

EMGT 5220. Engineering Project Management

PROJECT PROPOSAL



Building a Game Studio to Develop Mobile Game

By

Group - 1

Ashok Thiruvengadam

Rahul Rudra

Tianyu Chang

Sindhu Koppiseti

Aditya Abhijeet Hongunti

TABLE OF CONTENTS

1. Cover Letter	- Pg. 3
2. Executive Summary	- Pg. 4
3. Project Objectives	- Pg. 5
4. Project Organization	- Pg. 6
5. Implementation Plan	- Pg. 7
5.1 Work Breakdown Structure	- Pg. 7
5.2 Scheduling	- Pg. 7
5.2.1 GANTT Chart	- Pg. 7
5.2.2 PERT Analysis	- Pg. 7
5.3 Responsibility Chart	- Pg. 7
6. Risk Analysis	- Pg. 8
7. Monitoring and Control	- Pg. 10
8. Financial Plan and Resource Allocation	- Pg. 14
9. Conclusion	- Pg. 17
Appendix	- Pg. 18

1. COVER LETTER

To,
Dr. Andrei Guschin
College of Engineering
Northeastern University
Seattle, WA-98109

August 20, 2022

Subject: Building a Game Studio to Develop Mobile Game.

Dear Professor,

We are pleased to submit our project proposal for Building a Game Studio to Develop Mobile Game. Recent trend shows that there has been a great success in generating revenue by developing free to download mobile game. The segment is expected to grow 1.7 times faster than the rest of the gaming market and surpass \$222 billion in revenues in 2022. After researching the iOS and android game leaderboards, we found an interesting fact that most downloaded games were free games and among them many were more of mind games of different genres: such as Puzzle game, Action game and Arcade games, etc. We found an interesting fact that top grossing e-games on iOS marketplace and Google Play are mostly free. in-app purchases remain the primary contributor to revenue for top-grossing games. Gamers from age of 14-26 have spent 2.7 billion euros in 2021 which is likely to increase in upcoming years. If we make a mind game, we have more chance to make a trendy game, and to make money in the game.

The report describes the project by providing detail definition of the work involved and the various scheduling and financial information pertaining to the phases of the project. We would be setting up the gaming studio headquarters at Palo Alto, Silicon Valley and the other R&D hub would be located at Bengaluru, India. The HQ will make all financial and marketing related decision and the R&D hub would take care of most of the technical aspects in development. The hub will develop around 5 games within a span of 8 months and will cost \$12.45 million. The estimated start date is July 8, 2022 and the estimated finish date is May 11, 2023.

Sincerely,
Ashok Thiruvengadam
Rahul Rudra
Tianyu Chang
Sindhu Koppiseti
Aditya Abhijeet Hongunti

2. EXECUTIVE SUMMARY

Introduction

Our Objective here is to create a mobile game. This project involves from setting up of the studio to the release it in the market. And this mobile game is more of a mind game the genre where people engagement is more. This would provide us a huge market and chances of success are high thus profits.

Problems

Since this game will be served across the world, For the reasons of cost optimization and talent, the game will be built by people across the world. The problem would be in finding the right set of people and setting up the organization.

The other problems would be finding the right game idea, since it is already a highly competitive business, only the game can make it standout. So, for this highly analytical and creative people will be required.

Strategy

In order to be successful in the market. Our strategy will be, first surveying the market and finding the good amount of data on which we can plan like finding the target audience and all. Next it will be taking it into the market i.e., marketing the game. Our marketing strategy will be the latest like cross-marketing, building an online presence, Creating social media blogs etc.

Financing

In order to get with all these, we have created a good budgeting plan and timeline. It's a 10-month plan with \$12 million budget. Our monetization strategy will be In-app purchases and In-game advertising. We will be also raising funds and will look for Angel Investor. Good project management techniques will be applied for effective use of funds.

3. PROJECT OBJECTIVES

Objectives

Our objective is to setup a mobile game studio and to develop 5-6 games. We are planning to create our hub in San Francisco as there are lot of investors in Silicon Valley. We can pitch our idea and attract funding. And most of our R&D staffs can be based in Bengaluru, India. As we can get highly skilled technical manpower and since labor cost is low. Thus, we can cut down our expenditure in employee salary. The duty of the studio in SF is of controlling the design direction and making market survey. For the R&D staffs in India, their duty is more of developing game functionalities and to solve technical issues. We could build our game community on the internet and communicate with our player for feedback and further improvising it.

