Project Plan
for
Compete

Team 5

Version 2.0

13/10/2020

Document History and Distribution

1. Revision History

Revision #	Revision Date	Description of Change	Author
1.0	09/13/2020	Initial Document	Omar Pervez Khan
2.0	11/24/2020	Added sections 4 to 5.5	Omar Pervez Khan
3.0	12/6/2020	Added sections 5.6 to 7	Omar Pervez Khan

Table of Contents

1. Overview

In 2019, the gaming industry was worth $148.8B. This is expected to increase to $160B by the end of 2020. Upon further inspection, the global gaming market is projecting a 12% CAGR (Compound Annual Growth Rate) between 2020 – 2025. Developing an application for a steadily growing market will prove to be beneficial. This project is for developing “compete”, a mobile application for the gaming community.

Compete, will be available on both Android & IOS. The app is centered around the gaming community. The main objective is to provide a unique platform where gamers can expand their communities, organize tournaments, and share content with each other. Thus, creating a hub for the gaming community to come back to whenever they think of anything associated with gaming.

2. Goals and Scope

2.1 Project Goals

The goal of this project is to build and successfully deploy a one-stop collaborative mobile-based application for the gaming community within a span of 12 months and provide users the ability to manage communities, tournaments, user and team profiles, leaderboards and share media content with each other. The platform shall adhere to the regulations of each respective mobile platform.

2.2 Project Scope

2.2.1 Included

The application will contain different types of accounts, regular users and administrators. It will provide users with the ability to create, manage, join, and search for tournaments as well as communities. Users will also be able to share multimedia content, manage their profiles and view leaderboards for different tournaments. Administrator accounts will be included to manage the entire system.

2.2.2 Excluded

The platform will not include:

- Games to be played but only functionalities such as the creation of tournaments and communities related to these games are included
- Compatibility with Harmony OS
- Compatibility with Windows Phone OS
- Recording of tournaments to be saved

2.3 Assumptions

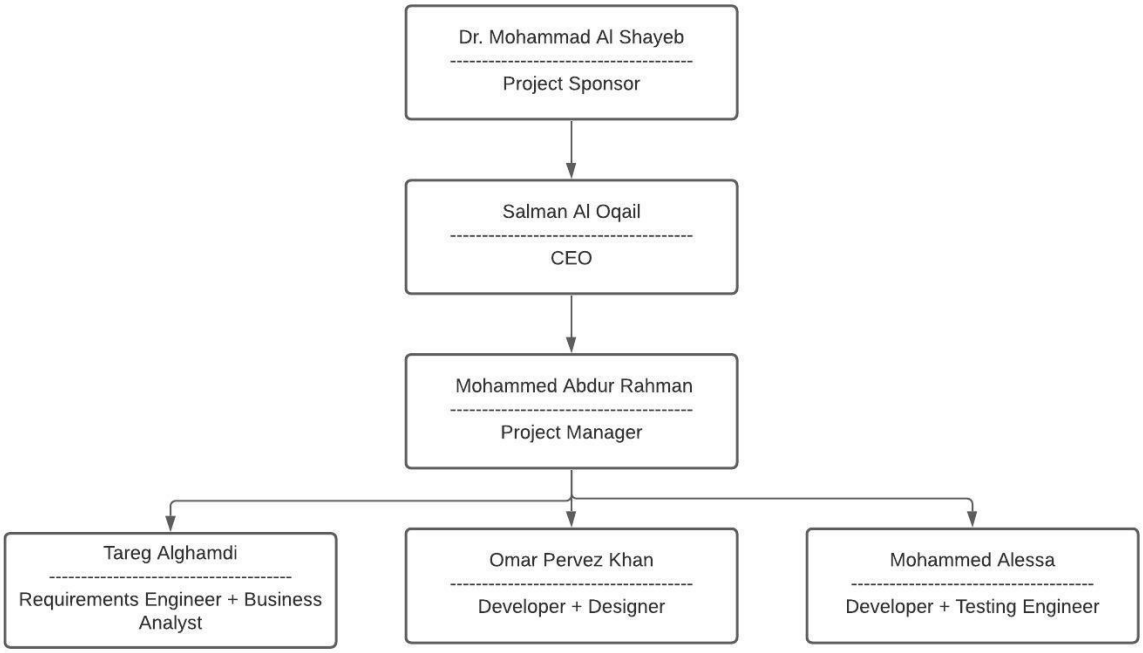
- Multiple programs will have access to the application to allow content sharing.
- Funding for licenses will be provided by the respective departments as per requirement.
- Project stakeholders and team members will always be available for meetings.
- Estimated expenditure throughout the project will remain the same as what was initially projected.

2.4 References

Title	Document Number	Report Number	Date	Publishing Organization
Software Project Management Plan Outline	~	Std 1058-1998	31st August, 1998	Institute of Electrical and Electronics Engineers (IEEE)
Final Compete Schedule (.mpp)	DN.1	~	24th November, 2020	Compete
Key Resources	DN.1	~	3rd December, 2020	Compete
Resource Calendar	DN.1	~	4th December, 2020	Compete
Resource Usage	DN.1	~	4th December, 2020	Compete
Risk Register	DN.2	~	4th December, 2020	Compete

3. Project Organization

3.1 Project Organizational Structure



3.1.1 Project Team

Team member	Role	Involvement duration	Comment
Dr. Alshayeb	Project Sponsor	12 months	
Mohammed Alessa	Developer + Tester	12 months	
Salman Aloqail	CEO	12 months	
Mohammed Abdur Rahman	Project Manager	12 months	
Omar Pervez Khan	Developer + Designer	12 months	
Tareg Alghamdi	Requirements Engineer + Quality Manager	12 months	

4. Schedule and Budget

4.1 Schedule and Milestones

The detailed schedule with their sequencing was done using Microsoft project which provides the following items:

- Work Breakdown Structure
- Work Packages
- WBS dependencies
- Milestones

The link to the Microsoft project file containing the items mentioned above has been referenced in the References section (2.4).

