King Fahd University of Petroleum and Minerals

College of Computer Sciences and Engineering CCSE
Information and Computer Sciences Department

Obesity Group Clinic

Team B

Abdulaziz Al-Amoudi
Rakan Al-Ghufaili
Saeed Al-Tuwaileb
Sameer Al-Amri
Shaeq Khan
Yasir Al-Agl

iDhahran

Sponsor

Dr. Essam Jalal

ارامكو السعودية
Saudi Aramco

Project Advisor

Dr. Sajjad Mahmood

جامعة الملك فهد للبترول والمعادن
King Fahd University of Petroleum & Minerals

Document Revision History

Date	Version	Description	Author
4th March 2011	1.0	Initial Software Project Management Plan	Yasir
15th April 2011	1.1i	Identifying errors in RED	Yasir
1st April 2011	1.1f	Final Software Project Management Plan	Yasir
3rd June 2011	1.2	Software Project Management Plan, final submission for term 102	Shaeq

Table of Figures

Table of Contents

Part One

Scope Statement

The Obesity Group Clinic System (OGCS) will be developed to manage, monitor and set the goals for the patients of Obesity Group Clinic, Saudi Aramco Medical Service Organization (SAMSO) in Dhahran. The main functionality of the system is the profiling of all patients and monitoring their progress in the process of losing weight. In addition, the Obesity Group Clinic System (OGCS) will provide other functionalities that will help and improve the workflow of the system. The system should be deployed by December 2011 and the resources provided should accommodate the development process of the project.

Main Functionalities

1. The *OGC* health team and patients are users who will be interacting with the system.

2. The patient can add weight loss goals and use the system to enter their timely scores to assess their progress for weight loss. The *OGC* health team can view these selections made by patients and make appropriate changes necessary.

3. "The Bank of Ideas" is created by the *OGC* health team with activities for weight loss called "goals".

4. The patients start at the clinic in groups and their accounts are created by the *OGC* health team. The patients can then login to the system using this account and get started by appointing goals for themselves and following up on their progress.

5. The *OGC* health team and patients will receive timely reminders of when the filling in of progress sheets is due.

6. The OGC team will be able to deactivate the account of a patient in case a patient chooses to drop out of the clinic.

7. The system should be able to generate reports according to different categories and parameters. Some possible reports that can be generated are –

    *   On progress of individual patients

    *   Dropout rate and contributing factors

    *   Most chosen behavior goals

    *   Most achievable goals

    *   Most successful goals

- Number of chosen goals and relation to outcome

- Dietary vs. PA goals and outcome

- Emotional rating and outcome

- Emotional rating and number of chosen goals

- Other types of reports maybe added upon request from sponsor

Part Two

1. Overview

This clause of the Software Project Management Plan *SPMP* shall provide an overview of the purpose, scope, and objectives of the project, the project assumptions and constraints, a list of project deliverables, a summary of the project schedule and the plan for evolution of the SPMP.

1.1 Project Summary

1.1.1 Purpose, scope and objectives

The **purpose** of this project is to develop a system for the Obesity Group Clinic (OGC) of Saudi Aramco Medical Services Organization (SAMSO) in Dhahran. The system should handle all the usual processes of the clinic that used to be done manually on paper.

The **scope** of The Obesity Group Clinic System (OGCS) will be developed to manage, organize and schedule the Obesity Group Clinic (OGC) located in Saudi Aramco Medical Services Organization (SAMSO) in Dhahran. The main functionality of the system is the profiling of each patient and the organizing of ideas in the Bank of Ideas (BOI). In addition, The Obesity Group Clinic System (OGCS) will provide other functionalities that will help and improve the workflow of the system. The system should be deployed by December 2011 and the resources provided should accommodate the development process of the project.

The **objectives** of The Obesity Group Clinic System (OGCS) are as follows -
- Developing a user-friendly system, since the Obesity Group Clinic System (OGCS) will replace the current complicated process of profiling the patients and monitoring their progress.
- Developing a robust and reliable system that can handle the progress of many patients.
- Developing a reusable system, that can be implemented offshore for economic purposes.
- Making the profiling of patients, suggestion of ideas and the workflow of OGCS as easy as possible.

1.1.2 Assumptions and Constraints

Assumptions

- Dr. Esam Jalal will be responsible for the communications between the Obesity Group Clinic (OGC) and us.

- The Obesity Group Clinic (OGC) will have a committee that will be available to meet with our requirements team.

- The complete development of the Obesity Group Clinic System (OGCS) will be finished by the end of December 2011.

- The Obesity Group Clinic Committee (OGCC) will provide us with the regulations of the processes.

- The development company, according to the requirements, will provide necessary software and hardware components.

Constraints

- The project will be completed within one year.

- Some of our team members are undergraduates, so this needs to be considered when assigning tasks.

1.1.3 Project deliverables

Deliverable to Stakeholders

This document describes the deliverables for the stakeholders of the system. These deliverables are discussed within the development team with minimal incorporation of other stakeholders that are not part of the development team.

1. Software Requirements Specification [SRS]

This document represents the backbone of the project because it describes WHAT the user needs and WHEN to expect it. It contains an elaborated description on two types of requirements:

- *Functional Requirements*: the functionalities that the system should provide (e.g. the Health Team can create a patient's profile).
- *Non-functional Requirements*: property that accompanies the development of the system or provided by the system but it doesn't represent an independent functionality (e.g. the system should be developed using PHP, system should be robust etc.).

Use Cases are representations of the functional requirements using models that show how users will interact with the system. Every use case will be individually documented using Use Case Description documents and these documents will be interpreted into activity diagrams to model the sequence of steps in the use case description.

To bridge the gap between requirements and design, a *Robustness Analysis Diagram* should be depicted to help gain an understanding on how to derive the entities and theirs relationships in the design phase.

2. Software Design Document [SDD]

The design description should contain the design and architecture components of the system. All entities and components are described in the SDD using formal documentation along with UML diagrams, such as:

- Class Diagrams
- Collaboration Diagrams
- Sequence Diagrams
- ER Diagrams

After documenting the requirements, the functionalities will be interpreted into prototypes that will be discussed with the stakeholders to gain consensus, validate and verify the development of the project team. These prototypes for the user interface should be represented as follows to gain approval from the stakeholders of the system and to assure correctness:

- *Content Diagrams*: that represents the structure of the user interface.
- *Prototypes*: that shows the content diagram entities.

3. Software Testing Document [STD]

The Software Test Documentation should contain the following information -

- Summary of inspection results carried out on the code.
- Find the total number of defects per class and total number of defects per type of defect across all classes.
- Present a list of test activities, test cases, test schedule, testing responsibilities (Individual roles etc.), test cases generation, test cases results and list of bugs identified.

Deliverable to System end users

- Obesity Group Clinic System (OGCS).
- Online manual.
- Presentation and training sessions.

Deliverables to Supervisor

- *Progress reports* - These reports will be sent after each main activity. It describes who did what and who reported to whom.
- *User Interface Prototypes* - The prototypes will be delivered to the users as well to allow them to contribute to the design. Also, prototypes help to validate and negotiate the requirements with users.

1.1.4 Schedule Summary

Schedule

The detailed scheduled attached along with this document was made using Microsoft Project 2010. As per request, the same file has been provided in 2 formats – Microsoft Project 2007 and Microsoft Project 2010.

The file contains detailed schedule of the system along with Gantt chart and Network Diagram [File Name: OGCS Schedule - iDhahran]

1.2 Evolution of the plan

This is the first release of the SPMP. This SPMP will be updated as per the modification process.

2. References

Author/Title	Publisher/Year	Description
Kathy Schwalbe/ Information Technology Project Management	Course Technology, CENGAGE Learning / 2007	Course Textbook
IEEE Standard for Software Project Management Plans	The Institute of Electrical and Electronics Engineers, Inc. / 1998	IEEE Std 1058-1998

Table 1 – References

3. Definitions

- *SPMP* – Software Project Management Plan
- *SRS* – Software Requirements Specification
- *SDD* – Software Design Document
- *STD* – Software Testing Documentation
- *OGC* – Obesity Group Clinic

- *OGCT* – Obesity Group Clinic Health Team
- *OGCS* – Obesity Group Clinic System
- *OGCC* – Obesity Group Clinic Committee
- *SAMSO* – Saudi Aramco Medical Services Organization
- *BOI* – Bank of Ideas

