



## **Edival (Edible Evaluation)**

*The Smart Solution to Reduce Food Waste and Nurture a Greener Tomorrow*

# Our Team (CH2-PS194)



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Problem

Absence of a **dependable mechanism** for assessing **food condition results**

There's a **lack** of **awareness** and **guidance** on how individuals can **reduce** food waste and **adopt** sustainable consumption practices.

Individuals **struggle** with **managing** their **food inventory**



Problem Statement

What **strategies** can be **employed** to **create** reliable **mechanisms** for **assessing** food conditions, **enhance awareness** and **guidance** in **reducing** food waste and **implementing** sustainable consumption practices, and **alleviate** the difficulties faced in **managing** food inventory?



Solution

A **mobile application-based strategy** that provides **condition assessments, recommendations and food reminders**



**Edival**  
(Edible Evaluation)



Impact

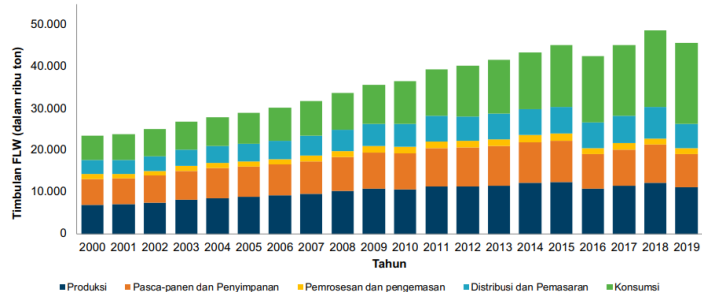
USD 66,000.00  
**Revenue / year**



# Background : Food Loss and Waste in Indonesia



**Largest Food Waste Producer  
in the World**



Gambar A. Timbulan Food Loss and Waste Indonesia Tahun 2000 - 2019 per Tahap Rantai Pasok Pangan (dalam ribu ton).

The **accumulation** of **Food Loss and Waste** from **2000 to 2019** was **115 to 184 kg per capita per year**, with the highest accumulation occurring in the **consumption stage**.

(Bappenas)

**2045**

**344 kg/capita/year**

Projection

## Impact

### Environmental

Potential Greenhouse Gas Impact at Food Loss and Waste

### Economic

The economic loss amounts to 213 - 551 trillion rupiah per year (4% - 5% of Indonesia's GDP)

### Social

Loss of Nutrient Content

# Overview : Realizing Food Sustainability Through Edible Evaluation



## Background

- Increasing Food Waste
- Lack of Reliable Food Assessment Mechanisms
- Awareness and Concerns About Food Waste
- Challenges in Food Inventory Management
- Contribution to Sustainable Development Goals (SDGs)

## Main Objective

To facilitate the assessment of whether a food item is suitable for consumption.

## Core

### Food Condition Assessment

Users capture a photo of a food item with the application, and Edival uses image recognition algorithms to assess its suitability for consumption.

### Educational Component

Edival educates users on proper food management for unsuitable items and provides food recommendations and cooking instructions for suitable items.

### Inventory Management Features

Edival enables users to set reminders for their food items, receiving notifications as items approach their expiration dates.

### Sustainability

Edival actively supports global sustainability goals by contributing to the reduction of food waste, aligning its objectives with the broader aims of the Sustainable Development Goals.

# Comparison of Competitive Position : Based on Functionality and Impact



## Competitive Positioning



## Comparison with Competitors



**Edival's high functionality and impact** stem from its use of **object detection technology** to assess **food conditions**. It offers various features, including **food recommendations**, **processing suggestions for unsuitable ingredients**, and **food expiration reminders**, making it an **easy and effective tool** for users to reduce **food waste**.



**Too Good To Go** boasts **high functionality** and a **moderate impact**, offering features like a **marketplace for purchasing surplus food** and a **community for sharing**. It aids in **reducing food waste** generated by **restaurants and retailers**, yet its **limitation** lies in its **exclusive focus** on acquiring **surplus food** from these establishments.



**Kiftche** has **moderate functionality** with a **focus on reducing food waste** from **leftovers** through its **meal plan recommendation feature**. However, its **impact is relatively low** as its capabilities are limited to addressing **food waste from leftovers**, and its main function is to **create meal plans**.



**Ollo** has **low functionality** but a **high impact**, as it helps reduce **food waste** produced by **household users**. However, **Ollo** relies on **user interaction** to share food.



**Pepperplate** has **moderate functionality and impact** due to its **recipe saving features**, **shopping reminders**, and **expiration date tracking**. It facilitates an **easy and effective way** for users to **reduce food waste**.