Since 9 out of 10 startups fail, we are going to implement efficient project management techniques to define the scope of our project, effective management and allocation of funding, team management. We will break our project into different phases and track the desired outcome. We are planning to implement Agile methodology for effective product development.

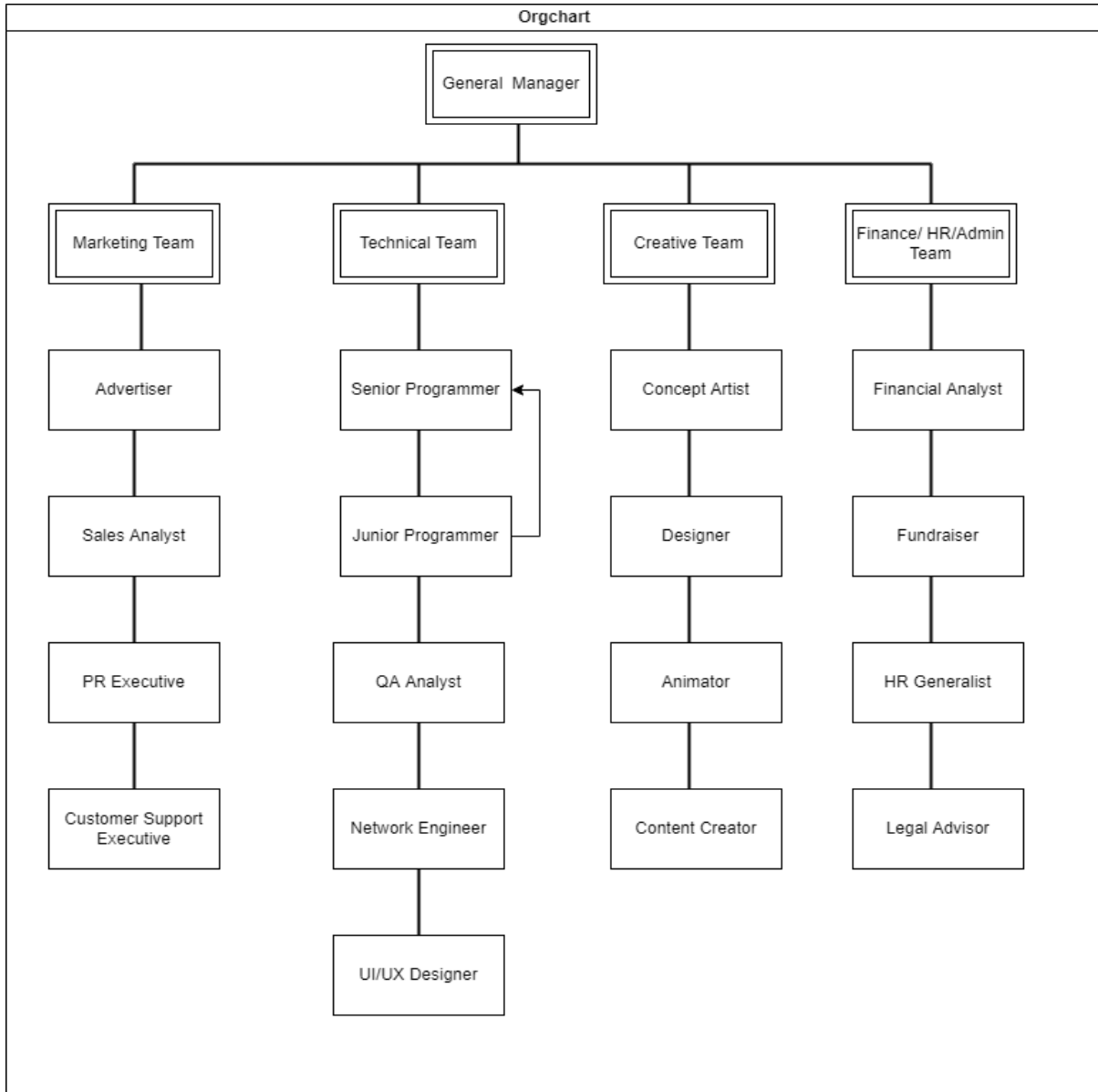
Critical Success Factors

1. Setting up the Team like Recruitment of Solution Architects, Designers, Development Managers, Coders.
2. Procurement of High-end Devices like Computers, Servers, graphic cards.
3. Meeting the Deadlines.
4. Good Budget Plan and making sure of not exceeding the allotted one.
5. Good Teamwork between all the stake holders.
6. Compliance with all the game standards as per the experts.
7. Office spaces and equipment's are leased to save cost.
8. Taking advantage of all startup funds and startup aids for acquiring devices and licenses

