

School of Business, Economics and IT

Division of Informatics

**Project Management Plan of an IT application development.**

**- A Project Manager’s perspective**

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# Introduction

Project management is an ongoing continuous process which involves initiating, planning and organizing and managing of tasks as well as resources usually with constraints like time and cost to fulfil an objective. A project may be new, a continuation of an existing one or a one-time endeavour. Any project, be it small, large or complex needs explicit requirements and can be successful with proper planning. This can be accomplished by dividing the project into small and manageable tasks, proper allocation of schedule and resources accompanied with tracking the work progress. Each activity in project management is interrelated and the later phases of the project management (Monitoring and controlling, executing) depend directly on the information that is provided in the initial phase of the project. Project management is a structured process to understand the business objective as a team and work on the same, handle the technologies involved, communicate at different levels, encourage peers and promote collaboration within the team as well as organization. This way, the project manager is not only able to meet but exceed the stakeholder’s expectations.

A brainstorming session was held among the group and each of the members contributed with their colourful ideas. A consensus was reached among the group to vote and work on a single project. One such project is the *‘development of an application/website which is involved with photography’*. On the assumption that the pre project phase has been successfully outlined, this paper mainly focuses on the planning process involved throughout the project. Much of the sections involved in this paper has been written according to the project management guidelines given by (Project Management Institute, 2017) and the templates for each process management plan given by Project manager’s book of forms (Snyder, DC 2017). Thus, it can be assured that the processes involved in this project helps the reader to answer few questions such as

* What is the scope of this project?
* Who/When/How will the task be carried out and completed?
* What is the cost involved?
* What are the risk factors and measures to overcome it?
* What are the quality factors involved?
* What type of communication protocol is followed?

# Pre project phase

## Project Business case

As per (Project Management Institute, 2017) Project business case document is one of the important Project management business documents which is maintained throughout the project life cycle. It is necessary to provide this document before the project initiation phase begins to give a go or no-go decision for the project to begin. Based on the analysis of business needs and objectives, the following recommendations and evaluation criteria has been outlined in accordance with the guidelines stated in (Project Management Institute, 2017)

**Business needs:**

A team of web developers who are also skilled photographers came up with an idea to develop an interactive and social application to connect photography enthusiasts worldwide on a common platform. This idea was based on the quantitative and qualitative studies on this subject as the main focal point. The main scope of this project was to bring out the potential in individuals who are not only photographers but for anyone interested in art and culture. With the mentioned valid factors, this project is assumed to generate good profit for the stakeholders involved as well as for the organization.

**Analysis of the situation:**

One of the main strategies that the organization aims to achieve is to reach a wider audience in the digital market and establish the product among different age groups along with numerous genres thereby creating a healthy community. Due to the lack of any existing community for photographers unlike many social media platforms, there is a welcoming demand for this application to capture many users and use it wisely. Potential risks that have been identified is deficit in budget, resource outrun. Once the product has been launched, in six months, an expected number of users around 100,000 is a major success factor. **Recommendations:**

The project is expected to be developed from the fund issued by *“Trollhättan Innovatum science park”* with an estimated budget of 100,000 kronor. In a situation of ‘no fund grants’, the project will be called off. Once the fund has been issued, the recruitment phase is expected to begin immediately and complete successfully within 45 days and the development phase begins. Application development will start right from the design to testing which is expected to be around 6 months. On successful launch of the product, we give an initial time period of 3 months to earn the expected income. Post this phase, the ROI (Return On Investment) is expected to increase by 15 – 30 percent more than the issued fund within a year.

**Evaluation:**

Initial usage of the product will be given on a trial basis with no membership fee but limiting the users with few benefits. One of the business aspects is to establish the brand and maintain the sustainability of the product usage. To achieve this, the project aims to hold the active users by keeping a nominal membership fee and provide the essential benefits. A few to list are by providing high quality images, more space in their account to upload as well as download the images. Furthermore, this product can also be used as a marketing platform to sell their photographs which in return will benefit the users. In addition to this, the product aims to capture new users by increasing the quality of the product and through valuable advertising.

## Organizational structure

The selection of the right organizational structure for a project is crucial to the project's success (George, 2020). Given that the whole nature of the company is based on this project, the projectized organizational structure has been proposed for this project. Project managers in this structure have a high level of authority, which gives them not only considerable project control but also complete responsibility for the project's success (Cristóbal et al., 2018). Figure 1 depicts the organizational structure.

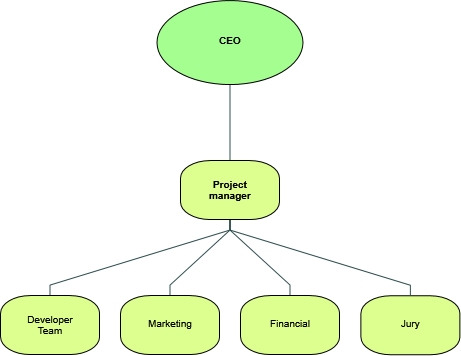


Figure 1. Organizational structure

# Initiating

Presentation of the business case document to Trollhättan Innovatum science park and proposal of the same were initiated. Trollhättan Innovatum science park was glad to be a part of this project acting as one of the stakeholders and the expected funds has been issued to the organization. Based on this, the project charter has been formulated as the initial phase of the project as shown in Table 2.

The business case and the agreement with Trollhättan Innovatum science park were used as the basic sources of information for proposing the project charter.

The tools and techniques used for this section include expert judgment, data gathering, and meetings. Tabe 1 shows the detail.

Table 1. Tools and techniques for proposing project charter

|  |  |
| --- | --- |
| Tools & Techniques | Description |
| Expert judgment: | Expert opinions in the fields of photography, business, programming was gathered, and the benefits and risks of the project were analysed. |
| Data gathering: | The brainstorming and focus group were two techniques that were used. |
| Meetings: | Face-to-face and online meetings were used due to Corona Pandemic conditions. The meetings were attended by stakeholders in the Innovatum science park and experts in the fields of business and software development. |

## Project Charter

In order to provide the project charter, the business documents and agreements with Trollhättan Innovatum science park for start-ups were used as inputs. The tools and techniques included data analysis, data gathering, meetings, and interpersonal and team skills. Table 2 depicts the details of the project charter.