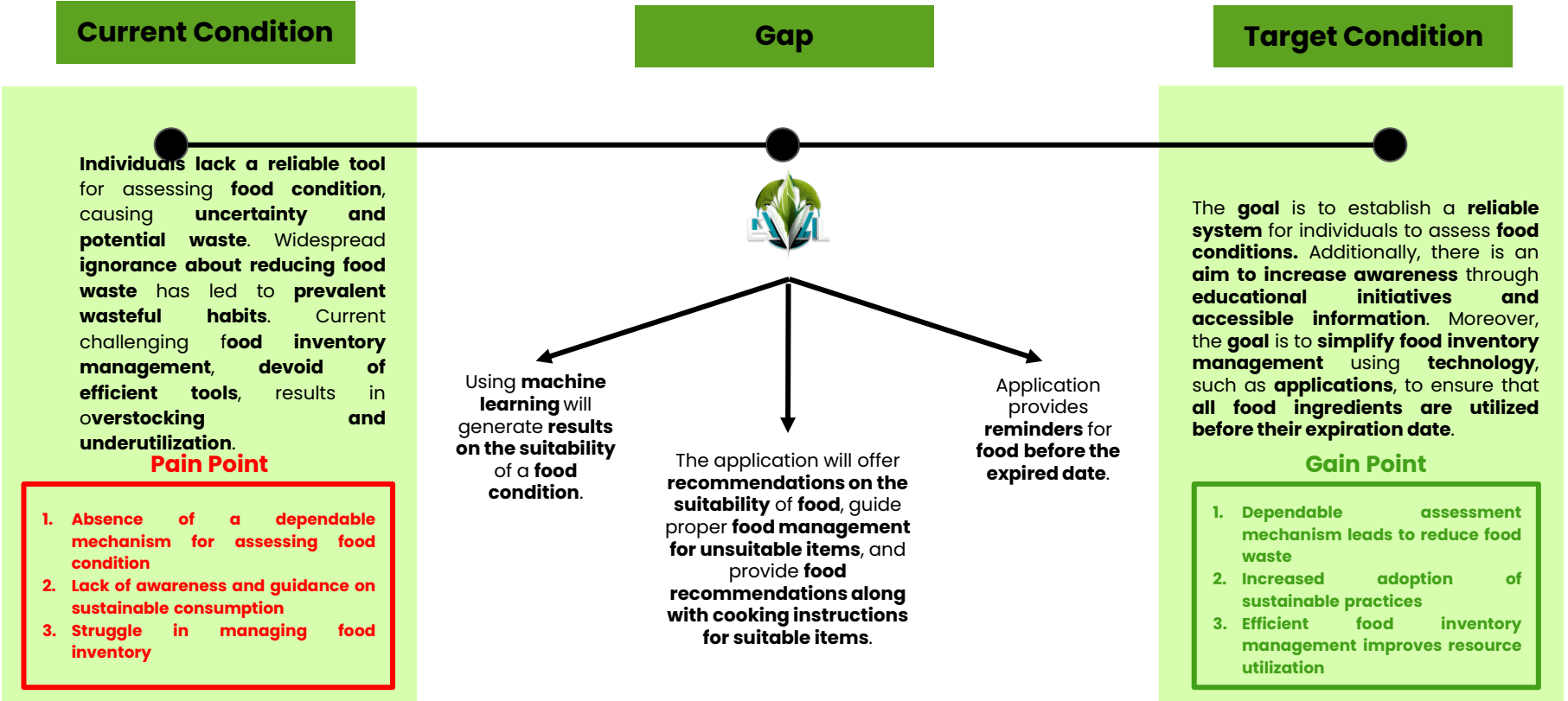


**Cozzo** has **medium functionality** and a **high impact**, offering features such as **recipe saving**, **shopping reminders**, and **expiration date tracking**. It provides an **easy and effective way** to help **reduce food waste**.





# Gap Analysis : Using Edival App to Get Target Condition





## Deep Learning Technology for Object Detection

- To **identify** the **condition** of food based on **photos captured** by users and **automatically determine** the **suitability** of **food for consumption**.
- **Target** : Efficient food assessment

## Generative AI for Recommendation System

- To **provide** users with **tailored recommendations** based on the **condition** of **food items**.
- **Target** : Enhancing user knowledge and efficient use of edible ingredients

