Faculty of Informatics
Engineering Departmemt Of
Software Engineering

Project Planning Automation System (PPA)

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Shahed alzoni

Rand abo shamleh

Najat bostaty

Bushra alshabani

Nour sheikha

Version	Submitted by	Verified by	Date
V0.1	Areej	Areej Group	29/10/2025
V0.2	Areej	Areej Group	3/11/2025
V0.3	Areej	Areej Group	13/11/2025

1. Project Scope

The Project Planning Automation (PPA) system is a cutting-edge Generative AI solution designed to empower Project Managers and Analysts by automating one of the most time-consuming phases of the project lifecycle: the conversion of initial, unstructured project scope ideas into structured, actionable project plans.

The system leverages advanced Large Language Models (LLMs) to process natural language project scope descriptions and instantly generate a comprehensive set of core planning outputs.
Key System Functions (Core Deliverables)
The core capabilities are delivered via a robust and efficient API and include:

- ➢ Scope Text Processing: Receiving and analyzing the project scope description entered in natural language.
- ➢ Work Breakdown Structure (WBS) Generation: Producing a structured, hierarchical breakdown of key tasks and deliverables.
- ➢ Gantt Chart / Schedule Creation: Generating the necessary data for a project schedule, including tasks, estimated durations, dependencies, and key milestones.
- ➢ Risk Log Creation: Identifying potential risks and generating a structured Risk Log complete with initial assessments of Probability and Impact.
- ➢ Domain-Specific Q&A System: Providing a focused query function capable of answering questions solely related to Software Project Management (e.g., methodologies, contracts, governance, quality), enhancing decision-making support.

This system ultimately aims to help planning teams make informed decisions and initiate project execution with greater speed and consistency, significantly reducing manual effort in drafting initial planning documentation.

2. Requirements Elicitation

Number	Functional Requirement	Description
FN01	The system must receive and analyze unstructured project scope text written in natural language (English or Arabic).	Enables automatic understanding of project descriptions and extraction of key concepts.
FN02	The system must automatically generate a hierarchical WBS of major and sub-tasks with clear descriptions.	Provides structured task organization for planning and tracking.
FN03	The system must generate project scheduling data, including tasks, estimated durations, dependencies, and milestones.	Supports visual timeline creation and time-based project management.
FN04	The system must identify potential project risks and produce a structured risk log including Probability and Impact levels.	Helps in proactive risk assessment and mitigation planning.
FN05	The system must answer user questions solely related to software project management (e.g., methodologies, contracts, governance, quality).	Provides a focused Q&A feature that answers only Software Project Management–related questions using domain knowledge for accurate and relevant responses.
FN06	The system must provide an intuitive, userfriendly dashboard for project creation, monitoring, and status tracking.	Allows users to view project progress, generated outputs (WBS, Gantt, Risks), and manage project lifecycle through a clear interface.

Choosing Agile-Scrum Methodology for PPA System

1. AI/LLMs Technology Nature
- Language models require continuous experimentation and tuning
- Output uncertainty demands high flexibility

2. Rapid Feedback
- Short work cycles (Sprints)
- Immediate improvement of output quality (WBS, Risks)

3. Incremental Delivery
- Gradual and iterative API delivery
- Continuous Integration/Continuous Delivery

4. Requirements Flexibility
- Innovative project with evolving requirements
- Adapting to changes without complete replanning

3. Literature Review For The Project Planning Automation (PPA) System

This study focuses on the development of AI-powered project planning systems. It aims to provide a comprehensive overview of the current landscape in intelligent project management solutions, emphasizing how artificial intelligence, natural language processing, and data-driven automation are utilized to streamline project planning, scheduling, and risk management. The analysis includes a comparative evaluation between existing systems such as like DartAI, ClickUp AI and Notion AI, highlighting their key features and limitations in contrast with . the .proposed Project Planning Automation (PPA) system

1.Dart AI

Dart AI is an AI-native project management platform built to automate and streamline the planning and execution phases for teams. It integrates generative AI at the core of its workflow, enabling users to create tasks, roadmaps, and documentation using natural language, and manage projects with minimal manual overhead.

Main Features:

- AI-based task generation from natural language project descriptions.
- Automatic scheduling and resource allocation, with dependency management.
- Gantt chart and timeline visualization for project progress tracking.
- AI-driven performance insights and risk detection suggestions.
- Integration with productivity tools such as Slack, Google Calendar, and Jira.
- Collaboration tools for teams including chat, document sharing, and real-time updates.

Advantages:

- Reduces manual planning time through AI-generated tasks and schedules.
- Intelligent automation that adapts to different project methodologies (Agile, Scrum, Waterfall).
- Improved decision-making with predictive insights and performance dashboards.

- User-friendly interface designed for quick onboarding and team collaboration.

Disadvantages:

- Limited customization for complex enterprise workflows.
- Dependence on AI accuracy — generated plans may require manual review.
- Still developing advanced reporting and cost estimation tools.
- Requires internet connectivity for AI processing and data synchronization.

2. ClickUp AI

ClickUp AI is a modern, all-in-one productivity and project management platform designed to unify tasks, docs, goals, and communication in a single interface. It is popular among startups and Agile teams for its flexibility and ease of use.

Main Features:

- Task and sprint management with multiple view options (List, Board, Gantt).
- Built-in chat, document sharing, and goal tracking.
- Time tracking and workload view for team performance analysis.
- Integrations with tools like Slack, Google Drive, and GitHub.

Advantages:

- Highly customizable interface with modern UX.
- Combines task management, documentation, and collaboration in one app.
- Strong automation and workflow templates.
- Affordable pricing with generous free plan.

Disadvantages:

- Can feel overwhelming due to excessive customization options.
- Performance may slow down with large projects.
- Reporting tools are basic compared to enterprise systems.

3. Notion AI

Notion AI is an intelligent workspace extension built into the Notion platform, combining note-taking, documentation, and task organization with AI-powered content generation and analysis. It is widely used by teams and individuals for knowledge management, project documentation, and creative writing assistance.

Main Features:

- AI-assisted writing tools for generating, summarizing, translating, and editing text.
- Integration with Notion databases for auto-filling properties and structured documentation.
- Smart search and content generation across connected workspaces.
- Multi-language support and collaboration within shared pages and templates.

Advantages:

- Unified environment combining documentation, databases, and AI in one platform.
- Great for creative and analytical work such as writing SOWs, meeting notes, and reports.
- Saves time by automating repetitive writing and summarization tasks.
- Simple and visually appealing interface suitable for teams of all sizes.

Disadvantages:

- Limited advanced project management capabilities (no native Gantt or scheduling).
- Some AI features require a premium plan.
- Can become slow or cluttered in large workspaces.

