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Production Studio: An AI-Assisted and Blockchain-Enabled Platform for Collaborative Project Management

Rahul R[1*], Pratham B Bhavi[2*], Vinay S Angadi[3*], Nanditha G[4]

[1-3]Department of Computer Science and Engineering, G M Institute of Technology Davanagere
[4] Guide, Assistant Professor, Department of Computer Science and Engineering, G M Institute of Technology Davanagere
Email- : rahulr142005@gmail.com , prathambhavi@gmail.com, vinaysangadi31@gmail.com , nandithag@gmit.ac.in

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A B S T R A C T

Problems with task assignment, deadline management, progress tracking and team coordination are common in collaborative projects. we introduce PRODUCTION STUDIO, a web-based project management platform that provides integrated project organization, task assignment, progress monitoring, and activity tracking. Project managers can create projects, manage members, assign tasks and monitor deadlines. Members can be part of several projects and change the status of tasks. The platform offers AI-powered prompts for upcoming and missed due dates, plus a blockchain-style audit trail for activity tracking. The system, based on React, Node.js, Express and MongoDB, seeks to enhance collaboration, accountability and workflow transparency through systematic functional testing and usability evaluation.

Production Studio goes beyond basic task tracking by using proven scheduling methods. It applies the Program Evaluation and Review Technique (PERT) to estimate how long tasks will take, and a Directed Acyclic Graph (DAG) to map out which tasks depend on others. Together, they help project managers see how pieces of work connect and plan the workflow in a clear, logical order. AI-assisted workload insights and deadline reminders add another layer of support, helping users decide what to tackle first and spot tasks that are still pending. A blockchain-based audit ledger keeps a traceable record of key project activities, which adds transparency and accountability. The platform is built with React, Node.js, Express.js, and MongoDB. Overall, Production Studio aims to help teams stay organized, use their resources well, and work more efficiently through connected management, scheduling, and monitoring tools.

Keywords: Project Management, Artificial Intelligence, Blockchain Audit Trail, Task Scheduling, Team Collaboration, Workflow Automation, Web Application.

1. Introduction

Projects—be it building software, creating media, doing academic work, and other collaborative work—require clear ownership of tasks, timely communication, and a shared understanding of progress. With growing teams, project details get lost across messaging apps, documents, and individual task lists. This fragmentation makes it hard for managers to see delayed work, know what has changed recently, and know which tasks need attention.

PRODUCTION STUDIO is suggested as one-stop shop for creating projects, managing memberships, assigning tasks, setting deadlines, updating status, sending notifications, analyzing, and keeping an activity history. Its role model enables a user to be a member of one project and manage another project. The system is designed to avoid extensive manual follow-up by providing assigned work and due dates in a clear way and by providing AI-assisted reminders. The audit-ledger component is intended to record certain events so that changes can be reviewed at a later time. The contribution of this work is the design and implementation framework to combine these functions in one web application.

Good project management is what keeps teams on track, productive, and working in sync. Today's projects usually involve many tasks, tight deadlines, shared resources, and several people working side by side. When all of this is handled by hand, things tend to slip: schedules clash, tasks finish late, messages get lost, and it becomes hard to see who contributed what. That is why a single, technology-based approach is needed to make project administration easier and help work flow more smoothly.

2. Literature Review

The following literature review is structured in the same format as your reference paper, with each study's title, authors, year, and a concise explanation of its contribution and relevance to PRODUCTION STUDIO

2.1 Title of the Paper: A Multi-layer Trust Framework for Self-Sovereign Identity on Blockchain

Authors and Year: A. De Salve, D. Di Francesco Maesa, P. Mori, L. Ricci, and A. Puccia — 2023

This paper explores a multi-layer trust framework for managing self-sovereign identities using blockchain technology. It focuses on establishing trust, identity verification, and reliable interactions in decentralized environments. These concepts are relevant to PRODUCTION STUDIO for strengthening user accountability and supporting trustworthy records of project activities.