Assumptions

1. A good workplace to work with at least 2000 sq.ft with constant supply of electricity.
2. Skilled labor is recruited in both India and U.S
3. All the legal permissions are acquired.
4. Game is accepted by Device platforms.
5. Game is a good hit in the market.

4. PROJECT ORGANIZATION



5. IMPLEMENTATION PLAN

It consists of work breakdown structure, responsibility chart, Risk analysis monitoring and control. It is a very important tool designed to illustrate in detail the critical steps in developing and starting a project.

5.1 Work Breakdown Structure

The project is divided into successively finer levels of detail in the work breakdown structure. Tasks and units are divided out for each project. The project manager would be able to predict outcomes using the work breakdown structure, which may guarantee that the best choices are taken in response to the changes. Refer to Appendix A for the complete Work Breakdown Structure (WBS).

5.2 Scheduling

To ensure the success of the project its done through Gannt chart & PERT analysis

5.2.1 Gannt Chart

A timetable was made as a Gantt chart tool to monitor and control project activities, including task duration and start/end times. This schedule enables us to do the task at the necessary rate in order to meet the deadlines. The graph can be seen in Appendix B.

5.2.2 PERT Analysis

And a network flow diagram was also created, and the PERT Analysis can be seen in Appendix C.

5.2 Responsibility Chart

The Work Breakdown Structure (WBS) is translated to the accountable team members working in the project using the RACI matrix. It makes sure that someone is allocated to handle each work included in the project's scope. In this matrix, the person is either held accountable, responsible, consulted, or informed. In Appendix D, the Responsibility chart of the project is given.

6. RISK ANALYSIS

Although the global sales of the video game software industry have grown dramatically, surprisingly little academic research has looked at the industry's reputation for volatile, chaotic projects. we researched about the different risks associated with video game development from makers from different types. Two of the main risk factors highlighted are particular to the special environment in which video game development occurs. One of the main causes was the possibility of failing to match the development strategy to the project. Along with those we tried to analyze the risks which has possibility to occur.

The Top 10 Risks possible are:

1. Development strategy
2. Human resources and Manpower
3. Schedule
4. Budget governance
5. Inadequate Details or specifications
6. Fun Factor
7. Management Change
8. Errors
9. Mutual Trust
10. Higher level Support

We have performed two different types of Risk analysis here:

1. Qualitative risk analysis
2. Quantitative risk analysis

Qualitative Risk Analysis

A qualitative risk analysis will help you in identifying any particular categories or types of risks that need to receive more attention or any impact of risks that need to be dealt right away.

	<i>Trivial</i>	<i>Trivial</i>	<i>Significant</i>	<i>Major</i>	<i>Catastrophic</i>
Very High					3. Schedule
High				1. Development Strategy	4. Budget governance
Moderate			2. Human resources and Manpower	6. Fun Factor	
Low			5. Inadequate Details or specifications	7. Errors	
Very Low	8. Management Change	9. Mutual Trust	10. Higher level Support		

Quantitative Risk Analysis

For the Quantitative Risk Analysis, we have used FMEA analysis on our project, it helps us with the information related to our risks associated with projects which in turn can help us in applying already established safety measures. And in FMEA we have used RPN approach to analyze our Risks. After going through the different risks and their affects, we were able to generate a result shown below:

Threat	Severity	Occurrence	Detection	RPN
Development strategy	8	5	3	120
Human resources and Manpower	7	5	4	140
Schedule	7	4	2	56
Budget governance	5	3	1	15
Inadequate Details or specifications	4	2	6	48
Fun Factor	7	5	1	35
Management Change	6	2	2	24
Errors	4	3	6	72
Mutual Trust	7	4	2	56
Higher level Support	8	2	5	80

7. MONITORING AND CONTROL PLAN

MONITORING

For monitoring the first task is to examine the WBS in order to extract scope, time, and cost goals. Alderton (2013) suggests five telltale signs of project trouble it is wise to monitor: Muddy Waters, Mysterious Stakeholders, Unconstrained Constraints, Suspicious Status Reports and Discord and Drama. PMs need to monitor each phase of project these three aspects.