In conclusion, Despite the presence of advanced project management systems like Dart AI, ClickUp AI and Notion AI all of them require manual input or predefined templates, whereas the Project Planning Automation (PPA) system offers a qualitative leap by transforming raw textual scope into a complete project plan using generative AI, thereby reducing time and increasing consistency and accuracy.

Feature	PPA (Our System)	Dart AI	Notion AI	ClickUp AI
1. Scope Text Processing	✓	✓		
2. Automatic WBS Generation	✓			Manual (from tasks)
3. Automatic Gantt Chart from Text	✓	✓		✓
4. Effort & Cost Estimation (AI-based)	✓	Manual		Manual
5. Automated Risk Log Generation	✓			Manual
6. Domain-Specific Q&A System	✓		✓	
7. API Integration	✓	✓	✓	✓
8. User Interface / Experience (UI/UX)	✓	✓	✓	✓
9. Time Tracking & Workload View	Not Supported	✓	Limited	✓
10. Advanced Dashboards & Analytics	Not Supported	✓		✓
11. Reports / SOW Document Generation	Addable in the future		✓	

4. Project Charter:

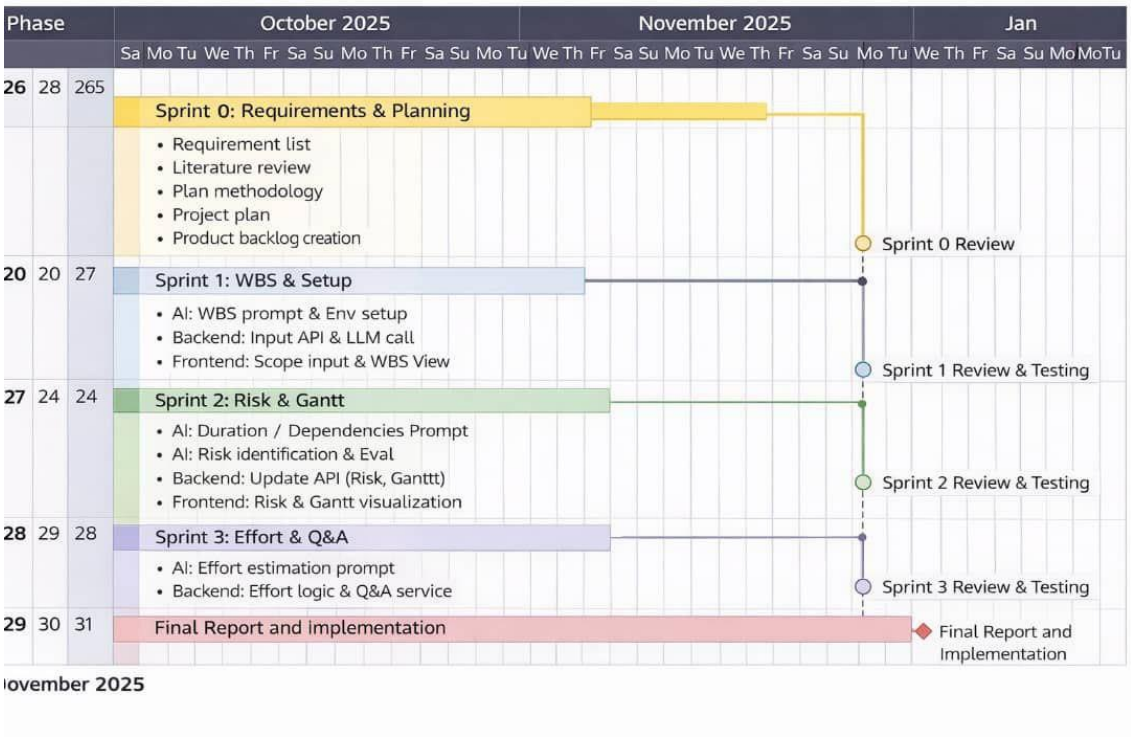
Project title (PPA)Project planning automation

Project start date	October _ 10 _ 2025
Project finish date	January _ 31 _ 2026
Project manager	Eng.Anas Abdulaziz
Project objectives	The Project Planning Automation (PPA) system is a Generative AI solution designed to automate the conversion of unstructured project scope descriptions into actionable project plans. It utilizes Large Language Models (LLMs) to instantly generate key planning deliverables, including the Work Breakdown Structure (WBS), project schedule data, and a structured Risk Log.
Approach	1. Input & NLP processing 2 AI-Driven Generation. 3.Interaction & Support.

Roles and responsibilities:

Name	Role	Responsibility
Eng.Anas Abdulaziz	Supervisor	Highly project management and work monitoring
Areej noor aldeen	Engineer	Work monitoring & AI
Kamar aldiab	Engineer	AI
Wiaam alouni	Engineer	AI
Ola najibeh	Engineer	Backend Development
Shahed alzoni	Engineer	Backend Development
Rand abo shamleh	Engineer	Backend Development
Najat bostaty	Engineer	Frontend Development
Bushra alshabani	Engineer	Frontend Development
Nour sheikha	Engineer	Frontend Development