2.2 Title of the Paper: Artificial Intelligence Enabled Project Management: A Systematic Literature Review

Authors and Year: I. Taboada, A. Daneshpajouh, N. Toledo, and T. de Vass — 2023

This paper reviews the applications of artificial intelligence in project management, particularly in planning, performance measurement, forecasting, and decision-making. The study highlights the potential of machine learning to support project monitoring and manage uncertainty. These findings are relevant to PRODUCTION STUDIO for developing intelligent deadline reminders, progress monitoring, and decision-support features

2.3 Title of the Paper: Optimizing Agile Project Management Methodologies in High-Tech Software Development

Authors and Year: P. Amajuoyi, L. B. Benjamin, and K. B. Adeusi — 2024

This paper examines challenges associated with Agile methodologies in high-tech software development and discusses improvements through DevOps practices, Lean principles, hybrid approaches, and continuous feedback. It emphasizes adapting project workflows to improve efficiency and collaboration. These concepts are relevant to PRODUCTION STUDIO for organizing tasks, managing team activities, and supporting iterative project development.

2.4 Title of the Paper: Integrating Artificial Intelligence for Agile Project Management: Innovations, Challenges, and Benefits

Authors and Year: E. Karim Zadeh, A. Bagheri Khoulenjani, and M. Safaei — 2024

This paper explores the integration of artificial intelligence into Agile project management, focusing on predictive analytics, resource optimization, decision-making, and project efficiency. It also considers the challenges associated with adopting AI-driven methods. The study is relevant to PRODUCTION STUDIO because intelligent notifications and future delay-risk analysis could help managers identify tasks requiring attention.

2.5 Title of the Paper: Customising Hybrid Project Management Methodologies

Authors and Year: M. Mirzaei, V. J. Mabin, and O. Zwikael — 2025

This study investigates how project managers combine Agile and plan-driven practices according to project requirements. Using evidence from ten case studies, the authors identify team type and project goals as important factors influencing methodology selection. The findings are relevant to PRODUCTION STUDIO because the platform can support structured task assignments and progress tracking while accommodating different team workflows.

3. Research Methodology

Project Creation: The project manager creates a project by providing the necessary details and adding team members. Each project maintains its own tasks, deadlines, and progress information.

Task Assignment: Tasks are assigned to team members with descriptions, priorities, and due dates. Members can participate in multiple projects and manage their assigned responsibilities.

Data Storage: Project details, user information, task assignments, deadlines, and progress updates are stored in MongoDB. This enables centralized data management and efficient retrieval of project information.

Progress Monitoring: The system tracks task status and project progress through a dashboard. Managers can monitor pending, ongoing, and completed tasks to understand the overall project status.

AI-Assisted Reminders: The system supports reminders for approaching deadlines and overdue tasks, helping team members manage their work and complete tasks on time.

Blockchain-Based Audit Trail: Important project activities and task updates are recorded in an audit ledger to improve traceability and accountability. The level of tamper resistance depends on the implemented blockchain mechanism.

Visualization and Reporting: Project information is presented through dashboards, task boards, activity logs, and reports. These visualizations help managers identify delays, review team progress, and make informed decisions.

