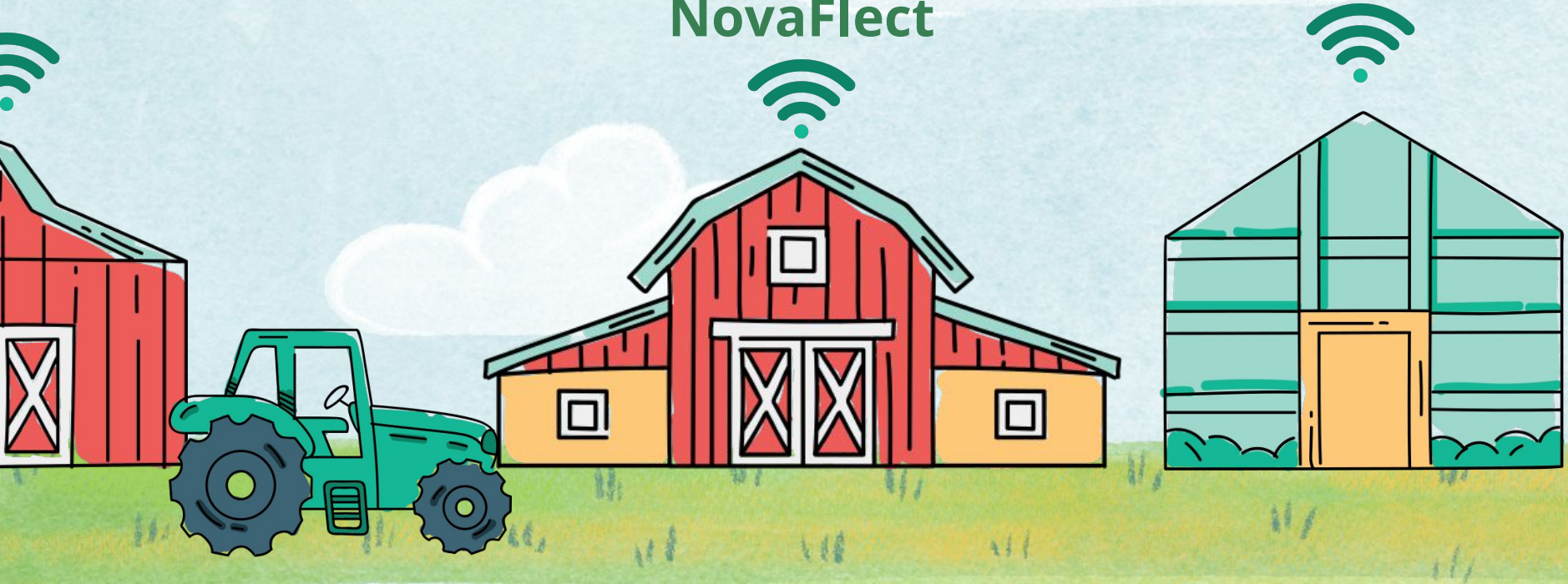
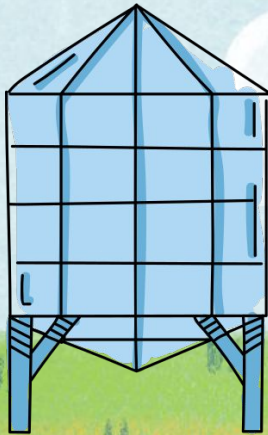


Big Fun Agriculture

NovaFlect



Overview



Problem Statement

Proposed System

Scope

Main Functionalities

System Overview

Reflection

Process

Technique

Challenges

Recommendations

Outstanding Issues

Closing

Problem Statement

- Inefficient crop disease management system at “Big fun agriculture”
- Manual methods are time consuming and prone to errors
- Lack of real time insights hinders effective decision making
- Makes it challenging to identify and treat diseases

Scope

Objectives:

- Identification of Diseased/Infected Crops
- Detailed Information on Infected Crops
- Integration with Existing Systems
- Database Maintenance

User Interaction & Interface:

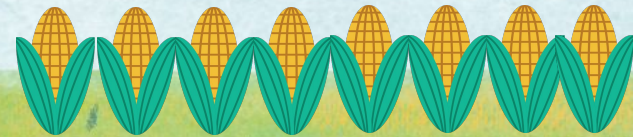
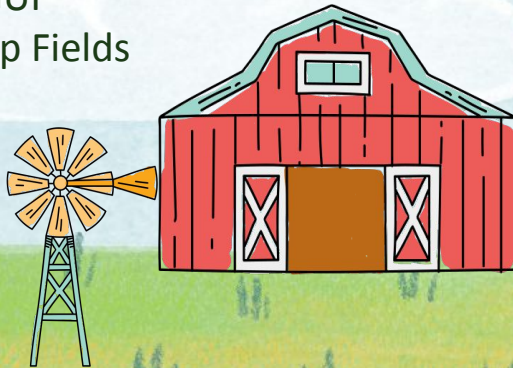
- User-Friendly GUI
- Monitoring Crop Fields
- Coverage Area

Main Goals:

- Early Detection & Prevention
- Improved Crop Yield & Quality

Out of Scope:

- Image Collection
- Hardware Failure
- Network Connectivity Issues



Disease Detection

Uses cameras and drones for timely identification of crop diseases, facilitating prompt intervention for crop health.

AI / ML

Employs advanced algorithms for precise crop disease diagnosis, enhancing decision-making efficiency.



User-friendly interface

Facilitates easy interaction for staff and farmers, providing quick access to essential crop information.