Table 2. Project charter

|  |  |  |  |
| --- | --- | --- | --- |
| Project Name: ShutterBug App | | Project Sponsor: Trollhättan Innovatum science park | |
| Project Manager: | M DFHKP | | |
| Description: | * Creating a common environment as website and mobile application for professional and amateur photographers. | | |
| Objective: | * Attract and identify talents among different age groups, photography genres. * An opportunity to compete and professional evaluation for photography enthusiasts. * A platform to hone photography skills. | | |
| Success factors | * Number of users per month. * App downloads on each platform /month * User rating reaches 4 stars. | | |
| Cost: | * Costs associated with creating the site and mobile application such as design * Teams' salary for 1 year * Advertisement for 1 year   Total cost = 400000 SEK | | |
| Milestones: | Application Launch (Design to Testing) | | 6 months |
| Earnable Income | | 10 – 15 months |
| Expected Profit | | 15 - 20 months |
| Expected return on investment: | * Year 1:0 * Year 2: 20% | | |
| Risks: | * Pandemic * Running out of budget * Insufficient content monitoring * Copyright issues * Bad resource management * Non-adherence to GDPR guidelines | | |
| Team players: | * CEO * CFO * Project manager * Development team * Marketing experts * Jury | | |
| Key stakeholders: | * Users * Team players * Jury * Sponsor (Trollhättan Innovatum science park) | | |
| Approval: | **Title and name:**  Investor:  Project manager: | **Date** | |

Planning

Stakeholder engagement

Stakeholders can influence projects positively or negatively (Project Management Institute, 2017). Hence it is essential for the project manager and team to correctly identify and engage all stakeholders in an appropriate way to increase the chances of success of the entire project. The approach to engage stakeholders is illustrated below.

**Table 3 . Stakeholder engagement process**

|  |  |  |  |
| --- | --- | --- | --- |
| **Process** | **Input** | **Tools and Techniques** | **Output** |
| Identify stakeholders | Project charter | Expert judgement, meetings | Stakeholder register |
| Plan stakeholder engagement | Project charter, Project Management Plan | Expert judgement, meeting | Stakeholder engagement plan |

Experts in photography, website design, mobile app development, Innovatum Science Park, were consulted in meetings to identify their individual needs, expectations, and interest in the shutterBug project.

A plan was developed by the project manager to illustrate the interest of each stakeholder and the corresponding desired state in order to develop an effective approach to incorporate all stakeholders in the project. The project charter and project documents were the input in this phase. The stakeholder engagement plan is tabulated below

Table 4 stakeholder engagement plan

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Stakeholder** | **Unaware** | **Neutral** | **Resistant** | **Supportive** | **Leading** |
| Sponsor |  |  |  | CD |  |
| CEO |  |  |  | C | D |
| CFO |  |  |  | C | D |
| Users |  | C |  | D |  |
| Marketing Team |  | C |  |  | D |
| Development Team |  | C |  |  | D |
| Jury |  | C |  |  | D |

C= current state D = desired state

Unaware= unaware of project potentials, impact, and objectives

Neutral= aware of project objectives, impact but neither supportive nor resistant

Resistant= aware of project objectives and impact but resistant to project changes

Supportive= aware of project objective, impact, and supportive of change

Leading= aware of project objectives, impact and carry out supportive actions to ensure project success

Table 5

|  |  |
| --- | --- |
| **Stakeholder** | **Approach** |
| Sponsor | Monthly meetings, report |
| CEO | Weekly meetings, report |
| CFO | Weekly meetings, report |
| Development Team | Weekly meetings and report |
| Marketing Team | Weekly meetings and report |
| Jury | Monthly meetings and report |
| users | advertisements |

Scope

### Scope management

In scope management, the project team undertook activities to ensure that the project contains all the work required and only the work required to complete the project by specifying what is to be included or not in the project and this was in a bid to guard project team against scope creep.

To effectively manage scope in the planning of this project, the project manager developed a scope statement, decomposed the project into discrete deliverables (WBS), determined the constituents of scope change and how scope changes will be managed, defined the scope baseline and how deliverables will be accepted.

The processes, inputs, tools and techniques used in the scope processes are tabulated below.

Table 6. Scope processes

|  |  |  |  |
| --- | --- | --- | --- |
| **Process** | **Inputs** | **Tools & Techniques** | **Outputs** |
| Plan scope management | * Project charter * Project Management Plan | * Expert judgement * Data Analysis * Meetings | * Scope Management plan * Requirements management plan |
| Collect Requirements | * Project charter * Project Management Plan * Agreements * Business case doc | * Expert Judgement * Data gathering * Data Analysis * Decision making | Requirements Documentation |
| Define Scope | * Project charter * Project Management Plan * Project Documents | * Product analysis * Interpersonal and Team skills * Expert judgement * Data analysis | * Project scope statement * Project document update |
| Create WBS | 1. Project documents 2. Project Management Plan | * Expert judgement * Decomposition | Scope baseline  - Project scope  - WBS  - WBS Dictionary  Project documents updates |

### Project Scope Statement

**Project objective**

To design a user-friendly application/website which acts as a connecting platform for photographers worldwide and reward their talents.

**Project deliverable**

To deliver a minimum viable product with basic functionalities like login page, home page, profile page, gallery and forum. The product is expected to work on any OS. The product should be a minimum error one during launch and expected to comply with GDPR guidelines.

**Process**

Project life cycle – Predictive approach

Development life cycle – Iterative (4 iterations)

**Timeline**

Project is expected to be launched in a period of 6 months from the approval date.

**Budget**

Project is funded by the Innovatum Science Park in Trollhattan with an amount of 400000 SEK.

**Work Breakdown Structure**

The work breakdown structure shown in figure 2 consists of four phases. Based on the WBS, the breakup of tasks with the respective IDs, activity and it’s description with the level is shown in table 7 in the form of a WBS dictionary.