4.2 Cost and Budget

4.2.1 Cost Estimation

We have used two different approaches to cost estimation:

1. Bottom-up estimate
2. Analogous estimate

1. Bottom-up estimate

Bottom-up Estimate			
Work Package	Duration (Some days overlap) working days	Cost (SAR)	Cost rate per day (SAR)
1 - Concept development	50	178,571.5	
Draft idea	10	35,714.3	3,571.43
Draft concept	10	35,714.3	3,571.43
Draft features	10	35,714.3	3,571.43
Must-haves	3	10,714.29	3,571.43
Nice to haves	2	7,142.86	3,571.43
Define main issue to solve	3	10,714.29	3,571.43
Draft Minimum Viable Product (MVP)	4	14,285.72	3,571.43
Draft core functions	4	14,285.72	3,571.43
Define vision	2	7,142.86	3,571.43
Define programming language	1	3,571.43	3,571.43
Define platforms	1	3,571.43	3,571.43
2 - Research	32	130,664	
Alternative or competitors	8	40,000	5,000

Draft differentiation factors	8	24,000	3,000
Draft success factors	8	26,664	3,333
Draft possible cost of Compete	4	20,000	5,000
Define budget for Compete	4	20,000	5,000
3 - Users	16	16,000	
Draft type of users	8	8,000	1,000
Target group	8	8,000	1,000
4 - Prototyping and Design	49	119,940.4	
Create a mockup	12	61,952.4	5,162.7
Create Login/Signup	4	4,400	1100
Create User profile UI/UX	4	4,800	1200
Create my teams Management	5	6,500	1300
Create Upcoming tournaments	5	6,695	1339
Create Manage tournament group UI/UX	3	3,897	1299
Create Tournament	2	2,474	1237
Create manager a gaming community UI/UX	5	7,375	1475
Create Content Sharing UI/UX	4	8,200	2050
Create Administrator	3	5,697	1899
Fix UI/UX issues	2	8,000	4,000
5 - Promoting	5	30,000	
Build landing page	3	15,000	5,000
Test landing page	1	5,000	5,000
Launch landing page	1	10,000	10,000
6 - Development	135	307,500	
6.1 - Front-end development	75	150,000	2,000
Layout	15	30,000	2,000
Navigation	15	30,000	2,000
Graphics	30	60,000	2,000
Animations	15	30,000	2,000
6.2 - Back-end development	63	157,500	2,500
Development	20	50,000	2,500
Database	10	25,000	2,500
Storage	10	25,000	2,500
Test MVP	8	20,000	2,500

Testing and debugging	8	20,000	2,500
Refinement	7	17,500	2,500
7 - Launch application	6	33,000	
Register application on mobile store	1	5,000	5,000
Get approval for application	3	3,000	1,000
Launch application on mobile store	1	10,000	10,000
Market application	1	15,000	15,000
8 – Project Evolution	7	44,200	
Survey your users	1	200	200
Analyze app analytics and gather data	1	1,000	1,000
Get feedback from users	1	1,000	1,000
Fix possible issues	3	42,000	14,000
Total		859,875.9	

2. Analogous estimate

Analogous Estimate

CODE	Project name	Description	Project Expected Duration (months)	Project Actual Duration (months)	Number of Resources	Estimated Cost (SAR)	Actual cost (SAR)	Project Domain	Process Method used
A	Connectify	A mobile app that lets users communicate with each other with high speed message and content delivery	12	13	7	734,000.00	824,000	Mobile App	Agile
B	Language Central	A mobile app that lets users Learn new languages	14	11	10	951,000	977,000	Mobile App	Iterative
C	Alpha	Educational platform for people with disabilities	10	12	10	665,000	648,000	Mobile App	Waterfall
	Compete		12	-	5	884,200			
						Formula= (A*2 + B*1 + C*2)/5 + 100000			
						100000 = EXTRA cost unique to Compete			

A		
Connectify WBS	ESTIMATED COST	ACTUAL COST
Sprint 1: scope definitions	10,000.00	10,000.00
sprint 2: Develop mobile environment ANDROID	10,000.00	10,000.00
sprint 3: Develop main pages(Contacts list page, single user comm. Page, stories page)	300,000.00	300,000.00
sprint 4: develop online calling functionality	150,000.00	150,000.00
sprint 5: Test the system	50,000.00	50,000.00
sprint 6: Develop mobile environment IOS	20,000.00	20,000.00
sprint 7: Import and configure sprint 3 to make it compatible for IOS	70,000.00	70,000.00
sprint 8: Import and configure sprint 4 to make it compatible for IOS	50,000.00	70,000.00
sprint 9: TEST system	50,000.00	100,000.00
sprint 10: push into production	24,000.00	44,000.00
	734,000.00	824,000.00

