SMART INDIA HACKATHON 2025

TITLE PAGE



- **Problem Statement ID –** SIH25076
- **Problem Statement Title-** AI Based Farmer Query Support and Advisory System.
- **Theme-** Smart Farming
- **PS Category-** Software
- **Team ID-**
- **Team Name -** INNOVIX

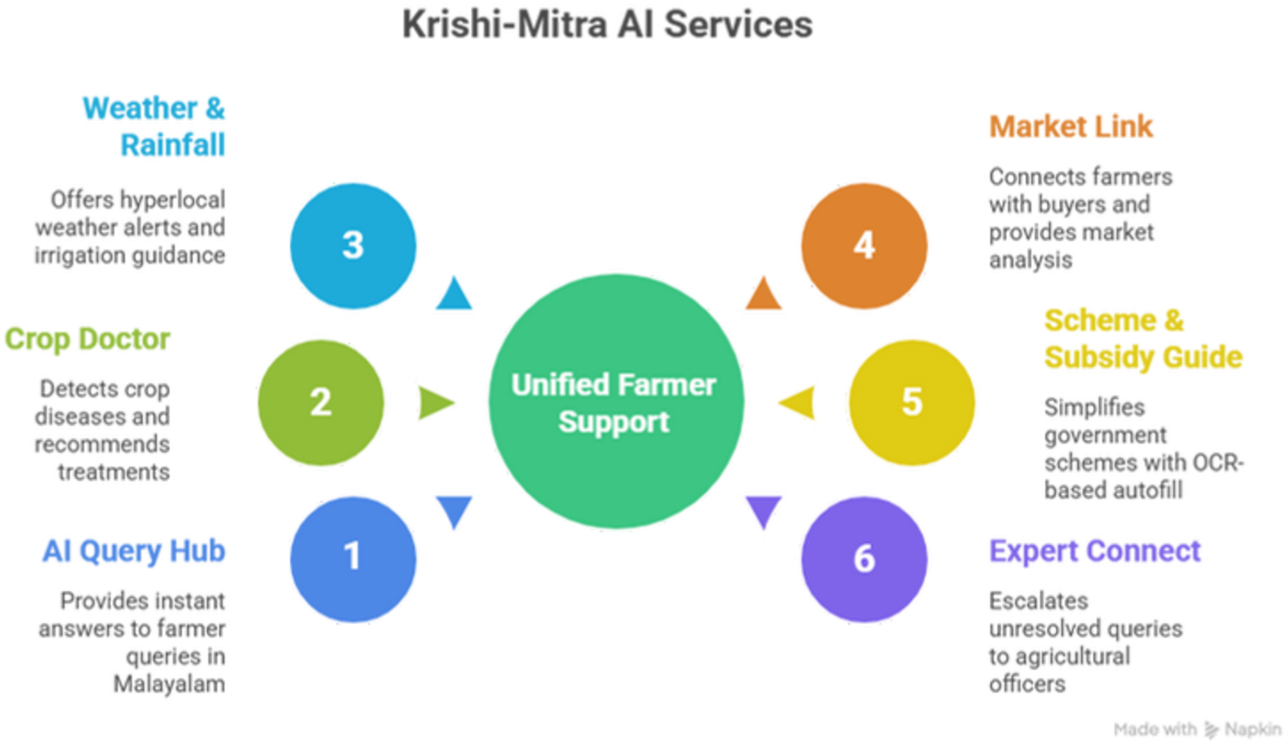
INNOVIX

KRISHI MITRA AI

SMART INDIA HACKATHON 2025

Key Features:-

- **Crop Disease Detection:** Detects Disease via Photo and recommended solution.
- **Weather and Rainfall Alert System:** Location Specific Weather Forcast and Rainfall alert which help farmer in Crop planning.
- **Agri-Mandi(MSP):** Shows current Mandi-Price and MSP(Minimum selling Price) alerts.
  Helps in Selling crops.
- **Gov. Schemes:** Provides timely Information and Guidance on Applying for Government Subsidies.
- **Query Handling:** Queries via Text , Voice or Pictorial form Provides personalised ,Easy to understand for Users.
- **Expert Advice:** If user is not Satisfied by Ai support then We schedule a meeting between User and D.A.O.(District Agricuture Officer) through video.



TECHNICAL APPROACH

Technology Stack

Frontend :- Flutter framework with SQLite for offline-first access(Mobile App)

HTML,CSS, JavaScript (for web platform)

•**Backend:** FastAPI with Python; scalable microservices; Docker & Kubernetes for deployment

AI Core:-

- NLP: LLM + Retrieval-Augmented Generation using Vector DB (Pinecone/Chroma).

- Computer Vision: CNN for crop disease detection.