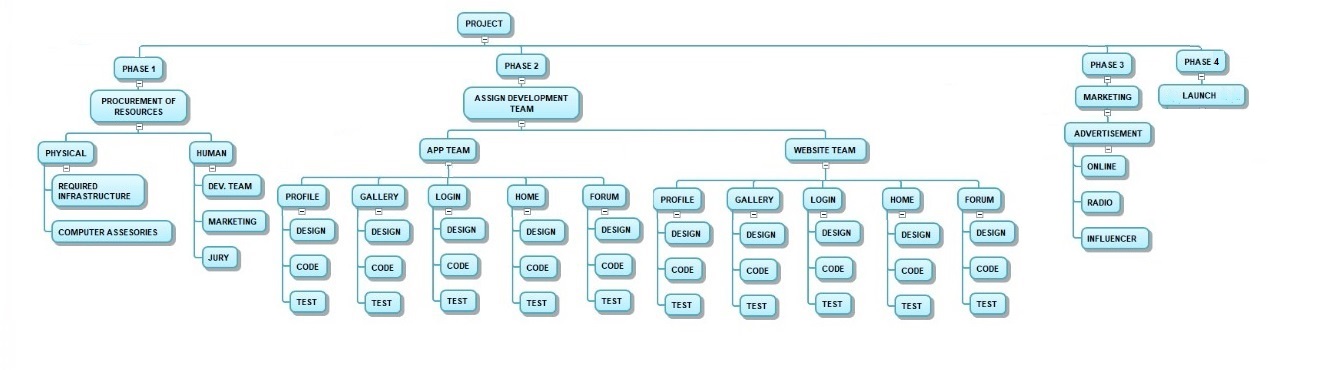


Figure 2. Work breakdown structure

Table 7. WBS dictionary

|  |  |  |  |
| --- | --- | --- | --- |
| **ID** | **Level** | **Activity** | **Description** |
| 1 | 1 | PROJECT | All parts required for the project |
| 1.1 | 2 | PHASE 1 |  |
| 1.1.1 | 3 | PROCUREMENT OF RESOURCES | Providing all resources. |
| 1.1.1.1 | 4 | PHYSICAL | Supplying physical resources. |
| 1.1.1.1.1 | 5 | REQUIRED INFRASTRUCTURE | Providing necessary infrastructure |
| 1.1.1.1.2 | 5 | COMPUTER ASSESSORIES | Providing computer accessories infrastructure |
| 1.1.1.2 | 4 | HUMAN | Providing human resources. |
| 1.1.1.2.1 | 5 | DEV. TEAM | Development team |
| 1.1.1.2.2 | 5 | MARKETING | Marketing team |
| 1.1.1.2.3 | 5 | JURY | Taking the necessary steps to work with photographic experts as jurors |
| 1.2 | 2 | PHASE 2 |  |
| 1.2.1 | 3 | ASSIGN DEV. TEAM | Development team tasks |
| 1.2.1.1 | 4 | APP TEAM | Tasks related to developing the mobile application |
| 1.2.1.1.1 | 5 | PROFILE | The actions that are associated with the Profile page. |
| 1.2.1.1.1.1 | 6 | DESIGN |
| 1.2.1.1.1.2 | 6 | CODE |
| 1.2.1.1.1.3 | 6 | TEST |
| 1.2.1.1.2 | 5 | GALLERY | The actions that are associated with the Gallery page. |
| 1.2.1.1.2.1 | 6 | DESIGN |
| 1.2.1.1.2.2 | 6 | CODE |
| 1.2.1.1.2.3 | 6 | TEST |
| 1.2.1.1.3 | 5 | LOGIN | The actions that are associated with the Login page. |
| 1.2.1.1.3.1 | 6 | DESIGN |
| 1.2.1.1.3.2 | 6 | CODE |
| 1.2.1.1.3.3 | 6 | TEST |
| 1.2.1.1.4 | 5 | HOME | The actions that are associated with the Home page. |
| 1.2.1.1.4.1 | 6 | DESIGN |
| 1.2.1.1.4.2 | 6 | CODE |
| 1.2.1.1.4.3 | 6 | TEST |
| 1.2.1.1.5 | 5 | FORUM | The actions that are associated with the Forum page. |
| 1.2.1.1.5.1 | 6 | DESIGN |
| 1.2.1.1.5.2 | 6 | CODE |
| 1.2.1.1.5.3 | 6 | TEST |
| 1.2.1.2 | 4 | WEBSITE TEAM | Tasks related to developing the website |
| 1.2.1.2.1 | 5 | PROFILE | The actions that are associated with the Profile page. |
| 1.2.1.2.1.1 | 6 | DESIGN |
| 1.2.1.2.1.2 | 6 | CODE |
| 1.2.1.2.1.3 | 6 | TEST |
| 1.2.1.2.2 | 5 | GALLERY | The actions that are associated with the Gallery page. |
| 1.2.1.2.2.1 | 6 | DESIGN |
| 1.2.1.2.2.2 | 6 | CODE |
| 1.2.1.2.2.3 | 6 | TEST |
| 1.2.1.2.3 | 5 | LOGIN | The actions that are associated with the Login page. |
| 1.2.1.2.3.1 | 6 | DESIGN |
| 1.2.1.2.3.2 | 6 | CODE |
| 1.2.1.2.3.3 | 6 | TEST |
| 1.2.1.2.4 | 5 | HOME | The actions that are associated with the Home page. |
| 1.2.1.2.4.1 | 6 | DESIGN |
| 1.2.1.2.4.2 | 6 | CODE |
| 1.2.1.2.4.3 | 6 | TEST |
| 1.2.1.2.5 | 5 | FORUM | The actions that are associated with the Forum page. |
| 1.2.1.2.5.1 | 6 | DESIGN |
| 1.2.1.2.5.2 | 6 | CODE |
| 1.2.1.2.5.3 | 6 | TEST |
| 1.3 | 2 | PHASE 3 |  |
| 1.3.1 | 3 | MARKETING | Tasks related to the marketing area. |
| 1.3.1.1 | 4 | ADVERTISING | Advertising through various channels |
| 1.3.1.1.1 | 5 | ONLINE | Online advertising channels such as websites |
| 1.3.1.1.2 | 5 | RADIO | Actions related to radio advertising |
| 1.3.1.1.3 | 5 | INFLUENCERS | Collaborating with influencers for advertising |
| 1.4 | 2 | PHASE 4 |  |
| 1.4.1 | 3 | LAUNCH | Launching the software. |

## 

## Schedule Management

To ensure timely completion of tasks and with a pre-defined scope baseline, schedule management is necessary for a project. Six processes are involved to produce a project schedule that works efficiently with the project. A brief explanation for each of the process is described in the following section.

**Plan schedule management** – Process to establish policies, procedures and documentation that helps with all activities of project schedule.

**Define activities** – Identify and document specific actions at each phase to produce a project deliverable.

**Sequence activities** – Identify and document relationship that exists between the project activities.

**Estimate activity durations** – Estimation of duration for each activity in relation to the estimated resources.

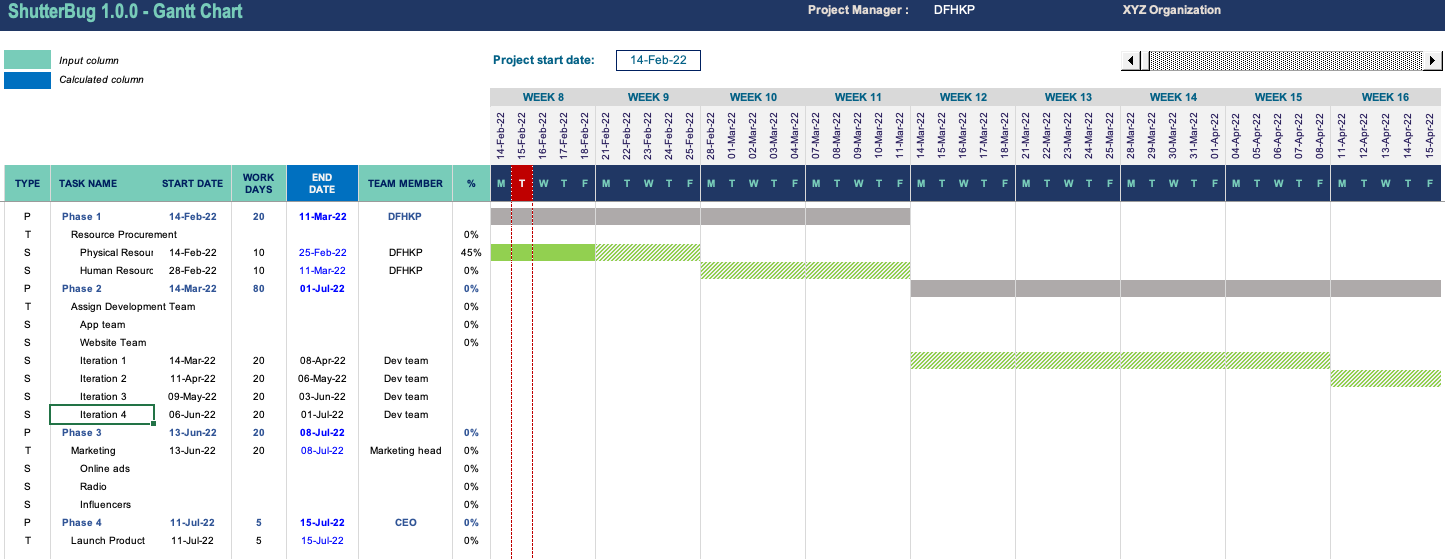
**Develop schedule** – Analyse activity sequence, durations, constraints and resource requirements to create a schedule model that helps with project monitoring, controlling and execution.

