कृषि एवं किसान कल्याण मंत्रालय
MINISTRY OF AGRICULTURE AND FARMERS WELFARE

NATIONAL BANK FOR AGRICULTURE AND RURAL DEVELOPMENT
NABARD

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AGRISURE GREENATHON

Team Details

- **Team Name:** Green Innovators
- **Team Leader Name:** Ayana
- **Problem Statement:** Small and marginal farmers face low productivity and profitability due to poor access to quality inputs, insufficient climate information, outdated farming practices, and inefficient irrigation. Many also stick to traditional crops despite more profitable alternatives. By monitoring weather, soil, and irrigation, we can recommend scalable crops to improve income and sustainability. Addressing these challenges is crucial for enhancing agricultural outcomes in rural areas.

Brief about the idea

AgriSmart empowers small and marginal farmers by providing them with essential tools and resources to make informed decisions and enhance their farming practices. By integrating real-time weather updates, personalized irrigation schedules, and soil moisture monitoring, the app aims to:

- **Optimize Water Usage:** Ensure efficient use of water resources, reducing wastage and promoting sustainability.
- **Improve Crop Yields:** Enhance crop health and productivity through precise irrigation and timely interventions.
- **Increase Knowledge and Skills:** Equip farmers with valuable knowledge and skills to adopt best practices and modern techniques.

Opportunities

- How different is it from any of the other existing ideas?

  Localized Real-Time Data: Unlike other platforms, AgriSmart offers highly localized weather and soil data tailored to individual farms.
  Comprehensive Education: Provides extensive training materials offering a more holistic approach than simple advisory apps.
  IoT Integration: Uses soil moisture sensors to provide real-time data, ensuring accurate and actionable insights.

- How will it be able to solve the problem?

  Data-Driven Decisions: Real-time weather updates and soil moisture data help farmers make informed irrigation decisions.
  Personalized Advisory: Tailored irrigation schedules and climate adaptation tips reduce crop failures and improve yields.
  Continuous Learning: Educational resources and expert interactions keep farmers updated on best practices and new technologies.

- USP of the proposed solution

  Real-Time, Localized Data: Offers hyper-local weather forecasts and soil moisture data.
  Integrated Education Platform: Combines training materials and data driven advice in one app.
  IoT-Enabled Insights: Uses IoT sensors for precise soil moisture monitoring and data-driven irrigation scheduling.

List of features offered by the solution

Real-Time Weather Updates:

- Accurate Forecasts: Receive up-to-date weather forecasts tailored to the specific location, including temperature, rainfall, humidity, and wind conditions.
- Weather Alerts: Get timely alerts about severe weather conditions, such as heavy rain, frost, or drought, to help you take proactive measures to protect your crops.

Personalized Irrigation Schedules:

- Custom Irrigation Plans: Based on weather data, soil moisture levels, and crop requirements, the app generates personalized irrigation schedules to optimize water usage.
- Automated Reminders: Receive automated notifications and reminders for irrigation tasks to ensure timely and efficient watering of your crops.

Soil Moisture Monitoring:

- Real-Time Monitoring: Utilize soil moisture sensors to monitor soil conditions in real time, ensuring that your crops receive the right amount of water.
- Data Insights: Access detailed insights and historical data on soil moisture levels to make informed decisions about irrigation and crop management.