5. Project Plan – Gant chart:

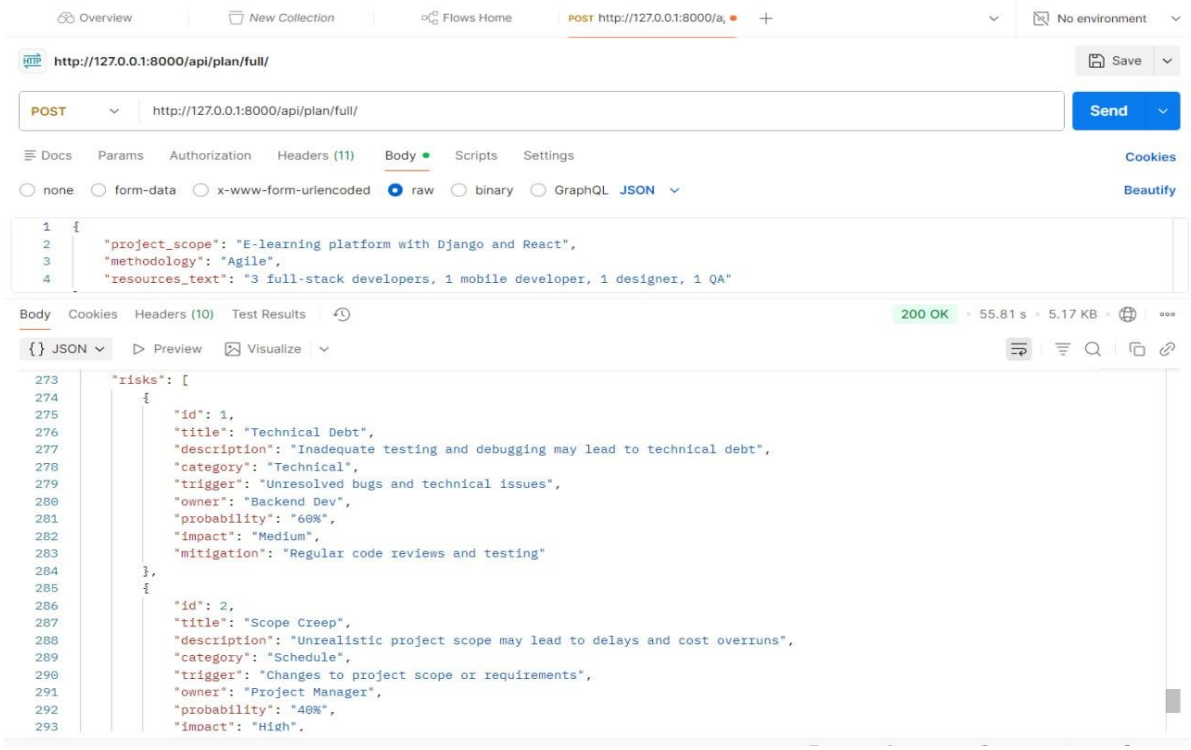


6. Risk Management:

No.	Risk Description	Category	Probability	Impact Severity	Risk Level	Mitigation / Action Plan
1	The AI system produces inaccurate project planning results.	Technical	Medium	High	High	Regularly test the model and update the training data used for predictions.
2	Difficulty integrating the AI module with the system interface.	Technical	Medium	Medium	Medium	Perform integration testing during development and fix issues promptly.
3	Possible data breach or misuse of user information.	Security	Low	High	Medium	Apply encryption and restrict data access to authorized personnel only.
4	Ambiguity in project requirements causing delays or conflicts.	Management	High	Medium	High	Clearly define requirements from the start and review them regularly with the client and team.
5	Lack of AI expertise within the team.	Human / Resource	Medium	High	High	Provide training or hire external experts when necessary.

6	User resistance to adopting the new system.	Operational	Medium	Medium	◍ Medium	Conduct awareness sessions and explain the system's benefits and efficiency.
7	System downtime or unexpected technical failures.	Operational	Low	High	◍ Medium	Implement backup and recovery plans and ensure quick service restoration.

