



Enhancing Project Management Efficiency with a Web-Based Project Tracking Tool

M S Chethan¹, Sandarsh Gowda MM²

Department of Computer Applications, Bangalore Institute of Technology, Bengaluru, India¹

Assistant Professor, Department of Computer Applications, Bangalore Institute of Technology, Bengaluru, India²

Abstract: Any organization's success depends on efficient project management. However, it often runs into problems brought on by poor teamwork and communication, which produces subpar outcomes and inefficiency. Web-based project tracking applications have appeared to address these issues, providing user-friendly interfaces and a wealth of capabilities to increase productivity, organization, and efficiency. This study explores the possible benefits of using online project tracking technologies to enhance project management procedures. It examines the main features and advantages of these technologies, including responsive design, work delegation, real-time updates, and progress tracking. The research also looks at how these technologies affect user involvement, project results, and decision-making. The results show that using web-based project tracking tools may better decision-making, increase user involvement, and improve project outcomes, particularly for remote teams. By adding to the project management literature, this study helps firms looking to use technology to improve their project management processes by offering insightful information.

Keywords: project management, collaboration, efficiency, Real-time updates, Task, allocation, Progress, tracking, Responsive design, Project Outcomes, User-engagement, Decision-making, Remote teams.

I. INTRODUCTION

Project management plays a vital role in any organization, ensuring timely project completion, adherence to budgets, and achievement of desired outcomes. Traditional project management techniques, such as manually recording project data or depending on old third-party software, may, however, result in inefficiencies and make it difficult for business development managers to correctly track the progress of projects. In order to resolve these problems, this article offers a web-based project tracking tool that will help enterprises effectively manage a variety of projects and their teams. With the help of this application, you can keep track of important project data in one place while also tracking operations, delivery, paperwork, and progress. Additionally, it streamlines the administration and monitoring process by providing real-time project status updates and generating thorough reports for project managers. Additionally, the system offers capabilities for job management and centralized feedback collecting, as well as functions for filing, prioritizing, and tracking issues.

This study paper's main goal is to investigate how this web-based project tracking tool could improve the efficacy and efficiency of project management procedures. The purpose of this study is to examine the tool's effects on project results, user engagement, and decision-making, as well as to highlight its important features and advantages. In the end, this study gives assistance to businesses looking to enhance their project management procedures via the use of technology as well as useful insights to the current project management literature.

II. LITERATURE SURVEY

"An Evaluation of Project Management Tools and Techniques Suitable for Small Projects" by Michael and Olugbenga A. (AMCIS, 2013) assesses project management tools and techniques suitable for small projects. The authors conduct a review of various project management software, such as Microsoft Project, Primavera, and ProjectLibre, comparing their features and functionalities. The paper also presents a framework for selecting the most appropriate project management tool for small projects.

"Project Management Tools and Techniques in High-Tech Projects" by M. D. Dahanayake and H. Konno (Elsevier, 2007) explores the utilization of project management tools and techniques in high-tech projects through a comprehensive survey of industry practices. The authors identify the most commonly used tools and techniques and offer recommendations for future research. The paper also discusses the challenges and limitations of employing project management tools in high-tech projects.



"A Study of the Effectiveness of Project Management Tools and Techniques in Software Development" by Anshuman Singh and Pradeep Kumar Bhatia (IJCA, 2012) investigates the effectiveness of project management tools and techniques in software development projects. The study indicates that project management tools can significantly enhance project performance in software development projects, but their efficacy relies on the project's nature and the level of collaboration among team members.

EXISTING SYSTEMS

- **Trello** is a cost-free and user-friendly project management solution that includes configurable boards, lists, and cards for managing projects, tasks, and milestones. It is well-suited for small teams and those on a low budget. However, Trello lacks sophisticated capabilities like reporting, time tracking, or resource management.
- **Basecamp** is an economical and user-friendly project management application that supports team communication and job tracking. While it provides a variety of functionality, it falls short in delivering complex functionalities like resource scheduling and time monitoring, making it less ideal for big and complicated projects.
- **Bugzilla** is an open source bug-tracking system developed to aid teams in discussing and handling bug and feature requests. However, it lacks a contemporary user interface and mobile compatibility, perhaps making it less suited for applications that need more advanced functionality or wider accessibility.
- **Jira** is an integrated project management application with a modern user interface and easy connection with third-party software. However, setting up Jira may be complex, and its user interface may be perplexing for certain users. Moreover, Jira's pricing might be exorbitant, making it less accessible for smaller teams or those with restricted resources.