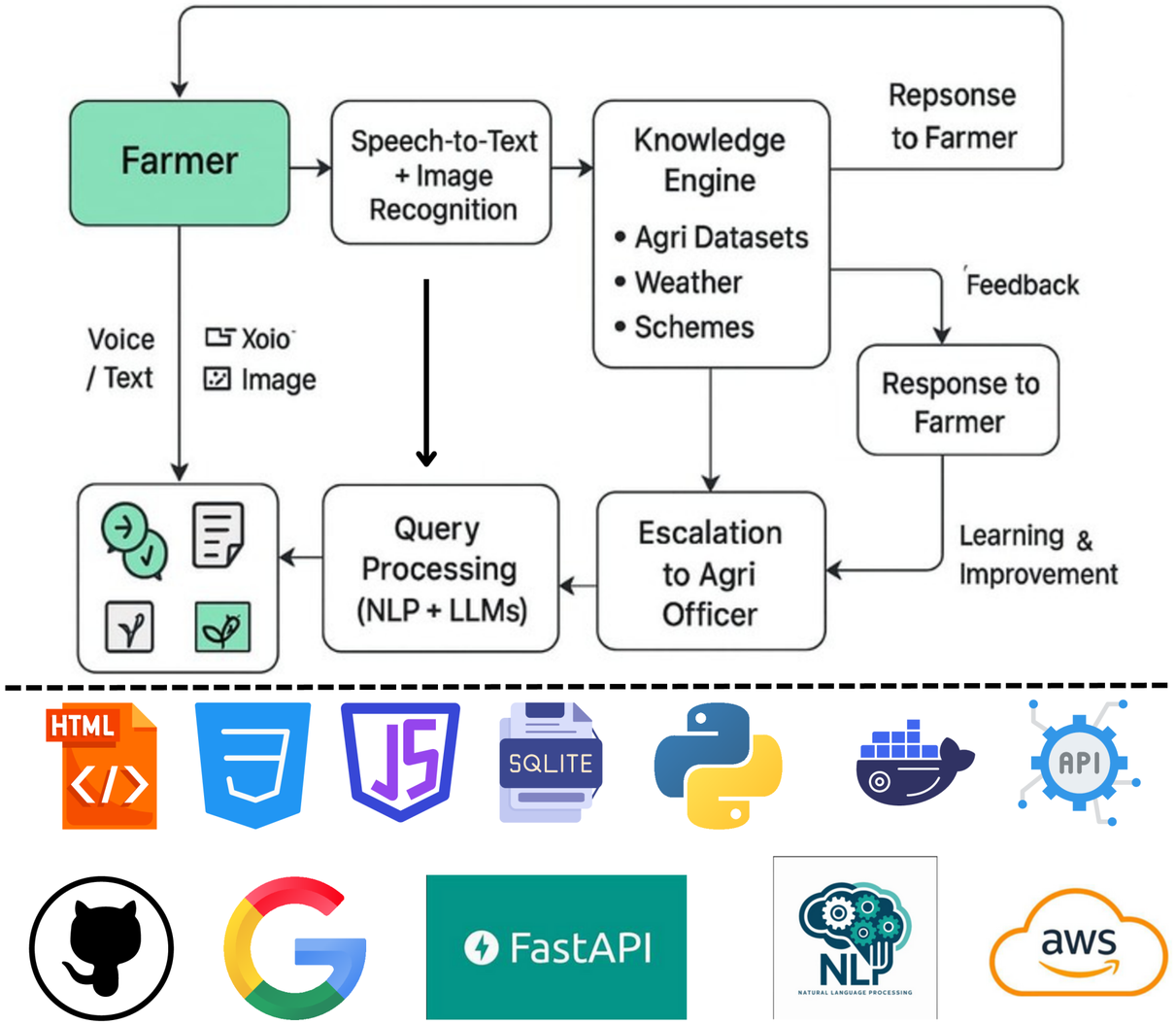
- OCR: Google ML Kit (on-device) + Cloud Vision API (server-side).

- Speech Recognition & Translation: Google Speech-to-Text and Translation AI.

Database: PostgreSQL + PostGIS for geo-data; secure data handling.

Real-time Expert Connect: WebRTC protocol for video/audio calls.

•**Cloud Infrastructure:** GCP/AWS ensures scalability, security, and high availability.



FEASIBILITY AND VIABILITY

Feasibility:

