**Batch: B2 Roll No.: 1911091**

**Experiment / assignment / tutorial No.\_\_\_3\_\_\_\_**

|  |
| --- |
| **TITLE: Project Plan Document for Mini Project** |

**AIM:** To learn and understand the way of developing the software by classical methods of software Engineering., Planning and monitoring of the project using tools and prepare a document for the same by using the concept of software engineering **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Expected OUTCOME of Experiment:**

Analyze the software requirements and Model of the defined problem.

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**Books/ Journals/ Websites referred:**

1. Roger Pressman, Software Engineering: A practitioner's Approach, McGrawHill, 2010 ,6th edition

2. Ian Somerville, Software Engineering, Addison Wesley,2011,9th edition

1. http://en.wikipedia.org/wiki/Software\_requirements\_specification

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**Software Project Management Plan**

**for**

**Vocal For Local**

**Aayush Malde (1911090), Aditya Malwade (1911091), Rahul Panchal (1911097)**

**23/09/2021**

|  |  |  |  |
| --- | --- | --- | --- |
| **Version** | **Release Date** | **Responsible Party** | **Major Changes** |
| 0.1 |  |  | Initial Document Release for Comment |

**Table of Contents**

Build the table of contents here. Insert it when you finish your document.

**1.  Introduction**

This section of the SPMP provides an overview of the project.

Purpose

The current pandemic situation has encouraged many people to start their own small business, but due to lack of connectivity and customer reach, upscaling becomes a difficult task for small business owners. There is a need for an exclusive platform for consumers to connect with blooming small -scale businesses and for the business owners to showcase their products and to create contacts.

Problems are faced by businesses new in the market to showcase their product to gain customer reach. There is a need for a platform to connect small scale business owners to the local consumers. The businesses can register themselves and can post details about their products which the consumers can look up to and can subsequently connect with the business owners. Thus, create a web application that connects small scale businesses with larger audiences and blooms local businesses

Product Scope

•To design a website with user friendly, easy to understand interfaces.

• To provide a login and registration facility for the user.

• To provide registered users with the facility to post details about their products.

• To design appropriate server backends for storing and retrieving details.

• The consumers can look up businesses on the website as per their requirements.

• The consumers can connect with the business of their choice.

• The consumers can post feedback of their experience with a product.

References

*Vocal For Local is a budding project and at its beginning stages it has taken inspiration from many great tech companies and their approach towards building their user interface clean and subtle. Inorder to make the frontend look attractive, seamless and simple at the same time we had to refer to the styling and design of various websites. Some of the websites used to references are:*

*❏ Amazon.com*

*❏ Amazon Prime Video*

*❏ Netflix India*

*Graphic illustrative images for backgrounds were designed using tools like*

*❏ Canva : Create Amazing Graphic Design Our approach for the backend of this website project was fairly conventional and followed the official documentation of Django for most of the part. The database chosen was SQLite3 as it is the most compatible database system with Django projects. However, whenever we found ourselves stuck at a backend problem, we referred to the following websites.*

*❏ Tech With Tim*

*❏ Ecommerce Website - Course*

*❏ Django documentation*

**1.1 Project Overview**

Project Objectives:

•To design a website with user friendly, easy to understand interfaces.

• To provide a login and registration facility for the user.

• To provide registered users with the facility to post details about their products.

• To design appropriate server backends for storing and retrieving details.

• The consumers can look up businesses on the website as per their requirements.

• The consumers can connect with the business of their choice.

• The consumers can post feedback of their experience with a product.

Major Milestones:

|  |  |
| --- | --- |
| **Milestones** | **Milestone Date** |
| Planning and objectives of the website approved | 28-10-2021 |
| Setting up all the tools to start working on the project | 4-11-2021 |
| Designing System Architecture and flow diagram for all the functionalities. | 12-11-2021 |
| All the front end views to be completed and backend tables to be made simultaneously. | 20-11-2021 |
| Completing the respective back end i.e creation of database and launching it. | 25-11-2021 |
| Evaluation of the work done so far and getting feedback. | 27-11-2021 |
| Complete the frontend and backend of the whole website and make it ready for testing. | 6- 12-2021 |
| Populating the software with a dummy database and testing for bugs. | 10-12-2021 |
| Website ready to be launched on the server. | 20-12-2021 |
| Customer Approval and response | 28- 12 -2021 |
| Project successfully completed | 3- 1 -2022 |

Required Resources:

* PCs for all the employees.
* Necessary software installed.
* Server running 24/7.
* Respective database software.
* Host server apis and permissions.