Data Integration

Merges information seamlessly from various sources, enhancing decision-making with a comprehensive dataset

Main Functionalities



Receive images from
drone and analyze
it in real time with
the help of AI



AI model focus on
disease detection,
treatment suggestion,
crop monitoring and
utilizing data model for
training purposes.



Main Page:
Map of each crop field
Interactive
Map shows crop status



Three widgets for
accessing information on:
Inventory weather
Drone status



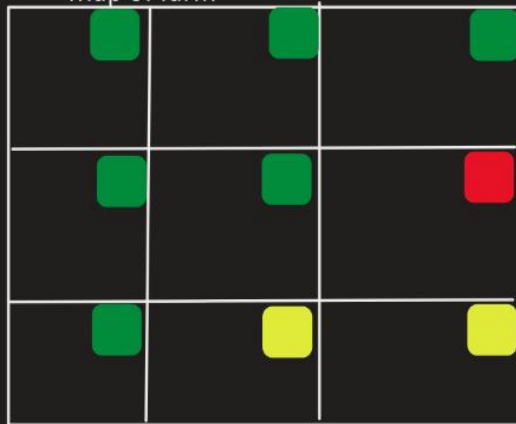
Notify the user if any
disease is detected and
suggest information on
available remedies and
inventory status.



Main Page

Main page

Map of farm



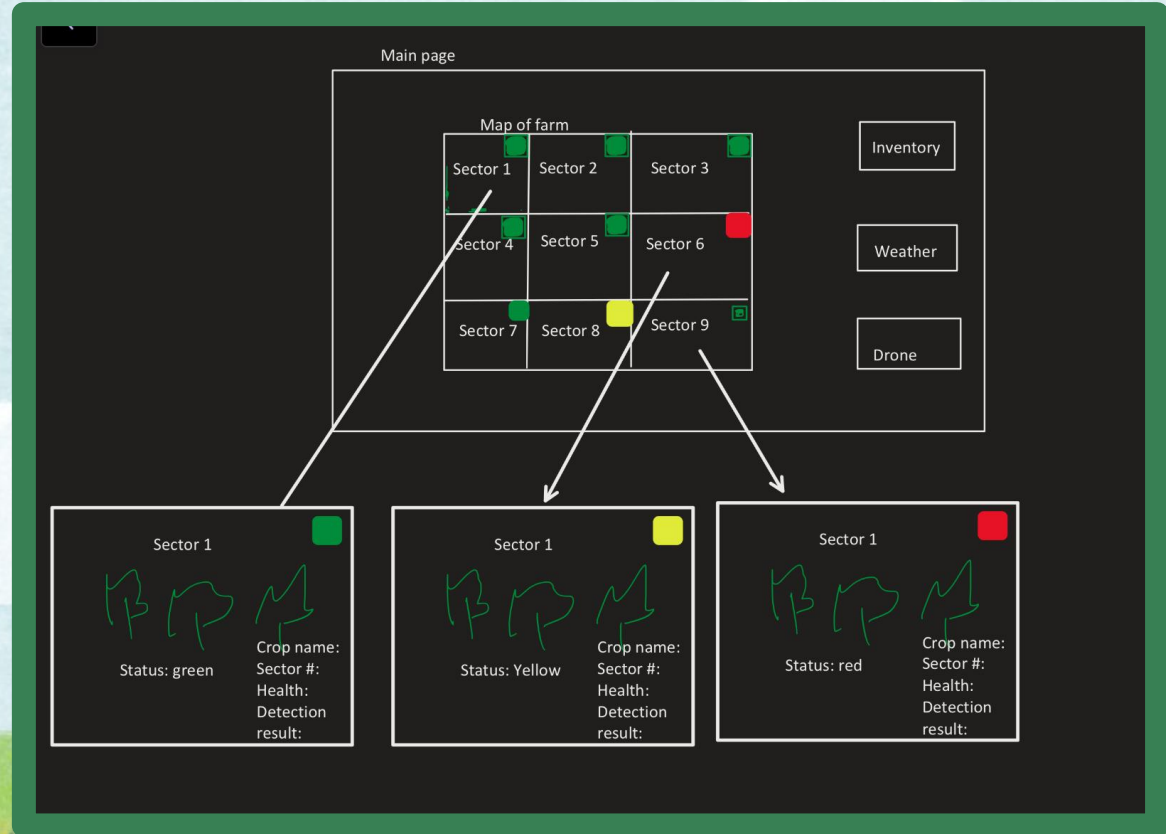
Inventory

Weather

Drone

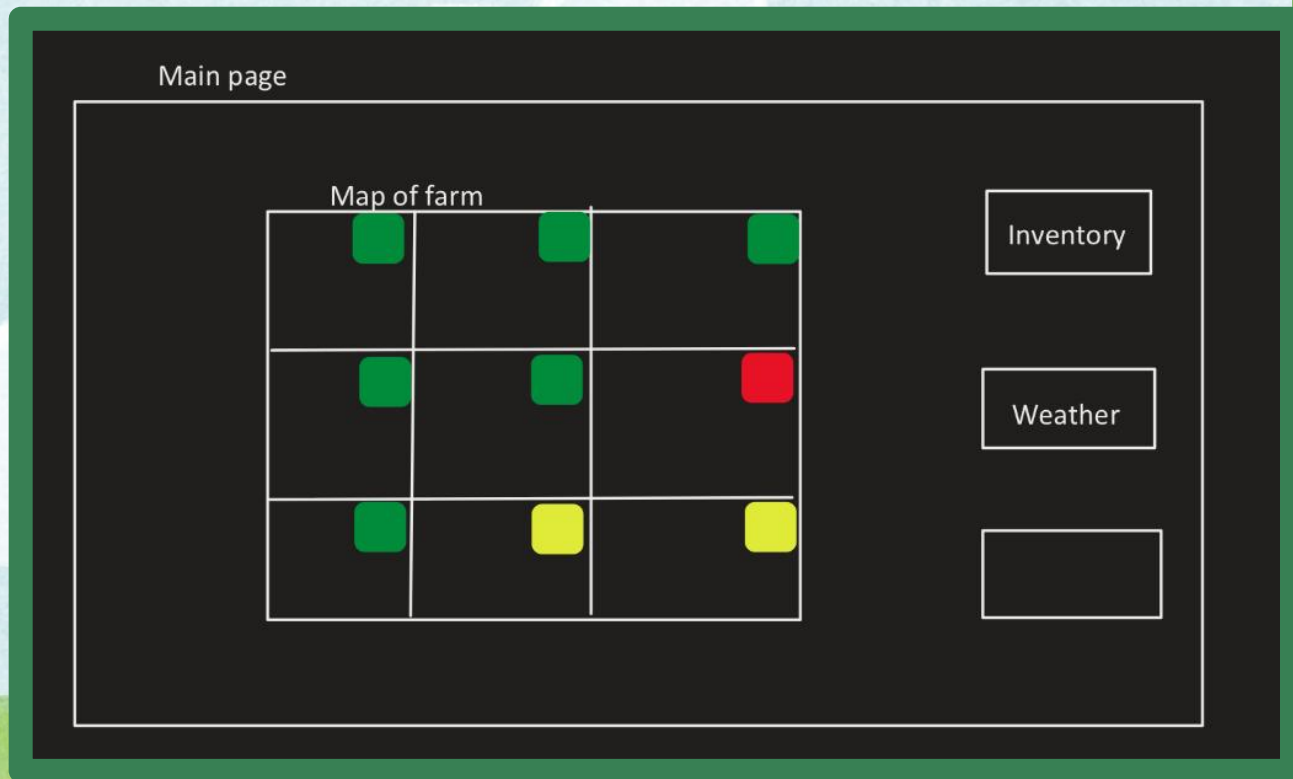
Integration with Weather Forecasting

- Allow farmers to enhance their farm management decision
- Access to real time weather forecasting information
- Weather data accuracy will be within +/- 5% deviation
- Real-time updates every 15 minutes
- Forecasts up to 7 days ahead
- Weather data affects farmers decisions related to irrigation, planting, and pest control



Integration with Pesticide Inventory Systems


- Accurate information on available pesticides in the inventory
- Gives access to information about pesticides that are available
- Also provides their application rates on the crop
- Quantity (liters/gallons), Application Rate (liters/hectare)
- Real-time updates on pesticide availability
- Crucial for providing effective treatment for the identified disease.



Integration with Plant Diseases Library

- **Plant Diseases Library interface is integrated with the software**
- **Provides access to a wide and comprehensive database of known plant diseases**
- **Help give accurate identification and treatment recommendations to farmers**
- **95% accuracy in disease identification based on visual inputs given by the drones**
- **1- 5 spectrum, 1 being healthy and 5 being the plant is beyond recovery**
- **Instant response time for disease identification and detection results**

