Assignment Record Form

Student Name	:	XXXXXXXXXXXX
IC / Passport Number	:	XXXXXXXXXXXX
Nationality	:	XXXXXXXXXXXX
IPE Index Number	:	XXXXXXXXXXXX
Teamie Index Number	:	XXXXXXXXXXXXX
Learning Centre	:	XXXXXXXXXXXXX
Course	:	PGDBA
Term	:	XXXXXXXXXXXXX
Module Title	:	PROJECT MANAGEMENT
Centre Facilitator Name	:	XXXXXXXXXXXXXX
Assignment Submission Due Date	:	XXXXXXXXXXXXX
Status	:	Active

(4962 words)

I declare that this is an original piece of work undertaken by me.

I confirm that I have read and understood the LEB regulations with regard to referencing and plagiarism.

YES ☒   NO ☐

Note: Please read the "Instruction to Upload the Assignment on Teamie Learning Portal" before uploading your assignment.

Contents

Executive Summary
This report provides analysis and details on the planning of the Global Security Risk Modeler (GSRM) Enhancement project for Dell. Methods of analysis include producing project charter, developing Work Breakdown Structure (WBS), establishing Project Evaluation and Review Technique (PERT) chart and scheduling via Gantt chart. Other analysis includes identifying the Critical Path to analyze task project as well as estimating time and costs. The report will also detail the resources requirement and asses the quality of the project through regular monitoring as well as project closure provisions.

The report finds several options where alternative methods of managing scope of the GSRM Enhancement project can be introduced. Recommendation discussed includes:

- ✓ Crashing the project time in critical tasks to reduce the project time. This is a direct relations to the crashing cost impacted.
- ✓ Levelling resources conflicts by delaying tasks.
- ✓ Parallel tasking project tasks to complete multiple tasks at once and deliver the task within a shorter time frame.

The report will also discuss multiple approaches to staffing this project and also discuss in detail which of these methods of staffing is right for the project by incorporating cost, risk and convenience factors.

Recommendation to the Managing Director is to allow proper project management techniques and method when executing this project and to comply with the findings of this report to ensure proper completion of the project, on time, within budget with project deliverables delivered accordingly.

.

Introduction

The Global Security Risk Modeler (GSRM) tool is in its 4th year of existence at Dell, and it has succeeded beyond the companies highest hopes. At the same time, enhancements on to the tool need to be made to enable continued growth in our user population and continued demands on the web farm and database farm used by the application. During the first year, GSRM handled 300 requests. It has more than triple that number now and need to make significant changes to sustain current and anticipated project volume for the coming years. Thus Global Security Risk Modeler (GSRM) Enhancement project is initiated to cater for the growing demand.

Main Body

1.1 Project Charter

The project charter is the document that formally authorizes a project. The project charter provides the project manager with the authority to apply organizational resources to project activities. Developing the project charter is primarily concerned with documenting the business needs, project justification, current understanding of the customers' requirements, and is intended to satisfy those requirements.

Some of the project charter goals include:

- Grant authority to the project manager

- Give a high-level view of what the project includes and excludes

- Define the resources that the project manager has authority over

PROJECT CHARTER	
Project Name: Global Security Risk Modeler (GSRM) Enhancement	
Project Sponsor(s):	**Business Owner:** Global Security
Project Start Date:	**Target End Date:**
Project Manager:	

Project Charter Version Control

Version	Date	Author	Change Description
1			Initial draft

Project Vision

Enable the Global Security Risk Modeler (GSRM) tool to be more productive and thus use the resource in other strategic programs. The current tool supports over 500 active projects, and during calendar year 2014, over 1,000 project teams will be engaged with the Security Consulting team to get expert advice on reducing information security risk for the enterprise.

Project Objectives/Deliverables

Develop enhancements to GSRM IT risk assessment framework that addresses the major functional areas of an IT organization.

- Assignment of consultant to be done in Search Screen.
- Ability to make mass status update in Search Screen.
- Ability to copy former request to a new request.
- Action Item tracker, and auto notification mailer.
- Ability to design feedback question and collect feedback from requestor.

Collaborate with Global Security to ensure their risk assessment methodology is aligned with the holistic IT security risk assessment framework.

Develop a plan to integrate the results of the Global Security risk assessment into the holistic IT security risk assessment.

Project In Scope

The GSRM enhancements will provide the IT Security Risk Framework a comprehensive, concise and gives an insight of what risks need to be accounted for in our internal Dell environment and also gives an indication of what controls need to be in place and to what degree (based on magnitude of risk).

Project Out of Scope

Work products and risks that are non- IT Security Risk Framework is not to part of the scope of this GSRM enhancement.

The scope also does not extend to consumer products and services from the End User Segment (EUS) and Technical Support Services Team (TSST).

Assumptions

Described below are the infrastructure, resources, training and other project releases assumed to be in place to make this project successful.

No.	Assumption	Impact if not True
1	Use existing Infrastructure SQL Server 2008 ausgtesfrmsql.aus.amer.dell.com and Web Server U1VMGISSWEB01.aus.amer.dell.com and U1VMGISSWEB02.aus.dell.com	No impact because seldom has concurrent users. Will assess the potential growth of user size.
3	Later Integration with Fortify application (Nice to have feature)	
4	GSRM will be one of the choice of engagement tool, but security team open to other choice of tools	
5	Updates to configuration for the web farm or database farm may be necessary to correct performance problems.	If configuration settings (increased memory, indexing, etc.) do not solve the problem, we may need a coding fix to improve efficiency in the tool.
6	Project will run 7 days a week including weekends and public holidays	

Risks and Dependencies

No.	Dependency
1	Not applicable to other projects (Central repository of GAARF ID, Exception Tool ID)
2	There are no dependent projects, tasks, or vendor support. However, we may need assistance from server engineering and/or database engineering and their related support teams to solve current performance problems in the tool.

No.	Risk	Rationale for Risk
1	We will have continued reliance on developer, Project Manager, and subject matter resources throughout the project.	We have experienced a delay in the project due to resource availability and we need to stay focused on maintaining the resources dedicated to the project.
2	We need to deliver incremental value in the project in phases, with a particular focus on the response time of the tool.	The tool is nearly unusable due to delays in response time, but when it responds, the tool saves us a huge amount of work versus manual efforts.
3	We may encounter lack of support and cooperation from the project team.	Previously project team members may be working on other project while working on this project. As such will get buy off from management that team members in this project will be dedicated to this project only.

Actor Catalog

An actor is anything that interfaces with the system. Actors can be people, organizations, other software systems, hardware devices, databases or network services.

No.	Actor Name	Description
1	Security Consulting Team (For standard project engagement)	Receive engagement request and process assessment
		Output:
		Service provided to customer
2	Security Assurance Team	Receive assurance request and process assessment
		Output:
		Service provided to customer
3	All Dell Users	Any Dell user (NTLM authenticated users) that would like to engage the services of GISS team for security assessment, etc.
		Input:
		Risk assessment, project attributes, consulting assessment

4	Other Team in GISS (for non-standard project engagement)
	      Identity and directory access team
	
	      Security engineering team
	
	      Security operation team
	
	      Security response team
		To close process gaps and bring awareness

5	Application Admin	Support configuration
6	Auditor	Reviewer to audit GSRM request
7	Management	To view high level reporting and metrics
8	Fortify users	Integration with GSRM
9	GSERB (Global Security Exception Review Board)	Later Integration with GSERB e.g., Exception ID, status, URL to GSERB
10	AIMS Infrastructure Applications Tools Development	Provide L3 support and technical owner of GSRM
11	End user/requestor	Project Manager or Dev Lead around the company, from Corporate, IT, Services, or Product Group.
12	Security Consultant	This is the person assigned to fulfilling the request.
13	GSRM admin/SuperUser	This is the person responsible for configuration of the tool.
14	Developer	This is the lead developer on the tool who may have access to debugging statements and system logs.

