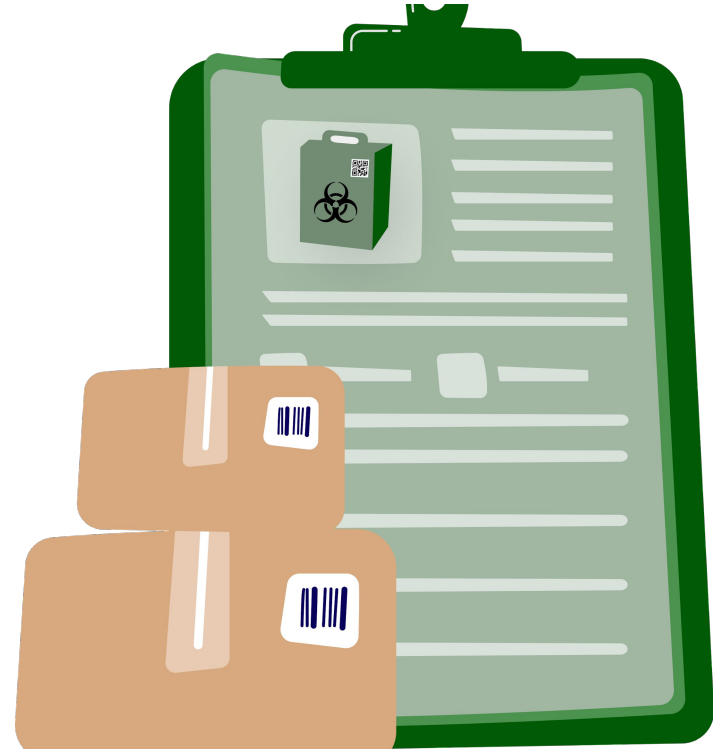# CLEAN MEDIC

A Case Study

Clean Medic

Medical Waste Management Process

Agenda List

1. **Overview**
2. **Aim Of The APP**
3. **Key Points, Key Roles & Key Functionality**
   - **App users**
     - ▪ Producers
     - ▪ Drivers
     - ▪ Delivery Point Users
   - **Web Portals**
     - ▪ Admin
     - ▪ Transporters
     - ▪ Warehouse & Factory
4. **Technology and Tools**
5. **Challenges & Solutions**
6. **Visit Clean Medic**
7. **We Serve**
8. **Thank You**

OVERVIEW

Clean Medic, an Indonesian medical waste incineration process, offers an end-to-end solution with large modules like User Management, eCommerce, Warehouse Management, Delivery System, Payment Processing, Invoice Module, Internal Custom Chat System, and more.

Here, medical waste logistic operator piloted by a mobile application and available for all professionals that generates medical wastes. The wastes are collected in special cardboard containers supplied by Clean Medic and are delivered to a selected factory as a final delivery point for incineration. There could be a warehouse as an intermediate process point to allow trucks to bring the containers to factories.

As Medical waste producer you can set the frequency for your waste collection either by same time or programmed tour considering daily, alternative day etc.. Being driver you will receive the notification of your ride and after that can collect waste by scanning the container and measuring weight of waste and transport them either by warehouse or factory as per the near destination.

Being delivery point user either from factory or warehouse, one can load/unload the truck, scan the container and incinerate the waste.Once the waste is being incinerate, waste producer will receive the incineration certificate as per their medical waste.

As Indonesia is geographically situated with multiple time zone, here system works well accordingly.Features Video
https://drive.google.com/file/d/1uvzwGYfLJi1LQxjSQgpJcvKEBw8ufL3J/view

AIM OF THE APP

The Clean Medic platform is an advanced digital system that is designed to meet the needs of all parties involved in the process of medical waste management.

This platform establishes a direct line of communication between the facilities that generate waste, as well as those that transport it, store it, and incinerate it.