On clicking the image

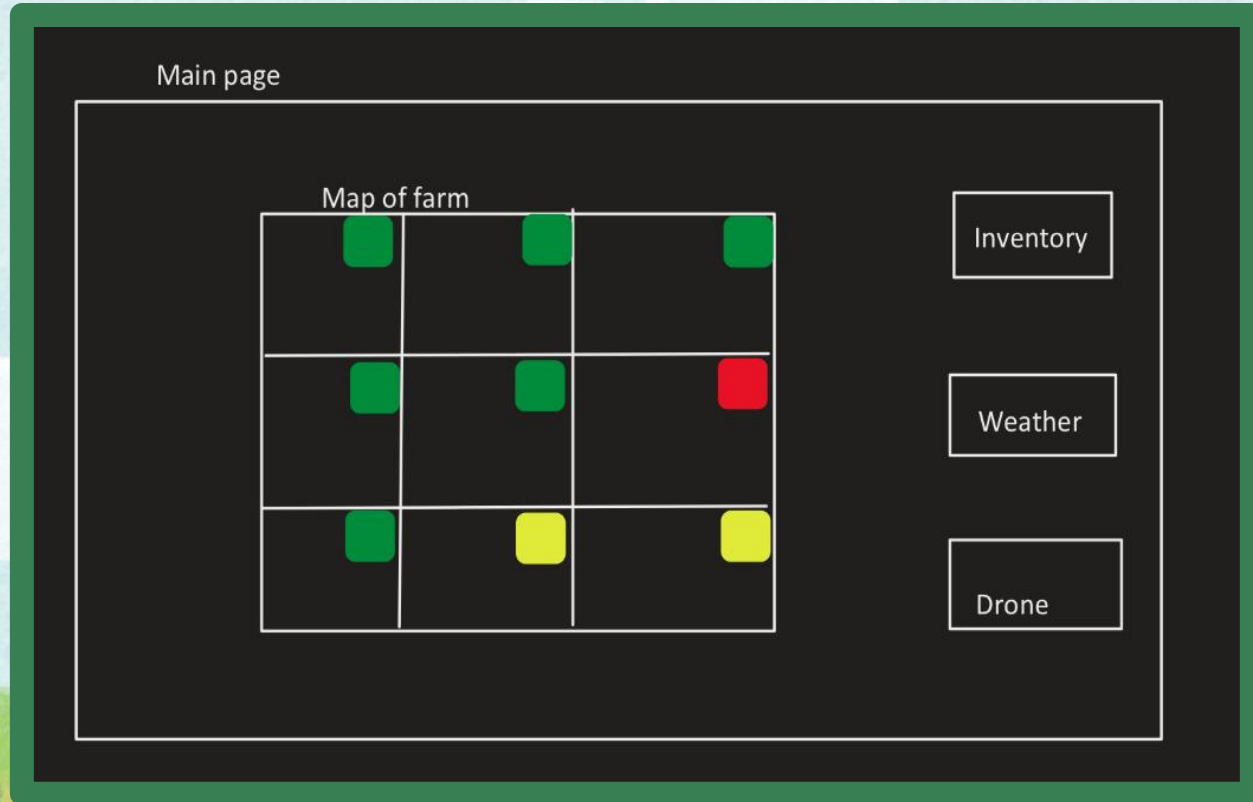


Status

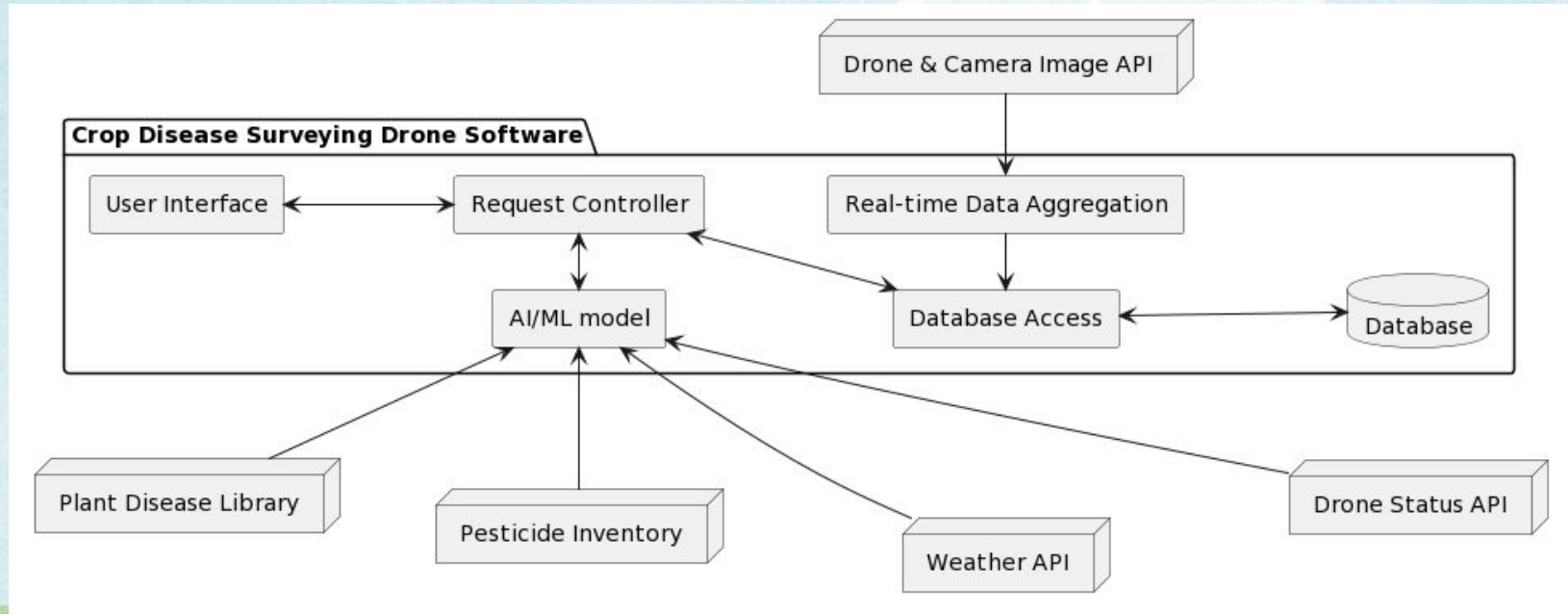
Crop name:
Sector #:
Health:
Detection result:

