99	PDA 1	\$653.99
Laptop 6	\$1,743.99	PDA 2	\$435.99
Laptop 7	\$1,634.99	PDA 3	\$435.99
Laptop 8	\$1,634.99	PDA 4	\$217.99
Laptop 9	\$1,416.99	PDA 5	\$217.99
Laptop 10	\$1,416.99	Desktop 1	\$2,397.99
Laptop 11	\$1,416.99	Desktop 2	\$2,397.99
Laptop 12	\$1,362.49	Desktop 3	\$1,664.60
Cellphone 1	\$1,098.00	Desktop 4	\$1,664.60
Cellphone 2	\$981.00	Desktop 5	\$1,664.60
Cellphone 3	\$872.00	Desktop 6	\$1,664.60
Cellphone 4	\$872.00	Desktop 7	\$1,504.19
Cellphone 5	\$872.00	Desktop 8	\$1,504.19
Cellphone 6	\$872.00	Desktop 9	\$1,504.19
Cellphone 7	\$872.00	Desktop 10	\$1,504.19
Cellphone 8	\$763.00		

## 8. Cost Management

### **Project Cost Estimates**

LOC Based Estimation			
Function	Pages	Lines of Code per page	Total Lines Of Code
User Interfaces for Static Pages	170	110	18700
User Interface for Dynamic Pages	195	158	30810
Code behind Static Pages	180	135	24300
Code behind Dynamic Pages	240	165	39600
Database- SQL Stored Procedures	34	95	3230
Business Layer Logical Pages	84	134	11256
Other Layer Logical Pages	28	70	1960
		Total	129856
		Total Project Cost	\$2,077,696.00

## Function Point Analysis

LOC Based Estimation			
Function	Pages	Lines of Code per page	Total Lines Of Code
User Interfaces for Static Pages	170	110	18700
User Interface for Dynamic Pages	195	158	30810
Code behind Static Pages	180	135	24300
Code behind Dynamic Pages	240	165	39600
DataBase- SQL Stored Procedures	34	95	3230
Busines Layer Logical Pages	84	134	11256
Other Layer Logical Pages	28	70	1960
		Total	129856
		Total Project Cost	\$2,077,696.00



## Project Budget(Partial Outcome of Microsoft Project after lab 02)

	Task Name ▼	Cost ▼
1	▸ <b>QMS System</b>	<b>\$2,165,753.54</b>
2	▸ <b>Project Initiation</b>	<b>\$162,735.52</b>
3	Develop Project Charter	\$26,482.04
4	Develop Statement of Work	\$32,343.64
5	Develop Preliminary Scope Development	\$37,594.49
6	Develop Preliminary Architectural Model	\$43,695.91
7	Project Initiation Complete	\$22,619.44
8	▸ <b>Project Plan</b>	<b>\$286,971.50</b>
9	Develop Scope Management Plan	\$18,739.06
10	Develop Change Management Plan	\$20,733.68
11	Develop Initial Descriptive Budget	\$78,277.54
12	Develop Schedule	\$42,214.65
13	Develop Quality Management Plan	\$59,456.64
14	Develop Human Resource Plan	\$21,843.97
15	Develop Risk Management Plan	\$37,517.06
16	Project Plan Complete	\$8,188.90
17	▸ <b>Project Execution</b>	<b>\$1,712,211.60</b>
18	▸ <b>Release 1</b>	<b>\$684,274.56</b>
19	Analysis Phase	\$99,248.62
20	Design Phase	\$150,064.82
21	Construction Phase	\$283,004.82
22	Validation Phase	\$71,769.34
23	Deployment Phase	\$55,046.43
24	Closeout	\$25,140.53
25	Release 1 Complete	\$0.00
26	▸ <b>Release 2</b>	<b>\$342,645.68</b>
27	Analysis Phase	\$43,568.62

