Engineering Project

“AGRICULTURAL EMPOWERMENT PLATFORM”

PEA

Knowledge and Fair Market

Software Requirements Specification

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I. PURPOSE

Purpose 1: Economic Empowerment of Farmers:

The first purpose of the project is to strengthen the economic position of farmers by providing them with accurate and up-to-date information on the standardized real prices of their agricultural products. This will allow farmers to make informed decisions and negotiate fairly with middlemen, reducing financial exploitation and ensuring they receive fair payment for their hard work.

Purpose 2: Promoting Transparency in the Supply Chain:

The second purpose of the project is to increase transparency in the agricultural supply chain by centralizing market price information on an accessible platform. By providing farmers and other relevant stakeholders with reliable, real-time price data, it will reduce asymmetric information between parties and promote a fairer and more ethical business environment.

Purpose 3: Promotion of Sustainable Development of the Agro-sector:

The third purpose of the project is to contribute to the sustainable development of the agricultural sector by improving the living and working conditions of farmers. By receiving fair payment for their products, farmers will have the ability to invest in more efficient and sustainable agricultural practices, which in turn will promote environmental conservation, food security and the economic growth of rural communities.

II. Description of the client's industry

The industry of micro and medium-sized farmers represents a vital component of the economy in many regions of Costa Rica. It is made up of a wide variety of farmers who operate on smaller scales compared to large agricultural companies. These farmers play a fundamental role in food production, rural employment generation and agricultural sustainability.

Key Industry Features:

Crop Diversity: Micro and medium-sized farmers grow a wide range of products, from cereals and vegetables to fruits and dairy products. This diversity contributes to food security and the supply of fresh products in local markets.

Contribution to Employment: The industry employs large numbers of people in rural areas, providing work opportunities and improving living conditions in agricultural communities.

Financial Challenges: Many of these farmers face financial challenges, including fluctuating commodity prices, limited access to credit, and lack of information about fair market prices.

Environmental Sustainability: Smaller farmers often have a greater connection to sustainable agricultural practices and environmental conservation due to their long-term dependence on land and natural resources.

Technological Innovation: As technology advances, some farmers in this sector are adopting technological solutions, such as precision agriculture and data management, to improve efficiency and productivity.

III. Problem to solve

In the agricultural community, farmers face economic difficulties due to lack of information about real market prices for their products.

Lack of access to up-to-date data and reliance on middlemen with opaque practices result in farmers receiving unfair payments for their crops.

This situation not only threatens their livelihoods, but also hinders agricultural development and undermines food security in the region.