Integration with Drone Systems

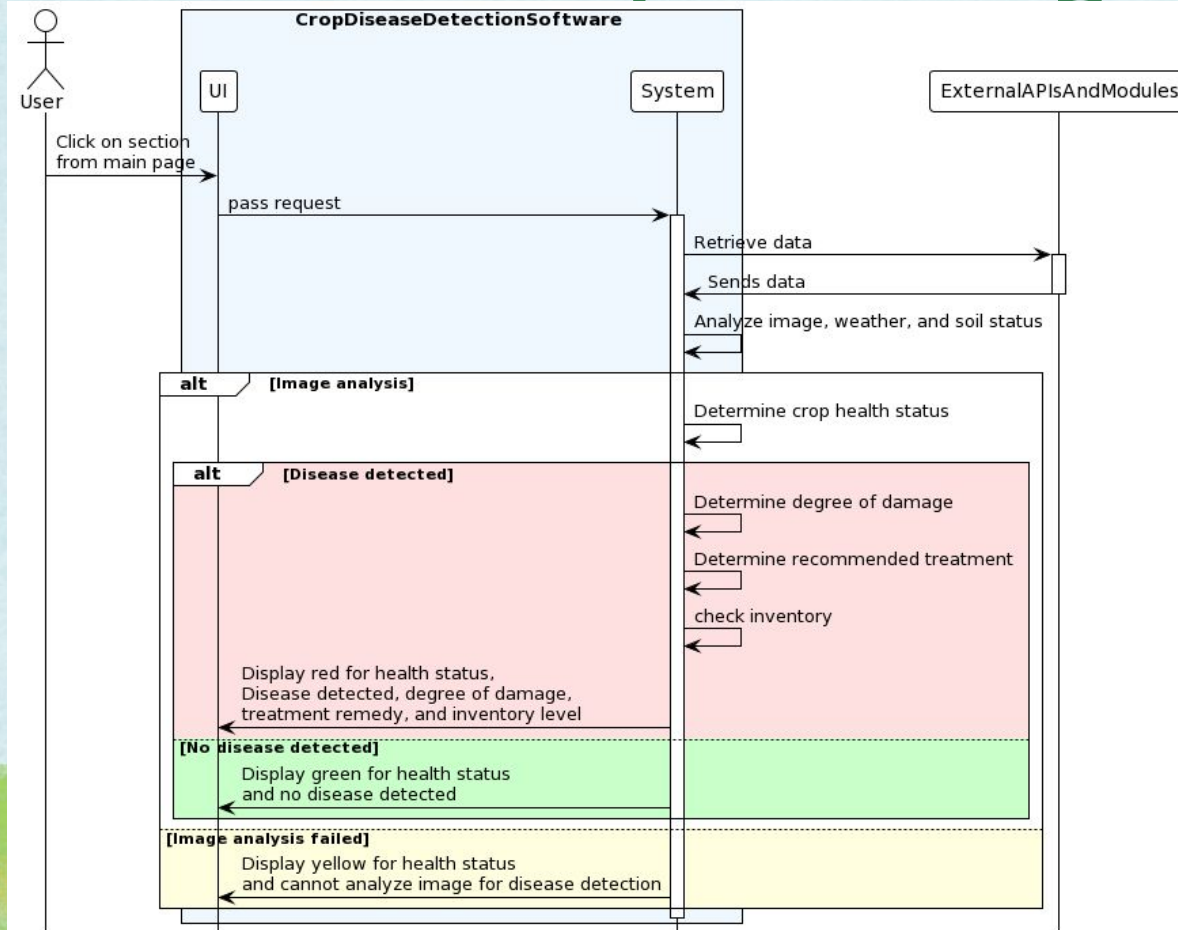
- Integrates the software with the farmer's drone system
- Gives real time access to drones status
- Provides accurate information on Active drones on the field
- Units of measure is the number of active drones and number of inactive drones



