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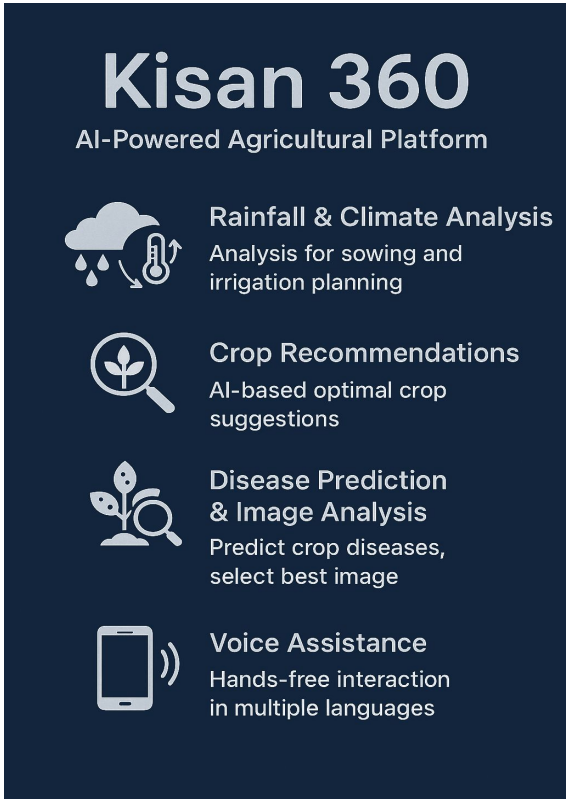
Profile Overview

Problem Statement Title

G3. Smart agriculture and water management: Sustainable practices that optimize resource use in agriculture, ensuring food security while protecting the environment.

- Theme - Green Tech
- Team ID -
- Team Name - Team Ignite

Solution :



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IDEA TITLE

Problem Faced

Water Overuse: Inefficient irrigation depletes resources.

Poor Crop Selection: Crops often mismatch soil and climate.

Late Disease Detection: Leads to low yields and losses.

Tech & Data Gap: Farmers lack tools for smart decisions.

Unreliable Markets: Farmers face unfair trade and exploitation.

Solution

Smart Agriculture: AI suggests ideal crops, predicts diseases early.

Water Management: Climate data guides efficient irrigation.

Sustainability: Precision farming cuts waste and runoff.

Food Security: Boosts yield, reduces crop failure risk.

Accessibility: Voice & multilingual support for all farmers.

Innovation

- **AR Photo Guide** for accurate disease detection.
- **Best Image Auto-Select** boosts analysis precision.
- **Voice + Regional Language Support** for inclusivity.
- **Verified Marketplace** ensures safe, fair trade.
- **Localized AI** for crop and disease insights.
- **Unified Platform** for farming, irrigation, and trading.

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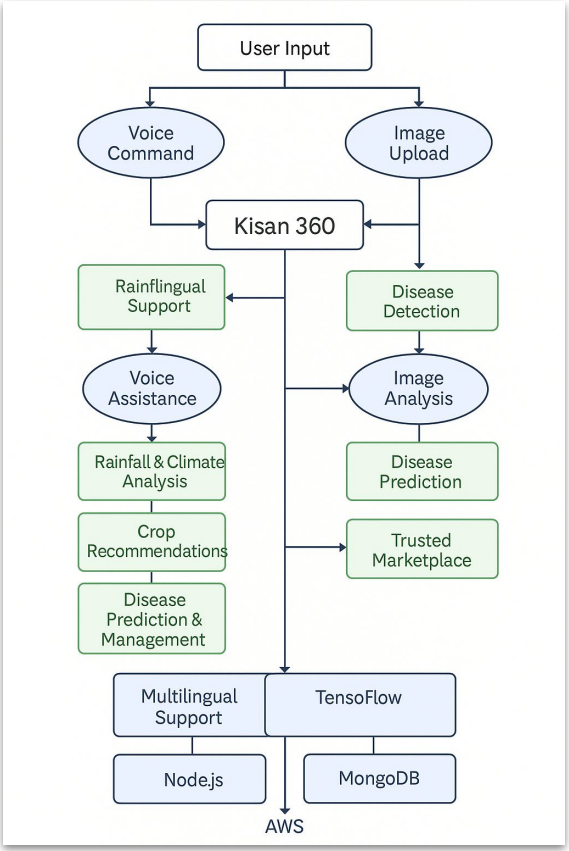
Technical Approach

Technologies Used

- **Backend**: Node JS
- **Frontend**: HTML, CSS, JavaScript, React, React Native
- **Machine Learning**: scikit-learn, pandas, TensorFlow
- **Database**: MongoDB
- **Deployment**: AWS EC2, Docker
- **Additional Technologies**: NLP for voice recognition, image processing for camera selection, multilingual integration.



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FEASIBILITY AND VIABILITY

Feasibility

- **Tech Stack Ready:** Uses proven tools (React, Node.js, TensorFlow, MongoDB, AWS) for scalable, cross-platform development.
- **Field Usability:** Voice, AR, and multilingual features ensure real-world usability for rural farmers.
- **Data Availability:** Reliable access to weather APIs and soil databases supports accurate AI recommendations.

Challenges & Risks

- **Low Digital Literacy:** Some farmers may struggle with app usage.
- **Internet Access Issues:** Rural connectivity can limit functionality.
- **Image Quality Variance:** Poor photo uploads may affect AI accuracy.
- **Trust in Marketplace:** Skepticism towards online platforms.

Mitigation Strategies

- **Voice & Visual Tutorials:** Onboarding support for new users.
- **Offline Mode:** Core features available without constant internet.
- **AR + Auto Image Selection:** Ensures usable images for disease detection.
- **Verified Users & Ratings:** Builds trust and credibility in the marketplace.

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IMPACT AND BENEFITS

TARGET AUDIENCE

- **Farmers (Small, Marginal, Commercial):** Gain from AI-driven crop planning, smart irrigation, & disease alerts.
- **Farmer Producer Organizations (FPOs):** Use data insights for group decisions, better resource use & community trading.
- **Agri Workers & NGOs:** Support farmers with voice-enabled tools & real-time data for training and field assistance.

LONG TERM VALUE

- Scalable across regions
- Easy feature expansion
- Govt. scheme integration
- AI & data innovation
- Global adaptability
- Startup & NGO partnerships

SOCIAL BENEFITS	ECONOMIC BENEFITS	ENVIRONMENTAL BENEFITS
Empowers Farmers with knowledge via multilingual, voice tech. **Bridges Digital Divide** between rural farmers and smart tools. **Builds Trust & Community** through marketplace & FPO collaboration.	**Increases Yield** through AI crop recommendations & disease detection. **Reduces Costs** by optimizing water and fertilizer use. **Boosts Income** via direct marketplace access.	**Optimizes Water Use** with smart irrigation planning. **Reduces Chemical Use** by targeting disease control. **Enhances Climate Resilience** through data-driven insights.

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