## Scheduled Notifications

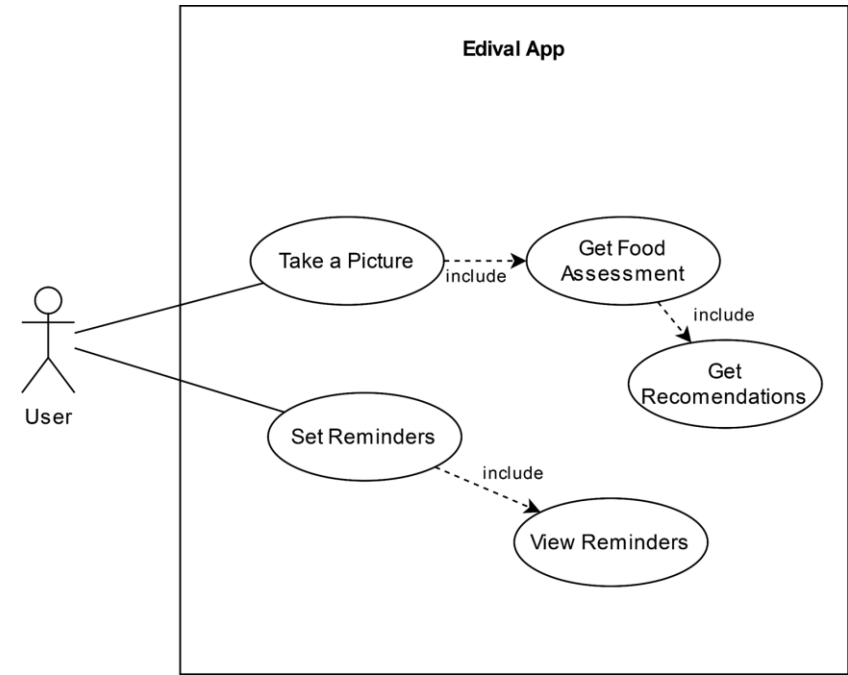
- To set **reminders** for their **food items** when their food is **approaching** its **expiration date**.
- **Target** : Reduction of food waste