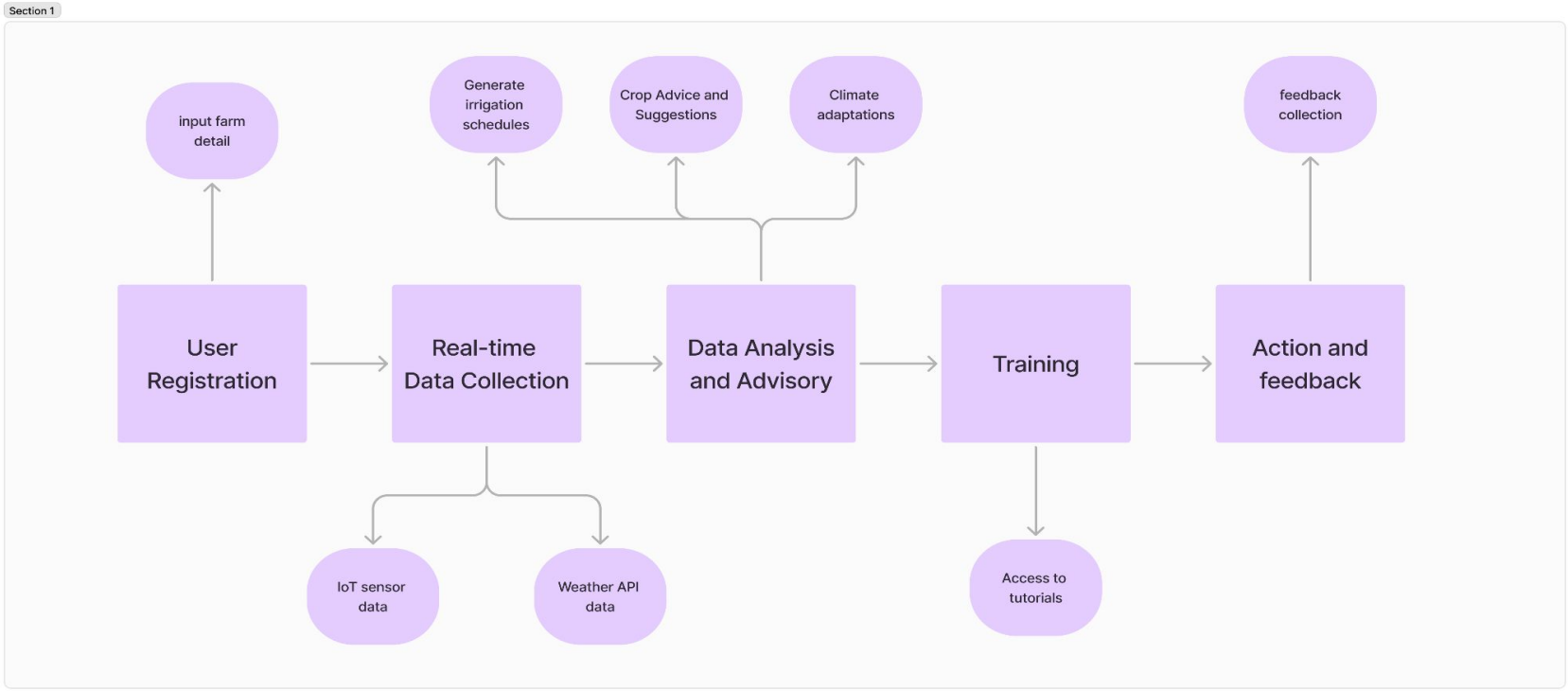
Educational Resources:

- Access of articles, videos, and guides on climate and irrigation management, and crop advice & suggestion.