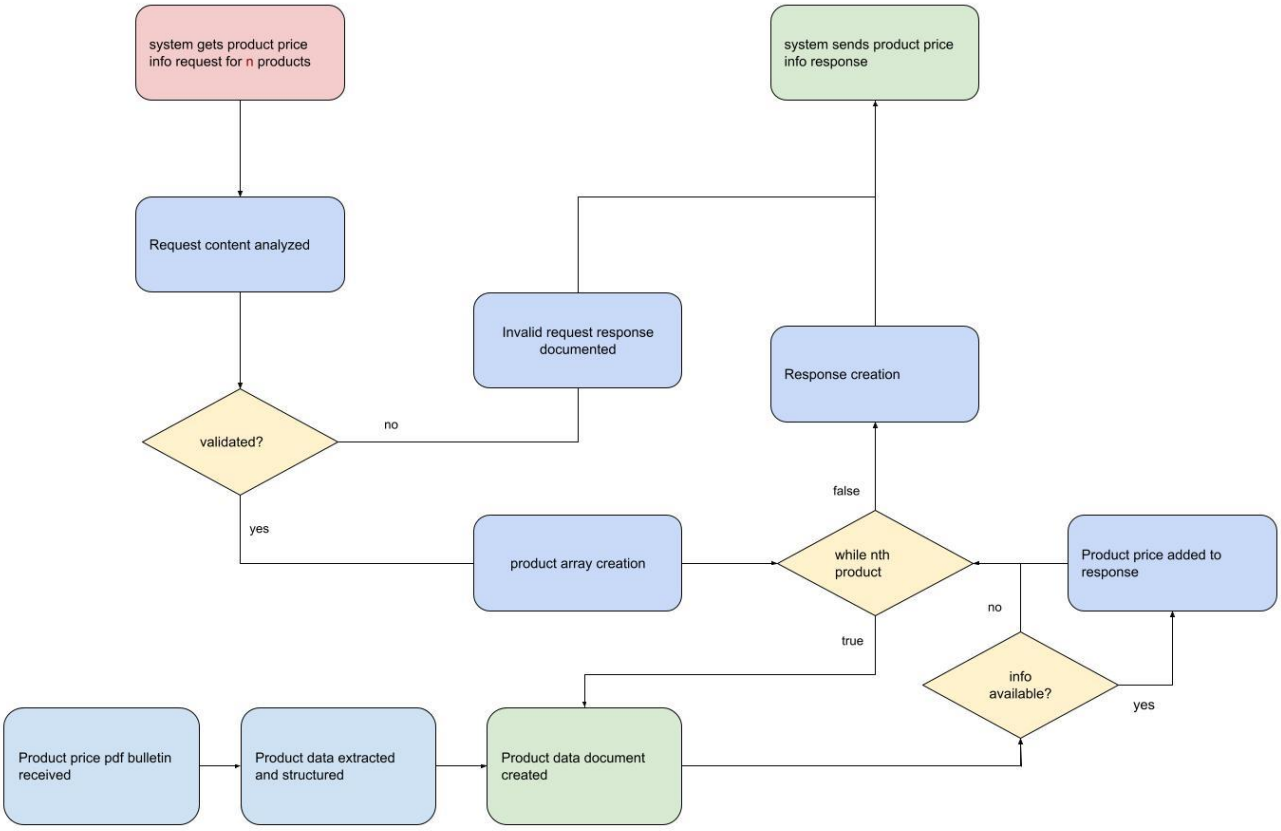
Solving this problem is essential to improve the living conditions of farmers and strengthen the resilience of the agricultural sector in the community.

IV. Farmer Users on the Platform

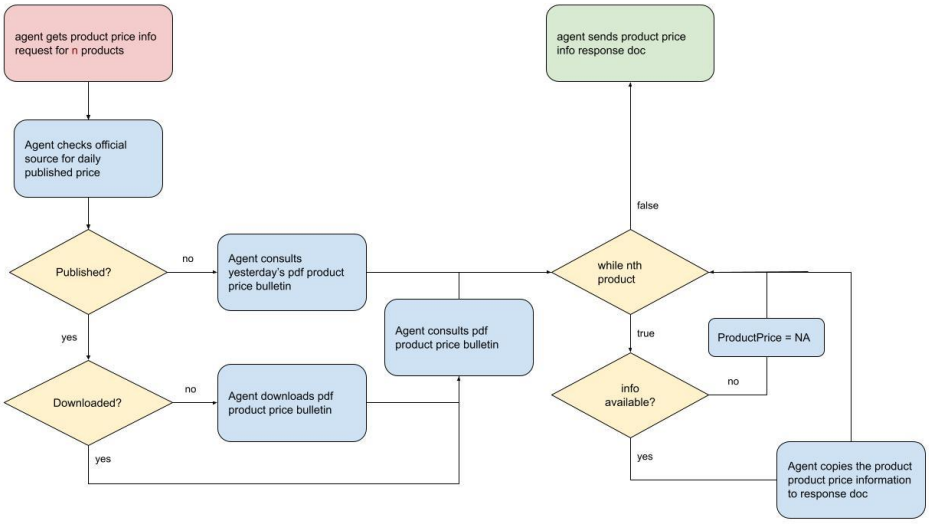
For the implementation of farmers as users on our platform, it is essential to establish clear conditions of use and define the requirements and access permissions according to their role and profile. Farmers, as users, will have the ability to configure and modify their individual profiles.

