TaskMate: Web-Based Project & Task Management

TaskMate empowers teams to plan, track, and deliver projects with ease. It offers a unified workspace for creating projects, assigning tasks, monitoring progress, and collaborating via activity logs and notifications.

Introduction

TaskMate serves as a versatile platform for both individual contributors and large teams. Its design emphasizes real-time updates, intuitive interfaces, and scalable architecture.

Purpose

- Streamline end-to-end project workflows
- Enhance team collaboration and transparency
- Provide real-time insights into task and project status
- Optimize resource allocation and workload balance
- Maintain detailed activity histories and audit trails

Target Users

- **Project Managers**: Define scope, assign tasks, track milestones
- **Team Leads**: Oversee deliverables and team performance
- **Team Members**: Execute tasks, update statuses, share files
- **Administrators**: Manage users, view analytics, configure system

System Architecture

TaskMate implements a robust three-tier model with clear separation of concerns:

- **Presentation Layer**: React-based SPA with responsive design
- **Business Logic Layer**: Express.js REST API handling authentication, validation, and workflows
- **Data Access Layer**: MongoDB via Mongoose ODM for schema enforcement and queries

Functional Requirements

TaskMate delivers a comprehensive feature set organized by domain:

User Management

- **FR1.1**: Register with email, password, and profile details
- **FR1.2**: Secure login using JWT authentication
- **FR1.3**: Update profile info and avatar
- **FR1.4**: Select department
- **FR1.5**: Admins can view and manage all users
- **FR1.6**: View personal and team member profiles

Project Management

- **FR2.1**: Create projects with title, description, start/end dates
- **FR2.2**: Edit project details anytime

- **FR2.3**: Delete projects when obsolete
- **FR2.4**: Browse all projects
- **FR2.5**: List own created projects
- **FR2.6**: List projects where the user is a member
- **FR2.7**: Add or remove team members per project

Task Management

- **FR3.1**: Create tasks with title, description, priority, due date, attachments
- **FR3.2**: Assign tasks to one or multiple users
- **FR3.3**: Manage statuses: New, To Do, In Progress, Review, Done
- **FR3.4**: Edit tasks and update status
- **FR3.5**: Delete tasks
- **FR3.6**: View all tasks in a project
- **FR3.7**: View tasks assigned to the user
- **FR3.8**: View tasks created by the user
- **FR3.9**: Support file attachments for tasks
- **FR3.10**: Download attached files

Kanban Board

- **FR4.1**: Drag-and-drop interface for task status
- **FR4.2**: Auto-update status on drop
- **FR4.3**: Filter tasks by creator or assignee
- **FR4.4**: Clear filters with one action

Activity & Timeline

- **FR5.1**: Log every project event
- **FR5.2**: View chronological activity stream
- **FR5.3**: Include user info and timestamps
- **FR5.4**: Show clear change descriptions

Notifications

- **FR6.1**: Notify on task assignment
- **FR6.2**: Notify on status change
- **FR6.3**: Display user notifications centrally
- **FR6.4**: Mark individual notifications as read
- **FR6.5**: Mark all notifications as read

Team Management

- **FR7.1**: Create and name teams
- **FR7.2**: Assign members to project teams
- **FR7.3**: View team rosters with contact info

Admin Dashboard

- **FR8.1**: View system-wide analytics
- **FR8.2**: Monitor all projects and tasks
- **FR8.3**: Manage every user
- **FR8.4**: Display project and task metrics

Non-Functional Requirements

TaskMate meets critical standards for performance, security, and usability.

Performance

- API responses < 500 ms for common queries
- Page load ≤ 3 s on standard broadband
- Scalable under high concurrency
- Indexed database queries

Security

- Passwords hashed with bcrypt
- JWT-based authentication
- Input validation and sanitization
- CORS strictly configured
- Encryption for sensitive fields

Availability

- 99% system uptime target
- Automated database backups
- Graceful error handling

Scalability

- Horizontally scalable services
- Efficient database sharding and indexing
- Optimized frontend bundles

Usability

- Intuitive UI with clear navigation
- Fully responsive on mobile, tablet, desktop
- Contextual error messages

Maintainability

- Consistent code style
- Modular, reusable components
- Well-documented API endpoints
- Normalized database schemas

Core Features

User Authentication & Management

1. Secure registration and login (JWT)
2. Profile editing and photo upload
3. Role and department assignment

Project Management

1. CRUD operations for projects

2. Team member assignment

Task Management
1. Create, edit, delete tasks
2. Status tracking and multiple assignees
3. File attachments