26	▸ <b>Release 2</b>	<b>\$342,645.68</b>
27	Analysis Phase	\$43,568.62
28	Design Phase	\$67,844.82
29	Construcion Phase	\$131,244.82
30	Validation Phase	\$38,016.94
31	Deployment Phase	\$41,366.43
32	Closeout	\$20,604.05
33	Release 2 Complete	\$0.00
34	▸ <b>Release 3</b>	<b>\$342,645.68</b>
35	Analysis Phase	\$43,568.62
36	Design Phase	\$67,844.82
37	Construcion Phase	\$131,244.82
38	Validation Phase	\$38,016.94
39	Deployment Phase	\$41,366.43
40	Closeout	\$20,604.05
41	Release 3 Complete	\$0.00
42	▸ <b>Release 4</b>	<b>\$342,645.68</b>
43	Analysis Phase	\$43,568.62
44	Design Phase	\$67,844.82

Total Project Budget

Phases	Total Project Cost(\$)	Actual Cost(\$)	Remaining Cost(\$)
Project Initiation	\$162,735.52	\$162,735.52	\$0.00
Project Plan	\$286,971.5	\$123,336.92	\$163,634.58
Release 1	\$684,274.56	\$0.00	\$684,274.56
Release 2	\$342,645.68	\$0.00	\$342,645.68
Release 3	\$342,645.68	\$0.00	\$342,645.68
Release 4	\$342,645.68	\$0.00	\$342,645.68
Overall Project	<b>\$2,165,753.54</b>	\$286,072.44	\$1,879,681.10

## 9.Risk Management: Decision Tree with EMV



## 10.Risk Management

### List of Risk relevant to project

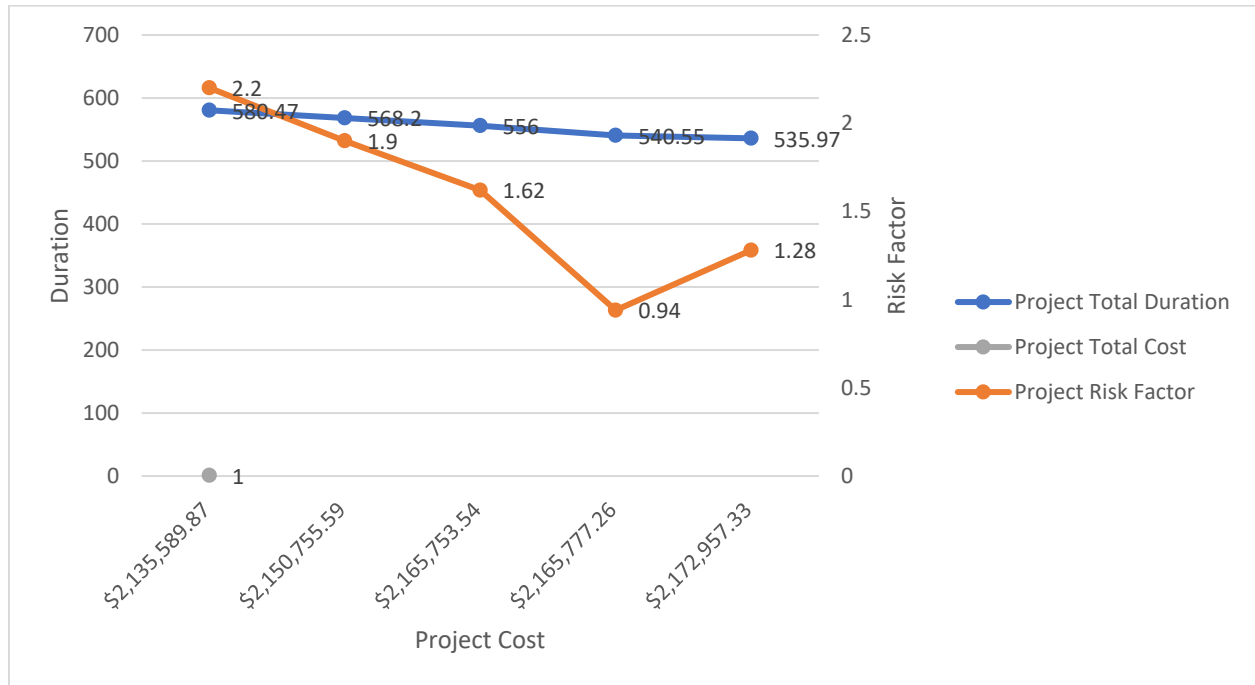
Types of Risks	Key	Explanation
Integration Management	Integration points	Avoiding extreme complexity by smart and simple planning will result in a better integration.
Scope Management	Change in requirements	Frequent changes to the requirements can cause serious damage to the project.
Time Management	Unrealistic schedules	Setting unrealistic schedules is a sign of poor management and can cause unwanted and very expensive delays.
Cost Management	Unproven technology	The use of unproven technologies might prove more problematic than beneficial.
Quality Management	Testing plans	Testing can be performed often to insure the early discovery of problems.
Human Resource Management	Experience and knowledge	Staff need to have knowledge and experience and be provided with proper training to work in a QMS project.
Communication Management	Lack of communication or miscommunication	All parties involved in the project need to communicate and provide feedback to guarantee the success of the project.
Procurement Management	Change in staff	Any changes in the staff (Project managers, System analysts, Software engineers, Quality Engineers, Testing engineers) will complicate the completion of the project.