Initiation phase:

In this phase identifying goals and objective need more muddy waters monitoring, because goals and objective might be ambiguous, they could shift on the execution phase, we need do this at the beginning, if it happened the subsequent planning could be adjusted immediately. We also need to remember our target potential to clear our object.

Planning phase:

After team hiring, we need to monitor each staff discord and drama, when we do this, it also be benefit to mysterious stakeholders monitoring, we could know if all the employees are willing and able to complete their work on time. In addition, when we prepare the Gantt chart, needing split the task as finely as possible, in order to help suspicious status reports monitoring.

Execution phase:

Mysterious stakeholders monitoring need be reinforced, when the team scope is developed. Each staff's state should be paid close attention. During the game interface develop, each small task is important, we need unconstrained constraints and suspicious status reports monitoring, to evaluate the risk of delay for each task, and are there any tasks that can be completed early to make up time, or for the different milestones, which one might delay, and which one could finish early.

Control phase:

During the performance evaluation, some designs and effects of the game might be adjusted. Although on the planning phase, we should have planned for that, we still face suspicious status reports monitoring at that time. Because this phase is far from the planning phase, not only effect and design test and adjust, market and objectives might be change.

Closing phase:

After presentation and publish, the game will have benefit, and the team might have turnover. Thus, at that time, mysterious stakeholders and discord and drama monitoring are also important.

CONTROL

Physical asset control:

Physical asset refers to computer, desk and chair, viewing screen and refrigerators, coffee makers, etc. in common areas. Because we are the game company, the main physical asset is computer and computer accessories. Each staff need a computer and some accessories of it, and the computer need to change termly, because the computer needs to support the game R&D and operation, we need newer equipment to ensure our work efficiency. Thus, computers might be changed every three years, and desk, chair, refrigerators, coffee makers, etc. could be held for along time, maybe 10 years.

Human resource control:

When the team wants to recruit a new staff to work on our company, we need multiple evaluation to ensure the new staff could be competent for the job. Also, we want to get the right person at the lowest possible salary. During game development, the company need set up two performance appraisals and one salary adjustment for each employee every year to motivate employees to work harder.

Process control:

When a task was finished, the result would be compared with a standard, to evaluate its effect, although this step needs more people to execute, it can further ensure that our project has a certain quality and is on the original track. Go/No-Go controls are also important, we need list a chart to visually understand the progress of each task, and what is needed next (such as chart 1).

task	phase		
	1	2	3
Project Definition	C	C	C
Identifying Goals and Objectives	C	C	C
Reviewing Online Survey	C	C	
Target Potential	C Market	Research	and
	C	C	
	C Team Hiring	NS/HR	C
	C		
Target Age Group Definition	NS/HR	C	C
Type of Video Game Decision	NS/HR	W/10	C
Designing the Website	NS/HR	W/5	C
Development of scope	NS/HR	NS/HR	C
Game Design finalizing	NS/HR	NS/HR	W/15
Game Interface Development	NS/HR	NS/HR	NS/HR
.....			
N/A—Not applicable			
W—Work in progress (number refers to month required)			
C—Completed			
NS—Not started			
NR—Need resources			
HR—Have resources			

chart 1

After each phase or milestone, we need to evaluate schedule, time and cost, if they are on time or on schedule, if not how much deviation they have, and we need how many extra resources to finish that. Or if we finish the milestone early, how many resources we have saved, can we use these resources to upgrade our products. On this way, we could use critical ratio (CR) to multiple evaluate the task. $CR = (\text{Actual Progress} / \text{Scheduled Progress}) \times (\text{Budgeted Cost} / \text{Actual Cost})$, if $CR > 1$, means the task did well, while, if $CR < 1$, we need to concern how to make up it.