Kanban Board
1. Drag-and-drop status changes
2. Real-time updates and filters

Activity Timeline
1. Automatic event logging
2. Chronological activity feed

Notification System
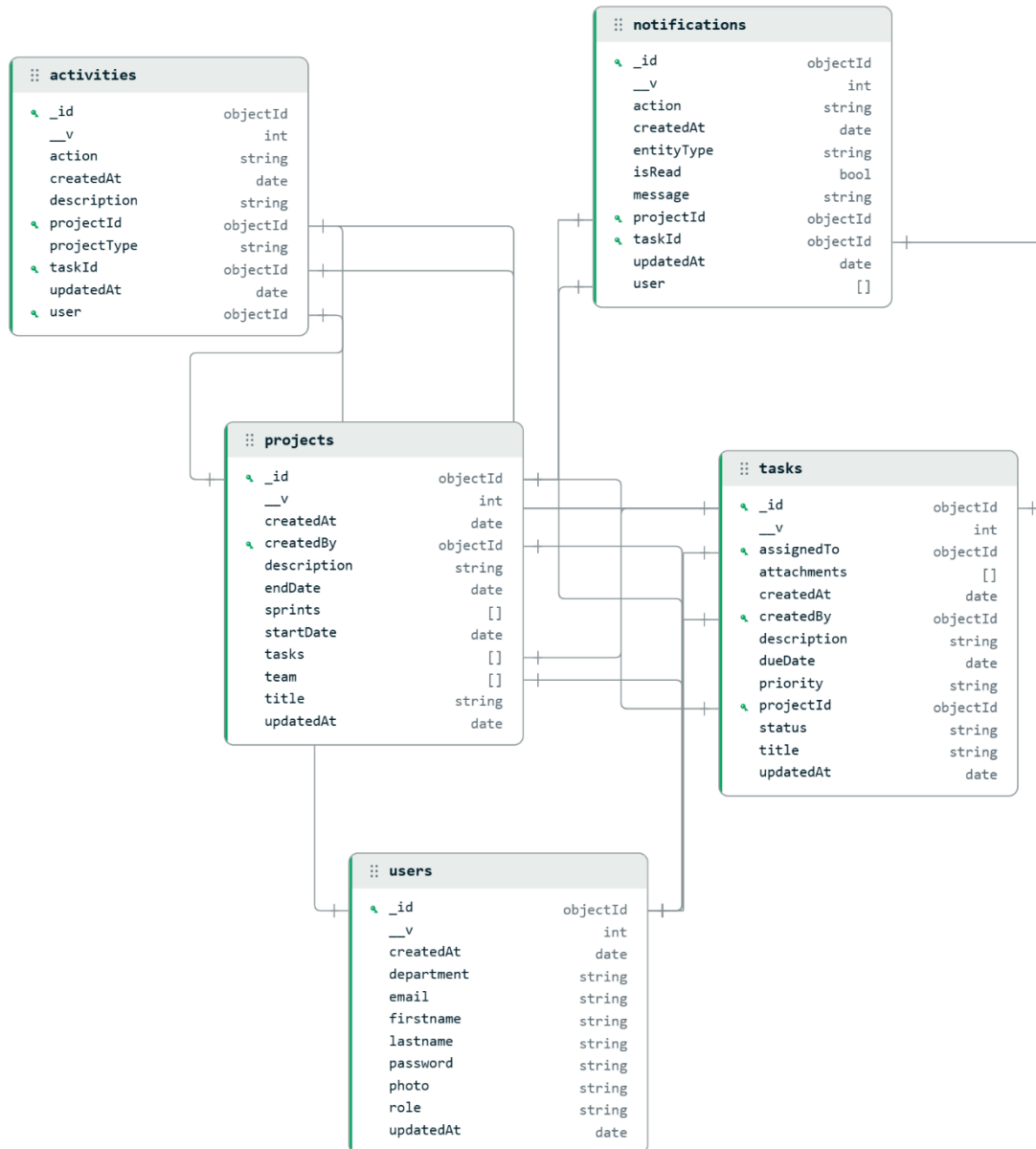1. Real-time alerts for assignments and updates
2. Read/unread management