Business Process Flow

Global Security Request Management - Workflow Diagram
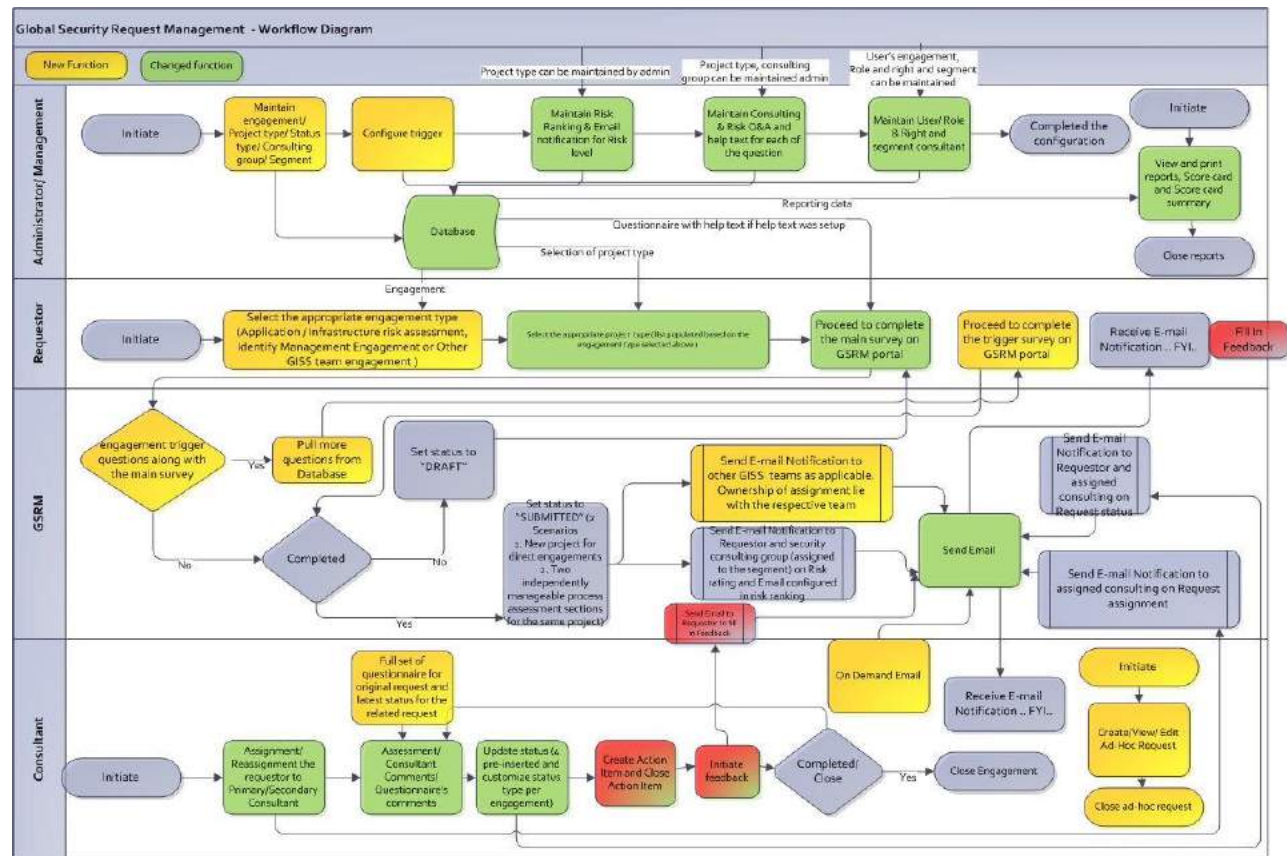
Step No.	Simplified Process
1	Customer enters engagement request via https://uvmgissweb.us.dell.com/GSRM/addProject.aspx.
2	GSRM tool sends "new request" alert to Security Consultants based upon business segment configuration / consultant assignment.
3	First available Security Consultant takes the request assignment and contacts the requestor with action items or follow-up questions. The Consultant updates the Audit Trail in the tool with key interactions/decisions.
4	Security Consultant and requestor work together to address security gaps and project risks; Security Consultant assigns a final status of Production Approved, Approved with Findings, Cancelled, Denied, or On Hold.

Project Organization Chart
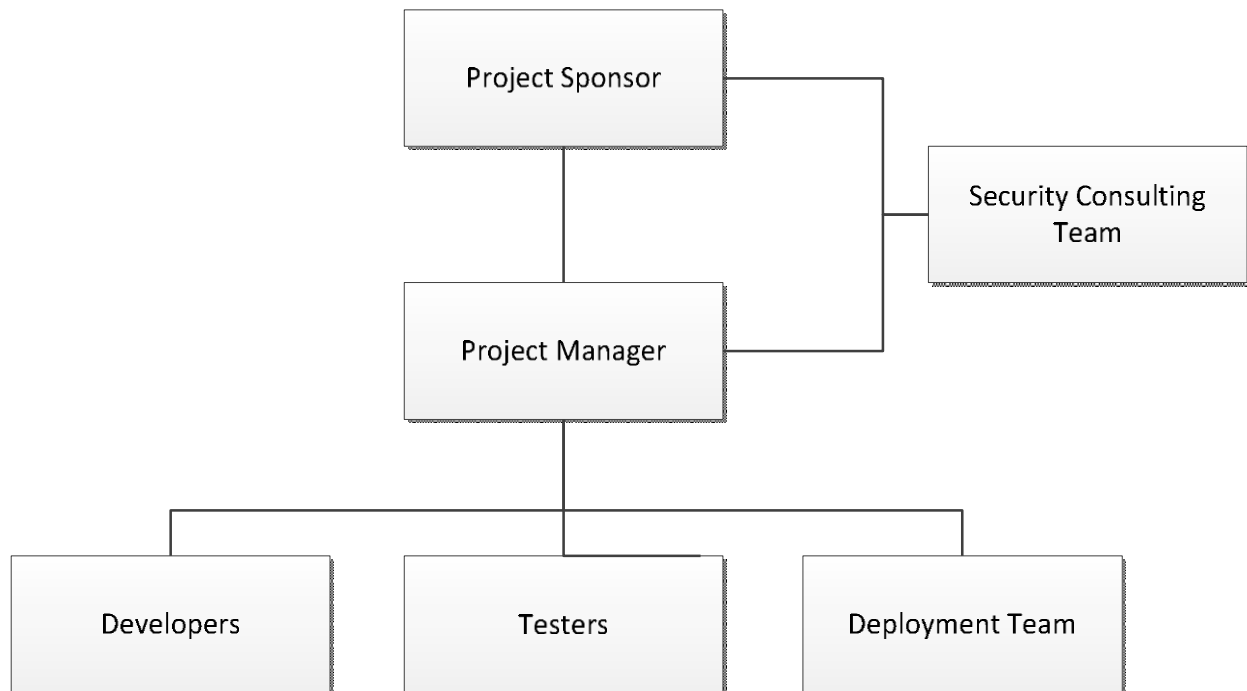
Figure 1: Organization Chart

Roles and Responsibility

 Project Sponsor

- Provide approval on the deliverables.