B		
Language Central WBS	ESTIMATED COST	ACTUAL COST
scope definitions	10,000.00	10,000.00
Develop mobile environment ANDROID	10,000.00	10,000.00
test + validation	11000	11000
Develop main pages(Contacts list page, single user comm. Page, stories page)	30,000.00	30,000.00
TEST + validation + specification	15,000.00	15,000.00
develop online calling functionality	250,000.00	250,000.00
Test the system + Validation + specification	20000	20000
Develop mobile environment IOS	20,000.00	20,000.00
Import and configure ANDROID component to make it compatible for IOS	70,000.00	70,000.00
Import and configure ANDROID component to make it compatible for IOS	50,000.00	50,000.00
TEST system + validation	50,000.00	50,000.00
Redesign software for new specification updates	50,000.00	50,000.00
FIX IOS compatibility issues	50,000.00	50,000.00
Redevelop IOS + ANDROID main pages frontend	230,000.00	330,000.00
test+validation	80,000.00	10,000.00
push into production	5,000.00	1,000.00
	951,000.00	977,000.00

C		
Alpha WBS	ESTIMATED COST	ACTUAL COST
scope definitions	10,000.00	10,000.00
Documentation	50,000.00	55,000.00
Software Designing	70,000.00	76,000.00
Develop mobile environment ANDROID	10,000.00	20,000.00
Develop main pages(Contacts list page, single user comm. Page, stories page)	30,000.00	30,000.00
develop online calling functionality	250,000.00	250,000.00
Develop mobile environment IOS	20,000.00	20,000.00
Import and configure ANDROID component to make it compatible for IOS	70,000.00	70,000.00
Import and configure ANDROID component to make it compatible for IOS	50,000.00	50,000.00
Redesign software for new specification updates	50,000.00	50,000.00
test+validation	50,000.00	10,000.00
push into production	5,000.00	7,000.00
	665,000.00	648,000.00

4.2.2 Budget

Category	Budget for Period in k SAR (*1000)												
	1	2	3	4	5	6	7	8	9	10	11	12	Total
Draft idea	35.714												35.714
Draft concept	35.714												35.714
Draft features	28.571	7.14											35.714
Must-haves		10.714											10.714
Nice to haves		7.142											7.142
Define main issue to solve		10.714											10.714
Draft Minimum Viable Product (MVP)		14.285											14.285
Draft core functions		14.285											14.285
Define vision		3.571	3.571										7.142
Define programming language			3.571										3.571
Define platforms			3.571										3.571
Alternative or competitors			40										40
Draft differentiation factors			24										24
Draft success factors			26.664										26.664
Draft possible cost of Compete			20										20
Define budget for Compete			20										20
Draft type of users			8										8
Target group			8										8
Create a mockup				61.952									61.952
Create Login/Signup				4.4									4.4
Create User profile UI/UX				4.8									4.8
Create my teams Management				6.5									6.5
Create Upcoming tournaments				4.017	2.678								6.695
Create Manage tournament group UI/UX					3.897								3.897
Create Tournament					2.474								2.474
Create manager a gaming community UI/UX					7.375								7.375
Create Content Sharing UI/UX					8.2								8.2
Create Administrator					5.697								5.697
Fix UI/UX issues						8							8

Build landing page						15							15
Test landing page						5							5
Launch landing page						10							10
Layout						26	4						30
Navigation							30						30
Graphics							6	44	10				60
Animations									30				30
Development									5	45			50
Database										7.5	17.5		25
Storage											25		25
Test MVP											20		20
Testing and debugging											2.5	17.5	20
Refinement												17.5	17.5
Register application on mobile store												5	5
Get approval for application												3	3
Launch application on mobile store												10	10
Market application												15	15
Survey your users												0.2	0.2
Analyze app analytics and gather data												1	1
Get feedback from users												1	1
Fix possible issues												42	42
Total	100	67	157	81	30	64	40	44	45	52.5	65	112	859
Total cumulated	100	167	324	406	436	500	540	584	629	682	747	859	859

5. Management Plans

5.1 Integration Management

5.1.1 Configuration Management Plan

Configuration management functions will be supported by the following tools:

- **Git**: Version Control System
- **GitHub**: Hosting Online Repositories for Source Code Management
- **Datadog**: Log Collection & Management Tool

Git

Git will be used to track any changes made to the configuration items. Branches will be used to work on new builds and releases to ensure isolation of any

volatile changes made.

GitHub

The repository for the product will be hosted on GitHub so that the team can effectively utilize Git and plan releases.

Datadog

Specifically, for use in the Test User Acceptance phase under the Release Management process, Datadog will be used to aggregate and log any unexpected issues that arise during the testing phases. This will help the development team identify pain points and rectify them immediately.

Method of Configuration Identification

Configuration identification will be performed in three stages, as follows:

1. Items to be placed under configuration control will be identified
2. Unique identifiers will be assigned that specify the configuration item and its version
3. Configuration items will be placed into their respective sections of the configuration control plan once assigned an identifier

Method of Configuration Control

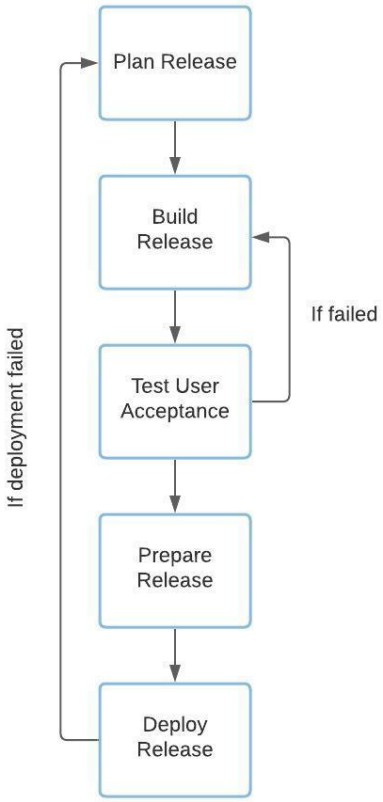
Configuration control will consist of the following:

- Change Requests
  Changes to any configuration item will be requested through the Git Version Control System.
- Change Evaluation
  The impact of the change to the configuration item will be evaluated based on its perceived risk vs. benefit with respect to the budget, schedule, and other configuration items.
- Change Approval/Rejection
  Permission to change the item will be granted based on the evaluation of the change to the configuration item in the Change Evaluation. This permission will be granted by the Change Control Board (CCB) committee.