4. Project Organization

4.1 External Interfaces
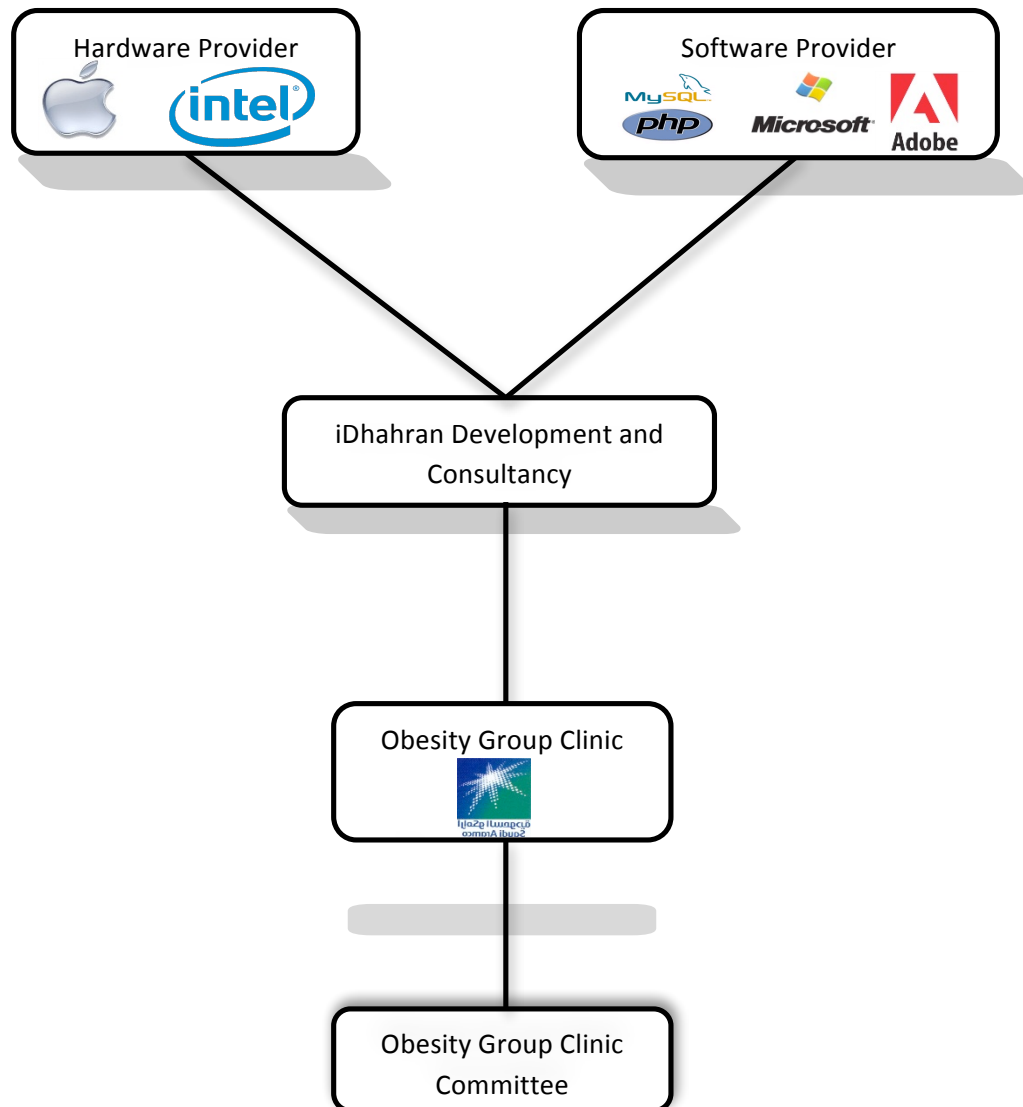
Figure 1 – External Interfaces

During our development process, our company will interact with the following external entities

- Hardware Provider: to purchase required hardware for the project. Contact to a hardware provider is initiated by iDhahran.
- Software Provider: to purchase required software for the project. Contact to a hardware provider is initiated by iDhahran.
- The Obesity Group Clinic Committee (OGCC) in order to discuss technical issues polices roles and gathering requirements.
- Obesity Group Clinic (OGC): who has given us the project to keep them up to date with progress about the system.

4.2 Internal Interfaces

```
                    ┌─────────────────┐
                    │   Prof. Sajjad  │
                    │   Supervisor    │
                    └─────────────────┘
                             │
   ┌─────────────┐           │
   │  Dr. Jalal  │───────────┤
   │  Sponsor    │           │
   └─────────────┘           │
                    ┌─────────────────┐
                    │     Shaeq       │
                    │ Project Manager │
                    └─────────────────┘
```

Prof. Sajjad
Supervisor

Dr. Jalal
Sponsor

Shaeq
Project Manager

Aziz

Saeed

Yasir

Sameer

Rakan
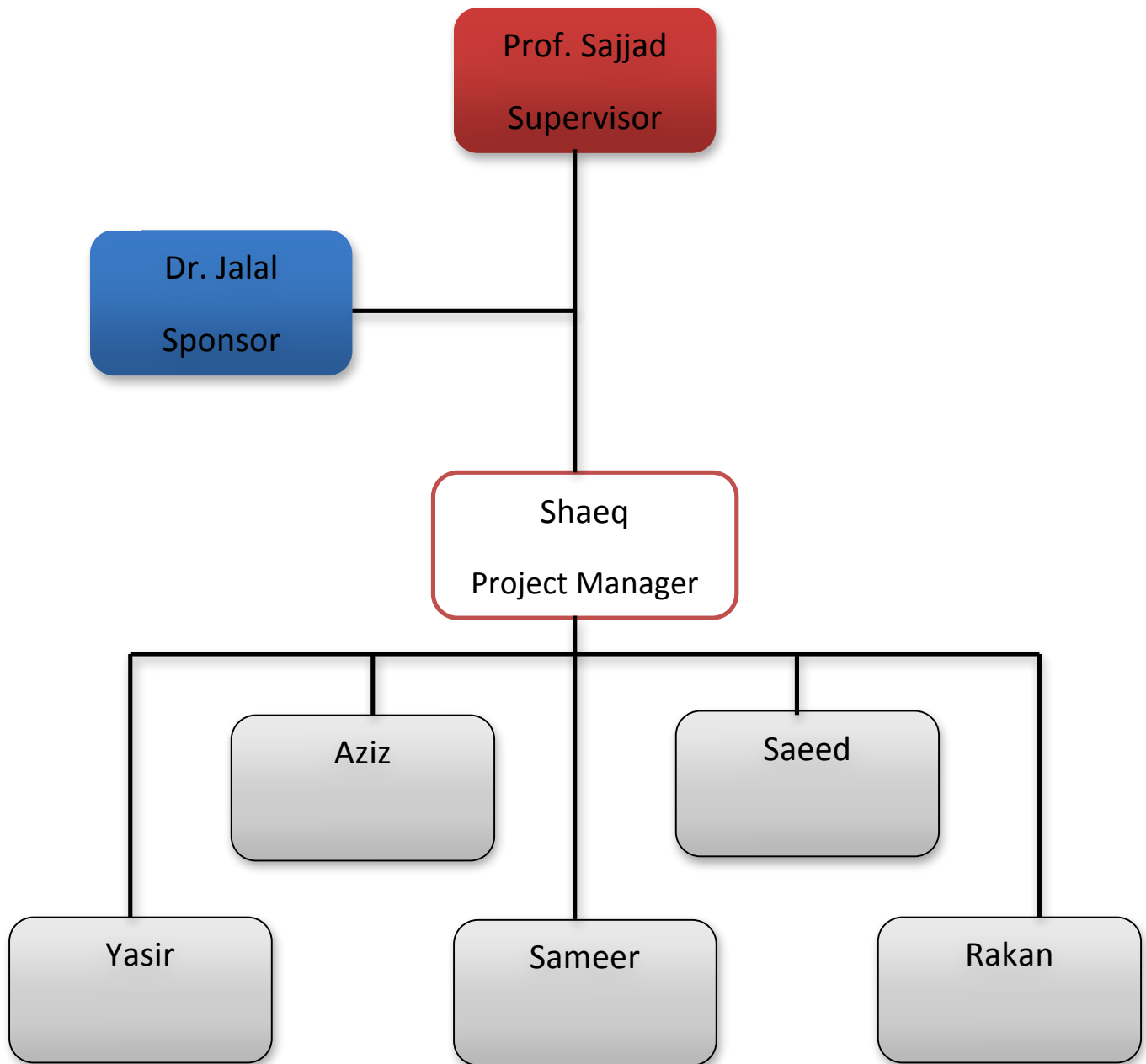
Figure 2 – Internal Interfaces

4.3 Roles and responsibilities

Prof. Mahmood Sajjad [Supervisor]	• Supervising the project • Consultant
Dr. Esam Jalal	• Sponsor of the project • End user
Shaeq Khan [Project Manager]	• Compiling documents • Submissions • Meetings arrangements • Interface design • Web development
Yasir Al-Agl	• Requirement analysis • Designer • Programmer • Tester
Saeed Al-Tuwaileb	• Module Developer • Designer • Web developer • Tester
Abdul Aziz Al-Amoudi	• Requirement analysis • Designer • Tester
Sameer Al-Amri [Design Developer]	• Designer • Database manager
Rakan Al-Ghufaili	• Interface designer • Web developer

Table 2 - Responsibilities

5. Managerial Process Plans

This clause of the SPMP shall specify the project management processes for the project. This clause shall be consistent with the statement of project scope and shall include the project start-up plan, risk management plan, project work plan, project control plan, and project closeout plan.

5.1 Start-up Plan

5.1.1 Estimation Plan

Work estimation for tasks in the WBS is going to be performed according to the following methods:

1. The resource (whoever is responsible for a certain task) is going to present the required duration needed to complete the tasks assigned to him (data is going to be collected for every task separately).
2. Some tasks require that more than one resource working on them. In this case, the estimation of duration is going to be collected from every resource individually. After that, the project manager will discuss these estimations with the resources.

Work re-estimation for tasks in the WBS is going to be performed according to the following methods:

1. Updating the schedule and scope is inevitable. So whatever changes occur will be included in the SPMP updates.
2. Trying to maintain a current status of the baseline is crucial. If changes must be done to the baseline then it should only be in extreme circumstances.
3. Resources might be added or removed. If these changes occur then it should be discussed with the project manager.

The software tool used is MS Project 2010 and the following techniques are applied:

- Work Breakdown Structure (WBS).
- Critical Path Analysis.
- Gantt Charts

5.1.2 Staffing Plan

Not applicable

5.1.3 Resource Acquisition Plan

The project manager shall be responsible for acquiring all non-human resources required by the

Project, such as:

- Printing Services:

OGCS uses in-house printing services for all volume printing requirements. It requires 1 week in-advance notification for any large volume printing requests in order to schedule the print jobs against those of the customers. Printing services through requisitioned via OGCS administrative assistant.

