Capital One Launchpad Hackathon: Submission Template

1. Team Details

Team Name: AI-Mavericks

Team Members:

Sandeep

2. Theme Details

Theme Name: The Challenge: Exploring and Building Agentic AI Solutions for a High-Impact Area of Society: Agriculture

Sub-theme: Real-time Market Price Intelligence and Supply Chain Optimization

Theme Benefits:

This theme directly addresses the critical issue of information asymmetry faced by smallholder farmers in India. By providing real-time, localized market price data, it empowers farmers to make informed decisions about when and where to sell their produce. This not only increases their bargaining power against intermediaries but also helps in maximizing their income. Furthermore, by identifying optimal selling windows, the solution can help reduce post-harvest losses and contribute to a more transparent and efficient agricultural supply chain.

3. Synopsis

Solution Overview:

Our solution is a unified portal that processes and synthesizes diverse market data streams from sources like the Unified Portal for Agricultural Statistics (UPAg) and the Open Government Data (OGD) Platform, specifically the AGMARKNET Portal. The core of the solution is a Gemma-3n based AI model that analyzes these data streams to identify market trends and price fluctuations. This information is then translated into easily digestible, actionable insights for farmers, advising them on the optimal selling times and locations for their specific crops. The application will be accessible via a simple web or mobile interface, making it usable even for low-literacy users.

Technical Stack:

- **Frontend:** A responsive web application built with React to ensure a user-friendly and mobile-first experience.
- **Backend**: A Python/FastAPI backend to handle data processing, API calls to government data sources, and communication with the Gemma-3n model.
- **AI/ML**: The Gemma-3n model will be used for synthesizing and analyzing market data to provide actionable insights.
- **Data Sources**: The solution will pull data from the AGMARKNET Portal (via OGD Platform) for real-time wholesale prices and the UPAg for broader market trends.
- **Database**: A Firestore database can be used to cache historical data, user preferences, and to store logs for model improvement.

Decision Rationale:

The decision to use a React frontend and Python/FastAPI backend provides a robust and scalable architecture. React is chosen for its component-based structure, which allows for a clean, modular, and responsive user interface. Python with FastAPI is ideal for the backend due to its excellent performance and ease of integration with AI/ML frameworks. The use of Gemma-3n as the core intelligence model is a strategic choice for its ability to process and synthesize complex, multi-source data into simple, actionable insights. Firestore provides a flexible NoSQL database solution for storing and retrieving data efficiently.

Innovation Highlights:

The key innovation of this solution lies in its ability to go beyond simply displaying raw data. By leveraging Gemma-3n, it transforms complex and often overwhelming price data from multiple government portals into a personalized, actionable intelligence tool. The solution's focus on identifying optimal selling windows and locations based on real-time and historical data sets it apart from simple data aggregation services. This approach directly tackles the core problem of information asymmetry and provides a tangible benefit to the farmer.

Feasibility and User-Friendliness:

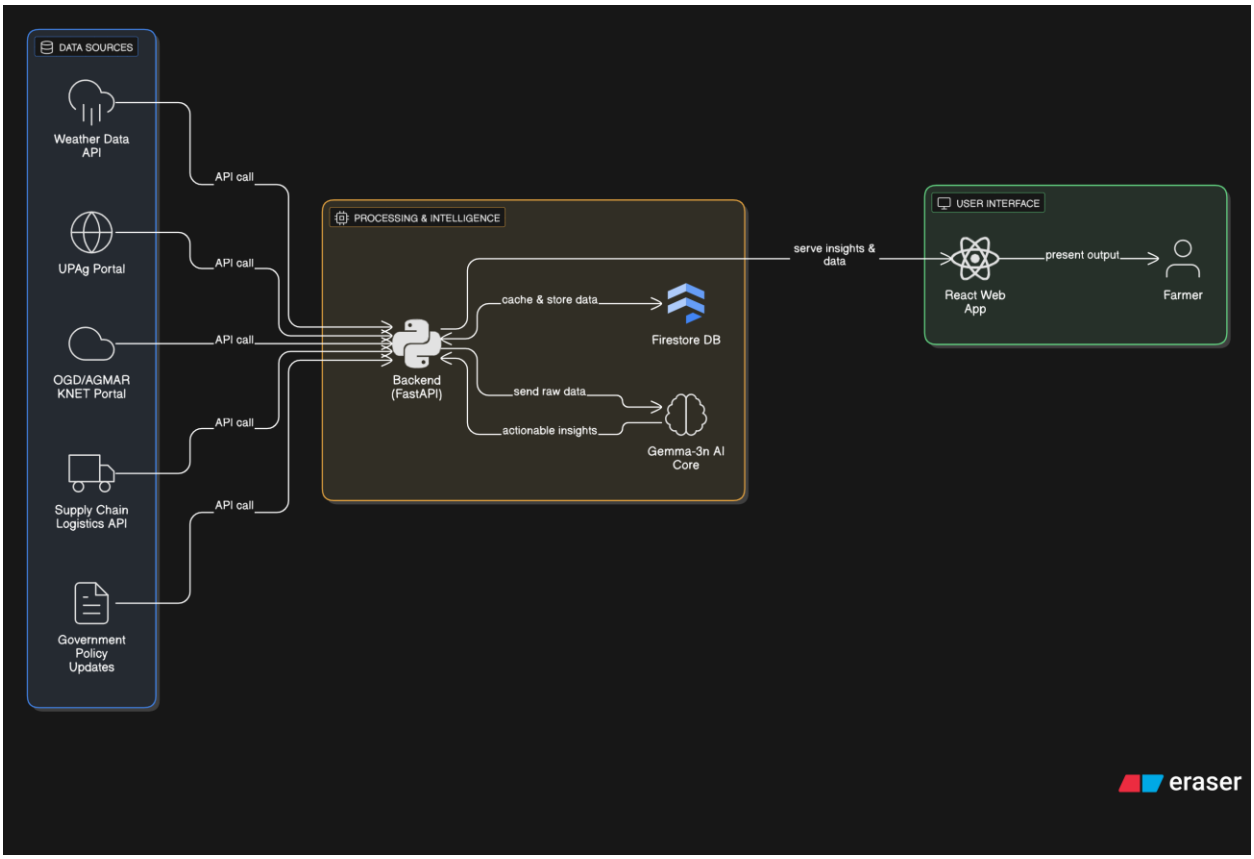
The solution is highly feasible, as it relies on publicly available, open government data from the OGD Platform and UPAg. The technical stack is well-established and allows for rapid development. User-friendliness is a top priority, with a simple, intuitive interface designed to be accessible to users with varying levels of technological proficiency. The advice

provided by the Gemma-3n model will be presented in a clear and concise manner, possibly in multiple languages, to ensure easy adoption.

Success Metrics:

- **User Adoption:** Track the number of active users and repeat visits to the portal.
- **Increased Farmer Income:** Measure the increase in average selling price achieved by farmers using the platform compared to the market average.
- **User Satisfaction:** Conduct surveys to gauge user satisfaction with the quality and clarity of the market insights.
- **Data Accuracy & Timeliness:** Monitor the accuracy of the price data and the speed at which it is updated from the source portals.

4. Methodology/Architecture Diagram



5. Data References

1. https://upag.gov.in/
2. https://www.data.gov.in/
3. https://agmarknet.gov.in/