Budget:

* The budget of the project considering the database connectivity, server connectivity for 24 hrs, efforts and the software cost will be around 10-12k dollars.
* Initial advanced payment will be required for the softwares and server hosts.
* The increase in functionality and users will see the increase in budget.

**1.2 Project Deliverables**

* Secure e-commerce/m-commerce facilities
* Online Secure Database
* Non-Premium Market
* Personalized Profiles
* Easy to understand UI
* Access To Business Contacts
* Business Search Bar
* Product marketing
* Product Post Services

**1.3 Evolution of the SPMP**

* The project is going to follow a simple waterfall mode.
* We will first discuss and confirm all the functionalities the website will be providing.
* Then we will move on to the system design, flow chart diagrams for functionality, use case models,etc.
* Then the softwares , server , databases would be decided and coding would start.
* First we will finish with the Frontend and along with that the backend creation will start simultaneously.
* We would like to present the currently completed work which should be around 80% to our clients and get the necessary approvals and feedback. This would be the time to add or remove functionalities.
* We would then move on to complete the project coding part and make it ready for testing.
* Testing for bugs will take place using a dummy environment.
* Then the website should be ready to be launched.
* Monitoring response of the users and general foot traffic on the website.

**1.4 Reference Materials**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Title** | **Report No** | **Author** | **Date** | **Organization** |
| Setting up softwares like django | 1 | Tim | 2-11-2021 | NA |
| Frontend design ideas. | 2 | NA | 10-10-2021 | Ecommerce websites |
| Frontend templates | 3 | NA | 11-10-2021 | Nicepage.com,  templatemo.com |
| Database documentation | 4 | [D. Richard Hipp](https://en.wikipedia.org/wiki/D._Richard_Hipp) | 10-11-2021 | Sqlite3 |
| Errors meaning and correction | 5 | NA | NA | Stackoverflow |

**1.5 Definitions and Acronyms**

Define or provide references to the definition of all terms and acronyms required to properly interpret the SPMP.

E-commerce: Electronic commerce

Server: A server is a computer, equipped with specific programs and / or hardware, to enable it to offer services to other computers (clients) on its network (connected to it).

Database: A database is an organized collection of structured information, or data, typically stored electronically in a computer system.

Frontend: Relating to or denoting the part of a computer system or application with which the user interacts directly (generally the windows we see in a particular website).

Backend: In the computer world, the "backend" refers to any part of a [website](https://techterms.com/definition/website) or software [program](https://techterms.com/definition/program) that users do not see. It contrasts with the [frontend](https://techterms.com/definition/frontend), which refers to a program's or website's [user interface](https://techterms.com/definition/user_interface).