8. FINANCIAL PLAN

The goal of this project is to create to new game in the market. However, we need a viable budget, which is to be planned and monitored throughout the project to ensure successful completion. The detailed budget justification can be found below

The following assumptions have been made while making the financial plan:

1. No overhead or miscellaneous cost are included
2. The salary of employees is quoted based on average salary taken from labor statistics
3. Most of the technical staffs are hired from India to cut down cost and unpaid interns are also hired to cut down cost
4. Most of the high-end devices are rented and virtually rented as it is cheaper
5. Employees are hired in contractual manner and in phase wise based on the needs

Based upon the raised funds from our investors and funds allocated by the founders the fund is effectively utilized in paying the workforce and setting up of the gaming studio with all required devices. Top-down budgeting plan is used as it is best suited to work with allocated funds within stipulated time under the supervision on senior management.

The following table depicts the estimated expenses of salaries working on the project

Title	Tasks Responsible	People	Months	Earnings/month	Total Earnings
Project Manager	Looks after overall project	1	10	\$10000	\$100000
Programmers	Looks after Back-end and Front-end	7	10	\$8000	\$200000
Quality Analyst	Overall Project	2	4	\$650	\$2600
Network Engineers	Hardware and Software	1	8	\$6500	\$52000
UI/UX Designers	Game Development	2	10	\$700	\$14000
Creative Team	Game Development	4	9	\$8000	\$288000
Financial Analyst	Entire Project	1	2	\$10000	\$20000
Accountant	Entire Project	1	10	\$8000	\$80000
HR Generalist	Entire Project	1	10	\$8000	\$80000
Legal Advisor	Entire Project	1	10	\$11000	\$110000
Marketing Team	Game Development	4	4	\$8000	\$128000
Intern	Overall Project	10	4	\$0	\$0

The following table has information about the materials required and its cost

Materials Required	Total Cost in Dollars
Personal Computer	60000\$
Laptop	10000\$
Graphic card	20000\$
UHD Monitors	10000\$
iPad	7000\$
Server	3000\$
Router	3000\$
License	8000\$
Office Setup	50000\$

From the above two tables we can see that around \$ 1.71 million is estimated budget to setup office and to procure the required hardware and software for the gaming studio setup and about \$ 10.74 million towards salary of the employees and total budget of our project is \$ 12.45 million.

Cost Benefit Analysis

We have performed Return on investment, Breakeven analysis, and Risk analysis.

Some of the assumptions taken into consideration before performing Cost benefit analysis are:

1. Based on the current trend a successful game is well received by gamers up to 5 years
2. The annual operational and maintenance cost is 30000\$
3. The estimated revenue of the game when downloaded by 10 million plus users is 150000\$ per 3 months
4. The minimum attractive rate of return of our game is 35%

9. CONCLUSION

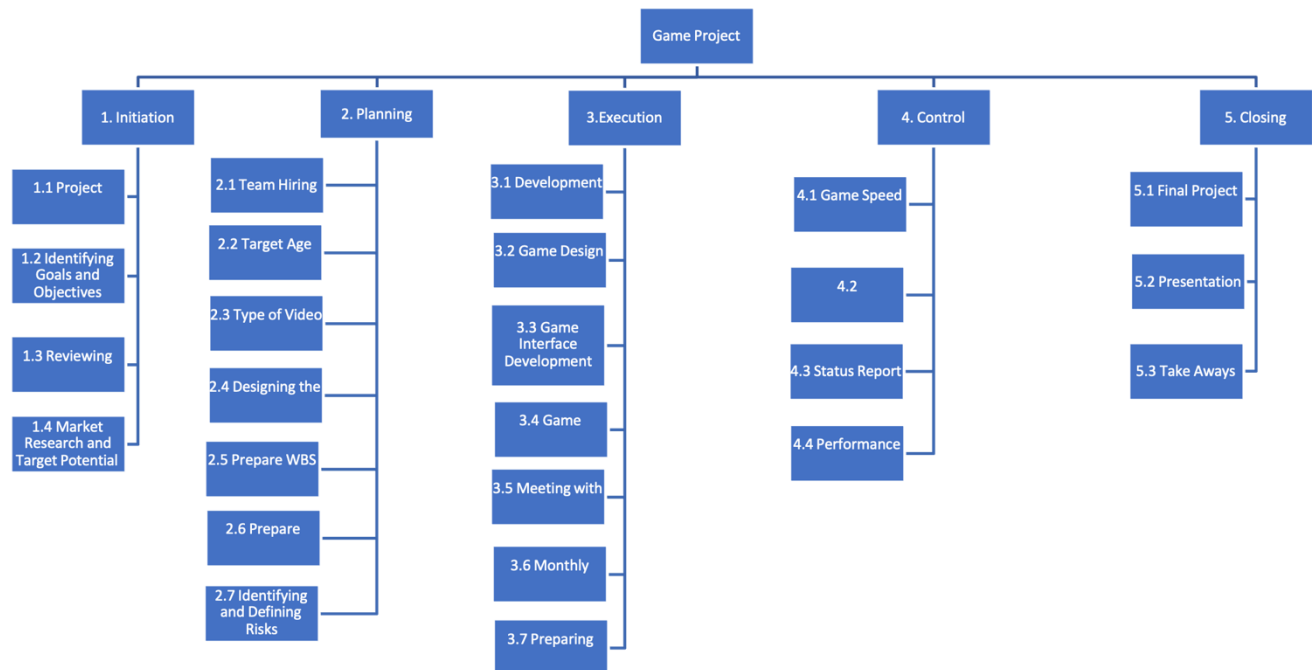
With gaming industry growth booming with 3.24 billion gamers across the globe and with covid restrictions attracting more gamers. It is great time to start a gaming studio. And we have a higher of chance of creating a trendy game by launching a free version of mind game in multiple genres across 2 major platforms supporting various devices.

