

University of Science and Technology of Southern Philippines

College of Information Technology and Computing Department of Computer Science



AniTulong

A Start-Up Business Proposal presented to the
Department of Computer Science
College of Information Technology and Computing

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1. Executive Summary

1.1. Project Background

AniTulong aims to address two pressing challenges faced by Filipino farmers: financial losses due to unsold produce and the growing issue of food waste. Cosmetic standards in the market often lead to the rejection of perfectly edible but visually imperfect fruits and vegetables, leaving farmers with surplus goods that are discarded or sold at extremely low prices. This contributes to food insecurity and significant waste, as the Philippines discards approximately 1,717 metric tons of food daily [1][2]

Inspired by successful initiatives like **Rural Rising Philippines**, which supports farmers in marketing surplus harvests, and Europe's **Too Good To Go**, AniTulong adapts these concepts to the local context. Through a mobile app, the platform directly connects farmers with consumers and small businesses, enabling the sale of surplus produce at affordable prices. By focusing on urban centers like Cagayan de Oro, AniTulong seeks to empower farmers, reduce food waste, and make fresh produce accessible to more people, fostering a sustainable food ecosystem.

1.2. Problem Statement

Farmers in the Philippines face economic setbacks due to unsold produce that fails to meet market standards, resulting in financial losses and wasted resources. This issue is compounded by the lack of alternative markets for surplus goods, leaving farmers with limited options to recover costs. At the same time, urban communities struggle with rising food prices, limiting access to affordable fresh produce.

AniTulong addresses this gap by creating a platform that provides a sustainable solution. By connecting farmers directly to consumers and small businesses, AniTulong reduces food waste while providing farmers with additional income streams. This initiative ensures that surplus produce reaches households and businesses, promoting food affordability and sustainability.

1.3. IT Solution

AniTulong leverages technology through a mobile and web application designed to connect farmers directly with consumers and small businesses. The platform includes user-friendly interfaces with multilingual support, secure e-commerce features such as dynamic pricing and diverse payment options, and advanced logistics powered by route optimization algorithms and real-time order tracking. It also incorporates data analytics for demand forecasting and personalized recommendations, while offering subscription services for recurring deliveries and bulk discounts. To enhance community engagement, the platform features feedback mechanisms and social impact tracking, ensuring continuous improvement

and transparency. Inspired by successful models like Too Good To Go and Rural Rising PH, AniTulong's IT solution emphasizes sustainability, efficiency, and inclusivity

1.4.Objectives

AniTulong aims to empower local farmers by increasing their profitability through a direct-to-consumer platform, reducing food waste by rescuing surplus and cosmetically imperfect produce, and promoting sustainability in the food supply chain. The platform seeks to enhance access to affordable fresh produce for urban communities, foster long-term partnerships with farmers, and provide a seamless and efficient customer experience, ensuring both social and environmental impact.

1.5.Scope and Limitations

For now, our system will primarily focus in assisting users in navigating and exploring cemeteries. The integration of systems unrelated to burial plot and deceased management, such as the ordering, reservation, and budget and finance management systems, were excluded in this project. Additionally, insights on the essential navigational features and functionalities of the mobile application will be dependent on the gathered data from the interviews of cemetery visitors and managers. Furthermore, external factors such as changes in cemetery regulations, political and economic conditions, or unforeseen events like natural disasters were not considered during the design and development of the mobile application.

1.6.Project Significance

AniTulong plays a vital role in addressing both food waste and financial struggles faced by Filipino farmers. Many farmers are forced to discard surplus or cosmetically imperfect produce, leading to significant financial losses. This waste contributes to food insecurity and environmental degradation. By offering a platform for selling such produce, AniTulong provides farmers with an alternative revenue stream and helps reduce food waste.

The initiative also improves access to affordable, fresh produce for urban consumers, especially in areas where food prices are rising. This model promotes sustainability and supports local economies, which is especially crucial in the context of rising agricultural imports and limited support for local farmers in the Philippines [7].

1.8.Pricing Strategy

We will be adopting a freemium model pricing strategy where our target market can access basic navigation features for free and then offer in-app purchase or subscription plans to upgrade or access premium features such as advanced mapping tools, detailed grave-site information, and the ability to explore additional cemetery-related services.

2. Methodology

2.1.Research Design

We will be utilizing a modified Agile mobile application development process for the design and development of the Grave Finder mobile application. With this methodology, we will be able to develop the app sprint by sprint where a testing and checking process is done at

every end of the cycle. We will deploy the system to potential users then gather their continuous feedback to evaluate if the major functionalities are working as intended. And if we will do a system upgrade every few months, our developers will be able to avoid wasting time in fixing small bugs one-by-one since it can be tackled all-at-once on the next sprint.

2.2.Detailed Methodology

2.2.1. Requirements Gathering

We will be conducting interviews and surveys to both cemetery visitors and managers, inquiring about their current practices and processes in cemetery navigation. We will also be interviewing local governments that are responsible for the management of public cemeteries, inquiring about their current management of grave information including reports and analysis on visitor traffic, grave-site usage, and maintenance needs. Data collected from these will enable us to understand the needs of our potential customers.

2.2.2. Analysis and Design

Data collected from the requirements gathering will be analyzed through three diagrams. These are the unified modeling language (UML), the Must have, should have, could have, will not have (MoSCoW) chart, and the process flow diagram (PFD).

The UML diagrams would visually present the main actors, roles, actions, and classes within the system. This will help better understand, alter, maintain, and document its information. The specific UML diagrams we will use are the class diagram, use case diagram, and activity diagrams.

After analysis, we will be using the MoSCoW chart as a guide to finalize the major features and functionalities of the Grave Finder mobile application. We will also design our user interface (UI) with Icons8 Lunacy which is a free graphic design software like Figma.

2.2.3. Development

The mobile application will utilize maps and pins for plotting cemetery locations, employ a search functionality to retrieve specific information about a deceased person such as the deceased person's name, birth and death date, and burial plot location, and allow the submission of requests to the cemetery managers for immediate resolution.

For development, we plan to utilize the Android Studio as our IDE, VS Code as our code editor, and Flutter which is an open-source UI software development kit that utilizes the languages Dart and Kotlin. In addition to this, we plan to utilize existing Dart packages (or Flutter dependencies) provided in the pub.dev (the package manager for the Dart programming language, containing reusable libraries & packages for Flutter, AngularDart, and general Dart programs). For the map API, we plan to use vector map provided by the Google Maps.

2.2.4. Testing

We will be utilizing Black Box Testing techniques, specifically Equivalence Class Testing, Error Checking, and State Transition Evaluation, to validate whether the Grave Finder mobile

application meet the functional and non-functional requirements and specifications. Additionally, we will also be conducting a map accuracy testing to check if our application is able to accurately pin starting and destination coordinates in accordance with the current location of the user and the location of the searched burial plot on the provided cemetery map in the mobile app. Participants of this testing included the developers, cemetery visitors and managers, and staff from organizations and local government units that manage cemeteries.

2.2.5. Evaluation

We will evaluate the Grave Finder mobile application based on its accuracy, effectiveness, and efficiency. To determine whether the grave locator mobile application was accurate, efficient and effective, we will conduct a test that evaluates the tracking precision of the mobile application to pinpoint the location of the user as well as the location of the cemetery destination, calculating the margin of error when embedding Google Maps on the mobile application and observing how it affected its GPS tracking feature. We will also be conducting a timed test to determine if having the Grave Finder mobile application sped up the process of locating and navigating grave sites and burials. This included conducting a test that determined how long it took for users to search and get the x- and y-coordinates, and the vertical layer of the searched grave.

3. References

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