HTML- HyperText Markup Language

JS- Javascript

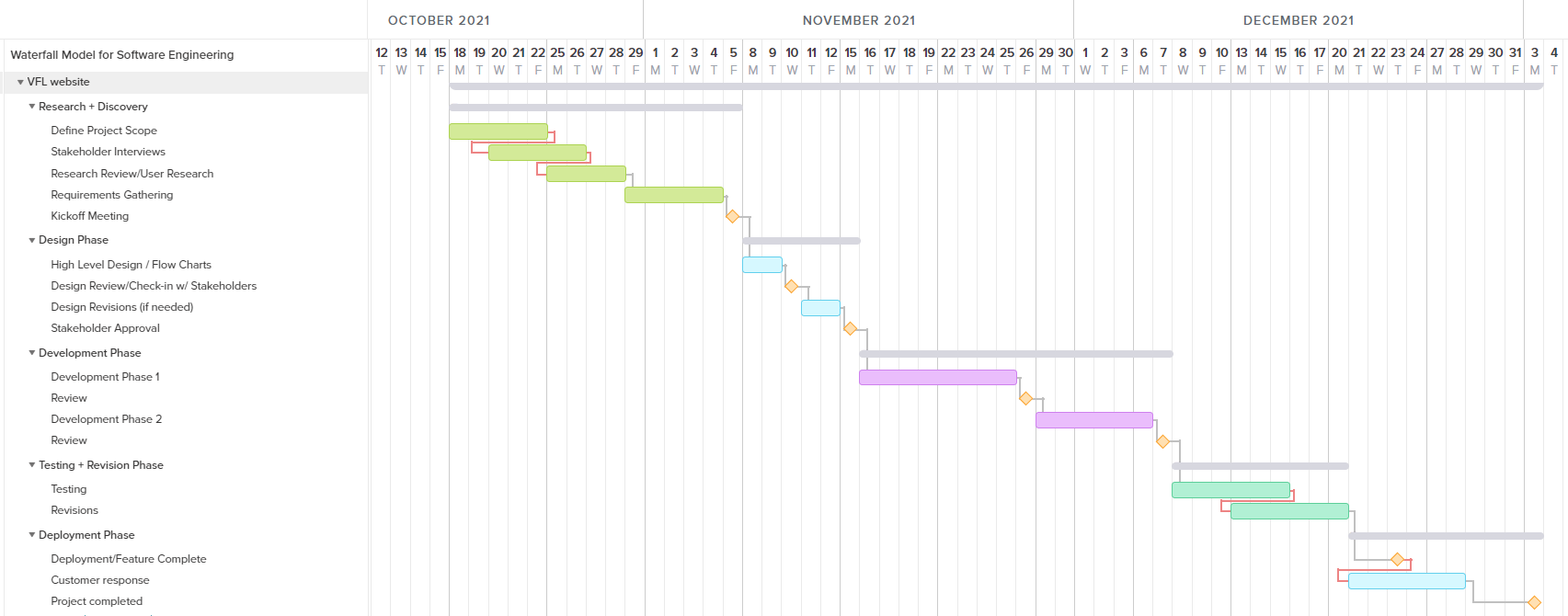
CSS- Cascading Style Sheets

SQL - Structured Query Language

**2.  Project Organization**

This section specifies the process model for the project and its organizational structure.

**2.1 Process Model**

Specify the life cycle model to be used for this project or refer to an organizational standard model that will be followed. The process model must include roles, activities, entry criteria and exit criteria for project initiation, product development, product release, and project termination.

**2.2 Organizational Structure**

**2.3 Organizational Interfaces**

Describe the administrative and managerial interfaces between the project and the primary entities with which it interacts.  A table may be a useful way to represent this.

|  |  |  |
| --- | --- | --- |
| **Organization** | **Liaison** | **Contact Information** |
| Customer: <name> | <name> | <phone, email, etc.> |
| Subcontractor: <name> |  |  |
| Software Quality Assurance |  |  |
| Software Configuration Management |  |  |
| NA |  |  |

**Table F-1. Project Interfaces**

**2.4 Project Responsibilities**

Identify and state the nature of each major project function and activity, and identify the individuals who are responsible for those functions and activities.  Tables of functions and activities may be used to depict project responsibilities.

|  |  |  |
| --- | --- | --- |
| **Role** | **Description** | **Person** |
| Project Manager | leads project team; responsible for project deliverables | <name> |
| Technical Team Leader(s) | <define as locally used> | <name> |
| NA |  |  |

**3.  Managerial Process**

**3.1 Management Objectives and Priorities**

|  |  |  |  |
| --- | --- | --- | --- |
| **Project Dimension** | **Fixed** | **Constrained** | **Flexible** |
| Cost |  |  | X |
| Schedule | X |  |  |
| Scope (functionality) |  |  | X |

**Table F-3: Flexibility Matrix**

**3.2 Assumptions, Dependencies, and Constraints**

● Users are expected to have a stable internet connection.