Our gaming studio has all the characteristics to become a successful one. With 90% of startup failing without clear scope, goals, and mismanagement of funds. However, a well-defined and a well-planned project combined with risk assessment and monitoring of processes, the organization can overcome these problems.

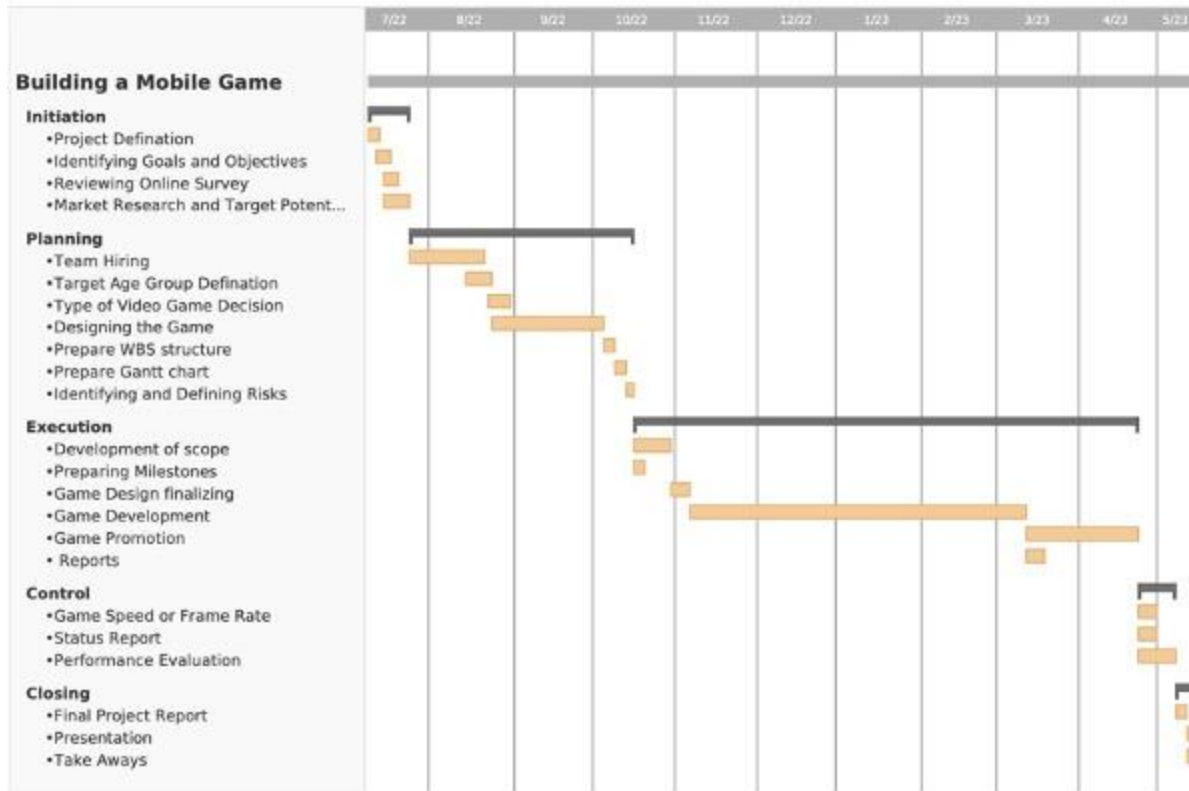
By effective fund raising and by following the project plan closely by the team and monitoring of the milestones and the budget we can achieve a successful venture. And this venture can generate continuous income at minimal maintenance cost and adding updates to the current game and by placing advertisements which also included in the project plan along with budget and timeline.