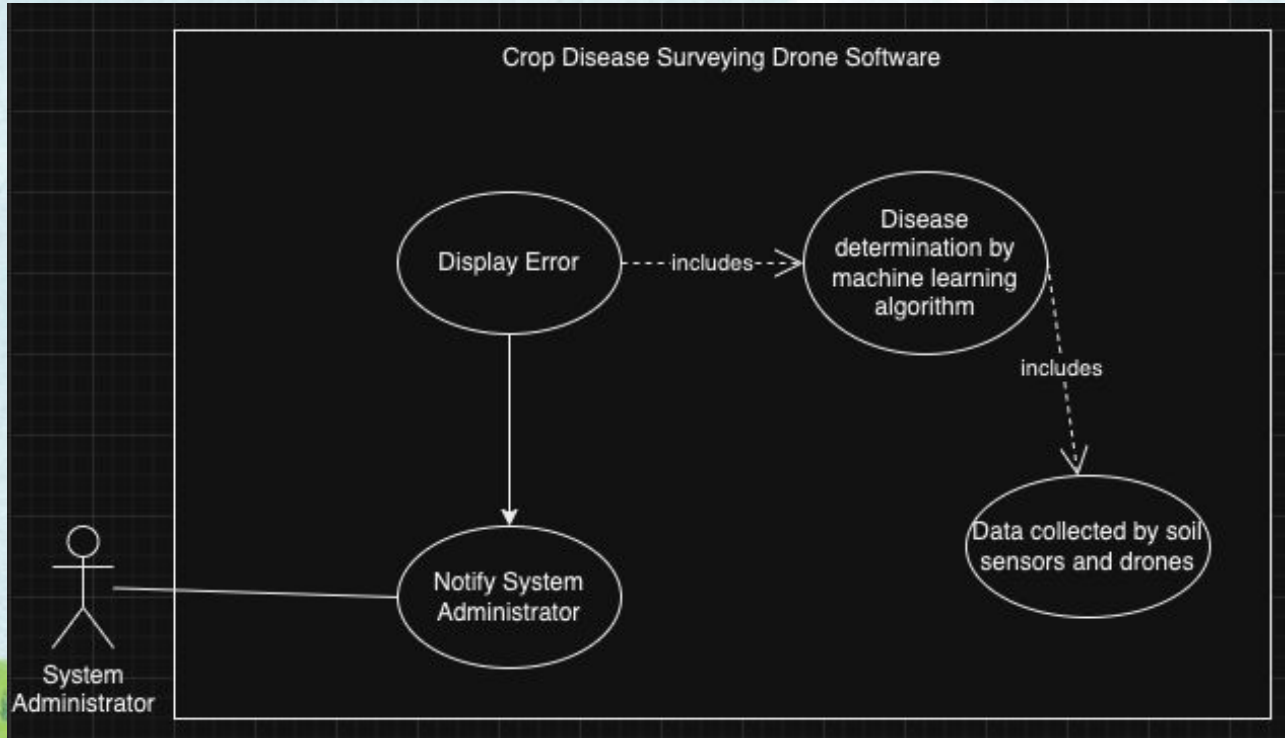
System Overview - Architecture



System Overview Sequence Diagram

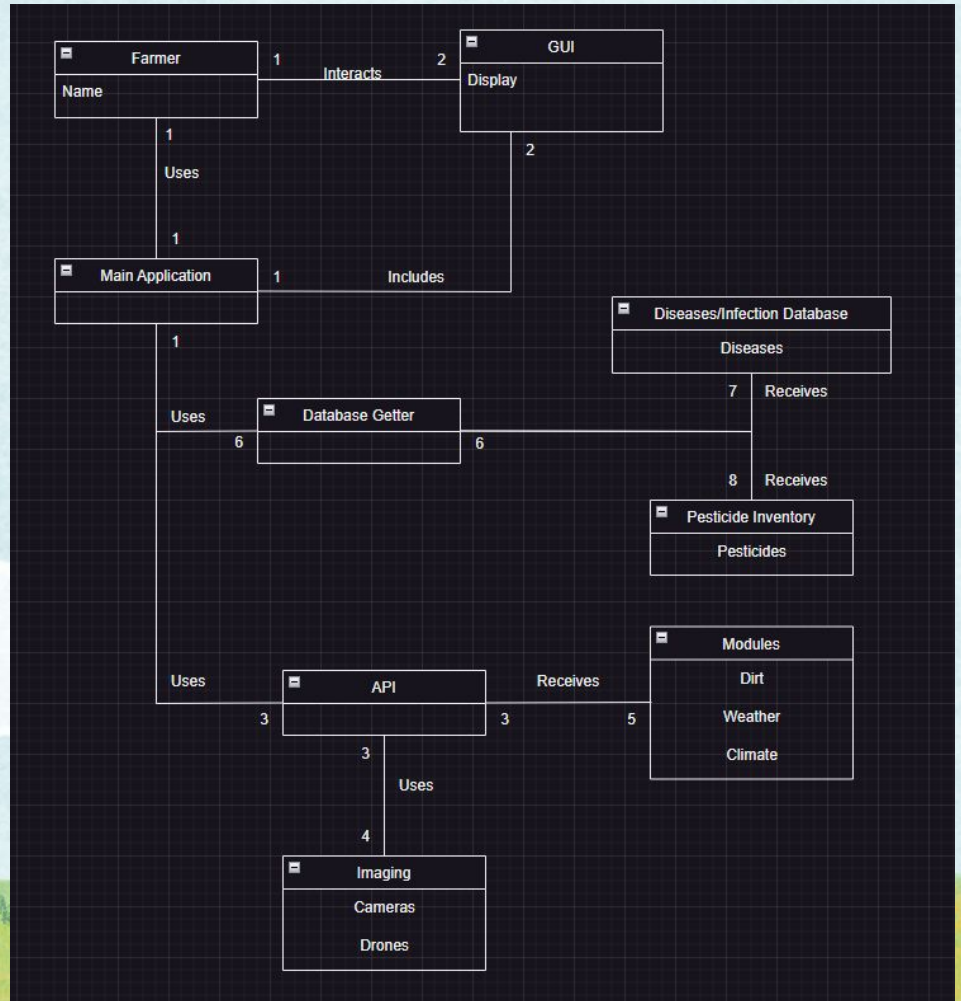


Use Case



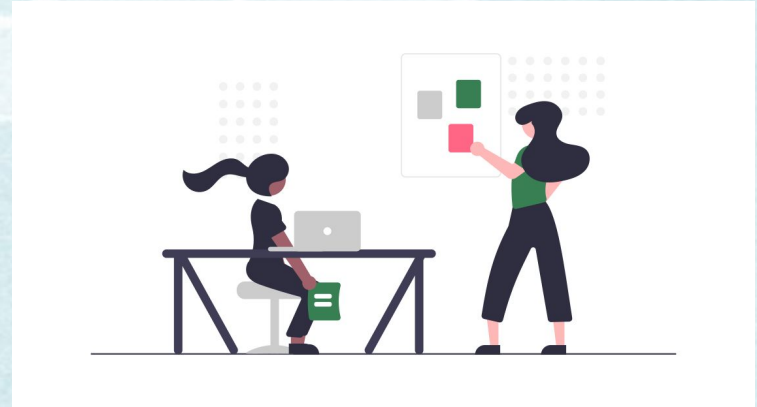
System Overview

- Domain Model



Reflection - Processes

- **The Requirements Engineering Process**
 - **Elicitation**
 - **Analysis**
 - **Specification**
 - **Validation**
 - **Management**



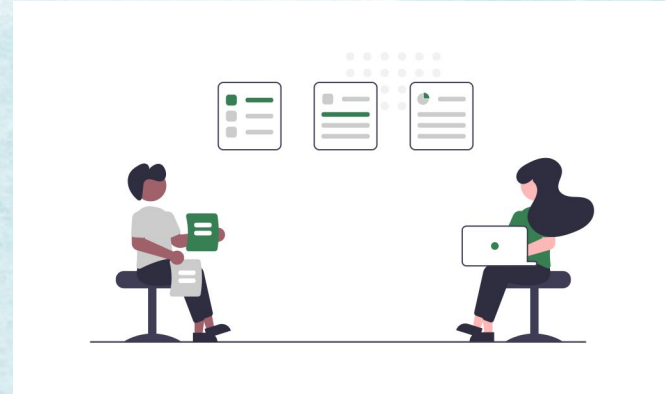
Reflection - Requirements Elicitation

- Collected information from stakeholders to identify and understand their needs and requirements for a system
- Achieved primarily through interviews and discussions with our client (Big Fun Agriculture)
- Gained crucial design information and developed mockups/prototypes



