Project Management App

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Project Management App
For Aspen Surgical Products, Inc.

By

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April, 2014
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Abstract

Project management software help an organization to improve their project planning, control their operational costs, manage their budget, allocate their resources, and much more. This type of software can address all these issues for both small and large business. Project management software makes business operations flow in smooth processes for both simple and complex issues. Every project conducted within a business includes planning aspects, managing aspects, and execution aspects. These aspects can be easily controlled with an effective project management software program, also being compatible with budget and time constraints. The most advantageous aspect of using project management software is it increases the effectiveness in teamwork, and improves positive collaboration between the team members.

Engineers of Aspen Surgical Products, Inc. manage their projects by using Microsoft Excel software, which is a very time consuming and inefficient way. It also takes long time for the Engineering Manager to track the update of all the engineers’ projects. There is no easy way to sort out the projects based on the engineers’ name, type of project, status of project, etc. by using Microsoft Excel. The purpose of this project is to develop a project management app for the engineering department of Aspen Surgical Products, Inc. The app is expected to reduce the time of the engineers in managing their projects by developing an easy to use, user-friendly program, and which can also bring a project’s issues that need to be addressed immediately to the user’s attention. Engineers will be able to create new projects and track their projects effectively using this app and update the details whenever necessary. Engineering manager will have the option to search the projects based on the name of the engineer, participation type, type of the project, and status of the project. This will save extensive amount of time for the Managers as well as other users in managing and planning their projects in any kind of organization.
1. Introduction

Not very long ago, project management meant three things — a pencil, pad of paper, and the brain [1]. Now, however, there's project-management software available to help organize the business better, collaborate more effectively, and plan and track projects comprehensively. Project Management Software is an application to help the workgroup plan and coordinate different activities within the workgroup. These applications help users put together a plan of action to obtain their goals [2].

There is a wide range of project management software programs available today [6], e.g. web-based software programs, hosted software programs, or desktop applications. Web-based programs easily allow all members of an organization to access information stored in program from any location. Most times a desktop application is only utilized by a single user, while web-based programs are utilized by multiple users [3].

Using the proper project management software is essential when it comes to meeting an organization’s needs and wants. An effective program can complete almost all basic management functions from start to end. An effective program is also very easy to use, user-friendly, and can bring a project’s issues that need to be addressed immediately to a user’s attention. This software solution will be able to collect accurate information between organizational units in real time. The final goal of such system is to provide the right information at the right time to the right person or group of persons (project member, group of members, project manager, etc.) [4].

Monitoring and tracking of the project team activities is very important, in order to carry out corrective actions when needed, thus avoiding additional work, duplication of data and other related costs (some reasons that lead to project failures, cost and time overruns are explained in [5]). By developing easy-to-use tool which enables an end user to efficiently access relevant data, the above issues can be solved, reducing delays and costs and increasing project efficiency.

The purpose of this project is to develop easy to use, user friendly project management software for the engineering team of Aspen Surgical Products, Inc. Engineers will be able to manage their projects effectively and the Engineering manager will have the options to track the projects efficiently using this app.
1.1. Background

This App was developed for the Engineering Department of Aspen Surgical Products, Inc., a Hill-Rom Company. Aspen Surgical Products, Inc. is a leading worldwide manufacturer of surgical disposable products producing specialty medical products and surgical instruments, which includes blades, scalpels, operation room accessories, patient and staff safety products, wound care products, and instrument care products. Aspen Surgical Products, Inc. is also a renowned owner and seller of trusted brands such as Bard-Parker®, Colby™, WriteSite®, Richard-Allan™, Dr. Fog®, Sterion®, and Oxboro®. The project was developed for their main location in Caledonia, Michigan. Aspen Surgical Products, Inc. also has facilities in U.K and Puerto Rico.

Currently, the Engineers of Aspen Surgical Products, Inc. use MS Excel to manage their projects. It is very time consuming and inefficient way of managing the projects. Engineers have to enter all of their projects in a file having different spreadsheet in different tabs according to their name. They provide all different types of project details into the same sheet, which makes it difficult to keep track on their projects. It also takes long time for the Engineering Manager to track the project updates of his team members. So, the Engineering Manager wanted to have an app that will ease his work in searching different types of projects and will reduce his time in tracking the projects. The Project Management App is also expected to have a good looking and easy to use interface.