Through this we can setup a highly profitable gaming company which can generate Recurring revenue.

Appendix A: Work Breakdown Structure



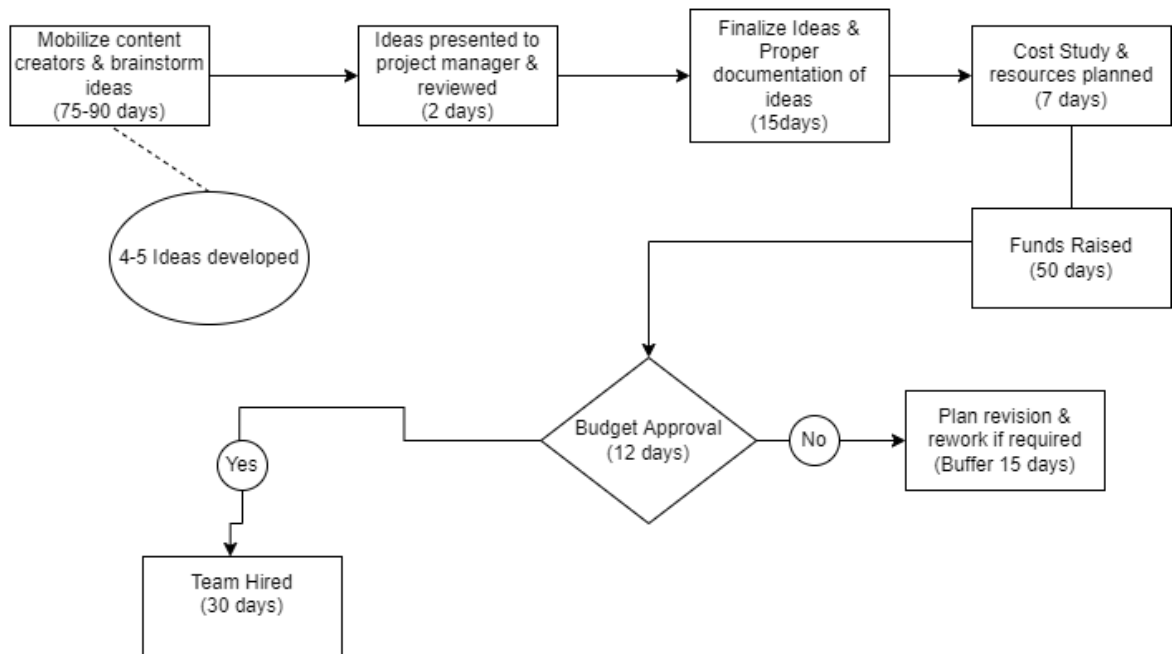
Appendix B: Gantt Chart



Appendix C: PERT ANALYSIS (NETWORK FLOW DIAGRAM)