**Control Schedule** – Monitoring the status of the project and manage changes in the project schedule and baseline.

Each of the process with the used inputs, tools and techniques and outputs that has been sued to devise the project schedule has been shown in table 8.

**Table 8 - Schedule Management Plan overview**

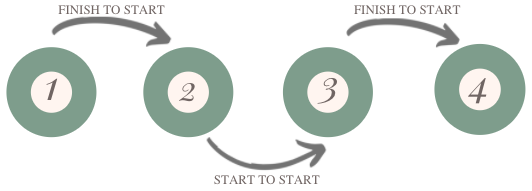
|  |  |  |  |
| --- | --- | --- | --- |
| **Process** | **Inputs** | **Tools & techniques** | **Outputs** |
| Plan schedule management | Project charter  Project Management Plan | Expert judgment  Data analysis  Meetings | Schedule Management Plan |
| Define activities | Project Management Plan | Expert Judgment  Meetings | Activity list  Milestone list  Change requests  Project Management Plan updates |
| Sequence activities | Project Management Plan  Project documents | Precedence Diagramming method | Project documents updates |
| Estimate activity durations | Project Management Plan  Project documents | Expert judgment  Three-point estimating  Data analysis  Decision making  Meetings | Duration estimates  Project documents updates |
| Develop schedule | Project Management Plan  Project documents  Agreements | Data analysis  Agile release planning | Project schedule  Change requests  Project Management Plan updates  Project documents updates |
| Control Schedule | Project Management Plan  Project documents | Data analysis | Change requests  Project Management Plan updates  Project document updates |



**Figure 3 – Schematic representation of Gantt chart**

Based on each phase duration, the schedule has been designed to fit in with the project. Phase 1 starts with the procurement of resources followed by development in phase 2. As the development life cycle would be iterative, each development task will be done in iterations. The specific agile approach (Scrum, Kanban, XP, Lean) that will be followed is not mentioned here. One reason, this is a fictitious project. Another dependent factor being the resources that will form the development team. Based on the recruited resources and their skills and knowledge, there might be future adaptations to the project. As any agile approach follows an iterative life cycle, *‘Iterations’* has been used in the Gantt chart to have a generalized view. Also, as mentioned in the PMBOK Guide (Project Management Institute, 2017), in an agile team, the Project manager does not have any authoritative role to direct the tasks. The development team is self-organized and efficient enough to complete the tasks by the deadline as scheduled. Design, development and testing of the project software is correlated and followed in every iteration. Marketing phase is the next phase in the project which is expected to begin a few weeks before the development is completed. Once the marketing phase ends, on the presumption that each phase is successfully completed, the product is ready to be launched in the market.

Once the activities are scheduled, it is very important to represent the logical relationship between each phase. This helps to understand the sequence of activities that are to be performed in a project. With the help of precedence diagramming method techniques, logical relationship between the four phases in this project has been outlined in figure 4.



**Figure 4 – Precedence Diagramming Method Technique**

Figure 4 indicates that Development task (Phase 2) shall not begin until phase 1 is complete. To start the marketing phase (phase 3), Development phase must begin. Once the marketing phase (Phase 3) is completed, the product is ready to be launched. (Phase 4).

Resource management

Project resource management plays a vital role in project management among the planning process, first to ensure that the right resources are available at the right time and place to the project manager and the team. Second, it helps with successful project completion. Inefficient management and control of resources could act as a barrier to the project team as well as organization to complete the project successfully. As a responsible Project Manager, it is necessary to identify the skills and competencies required to manage physical and human resources for this start-up initiative. The organization has agreed to follow the predictive life cycle approach throughout the project, but the development team will work on iterative life cycle. With this in mind, a few factors that have been tailored are listed below.

* The organization has agreed to place the vacancies for the development team on Swedish Employment exchange (‘*arbetsformedlingen*’).
* Any candidates who live in Sweden with a valid work visa and appropriate educational background with a minimum of 3 and maximum of 5-year experience will be considered for the job interview and placed in the teams. The organization is glad to adopt a multicultural background to work on the project as it may promote a healthy and collaborative environment.
* All the personnel involved in this project will work in a physical location with the necessary infrastructure and equipment, unless there is a need to adapt to remote workspace.
* All the team members shall work full-time on the project.

There are 6 processes involved in project resource management. All the process goes hand-in-hand throughout the project life cycle. A brief description of each process and the activities involved with some of the notable inputs, tools and techniques and outputs in each process that will be used in this project is discussed as follows.

* **Plan Resource Management** - Estimate, acquire, manage and utilize project resources. Identification of an approach to assure sufficient resource availability for successful project completion.

One of the important techniques during this process is the design of *Responsibility Assessment Matrix (RAM)* which facilitates clear assignment of roles and responsibilities in view of the project and development life cycle approach. One such example is RACI (Responsible, Accountable, Consulted, Informed) chart. The acronym *RACI* denotes the level of authority when assigned a task and helps to delineate the tasks in the team.

**Table 9 – Understanding RACI Chart**

|  |  |
| --- | --- |
| **R - Responsible** | Person assigned with this role has to make sure ‘right things happen at the right time’. This can be assigned to a single person or several people for large projects. |
| **A - Accountable** | Person who has the ‘ownership’ of the task, makes the final decision. In short. ‘The buck stops here’. Only one person can be accountable for a task. |
| **C- Consulted** | These are the people who need to be consulted to provide their input to the task. Example: A developer might need to consult with the UX designer before the development is started. |
| **I - Informed** | People who need to be kept aware of the task progress and any changes that affect the task progress.  Example: Project manager should inform the client if there were any delays and the stakeholders about the task progress. |

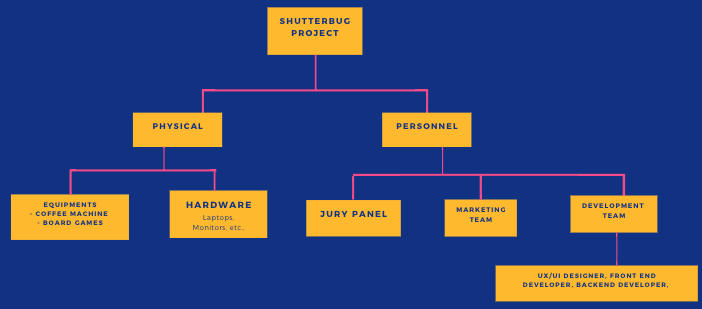
The permissible role for each of the task/ phase in this project are as shown below in table 10.