Reflection - Requirements Analysis

- Requirements were examined and refined to ensure that they are clear, complete and consistent
- Ambiguities and inconsistencies were clarified with the stakeholders
- Dependencies between requirements and the feasibility of implementing each requirement were verified
- Visual representations of the functionality of the system were developed (such as use case and sequence diagrams)



Reflection - Requirements Specification

- Outlines the requirements for the system in a clear, consistent and unambiguous manner
- Accomplished by the Software Requirements Specification document

NOVAFLECT

Crop Disease Surveying Drone
Software

Software Requirements Specification
For No Name Brands Software

Version 1.0

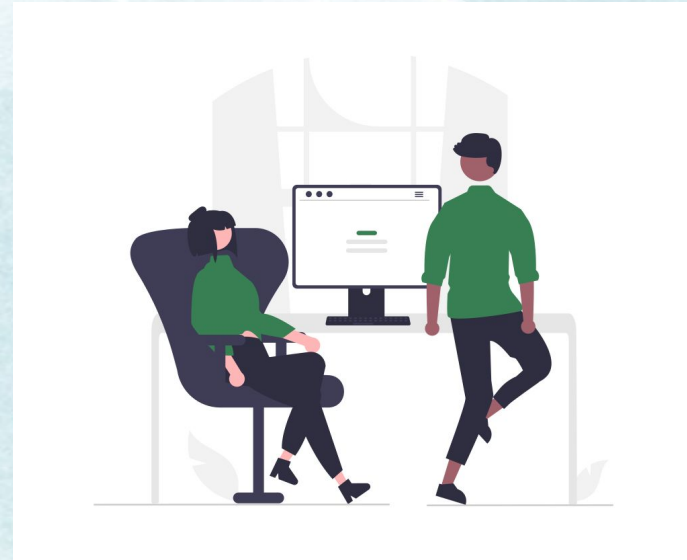
Reflection - Requirements Validation

- **Confirming that the specified requirements represent the stakeholders' needs**
- **Accomplished through the Customer Feedback on the SRS 1.0 document**

Smart Retail Inventory Management
SRS V1
Client Feedback

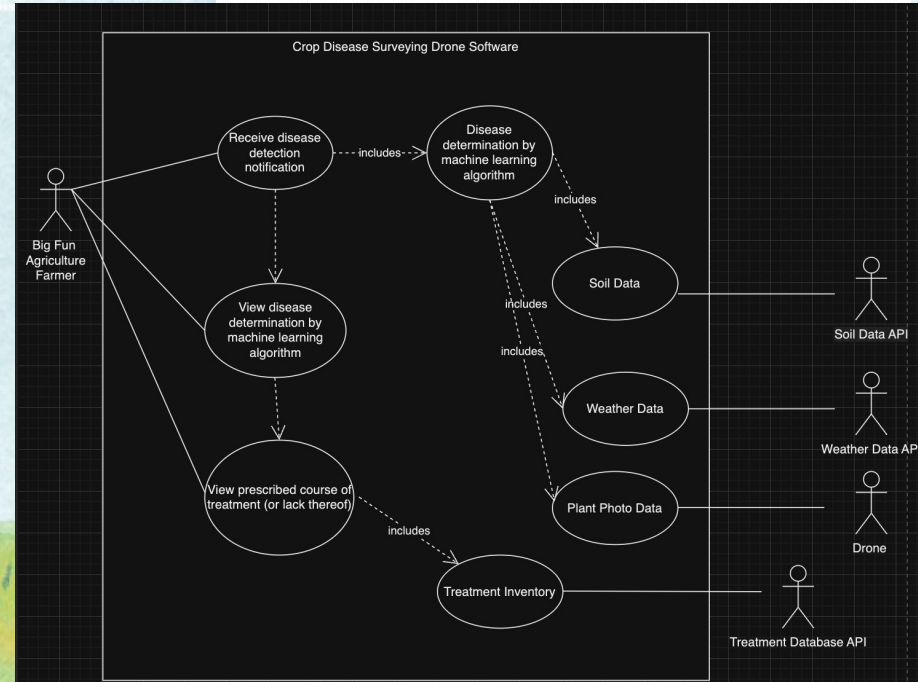
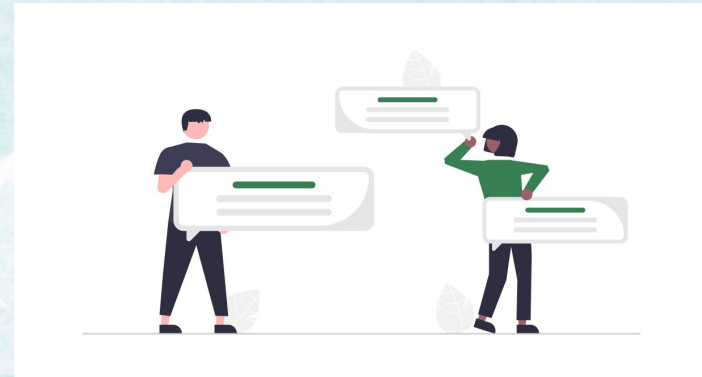
Reflection - Requirements Management