1.2. Scope and Limitation

The scope of this project is limited to:

I. The Engineering Department of Aspen Surgical Products, Inc.
II. The Engineer’s will use the App to enter and update their projects.
III. The Engineering Manager will use the App for tracking the update of all the projects.
IV. This App was developed by using the open source web server XAMPP.
V. Chrome browser is recommended to use since bootstrap doesn’t work properly with IE.
VI. HTML5 was used to create the forms, SQL was used to insert, query, update and delete data.
VII. PhP was used to create connection between HTML5 and SQL.
VIII. phpMyAdmin was used as the database.
IX. Project leader and project participant have to enter projects separately for their records.
X. No restriction for the user in filling out the form.

XI. If there’s no project available based on the user’s search criteria the App will still show the tables without any projects.

XII. There’s no authorization required in viewing and editing the projects. Anyone can view and edit anyone’s projects.
2. Design

This Project Management App was developed for the ease of the Engineers of Aspen Surgical Products, Inc. Before designing the App, reviews from several Engineers of Aspen Surgical Products, Inc. were taken in order to understand the requirements and expectations. All the engineers agreed upon one thing that the current system (MS Excel spreadsheet) they are using is very time consuming and confusing. So, they wanted to have something easy to use as compared to the current system they are using.

2.1. Use case diagram of Project Management App

![Use Case Diagram](image)

Figure 1: Use Case diagram
2.2. **HTA of Project Management App**

Hierarchical Task Analysis (HTA) diagram was drawn to show the task analysis of App (Figure 2). In HTA a high-level task is decomposed into the hierarchy of subtasks. The HTA diagram helped in defining the overall task goals and sub-goals of the Project Management App [7].

Based on the requirements and recommendations provided by the engineers, this App was designed to develop a very easily understandable and uncomplicated system in managing projects.

The basic features of this app are given as below:

**Home Page**

The interface of the Home Page is very simple and gives straightforward options to the users of the App (Figure 3). This page provides three options to the users: add a new project, view all projects and search projects with help of different criteria.

**Add New Project Options Page**

This screen displays when users click on the Add New Project button from the Home Page (Figure 4). Add New Project page provides different options to the user for adding a project. They can either add project as: leader, participant, day to day support, and parking lot project. Each option pops up a different form for the user to add corresponding type of project.

**Add New Project Page**

This screen shows a form to the user with different user input options based on the corresponding type of the project such as owner name, project description, release dates, project type, status, comments, etc. (Figure 5). This form is different for all the four different types of project roles. After completing the form users can save the projects by clicking on the submit button which is located at the bottom of the form. This will take users back to the Homepage with a confirmation message on top of the page: “Project submitted successfully”.
Figure 2: HTA diagram
Figure 3: Home Page

Figure 4: Add new project options page
Figure 5: Add new project page for leading projects

View All Project

This screen appears if the users click on the View All Project button from the homepage (Figure 6). This page displays the information stored in the database in the form a table. As there are four different types of projects, there are also four separate tables on the View All Project page. Not only users can view the projects from the page but also they can delete and make updates in project list such as project status, percent complete, project type, etc. from this page. If user clicks on the delete button, it will erase the corresponding project descriptions from the database. If the user clicks on the edit button, it will pop up corresponding types of project forms again having the current information filled in it. The users will be able to edit any type of information from that project.
Search Options (homepage)

The user can use different search combinations or just one search option to search the desired projects (Figure 7). Users can search the projects by the project keyword i.e. a part or full name of the project, name of the engineer, role of the engineer in the project, project status and project type options. Users can select all or any option from these and click on the search button to get the desired projects.

Search Project Result

This screen will display when users click on the search button after providing the search criteria (Figure 8). This page displays all the tables corresponding to the search criteria of the users in form of tables. Users are allowed to update and delete project details from this page.

Figure 6: View all projects screen
Figure 7: Search options (selected)

Figure 8: Search result
2.3. Design Tools

For the implementation of Project Management app twitter bootstrap with HTML5 was chosen. Twitter bootstrap is a project on GitHub [8]. Bootstrap was to make a responsive layout for the App so that it provides an optimal viewing experience such as easy reading and navigation with a minimum of resizing, panning, and scrolling to the users. It will also be helpful in future to make a mobile version for this App. Twitter bootstrap is a collection of free themes for designing web applications. It contains HTML and CSS-based design templates for typography, forms, buttons, navigation and other interface components, as well as optional JavaScript extensions [9].