**Table 10 - RACI Chart for this project**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **PROJECT TASKS** | **CEO** | **CFO** | **Project Sponsor** | **Project Manager** | **Development Team** | **Marketing**  **Team** |
| **Pre project phase** | A | C | R | I | - | - |
| **Financial analysis** | R | A | C | I | - | - |
| **Initiating, Planning** | R | - | C | A | I | - |
| **Design, development and testing** | C | - | - | R | A | I |
| **Project progress** | - | - | I | A | R/C | - |
| **Marketing phase** | I | - | I | R | - | A |
| **Product launch** | A | I | I | R | - | C |

* **Estimate Activity Resources** - Estimation of team resources, type and quantities of physical resources required to be involved in a project.

One of the valuable outputs generated at the end of this process is a Resource Breakdown Structure (RBS). This is a hierarchical representation of all resources that will be used in the project and guides in categorization. As the Innovatum science park agreed to provide office space to organization, the resources to procure would be much of the required infrastructure and all hardware accessories. The resource breakdown structure for the project is illustrated as below in figure 5.



**Figure 5 – Resource Breakdown Structure (RBS)**

* **Acquire Resources** - Obtain the necessary personnel and physical resources for project completion.
* **Develop Team** - Enhance performance of the project by improving competencies and interaction between team members and overall team.

One important aspect of team development is to recognize the performance of team members and appreciate them at the right time by providing with rewards. In this project, 2 team members (one from technical and one from non-technical department) who worked efficiently will be given a well-designed and thank you note. This further propels the team members to put in their efforts throughout the project.

Another factor to consider in team development is training, that is required for the team members, be it technical or non-technical. This is crucial because it is good to stay updated with technologies and maintain pace with the IT market. The organization plans to subscribe for enterprise edition on learning platforms like *‘Pluralsight’, ‘Udemy’* or any other virtual learning platform. This can help the employees to study at their own pace.

* **Manage Team** - Optimize project performance by tracking team members’ performance, resolving issues, providing feedback and change management.
* **Control Resources** - Assignment and allocation of physical resources availability as planned to the project. Also, track the planned versus actual usage of resources, with corrective actions taken when required.

Each process inputs, tools and techniques, and a set of outputs that has been used in the resource management planning process has been marked in table 11.

**Table 11 - Resource management process: Inputs, Tools & Techniques, and Outputs**

|  |  |  |  |
| --- | --- | --- | --- |
| **Process** | **Inputs** | **Tools and Techniques** | **Outputs** |
| Plan Resource Management | Project charter  Project Management Plan  Project documents | Expert judgment  Data representation   * Resource Assessment Matrix   Meetings | Resource Management Plan  Project documents updates |
| Estimate Activity Resources | Project Management Plan  Project documents | Expert judgment  Meetings  Data analysis | Resource requirements  Resource Breakdown Structure  Project documents updates |
| Acquire Resources | Project Management Plan  Project documents   * Project schedule | Interpersonal and team skills  Decision making | Physical resource assignments  Project team assignments  Project Management Plan updates  Project documents updates |
| Develop Team | Project Management Plan  Project documents | Communication technology  Interpersonal and team skills  Recognition and Rewards  Training  Individual and team assessments  Meetings | Team performance assessments  Project Management Plan updates  Project documents updates |
| Manage Team | Project Management Plan  Project documents  Work performance reports  Team performance assessments | Interpersonal and team skills | Project Management Plan updates  Project documents updates |
| Control Resources | Project Management Plan  Project documents  Work performance data  Agreements | Data analysis  Problem solving  Interpersonal and team skills | Project Management Plan updates  Project documents updates  Work performance information |

Procurement management

Now that the schedule has been planned and resources assigned to each of the tasks, it is now important to set a strategy and devise a procurement management plan. Practically speaking, procurement of resources should not exceed the budget and quality should not be compromised. To achieve this, various strategies like previous knowledge of projects, review about the vendors and the product by conducting qualitative and quantitative studies help to procure the best products for the organization. Also, a contract needs to be agreed between the buyer and the seller with some important factors like installation, warranty and maintenance of the procured resources. Procurement management involves three processes discussed briefly as follows.

**Plan Procurement Management** – Process of identifying potential sellers, How and when to acquire resources. This might be a one-time process or performed at pre-defined points.

**Conduct Procurements –** Process of qualifying the best seller and contract finalization along with the legal terms for delivery.

**Control Procurements –** Process involved throughout the project to maintain relationships between the buyer and seller, monitor performance to meet the project requirements as per the agreement, make changes as and when required, closure of procurement contracts.

Some of the Inputs, Tools and Techniques and Outputs selected for each of the process has been outline in table 12.

**Table 12 – Procurement Management process: Inputs, Tools & Techniques, Outputs**

|  |  |  |
| --- | --- | --- |
| **Inputs** | **Tools & Techniques** | **Outputs** |
| **Plan Procurement Management** | | |
| Project charter  Project Management Plan  Project documents | Expert judgment  Data gathering  Meetings | Procurement management Plan  Procurement strategy  Source selection criteria  Make-or-Buy decisions |
| **Conduct Procurements** | | |
| Project Management Plan  Project documents  Procurement documentation  Seller proposals | Expert judgment  Data analysis  Interpersonal and team skills | Selected sellers  Agreements  Change requests  Project Management Plan updates  Project documents updates |
| **Control Procurements** | | |
| Project Management Plan  Project documents  Agreements  Procurement documentation  Approved change requests | Expert judgment  Data analysis  Inspection  Audits | Change requests  Project Management Plan updates  Project documents updates  Procurement documentation updates |

**Table 13 - Procurement strategy**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Project Title: ShutterBug App Date: 02 – Feb - 2022  Delivery Method   |  | | --- | | Contractor will be directly dealt by the CFO and Project Manager to procure resources. No sub-contractors will be allowed. |   Contract Type: FP – EPA (Fixed Price with Economic Price Adjustment)  Procurement Life Cycle   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Phase | Entry Criteria | Key Deliverables or Milestones | Exit Criteria | Knowledge Transfer | | 1 | Selection of physical resources | Procurement completed on or before 25th Feb’22.  Purchase of coffee machine, board games and hardware equipment. | Contract signed with vendors. | Required | | 1 | Job Advertisement. | Procurement completed on or before 5th Mar’22.  Selection of right candidates for development team. | Contract signed and work permit applied | Not required | |