Also, The efficiency of the public health and safety as well as the threat to the environment can all be improved through the use of Clean Medic waste collection services.
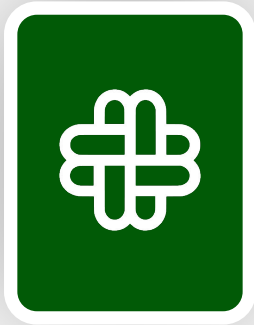
Key Points

Key Roles

Key Functionality

Producer

Mobile App User

Waste is generated by the Producers and then collected by Clean Medic system. They are required to sign a contract and open an account through a mobile Producer application in order to complete the registration process. Once they have been validated by the CleanMedic admin, producers will be required to place an order for containers and pay for them .

In order to provide a unique identity, here, each producer will have a unique QR code, and when the driver comes to collect waste, he will be able to scan the code against the producer's QR code. Additionally, here, each container will have its own unique QR code, and as a result, there will be a distinct combination of QR codes while the driver collects waste.

The Producers will have the ability to schedule tours for the collection of waste either by a programmed tour at fixed intervals of time, which could be every day, every two days, every week, every two weeks, and every month, and at the relative date from the beginning of the process; or by real-time collection, also known as collecting waste at the same time each day, which is referred to as real-time collect.

The producer has the option to either pause or cancel the scheduled collect tour. Aside from this, the producer will be able to see how many containers are currently in stock. After the incineration of medical waste, the producer will be given a certificate for their equal measurement of waste to be sent to be incinerated.

In case Producer has any question, producer can connect through chat option.

Driver

Mobile App User

A mobile app user called a "Driver" will collect the medical waste container from the producer and finish the tour. To access the application, driver will log-in using the credentials given by the Transporter. The driver must then show the QR code for his truck while processing any process further. The mobile app will determine the driver's location and set it up to receive tour notifications further.

After the Driver has successfully logged in, in order to receive collect notification, he must put his mobile in a status to receive collect by pushing a switch to accept collect in tours. This is necessary for the Driver to do if he wishes to be notified for tours. He can put himself into collect mode by pushing the two switches, and while he is doing so, he will be able to accept a real-time collect or a programmed tour at various points throughout the tour.

During tour mode, the driver will receive the firstly available tour notification and have time to accept it. The screen popup for tour notification displays the number of Producers, containers, and weight for the tour, allowing the user to accept or decline the tour.After accepting the tour, the driver will receive the nearest collect address, collect the waste, and repeat until the tour is complete.

During a collect, the Driver scans the Producer's QR-code upon arrival. The driver collects containers by scanning their QR-codes and weighing them. Here we use BLE with a weight scale to receive weight on the app when the container is placed on the scale. After loading the containers onto the truck, the session is closed once all containers are collected. After collecting, driver unload the truck at destination factory or warehouse.

In case Driver has any question, Driver can connect through chat option.

Delivery Point User

Mobile App User

A mobile app user known as a "Delivery point user" will be the one responsible for Delivery point users can be warehouse or factory workers. Both receive containers and store them for later.

A warehouse is an intermediary delivery point that stores containers and loads them onto a large truck for transport to the factory. A factory is an end delivery point that stores containers for incineration.

The mobile Delivery Point application is being used by a delivery point user working in either a warehouse or a factory to carry out all of these tasks. delivery point user has the appropriate access rights in the portal for the relevant warehouse or factory.

There will be different scan points based on factory or warehouse like load, unload, store, incineration etc..

During different session delivery point user may scan the container and measure the weigh by scanning QR-codes and weighing it. Here we use BLE with a weight scale to receive weight on the app when the container is placed on the scale. Accordingly update the life cycle of containers with different stage.

In case Delivery point user has any question, can connect through chat option

Super Admim

Web Portal User

The first user of the portal to have the ability to manage all functionalities of the platform while also delegating access and privileges to other users in accordance with the requirements is known as the "Super Admin".

Being super admin, he will create unique users for each portal. In the same way, first create warehouse or factory portal, and will create admin and sub users for the warehouse and factory, and he will also be able to create users for scan points and delivery points. In regard to Transporter, he will have the ability to create Transporter account first and following it, Transporter admin and sub-users, in addition to being able to create drivers and the ability to set transport fees for their tours. Also will able to create producers and Agents as well. Any Registration must be accepted by relative admin user only.