- Computer software purchases:

Our project team will use these software:

SOFTWARE	NAME	VERSION	SOURCE
Operation System	Microsoft Windows	Seven	Microsoft
	Mac OSX	Lion	Apple
Database	MySQL	7.0	Oracle
Word Processer	Microsoft Word	2007	Microsoft
Project Management Tool	Microsoft Project	2010	Microsoft
Design Tool	Dreamweaver	CS5	Adobe
Design Tool	Photoshop	CS5	Adobe
Architecture Design Tool	Enterprise Architect	7.0	Sparx Systems

Table 3 – Resource Acquisition Plan

- Software repository:

Software repository storage space is provided in-house and is managed by the repository Manager.

5.1.4 Project Staff Training Plan

Not applicable

5.2 Work Plan

5.2.1 Work Activities

1.Initial Project Proposal

1.1 Project Objective

1.2 The need of the project

1.3 Expected Output

1.4 Key Feature

1.5 Project Impact

1.5.1 Impact on Individual and Organization

1.5.2 Impact on Society

2.Final Project Proposal

3. Management Plan

3.1 Overview

3.1.1 Project Summary

3.1.1.1 Purpose, scope and objectives

3.1.1.2 Assumptions and Constraints

3.1.1.3 Project deliverables

3.1.1.4 Schedule and budget summary

3.1.2 Evolution of the plan

3.2 References

3.3 definitions

3.4 Project Organization

3.4.1 External Interface

3.4.2 Internal Interface

3.4.3 Roles And Responsibilities

3.5 Managerial Process Plan

3.5.1 Start-up Plan

3.5.1.1 Estimation Plan

3.5.1.3 Resource Acquisition Plan

3.5.1.4 Project Staff Training Plan

3.5.2 Work Plan

   3.5.2.1 Work Activities

   3.5.2.2 Schedule Allocation

   3.5.2.3 Resource Allocation

3.5.3 Control Plan

   3.5.3.1 Requirements Control Plan

   3.5.3.2 Schedule Control Plan

   3.5.3.3 Budget Control Plan

   3.5.3.4 Quality Control Plan

   3.5.3.5 Reporting Plan

   3.5.3.6 Metrics Collection Plan

3.5.4 Risk Management Plan

   3.5.4.1 Identifying Risks

   3.5.4.2 Assessing Risks

   3.5.4.3 Analyzing Risks

   3.5.4.4 Monitoring Risks

   3.5.4.5 Risk Management Roles and Responsibilities

   3.5.4.6 Opportunities Management

  3.5.5 Closeout Plan

3.6 Technical Process Plan

  3.6.1 Process Model

  3.6.2 Methods, Tools, and Techniques

  3.6.3 Infrastructure Plan

  3.6.4 Product Acceptance Plan