III. METHODOLOGY

A. Modules

The methodology for a web-based project tracking tool is a vital framework that supports efficient and successful project management. The tool is divided into several modules, each fulfilling certain purposes, including:

- **User Module** – This module serves mostly to project managers, developers, and testers. Project managers are responsible for establishing and administering the project plan, allocating tasks, monitoring progress, and managing resources. Developers may examine and change task and problem statuses, as well as work on new allocated features. Testers produce test reports, raise defects, and offer input to the project management.
- **Scheduler Module** – Project managers employ this module to create and assign tasks to team members, determine priorities, and monitor progress. It also supports the scheduling of meetings and other project-related activities, supporting effective project planning and progress monitoring, hence assuring timely job completion.
- **Reports Module** – The Reports Module allows project managers to create thorough reports on project progress. These reports give extensive insights on task, problem, and feature statuses, as well as the project's timeframe and budget. Analyzing data from these reports allows identification of areas for improvement, informed decision-making, and overall project development.
- **Messaging Module** – The Messaging Module acts as a crucial communication tool, facilitating smooth communication among project participants and with the project manager. It gives a simple method to remain informed on project progress, request explanations, and discuss ideas. The module also permits the dissemination of alerts to team members when there are project modifications or updates, ensuring everyone remains informed.
- **Tickets Module** – The Tickets Module enables project participants to log and track project-related problems and defects. Project managers may assign tasks to individual members, monitor progress, and report difficulties. Efficient monitoring and reporting of concerns assist detect possible problems early on and resolve them swiftly, reducing escalation.



B. Proposed Framework

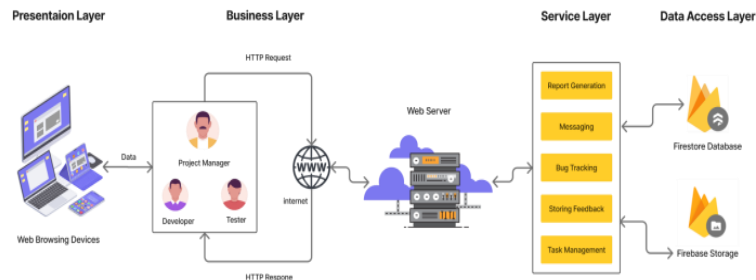


Figure 1: Architecture Diagram

The web-based project tracking tool's architecture is divided into four tiers, as indicated in Figure 1. The presentation layer acts as the user interface available from any web browser, combining components like ReactJS and Tailwind to build an intuitive and user-friendly design. With an emphasis on offering a smooth user experience, this layer allows project participants to seamlessly engage with the tool's functions.

Moving further into the architecture, we discover the business layer, which plays a vital role in allowing effective project planning and execution. Within this layer, the project manager, developers, and testers are the major users of the product.

As we go deeper into the design, we reach the data layer, responsible for organizing and storing project-related data. This layer contains databases and other data storage technologies, ensuring that project information is quickly accessed and securely preserved. The service layer comprises five core services, including report generation, board, bug tracking, storing feedback, and task management, that enable project tracking and management in a streamlined manner. The data access layer provides a secure platform to store all project data in an unstructured format using Firebase storage and Firestore, ensuring that only authorized users have access to the data.

The architecture of the project monitoring application provides various advantages for good project management. The data access layer enables safe storage of project data, limiting the risk of data breaches. Meanwhile, the service layer offers vital capabilities for coordinating and monitoring project-related activities. The business layer facilitates cooperation and communication among multiple users, providing a teamwork-friendly atmosphere. Lastly, the presentation layer delivers an intuitive and user-friendly interface, boosting the user experience and overall efficiency. With this architecture in place, project managers, developers, and testers can readily monitor progress, make appropriate modifications, and execute the project effectively.

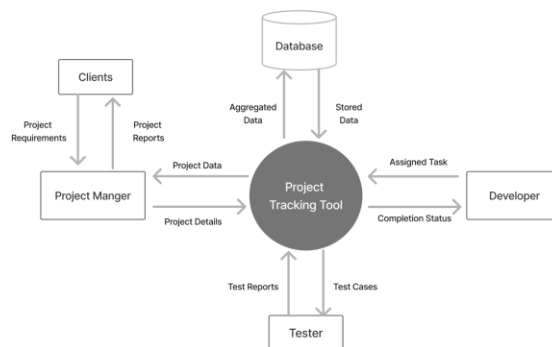


Figure 2: Level 0 DFD

Figure 2 depicts the distinct roles and responsibilities of various components within the system, comprising the Project Manager, Developer, Tester, and Database. The Project Manager assumes a pivotal role in supervising the project timeline, engaging in client communication, and ensuring adherence to the established project goals and objectives. The Developer holds the task of authoring, testing, and troubleshooting the application code. Additionally, they engage closely with the Project Manager to guarantee timely project delivery within the allocated budget. Conversely, the Tester



is liable for evaluating the code created by the developer, certifying that the application fits with the client's requirements, and undertaking extensive testing to find and repair any found errors.

Lastly, the Database carries the critical role of storing and maintaining the data used by the application. It assures the security, accessibility, and availability of the data to authorized users. The database plays a crucial part in the overall success of the application by offering a trustworthy and effective means of storing and retrieving data.