Release Management Process

The release management process will be used for the deployment of software products and documentation. The process is divided into 5 different phases:

1. Plan Release
2. Build Release
3. Test User Acceptance
4. Prepare Release
5. Deploy Release



Plan Release
During this phase, the entire plan of the release is created. This plan explains how the release is staged and includes requirements, timelines, and delivery dates.

Build Release
Once the release has been planned, the development and design of the product based on the requirements specified is conducted in this phase. For each build, a new branch in the git repository is created.

Test User Acceptance
In this phase, the current build will be deployed to a testing environment for user acceptance to identify any bugs or issues that may arise in a real-world environment. The build will be tested by giving a beta version to several of your employees. Any unexpected behavior will be logged through Datadog.
As issues are identified, the build is sent back for development in the Build Release phase. Once the issues are fixed, the build is once again deployed to test for user acceptance.
The work may flow back and forth from the Build Release phase to the Test User Acceptance phase until the release is approved.

Prepare Release
In this phase, the team will conduct final checks to ensure the current build meets the requirements outline in the release plan. Once the review is completed, all findings are validated and finalized for the release and the build is marked as a minimum viable product.

Deploy Release
In this phase, the product is released into production. Users will be notified of any changes that have been made from the previous releases. The branch containing the build in the git repository is merged into the production branch. The performance of the release is evaluated and discussed. If the deployment was not successful, the process restarts from the first phase where the entire release is planned once again. Issues that arose during the deployment phase are considered.
If there are any minor issues found, they are identified and documented and will be addressed in the next release.

5.1.2 Change Management Plan

The process used to manage changes to the project will be as follows:

A change request must be created and submitted each time the client needs a change that will impact the project schedule. A change request will be sent to the Compete team through Slack. The Compete team will then process the change request, assess the feasibility of the change based on the risk and perceived benefit it accompanies, and the project manager will then approve or deny the change request.

If the change is denied, the team and the project manager will sign the change request indicating the agreement that no change is to be made. If the change is accepted, documents that reference the newly updated requirements will be modified to reflect the changes. The team, project manager and client will sign the change request indicating the agreement to the change.

Once a decision has been made, the change request will be documented in the Changes document entailing the team's decision regarding the request. Any changes or updates regarding the status of a change request will be made in the Changes document.

5.1.3 Delivery Plan

Deliverable #	Deliverable	Planned Date	Receiver

D1	Software Requirements Specification (SRS)	1/1/21	Project Sponsor
D2	High Fidelity Prototype	3/3/21	Project Sponsor
D3	User Interface	6/23/21	Project Manager
D4	Minimum Viable Product	9/21/21	Project Sponsor and Project Manager
D5	Source Code	9/25/21	Project Sponsor
D6	End-User Documentation	9/25/21	Project Sponsor

5.2 Scope Management Plan

All changes and management activities with concern to the scope will be carried out by the Project Manager.

Proposed changes to the scope may be initiated by the Project Manager, Stakeholders, or any team member. Any request for change in project scope will be processed through the project's change management procedure. All scope change requests will be submitted to the Project Manager who will then evaluate the requested change. The change will be analyzed for its impact on project time and project costs, and a risk assessment of the scope change will be conducted.

The approval of the change request will be done by the Change Control Board (CCB) and the Project Sponsor. Once a change request has been approved, the Project Manager will update all effected project documents and relay the changes made to the scope to all stakeholders. The change will also be documented in the Change document. If the change request is declined, it is added to the Change document with the reasoning of its declination and the Project Manager will relay the decision made to all the stakeholders.

After being provided with feedback from the Project Manager, the Project Sponsor will be responsible for the acceptance of the final project deliverables and the project scope.

5.3 Procurement Management Plan

We have five major steps for a procurement process, which are:

5.3.1 Specification

In this step, the purchasing department will be allowed to communicate with the project manager to develop and approve a list of procurement items necessary for project implementation. The department will specify the approved items to external vendors.

5.3.2 Selection

In this step of the project procurement process, we will require the department to find potential suppliers which can procure the necessary items, according to the specifications. For this purpose, the department needs to set vendor selection criteria, which may include such measures as Delivery, Service Quality, Cost, and Past Performance.

5.3.3 Contracting

In this step the department will communicate with the suppliers to discuss delivery dates and payment conditions to ensure “on-time” delivery of the ordered items within the stated project budget.

5.3.4 Control

Through arranging regular meetings with the vendors, tracking delivery progress, reviewing the ordered items against the approved product specifications, and making necessary changes to the procurement contract, the department will control the process and ensure successful accomplishment.

5.3.5 Measurement

The final step of our procurement management process is using a system of performance indicators and measures for assessing the effectiveness and success of the entire process. The project manager will set up such a system and the purchasing department will use it in measuring the process. Special meetings and workshops will be conducted to view KPIs, intermediate results of staged delivery, adherence to product specifications, communications with suppliers, and the like. In case any deviations or gaps are revealed, the department will notify the project manager and make necessary changes to the procurement plan.

5.4 Schedule Management Plan

The project schedule will provide a roadmap for the team by providing all the required activities that will collectively achieve project goals and objectives.
A detailed approach and methodology for proper schedule management and the roles and responsibilities of all the parties involved is provided in the two sections below.