3.7 Supporting Process Plan

  3.7.1 Configuration Management Plan

  3.7.2 Verification and Validation Plan

  3.7.3 Documentation Plan

  3.7.4 Quality Assurance Plan

  3.7.5 Reviews and Audits Plan

  3.7.6 Problem resolution plan

  3.7.7 Subcontractor management plans

  3.7.8 Process improvement plan

3.8 SPMP Submission

4.Vision Document

5.SRS Document

   5.1 State Transition Diagrams & Use cases

   5.2 Class & sequence diagrams

   5.3 Screens Layout

   5.4 Revised Project Plan

   5.5 Revised Vision Document

   5.6 Initial test cases

   5.7 SRS

   5.8 Requirement Review Report

   5.9 Revised SRS

6. SDS Document

   6.1 Deployment Architecture

   6.2 Package Diagram

   6.3 Refined Class Diagram

   6.5 DB design

   6.6 White Box Test Cases

   6.7 Software Design Document (SDD)

   6.8 Design Review Report

   6.9 Revised SDD

7. Prototype and Presentation

5.2.2 Schedule Allocation
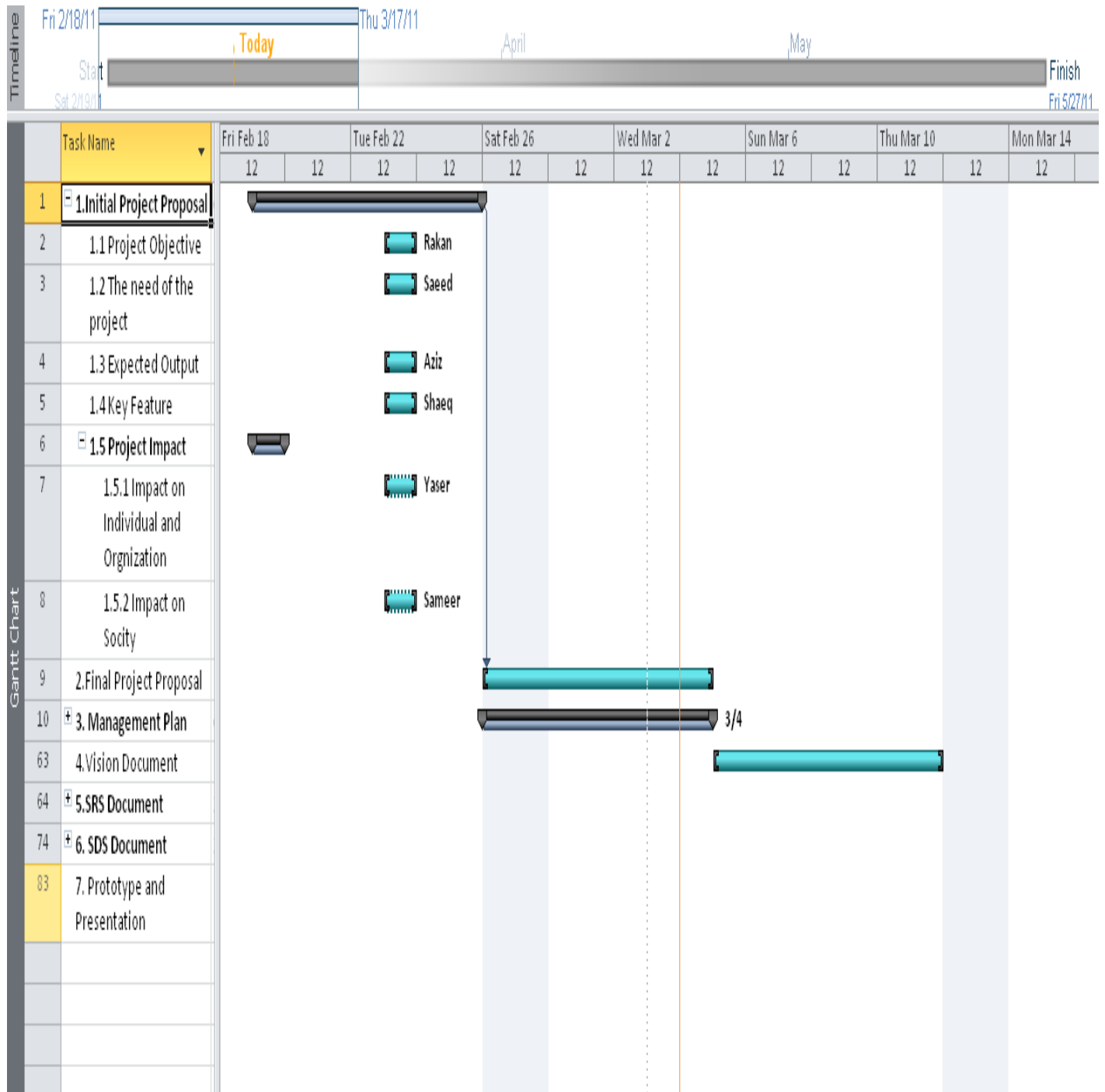
Figure 3 – Schedule Allocation (1/6)

Project Plan
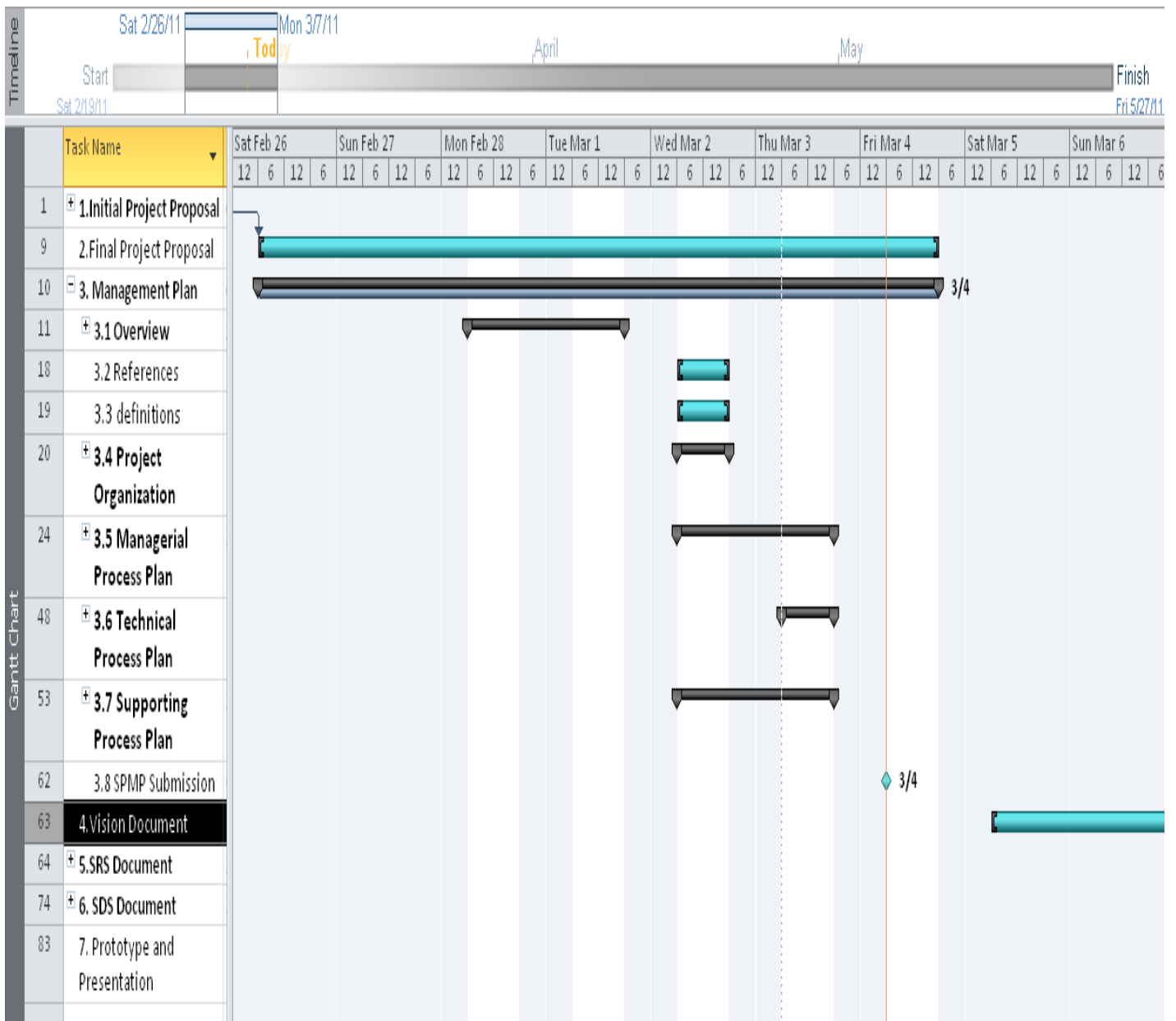
Figure 4 – Schedule Allocation (2/6)

1.Initial Project Proposal

Start: 2/19/11   ID: 1

Finish: 2/25/11   Dur: 6 days

Comp: 0%

1.1 Project Objective

Start: 2/23/11   ID: 2

Finish: 2/23/11   Dur: 1 day

Res: Rakan

1.2 The need of the project

Start: 2/23/11   ID: 3

Finish: 2/23/11   Dur: 1 day

Res: Saeed

1.3 Expected Output

Start: 2/23/11   ID: 4

Finish: 2/23/11   Dur: 1 day

Res: Aziz

1.4 Key Feature

Start: 2/23/11   ID: 5

Finish: 2/23/11   Dur: 1 day

Res: Shaeq
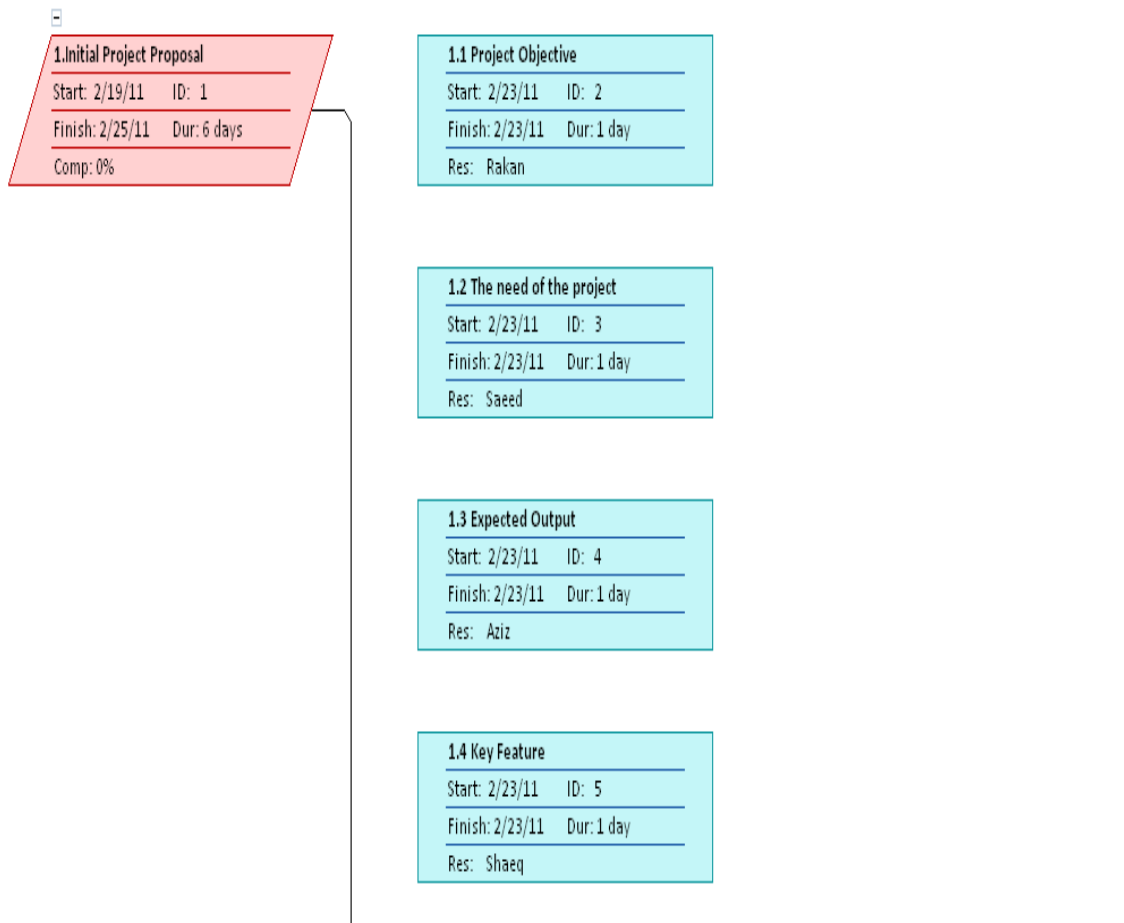
Figure 5 – Schedule Allocation (3/6)

Timeline

| Today | April | May |

Start
Sat 2/19/11

Finish
Fri 5/2

Network Diagram

Finish: 2/23/11 Dur: 1 day
Res: Aziz

1.4 Key Feature
Start: 2/23/11   ID: 5
Finish: 2/23/11   Dur: 1 day
Res: Shaeq

1.5 Project Impact
Start: 2/19/11   ID: 6
Finish: 2/19/11   Dur: 1 day
Comp: 0%

1.5.1 Impact on Individual and Orgniza
Start: 2/23/11   ID: 7
Finish: 2/23/11   Dur: 1 day
Res: Yaser

1.5.2 Impact on Socity
Start: 2/23/11   ID: 8
Finish: 2/23/11   Dur: 1 day
Res: Sameer
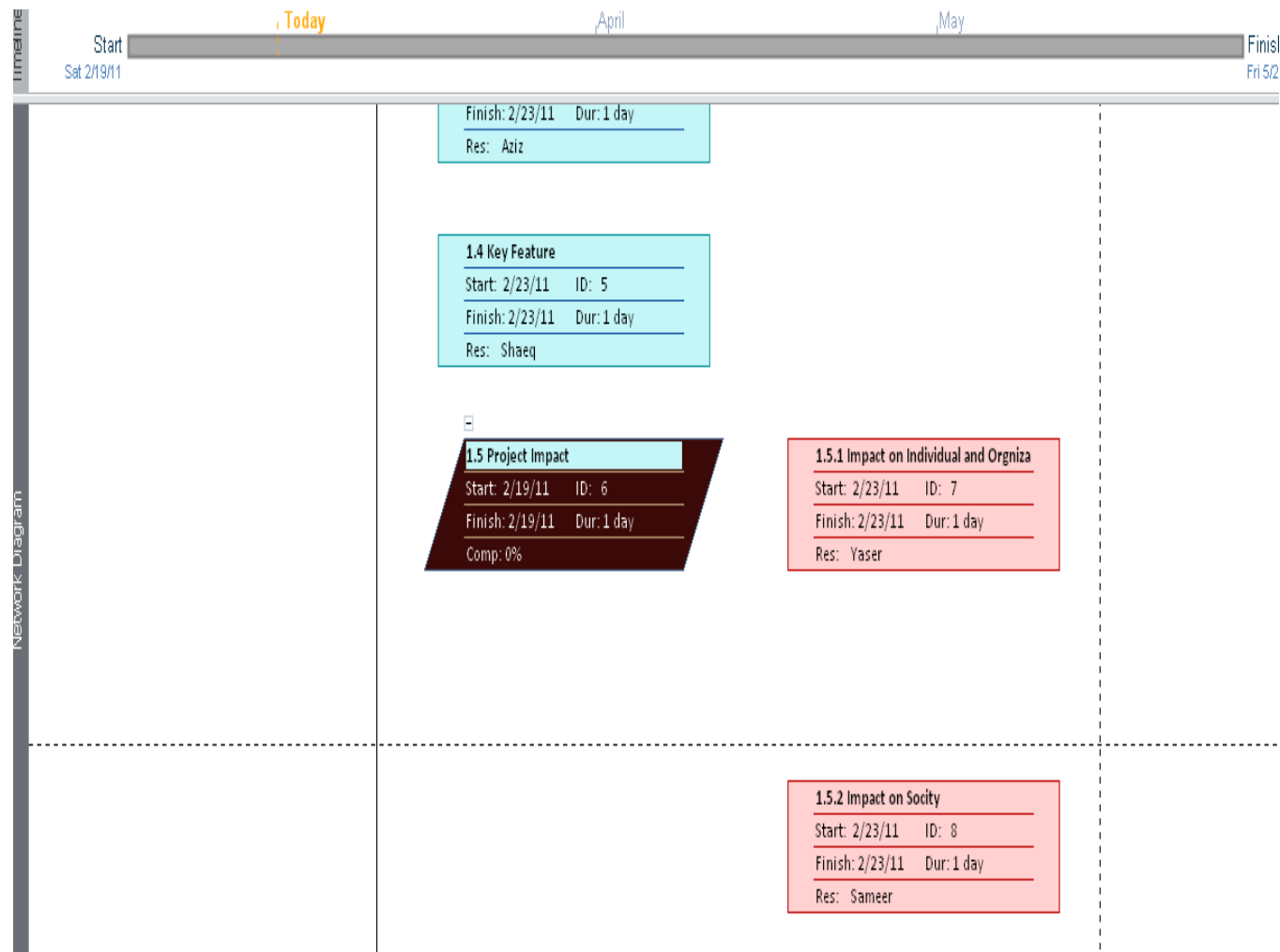
Figure 6 – Schedule Allocation (4/6)

