AGILE DEVELOPMENT MODEL DOCUMENT

Introduction

Agro Vision is developed using the Agile software development model. Agile is an iterative and incremental approach that emphasizes flexibility, continuous feedback, and early delivery of working software. This model is suitable for Agro Vision as the system requirements may evolve based on user feedback, real-world farming conditions, and integration of external services such as AI models and weather APIs.

Why Agile for Agro Vision

Agro Vision involves multiple components such as frontend interfaces, backend APIs, AI-based disease detection, and external weather services. Agile allows the development team to build these components step-by-step, test them early, and refine features based on feedback. This approach reduces development risk and ensures that useful functionality is delivered at every stage of the project.

Agile Workflow Overview

The Agile model for Agro Vision follows a continuous cycle consisting of the following phases:

- Requirement Planning
- System Design
- Development
- Testing
- Deployment
- Review and Feedback

These phases are repeated in short iterations called **sprints**, ensuring continuous improvement and adaptability.

Sprint-Based Development Plan

Sprint 1 – Requirement Analysis and Core Setup

During the first sprint, the focus is on understanding the problem statement and setting up the project foundation. Activities include requirement gathering, defining system architecture, designing basic user interfaces, setting up the Flask backend, and creating the database schema.

Deliverable:
Basic application structure with user authentication and initial dashboard layout.

Sprint 2 – Feature Implementation

The second sprint focuses on implementing the core features of the system. This includes crop image upload functionality, integration of the AI-based disease detection model, integration of the weather API, and storing analysis results in the database.

Deliverable:
Working disease detection and weather information displayed on the user dashboard.

Sprint 3 – Enhancements and Admin Features

In the third sprint, additional features are added to improve usability and monitoring. This includes developing the admin dashboard, adding alert mechanisms such as email or SMS notifications, refining the user interface, and optimizing performance.

Deliverable:
Complete working prototype with farmer and admin dashboards and alert functionality.

User Stories

The Agile development of Agro Vision is guided by simple user stories:

- As a farmer, I want to upload crop images so that I can detect plant diseases early.
- As a farmer, I want to view weather forecasts and alerts to plan irrigation and farming activities.
- As an admin, I want to monitor farmer data and disease trends to analyze system usage.

Testing and Feedback

Testing is performed at the end of each sprint to verify that the implemented features meet the requirements. Feedback from users and evaluators is collected and used to improve the system in subsequent sprints. This ensures that the final product is reliable, user-friendly, and aligned with real-world needs.

Advantages of the Agile Model

- Early delivery of functional components
- Flexibility to adapt to changing requirements
- Continuous testing and improvement
- Better user involvement and feedback
- Reduced development risk

Conclusion

The Agile development model enables Agro Vision to be built incrementally with continuous feedback and improvement. By following this approach, the project ensures timely delivery, better quality, and adaptability to evolving agricultural and technological requirements.