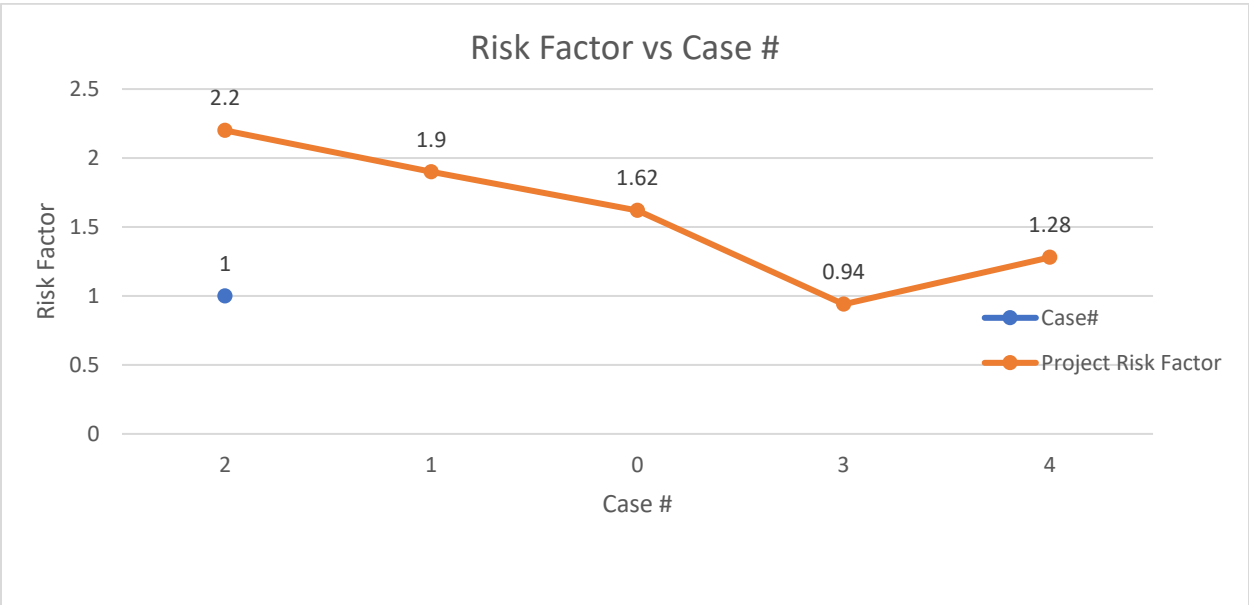
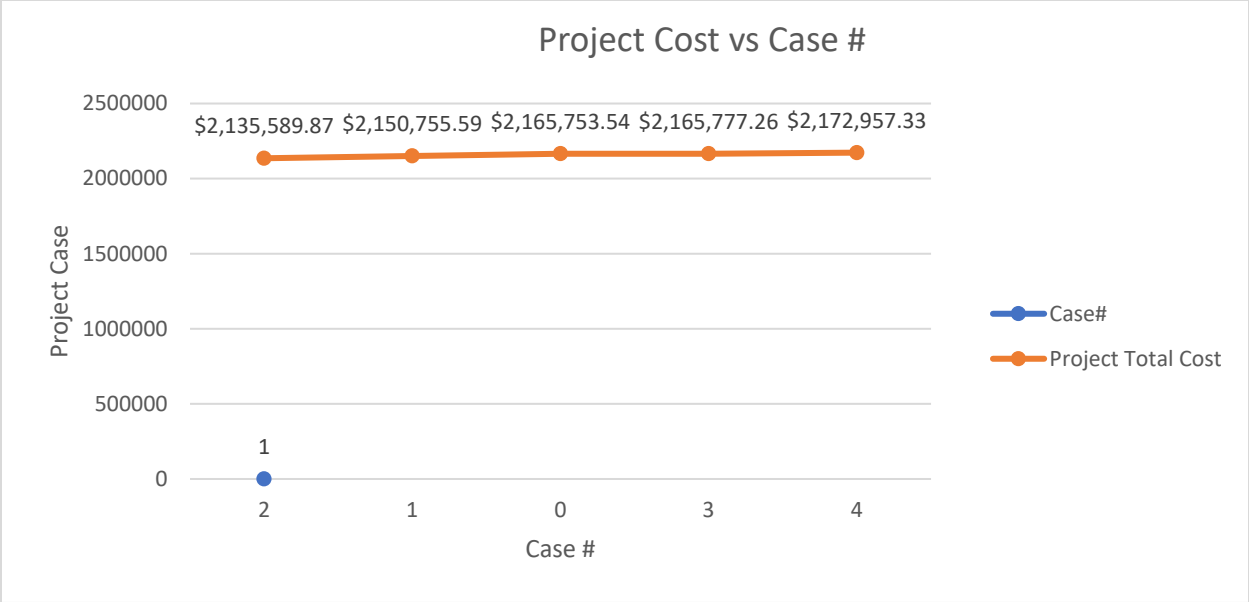
# Risk Impact-Probability matrix