IV. IMPLEMENTATION

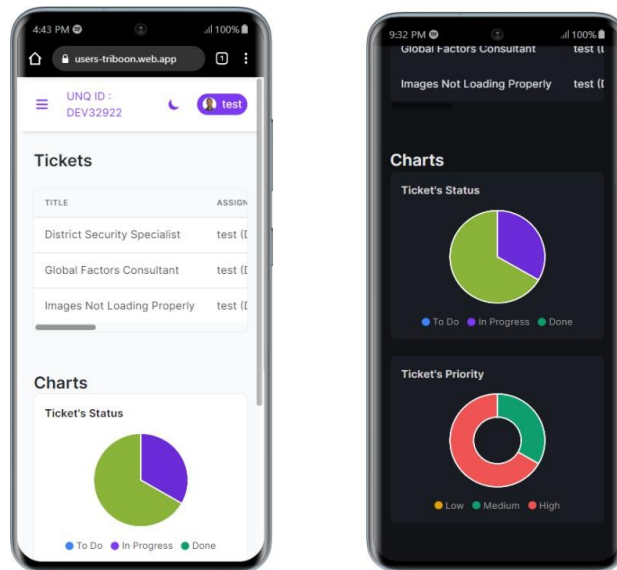


Figure 3: Dashboard Screen

The Dashboard provides users with an overview of their tasks, including graphs displaying priority levels and the status of each ticket. It is designed to be responsive, so it can be accessed from any device, allowing users to stay informed and manage their tasks even when they are on the go. The list of assigned tickets is also available, making it easy to track the progress of each task.

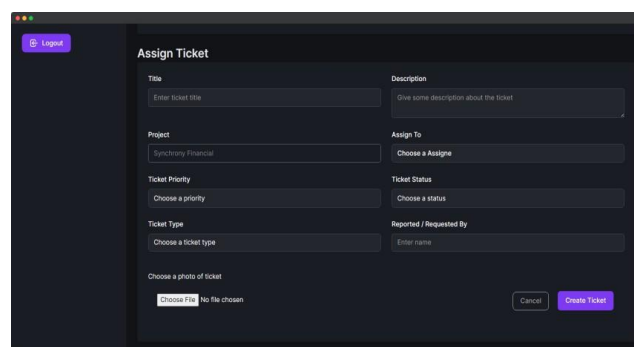


Figure 4: Assign Tickets Screen

The Assign Ticket screen is useful for teams handling tickets and problems. It provides all the essential information to assign a ticket, including the title, description, project name, kind of ticket, assigned to, ticket priority, and reported by. Additionally, it enables team members to upload photographs linked to the ticket, which might be valuable in identifying and addressing the problem. This makes it easy to follow progress and assure prompt resolution of the ticket.

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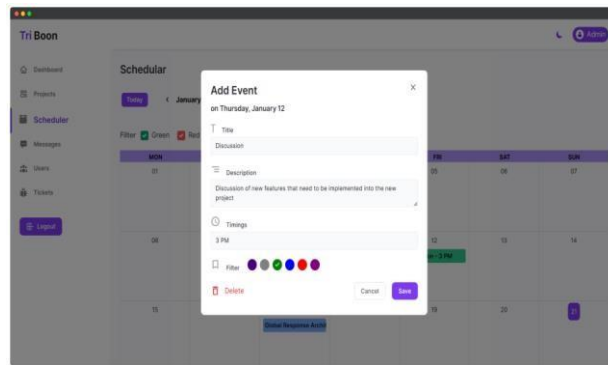


Figure 4: Scheduler Screen

The Scheduler acts as an excellent assistance for project managers, helping them to properly plan, organize, and supervise various activities. It allows users the opportunity to construct separate events with extensive descriptions, allowing for simple identification via color-coding. The calendar view gives a well-organized and clear picture of all the events, easing the process of planning and scheduling.

V. CONCLUSION

A web-based project tracking application shows to be more useful compared to conventional project management systems, delivering several advantages. With centralized data storage, real-time communications, up-to-date status reporting, and user-friendly features, this application improves project management operations, greatly decreasing the time and effort necessary to manage and monitor software teams and projects. As a consequence, project results are enhanced, and enterprises may achieve higher success in their software development initiatives. The tool's extensive capabilities and easy design increase communication among project managers, developers, testers, and other team members, leading to quicker development cycles and higher-quality software products. Therefore, enterprises should carefully consider using this powerful solution to streamline their project management processes and raise their software development projects to new heights.

VI. FUTURE ENHANCEMENT

The Assign Ticket screen becomes useful for teams in properly handling tickets and problems. It comprises all the key information needed for ticket assignment, including the ticket's title, description, project name, ticket type, allocated team member, ticket priority, and the reporter's data. Moreover, team members have the added benefit of submitting essential photographs connected to the ticket, which acts as a useful assistance in precisely identifying and resolving the problem at hand.

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