5.4.1 Approach and Methodology

Defining tasks
Prior to the initiation of the project, the project manager will conduct a meeting with the assigned team to discuss the project deliverables. The team will follow an analogous approach to create a WBS, and the tasks will be ordered according to their priority at each level. Furthermore, milestones will be clearly defined to help the project manager and the stakeholders view the progress at the topmost level.

Assigning tasks
After creating the WBS, the team, with the assistance of the project manager, will assign work packages to resources. Each work package will be designated based on the technical knowledge, the experience, the communication skills, and the level of interest of the resource.

Estimating Task Duration
To accurately estimate each task duration, expert judgement, data analysis, and PERT analysis will be used. The project manager will consider the resource's estimation as well. The units of estimation will be in terms of days for work packages and weeks for higher level deliverables.

The formula for the PERT analysis is given below:

$$Estimate = \frac{Optimistic + (4 * Most\ Likely) + Pessimistic}{6}$$

Sequencing Activities
Critical Path Method (CPM) along with Precedence Diagraming method (PDM) will be used to sequence all the tasks. This will determine the earliest time for Compete's completion.

Developing Gantt chart
After defining the activities with their estimated time duration and sequencing them, a Gantt Chart will be produced which will contain the full schedule of the project with their start and finish date, and the assigned resources for each work package.

Controlling Schedule
The change control Board will handle all the changes that may occur during the project timeline.

Scheduling Tools
Microsoft Project is the main project management tool that will be used to create the Gantt chart and the Work Breakdown Structure.

5.4.2 Roles & Responsibilities

Name	Role	Responsibility
Mohammed Al Shayeb	Project Sponsor	• Reviews & Approves schedule baseline and progress reports.
Salman Al Oqail	CEO	• Provides status reports to the project sponsor.
Mohammed Abdur Rahman	Project Manager	• Leads the team in developing the schedule management plan and the project schedule.
Omar Pervez Khan	Quality Manager + Requirements Engineer	• Assists the project manager in creating the schedule management plan. • Assists in developing activity duration estimates. • Makes schedule change and risk recommendations to the project manager.
Tareg AlGhamdi	Developer + Designer	• Assists in estimating schedule activities. • Provides progress reports during the project (to the project manager) • Notifies possible scheduling risks and issues during the project.
Mohammed Al Essa	Developer + Testing Engineer	• Assists in estimating schedule activities. • Provides progress reports during the project (to the project manager) • Notifies possible scheduling risks and issues during the project.

5.5 Cost Management Plan

Cost management is typically the project manager's responsibility. Cost management involves not only managing the budget, but also planning, and preparing for potential risks. Risks can set projects back and sometimes even require unexpected expenses.

5.5.1 Cost Estimation

The cost estimation will be done by using the Bottom-up estimate approach where the cost performance is measured by dividing the work-to-work packages, then summing all the packages to get the total cost. Furthermore, to eliminate bias towards underestimation, the project manager will consult other project managers of ongoing projects within the company that are similar to the project. All parties involved in the project will attend all meetings and work together to produce the cost

baseline. To help with better estimation, we will use the earned value management of previous projects and learn from their cost performance metrics.

5.5.2 Controlling Cost

To monitor and control the cost, we will use the cost management plan, conduct meetings, and use quality control (i.e. control charts, histograms, and cause and effect diagrams) methods. Monthly cost performance reports will be provided to the stakeholders and the project manager. If the cost baseline must be revised, both the project manager and Change Control Board (CCB) can approve budget changes.

5.6 Quality Management Plan

Roles & Responsibilities

1) **Project Manager**
   - Plan and implement quality processes
   - Relay current project quality status to project staff
   - Communicate any quality risks or issues to stakeholders
   - Ensure quality control practices are performed at every stage
   - Ensure that the project sponsor approves all quality objectives included in the in the Quality Management Plan
   - Develop and track project metrics
   - Monitor quality activities, resources, and timelines

2) **Quality Manager**
   - Identify and track quality standards and metrics
   - Implement quality control techniques to control the quality of the deliverables being produced.
   - Implement quality assurance techniques to ensure the quality of deliverables being produced
   - Communicate quality risks or issues to the Project Manager

3) **Testing Engineer**
   - Perform User Acceptance testing on the release before production to ensure quality

Quality Assurance

The Compete project will apply a quality assurance process to provide adequate assurance that the software products and processes in the project life cycle meet the specified requirements and follow the established plans.

The Quality Manager and Project Manager will prepare and execute a quality assurance plan containing quality standards, methodologies, procedures, schedules, and responsibilities. To ensure quality, an iterative process will be used for the entirety of the project life cycle.

The Project Manager, Quality Manager and the development team will perform evaluations at intervals throughout the project to make sure that all processes are being correctly executed.
The Quality Manager will oversee day-to-day quality management and carry out process audits on a weekly basis. They will also monitor all the process's metrics and make sure the processes follow the project's standards. If any issues are found, the Quality Manager will meet with the Project Manager and discuss what needs to be done.
The development team will identify, review, and report any issues related to the quality characteristic found in the project deliverables. These characteristics could be anything such as completeness, consistency etc.

Quality Monitoring and Control

This section will describe the methods that will be used to measure, monitor, and control quality of the work processes and products.

- **Audits**
  Audits of work processes can be requested by the Project Manager, CEO, or the Project Sponsor. Once requested, these audits will be done to verify the adherence of procedures and processes as described in the Quality Assurance Plan.

  Audits of the software (source code) will be performed to assure that a minimum level of documentation quality exists.