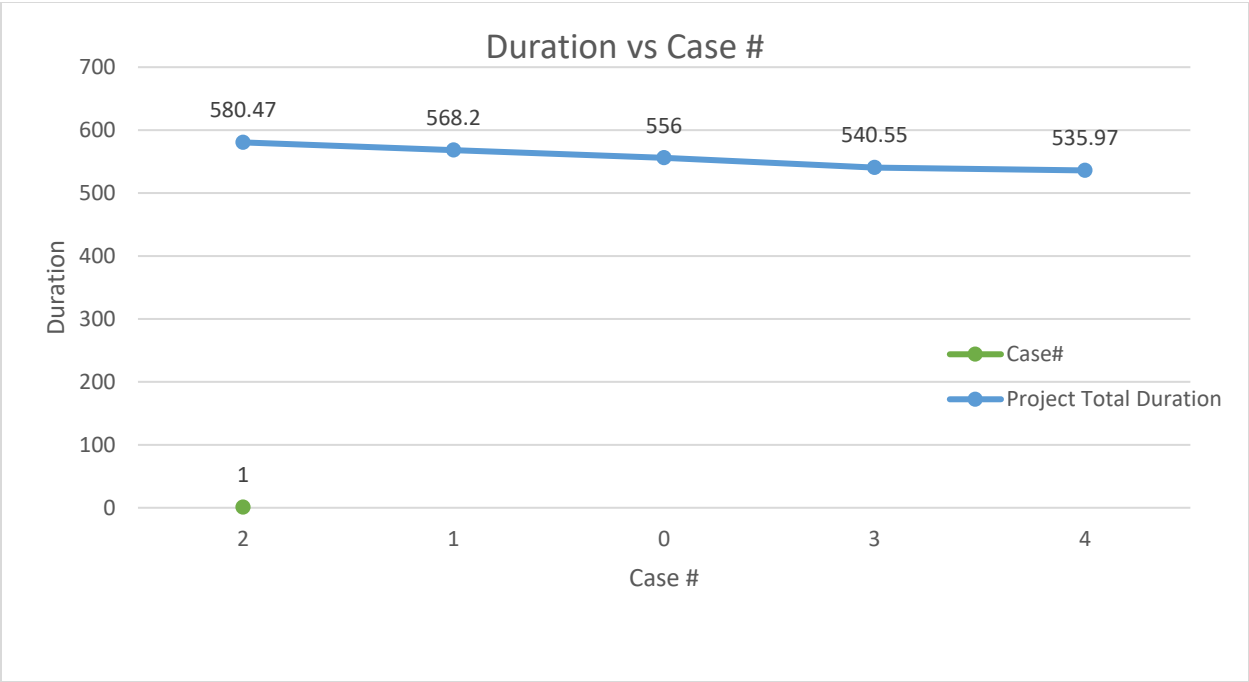
S.NO	Risk	Impact	Probability
1	Cost management	Medium	Medium low
2	Requirement Analysis	Medium Low	Low
3	Beginners on the project	High	High
4	Using APIs or Third party Used	Medium High	Medium High
5	Acquiring New System	Low	Medium
6	Using the Offshore Resources	Medium	High
7	Knowledge Transfer on New Transfer	Medium High	High