Each farmer's profile will be an essential component of their interaction with the platform. By creating and customizing their profile, farmers will gain access to the web application and be able to perform specific actions for which they have permissions. This includes, for example, the ability to search for official prices set by CENADA (The National Center for Food Supply and Distribution).

This user structure allows a personalized experience adapted to the needs of each farmer. Additionally, it facilitates navigation and efficient use of the platform by ensuring that each user has access only to the functionalities and data that are relevant to their role and responsibilities in the agricultural sector. The flexibility to modify profiles also gives farmers greater control over their experience on the platform, contributing to greater engagement and satisfaction.



Platform solution diagram #1. Process TO-BE



Platform solution diagram #2. Process AS-IS

V. General objective

The overall objective of this software project is to develop a comprehensive platform that empowers farmers by providing them with transparent and up-to-date information on fair market prices for their agricultural products, thereby fostering a fair trading environment with intermediaries and promoting agro-development. sustainable in agricultural communities.

VI. Specific objectives

Transparency: The aim is to create a digital platform that centralizes and provides real-time information on standardized prices of agricultural products in different local and regional markets. This will increase transparency in the pricing process and reduce information asymmetry between farmers and middlemen.

Promotion of Agro-development: The project is committed to strengthening agro-development by improving the economic and social conditions of farmers. By receiving fair payment for their products, farmers will be able to reinvest in their operations, adopt more sustainable agricultural practices, and contribute to the economic growth of their communities.

Training and Education: The platform will not only provide pricing information, but will also offer educational resources and training to help farmers better understand the factors that influence pricing, improve their negotiation skills and strengthen their position in the market. supply chain.

Direct Connection with Buyers: A functionality will be developed to directly connect farmers with buyers interested in purchasing their products. By eliminating unnecessary middlemen, farmers will be able to establish more direct and profitable relationships with buyers, creating a more efficient and fair system.

VII. Expected Impact

This software project is expected to have a positive and lasting impact on the lives of farmers, contributing to a more equitable distribution of benefits in the food chain and promoting sustainable agro-development. By empowering farmers with information and tools, we aim to strengthen their communities, improve their living conditions, and promote a more just and equitable agricultural system as a whole.

VIII. Project Restrictions and Limitations

Limited Financial Resources: The project is limited by the financial resources available. This could affect the scope of the project, the ability to develop all planned features, and the implementation of promotion and training measures.

Connectivity and Internet Access: The effectiveness of the platform largely depends on Internet connectivity in the rural areas where farmers operate. Limitations in Internet infrastructure could hinder widespread adoption of the platform.

Technology Adoption: Some farmers may have limitations in technology adoption, which could restrict their ability to take advantage of the platform. Training and support must be provided to ensure effective adoption.

Farmer Diversity: Farmers vary in size, type of crop, and level of education. This can make the platform complex to adapt to meet all needs optimally.

Changes in Market Prices: Market prices can be volatile due to various factors, such as weather and consumer demand. The platform can provide updated information, but cannot control these fluctuations.

Agricultural Regulations and Policies: Changes in local or national agricultural regulations and policies may affect the environment in which the platform operates and require real-time adjustments.

Market Competition: The platform could face competition from other similar solutions, which could limit its adoption by farmers and buyers.

Data Security: Ensuring the security of farmers' and buyers' data is essential. Any security breach could undermine trust in the platform.

Ongoing Maintenance: The platform will require ongoing maintenance, updates and technical support to ensure its effectiveness over time.

Financial Sustainability: Sustainable revenue models must be established for the platform in the long term, as the initial investment may not be enough to keep it running indefinitely.

Recognition and effective management of these constraints and limitations are essential to the success of the project and to ensure that it can address the challenges faced by farmers effectively and sustainably.