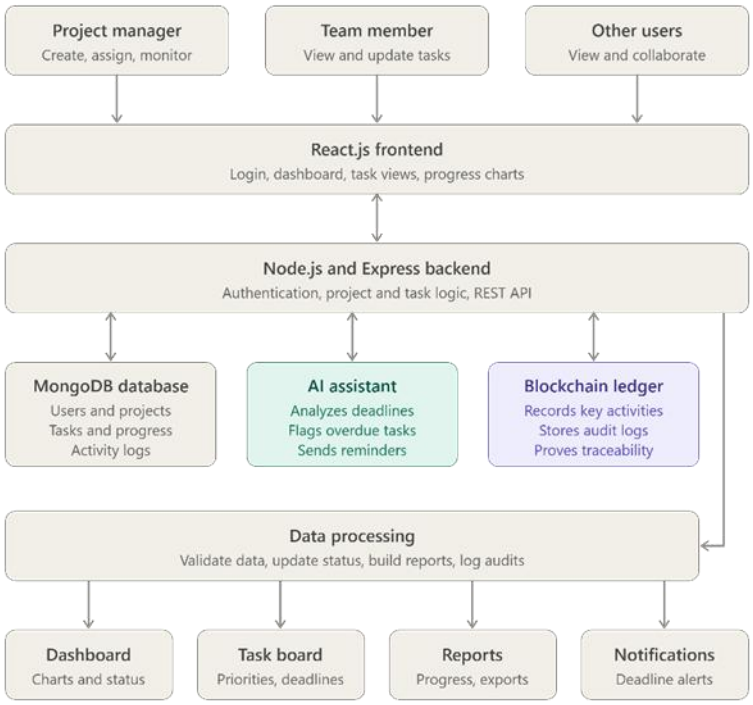


Fig 3.1: Flow Chart of Production Studio

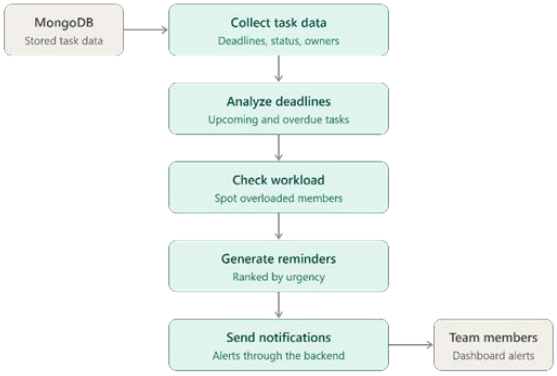


Fig 3.2: AI-Assisted Task Analysis and Deadline Reminder Workflow

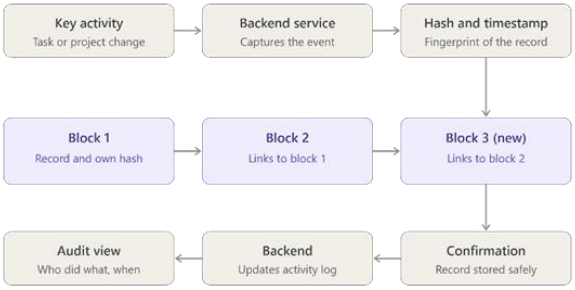


Fig 3.3: Blockchain-Based Activity Logging and Audit Trail Workflow

4. Objective Of Study

Centralized Project Management: To develop a unified platform for managing projects, team members, tasks, and deadlines efficiently.

Task Assignment and Tracking: To enable project managers to assign tasks and monitor their progress, priorities, and completion status.

AI-Assisted Deadline Management: To provide automated reminders for upcoming deadlines and overdue tasks, improving timely task completion.

Blockchain-Based Accountability: To maintain traceable records of important project activities and updates, enhancing transparency and accountability.

Progress Visualization and Reporting: To provide interactive dashboards and reports that help managers understand project progress and identify delays.

Improved Team Collaboration: To simplify communication, task coordination, and responsibility management among members working across multiple projects.