- Makes key organization/commercial decisions for the project.

- Approves the budget.

- Be the communication channel with senior management if required.

Project Manager

- Accountability for Project Charter preparation and updates.

- Plan, lead, coordinate and drive project team to achieve the project goals.

- Interfacing and coordinating with the various stakeholders of the project.

- Provide regular status reports for all activities related to the project.

- Serves as a catalyst to resolve project problems and conflicts, escalating when necessary.

- Ensures that impacted teams are involved and informed as early as possible in the project management process.
- Applies lessons learned from previous projects.
- Manages project priorities.
- Identify and mitigate risks.
- Ensuring the project is completed on time, within budget, and with acceptable quality.
- Determine the milestone
- Obtain sign off from stakeholders

Security Consulting Team

- Validates requirements, consult other experts at their organization, as required; also as required, obtain feedback and comment on issues raised at the weekly meetings.
- Contribute to requirements specifications or more sections of a major deliverable, such as BRD.
- Collaborate closely with broadcast operations management and key staff to assess facility needs.
- Provide consultation in facility design, layout, evaluation of equipment alternatives and equipment selection and configuration.

Developers

- Understands standards and guidelines for building software components.
- Builds project deliverables by converting all design elements to the technical solution. This includes programs, screens, reports' reusable components, interfaces, Software Requirements Specification (SRS), workflow etc.
- Documents all software components so that they can be understood and supported.
- Leads and participates in code reviews, as required, to ensure program code is complete, correct and understandable
- Creates, or assists in the creation of, support documentation.

- Performs initial unit testing on all components.
- Researches and fixes errors and bugs that are uncovered in the rest of the development process.
- Provides regular status to the project manager.

Testers

- Tests all software components to ensure that the solution is complete and correct.
- Performs integration testing by connecting all the solution components.
- Manages the test cases for the solution and updates them as needed.
- Documents and tracks solution errors and re-tests the solution when the errors are fixed.
- Performs testing on any and all platforms that are supported in the production environment.
- Performs many of the functional testing associated with system testing.
- Validates that solution meets any organization requirements for appearance, including screen layouts, report design and general look-and-feel
- Assists with user acceptance testing as needed.
- Provides regular status to the project manager

Deployment Team

- Establishes the final release configuration (e.g. knowledge, information, hardware, software and infrastructure).
- Builds the final release delivery.
- Establishes and reports outstanding known errors and workarounds.
- Provides input to the final implementation sign off process.
- Provide release acceptance for provision of initial support.
- Adapt and perfect elements that evolve with initial usage, such as user documentation and support documentation.

Responsibility Assignment Matrix (RACI Model)

Activities	Project Sponsor	Project Manager	Security Consultant Team	Developer	Tester	Deployment Team
Envisioning Phase						
Establish Project						
Setup Time Logging	C	A, R	I	I	I	I
Define preliminary resources	C	A, R	C	C	C	C
Setup SharePoint Site	I	A, R	I	I	I	I
Secure core resources	I	A, R	C	C	C	C
Conduct Project Kick-Off	C	A, R	I	C	C	C
Define Project Requirements						
Initiate BRD	C	C	A, R	C	C	C
Conduct needs analysis	I	A, R	R	C	C	C
Initiate software specifications	I	I	C	A, R	C	C
Define BRD	I	I	A, R	C	C	C
Initiate tasks and duration list	C	A, R	C	C	C	C
Complete Envisioning Phase						
Initiate Process Tailoring	C	A, R	A, R	I	I	I
Initiate Project Schedule	C	A, R	A, R	I	I	I
Package Requirements	I	I	C	A, R	C	C
Initiate Additonal resources - request	C	A, R	C	C	C	C
Conduct Envisioning Phase Exit Review	R	A, R	C	C	C	I
Planning Phase						
Refine Project Requirements						
Complete Tasks and duration list	C	A, R	C	C	C	C
Complete Additional resource request	C	A, R	C	C	C	C
Complete SRS	I	I	C	A, R	C	I
Develop Work Flow	I	I	C	A, R	C	I
Development Phase						
Design New Functional Test Case	I	I	C	C	A, R	C
Review Functional Test Specifications	I	I	C	C	A, R	C
Coding, Testing & Deployment						
Coding						
File extensions	I	I	C	A, R	I	I
Need capability similar to Q and A	I	I	C	A, R	I	I
Profile information	I	I	C	A, R	I	I
Build more intelligence	I	I	C	A, R	I	I
Consolidation of User management	I	I	C	A, R	I	I
Notification e-mails	I	I	C	A, R	I	I
Testing						
Execute Functional Testing	I	R	C	R	A, R	I
Bug Fixing	I	R	C	A, R	R	I
Test Fixes	I	R	C	R	A, R	I
Deployment						
Develop Support Documentation	R	R	R	C	C	A, R
Knowledge Training for Support Team	R	R	R	C	C	A, R
Deployment	A	R	C	C	C	C
UAT User Testing (Production)	R	R	A, R	C	C	C
User Training	R	R	R	C	C	A, R
Stabilizing Phase						
Post Implementation Review						
Document lessons learned	C	A, R	C	C	C	C
Project Complete						

R - Responsible. Responsible for writing, revising, delivering the work product which is reflected as an assigned task.

A - Accountable. Ultimately answerable for the correct and thorough completion of the deliverable and the one to whom "R" is accountable. There can only be one Accountable role for a deliverable.

C - Consulted. The resources that are consulted and whose opinions and reviews are sought to help complete a work product. These people are considered Subject Matter Experts in the area of the deliverable or task and its content.

I - Informed. Though all project team members should be informed on the status of work products, the people with the informed designation must be kept up-to-date because of a vested interest or dependency.

Work Breakdown Structure

No.	WBS	Task Name	Duration (Day)	Start	Finish	Predecessors	Resources
0	0	GSRM Enhancements Project		11-Apr-2015	5-Aug-2017		
1	1	Envisioning Phase		11-Apr-2015	28-Nov-2015		
2	1.1	Establish Project		11-Apr-2015	23-May-2015		
3	1.1.1	Setup Time Logging	7	11-Apr-2015	18-Apr-2015		2
4	1.1.2	Define preliminary resources	7	18-Apr-2015	25-Apr-2015	3	2
5	1.1.3	Setup SharePoint Site	7	25-Apr-2015	2-May-2015	4	1
6	1.1.4	Secure core resources	21	25-Apr-2015	16-May-2015	4	3
7	1.1.5	Conduct Project Kick-Off	7	16-May-2015	23-May-2015	6,5	1
		Project Established			23-May-2015		
8	1.2	Define Project Requirements		23-May-2015	12-Sep-2015		
9	1.2.1	Initiate BRD	35	23-May-2015	27-Jun-2015	7	2
10	1.2.2	Conduct needs analysis	14	23-May-2015	6-Jun-2015	7	1
11	1.2.3	Initiate software specifications	21	2-May-2015	23-May-2015	5	2
12	1.2.4	Define BRD	56	27-Jun-2015	22-Aug-2015	11,9,10	5
13	1.2.5	Initiate tasks and duration list	21	22-Aug-2015	12-Sep-2015	12	3
14	1.3	Complete Envisioning Phase		12-Sep-2015	28-Nov-2015		
15	1.3.1	Initiate Process Tailoring	21	12-Sep-2015	3-Oct-2015	13	3
16	1.3.2	Initiate Project Schedule	35	12-Sep-2015	17-Oct-2015	13	5
17	1.3.3	Package Requirements	14	17-Oct-2015	31-Oct-2015	15,16	1