Network Diagram

2.Final Project Proposal

Start: 2/26/11   ID: 9

Finish: 3/4/11   Dur: 6 days

Res:

3. Management Plan

Start: 2/26/11   ID: 10

Finish: 3/4/11   Dur: 6 days

Comp: 0%

4.Vision Document

Start: 3/5/11   ID: 63

Finish: 3/11/11   Dur: 6 days

Res:

5.SRS Document

Start: 3/18/11   ID: 64

Finish: 4/22/11   Dur: 26 days?

Comp: 0%
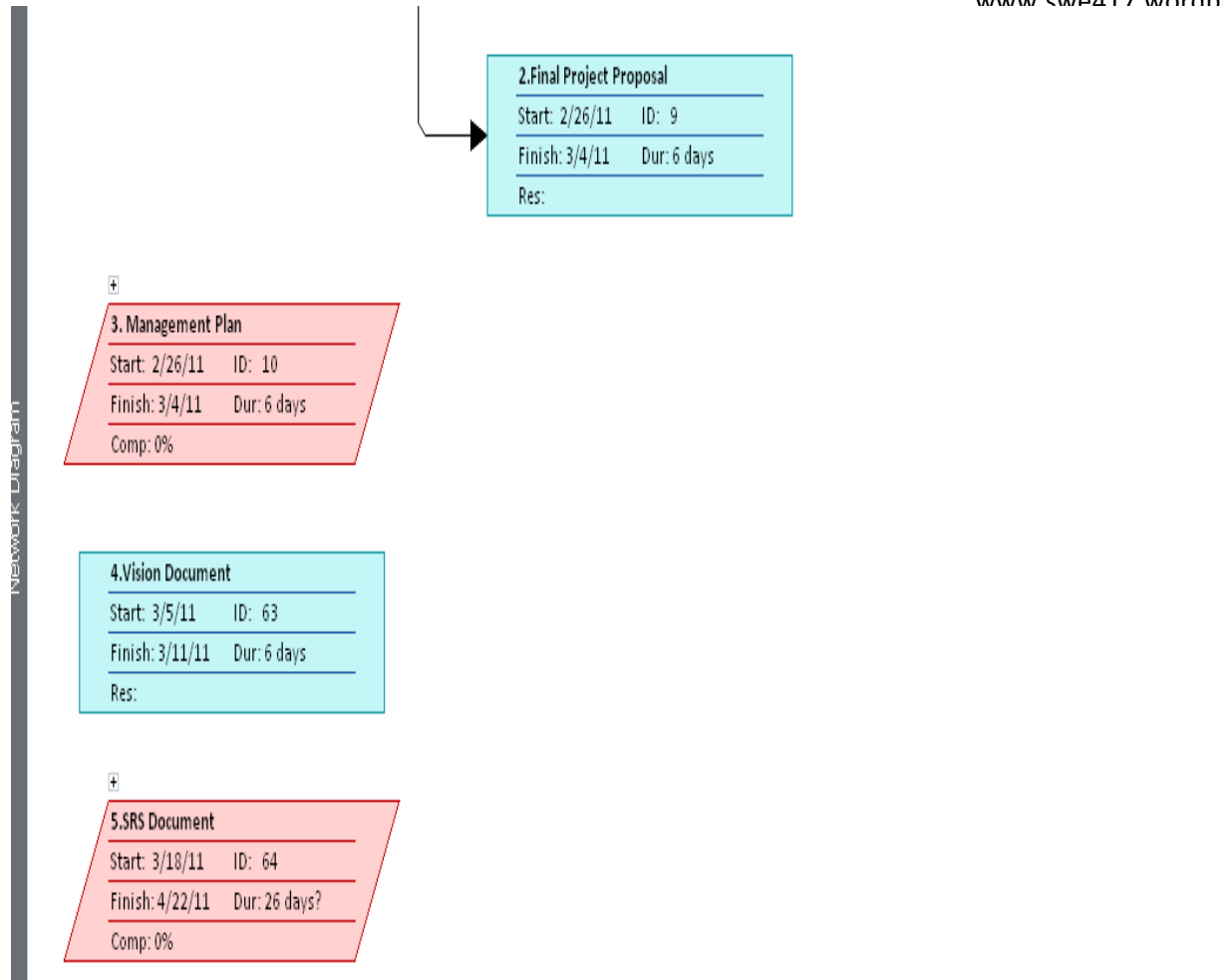
Figure 7 – Schedule Allocation (5/6)

6. SDS Document

Start: 4/29/11 ID: 74

Finish: 5/27/11 Dur: 21 days?

Comp: 0%

7. Prototype and Presentation

Start: ID: 83

Finish: TBA Dur:

Res:
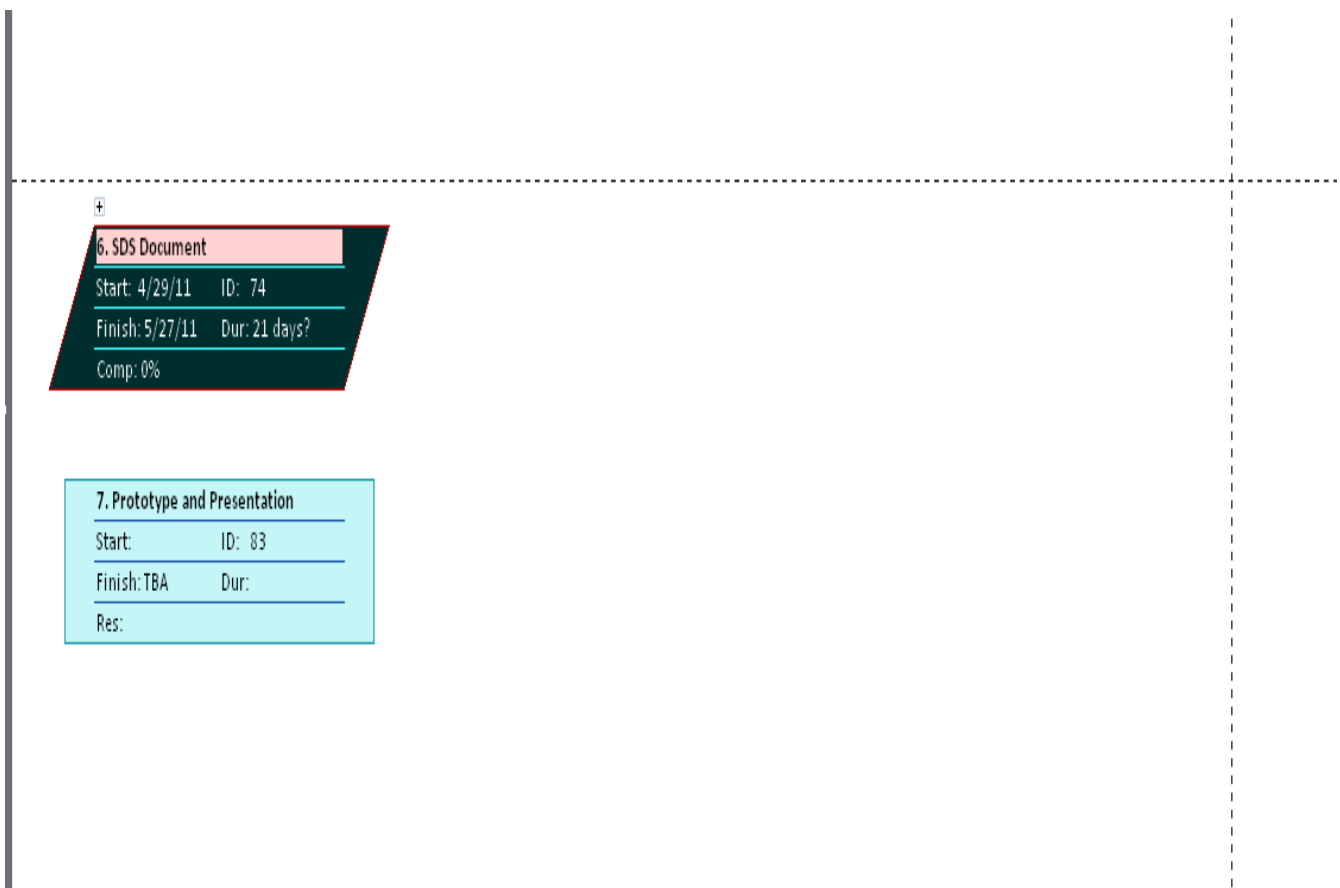
Figure 8 – Schedule Allocation (6/6)

5.2.3 Resource Allocation

Task Name	Resource Names
1.Initial Project Proposal	
1.1 Project Objective	Rakan
1.2 The need of the project	Saeed
1.3 Expected Output	Aziz
1.4 Key Feature	Shaeq
1.5 Project Impact	
1.5.1 Impact on Individual and Organization	Yasir
1.5.2 Impact on Society	Sameer
3. Management Plan	
3.1 Overview	Yasir and Rakan
3.2 References	Yasir and Rakan
3.3 definitions	Yasir and Rakan
3.4 Project Organization	Yasir and Rakan
3.5 Managerial Process Plan	Yasir, Abdulaziz and Shaeq
3.6 Technical Process Plan	Saeed
3.7 Supporting Process Plan	Sameer

Table 4 – Resource Allocation

5.2.4 Budget Allocation

Not applicable.