8)Screen shots :8.1 testing postman: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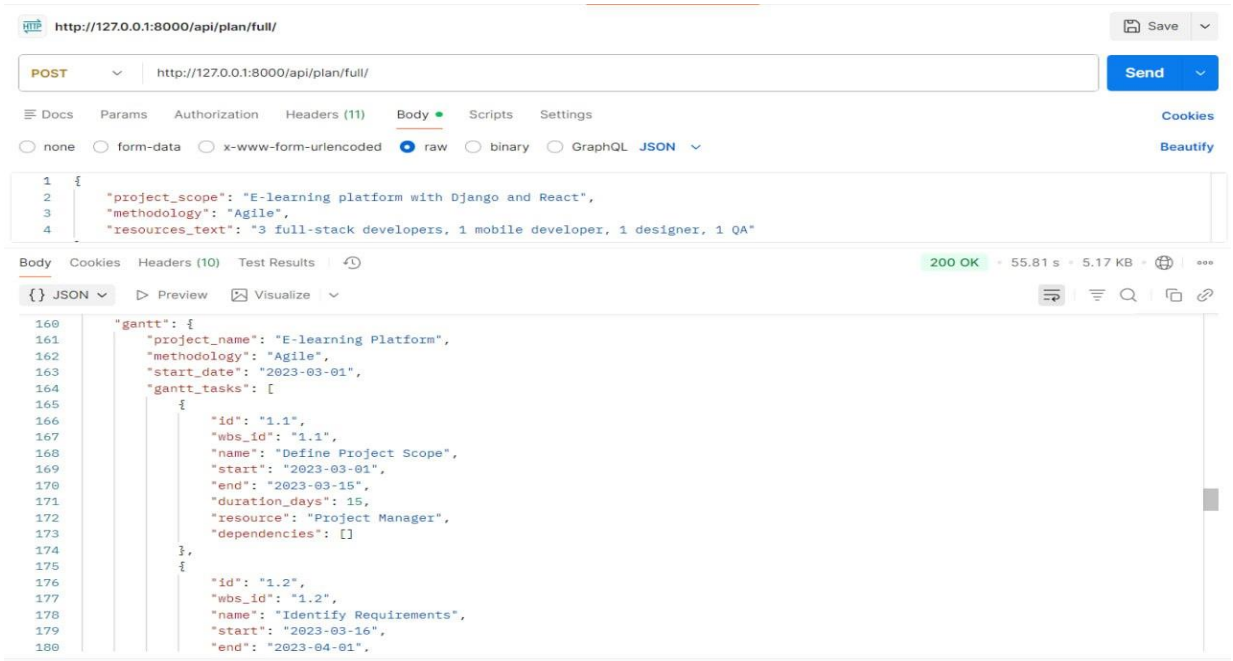
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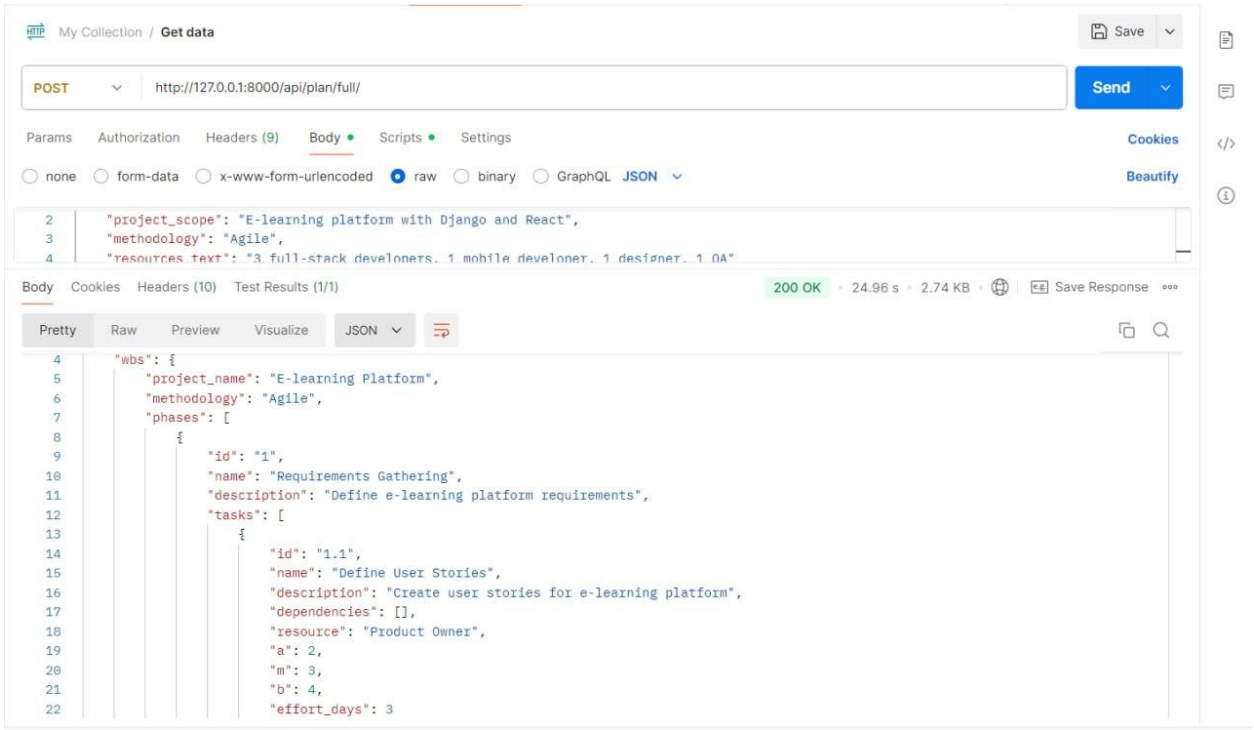
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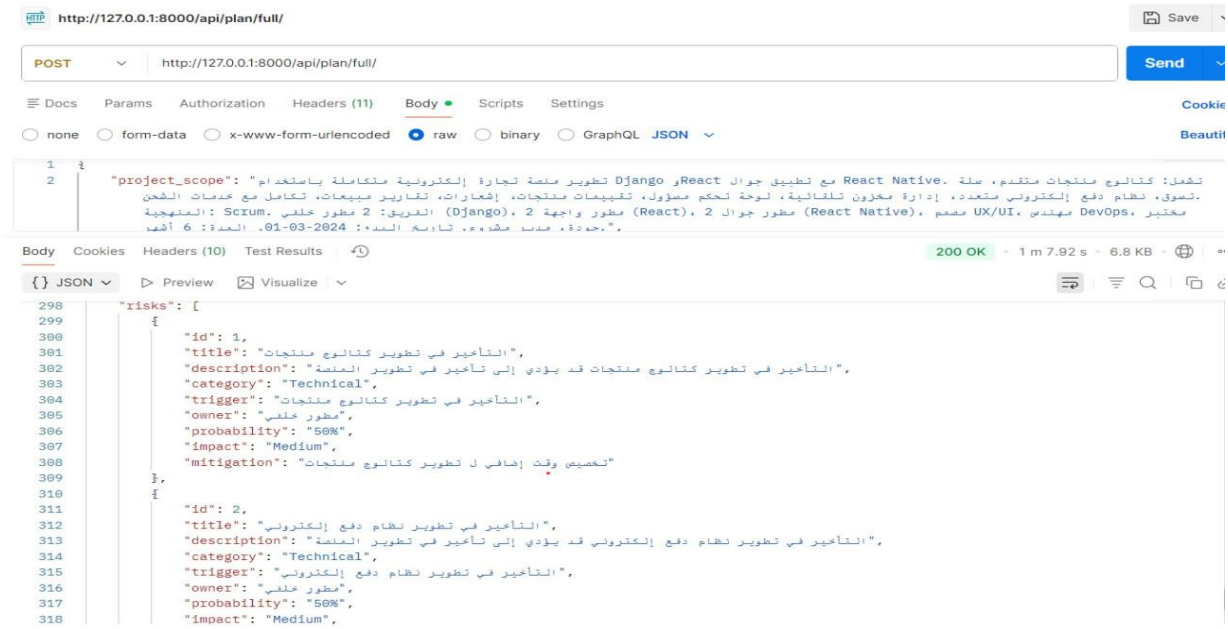
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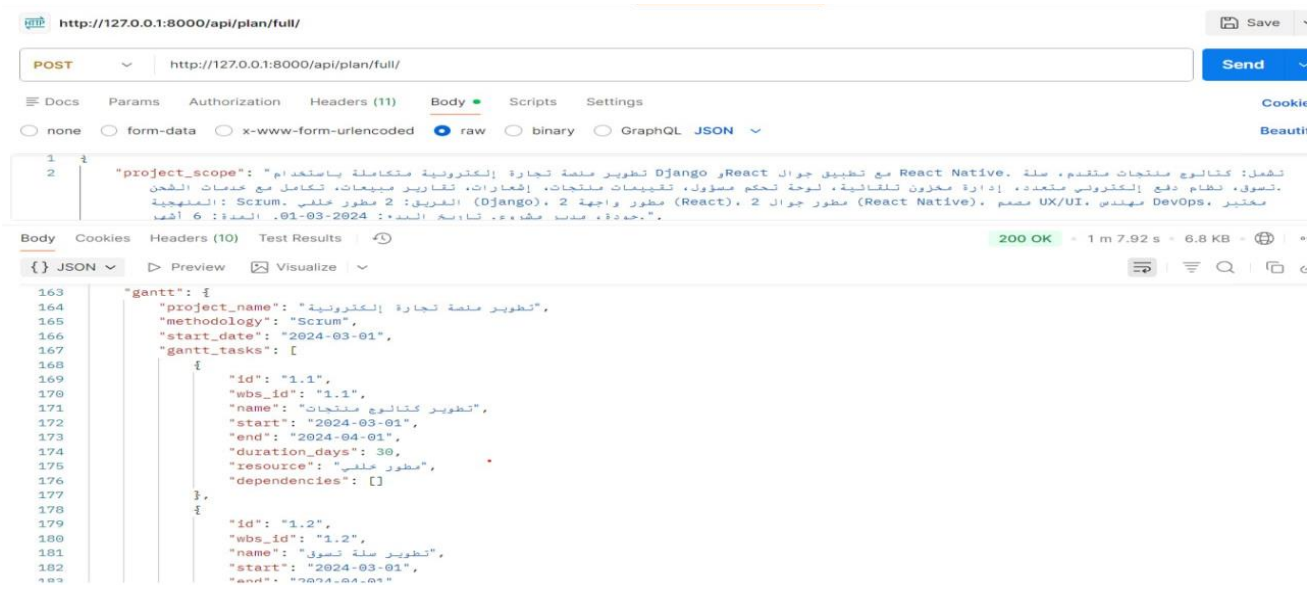
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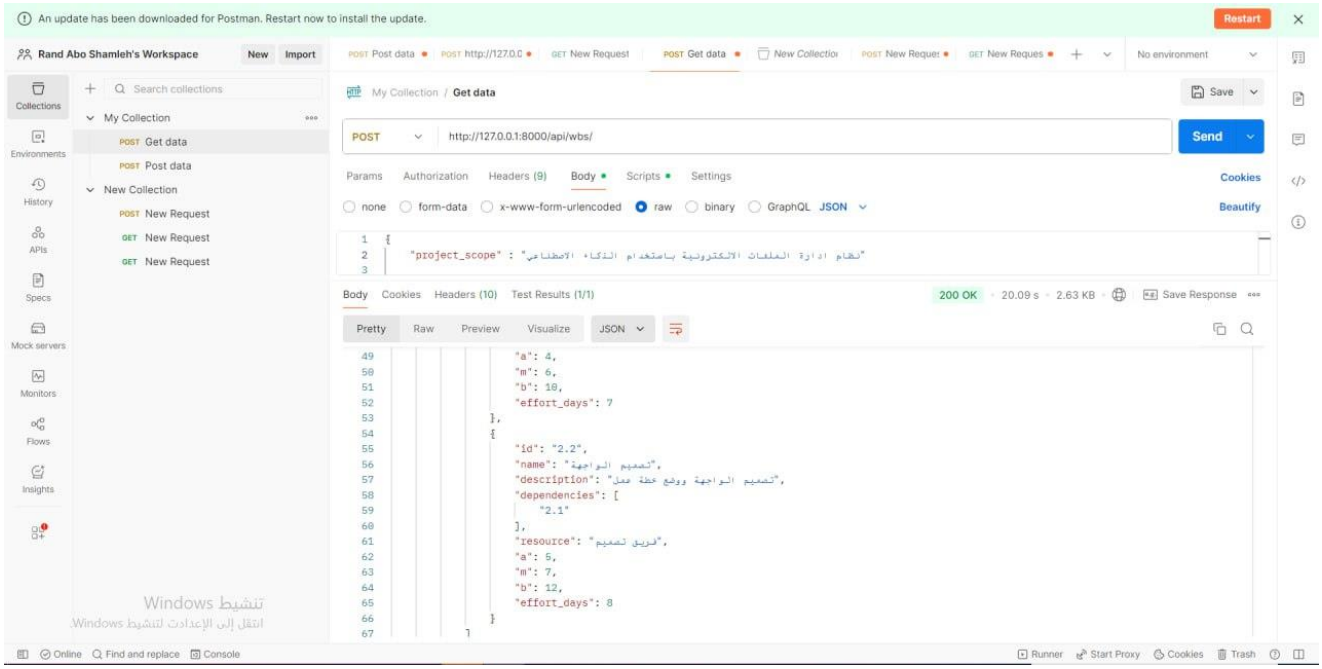
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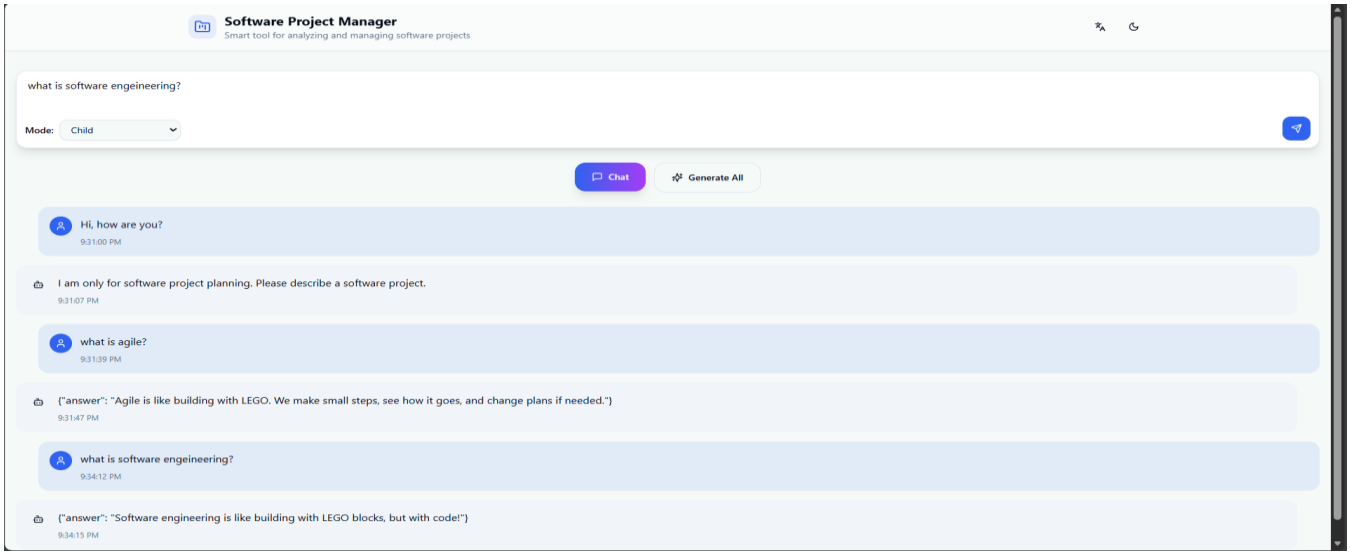
8.2 implementation:



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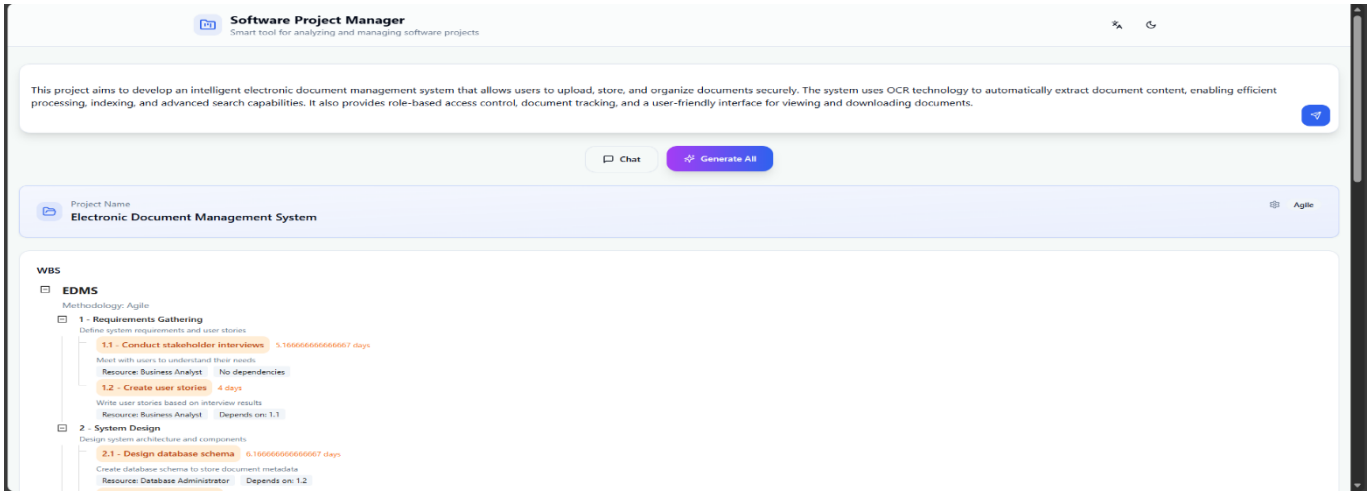