  The Project Manager will develop a procedure for requesting an audit and will make it available to the necessary individuals.

- **Issue Tracking**
  Defects and other issues will be logged and tracked in a document template prepared by the Project Manager. This document will then be filled out by the Quality Manager after determining the root cause of the issue and possible solutions to mitigate/solve the issue.

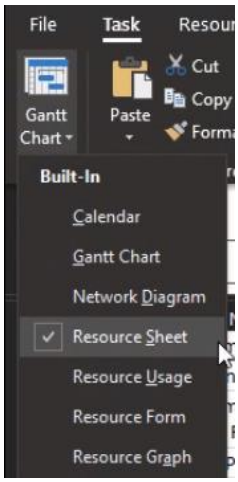
  The issue will be analyzed using Cause-and-effect diagrams. The quality manager will draw out the possible root causes and attach the diagram alongside the issue in the document prepared by the Project Manager.

- **Monitoring Metrics**
  Quality-specific metrics will be collected and stored in a document prepared by the Project Manager and the Quality Manager. This document will contain a quality metric and the minimum-acceptable-value of this quality metric. If the value of quality metric drops below its minimum-acceptable-value, the Quality Manager will relay the issue to the Project Manager and will prompt an investigation.

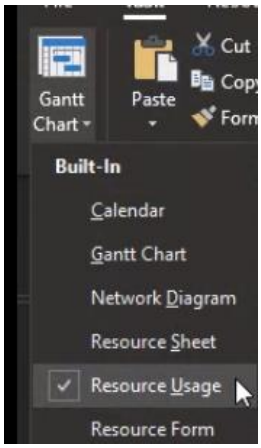
5.7 Resource Management Plan

The key resources and Resource Calendar can be found attached with this SPMP Document. Please refer to document DN.1 in the References section (2.4) to view the Key Resources and the Resource Calendar.

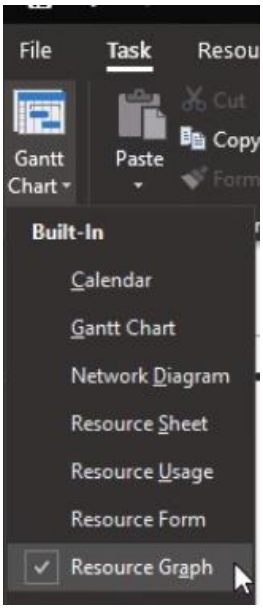
The Key Resources can be found by opening the DN.1 mpp file and navigating to the resource sheet.



The Resource Calendar can be found by opening the DN.1 mpp file and navigating to the resource sheet.



The Resource Graph showing the allocation/over-allocation of hours can be found by opening the DN.1 mpp file and navigating to the resource sheet.



5.8 Communication Management Plan

The communication management plan is shown in the communications matrix below.

Meeting Type	Objective	Medium	Frequency	Meeting Lead	Meeting Members	Deliverable	Format
Project Team Meetings	Review status of the project with the team	Face to Face or Conference Call	Weekly	Project Manager	Project Sponsor, Project Team	Agenda, Project Schedule	Document
Technical Meetings	Discuss and develop technical aspects of the project	Face to Face	As required	Developer Lead	Developers, Designer	Agenda	Documents and presentation
Monthly Project Status Meetings	Report on the status of the project to management	Face to Face or Conference call	Monthly	Project Manager	Project Sponsor, CEO, Quality Manager, Developers	Project Status Report, Project Schedule	Documents and presentation

Project Status Reports	Report of the status of the project including activities, progress, issues.	Email	Monthly	Project Manager	Project Sponsor, CEO, Project Team	Project Status Report, Project Schedule	Document

All conference calls will be held through Microsoft Teams. Documents will be made available through Microsoft SharePoint to all concerned stakeholders.

5.9 Risk Management

The purpose of risk management is to mitigate the cost of negative risk and its impact on the project deliverables and the project main objectives and aggravate the cost of positive risk also referred to as opportunities. This section will guide the project stakeholders, project manager, project team throughout the project's lifecycle.

After the project initiation, there will be 2 meetings for identifying possible risks. In the first meeting, the project manager, and the CEO of the organization along with a panel of experts will attend and use the Delphi Technique to identify risks and make predictions about future developments of the project. Stakeholders will be among the panel of experts. To avoid bias, there will be repeated rounds of questioning and all attendees can provide anonymous inputs regarding future events of the project. In the second meeting, the project manager and the project team will get together for brainstorming sessions to identify any technical risks related to the project.

Following the project initiation, the team and the project manager will perform Risk Analysis. Risk analysis will be divided into three categories, mainly, quantitative, and qualitative. Risk events will be ranked based on these two categories.

For Qualitative risk analysis, we will use the top 10 risk item tracking table which will be updated every month throughout the course of the project. For the risks that are of low priority we will use a watch list to monitor them regularly. As for quantitative risk analysis, the technique we will use is the simulation technique. More specifically we will make use of Monte Carlo analysis since, this technique is best suited for compete, keeping in mind the duration of the project and its deliverables. This will allow the concerning parties to analyze the expected behavior of the system and view performance metrics.

The project manager is responsible for monitoring risks and reporting to key stakeholders. The project manager will be responsible for tracking the previously identified risks, identifying new risks and perform regular risk management evaluation using the above risk analysis techniques and ensure that all documents pertaining to risk management including the risk register and project management

plan stays up to date. In the event of any change the project manager must request the CCB for approval and consult with key stakeholders if needed.

Microsoft project will be the perform all risk management activities including Monte Carlo analysis. Microsoft Excel will be used to create the risk register spreadsheet for the project.