● The access to the database is available 24/7.

● All the information like contact details, name, etc provided by the users is correct.

● Supported browsers are Google Chrome, Mozilla Firefox Microsoft Edge, Safari.

● We have assumed that the user knows english.

**3.3 Risk Management**

User authentication is very important and email and phone verification should be implemented for the same. Secondly, the database protection is a must since it contains users’ private data. Mechanisms must be implemented to prevent data theft. Also the database shouldn’t crash and back up database must be available when in need.

**3.4 Monitoring and Controlling Mechanisms**

|  |  |  |  |
| --- | --- | --- | --- |
| **Information Communicated** | **From** | **To** | **Time Period** |
| Status report | Project Team | Project Manager | Weekly |
| Status report | Project Manager | Software Manager, Project Team | Weekly |
| Project Review | Project Team | Software Manager | Monthly |
| <etc>  NA |  |  |  |

**Table F-4: Communication and Reporting Plan**

**3.5 Staffing Approach.**

Describe the types of skills required for the project, how appropriate personnel will be recruited, and any training required for project team members.

**4.  Technical Process**

**4.1 Methods, Tools, and Techniques**

Programming Languages: Python, SQL (Structured Query Language), JS (JavaScript)

Framework: Django

Databases Used: Sqlite3

Hosting: Heroku

Frontend: HTML, CSS, Bootstrap, javascript

**4.2 Software Documentation**

Not applicable since we are building a website/app product and not any library/API to be re-used.

**4.2.1 Software Requirements Specification (SRS)**

The SRS clearly and precisely describes each of the essential requirements (functions, performances, design constraints, and attributes) of the software and the external interfaces.  We have described the scope for an E-commerce website where the users can browse the products or host their business if they wish to.

In SRS, we have done the following:

1. Product Scope.
2. Overall Description.
3. External Interface Requirements.
4. System features.
5. Nonfunctional Requirements.
6. Business Rules
7. Assumptions about the users.
8. Functionalities and their description.

**4.2.2 Software Design Description (SDD)**

The database used-Sqlite3 will be hosted on the Heroku servers.

The internal interfaces and back end would be monitored by an administrator. The testing will be done once the frontend and respective backend is completed.

**4.2.3 Software Test Plan**

Testing is a very important part of our project. As we are using the waterfall model, first we will complete the user interfaces along with their back end.

Two members will form extensive and rigorous test cases charts for each interface

Then testing would be conducted accordingly.

**4.3 User Documentation**

We plan to have a chat section below the posted products so that user can express their opinions about a product directly.

There would be an About Us section and customer support section for the users to communicate grievances, suggestions.

**4.4 Project Support Functions**

The password of the users are encrypted and not even visible to the developers.

The database security is in place to avoid leaks.

Functions for validation of email and phone numbers are also implemented.

New functionalities can be added without disturbing the existing version of the website.

**5.  Work Packages, Schedule, and Budget**

**5.1 Work Packages**

On a global level, there is one package -

1. The application itself

The application packages will be as follows:

1. Backend - Django
2. Frontend - HTML, CSS, JS

The file structure will be as follows:

1. views.py: Used for writing the queries to the database.
2. urls.py: Connection of views with routes.
3. models.py: Schema of the database.
4. admins.py (Registering the model to the Django admin dashboard.)
5. settings.py (Configuration of Django web-app.)
6. templates folder: (Consists of HTML files)
7. mange.py: Used for running the application.
8. migrations folder: Used for managing the database.
9. static folder: Consists of CSS and JS files.
10. Media: used to collect images posted by users.

**5.2 Dependencies**

Application dependencies:

1. Frontend dependencies: HTML - CSS -JS components are interdependent, they should design the same pages clearly, by selecting the correct divs, and applying the right styles and animations.
2. Backend dependencies: Depends on various libraries for connection to database and Heroku website hosting.
3. Project dependencies: Frontend and Backend are heavily connected hence, depend on each other.