Impact Probability	Low	Low Medium	Medium	Medium High	High
Low					
Medium Low	5	3		6	
Medium			1		
Medium High			2,4		
High				7	

### Project Prioritized Risks diagram

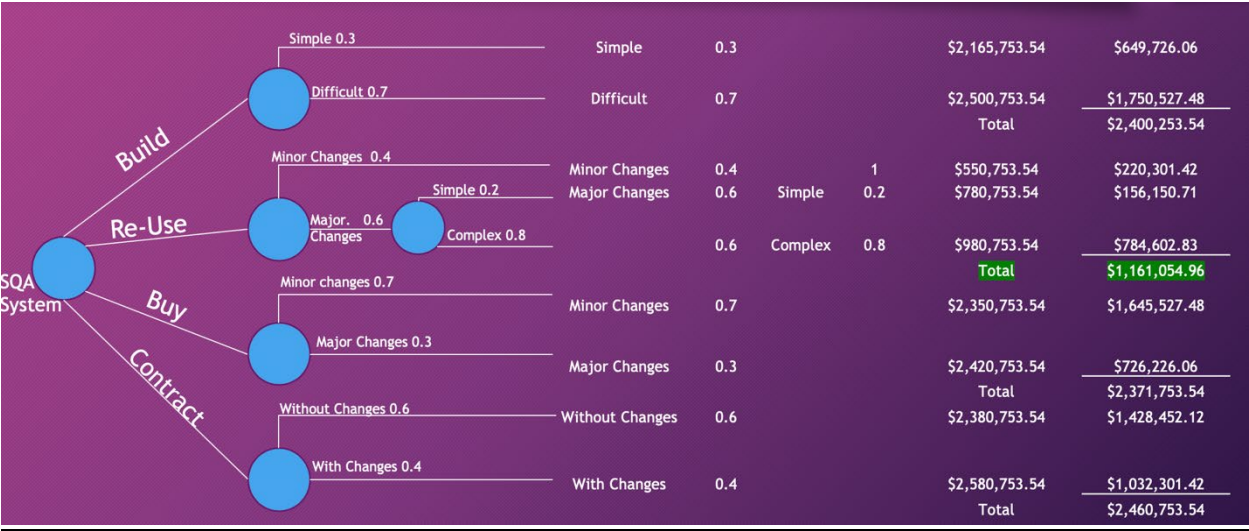






# 11.Procurement Management

## Make-Buy Diagram



### Type of Contract to be Used:

#### Case 1

- Sharing Formula : 85/15, 85% by buyer and 15% by seller
- Allowable cost: \$2,050,500.5
- Target Fee: \$150,000
- Maximum Fee :\$180,000
- Minimum Fee :\$90,000
- Project Result:
  - Seller completes the project at cost of \$1,850,753.54
  - seller is paid  $\$1,850,753.54 + (\$2,050,500.5 - \$1,850,743.54) \times 0.15 + \$150,000 = \$2,030,717.84$
  - seller profit=  $\$2,030,717.84 - \$1,850,753.54 = \mathbf{\$179,964.3}$

#### Case 2

- Sharing Formula :85/15, 85% by buyer and 15% by seller
- Allowable cost :\$2,050,500.5
- Target Fee :\$150,000
- Maximum Fee :\$180,000
- Minimum Fee :\$90,000
- Project Result:
  - Seller completes the project at cost of \$2200,753.54
  - seller is paid:  $\$2,050,500.5 + \$90,000 = \$2,140,500.5$
  - seller profit= **\$90,000**

## 12.Statement Of Work

Statement of Work	
Company name	Alanand Solutions
SOW Version	2.4.5
Date Submitted	5/7/2020
Author	Alanand
ORGANIZATION	
Client Name	Chillarga
Client Phone	(309)550-****