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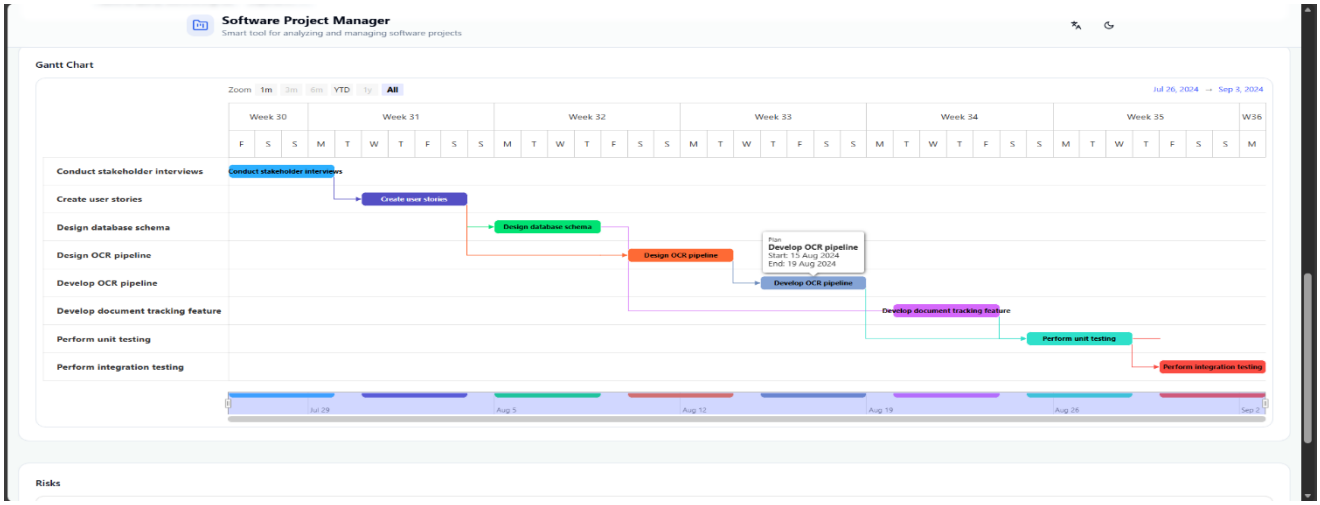

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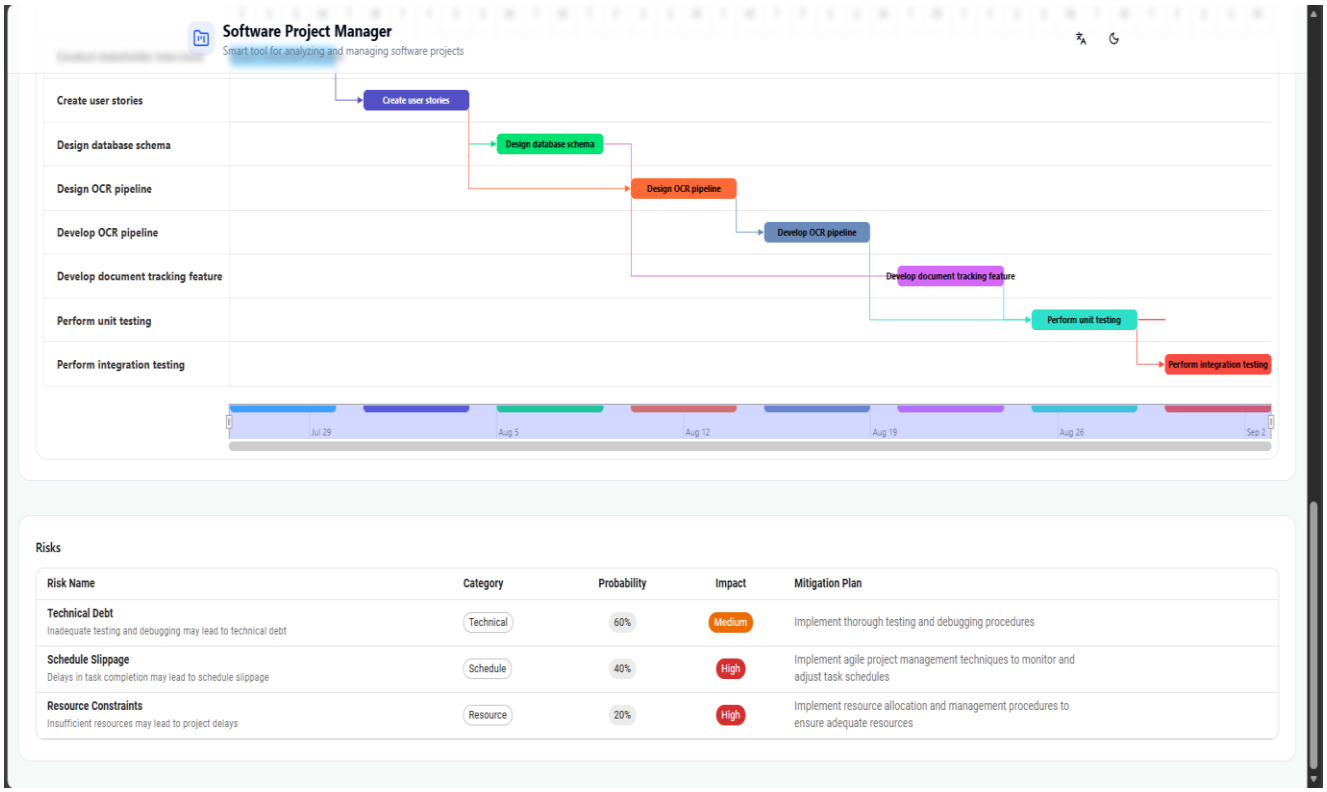