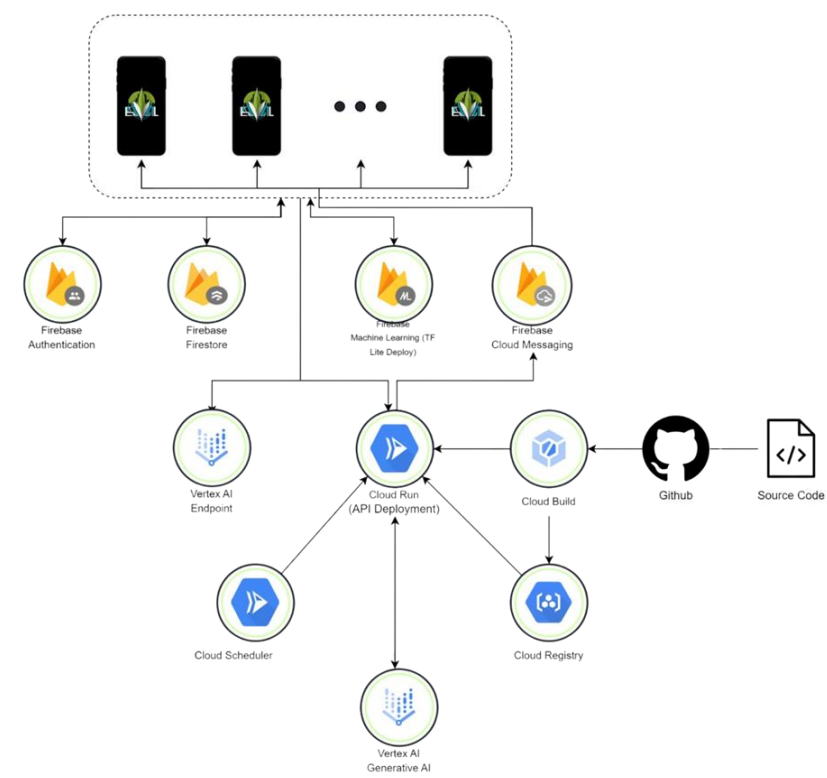


# Use Case and Architecture Diagram : Edival App

## Use Case Diagram

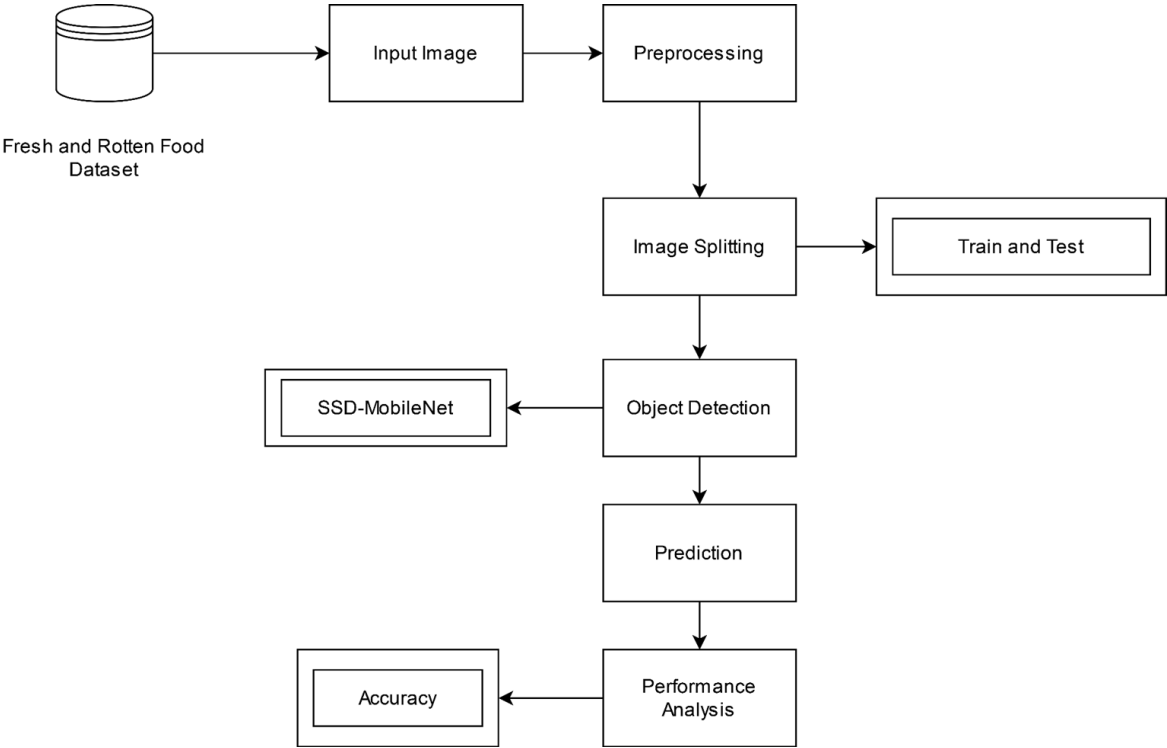


## Architecture Diagram





## Architecture Diagram





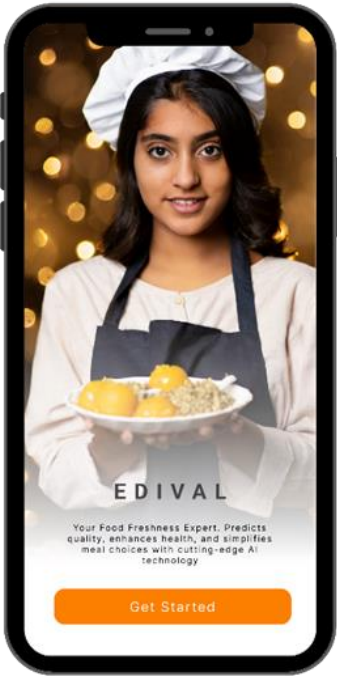
Splash Screen



Landing Page



Landing Page



Tutorial Page



Tutorial Page

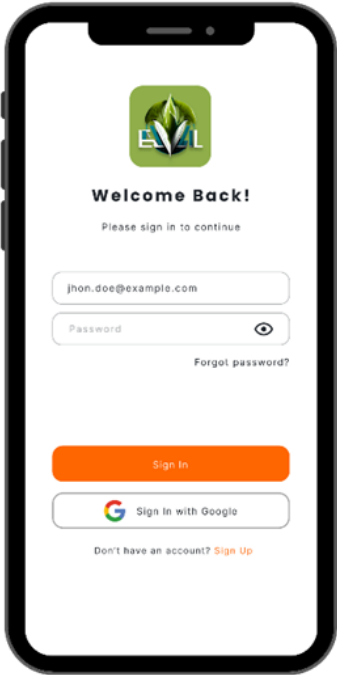




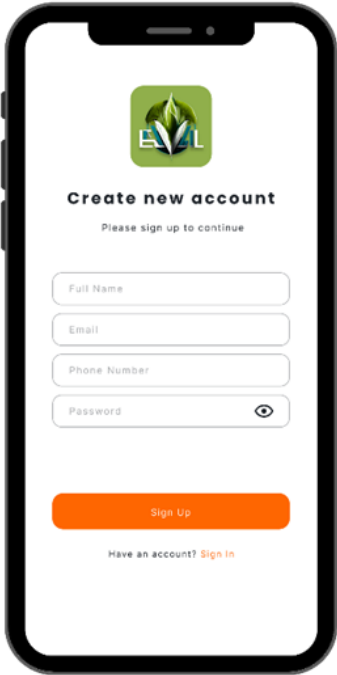
Tutorial Page



Sign In Page



Sign Up Page



Home Page



Camera Page





Result Page



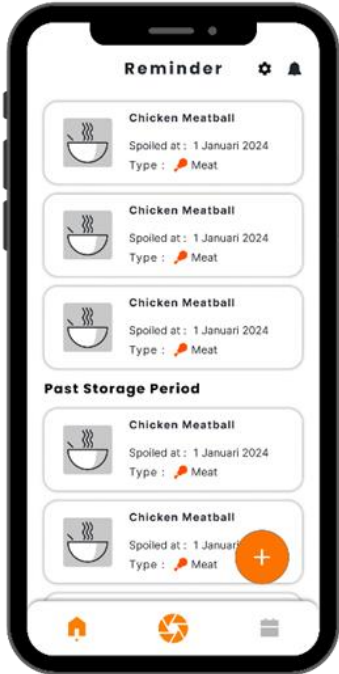
Result Page



Recommendation  
Page



List Reminder  
Page



Detail Reminder  
Page





Create New  
Reminder Page

←

Create

Nama Makanan :

Jagung

Tempat Penyimpanan :

Brankas

Disimpan sejak :

14 Februari 2023

Tahan hingga :

18 Februari 2023

Jenis makanan :

Sayur

Save

Setting Page

←

Marthe Jonh  
marthe.jonh@gmail.com

Edit Profile

Theme

Language

Log Out

Copyright by @Edival

Edit Profile Page

←

Edit Profile

Name :

Marthe John

Phone Number

078121398291