5. Result and Discussion

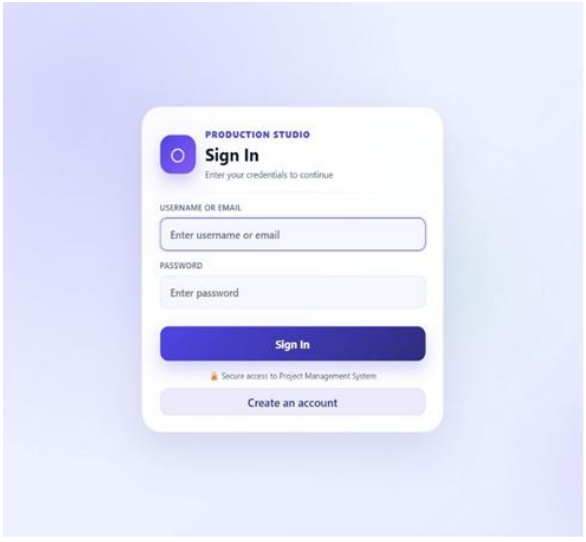


Fig 5.1: Production Studio User Authentication – Sign-In Interface

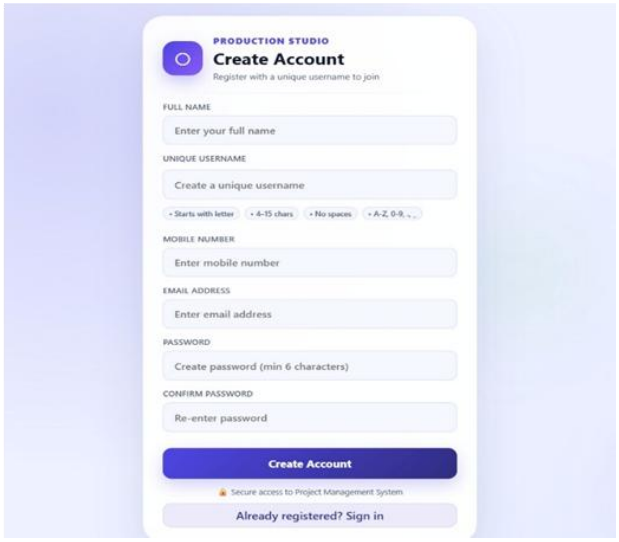


Fig 5.2: User Registration and Account Creation Interface

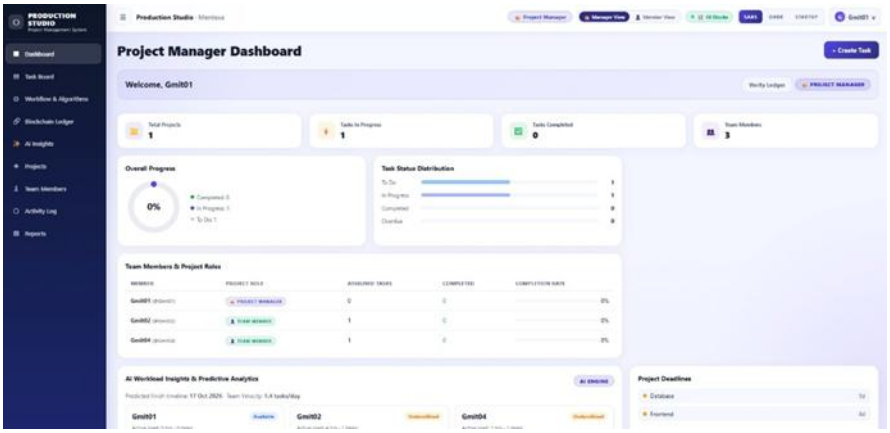


Fig 5.3: Project manager Dashboard with progress monitoring with AI Workload Insights