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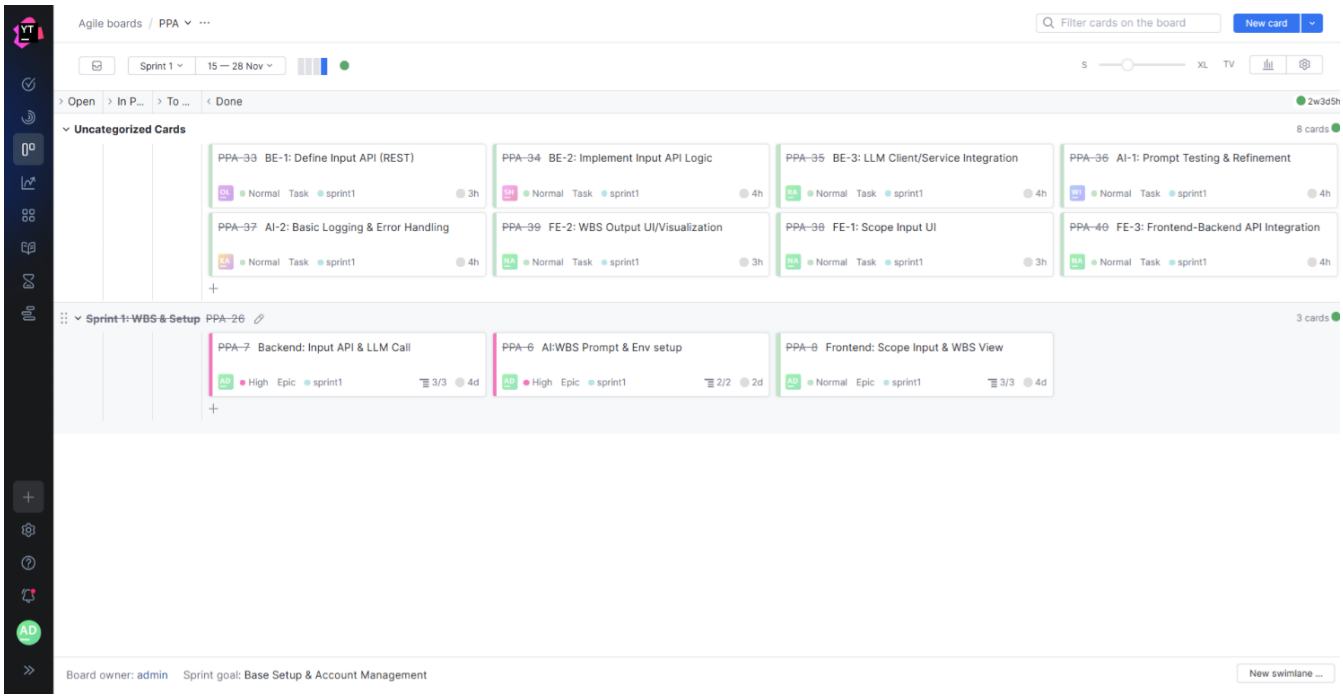