Password

\*\*\*\*\*

Jenis makanan :

Sayur

Save

Notification Page

←

Notifikasi

Makanan akan segera kadaluarsa!

Apel yang kamu simpan pada tanggal 14 Oktober akan segera kadaluarsa, segera olah atau makan bahan makanan tersebut!

Makanan akan segera kadaluarsa!

Apel yang kamu simpan pada tanggal 14 Oktober akan segera kadaluarsa, segera olah atau makan bahan makanan tersebut!

Makanan akan segera kadaluarsa!

Apel yang kamu simpan pada tanggal 14 Oktober akan segera kadaluarsa, segera olah atau makan bahan makanan tersebut!

Makanan akan segera kadaluarsa!

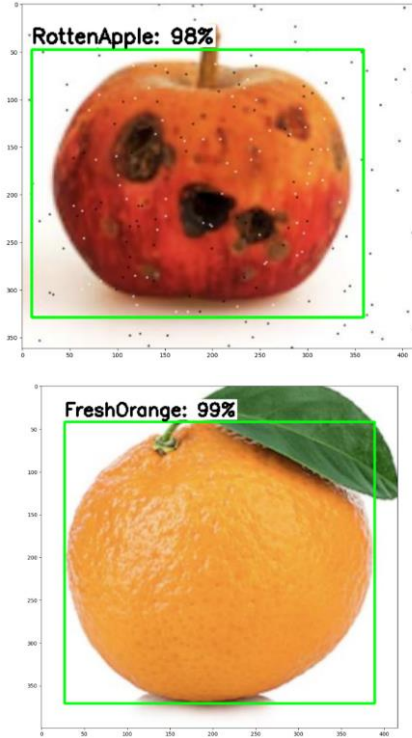
Apel yang kamu simpan pada tanggal 14 Oktober akan segera kadaluarsa, segera olah atau makan bahan makanan tersebut!

Makanan akan segera kadaluarsa!

Apel yang kamu simpan pada tanggal 14 Oktober akan segera kadaluarsa, segera olah atau makan bahan makanan tersebut!

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Apel yang kamu simpan pada tanggal 14 Oktober akan segera kadaluarsa, segera olah atau makan bahan makanan tersebut!