5.3 Control Plan

5.3.1 Requirements Control Plan

Changes to the requirements should be done through requirement management plan, which state that an authorized request must be sent to the project manager for that phase. Secondly, the supervisor (Dr. Sajjad) will evaluate the impact on the (scope, time and quality) and determine the change correctness. After that, the supervisor (Dr. Sajjad) may inform the sponsor (Dr. Esam) about change impact on the progress of the project if he feels it's important for the sponsor to know. Finally, once the advisor approves the change, the project manager can go ahead and decide wither to make changes on behalf of the team or assign it to a member of the team.

Methods and techniques used to estimate the effects of requirements change are:

1. Critical paths analysis
2. Gantt chart
3. Network Diagram (for illustration purpose)

5.3.2 Schedule Control Plan

We have a baseline for project tasks and activities so we can track and measure our progress in the project depending on the completed and uncompleted milestones. We measure our productivity and evaluate it by looking at weekly progress report to compare what we have planned with actual progress. Moreover, we use critical path with baseline to resolve any demand deliverable in case of any possible delay.

5.3.3 Budget Control Plan

Not applicable to our project. We are planning to use Open source software as much as we can.

5.3.4 Quality Control Plan

Quality control is an important and essential factor to achieve sponsor satisfaction for the project. The project activities will be reviewed. Peer reviews and quality management reviews will be performed. The quality management team would review the project to ensure that requirement meets the need. Customer satisfaction and acceptance will be one of the accepted product quality indicators. We will use control charts to prevent defect and mistake in the progress.

Methods and tools used to control the quality are:

- Software testing (this will include the following):
  - Unit testing

- Integration testing
- System testing
- Acceptance testing
- Prototyping (for customer quality indication).
- Software inspection.

5.3.5 Reporting Plan

Project Stakeholders	Description	Format(s)	Frequency
Supervisor	Deliverables	Paper, dropbox, WebCT	When due for submission [weekly as per given schedule]
	Progress Report	Paper, dropbox, WebCT	When due for submission [weekly as per given schedule]
Project Manager/Members	Individual work	dropbox	When required
Sponsor	Deliverables	Paper, email	Monthly [or whenever requested for one to the Project manager]

Table 5 - Reporting Plan

Performance Reporting:

The project will report performance to plan with the following metrics:

Requirements: requirements change count.

Quality:

- Open defects vs. closed defects over time
- Lines of code (LOC)

Risks: risk exposure

This information will be available and accessible according to the role of the stakeholder.

<u>Approvals:</u>

The following approval signatures are required in order to confirm consent to and validity of this reporting plan:

Name	Role	Date	Signature
Dr.Sajjad	Project Manager		

Table 6 - Approvals

5.3.6 Metrics Collection Plan

Metrics will be collected according to the project plan, quality plan and testing plan. Metrics will be based on deliverables and baseline items. The project will be monitored using MS Project and a spreadsheet, which have complete details about project activities. Our Metrics will be like the following:

Metric	Producer	Objective	Measurement
Management Category			
Development Progress	Team Leader	Track Computer Software Units (CSU) planned vs. Coded	Number of coded CSUs
Schedule	Project Manager	Track schedule adherence	Milestone/event slippage
Requirements Category			
Requirements Traceability	Team Leader	Track requirements to code	percentage of requirements traced throughout program life cycle
Requirements Stability	Project Manager/Team Leader	Track changes to requirements	Number and percentage of requirements changed/added.
Quality Category			
Design Stability	Team Leader	Track design changes	Stability index
Breadth of Testing	Team Leader	Track testing of requirements	percentage requirements tested and percentage requirements passed
Depth of Testing	Team Leader	Track testing of code	Degree of code testing

Table 7 - Metrics

5.4 Risk Management Plan

Risk Management Plan (RMP) will specify the process and the strategy of identifying, assessing, analyzing, and monitoring risks that can occur and affect the Obesity Group Clinic (OGC) system. The general process of risk management that will be followed in this project is specified as follows:
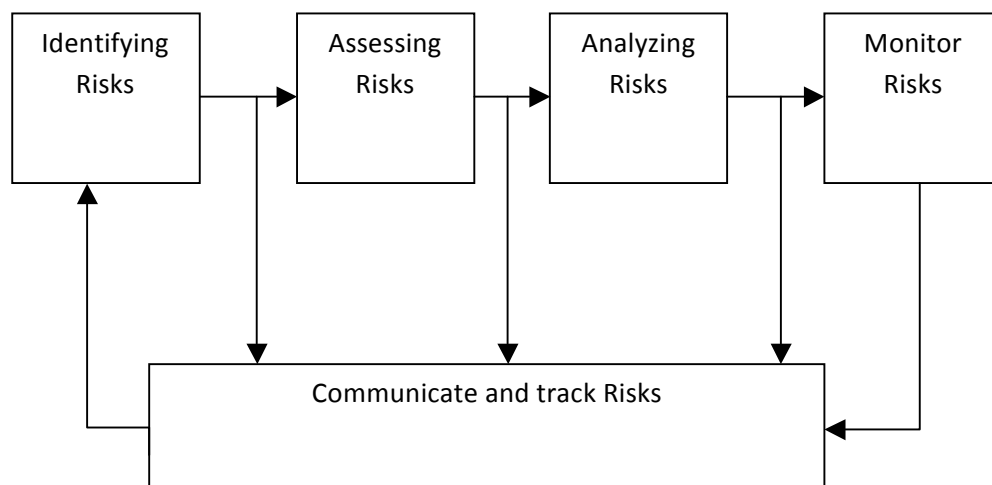
Figure 9 - Risk Management Plan

5.4.1 Identifying Risks

Risks will be considered and identifies thoroughly until the completion of the Obesity Group Clinic (OGC) system. Any risk that is identified at any time of the project life cycle will be added to the (RMP). The following techniques will be followed to help in identifying risks that can affect the progress and the quality of the project:

- Inspecting the work breakdown structure (WBS) of the project to spot risks that may arise.
- Reviewing the risk management efforts of the previous similar system.
- Reviewing the design specifications and the agreement requirements.
- Brainstorming.

5.4.2 Assessing Risks

Each identified risk will be assessed and will be given the probability and the impact values so that all risks can be prioritized and handled based on the assigned values. Assessing criteria will be as follows:

- Probability:

High	The risk is more likely to occur.	> 75 %
Medium	The risk has chances to occur.	25 to 75 %
Low	The risk is not likely to occur.	< 25 %

Table 8 - Probabilities

- Impact:

High	The risk may result in a complete failure for the system.
Medium	The risk may have a major impact that can effect schedule, quality...etc.
Low	The risk may have a minor impact on the project.

Table 9 - Impacts

5.4.3 Analyzing Risks

The assessed risks will be analyzed thoroughly so that proper mitigation actions can be taken to reduce or eliminate the risks. Once the risks are analyzed, they will be categorized with their effects on the project.

5.4.4 Monitoring Risks

Continuous monitoring of the risks will be applied until the completion of the project. If there is any risk that has been identified, assessed and analyzed but not mitigated properly, then the risk must be reported as soon as possible to change the mitigation method. After that, (RMP) should be updated accordantly.

5.4.5 Risk Management Roles and Responsibilities

The team leader of the project will be responsible for the risk management plan of the project. However, the team leader can delegate the responsibility of (RMP) to any member of the team. The project manager or the responsible member will have the following tasks in order to manage the risks:

- The participation in the identification of risks.
- Communicating and tracking risks process and tasks with other team members.

5.4.6 Opportunities Management

Similar to risks, the process is applied to identify, analyze and monitor opportunities that may occur. The opportunities may have a positive impact on the schedule, quality … etc. so, here comes the role of opportunities management where the appropriate steps should be taken to maximize the benefits of the identified opportunity. The same procedure of risk management will be applied here and also with the same roles and responsibilities pointed out in the previous sections.

5.5 Closeout Plan

The project closeout will occur with a presentation along with the written reports and final documents.

The Team is required to present the following information:

1. Software Requirements Specifications [SRS] document.

2. Software Design Document [SDD]

3. Software Testing Document [STD]

4. Product Package Deployment.

5. Product demo and workshop for OGC team.

The project would require a project closeout process for finalization. This process provides a checklist of final deliverables, organization members' approvals and review of project quality measurements. The plan shall include a planned session for the project team to perform a review of the project and complete a document that describes the lessons learned.