5.9.1 Risk Register

The following spreadsheet/ table contains all the risk events. The document will also be provided with the SPMP. The document is DN.2, please see References (2.4) for more information if the following images are not sufficient.

Risk ID	Rank	Name	Description	Category	Root Cause	Triggers	Risk Response	Risk Responsibility	Probability (Low - Medium - High)	Impact (Low - Medium - High)	Status
R1	1	Scope	Scope is not well defined	Scope	Not clear requirements	scope understanding issues	**AVOIDANCE:** communicate with project sponsor	Project Sponsor	Medium	High	CLOSED
R2	2	schedule estimates Error	work packages are not estimated correctly and have inconsistencies	Time	lack of expert judgement + not using good software tools	More than 4 work packages were delivered late	**MITIGATION:** try to work and update the schedule estimates.	Project Manager	Low	Medium	IDENTIFIED
R3	3	Resource overallocation	Resources are poorly allocated to the tasks with few doing 80% of the work	HR	Lack of resources available	can be identified using MS project	**AVOIDANCE:** Use Critical Path method	Project Manager	Low	Low	MANAGED
R4	3	Resource conflicts	The project team members have conflicts leading to delay in schedule and poor quality	People Risk	Occurs in new teams	Can be identified during daily meetings	**MITIGATION:** have team building exercises (eg: dinner parties, golf, etc.)	Project Manager + Project Team	Low	Low	Re-Open
R6	3	unprecedented equipment/software cost	unprecedented cost of utilities/software	Financial Risk	Not clearly discussing the softwares to use and their compatibility with other components	Identified when there are software compatibility issues and/or when the subscription ends when not monitored	**AVOIDANCE** when discussing how the project is going to be implemented research all the resources that are needed. (softwares familiar to the team and are useful for the project are preferred)	Project Manager	Low	Low	CONTROLLED
R7	3	Residual Risk	Risks are not fully been taken care of	Residual Risk	Occurs after a risk has been mitigated	Identified when a different risk is mitigated or avoided.	**ESCALATION:** Inform the CEO and project sponsor/stakeholders regarding this matter.	Project Manager	Low	Low	Open
R8	3	donating for better reach	A positive risk, where the company donates money to support poor families and also gives jobs	Market Risk	Brand reach	During a festival, or an occasion or identified by the CEO	**EXPLOIDATION:** Do what ever it take s to increase positive risk	CEO	High	High	MANAGE IN PROGRESS
R9	3	Contingency	known unknowns cost	contingency t	Can occur from unknown sources	when they occur	**AVOIDANCE:** Regularly monitor and control the project and try to find risks that may occur in the future.	Project Manager	Medium	Medium	OPEN
R10	3	culture conflicts	Problems: project team are from multiple countries leading to culture conflicts	People Risk	ethnocentrism	During daily meetings	**AVOIDANCE:** develop a good work culture document. Hire a Chief complience officer	Project Manager	Low	High	RE-OPNED
R11	3	Stakeholder reply delays	The stakeholders take a long time to respond to calls and do not attend required meetings	People Risk	Lack of stakeholder interest	stakeholder(s) do not respond for more than 1 week	**MITIGATION:** Find root cause of the issue and motivate the stakeholder by solving their issues	CEO	Low	High	CONTROLLED
R12	3	scope creep	gold plating; project team does not spend time to do their tasks	scope creep	poorly defined scope/requirements	when contacted to CCB more than 5 times during 1-2 months	**MITIGATION**: Clearly define the scope	Project Manager	High	Medium	IN PROGRESS / MANAGED
R13	3	competition	Discord also has a mobile application similar to compete. If they implement tournaments features. They will have an upper hand.	Competitor risk	Already established company which does something similar	Identified during project initiation	**AVOIDANCE** Emphasise on key features of compete's mobile app + brand reach+make the app easily accessible and colorful	Project Manager	Low	Medium	ASSESSED
R14	3	Resource delays a work package	when a resources takes longer time that estimated. This risk		Lack of knowledge in area or lack of interest in work	when resource delays work package	**AVOIDANCE:** Make work packages clearly defined; Assign resources where he/she is interested in	Project Manager	High	Low	CONTROLLED
R15	3	marketing	Poor use of marketing strategies.	management risk	interest rate risk, equity price risk, foreign exchange risk, and commodity risk	when the product is released	**AVOIDANCE:** analyze and quantify market risk and develop risk strategy using delphi technique	Project Manager	High	High	OPEN
R16	3	Theft of equipment, intellectual property	employe theft or outsider theft or Hacking attempts	Theft	Lack of security	when multiple items are stolen	**AVOIDANCE:** Hire security + make the mobile app secure	CEO	Low	5	OPEN
R17	3	Customer refuses to accept deliverable	During key deliverable validation, the customer may not accept part or whole of the deliverable	Scope Validation	Lack of communication from between the project manage and team, and the client	when the customer refused to accept deliverable	**AVOIDANCE:** show the client progress of the work, and seek validation along the process	Project Manager	Medium	High	ASSESSED
R18	3	unplanned work items	work items that are necessary for project completion but have not been listed in the WBS	contingency risk	scope not clearly defined	when the stakeholder mentions a work item not previously considered	**MITIGATE:** assign free resources to the task and add it to the Critical path	Project Manager	Low	Medium	MANAGED/CLOSED
R19	3	Software Bugs	Bugs created as a result of poor code quality	Quality	poor code quality	when the software is intesting phase or in production phase	**AVOIDANCE:** Hold seminars abour code quality and management. Give training to resources about code quality.	Quality Manager	High	Medium	OPEN
R20	3	Tech environment	Not using the right tools and technologies for building the app	Technical\Technology risk	Poor background knowledge	during the development process	**TRANSFER:** Hire consultants to help decide better.	Project Manager	Low	Low	CLOSED