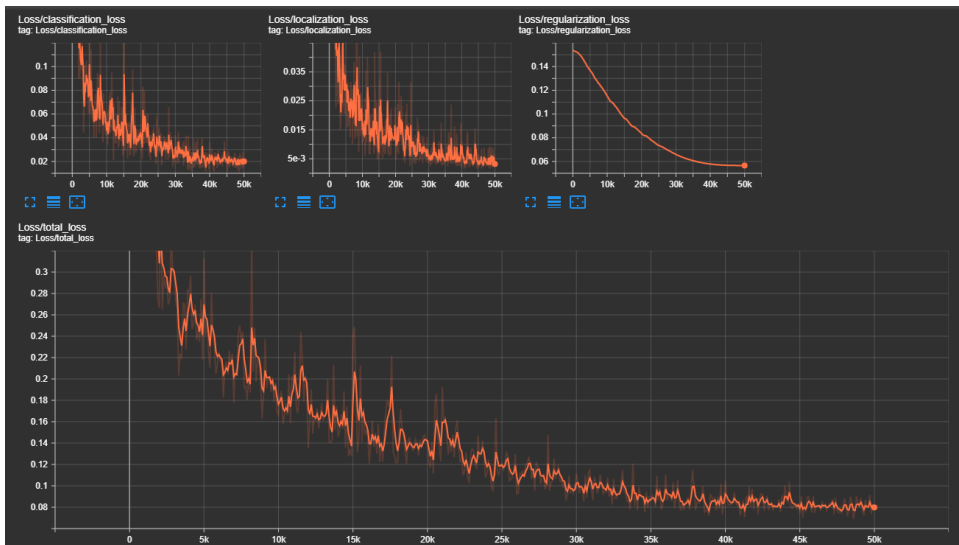


Optimized SSD MobileNet v2 for real-time object detection. Customized to 8 categories, balancing MAP and rapid inference for efficiency.





# Result of The Solution for Machine Learning : Edival App



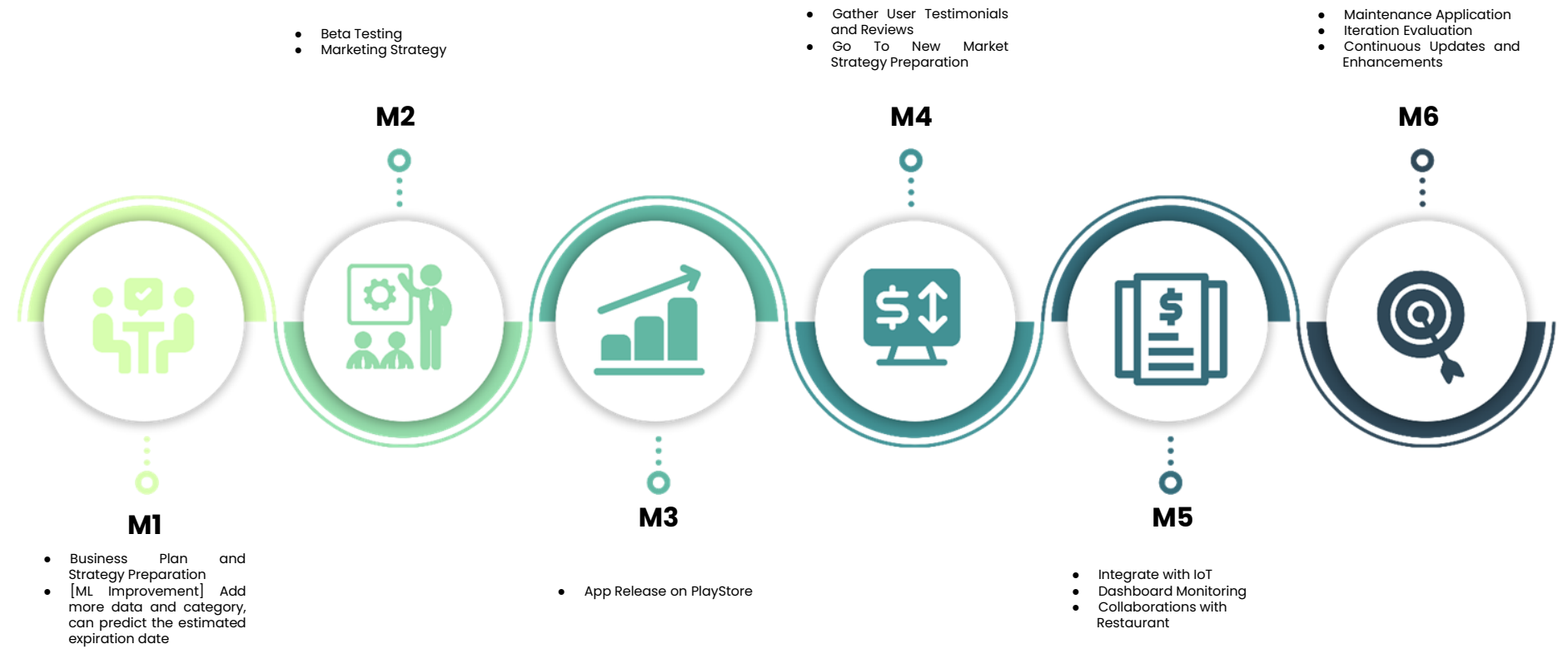
Calculating mAP at 0.50 IoU threshold...