18	1.3.4	Initiate Additonal resources - request	21	31-Oct-2015	21-Nov-2015	17	5
19	1.3.5	Conduct Envisioning Phase Exit Review	7	21-Nov-2015	28-Nov-2015	18	2
		Envisioning Phase Completed			28-Nov-2015		
20	2	Planning Phase		28-Nov-2015	23-Apr-2016		
21	2.1	Refine Project Requirements		28-Nov-2015	23-Apr-2016		
22	2.1.1	Complete Tasks and duration list	14	28-Nov-2015	12-Dec-2015	19	1
23	2.1.2	Complete Additional resource request	21	28-Nov-2015	19-Dec-2015	19	5
24	2.1.3	Complete SRS	77	19-Dec-2015	5-Mar-2016	22,23	5
25	2.1.4	Develop Work Flow	49	5-Mar-2016	23-Apr-2016	24	5
26	3	Development Phase		5-Mar-2016	15-Jul-2017		
27	3.1	Design New Functional Test Case	91	5-Mar-2016	4-Jun-2016	24	5
28	3.2	Review Functional Test Specifications	14	4-Jun-2016	18-Jun-2016	27	2
29	3.3	Coding, Testing & Deployment		23-Apr-2016	15-Jul-2017		
30	3.3.1	Coding		23-Apr-2016	18-Feb-2017		
31	3.3.1.1	File extensions	70	23-Apr-2016	2-Jul-2016	25	5
32	3.3.1.2	Need capability similar to Q and A	56	2-Jul-2016	27-Aug-2016	31	5
33	3.3.1.3	Profile information	70	2-Jul-2016	10-Sep-2016	31	5
34	3.3.1.4	Build more intelligence	56	10-Sep-2016	5-Nov-2016	33,32	5
35	3.3.1.5	Consolidation of User management	105	5-Nov-2016	18-Feb-2017	34	5
36	3.3.1.6	Notification e-mails	77	5-Nov-2016	21-Jan-2017	34	5
37	3.3.2	Testing		18-Jun-2016	3-Jun-2017		
38	3.3.2.1	Execute Functional Testing	70	18-Feb-2017	29-Apr-2017	36,28,35	5
39	3.3.2.2	Bug Fixing	35	29-Apr-2017	3-Jun-2017	38	5
40	3.3.2.3	Test Fixes	21	18-Jun-2016	9-Jul-2016	28	5
41	3.3.3	Deployment		5-Mar-2016	15-Jul-2017		
42	3.3.3.1	Develop Support Documentation	21	5-Mar-2016	26-Mar-2016	24	4
43	3.3.3.	Knowledge Training for	21	26-Mar-2016	16-Apr-2016	42	7

	2	Support Team					
44	3.3.3.3	Deployment	7	3-Jun-2017	10-Jun-2017	40,43,39	2
45	3.3.3.4	UAT User Testing (Production)	28	10-Jun-2017	8-Jul-2017	44	4
46	3.3.3.5	User Training	35	10-Jun-2017	15-Jul-2017	44	3
47	4	Stabilizing Phase		15-Jul-2017	5-Aug-2017		
48	4.1	Post Implementation Review		15-Jul-2017	5-Aug-2017		
49	4.1.1	Document lessons learned	21	15-Jul-2017	5-Aug-2017	45,46	5
50	5	Project Complete	0			49	

Project Communication Plan

This Communications Plan is created to ensure information is shared with project stakeholders. It identifies the informational needs of the stakeholders and determines a suitable means of meeting those needs.

Periodic Communications				
Description	**Audience**	**Delivery Method**	**Frequency**	**Owner**
Project Status Report	Project Team	E-mail	Weekly	Project Manager
Top Level Project Status Report	Project Team	E-mail	Weekly	Top Level Project Manager
Development Status Report	Project Manager, Sponsor and Project team	E-mail	Weekly	Development Lead
Defect Status Report	Project Manager, Sponsor and Project Team	E-mail	Weekly, after testing be	Tester (To be Identified)

Regular Meetings				
Type of Meeting	**Frequency**	**Location**	**Attendees**	**Owner**
Core Team	Weekly	Conference Call	Project Team	Project Manager

Event-Driven Communications				
Triggering Event	**Description**	**Target Audience(s)**	**Delivery Method**	**Owner**
End of Phase	Results of Phase Exit Review and Lessons Learned	Project Team	Presentation	Project Manager
Project Changes	E-mail or meeting for final review and approval	Project Team, Sponsor	E-mail	Project Manager
Project Closure	Results of Project Closure Activities	Project Team	Presentation	Project Manager