Due to the fact that Indonesia is geographically divided into multiple time zones, all of the data on this site are managed using multiple time zones. Accordingly here producers, warehouses and factories are divided in Territory and Areas These all managed by Super admin.

Admin has ability to create coupons as per the need like to share particular users or with any events.

There is finance module through which admin will approved raised invoices for Transporters, factories or Agents.

The Super Admin can also control inventory in their own built warehouse. After receiving the order from the producer, Admin will be able to track it and arrange for shipment from the warehouse serving area of responsibility.

Super Admim

CLEAN MEDIC

The complicated functionality of the system is to automatically create tours in accordance with the frequency that is set by the producers. According to the working hours of the producer, tours are being managed here in two slots: the first half and the second half. Tours will be automatically created with the appropriate slots, along with information about the truck's capacity, number of stops, and total weight. These settings are being managed by Super Admin. After the tour has been created, a notification will be sent to the driver automatically, and the driver can choose whether or not to accept the tour based on his or her availability. In this section, Admin have the option to manually create a tour as well as manually assign a driver.

After the tour has been created, it will proceed through a number of stages, beginning with the collection of waste and ending with the incineration process. The administrator will be able to view tours that are available, tours that are currently running, tours that have been completed, tours that have been cancelled, and tours that have been unloaded or loaded at a factory or warehouse. Also able to view the status of containers that are currently being stored, containers that have not yet undergone the incineration process, and containers that have undergone the incineration process.

Super Admin have chat functionality where he will be able to see chat with different users, can chat as well.

Apart from above can see different reports for statistics, can manage different settings parameters as well as different masters.parameters as well as different masters.

parameters as well as different masters.

Transporter

Web Portal User

One can sign up to become a Transporter, and once their application has been approved by the admin, they will have access to the portal and the additional menu options.

Through the use of the portal, transporter will be able to manage drivers and will also be able to manage further transporter admin and sub users. The Transporter will be able to manage the trucks for the tours from this location. In the worst-case scenario, if the driver experiences any problem and is unable to finish the ride further, the transporter has the option to replace the driver and can still continue the tour the same way. In the event that the truck fails, the transporter is also able to change trucks. In addition to this, able to track with the previous new truck/driver history with the tour as well.

It is also helpful to track the quantity of waste collected in kilograms between two dates, as well as the number of containers that have been collected by trucks, by drivers, and by producers. This information can be found in the Finance module with Transactions The Transporter has the option of uploading its invoice on the portal in order to be paid by Clean Medic and also can check the status of payment.

Transporter will be able to track current running tours as well as completed tours. In case of assistance can communicate with super admin through chat

Warehouse & Factory User

Web Portal User

The Warehouse/Factory portal is specifically designed for the Warehouse/Factory to use in order to create an account by providing the required information and uploading the necessary documents.

Through the use of the portal, transporter will be able to manage delivery point users and will also be able to manage further warehouse/factory admin and sub users. From the warehouse/factory user, one will be able to manage the scan points to scan the containers for the different phases of container life cycle.

Warehouse/Factory user will be able to track different phases of container session respectively like complete collects, load, unload, store & incinerated session. In case of assistance, can communicate with super admin through chat

It is also helpful to keep track of the quantity of waste collected in kilograms between two different dates, as well as the number of containers that have been incinerated by delivery point users and produce that has been produced by producers. This data can be located in the section of the Finance module that deals with Transactions. The user of the Factory can check the status of their payment as well as upload their invoice to the portal in order to be paid by Clean Medic. This option is available to the Factory user.

If a warehouse has been assigned as Clean Medic's own warehouse, then that warehouse will be responsible for managing the delivery of new containers. Additionally, container stock and order management are managed respectively according to geographical area and territory.