**5.3 Resource Requirements**

* Personnel required, with experience in Front End, Back End, Database Management each equipped with necessary hardware and software.
* 150 hours of coding time
* Support software - web browser with latest updates for CSS, Html and Javascript, Github, VSCode(or any text editor)
* Computer Hardware- Intel i3 processor.

**5.4 Budget and Resource Allocation**

Budget will be divided such that a major portion of it would go to database, storage and website hosting. The rest will go to the developers and software costs if any.

New functionality to be added if any would call for additional funding.

Budget will be estimated using the COCOMO II model.

**5.5 Schedule**

|  |  |
| --- | --- |
| Planning and objectives of the website approved | 28-10-2021 |
| Setting up all the tools to start working on the project | 4-11-2021 |
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**6.  Additional Components.**

**6.1 Index.**

HTML- HyperText Markup Language

JS- Javascript

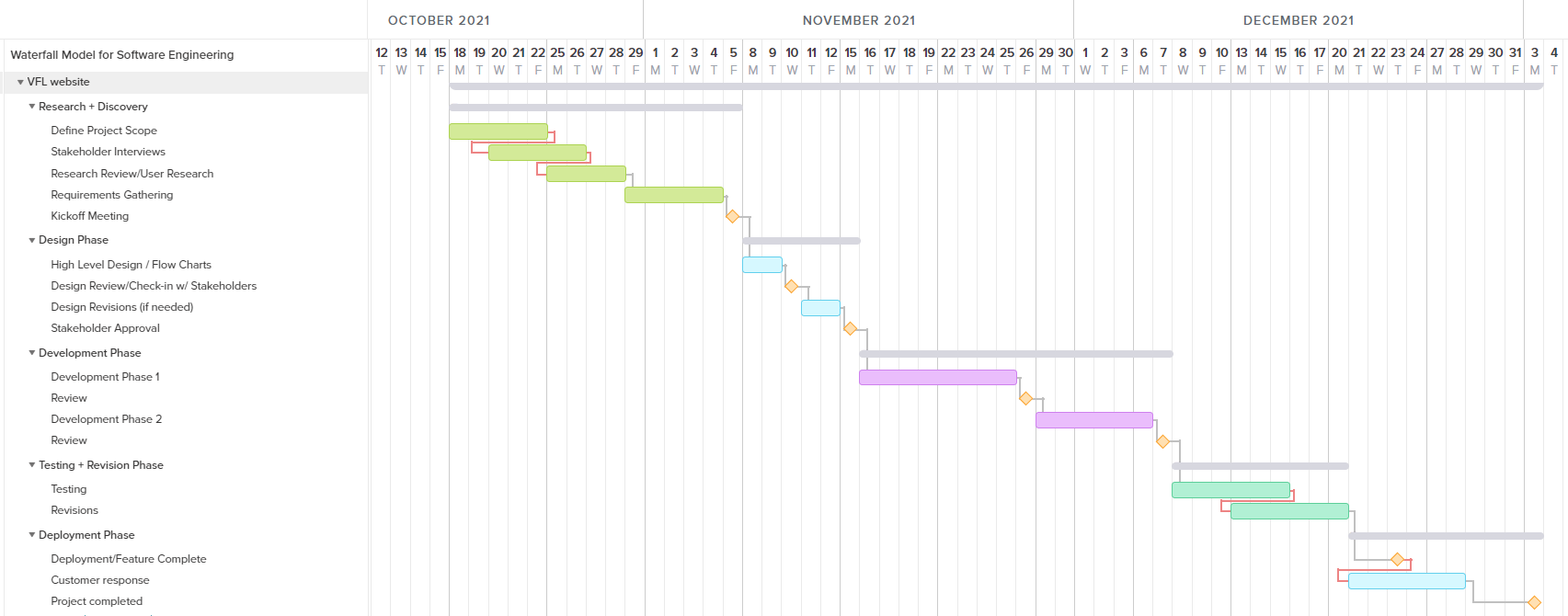
CSS- Cascading Style Sheets

SQL - Structured Query Language

COCOMO- Cost Constructive Model

**6.2 Appendices**

 Current Detailed Project Schedule:



**Conclusion:**

Our project will be constructed using the waterfall model and the project planning document is made accordingly. We understood the model, requirements and scheduling of the project.