**Table 14 - Procurement Management Plan**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Project Title: ShutterBug App Date: 01 - Feb - 2022  Procurement Integration   |  |  | | --- | --- | | Area | Integration Approach | | Scope | Project scope and WBS should match with the contractor’s WBS and scope baseline. | | Schedule | All items will be delivered on time as agreed in the contract. | | Documentation | Contract between Vendor and buyer will be signed and legally bound. | | Risk | Insurance and performance bond documents will be agreed on mutual terms and legally bound | | Reporting | Project status report should match with the contractor’s status report. |   Timing of Key Procurement Activities   |  |  | | --- | --- | | Date | Activity | | 01 - Feb - 2022 | Procurement document proposal date | | 07 - Feb - 2022 | Procurement document release date |   Performance Metrics   |  |  |  | | --- | --- | --- | | Item | Metric | Measurement Method | | Hardware equipment | Qualitative | Employee survey form as a questionnaire. | | Board games | Qualitative | User friendliness questionnaire | | Coffee machine | Qualitative and Quantitative | Product efficiency and quality grading scale. |   Legal Jurisdiction and Currency   |  | | --- | | Swedish procurement legislation will be followed. Currency - Swedish Kronor. |   Risk Management   |  | | --- | | Risk response plan and Risk register will be followed. |   Prequalified Sellers  1. IBM  2. DELL  3. HP |

## Risk management

It is important to implement project risk management practices iteratively since risks will arise continuously throughout the life cycle of the project. Planning is the first step in addressing risks during the project. Project risks should be evaluated and managed as it moves forward to ensure the project stays on track and emerging risks are addressed (Project Management Institute, 2017).

In this part due to the small size of this project, and medium complexity the simplified risk register matrix was applied, and the risk process was reduced to 4 processes. Moreover, as this is a waterfall project the risk project can be sequentially.

### Risk management plan

For suggesting the risk management plan the project charter provided input. Expert judgment and online or in-person meetings with project team members and the sponsor were used as techniques. Table 15 shows the detail for definition of risk probability and impacts level and table 16 displays the probability and impact matrix.

Table 15. Definition for probability and impacts

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Scale | Probability | Impact | | |
| Time | Cost  SEK | Quality |
| Very High | >70% | >6 months | >150000 | Incredibly significant impact on total functionality |
| High | 51-70% | 3-6 months | 100000-150000 | Significant impact on total functionality |
| Medium | 31-50% | 1-3 months | 50000- 100000 | Some impact in key functional domain |
| Low | 11-30% | 3-4 weeks | 20000-50000 | Minor impact on total functionality |
| Very Low | 1-10% | 1-2 weeks | <20000 | Minor impact on functionality |

Table 16. Probability and impact matrix

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Risk management Matrix | | Impact | | | | |
| Very low | Low | Medium | High | Very High |
| Probability | Very High | Low Risk | Moderate Risk | High Risk | Extreme Risk | Extreme Risk |
| High | Medium Risk | Low Risk | Moderate Risk | High Risk | Extreme Risk |
| Medium | Medium Risk | Low Risk | Moderate Risk | High Risk | High Risk |
| Low | Medium Risk | Low Risk | Low Risk | Moderate Risk | High Risk |
| Very Low | Medium Risk | Medium Risk | Low Risk | Moderate Risk | High Risk |

### Identify risks

For the next step and identifying risks the Project Management Plan, Project documents, and agreements were the input and expert judgment, data gathering, Data analysis and meetings were used as techniques. Table 17 shows the detail of risk register.

Table 17. Risk register

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Risk** | | | | | | | |
| **Type** | **Category** | **ID** | **Title** | **Probability (Very high, High, Medium, Low, very low)** | **Impact (Very high, High, Medium, Low, Very low)** | **Risk**  **Owner** | **Action** |
| Threats | Technical | 01 | Delay in programming due to technical problems | Medium | Medium | Development  team | The plan will be monitored constantly to identify any delay in the process as soon as possible. Then, changes in the schedule by allocating new resources or working parallel or increasing the time will be considered. |
| 02 | The applications or sites functions have errors | High | High | Development team | To ensure the performance of the software manual and automatic tests will be done constantly. |
| 03 | Cybersecurity and getting hacked | Medium | Very High | Company | The following tests will be done during the process.   * Functionality testing * Security testing * Penetration testing |
| Management | 04 | Changes in the team player | Medium | Medium | Project  Manager | As quickly as feasible, any changes will be identified. In addition, the plan will be revised. Substitutes with equivalent (or higher) qualifications and experience will be provided by the company. |
| 05 | Underestimation in the timetable | Low | Medium | Project  Manager | Re-allocation of resources, parallel execution of activities, changing the schedule or a combination of these will be considered by the company. |
| 06 | Increased costs and insufficient budget | Low | High | Financial manager | Any changes associated with sources can pose a significant impact on project costs. As a result, financial management will not be confined to reporting, but will also entail ongoing financial monitoring to assess financial progress and detect early warning indications of risk. |
| 07 | Sponsor withdrawal | Very low | Very High | Sponsor | If the sponsor leaves then the replacement procedures initiate for substituting the sponsor with another and this project needs to be ended. |
| Commercial | 08 | Poor user involvement | Medium | Very High | CEO | Lack of interest of users will be addressed by comprehensive marketing plans and considering UX and UI. |
| External | 09 | Legal issues related to copyright laws | Medium | Very High | CEO | The relevant technical issues like using artificial intelligence and reporting function will be taken into account to avoid these problems. Also, Users need to confirm the relevant agreements and policies to upload photos. |
| 10 | Non-compliance with GDPR | Very Low | Very High | Development team | The relevant technical issues will be considered for writing the software and how to store and present the information. |
| 11 | The continuation of the Corona pandemic and its impact on the workforce | Medium | Very Low | Company | Even if restrictive pandemic rules return, the task will be done remotely, and the project continues. |

### Qualitive risk analysis

In this process, individual project risks are prioritized by assessing their probability and their impact. The inputs, tools and techniques, and outputs are depicted in table 18. It is important to note that the risk register table is updated following this process.

Table 18. Qualitive risk analysis

|  |  |
| --- | --- |
| **Process** | Qualitive risk analysis |
| **Inputs** | * Project Management Plan * Project documents |
| **Tools & Techniques** | * Expert judgment * Data gathering * Data analysis * Risk categorization * Data representation |
| **Outputs** | Project documents updates |

### Plan risk response

In this process, practical solutions are identified to address overall and individual project risks. Table 19 illustrates inputs, tools and techniques, and outputs and the risk response plan is shown in table 20.