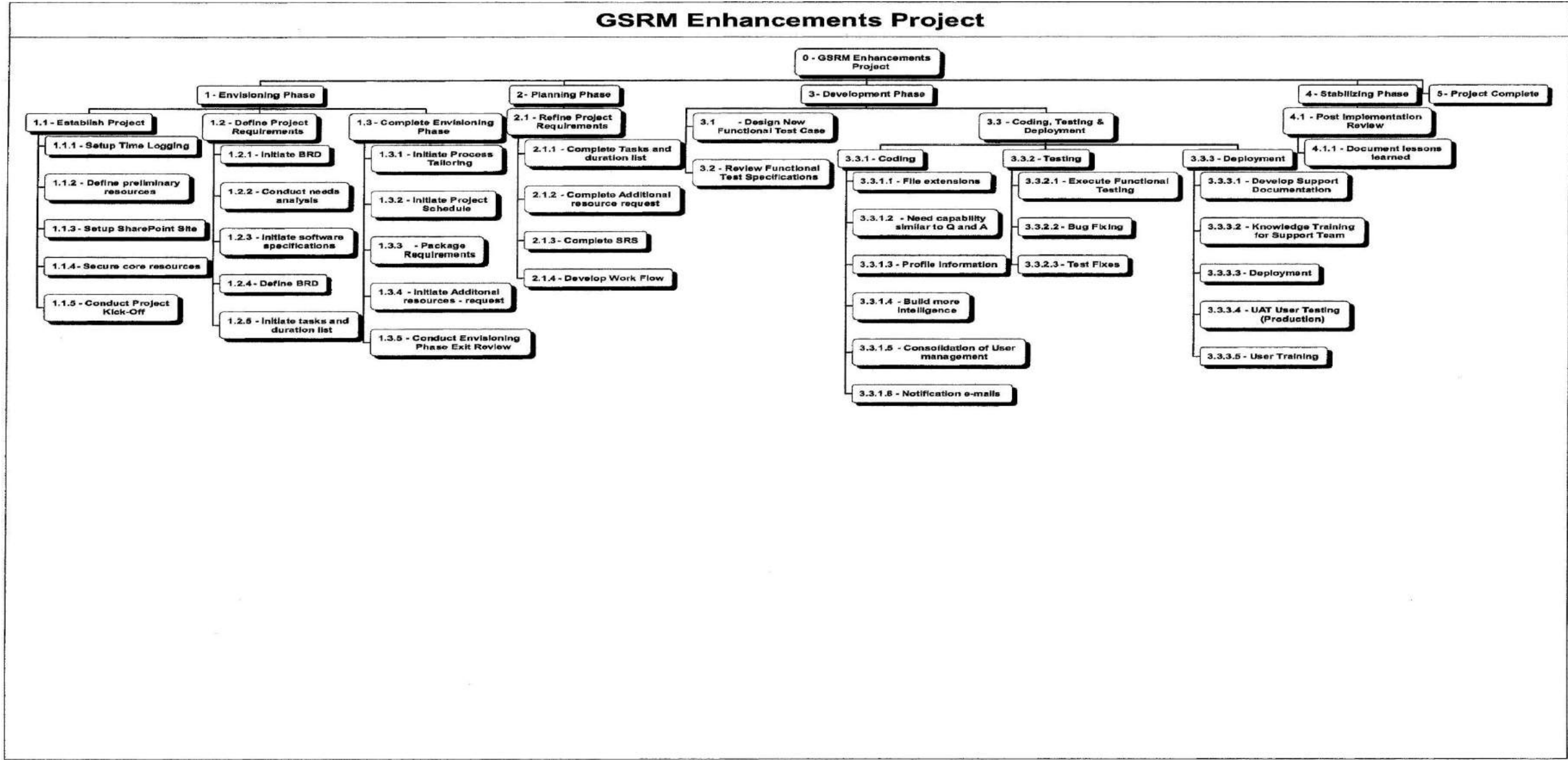Approvals

Prepared by   _____
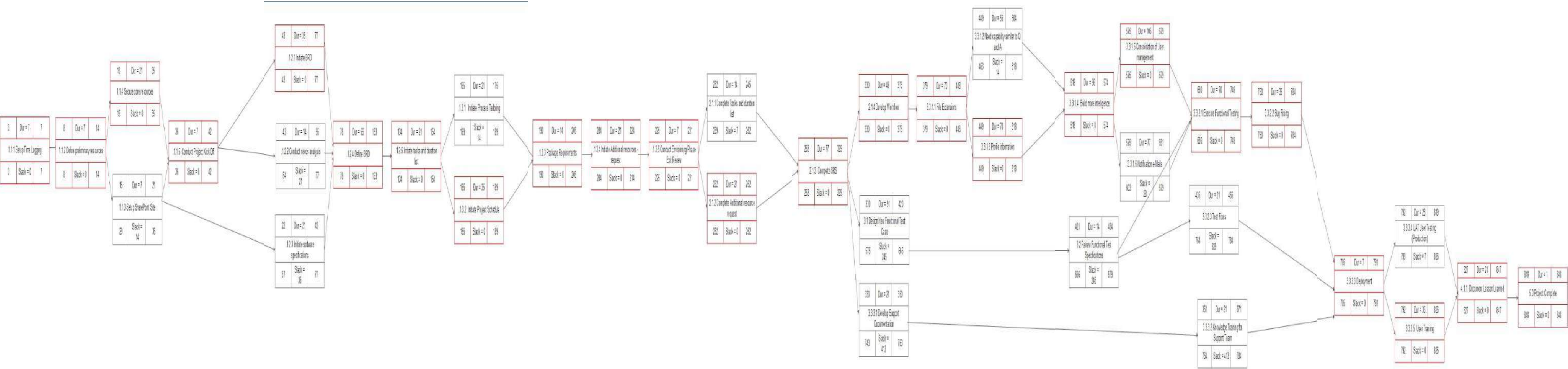
Project Manager

Approved by   _____

Project Sponsor

(Electronic signatures are acceptable)

GSRM Enhancement Work Breakdown Structure (WBS)

GSRM Enhancements Project

- **0 - GSRM Enhancements Project**

1 - Envisioning Phase

- **1.1 - Establish Project**
  - 1.1.1 - Setup Time Logging
  - 1.1.2 - Define preliminary resources
  - 1.1.3 - Setup SharePoint Site
  - 1.1.4 - Secure core resources
  - 1.1.5 - Conduct Project Kick-Off
- **1.2 - Define Project Requirements**
  - 1.2.1 - Initiate BRD
  - 1.2.2 - Conduct needs analysis
  - 1.2.3 - Initiate software specifications
  - 1.2.4 - Define BRD
  - 1.2.5 - Initiate tasks and duration list
- **1.3 - Complete Envisioning Phase**
  - 1.3.1 - Initiate Process Tailoring
  - 1.3.2 - Initiate Project Schedule
  - 1.3.3 - Package Requirements
  - 1.3.4 - Initiate Additional resources - request
  - 1.3.5 - Conduct Envisioning Phase Exit Review

2 - Planning Phase

- **2.1 - Refine Project Requirements**
  - 2.1.1 - Complete Tasks and duration list
  - 2.1.2 - Complete Additional resource request
  - 2.1.3 - Complete SRS
  - 2.1.4 - Develop Work Flow

3 - Development Phase

- **3.1 - Design New Functional Test Case**
- **3.2 - Review Functional Test Specifications**
- **3.3 - Coding, Testing & Deployment**
  - **3.3.1 - Coding**
    - 3.3.1.1 - File extensions
    - 3.3.1.2 - Need capability similar to Q and A
    - 3.3.1.3 - Profile Information
    - 3.3.1.4 - Build more intelligence
    - 3.3.1.5 - Consolidation of User management
    - 3.3.1.6 - Notification e-mails
  - **3.3.2 - Testing**
    - 3.3.2.1 - Execute Functional Testing
    - 3.3.2.2 - Bug Fixing
    - 3.3.2.3 - Test Fixes
  - **3.3.3 - Deployment**
    - 3.3.3.1 - Develop Support Documentation
    - 3.3.3.2 - Knowledge Training for Support Team
    - 3.3.3.3 - Deployment
    - 3.3.3.4 - UAT User Testing (Production)
    - 3.3.3.5 - User Training

4 - Stabilizing Phase

- **4.1 - Post Implementation Review**
  - 4.1.1 - Document lessons learned

5 - Project Complete

2.1 GSRM Enhancement Project Analysis

2.1 Critical Path

By referring to the PERT chart, the critical path is the longest total duration of all tasks. This will mean that it will match to the length of the project, and any delays to the critical path will hence delay the project. (Reh, 2015) A rule of thumb is the float for a critical path activity will be 0. The critical path for the GSRM Enhancement project is highlighted in red in the PERT chart with a total of 825 days.

1.1.1 – 1.1.2 – 1.1.4 – 1.1.5 – 1.2.1 – 1.2.4 – 1.2.5 – 1.3.2 – 1.3.3 – 1.3.4 – 1.3.5 – 2.1.2 – 2.1.3 – 2.1.4 – 3.3.1.1 – 3.3.1.3 – 3.3.1.4 – 3.3.1.5 – 3.3.2.1 – 3.3.2.2 – 3.3.3.3 – 3.3.3.5 – 4.1.1 –

2.2 Crashing The Project

The project time can be crashed by investing on more resources which usually means an increase in direct costs. As the duration of a project is dependent on the length of the critical path, these additional resources must be focused on the critical path. As such, the writer realizes the shortest duration in which a task can be completed and how much this will cost; the normal time in which a task will be completed with its cost; and how the costs will vary with the time that is crashed. The writer suggests that the tasks which can be crashed the most in duration but with the lowest crashed cost should be considered. Certain tasks will not be crashed and is listed as NA. This is due to the tasks does not take much time.