75.29% = FreshApple AP  
78.71% = FreshEggplant AP  
95.68% = FreshMeat AP  
90.94% = FreshOrange AP  
100.00% = RottenApple AP  
84.08% = RottenEggplant AP  
100.00% = RottenMeat AP  
100.00% = RottenOrange AP  
mAP = 90.59%

Tensorboard Training with 50000 epochs and the total mAP at 0.50 IoU threshold is **90.59%**



# Future Roadmap : Building and Developing Edival Apps





Tools



GCP Cloud Storage



Vertex AI



Firebase

- Firestore
- Storage
- Authentication
- Messaging
- Firebase Machine Learning

Marketing



Social Media



SEO



Email Marketing

Human Resource

- Project Manager
- Developer
- UI/UX Designer
- Business Consultant
- Marketing Team
- Quality Assurance

# Budgeting : Implementation of Edival App (USD 10K)



No	Description	Total
INCOME		
1	Cash	USD 10,000.00
Total Income		
EXPENSES		
A	Additional Budget for Human Resources	
1	Project Manager	USD 645.62
2	Developer	USD 516.50
3	UI/UX Designer	USD 258.25
4	Business Consultant	USD 839.31
5	Quality Assurance	USD 440.32
B	Additional Budget for Research/Ops	
1	Survey and Research Cost	USD 2,000.00
2	Operational Cost	USD 800.00
3	Infrastructure Cost	USD 1,000.00
C	Additional Budget for Marketing and Sales	
1	Marketing Team	USD 1,000.00
2	Go-to-new Market	USD 1,000.00
D	Additional Budget for Other Expenses	
1	Unexpected Cost	USD 1,000.00
2	Taxes and Legal Cost	USD 500.00
Total Expenses		USD 10,000.00



# Business / Go-To-Market Plan : User Persona



**Sarah**



**35 years old**



**Housewife**



**Jakarta**

## BIO

A housewife named Sarah regularly shops for groceries for her family. However, she sometimes has difficulty determining exactly when a food ingredient will expire or is no longer suitable for consumption. Apart from that, she often feels confused about how to manage food that is no longer fit for consumption so that it doesn't end up as waste.

## MOTIVATIONS

- Providing safe and healthy food for her family.
- Have limited time to monitor the condition of each food ingredient they have.
- Have concern for the environment and want to contribute to reducing food waste and creating a more sustainable lifestyle.

## GOALS

- Want to ensure that the food given to her family is safe and suitable for consumption.
- Want to manage food ingredients more efficiently, avoid waste, and maximize the use of each food ingredient.
- Want to gain further knowledge about how to manage food that is no longer fit for consumption so that you can contribute to reducing waste.

## FRUSTATIONS

- It is difficult to determine exactly when a food ingredient will expire, especially if the packaging has been opened.
- Feeling confused about how to manage food that is no longer fit for consumption so that it doesn't end up as waste, especially with limited knowledge.
- Difficulty taking the time to carry out detailed supervision of every food ingredient she has.