Table 19. Plan risk response process

|  |  |
| --- | --- |
| **Process** | Plan risk response |
| **Inputs** | * Project Management Plan * Project documents |
| **Tools & Techniques** | * Expert judgment * Data gathering * Data analysis |
| **Outputs** | * Change request * Project documents updates * Project Management Plan updates |

Table 20. Risk response plan

|  |  |  |  |
| --- | --- | --- | --- |
| **ID** | **Title** | **Status** | **Response** |
| 01 | Delay in programming due to technical problems | Moderate risk | Mitigate |
| 02 | The applications or sites functions have errors | High risk | Avoid |
| 03 | Cybersecurity and getting hacked | High risk | Avoid |
| 04 | Changes in the team player | Moderate risk | Mitigate |
| 05 | Underestimation in the timetable | Low risk | Active acceptance |
| 06 | Increased costs and insufficient budget | Moderate risk | Mitigate |
| 07 | Sponsor withdrawal | High risk | Escalate |
| 08 | Poor user involvement | High risk | Avoid |
| 09 | Legal issues related to copyright laws | High risk | Avoid |
| 10 | Non-compliance with GDPR | High risk | Avoid |
| 11 | The continuation of the Corona pandemic and its impact on the workforce | Medium risk | Passive acceptance |

Quality management

Quality management involves the process of integrating quality policies regarding planning, managing, and controlling project and product requirements to meet stakeholders’ objectives and standards. The primary goal of quality management is to ensure that the project deliverables are of quality and fit-for purpose. Quality management is essential in project management because it is very expensive to correct non-conformance when the product has been released to the customer (Project Management Institute, 2017). To ensure quality in the project, the project manager specified that all processes and deliverables in the project are subject to quality control and management. Furthermore, all members of the project team will play a role in ensuring that the project meets the quality standard. The project quality management processes are;

* Plan quality management - planning
* Manage quality -
* Control quality-

|  |  |  |  |
| --- | --- | --- | --- |
| **Process** | **Input** | **Tools and Techniques** | **Output** |
| Plan quality management | Project charter, Project Management Plan, project documents such as, risk register, stakeholder register | Expert judgement, test and inspection, meetings, Data gathering | Quality management plan, Quality metrics |

**QUALITY MANAGEMENT PLAN**

|  |  |
| --- | --- |
| **Project name: ShutterBug** | |
| Quality Standards: GDPR, Copyright | |
| Quality objective:   * Improve profitability and company value * Reduce risk * Detect and correct errors before the product reaches users | |
| **Metric or specification** | **Measure** |
| Quality of code | Number of lines per code, readability, maintainability of codes. (clean code principle) |
| Performance | The ability of software to perform requirements specified in scope |
| Compatibility | Ability of software to run on multiple platforms |
| Security | The robustness of software against cyber attacks |
| Usability | User friendliness of system |
| Cost variance | Difference in actual cost and estimated cost |
| Schedule variance | Difference in time spent to complete task and the specified time estimate |
| Customer satisfaction | Number of star rating and good reviews. |
| **Quality roles and responsibilities** | |
| **Quality roles** | **Responsibilities** |
| Project Sponsor | Responsible for approving the final acceptance of the project deliverable by ensuring that they meet the required compliance standard |
| Project manager | Responsible for ensuring that the project is run on the approved budget, schedule, and resources |
| Development team | Responsible for ensuring the product meets quality standards by containing all requirements (functional and non-functional) specified |
| suppliers | Mutually beneficial agreement to ensure continuous service availability |
| Marketing Team | Responsible for promoting the product to customers or users |
| CEO | Responsible for ensuring that project meets objectives |
| CFO | Responsible for ensuring that project stays within budget |
| Quality management approach | Quality audit, backlog management |
| Quality control approach | Nonconformance test and rework |
| Applicable quality procedures | Nonconformance and rework, Corrective actions, Quality audits, Continuous improvement |
| **Deliverables and process subject to quality review** | |
| Procurement of resources | |
| System development | |
| Marketing | |
| Launching | |

Communication management

A communication plan outlines how important information will be delivered to key stakeholders. The communication plan could help the project team to understand who should receive an information and when to loop in project stakeholders.

Table 23 depicts the details of plan communication management process and table 24 shows the communication management plan.

Table 23. Plan communication management process

|  |  |  |  |
| --- | --- | --- | --- |
| **Process** | **Input** | **Tools and Techniques** | **Output** |
| Plan Communications  Management | 1.Stakeholder register  2. Stakeholder management strategy  3.Enterprise environmental factors  4.Organizational process assets | 1.Communication requirement analysis  2.Communication technology  3.Communication models  4.Communication methods | 1.Communications management plan  2. Project document updates |

Table 24. Communication management plan

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Communication** | **Frequency** | **Description** | **Method** | **Audience** | **Owner** |
| Project team status meetings | Monthly | Checking the project status and reporting about their own parts | Meeting  (Face to face or online) | Project team | Project manager |
| Development team | Weekly | Checking the progress status and solving potential problems | Meeting  (Face to face or online) | Development team | Development team |
| Financial team | Weekly | A brief report on the actions taken and the status based on schedule | E-mail | Financial team | Project manager |
| Marketing team | Weekly | A brief report on the actions taken and the status based on schedule | E- mail | Marketing team | Project manager |
| Development team | Weekly | A brief report on the actions taken and the status based on schedule | E- mail | Development team | Project manager |
| Sponsor update | Every month | Project progress update | Meeting | Sponsor | Project manager |
| Project team meeting | As needed | In case of necessity or potential problem | Meeting  (Face to face or online) | Project team | Project manager |

# PROJECT COST MANAGEMENT

Tailoring PCM

This project has is based on knowledge management where a detailed financial database is supplied by startup incubator (Innovatum Science Park). Because of the hybrid approach to methodology (waterfall for planning and agile approach for project life cycle) a lightweight method is used to predict the cost for different tasks. The reason behind this decision is to be able to adjust changes in cost estimation. Organization follows the guidelines provided by Innovatum Science Park which are main sponsors of the project.

# PLAN COST MANAGEMENT

The preapproved budget based on the project charter is 751000 kr. Information is based on:

o Employment’s salary

o Designing, developing, and hosting website

o Marketing

o Costs of Award’s system for the first 6 months

* Cost for virtual learning platform for employees.

Project and budget are approved by the Innovatum Science Park and project manager. The known risk that can have an impact on the budget is a pandemic where employees are unable to work. To manage this potential risk all employees, have freedom to work from home if that is necessary and by doing that the budget can be controlled. The risk of running out of budget and bad resource management can be avoided by good and structural organization and by following project milestones and keeping the costs of each step as close as possible.

Table 25

|  |
| --- |
| COST MANAGEMENT PLAN |
| Project Title: Photography Website Date Prepared: 2022-02-10   |  |  |  | | --- | --- | --- | | Units of Measure: | Level Of Precision: | Level of Accuracy: | | Hours per worker estimated for project | It should be rounded for hours, not minutes | Acceptable range is ± 15% |   Organizational Procedure Links:   |  | | --- | | Organization follows WBS structure previously developed for this project as guidelines from Innovatum Science Park |   Control Thresholds   |  | | --- | | Every process and step must follow a cost baseline to prevent costs from going over budget |   Rules of Performance Measurement:   |  | | --- | | Every process upon finishing is measured by time and cost, meaning if the process is finished in time and if it follows the budget then the process is considered accomplished, and a percentage of overall project timeline is changed. |   Cost Reporting and Format   |  | | --- | | Weekly based report of cost management is scheduled to maintain the budget and SEK will be used as currency |   Additional Details   |  | | --- | | If currency suddenly fluctuate a change in budget is required and should be approved by the project manager and sponsor | |

# ACTIVITY COST ESTIMATES

The tools that were used to estimate cost included expert judgment where experience from previous similar projects was used as guidelines to predict cost. The other techniques which are important in this phase like analogous estimating where data and documents from other projects create a basis for creating parameters for our project.