WBS	Task Name	Normal			Crashing			
		Duration (Day)	Resources	Cost	Duration	Added Resource	Days Saved	Crashing Cost
1.1.1	Setup Time Logging	7	2	200	NA	NA	NA	NA
1.1.2	Define preliminary resources	7	2	200	NA	NA	NA	NA
1.1.4	Secure core resources	21	3	300	7	3	14	300
1.1.5	Conduct Project Kick-Off	7	1	100	NA	NA	NA	NA
1.2.1	Initiate BRD	35	2	200	NA	NA	NA	NA
1.2.4	Define BRD	56	5	500	14	20	42	2000
1.2.5	Initiate tasks and duration list	21	3	300	7	3	14	300
1.3.2	Initiate Project Schedule	35	5	500	7	15	28	1500
1.3.3	Package Requirements	14	1	100	NA	NA	NA	NA
1.3.4	Initiate Additonal resources - request	21	5	500	5	15	16	1500
1.3.5	Conduct Envisioning Phase Exit Review	7	2	200	NA	NA	NA	NA
2.1.2	Complete Additional resource request	21	5	500	10	5	10	500
2.1.3	Complete SRS	77	5	500	15	15	62	1500
2.1.4	Develop Work Flow	49	5	500	21	5	28	500
3.3.1.1	File extensions	70	5	500	14	15	56	1500
3.3.1.3	Profile information	70	5	500	14	15	56	1500
3.3.1.4	Build more intelligence	56	5	500	14	20	42	2000
3.3.1.5	Consolidation of User management	105	5	500	21	15	84	1500
3.3.2.1	Execute Functional Testing	70	5	500	14	15	56	1500
3.3.2.2	Bug Fixing	35	5	500	7	15	28	1500
3.3.3.3	Deployment	7	2	200	NA	NA	NA	NA
3.3.3.5	User Training	35	3	300	11	3	24	300
4.1.1	Document lessons learned	21	5	500	5	15	16	1500

Currently the critical path duration is 825 days. Based from the critical path crashing details table, the writer has identified several crashing options that has the most impact to crash the project timeline with an equitable crash costing to match.

Option 1 (Crashing days saved weightage)

Critical Path days = 825

3.3.1.5- Consolidation of User management (84 days saved: USD1500: add 15 resources)

2.1.3- Complete SRS (62 days saved: USD1500: add 15 resources)

3.3.2.1- Execute Functional Testing (56 days saved: USD1500: add 15 resources)

Total duration crashed

825 – 84- 62- 56 = 623 days.

Total crash cost

1500+1500+1500 = USD4500

Total additional resources

15+15+15= 45 resources

Option 2 (Crashing cost weightage)

Critical Path days = 825

1.1.4- Secure core resources (14 days saved: USD300: add 3 resources)

1.2.5- Initiate tasks and duration list (14 days saved: USD300: add 3 resources)

3.3.3.5- User Training (24 days saved: USD300: add 3 resources)

Total duration crashed

825-14-14-24 = 773 days

Total crash cost

300 + 300 +300 = USD900

Total additional resources

3+ 3+ 3= 9 resources

Option 3 (Crashing Balanced Weightage)

Critical Path days = 825

3.3.1.5- Consolidation of User management (84 days saved: USD1500: add 15 resources)

2.1.3- Complete SRS (62 days saved: USD1500: add 15 resources)

3.3.3.5- User Training (24 days saved: USD300: add 3 resources)

Total duration crashed

825 – 84- 62- 24 = 655 days.

Total crash cost

1500+1500+300 = USD3300

Total additional resources

15+15+3= 33 resources

Option 1 crashing places more weight on the duration days the crashing saved. As such the criteria for the 3 critical paths chose (3.3.1.5, 2.1.3 & 3.3.2.1) for crashing is based on the most number of duration days saved which (84 days, 62 days & 56 days respectively). The total crashing cost is USD 4500 which results in 202 of total days saved with total number of added resources of 45. This option will reduce the project time from 825 days to 623 days. The writer is assuming that if the additional cost is not an issue and reducing the duration is priority then this option would suffice. The writer also caution that with this option, the number of manpower is greatly increased thus it might create more risks and complexity and added time in manpower management.

Option 2 crashing places more weight on limiting the crash cost. As such the criteria for the 3 critical paths chose (1.1.4, 1.2.5 & 3.3.3.5) for crashing is based on the least crashing cost which is (USD 300, USD 300 & USD 300 respectively). The total crashing cost is USD 900 which results in 54 of total days saved with total number of added resources of 9. This option will reduce the project time from 825 days to 773 days. The writer is assuming the project has budget limitation and is not able invest in a great sum but still able to reduce the project time accordingly then this is a feasible option. From a resource management view, it will only incur additional 9 resources thus reducing any risks and complexity. The writer caution that with this option, although the cost is not high, the project timeline is not greatly reduced and any project slip may increase the project timeline.

Option 3 crashing places consideration on getting the most crashing days saved with an eye on the cost as well. As such the criteria for the 3 critical paths chose (3.3.1.5, 2.1.3 & & 3.3.3.5) which is (84 days, 62 days & 24 days respectively). The total crashing cost is USD 3300 which results in 170 of total days saved with total number of added resources of 33. This option will

reduce the project time from 825 days to 655 days. This option provides a balance between the amounts of cost incurred in investing in crashing while getting a considerable amount to time saved. There is an additional 33 resources to be injected in this option which may lead to more risks and complexity.

2.3 Resource Leveling

Resource levelling is a technique for resolving resource conflicts by delaying tasks. It is an analysis used in resource management to make scheduling decisions. The main purpose of resource levelling is to smooth out the distribution of resource usage. The writer examines the PERT chart for slack and the Gantt chart to identify resource conflicts (Dominguez, 2014). This way the writer is able to remove over allocations by delaying non-critical tasks, which does not result in an overall schedule delay.

Based from the resource division from Gantt, the writer found that:-

- Between 5 Mar 2016 to 16 Apr 2016, the resource allocated is 21
- Between 23 Apr 2016 to 25 June 2016, the resource allocated is 17
- Between 2 Jul 2016 to 20 Aug 2016, the resource allocated is 15
- Between 28 Aug 2016 to 29 Sept 2016, the resource allocated is 10
- Between 5 Nov 2016 to 14 Jan 2017, the resources allocated is 10

The writer then relates the tasks with a decent amount slack time in relation to the resource division as identified previously.

WBS Task ID	Slack days
3.1	245
3.2	245
3.3.2.3	329
3.3.3.1	413
3.3.3.2	413
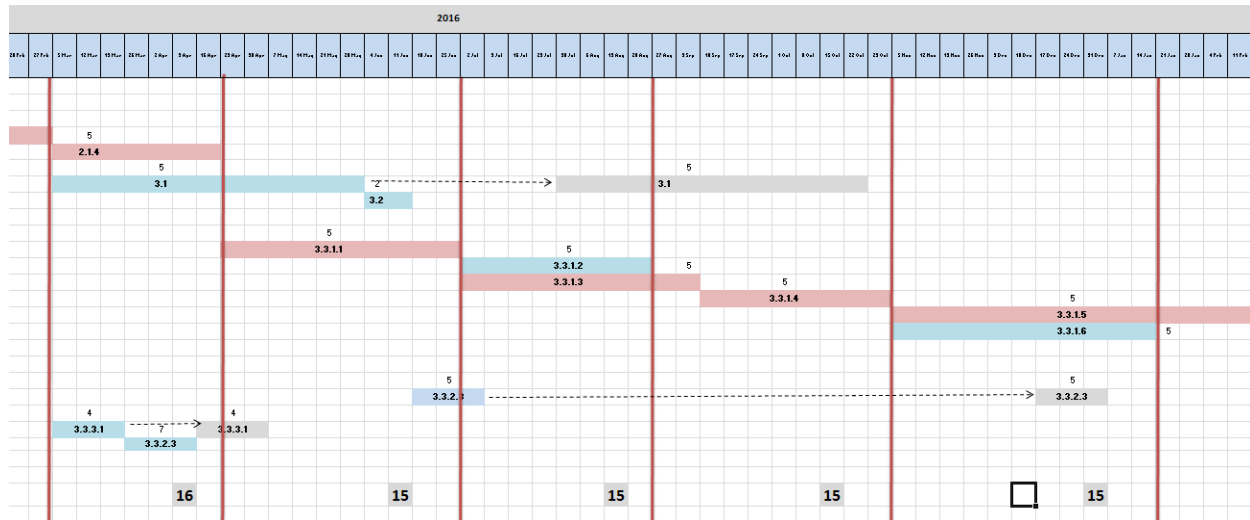
Based from the resource allocation and tasks slack time, the writer can "level" the resources accordingly.