Client Email	<a href="mailto:chillargaunnavara@gmail.com">chillargaunnavara@gmail.com</a>	
Current Mailing Address	1010 Chillarga Avenue, Jai Balayya Street,Ayyagare noone,NY.	
Project		
Project Name	SQA System for Binami Software Company	
Client	Chillarga Nenokadine	
Brand	Dobbeyra	
Begin Data	1/27/20	
End Data	3/14/22	
Project Duration	556	
GOALS		
Objective	To provide a SQA system which tests the Software Systems	
Business	Providing Software Systems	
Solution	Software Solutions	
Technical	Every Technical Support	
Service	Service for 3 Years	
Milestones		
Estimated Delivery Date	Project Milestone Title	
5/10/21	Release 1	
8/19/21	Release 2	
11/30/21	Release 3	
3/11/22	Release 4	
Standard Adherence		
The incremental Model is used so which suits the SQA system to build and modify for every increment		
Rate Schedule		
Estimated Cost	Delivery Schedule	Description
\$162,735.52	3/20/20	1.1 Project Initiation
\$286,971.50	9/7/20	1.2 Project Plan
\$684,274.56	5/10/21	1.3.1 Release 1
\$342,645.68	8/19/21	1.3.2 Release 2
\$342,645.68	11/30/21	1.3.3 Release 3
\$342,645.68	3/11/22	1.3.4 Release 4
\$2,165,753.54	3/14/22	Overall Project

POINTS OF CONTACT	
Name/Title	Contact Info
Project Manager	*****
Project Manager2	*****
Business Terms/Conditions	
Duration of Services	3 years of support
Terms of Payment	Release Wise Payment
Contract Modifications	Will be flexible till 2nd Release
Confidentiality	The information is made confidential only to the Project Team
Authorization	
Client Signature	Anand Reddy
Client Printed Name	Anand Reddy Sripathi
Client Date	5/7/2020

### 13.References

[1]	<a href="https://the9000store.com/iso-9001-2015-requirements/what-is-iso-9001-quality-management-system/">https://the9000store.com/iso-9001-2015-requirements/what-is-iso-9001-quality-management-system/</a>
[2]	<a href="https://quality.eqms.co.uk/blog/types-of-quality-management-systems">https://quality.eqms.co.uk/blog/types-of-quality-management-systems</a>
[3]	<a href="https://qa-platforms.com/software-quality-management-sqm/">https://qa-platforms.com/software-quality-management-sqm/</a>
[4]	<a href="https://metadesignsolutions.com/differences-between-SQA-and-SQC">https://metadesignsolutions.com/differences-between-SQA-and-SQC</a>
[5]	<a href="https://fortegrp.com/11-popular-software-testing-tools/">https://fortegrp.com/11-popular-software-testing-tools/</a>
[6]	<a href="https://www.guru99.com/hp-alm-introduction.html">https://www.guru99.com/hp-alm-introduction.html</a>
[7]	<a href="https://www.gurock.com/testrail">https://www.gurock.com/testrail</a>

[8]	<a href="https://www.microfocus.com/en-us/products/quality-center-quality-management/download">https://www.microfocus.com/en-us/products/quality-center-quality-management/download</a>
[9]	<a href="https://www.gurock.com/testrail/">https://www.gurock.com/testrail/</a>
[10]	<a href="https://www.selenium.dev/">https://www.selenium.dev/</a>
[11]	<a href="https://jenkins.io/">https://jenkins.io/</a>
[12]	<a href="https://newrelic.com/">https://newrelic.com/</a>
[13]	<a href="https://www.oracle.com/corporate/acquisitions/wercker/">https://www.oracle.com/corporate/acquisitions/wercker/</a>
[14]	<a href="https://github.com/">https://github.com/</a>
[15]	<a href="https://github.com/tmux/tmux/wiki">https://github.com/tmux/tmux/wiki</a>
[16]	<a href="https://www.postman.com/">https://www.postman.com/</a>
[17]	<a href="https://www.testing-whiz.com/">https://www.testing-whiz.com/</a>
[18]	<a href="https://sahipro.com/">https://sahipro.com/</a>
[19]	<a href="https://www.ranorex.com/">https://www.ranorex.com/</a>
[20]	<a href="https://www.mastercontrol.com/quality/qms/requirements">https://www.mastercontrol.com/quality/qms/requirements</a>