Methods:

1. PARAMETRIC ESTIMATING: The parameters for estimation of cost in this method included hourly cost of labor, cost of computer equipment per unit, cost of monthly award amount, deployment and hosting combined.
2. THREE-POINT ESTIMATING: In this scenario when the cost is uncertain this method can provide an effective way to predict the cost for a given task. By multiplying three parameters (optimistic, pessimistic, most likely) and dividing by the number 3, gives a fairly accurate prediction for the cost.

Table 26

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| WBS ID | TASK | Hours | Duration(days) | Start | End | Method | Resource | Hourly rate | Estimated Budget | Reserve |
| 1.1.1.1 | PROCUREMENT OF RESOURCES: PHYSICAL | 80 | 10 | 14-Feb-22 | 25-Feb-22 | Parametric estimates | DFHKP | 250 SEK | 20000 SEK | 5000 SEK |
| 1.1.1.2 | PROCUREMENT OF RESOURCES: HUMAN | 80 | 10 | 28-Feb-22 | 11-Mar-22 | Parametric estimates | DFHKP | 250 SEK | 20000 SEK | 5000 SEK |
| 1.2.1 | ASSIGN DEV. TEAM | 2 | 1 | 14-Mar-22 | 14-Mar-22 | Analogous estimates | Dev Team | 180 SEK | 360 SEK | 1000 SEK |
| 1.2.1.1 | APP TEAM | 200 | 25 | 14-Mar-22 | 1-Jul-22 | Parametric estimates | Dev Team | 180 SEK | 72000 SEK | 20000 SEK |
| 1.2.1.2 | WEBSITE TEAM | 200 | 25 | 14-Mar-22 | 1-Jul-22 | Parametric estimates | Dev Team | 180 SEK | 72000 SEK | 20000 SEK |
| 1.3.1 | MARKETING | 80 | 20 | 13-Jun-22 | 08-Jul-22 | Three-point estimates | Marketing head | 140 SEK | 112000 SEK | 10000 SEK |
| 1.4.1 | LAUNCH HOSTING | 40 | 5 | 11-JuL-22 | 15-JuL-22 | Analogous estimates | CEO | 600 SEK | 24000 SEK | 15000 SEK |
|  |  |  |  |  |  |  |  |  |  | 392360 SEK |

# COST BASELINE

Table 27

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Project estimates | Contingency reserves | Cost baseline | Management reserves | Cost budget |
| 392360 SEK | 76000 SEK | 395000 SEK | 50000 SEK | 400000 SEK |

Monitoring and Controlling Process

Now that all the necessary strategies and documents has been designed and fixed during the planning process, there might be some needful occasions to change the schedule plan, cost estimation or risk register. It is not an easy step to do this. Changes in any of these planning document might have a small or large impact on the whole project as well as with other documents. One of the strategies that has been prescribed in the PMBOK guide is the use of ‘Change Management Plan’. Usually, there exists a Change Control Board (CCB), who has the complete authority over this. As this is a simple project managed by a start-up organization, any changes in the existing process at the project level and the organization level will be handled by the responsible person as shown in below table 26. So, the following steps will be followed as a part of Monitoring and Controlling phase in this project.

**Step 1:** Any changes should be first entered into the Change request form by the respective people working on the project.

**Step 2:** Upon submission, changes will be reviewed and approved as per the authority level given in template (Table 27).

**Step 3:** Approved changes will be further entered into the record and maintained within the organization as per the template shown in table 28. This will help to prevent any future conflicts and deviations.

**Table 28 – Template of change request form**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Project ID** | **Document ID** | **Document name** | **Change description** | **Impact on** | **Requested by** | **Submission date** |
|  |  |  |  |  |  |  |

The change management plan specific to this project has been designed as follows.

**Table 29 – Template of change management plan**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **CHANGE MANAGEMENT PLAN**  **Project name: ShutterBug App Date: 07 - Feb – 2022**   |  |  |  | | --- | --- | --- | | **Changes in phase / activity / task** | **Reviewed by** | **Approved by** | | Pre project   * Business case | Project manager, CFO, CEO | CEO | | Initiation   * Project charter | Project sponsors, Stakeholders, CEO, CFO | Project manager | | Planning | - | Project Manager | | Development  (Agile approach) | Project Manager | Development Team | | Marketing | Project manager | Marketing head | | Product Launch | CFO, Marketing head, Project Manager | CEO |     Document Reviewed by: Project Manager  Document Approved by: CEO |

**Table 30 – Template for record of contract changes**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **RECORD OF CONTRACT CHANGES**   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | **Project ID** | **Change ID** | **Document ID** | **Document Name** | **Description of change** | **Approved by** | **Date approved** | |  |  |  |  |  |  |  | |  |  |  |  |  |  |  | |

Reflections

With mutual agreement, the team was formed to develop a Project Management Plan. All members were determined to make the project a success. Hence each member contributed in diverse ways to ensure that the tasks were completed within schedule.

Working on this project provided a better understanding of the PMBOK 6th edition’s (Project Management Institute, 2017) concepts of project management. Although the pace was slow at the initial stages, through collective efforts we were able to grasp the concept of project management and develop the plan for our fictious project.

The project has been an eye opener for us as far as planning project with PMBOK as a guide is concerned. A lot has been learnt but the basic tips we take with us are:

The relationship between planning and success of a project.

The importance of communication at each stage of project.

Conflict resolution and team building.

How to prevent failure of a project by adoption of proper Project Management Plan and implementation of the same.

Division of work

During the whole process, face-to-face and online meetings were held frequently. Most of the members tried to involve and proactively contribute to the tasks. Each of the task had some dependency and team integration was always consistent by providing each other’s feedback. Collaboration between the group was at pace by always maintaining a positive feedback loop. Specifically, the scope and schedule section, which served as the foundation for the rest of the document, were decided in joint sessions. However, the writing was divided between the group members and presented in the list below.

Introduction - Kanniga

Pre project phase

Business case – Darmin, Kanniga

Organizational structure - Fatemeh

Initiating

Project charter- Fatemeh, Helen, Pedram

Planning

Design of WBS – Darmin, Fatemeh, Helen, Kanniga

Scope Management - Fatemeh, Helen

Estimation of task duration – Fatemeh, Helen, Kanniga

Schedule Management - Kanniga

Resource Management - Kanniga

Procurement Management – Kanniga

Risk management- Fatemeh

Cost Management – Darmin

Communication Management - Pedram

Quality management-Helen

Stakeholder engagement- Helen

Change Management Plan - Kanniga

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