Database

**XAMPP** was selected to get a localhost server for the App [10]. XAMPP was chosen because it is free, easy to install and no configuration is required to make it compatible with PHP and MYSQL. phpMyAdmin was used to serve the database functionality for this app. It is supported by bootstrap and it’s a free open source tool written in PHP intended to handle the administration of MySQL with the use of a web browser.[11]

This Project Management App consists of four tables named as **leader**, **participant**, **support** and **parking**. These table lies under **aspen_pro** schema. Attributes of each table is explained as below:

- The **leader** table consist of owner_name, project_lead_desc, project_lead_type, project_lead_status, project_lead_engreldate, project_lead_comreldate, project_lead_percomp, project_lead_cfrnumber, project_lead_capitalexp, project_lead_actspending, project_lead_comments and a primary key ID.

- The **participant** table consists of owner, participant_name, part_desc, part_type, part_status, part_duedate, part_percomp, p_comments and a primary key ID.

- The **support** table is for day to day support participant of the project. this table consists of owner, sup_name, roll_desc, dueDate, proType, sStatus, supcomments and a primary key ID.

- The **parking** table is for parking lot (going to start soon projects). This table consists of owner, powner, pdesc, ptype, pstatus, pcomment and a primary key ID.
3. Advantages

Easy to use

This app is easy to use compared to the current system. Engineering Manager will be able to search specific projects very easily using the project keyword options. It will also be very easy for the Manager to narrow down the required project list by entering the name of the engineers and their corresponding role, project status, and project type options. This App also has different forms for different types of project, which will reduce confusion of the Engineer’s about the required information for different types of projects.

Time saving

This app will save lots of time for the Engineers in managing their projects and for the Engineering Manager in keeping track on the project updates.

User friendly

The interface of this App is very user friendly. The users will be able to find out any options very quickly. The Help option of the App provides necessary guidelines to the users on how to fill up specific options in the forms.

Aesthetic Interface

This app has a nice interface compared to the current system. Bootstrap was used together with html5 in developing a good looking interface.

Economic

This app was developed by using only XAMPP. XAMPP is a free and open source software. So, this app doesn’t have any tool or maintenance cost.
4. Usability Evaluation

4.1. Customer Review

The Engineering Manager, Mr. Keith Smith and two engineers, Mr. Roger Krese and Mr. Syful Ahmed of Aspen Surgical Products, Inc. were requested to use the app and provide feedback by answering few questions. The results of the user evaluation questionnaire are provided below:

i. Easy Compared to old way of adding and managing projects?
   - Agreed (3/3)

ii. Do clickable items stylistically indicate that they are clickable?
    - 10 of 10.

iii. Is the site’s design aesthetically appealing?
    - 7 of 10.

iv. Adequate text-to-background contrast?
    - 9 of 10

v. Navigation labels are clear & concise
   - Yes

4.2. Usability testing Results

On the basis of Usability testing the result was mapped according to the usability attributes. The results are showing in Figure 9-11.
Figure 9: Ease of learning test results

Figure 10: Efficiency of Use test results
Figure 11: Memorability test result
5. Future Improvements

Advanced search option

More advanced search option could be added with the app by adding date, percent complete, etc. options.

Linkage between different project types

Currently, project leader and project participant have to enter projects separately into their corresponding project list for the same project. Options could be added into the app so that whenever project leader add participants name for his leading project a project will automatically generate for corresponding participants into the participant’s project list.

Creating one single name for both leaders and participants

As the project leader and the participants have to enter projects separately into their corresponding project list the name of the project might also vary in different project lists for the same project. The Engineering Manager of Aspen Surgical Products, Inc. has the plan to make project name specific for all different types of project lists.

Voice Control

Voice control options could be added into the app. The users will be able to search or enter the projects with the help of their voice. Voice options could be added with the help of Goggle x-webkit-speech API.

Mobile App

The similar App could be generated for mobile phone also. Users will be able to manage their projects from their smart phone (android/iOS).

Introducing this App in other departments

This app was developed for the engineering team of Aspen Surgical Products, Inc. Similar types of app could also be developed for other departments also. It could also be possible to develop one single app for all the departments of Aspen Surgical Products, Inc.
6. Conclusion

I. A project management app was developed for the engineering department of Aspen Surgical Products, Inc.

II. Engineers will be able to create new projects and track their projects effectively using this app and update the details whenever necessary.

III. The app is expected to reduce the time of the engineers in managing their projects.

IV. Engineering Manager will have the option to search the projects based on the name of the engineer, participation type, type of the project, and status of the project.

V. HTML5 together with bootstrap was used in developing the forms and designing the web template and phpMyAdmin was used as database. XAMPP was used to create a connection between phpMyAdmin and HTML5.

VI. This will save extensive amount of time for the Managers as well as other users in managing and planning their projects in any kind of organization.
7. Reference


[8] https://github.com/twbs/bootstrap