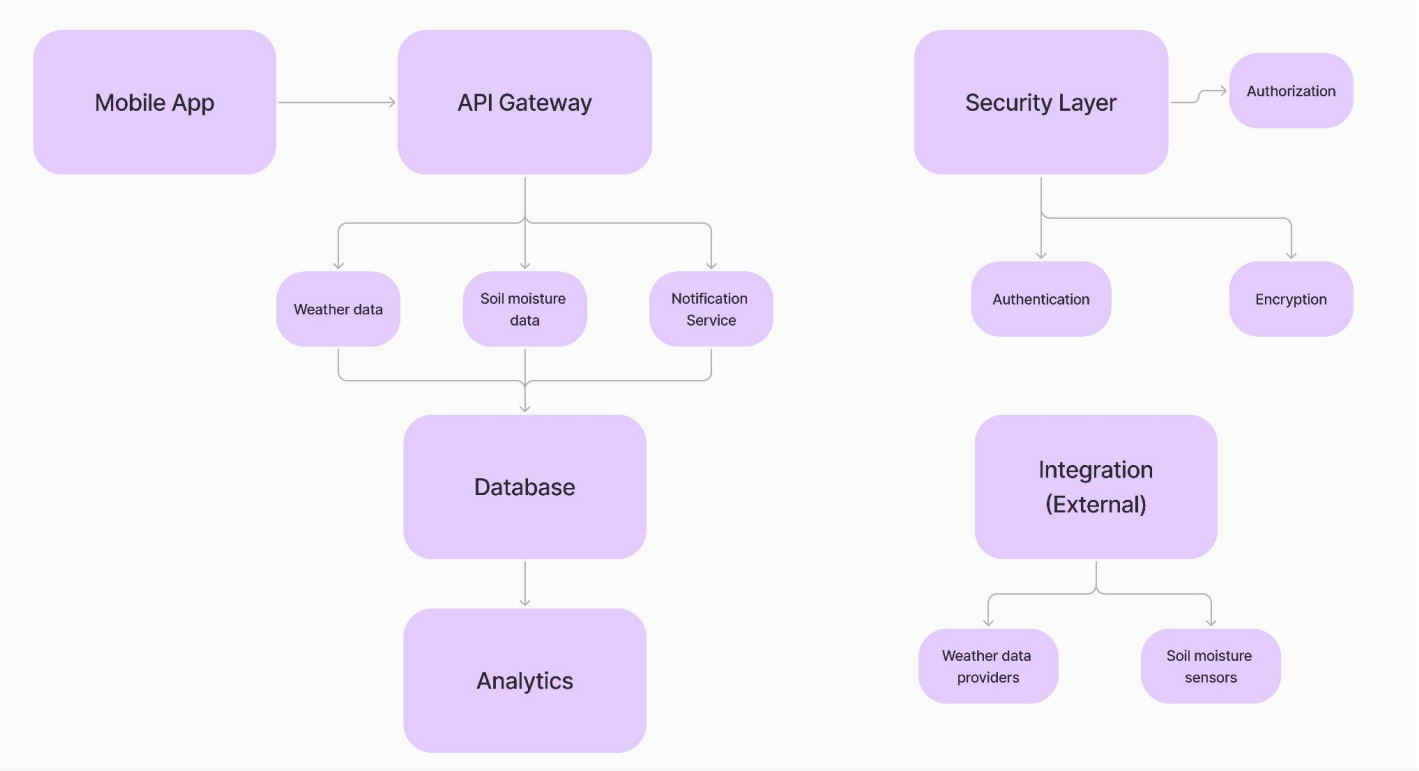
Use-case diagram

1. **User Registration and Setup**:
   - Farmer registers on the app and inputs farming details.
2. **Real-time Data Collection**:
   - IoT sensors collect soil moisture data.
   - Weather API provides localized weather forecasts.
3. **Data Analysis and Advisory**:
   - App analyzes data to generate personalized irrigation schedules.
   - Provides climate adaptation tips based on weather forecasts.
4. **Training**:
   - Users access tutorials, guides, and participate in forums.
5. **Action and Feedback**:
   - Farmers implement recommendations and provide feedback.
   - Continuous improvement based on user input.

Process Flow Diagram



Architecture diagram of the proposed solution



Technologies to be used in the solution

- **Frontend**: React Native (for cross-platform mobile app development)
- **Backend**: Flask (Python) (for server-side logic)
- **Database**: Firebase Firestore (for simplicity and ease of integration with the mobile app)
- **Weather API**: OpenWeatherMap (for real-time weather updates)
- **Authentication**: Firebase Authentication (for user management and security)

Estimated implementation cost

- **Mobile App Development**: ₹25,000 - ₹30,000
- **IoT Sensors and Integration**: ₹10,000 - ₹15,000
- **Content Development and AI Collaboration**: ₹10,000 - ₹15,000

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