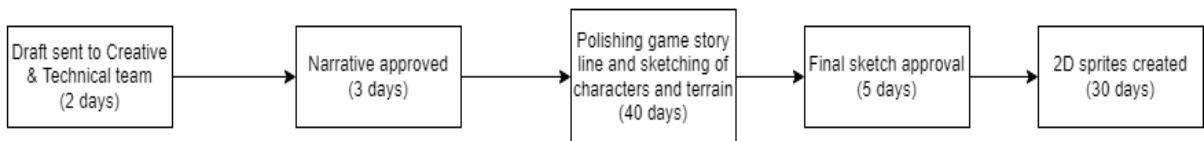
Phase 1

P1. Game Idea Discovery



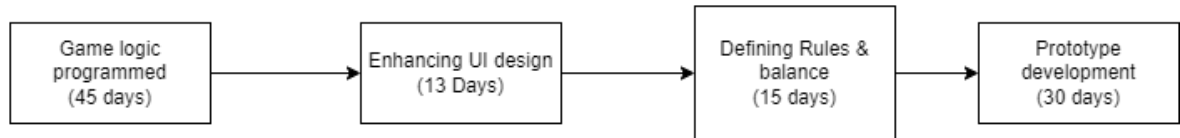
Phase 2

P2. Game Creation



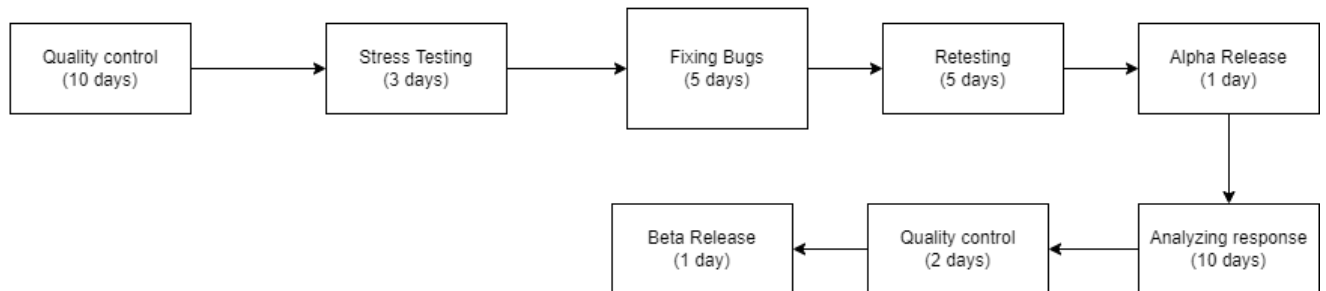
Phase 3

P3. Game Development



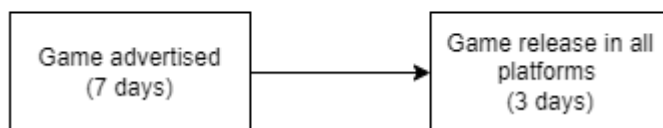
Phase 4

P4. Testing Phase



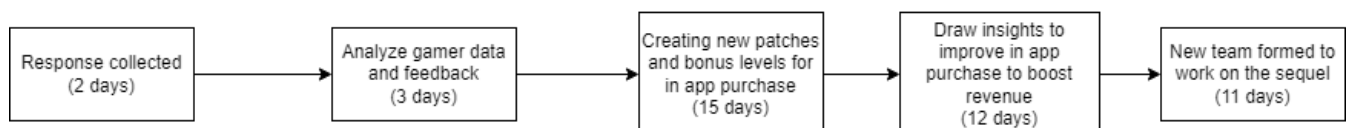
Phase 5

P5. Release to market



Phase 6

P6. Post Release



Appendix D: RACI Chart

	Senior Stake Holders	Project Manager	Financial Manager	Game Developer	Design Lead	Resource Manager	Game Tester
Project Definition	A	R	C	C	C	I	I
Identifying Goals and Objectives	A	A	C	I		C	
Reviewing Online Survey	I	R		C	C		
Market Research and Target Potential	C	R		R	R		
Team Hiring	R	A	R				
Target Age Group Definition		C			C		
Type of Video Game Decision	A	R	I	R	C		
Designing the Game	I	C		A	R		I
Prepare WBS structure	C	R					
Prepare Gantt chart	C	R					
Identifying and Defining Risks	I	R					
Development of scope	C	R	I			I	
Game Design finalizing	C	R		C	R		
Game Interface Development	I			R	R		C
Game Promotion	I	C	C				
Meeting with the sponsors	A	R	I				
Milestones	I	R	I	I	I	I	
Game Speed				A	C		
Documentation	I	C					
Status Report	I	I					
Performance Evaluation		C					
Final Project Report	R	R	R	R	R	R	R
Presentation	R	R	R	R	R	R	R
Take Aways	R	R	R	R	R	R	R

R – Responsible
 A – Accountable
 C – Consulted
 I – Informed