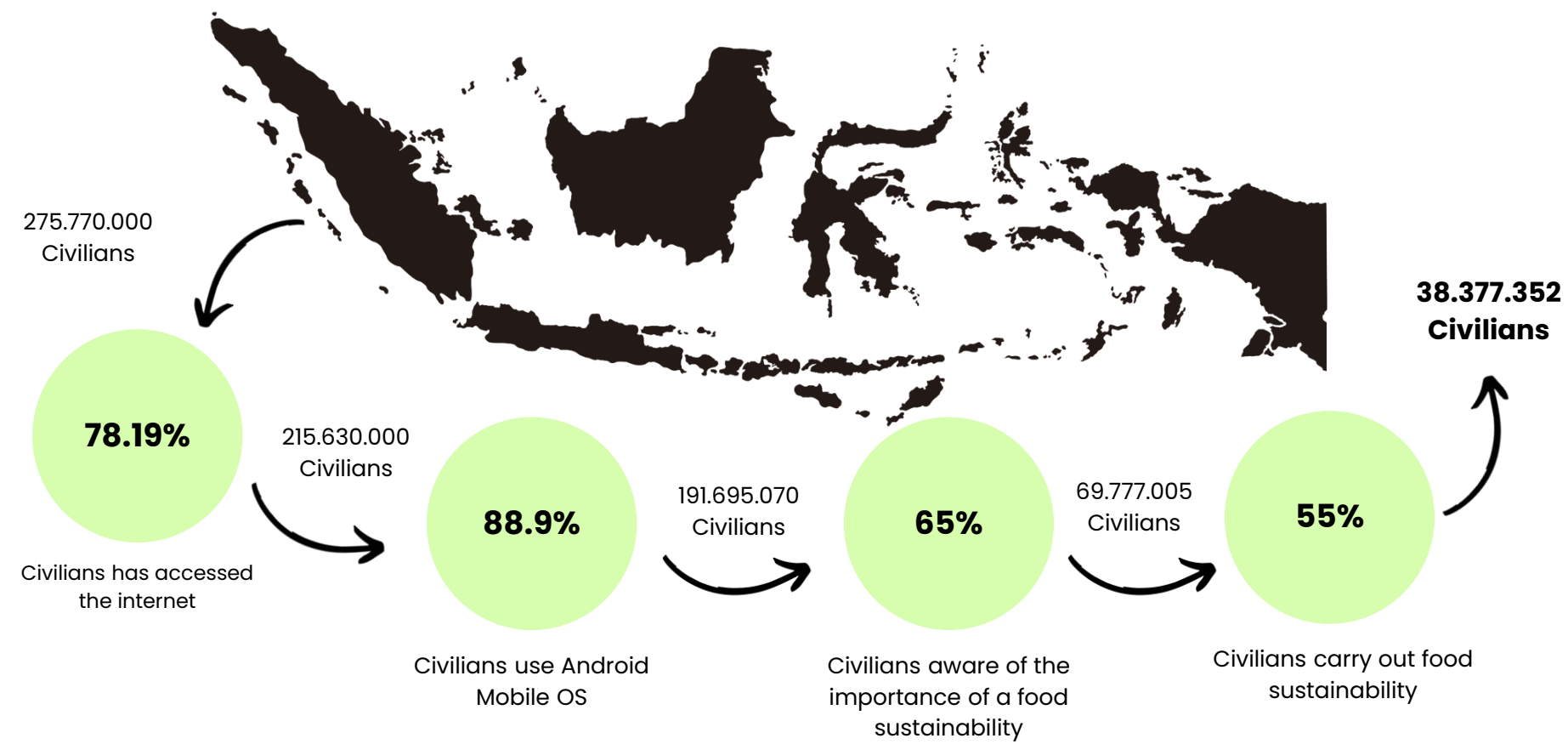
Background

Analysis

Solution

Implementation

Conclusion



# Financial Projection : Edival App per year



No	Description	Total
INCOME		
1	Cash	USD 120,000.00
2	Sales (penjualan)	USD 60,000.00
3	Project (proyek)	USD 12,000.00
4	Subscription (langganan)	USD 36,000.00
5	Grants (hibah)	USD 12,000.00
6	Soft Loan (pinjaman)	USD 0
Total Income (A)		USD 240,000.00

Total Revenue  
/ year

USD 66,000.00

EXPENSES		
A	Additional Budget for Human Resources	
1	Project Manager	USD 7,747.44
2	Developer	USD 6,198.00
3	UI/UX Designer	USD 3,099.00
4	Business Consultant	USD 10,071.72
5	Quality Assurance	USD 5,283.84
B	Additional Budget for Research/Ops	
1	Survey and Research Cost	USD 24,000.00
2	Operational Cost	USD 9,600.00
3	Infrastructure Cost	USD 12,000.00
C	Additional Budget for Marketing and Sales	
1	Marketing Team	USD 12,000.00
2	Go-to-new Market	USD 12,000.00
D	Additional Budget for Other Expenses	
1	Unexpected Cost	USD 12,000.00
2	Taxes and Legal Cost	USD 6,000.00
Total Expenses (B)		USD 174,000.00





# Conclusion : Impact of Implementation Edival App

## Problem Statement

What **strategies** can be **employed** to **create** reliable **mechanisms** for **assessing** food conditions, **enhance awareness** and **guidance** in **reducing** food waste and **implementing** sustainable consumption practices, and **alleviate** the difficulties faced in **managing** food inventory?

Consisting of three issues that must be resolved....

**Absence** of a **dependable mechanism** for assessing **food condition results**

There's a **lack** of **awareness** and **guidance** on how individuals can **reduce** food waste and **adopt** sustainable consumption practices.

Individuals **struggle** with **managing** their **food inventory**



... and solved with strategy ...

A **mobile application-based strategy** that provides **condition assessments, recommendations and food reminders**



**Edival (Edible Evaluation)**

... which will have three main impacts

Customer Growth

Incremental Revenue

Revenue / year **USD 66,000.00**