6. Technical Process Plans

6.1 Process Model

The Obesity Group Clinic System (OGCS) development will follow the waterfall model. The Obesity Group Clinic System (OGCS) will be implemented in two semesters, so the waterfall model will be used since the deadlines of the deliverables of the system are strict. An iterative approach will be applied to some of the artifacts of the project, since new feedbacks and changes to the requirements of the Obesity Group Clinic System (OGCS) will be given by the project sponsor.
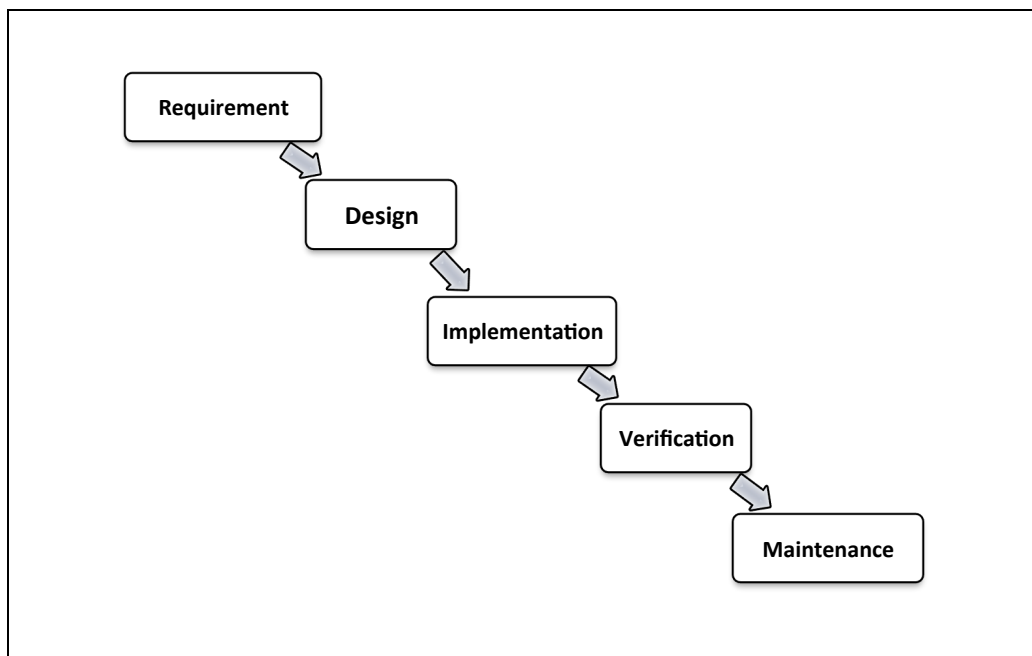
Figure 10 - Waterfall Model

1. Major Work Activities:

For the detailed work activities refer to clause 5 (5.2.1).

a) Developing project proposal and vision document.

b) Developing project plan.

c) Developing software requirements specifications (SRS) Document: in this phase the requirements of Obesity Group Clinic system (OGC) will be described in detailed showing the functional and the non-functional requirements specifications with their related actors.

d) Developing software design document (SDD): In this phase, the design of the Obesity Group Clinic System (OGCS) will be developed from the software requirements specifications (SRS) document. The class diagram, sequence diagram, data flow

diagrams, entity relation diagram etc. will be designed also. Mapping with the SRS document is very important to reflect the OGC's needs in the design.

e) Implementing the software: in this phase, the developer team will code and implement the whole system. In addition, the graphical user interface of the system will be implemented based on the prototypes designed in the (SDD).

f) Verification and validation of the software: in this phase, the system will be tested using the following tests:

   a. Unit testing
   b. Integration testing
   c. System testing
   d. Acceptance testing

g) Deploying and maintaining the software: After the verification and validation phase, the system will be deployed and maintained.

2. Work Products timing: Refer to MS project document to see the detailed timing for each task.

3. Conducting Reviews: whenever a major task or a milestone is achieved a review will be conducted to make sure that the customer's needs are fulfilled. The reviews will be conducted to review the milestones and it will be done by the members responsible of the milestones. Peer reviews and quality management reviews will be followed. In addition to that, Dr. Sajjad, the advisor of the project, will be following the progress of the project.

4. Major milestones: the following milestones will be achieved (refer to MS project to see the time for each milestone):

- Project proposal and vision document
- Project plan of the system
- SRS document
- Software design document (SDD)
- Source code of the system
- Software testing document
- Deploying and maintaining

5. Project Deliverables:

a) Stakeholders deliverables:

Deliverable	Approved by
Software requirements specifications (SRS) document.	Dr. Esam Jalal, Project sponsor Dr. Sajjad, Supervisor By the phase Project Manager
Software design document.	Dr. Sajjad, Supervisor By the phase Project Manager
Software testing document	Dr. Sajjad, Supervisor By the phase Project Manager

Table 10 - Stakeholder Deliverables

b. System end users deliverables:

Deliverable	Approved by
The Obesity Group Clinic system (OGC)	Dr. Essam Jalal, Project sponsor Dr. Sajjad, Supervisor
System online manual.	Dr. Essam Jalal, Project sponsor Dr. Sajjad, Supervisor
System online tutorials.	Dr. Essam Jalal, Project sponsor Dr. Sajjad, Supervisor
Presentation and Demo.	Dr. Essam Jalal, Project sponsor Dr. Sajjad, Supervisor

Table 11 - User Deliverables

6.2 Methods, Tools, and Techniques

The software development methodology that will be used in the Obesity Group Clinic System (OGCS) is the waterfall model as explained in section (6.1). The following methods, tools, and techniques will be used:

1. Development Tools:

#	Tool name	Description
1	Enterprise Architect 7.0	UML Software modelling tool.
2	MS Visio 2007	Diagramming tool.
3	MS project 2010	Project planner tool.
4	CodeIgniter	Open source PHP Web Application Framework
5	MySQL DBMS	Open source Data base management system.

Table 12 - Development Tools

2. Development Languages:

#	Language	Description
1	PHP	Server side programming language.
3	JavaScript	Client side programming

		language.
4	XHTML	Markup language.
5	CSS 3.0	Style sheet language.

Table 13 - Development Languages

3. Development Techniques: The major techniques are shown below, for the rest of the minor techniques refer to section (5.2.1):

Technique	Applied to
Use case diagram Use case description Data dictionary Sequence diagrams	Software requirements specifications (SRS) document.
Class diagram ER diagram Sequence diagram Activity diagram Design patterns technique	Software design document (SDD).
Object oriented programming	Source code.
Black box testing White box testing Graph coverage	Software testing document.

Table 14 - Development Techniques

4. Development standards: The Capability Maturity Model (CMM) will be followed when documenting, designing, implementing, testing etc. To make sure that software best practices are applied in the different life cycle of the system.

5. Work products development and modification policies:

a) When developing any work in the project IEEE software engineering templates must be followed.
b) When developing any work product, agreed upon tools, techniques and standards must be followed.
c) Whenever a work product is done in the project, all related parties are informed.
d) Whenever there is a change, the change must go thru the change control board (CCB) which will consist of the team members in order to approve or disapprove the change. In addition to that, the board may resolve any conflicting changes that may occur, and all related parties will be informed of the decision.

6.3 Infrastructure Plan:

The development of in the Obesity Group Clinic System (OGCS) will need the following resources:

1. Hardware devices:

#	Hardware	Description
1	Workstations	Each team member will have a laptop and the lab's PCs may be used for (OGC) development.
2	server	Hosting service inside or outside KSA
3	Printer	CCSE printers will be used.

Table 15 - Hardware Devices

2. Software tools:

The following software tools will be installed in all workstations:

#	Software Tool
1	MS office 2010
2	Adobe reader 9.0
3	Enterprise Architect 7.0
4	MS Visio 2007
5	CodeIgniter
6	Adobe Dreamweaver
7	Adobe Photoshop

Table 16 - Software Tools

6.4 Product Acceptance Plan:

In this plan, the Obesity Group Clinic system (OGC) team will assess the deliverables of the project and based on that the acceptance of the project will be determined. The (OGC) team will be delivered the following deliverables:

- The complete system of the Obesity Group Clinic (OGC).
- The online user's manuals.
- The online tutorials.
- The system presentation.
- The demo of the Obesity Group Clinic (OGC) system.

7. Supporting Process Plans

7.1 Configuration Management Plan

The following tools will support configuration management functions:

- Dropbox.
- Microsoft Project

Both tools will be used for tracking purpose.

The Configuration identification will be performed in as follows:

- Identifying: the items to be placed under configuration control will be identified.
- Naming: assigning a unique identifier for an item under configuration tool and process. (Deliverables version may be used as a unique identifier).

Configuration control method:

 Configuration control will be as follows:

1. Change requests.
2. Change evaluation: the impact of a change to the configuration item will be evaluated.
3. Change approval/rejection:
    a. Based on an evaluation of the change to the configuration item, permission to
    b. Change the item will be approved or rejected by the project advisor.
4. Change implementation: if the change was approved; change to the configuration item would be allowed to perform.

Status accounting procedure:

The following data about each configuration item will be tracked and available for inspection within the configuration management software:

- Latest approved version of the configuration item.
- Configuration control status of the configuration item.
- Implementation status of the configuration item.

Evaluation method:

Evaluation of changes will be done by project advisor and he will be responsible of the resources appropriate for evaluating a particular change, the project advisor will be a dynamically formed group of team members who are required to participate in the evaluation

of a change. The decision will be dependent on the configuration item affects and the impacts on other configuration items.