**Post Lab Descriptive Questions**

1. **State various Scheduling principles and explain them in detail.**

#### 1. Mathematical Analysis

Critical Path Method (CPM) and Program Evaluation and Review Technique (PERT) are the two most commonly used techniques by project managers. These methods are used to calculate the time span of the project through the scope of the project.

**a. Critical Path Method**

Every project’s tree diagram has a critical path. The Critical Path Method estimates the maximum and minimum time required to complete a project. CPM also helps to identify critical tasks that should be incorporated into a project. Delivery time changes do not affect the schedule. The scope of the project and the list of activities necessary for the completion of the project are needed for using CPM. Next, the time taken by each activity is calculated. Then, all the dependent variables are identified. This helps in identifying and separating the independent variables. Finally, it adds milestones to the project.

**b. Program Evaluation and Review Technique (PERT)**

PERT is a way to schedule the flow of tasks in a project and estimate the total time taken to complete it. This technique helps represent how each task is dependent on the other. To schedule a project using PERT, one has to define activities, arrange them in an orderly manner and define milestones. You can calculate timelines for a project on the basis of the level of confidence:

* Optimistic timing
* Most-likely timing
* Pessimistic timing

Weighted average duration and not estimates are used by PERT to calculate different timeframes.

#### 

#### 2. Duration Compression

Duration compression helps to cut short a schedule if needed. It can adjust the set schedule by making changes without changing the scope in case, the project is running late. Two methodologies that can be applied: fast tracking and crashing.

**a. Fast Tracking**

Fast-tracking is another way to use CPM. Fast-tracking finds ways to speed up the pace at which a project is being implemented by either simultaneously executing many tasks or by overlapping many tasks to each other. CPM helps us identify activities that can be used to speed up the pace of the project. Although it is an appealing technique, it has its own share of risks too. As many activities will be simultaneously implemented, it is highly likely to make mistakes and compromise on quality.

**b. Crashing**

Crashing deals with involving more resources to finish the project on time. For this to happen, you need spare resources to be available at your disposal. Moreover, all the tasks cannot be done by adding extra resources. Need to add new team members to a project and limited divisibility of tasks leads to increase communication and is the basic reason behind it. The crashing technique can also be used by adding time, paid overtime, but it should stay within the decided deadline. It, unfortunately, leads to raising the cost of the project.

#### 3. Simulation

The expected duration of the project is calculated by using a different set of tasks in simulation. The schedule is created on the basis of assumptions, so it can be used even if the scope is changed or the tasks are not clear enough.

#### 4. Resource-Leveling Heuristics

Cutting the delivery time or avoiding under or overutilization of resources by making adjustments with the schedule or resources is called resource leveling heuristics. Dividing the tasks as per the available resources, so that no resource is under or over-utilized. The only disadvantage of this methodology is it may increase the project’s cost and time.

#### 5. Task List

The task list is the simplest project scheduling technique of all the techniques available. Documented in a spreadsheet or word processor is the list of all possible tasks involved in a project. This method is simple and the most popular of all methods. It is very useful while implementing small projects. But for large projects with numerous aspects to consider task list is not a feasible method.

#### 6. Gantt Chart

For tracking progress and reporting purposes, the Gantt Chart is a visualization technique [used in project management](https://www.educba.com/why-is-project-management-important/). It is used by project managers most of the time to get an idea about the average time needed to finish a project. A project schedule Gantt chart is a bar chart that represents key activities in sequence on the left vs time. Each task is represented by a bar that reflects the start and date of the activity, and therefore its duration.

#### 7. Calendar

Many don’t consider scheduling tasks on a calendar for their project requirements – when they should! Most of the calendars can be curated with names of their own. In this case, you can create one calendar per project and scheduled events for that project. The calendar shows a timeline for the entire project. The major advantage is that it can be subjected to change as it is shareable. While it seems to be a great technique for tracking a project, it does have certain limitations you cannot assign tasks to certain people and you cannot see task dependencies.