Admin Dashboard
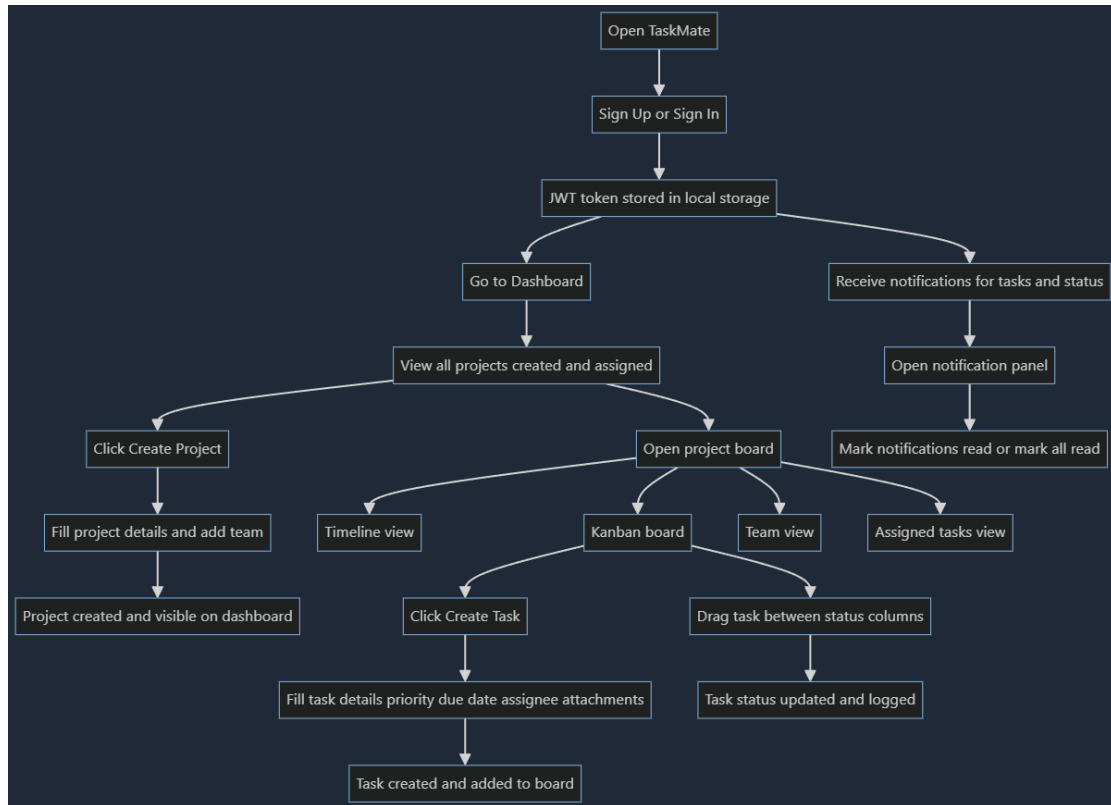1. System analytics and reporting
2. Global view of all entities

3.

Data Models

Each model resides in MongoDB via Mongoose schemas.

notifications

field	type
_id	objectId
__v	int
action	string
createdAt	date
entityType	string
isRead	bool
message	string
projectId	objectId
taskId	objectId
updatedAt	date
user	[]

activities

field	type
_id	objectId
__v	int
action	string
createdAt	date
description	string
projectId	objectId
projectType	string
taskId	objectId
updatedAt	date
user	objectId

projects

field	type
_id	objectId
__v	int
createdAt	date
createdBy	objectId
description	string
endDate	date
sprints	[]
startDate	date
tasks	[]
team	[]
title	string
updatedAt	date

tasks

field	type
_id	objectId
__v	int
assignedTo	objectId
attachments	[]
createdAt	date
createdBy	objectId
description	string
dueDate	date
priority	string
projectId	objectId
status	string
title	string
updatedAt	date

users

field	type
_id	objectId
__v	int
createdAt	date
department	string
email	string
firstname	string
lastname	string
password	string
photo	string
role	string
updatedAt	date

Workflow Overview

User Flowchart

Admin Flowchart

Repository Information

Property	Details
Repo Name	TaskMate
Owner	88bones
URL	https://github.com/88bones/TaskMate
Primary Branch	main

```
TaskMate/
├── client/       # React frontend
│   ├── components/
│   ├── pages/
│   ├── services/
│   └── App.jsx
├── server/       # Express backend
│   ├── controllers/
│   ├── models/
│   ├── routes/
│   └── index.js
├── README.md
├── DOCUMENTATION.md
└── .gitignore
```

Future Enhancements

- In-app chat and task comments with @mentions
- Custom reports, burndown charts, time tracking
- Automated workflows, task dependencies, templates
- Integrations: GitHub, Jira, Google Calendar, Slack

Summary

TaskMate offers a scalable, user-centric solution for modern project management. Its modular architecture and clear roadmap pave the way for continuous innovation and community collaboration.