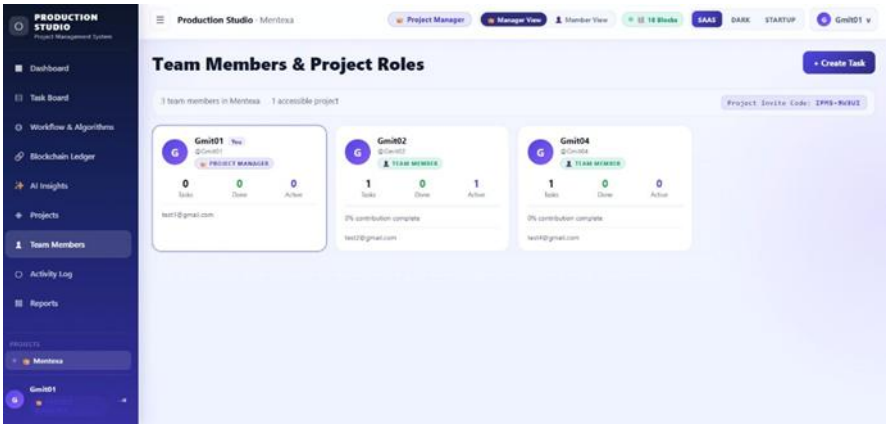


Fig 5.4: Team Members and Project Role Management Interface

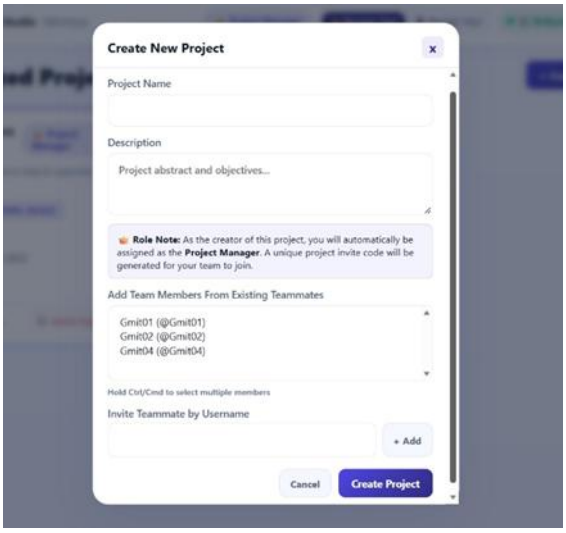


Fig 5.5: New Project Creation and Team member Invitation Interface

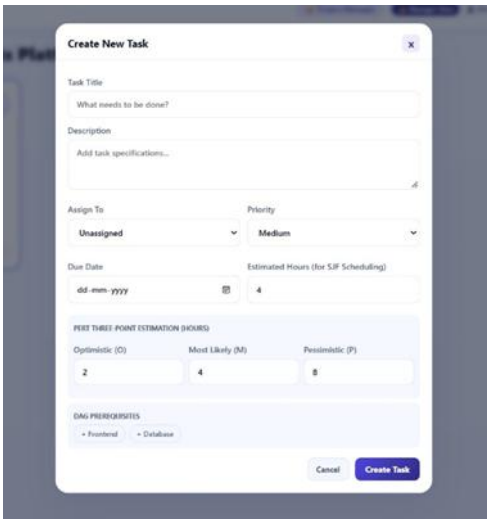


Fig 5.6: Task Creation and Scheduling Interface with Priority, PERT Estimation, and DAG Dependencies

5. Conclusion

Production Studio is a web-based platform that brings project management and team collaboration together in one place. Teams can create projects, assign tasks, set deadlines, track progress, and generate reports without switching between tools. Smart AI reminders nudge team members about approaching deadlines and tasks that have slipped, so nothing gets forgotten. A blockchain-backed audit ledger records every action in a tamper-resistant way, making it easy to see who did what and when. An interactive dashboard ties it all together, giving everyone a clear view of where each project stands. Looking ahead, the platform could grow to include delay prediction, deeper analytics, smarter workload balancing, and richer reporting.

Production Studio is a web-based project management system built to make project organization easier, teamwork smoother, and progress simpler to see. The finished system covers the essentials: user registration, secure sign-in, project creation, team member management, role-based access, task assignment, deadline tracking, and progress monitoring. Together, these give teams one shared workspace where project managers can coordinate the work and team members can keep track of what they are responsible for.

The project delivers a working module for managing projects and teams. Users can start new projects, bring in teammates who already have accounts, handle who belongs to each project, and give each person a suitable role. The dashboard gives a quick snapshot of the numbers that matter: how many projects exist, which tasks are underway or finished, who is on the team, how tasks are split by status, and how far along everything is. The team management screen also shows what each person has been assigned and how much they have contributed, so managers can see how work is spread across a project.

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