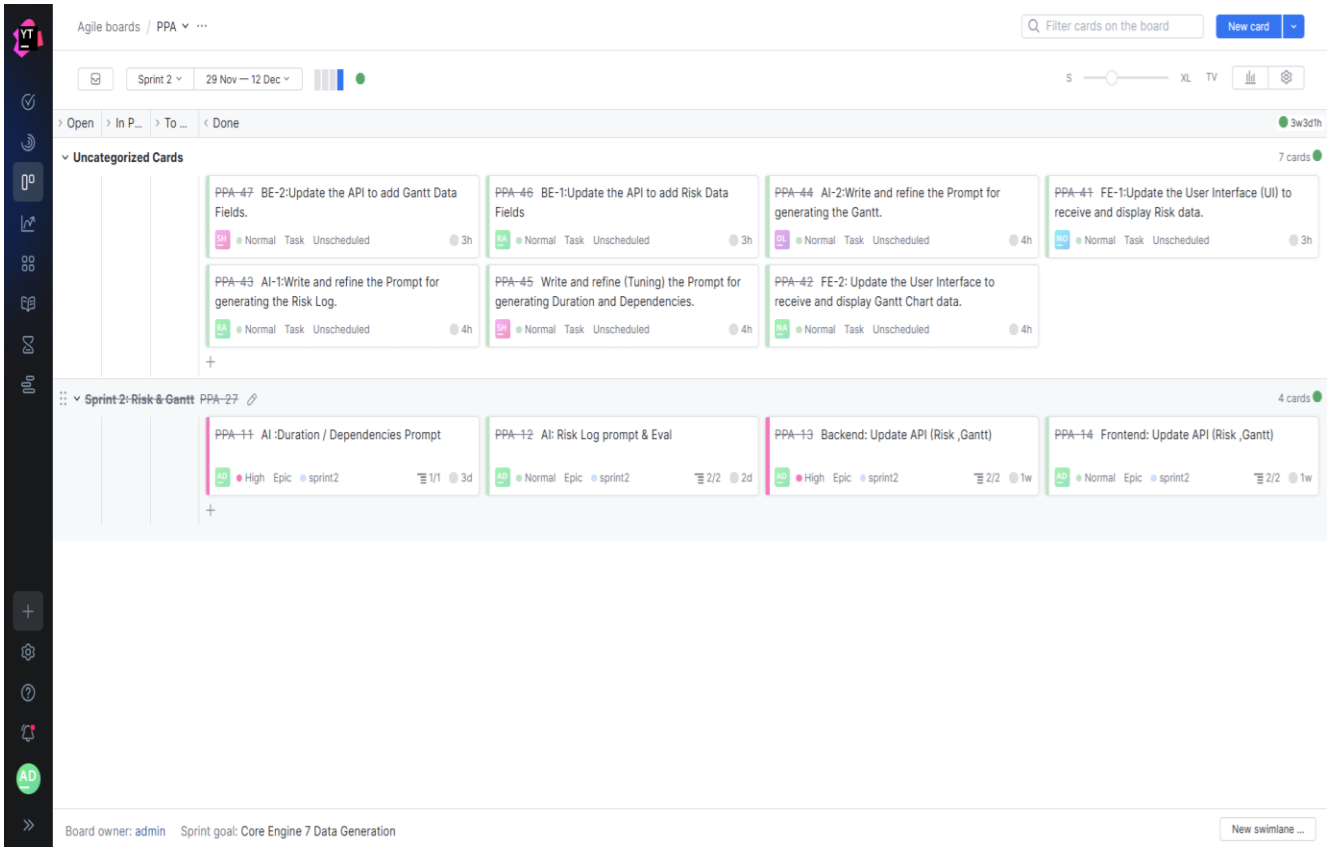
Agile boards / PPA
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Sprint 2
29 Nov — 12 Dec
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In P...
To ...
Done
Uncategorized Cards
7 cards
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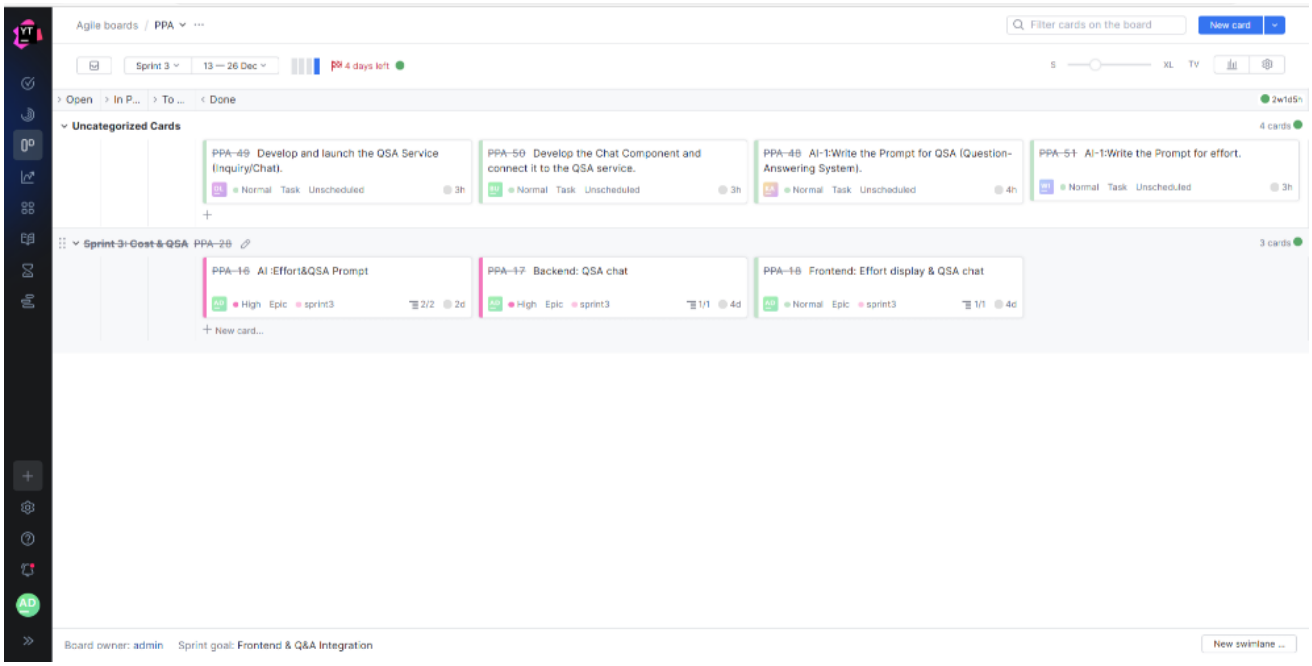
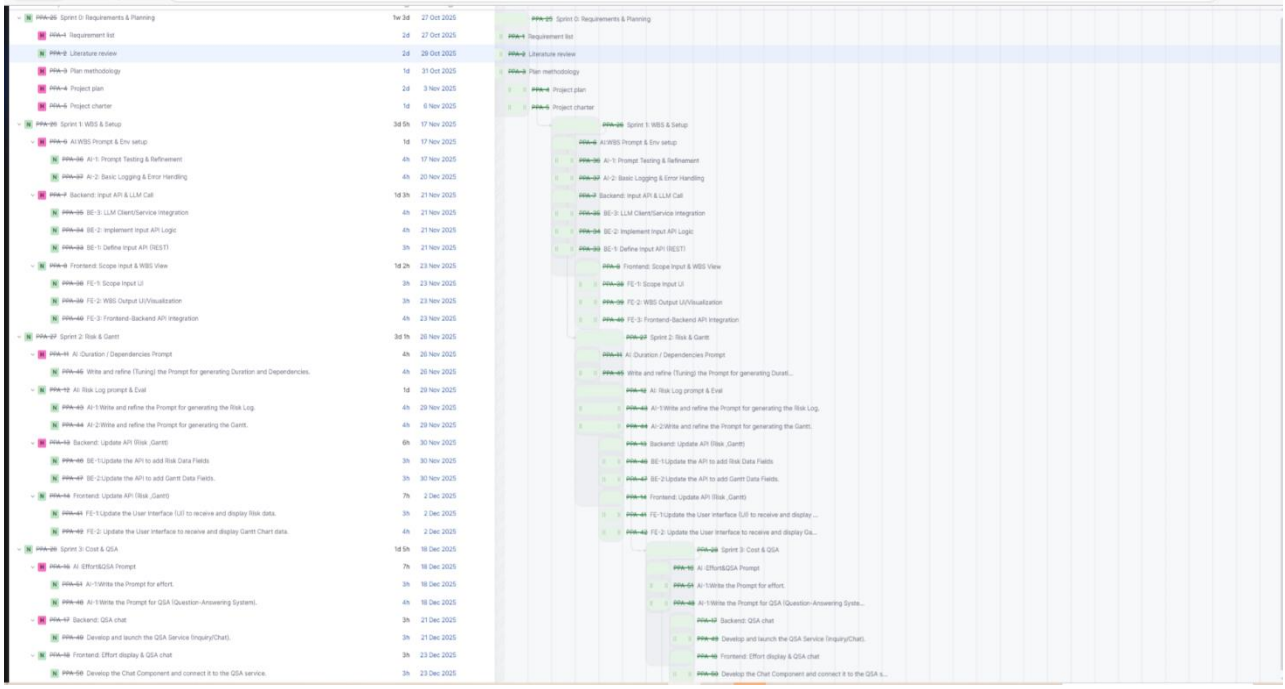
PPA-46 BE-1:Update the API to add Risk Data Fields
PPA-44 AI-2:Write and refine the Prompt for generating the Gantt.
PPA-41 FE-1:Update the User Interface (UI) to receive and display Risk data.
PPA-43 AI-1:Write and refine the Prompt for generating the Risk Log.
PPA-45 Write and refine (Tuning) the Prompt for generating Duration and Dependencies.
PPA-42 FE-2: Update the User Interface to receive and display Gantt Chart data.
Sprint 2: Risk & Gantt PPA-27
4 cards
PPA-11 AI :Duration / Dependencies Prompt
PPA-12 AI: Risk Log prompt & Eval
PPA-13 Backend: Update API (Risk ,Gantt)
PPA-14 Frontend: Update API (Risk ,Gantt)
Board owner: admin
Sprint goal: Core Engine 7 Data Generation
New swimlane ...


Agile boards / PPA
Filter cards on the board
New card
Sprint 3
13 — 26 Dec
4 days left
Open
In P...
To ...
Done
Uncategorized Cards
4 cards
PPA-49 Develop and launch the QSA Service (Inquiry/Chat).
PPA-50 Develop the Chat Component and connect it to the QSA service.
PPA-48 AI-1:Write the Prompt for QSA (Question-Answering System).
PPA-51 AI-1:Write the Prompt for effort.
Sprint 3: Cost & QSA PPA-28
3 cards
PPA-16 AI :Effort&QSA Prompt
PPA-17 Backend: QSA chat
PPA-18 Frontend: Effort display & QSA chat
New card...
Board owner: admin
Sprint goal: Frontend & Q&A Integration
New swimlane ...

8.3.2 gant chart:



Repository link:

https://github.com/olanajibah-ENG/SPM-OF-project-final.git