Release management method:

When configuration item are suitable to release, the tools to ensure the correctness and availability for delivering will track the history.

Procedure for Change Control Board review of changes:

In order for a change to start or take over, it must be reviewed through the Change Control Board and updated in the configuration management system by the development team. The flow of process will be like the following:

1. Analysing change request this will include the following:

- Analyse change importance.
- Analyse change's impact on the project's scope, schedule and time.
    - Done By development team.

2. Approve or Reject Change Request: decide whether the change worth to be performed and implemented.

- Done By development team.

3. Update change request status: change the request's status to "Approved" or "Rejected".

- Done By development team.

7.2 Verification and Validation Plan

The scope of the validation and verification process will be performed mostly on each project's or product's item and that is includes all documents for software development process:

1. Software requirements document (SRS).
2. Fit criteria.
3. Software Design Document.

The main V&V activities performed on these work products will be inspections and reviews.

All other work products will be informally verified and validated to some degree, but they will not receive formal verification and validation from the verification and validation team members.

Responsibilities:

The verification and validation team will be consists of some members from the development team. The validation and verification team leader will be dynamically chosen from the development team (according to the work schedule).

The Team leader has responsibility for focusing and coordinating the V&V effort of each resource chosen and selected. Moreover, the team leader is ultimately responsible for the outcome of the activities of the validation and verification team.

Tools & Techniques:

Each of the items within the "Scope" will be verified and validated to ensure that they account for all items in the products of the preceding activity. Mainly tracing will be used for development document to ensure that any requirement is represented in the design and any design is triggered in the implementation. The information produced by tracing will be used during software inspections. Software inspections will ensure that work products are faithfully representing the goals.

Regular peer reviews will be held to review in-progress work products. For each verification and validation of a configuration item, the development team will record changes made. These will be recorded with -

1. Problems discovered, and, if known, corresponding solutions.
2. Acceptance or rejection of the item (rejections should be explained).
3. Function impact on the system.

7.3 Documentation Plan

This section describes how the development team is going to document the process of the project's development phases. The development team is required to deliver project documentation to the stakeholders. This documentation is essential to keep stakeholders updated on the development process of the project and to ensure that the development team is on the right track.

Every document may require certain changes and updates. These changes and updates are added to the same document later on after finalizing the changes and gaining consensus from the development team. The documentation is divided into two categories:

1. Deliverable Work:

- Software Project Management Plan (SPMP).
- State Transition Diagrams & UCs.
- Class & sequence diagrams.
- Screens Layout
- Revised Project Plan
- Requirement Review Report
- Revised SRS
- Deployment Architecture
- Package Diagram
- Revised Vision Document
- Requirement Review Report
- Refined Class Diagram
- Algorithms & Activity Diagram
- DB design
- White Box Test Cases
- Software Design Document (SDD)
- Design Review Report
- Revised SDD
- Prototype
- Presentations

2. Non-Deliverable Work:

a) Project team meetings schedule.
b) Project team meeting outcomes.
c) Project team peer evaluations.

The people who are responsible to develop these documents and to whom it should be delivered for are mentioned in the table following tables:

Non-Deliverable Work	Author	Delivered To
Project team meetings schedule.	Yasir Al-Agl	Dr. Sajjad
Project team meeting outcomes.	Shaeq Khan	Dr. Sajjad
Project team peer	Development Team	Dr. Sajjad

evaluations.		

<p align="center">**Table 17 – Non-Deliverable Work**</p>

Deliverable Work	Author	Delivered To
Software Project Management Plan (SPMP).	Development Team	Dr. Sajjad
• State Transition Diagrams & UCs. • Class & sequence diagrams.	Development Team	Dr. Sajjad
• Screens Layout • Revised Project Plan	Development Team	Dr. Sajjad
Revised Vision Document	Development Team	Dr. Sajjad and project sponsor.
• Requirement Review Report • Revised SRS	Development Team	Dr. Sajjad and project sponsor.
• Deployment Architecture • Package Diagram	Development Team	Dr. Sajjad and project sponsor.
• Refined Class Diagram • Algorithms & Activity Diagram	Development Team	Dr. Sajjad.
• DB design • White Box Test Cases	Development Team	Dr. Sajjad.
Software Design Document	Development Team	Dr. Sajjad.

(SDD)		
• Design Review Report • Revised SDD	Development Team	Dr. Sajjad.
• Prototype • Presentations	Development Team	Dr. Sajjad.

Table 18 – Deliverable Work

7.4 Quality Assurance Plan

This section describes the how the development team is going to periodically evaluate the development process by reviewing and auditing the work results to ensure that it is following the standards accredited by the International Organization for Standardization (ISO) and the Institute of Electrical and Electronics Engineers (IEEE).

The quality assurance activities are going to be performed on the following:

a) Software Project Management Plan (SPMP).
b) Software Requirements Specification (SRS).
c) Software Design Specification (SDS).
d) Source Code.

7.5 Reviews and Audits Plan

This section describes the review and audit sessions. It defines what should be reviewed and audited and who should attend these sessions. The review and audit sessions are based on the two categories of deliverables mentioned in section 7.3 which are deliverable work and non-deliverable work. Also this section documents where and when the review and audit sessions are held.

Non-Deliverable Work	Attendants	Place	Time
Project team meetings schedule.	Team members.	Scheduled by the project manager according to the work progress.	
Project team meeting outcomes.	Team members.		
Project team peer	Team members.		

evaluations.		

Table 19 – Reviews 1 of 2

Deliverable Work	Attendants	Place	Time
Software Project Management Plan (SPMP) Development Team Meeting	All team members.	Decided by the team members.	3/3/2011
Vision Document Development Team Meeting	All stakeholders.	Decided by the team members.	11/3/2011
• State Transition Diagrams & UCs • Class & sequence diagrams Stakeholders Meeting	All team members.	Decided by the team members.	18/3/2011
• Screens Layout. • Revised Project Plan. Development Team Meeting	All team members.	Decided by the team members.	25/3/2011
• Revised Vision Document Stakeholders Meeting	All team members.	Decided by the team members.	1/4/2011
• Initial test cases • SRS	All team members	Decided by the team members.	8/4/2011
• Requirement Review Report • Revised SRS	All team members	Decided by the team members.	22/4/2011
• Deployment Architecture	All team	Decided by the team	29/4/2011

• Package Diagram	members	members.	
• Refined Class Diagram • Algorithms & Activity Diagram	All team members	Decided by the team members.	6/5/2011
• DB design • White Box Test Cases	All team members	Decided by the team members.	13/5/2011
Software Design Document (SDD)	All team members	Decided by the team members.	20/5/2011
• Design Review Report • Revised SDD	All team members	Decided by the team members.	27/5/2011
• Prototype • Presentations	All team members	Decided by the team members.	TBA

Table 20 – Reviews 2 of 2

7.6 Problem resolution plan

All problems must be reported to the project manager. The report can be only submitted through e-mail or discussed by calling the project manager. Problem report has high priority to take into consideration. Depending on the nature and reach of the problem, the appropriate team members will be engaged to properly analyse the problem, determine resolution steps, and estimate time required to resolve the problem.

As time is more important than budget or resources on this project, emphasis will be on determining the problem's impact on project schedule. This must include an analysis of the impact of diverting resource attention away from planned project activities toward resolving problems.

Tools and technique will be user in resolving the problems and identify its root causes:

1. Impact analysis.

A priority must be given to a problem. The problems will be prioritized based on the extent of their impact to schedule if they are allowed to persist. The problems will be classified as follows:

1. Critical (highest priority): problem will impact and/or has impacted delivery time of activities on the critical path.
2. High: problem has impacted and continues to impact delivery time of activities not on the critical path; will affect critical path if not resolved.
3. Medium: problem has an ongoing impact to schedule but is not expected to affect critical path.
4. Low (lowest priority): problem has/had a one-time impact, and/or is so minor that critical path will never be affected.

After system is delivered we are not responsible for hardware and software warranty/guarantee.

The Authority and rules for the team members:

Name	Authority	Responsibility	Communication within project
Shaeq Khan	Project Manager	Coordinate the progress of the project. Incorporate with other team members	Reports to Project Advisor (Dr.Sajjad) Communicates with Team members
Rakan Al Ghufaily	Team member	Phase 2 Coordinator • State Transition Diagrams & UCs • Class & sequence diagrams • Screens Layout • Revised Project Plan • Revised Vision Document	Reports to PM Communicates with Team members
Sameer Al-Amri	Team member	Phase 3 Coordinator • Initial test cases • SRS • Requirement Review Report • Revised SRS	Reports to PM Communicates with Team members
Yaser Al-Agl	Team	Phase 4 Coordinator	Reports to PM

	member	• Deployment Architecture • Package Diagram	Communicates with Team members
Saeed Al-Tuwalieb	Team member	Phase 5 Coordinator • Refined Class Diagram • Algorithms & Activity Diagram • DB design • White Box Test Cases	Reports to PM Communicates with Team members and coordinate.
Abdul Aziz Al-Amoudi	Team member	Phase 6 Coordinator • Software Design Document (SDD) • Design Review Report • Revised SDD • Prototype • Presentations	Reports to PM Communicates with Team members

Table 21 – Authority Table

7.7 Subcontractor management plans
Not Applicable

7.8 Process improvement plan:
The improvement plans will be extracted and build from any sources in order to assist the project process and progress. We benefit from the Company Audit that has old projects that company performed. We use benchmarking as a process improvement approach for quality. However, any suggestions for process improvements may be forwarded to the project manager at any time. Suggestions that are well-substantiated and supported by metrics may be considered for implementation in mid-project.