- Delay task ID 3.1 to start on 30 Jun 2016
- Delay task ID 3.3.2.3 to start on 17 Dec 2016
- Delay task ID 3.3.3.1 to start on 16 Apr 2016

By delaying the mentioned 3 task with the specified date, the resource allocation is levelled.

- Between 5 Mar 2016 to 16 Apr 2016, the resource allocated is 16
- Between 23 Apr 2016 to 25 June 2016, the resource allocated is 15
- Between 2 Jul 2016 to 20 Aug 2016, the resource allocated is 15
- Between 28 Aug 2016 to 29 Sept 2016, the resource allocated is 15
- Between 5 Nov 2016 to 14 Jan 2017, the resources allocated is 15

2.4 Parallel Tasking

Defining parallel project tasks allows a project to complete multiple tasks at once and deliver the task within a shorter time frame. Identifying critical project tasks is crucial in the completion of a project where parallel tasks are running. Critical path tasks are essential to the completion of a project. If any of these steps suffer delays, the entire project cannot finish on time. Thus by executing these critical paths in parallel, the writer believes the project time can be shortened.

Referring to the PERT chart, the writer has identified to potential tasks that can be run in parallel.

1. Executing parallel task ID 3.3.1.1 and 2.1.4. (70 days saved)

2. Executing parallel task ID 3.3.3.4, 3.3.3.5 and 4.1.1 (21 days saved)

The writer also cautions that only non-critical elements can run parallel with any single critical project step. If the task is an extremely important element then it is not recommended to parallel task it as the quality of the deliverable may suffer. Another risk to this technique is that project managers may need to monitor carefully the progress of all steps happening concurrently, and be able to fix issues as they arise to ensure all phases of the project remain on schedule.

2.5 Staffing Acquisition

One important factor in a successful project is to ensure that the project has sufficient human talent with the correct skill sets and experience.

There are multiple approaches to staff this project. The reader can deal directly with full-time or freelance/contracted employees, or the reader can outsource using local or offshore development firms.

Determining which of these methods of staffing software development projects is right for the company can be a challenging endeavor, and three opposing characteristics of business need to be considered: cost, risk and convenience. Each of these three concepts needs deep consideration in the specific context of the GSRM Enhancement project.

Below is an overview of what the reader needs to consider and the pros and cons of each option for staffing.

Convenience

The reader must first decide whether to work with individuals or development companies. Regardless of if it is working with developers in-house or if they're full-time or contracted, the first decision you need to make is whether you want to work with individual developers or companies that specialize in outsourced development. Full-Time Employees or contractors (through staffing companies). This approach allows your company to maintain total control as it manages the fine details of the project. Outsourcing (local development company or offshore firm) - This option allows the company to step away from the "day-to-day" responsibilities of managing individuals and project details and instead focus on the project's big picture.

The fundamental questions to ask here is: Do you want to manage the small details of the project? Do you have the time, expertise and desire to handle this responsibility? Or, would you rather use your time for something else and leave those details up to an expert?

Risk

Risk management is about assessing and minimizing the likelihood of delays or failures. Minimizing the effects of unforeseen difficulties is also critical. Basically, the reader needs to reduce the likelihood of anything that affects the bottom line.

Spending money at a project does not always guarantee the best outcome, however, being prepared to commit to the appropriate budgeting often does. In other words, a company that is prepared to fund success is more likely to achieve that success.

The reader can minimize risk by performing due diligence when selecting a company or individual to work with, clearly defining the project scope, expectations and milestones in any development contracts, and allocating enough money to hire competent developers.

Cost

The most talented technical candidates do demand higher hourly rates, but as indicated already, their expertise reduces risk and the number of required project hours. Spending additional money also allows the convenience of implementing the exact approach your company desires, while at the same time potentially simplifying the candidate selection process.

The underlying question here (related to convenience) is how much time do you want to dedicate to finding the most qualified talent? How confident are you in being effective in the selection process? Does your budget line up with expectations? (Miller, 2010)

Benefits and Drawbacks of Each Approach

Let's take a deeper look at some of the benefits and drawbacks of each method of IT staffing:

In-House Employees (Moderate Convenience, Moderate Cost, Moderate Risk)

Benefits:

- ✓ Longer term (employee) commitment to company
- ✓ Permanent employment builds the internal talent pool
- ✓ Allows most control over employees' daily activity
- ✓ Employees have the greatest familiarity with a company's personnel and procedures

Drawbacks:

- ✓ Employee costs (such as benefits, vacations, taxes, health insurance, etc.)
- ✓ Skills might not be applicable to next project
- ✓ Employee turnover (loss of company-provided training and familiarity)

Contractors (High Convenience, Moderate Cost, Moderate Risk)

Benefits:

- ✓ Immediate pool of talent
- ✓ Performance guarantees (to a certain degree)

✓ Quick ramp-up (staffing up and down with changing project requirements)

Drawbacks:

✓ Mark ups on contractor hourly rates

✓ Unknown interview process

✓ Inconsistent goals (staffing firms make money by placing candidates, not necessarily effective ones)

Outsourcing (High Convenience, High Cost, Low Risk)

Benefits:

✓ Existing structures for successful project implementation

✓ Proven track record of success

✓ Quickly staff up and staff down as needed

Drawbacks:

✓ Seemingly higher cost

✓ Hiring company needs to extended greater level of trust and give up a certain amount of control

This is a balancing act between the factors of cost, risk and convenience. No one goes into an project expecting it to fail, but the fact is, many projects do fail. Proper handling of risk management, decision making and cost control demands flexibility and advanced planning. Thoroughly understanding the options available and potential risks when staffing a software project will help ensure the most effective results. (Chamdani, 2010)

The organization chart and roles and responsibilities of the stakeholders are defined in section 1.9 and section 1.10 respectively under the project charter.

At the start of the GSRM Enhancement project, the direct or functional managers should review their staff skill sets against the roles or responsibilities needed for the project (as defined in

section 1.10). Each manager and their staff should discuss where additional training might be needed to ensure staff has the necessary skills to execute the activities for each project tasks. Career development and personal growth training should be discussed in staff Individual Development Plan (IDP).

The Responsibility Assignment Matrix (RAM) (as defined in section 1.10 of project charter) is used to illustrate the connections between work that needs to be done and project team members. This description may be accomplished with responsibility summaries for all roles combined with a Responsibility Assignment Matrix (RAM), which is also referred to as a Responsible/Accountable/Consulted/Informed (RACI) chart.

2.6   Assessment of Project Quality

It is important to continually evaluate and analyze the project as is being executed. If the deliverables is not achieved, then the project will not be effective or will not have a positive impact on the end users. Quality and Assessment planning is an integral part of management planning. It has been prepared in an early stage of the project, in order to demonstrate and provide the clients with the assurance that:

• The deliverables have been reviewed

• An effective quality planning has taken place.