IX. Product Perspective:

The proposed agricultural empowerment platform has the potential to significantly transform the reality of farmers, especially micro and medium agricultural entrepreneurs, by addressing their key challenges and needs. This product outlook focuses on how the platform could positively impact the short and long term:

Short term:

Economic Empowerment: Farmers will have access to real-time price information, allowing them to negotiate more fairly with intermediaries and obtain adequate payment for their products. This will improve your financial conditions immediately.

Greater Transparency: The platform will increase transparency in the supply chain, reducing opaque practices and promoting fairer competition. This can lead to an improvement in farmers' profit margins.

Training and Knowledge: Farmers will also benefit from the educational resources provided on the platform, improving their negotiation skills and knowledge about pricing.

Long-term:

Sustainable Development: As farmers earn fairer incomes, they will be able to reinvest in their operations. This will encourage the adoption of sustainable agricultural practices, contributing to long-term development and environmental conservation.

Strengthening Rural Communities: The economic empowerment of farmers driven by the platform could have a positive impact on rural communities, generating employment, improving access to basic services and stimulating local economic growth.

Improving Food Security: A stronger, more sustainable agricultural sector can contribute to regional food security by increasing the production and availability of fresh, quality food.

Possibility of Expansion and Scalability: As the platform gains traction and consolidates, there is the potential to expand it regionally or even nationally, benefiting a greater number of farmers.

Agricultural Innovation: The platform could be a catalyst for the adoption of advanced agricultural technologies, such as precision agriculture, further enriching the agricultural sector.

The product perspective points to a significant transformation in the lives of farmers and the sustainable development of farming communities. If properly managed and maintained, the platform has the potential to make a lasting difference in the agricultural industry and the lives of those who depend on it.

X. Platform Functional Requirements

- **RF-1: User Registration:**

The platform should allow farmers to register and create individual profiles.

Users must have the ability to edit and update their profile information at any time.

- **RF-2: Access to Price Information:**

Registered farmers should be able to access up-to-date, real-time information on market prices of agricultural products relevant to their region.

- **RF-3: Training and Educational Resources:**

Easy access to agricultural-related educational resources, including videos, tutorials and informative articles, should be provided.

- **RF-4: Connection with Buyers and Sellers:**

The platform in the future should allow farmers to connect directly with buyers interested in purchasing their products, as well as with other farmers for possible collaborations.

- **RF-5: Data Security:**

A robust security system is required to protect users' personal and financial data.

- **RF-6:Intuitive and Easy to Use Interface:**

The platform should be designed with an intuitive user interface that is accessible and easy to use for farmers with varying levels of technological proficiency.

XI. Non-Functional Platform Requirements

- **RNF-1: Availability and Reliability:**

The platform must be available at all times to ensure that farmers can access the necessary information when they require it.

- **RNF-2: Efficiency in Data Use:**

The platform must be efficient in its use of data to ensure seamless access even in areas with limited connectivity.

- **RNF-3: Scalability:**

The platform must be scalable to accommodate significant growth in the number of users and data without performance degradation.

- **RNF-4: Information Security:**

A high level of security must be implemented to protect users' personal and financial information, including measures such as data encryption.

- **RNF-5: Regulatory Compliance:**

The platform must comply with data privacy regulations and any other applicable legal requirements in the agricultural industry.

- **RNF-6: Fast Response Time:**

The platform must have fast response times to ensure a smooth user experience.

- **RNF-7: Adaptability and Multiplatform Support:**

The platform must be compatible with a variety of devices and operating systems, including computers, tablets, and mobile devices.

- **RNF-8: Data Backup and Recovery Capability:**

A data backup and recovery system must be implemented to ensure the integrity of stored information in the event of system failure or data loss.

These functional and non-functional requirements are essential for the successful design, development and operation of the agricultural empowerment platform, ensuring that it meets the needs of farmers and guaranteeing its long-term effectiveness and security.

XII. Special thanks:

On behalf of our team and all those benefiting from their invaluable support, we would like to express our sincere gratitude to the following members for their commitment and outstanding contribution throughout the process:

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