5.10 Stakeholders Management Plan

Internal Stakeholders

- CEO, Project Manager, Project Sponsor, Project Team, Quality Manager

External Stakeholders

- Project's customers and competitors

Analysis of stakeholders' power/interest

High	CEO	Project Sponsor, Project Manager
Low	Project Team	Customers, Competitors
Power ↑ Interest →	Low	High

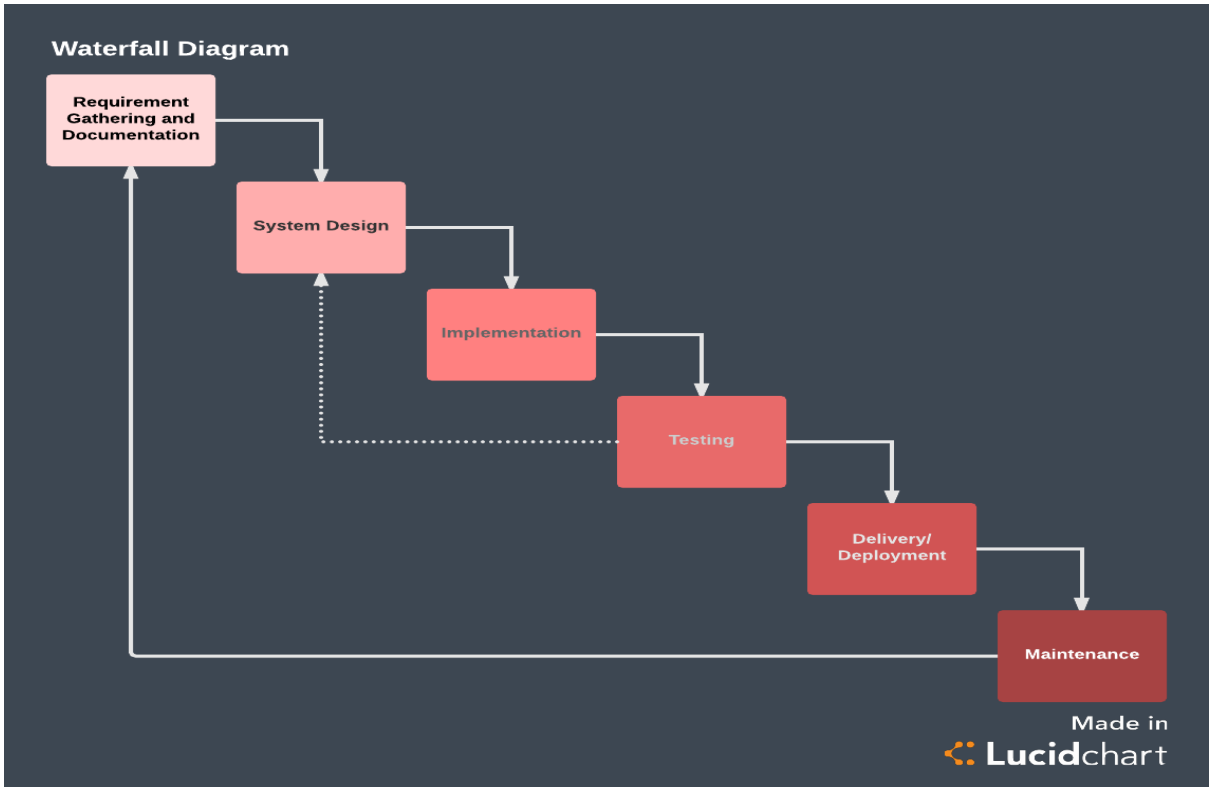
Stakeholders management strategy

- The high-power and high-interest stakeholders will be managed with the utmost care.
- The high-power and low-interest stakeholders will be kept satisfied.
- The low-power and high-interest stakeholders will be kept informed.
- The low-power and low-interest stakeholders require the least effort. So, they will be monitored.

6. Development Process

After discussing with the members of the group for what is the best development process that is suitable for our project, we agreed that we will use waterfall methodology. There is a lot of reasons why we choose waterfall, one of the reasons that make us decide to use waterfall is that we have clear requirements so we will not need to change the requirement in the feature. In waterfall the goal of the project is clear from the start so the members will be aware of the overall goal from the start and this will help the members to work in the right track and not getting lost in the details in the future. The most important reason for choosing waterfall because of the combination between using waterfall and the work breakdown structure (WBS) because it will make managing the tasks easier, also the project planning will be more organized.

So, as you can see from the picture, we can start with gathering the requirement by creating a use case diagram, sequence diagram etc. and documenting the ideas, features, programming language, platforms, goals, and scope. The next phase we will start with the design so we can hire a designer so he can make a rough ketch and after that working on the UI/UX. The third phase we will start developing so we will develop the front and back ends. The fourth phase we will test the whole program. In the fifth phase we will lunch the program, so in this phase we will work on getting the approval to lunch and choosing where the program should be lunched in. In the last phase we will maintain our program so we can publish a survey to the users so we can get some feedback from the users and after that we can work on fixing the issues.



7. Abbreviations and Definitions

CCB	Change Control Board
CAGR	Compound Annual Growth Rate
OS	Operating System
IEEE	Institute of Electrical and Electronics Engineers
MPP	Microsoft Project Planner
SRS	Software Requirements Specification
CEO	Chief Executive Officer
UI	User Interface
UX	User Experience