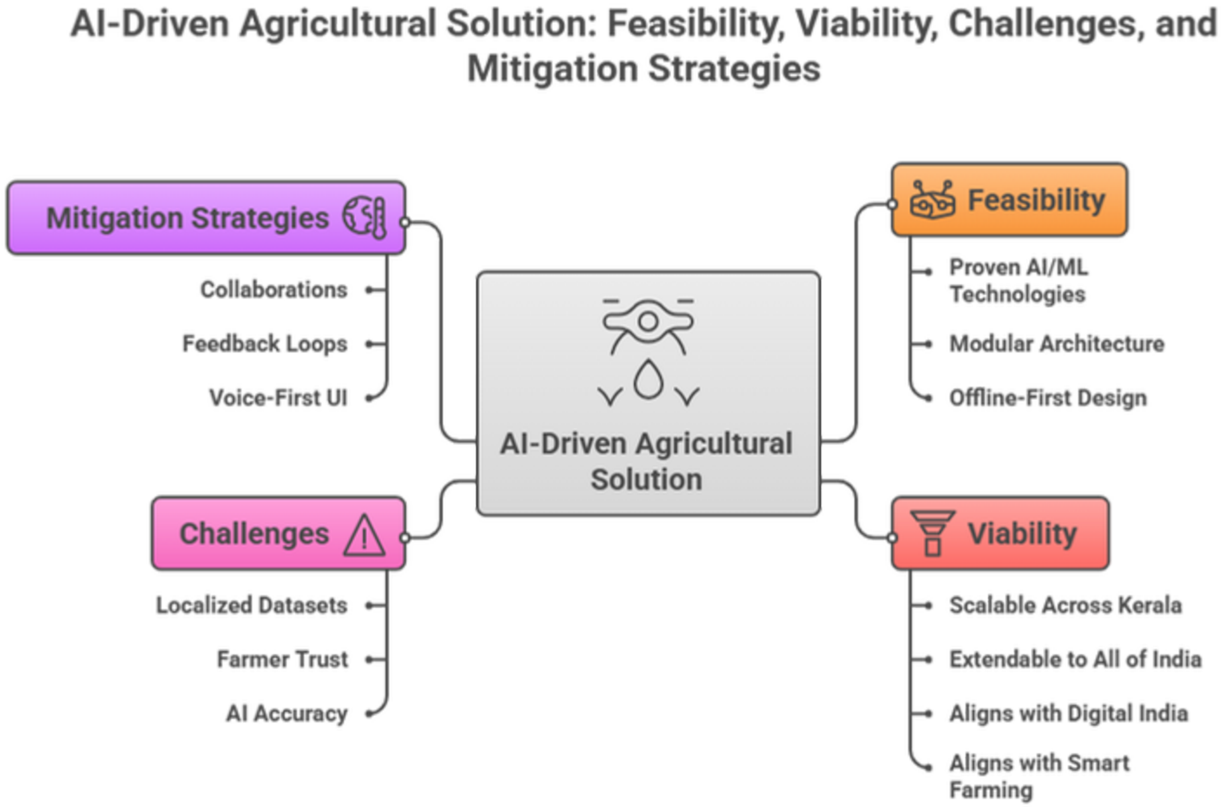
- Leverages proven AI/ML technologies with modular architecture.
- Offline-first design ensures usability in rural low-connectivity areas.
- Integrates existing data sources (IMD weather, mandi APIs, govt schemes).

Viability:

- Scalable across Kerala and extendable to all of India.
- Aligns with Digital India and Smart Farming initiatives.

Challenges:

- Availability of localized datasets for Kerala crops .
- Gaining farmer trust and adoption.
- Ensuring accuracy of AI responses.



UNIQUE VALUE PROPOSITION

"Bridging Traditional Farming Wisdom with Modern AI Technology"

Empowering Kerala's farmers with intelligent, accessible, and culturally-sensitive agricultural guidance that works both online and offline.

IMPACT AND BENEFITS

•**Expected Impact:**
- Acts as a 24/7 Digital Krishi Officer – always available.
- Provides early pest/disease detection, preventing major losses.
- Increases scheme adoption and farmer access to subsidies.
- Reduces water waste and promotes sustainable irrigation practices.

•**Benefits:**

•**Social:** Empowers small and marginal farmers with instant knowledge.

•**Economic:** Boosts farmer income by ensuring better yields and fairer market access.

•**Environmental:** Reduces chemical overuse, encourages sustainable practices.

•**Government Support:** Reduces workload of agricultural officers by handling first-level queries.



RESEARCH AND REFERENCES

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References

•Government Sources:
- Kerala Agriculture Department crop calendars, advisories, and pest management guidelines.
- Central & State Government scheme portals (PM-KISAN, subsidies).

•Technical References:
- ICAR and KAU research on crop disease detection.
- FAO & World Bank reports on AI adoption in agriculture.

•External APIs:
- IMD (India Meteorological Department) and OpenWeather for weather forecasts.
- Agri-market APIs for mandi prices.

•Supporting Studies:
- Case studies on AI in agriculture improving productivity and sustainability.

- **Datasets:**

Comparison of Agricultural Platforms

Feature	Krishi Mitra AI	Mandi Central	Plantix
Rates & Sentiment	✓	✓	✗
Market Report	✓	✓	✗
Government Scheme Updates	✓	✓	✗
Weather & Rainfall Alerts	✓	✓	✗
Disease Detection	✓	✗	✓
Fertilizer Guidance	✓	✗	✓
Cultivation Tips	✓	✗	✓
Disease Alerts	✓	✗	✓
Government Scam Alerts	✓	✗	✗
Expert Consultation	✓	✗	✓
Speech-to-Text Query System	✓	✗	✗