Technology and Tools
Front-end Development

1 **Technology :** Front End React JS, Web & Mobile API - Laravel

2 **Database :** MySQL

3 **Third Party Tool :** Google Place API, MidTrans Payment Gateway

Technology and Tools
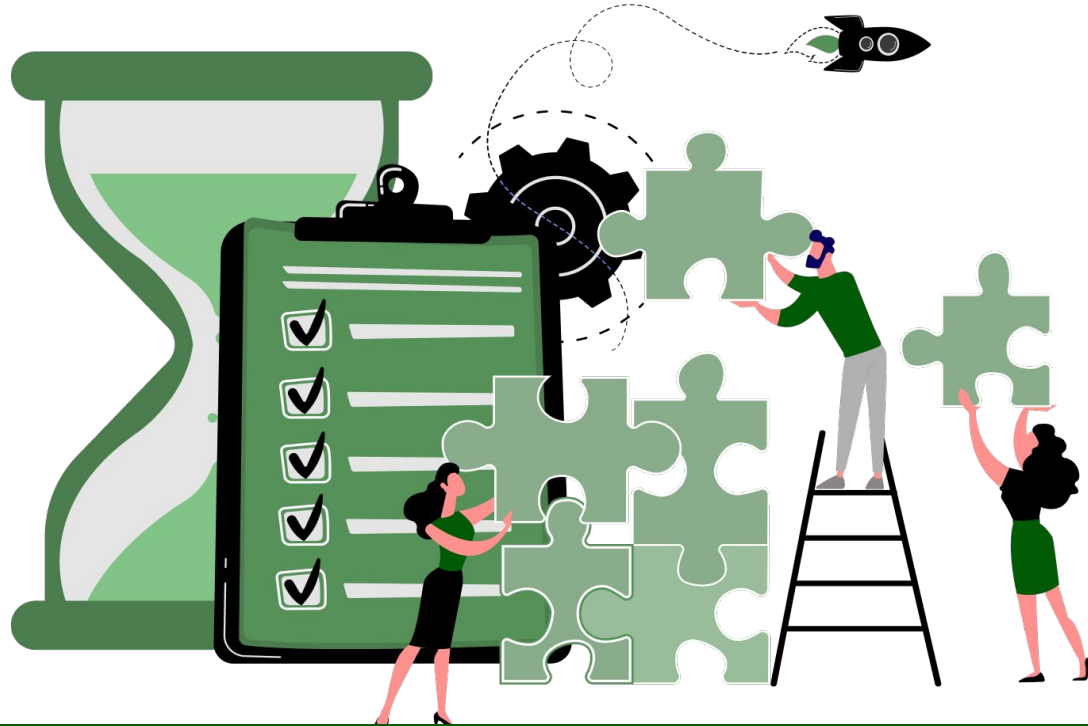# Building Mobile App

1   **Technology :** Flutter GetX Pattern
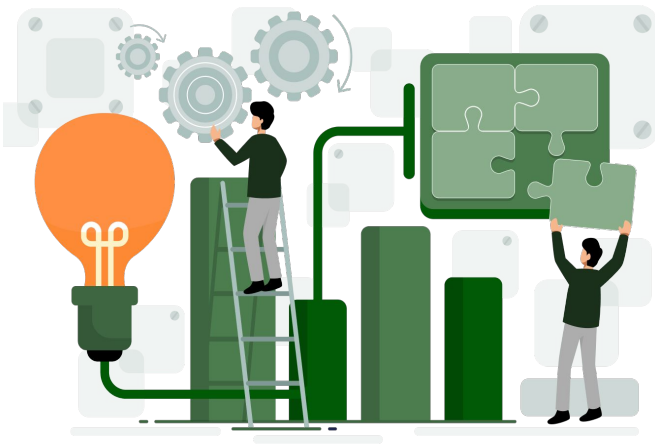
2   **Chat:** Socket.io