- **Maintaining effective communication with our client**
- **Implementing a version control system for documentation, tracking requirements over time**
- **Defining metrics to monitor progress on implementation**
- **Ensuring that all team members are aware of their roles and responsibilities**



Reflection - Techniques

- Interviews with the client
- Mock-ups
- Brainstorming
- Use Case Diagram
- Flowcharts



Reflection - Challenges Encountered

Some challenges that we faced include:

- **Vagueness and Ambiguity**
- **Time Constraints**
- **Scheduling Difficulties**
- **Providing concise and accurate information to our customer**

Reflection - Discussion of Recommendations

- Improving clarity on implementation of machine learning for disease detection
- Making software support and updates a requirement rather than an attribute
- Removing mentions of unnecessary levels of design
- Specifying how non-functional attributes will be tested (such as security and reliability)
- Unable to address weather-related issues beyond previously stated solutions

Reflection - Discussion of Recommendations

ERROR

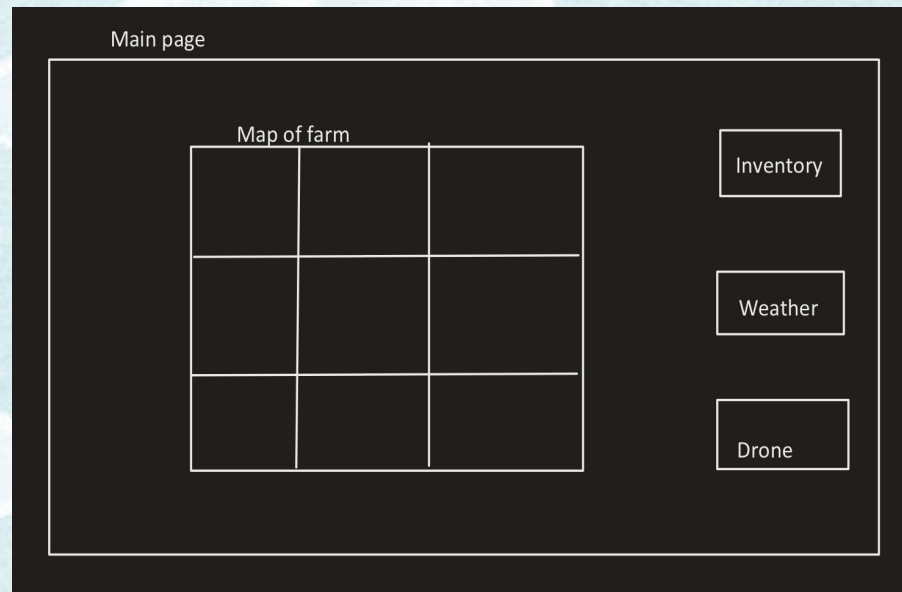
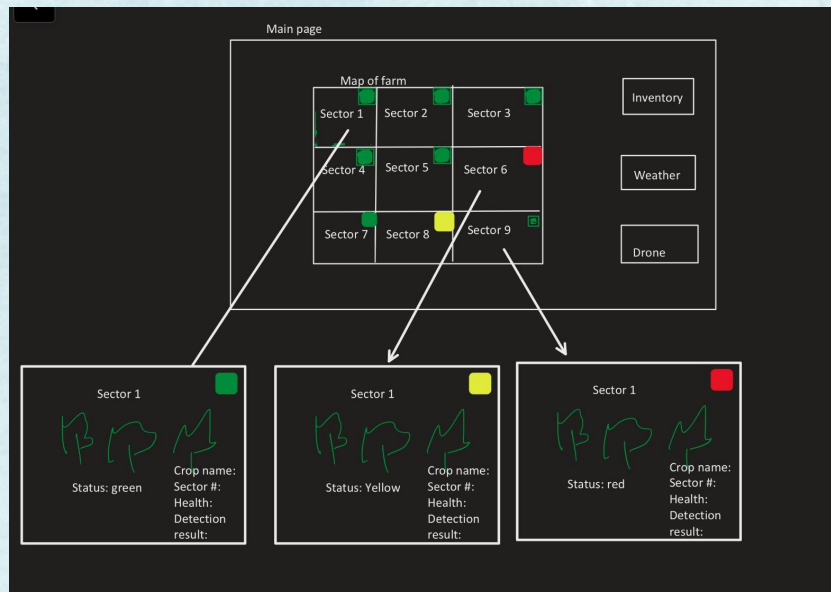
Oops! Something went wrong

We apologize for the inconvenience. Our team is aware of the issue and is working hard to fix it. In the meantime, please try closing the app and open it again to see if it resolves the problem. If the issue persists, feel free to contact our support team at [novaflect@email.com] for further assistance. Thank you for your patience!

Button - Alt

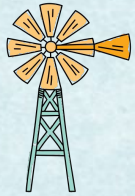
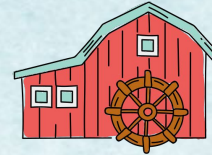
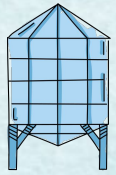
ok

Reflection - Discussion of Recommendations



Outstanding Issues

- **Technical Resource Constraints**
- **Time-Driven Development**
- **Data Storage and Performance Optimization**





SUMMARY

- Problem Analysis
- Refined Specifications
- API Integration
- Detecting crop disease
- Suggesting treatment
- Continuously Learning