To ensure relevance of the Quality and Assessment Plan, a set of quality reviews must be conducted, throughout the duration of the GSRM project. This specifies the tasks to be implemented, including their sequence, in order to ensure that the project and its deliverables conform to specific requirements. Responsible for ensuring that the required activities are carried out and the resources, which are crucial for the successful completion of the GSRM project. This includes explanation, necessary to show how quality requirements for activities are met.

By identifying milestone, the project manager can directly identify tasks can create the most impact to the project. Among the milestone identified (with reference to the Gantt chart above):

- ✓ Project Established
- ✓ Envisioning Phase Completed
- ✓ Deployment
- ✓ Project Closure

In the GSRM project there are five phases namely:

- ✓ Envisioning - Defines the vision and the scope of the project based on the business need and organizes the project.

- ✓ Planning - Develops the conceptual, logical and functional specification. Also develops project plans and the project schedule.

- ✓ Development - Builds and tests the enhancement components.

- ✓ Deployment - Deploys the enhancement and ensures that it is stable and usable.

- ✓ Stabilizing/Closure –Perform post-deployment reviews and close the project.

Between each of these phases, there is a checkpoint to ensure that the deliverables and tasks committed in a phase are completed accordingly before the project can proceed with the next phase. Checkpoints is structured to answer one main question, is the project ready for the next phase? If the answer is yes, then the project proceeds. If the answer is no, then necessary action is to be taken to correct and to proceed to the next phase.

Another way of ensuring quality of the GSRM Enhancement project deliverables are met is to conduct adequate testing. Types of testing carried out in this project include System Integration Testing (SIT) and User Acceptance Testing (UAT). In the work breakdown structure (WBS) activity 3.3.2.1 Execute Functional Testing (SIT Testing) and activity 3.3.3.4 UAT User Testing

(UAT Testing) are two type of tasks defined to ensure that GSRM Enhancement project product is verified according to the requirements thus ensuring quality of the deliverables.

2.7 Provisions for GSRM Enhancement Closure

Where there is a beginning, there must be an end. So is the same with the GSRM Enhancement project. The practice of project close-out finalizes all project activities completed across all phases of the project to formally close the project and transfer the completed or cancelled project as appropriate. The purpose of project closure is to assess the project, ensure completion of deliverables and derive any lessons learned and best practices to be applied to future projects. (Frans, 2014)

The customer's acceptance of the deliverables of the project as stated in Project Charter which are:

1. Develop enhancements to GSRM IT risk assessment framework that addresses the major functional areas of an IT organization.

   - Assignment of consultant to be done in Search Screen.
   - Ability to make mass status update in Search Screen.
   - Ability to copy former request to a new request.
   - Action Item tracker, and auto notification mailer.
   - Ability to design feedback question and collect feedback from requestor.

2. Collaborate with Global Security to ensure their risk assessment methodology is aligned with the holistic IT security risk assessment framework.

3. Develop a plan to integrate the results of the Global Security risk assessment into the holistic IT security risk assessment.

This signifies that the customer agrees that the scope of the project and its deliverables are complete and were delivered as agreed upon by all parties. Acceptance is based upon the success criteria defined in the envisioning and planning phases of the project. This acceptance should be formal, meaning that sign-offs should be obtained by the customer, project sponsor, and the project stakeholders accordingly. (Frans, 2014)

Lessons learned should pull on both positive experiences like good ideas that improve project efficiency or save money as well as negative experiences. Lessons learned only after an unwanted consequence has already happened.

A post-project review provides a record of the history of a project. It provides written documentation of the planned versus actual budget, the planned schedule versus actual schedule, as well as documents recommendations for other projects of similar size and scope.

And finally, celebrating the success of completing the GSRM Enhancement project with positive reinforcement can be rewarding for project stakeholders. When the project is completed successfully the writer suggests providing some kind of recognition to the team.

Conclusion and Recommendation

The project planning phase is the most important phase in project management. The work put in properly planning a project can save many hours of ambiguity and rework leading up to different stages of the project. Summary of the purpose of the project planning undertaken for GSRM Enhancement project are:

- Establish Business Requirements.

- Establish Cost, Schedule, List of Deliverables and Delivery Dates.

- Establish Work Breakdown Structure and Resource Plan.

- Establish Communication Plan.

- Establish Quality and Monitoring Plan.

- Establish provisions for project closure.

- Get Management Approval and proceed to next phases.

The writer also identified GSRM Enhancement task dependencies by identifying the project's critical path which is 825 days. This in turn allows the writer to conduct analysis on the alternative methods to manage the scope of projects.

Based on the findings, the writer would recommend to the Managing Director the following methods to improve management of the GSRM Enhancement project:

- Crashing project time – the writer gives 3 crashing options based on the weightage of crash, namely:-

    i. Crashing places more weight on the duration days the crashing saved. The total crashing cost is USD 4500 which results in 202 of total days saved with total number of added resources of 45. This option will reduce the project time from 825 days to 623 days.

    ii. Crashing places more weight on limiting the crash cost. The total crashing cost is USD 900 which results in 54 of total days saved with total number of added resources of 9. This option will reduce the project time from 825 days to 773 days.

iii. Crashing places consideration on getting the most crashing days saved with an eye on the cost as well. The total crashing cost is USD 3300 which results in 170 of total days saved with total number of added resources of 33. This option will reduce the project time from 825 days to 655 days

- Resource Leveling - The writer examines the PERT chart for slack and the Gantt chart to identify resource conflicts and found that the writer can "level" the resources accordingly.

  Delay task ID 3.1 to start on 30 Jun 2016

  Delay task ID 3.3.2.3 to start on 17 Dec 2016

  Delay task ID 3.3.3.1 to start on 16 Apr 2016

  By delaying the mentioned 3 task with the specified date, the resource allocation is levelled

- Parallel Tasking - Referring to the PERT chart, the writer has identified to potential tasks that can be run in parallel.
  i. Executing in parallel task ID 3.3.1.1 and 2.1.4. (70 days saved)
  ii. Executing in parallel task ID 3.3.3.4, 3.3.3.5 and 4.1.1 (21 days saved)

The writer also discussed multiple approaches to staff this project. The Managing Director may choose to deal directly with full-time or freelance/contracted employees, or to outsource using local or offshore development firms. The writer also discussed in detail which of these methods of staffing is right for the company by using three opposing characteristics of business cost, risk and convenience.

It is this writer's opinion that through proper project management and by ensuing what the writer has written above, the assurance that the project vision and deliverables of the project are maintained while mitigating risks and dependencies It also helps the team members to understand their responsibilities, the deliverables expected and define tasks (WBS) and proper

scheduling as to allow proper completion of the project, on time, within budget with project deliverables presented accordingly.

References

Jorge Dominguez, 2014, "Project Scheduling and Resource Levelling"(
http://www.projectsmart.co.uk/project-scheduling-and-resource-levelling.php) as seen on
9.15pm, 20 May 2015

John Reh, 2015, "Critical Path"
(http://management.about.com/od/projectmanagement/g/Critical-Path.htm) as seen on 11pm, 10

Brett Miller, 2010, "3 Things to Consider When Staffing a Software Development
Project"(http://mashable.com/2010/11/26/software-development-staffing) as seen on 12.30pm, 3
Jun 2015

Ismawan Chamdani, 2010, "Staffing Project"
(http://eichamdani.blogspot.com/2010_11_01_archive.html) as seen on 8pm, 28 May 2015

Peter Frans, 2014, "Effective Project Close-out", (http://www.trimitra.com/articles/project-
close.html), as seen on 10pm, 30 May 2015