3   **Third Party Tool :** Google Place API, MidTrans Payment Gateway, Firebase for Notification Handle, Crash analytics
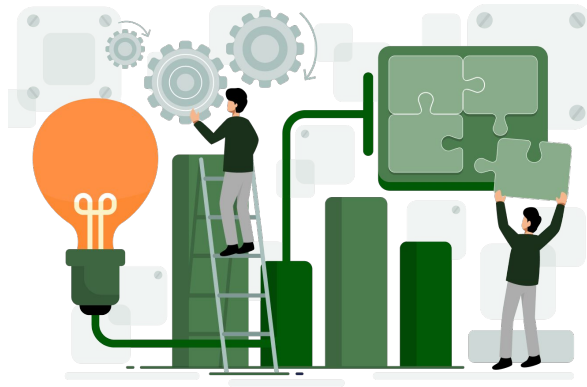
Challenges and Solutions

Challenge

One of the most important concerns regarding the system was the creation of a tour in a way that was dynamically based on the frequencies that were selected by the producer, and it had also been separated into various geographical areas. Also, multiple parameters need to be considered because a driver might have a combination of tours, such as a scheduled tour (also known as a "programmed tour") and a tour that occurs at the same time (also known as a "real-time tour").

Solution

As a result of the need to take into consideration geographical boundaries, we solved the problem by separating them into territories and areas. Now, we segmented the tours according to the different territories. In addition to this, we were able to get through it without exceeding the truck's capacity or the number of stops allowed per tour. managed a few settings, such as what time it should be dynamically created because the day has been split up into two distinct cycles here. We take note of the working hours of the producer, so the driver is required to make the trip during those times. also provided facilities such as the ability to manually create tours, cancel tours, notify administrators, and so on. Therefore, on the basis of the aforementioned logic, we create queries and logic that allow for this feature to actually work as client's requirement.

Challenge

The second most important concern was informing the driver about the tour in accordance with their preferences and the availability that was based on the surrounding area.

Solution

When the system sends a notification, we notify all logged-in drivers who have the appropriate modes of working for the type of tour they want to do Programmed, Real, or Both.
However, the driver whose working mode is off will be notified when they log in and turn it on.
Drivers will always receive the first notification and wait for certain minutes for them to act. If no one acts, the system will move on to the next tour and notify them.
If a driver ignores it, we will not notify them again for that tour, but if no new driver is available, they will be notified for a specific time of counts.
We limit the number of retries or resends.
We manage the queries and logic above to meet client requirements.

Visit Clean Medic

Website

CLEAN MEDIC

Mobile Apps

PRODUCER APP

DRIVER APP

DELIVERY POINT USER APP

What We Do

TECHNOURCE

WEB & MOBILE APP DEVELOPMENT COMPANY

With nearly a decade of experience of serving start-ups and enterprises, Technource is able to devise the right software solution. Endowed with the power of Agile, we ensure performance and customer delight. Having been successfully creating exemplary web and mobile applications, Technource team has honed the craft of creating Artificial Intelligence, Augmented Reality, IoT applications that has been steering clients to attain the next level in their business. Team Technource, with its perpetual learning culture created an ecosystem where innovation and execution is immutable reality.

We Serve
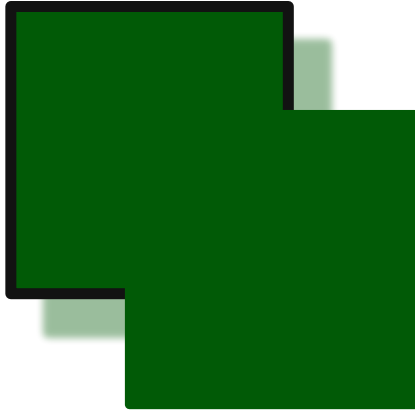
- Real Estate Development

- Online Store - eCommerce Development

- Manufacturing Development

- Financial Development

- Advertising Development

- Education Portal Development

- Electronics Development

- Entertainment & Media Development

- Food & Beverage Development

- Healthcare Development

- Travel & Transportation Development

Thank you

Case study prepared by:

Technource Pvt. Ltd.