yulu

Bike Fleet Management System

CASE STUDY

MANTRA LABS

India's No. 1 Bike Sharing Company is a Venture Capital backed micro-mobility solution that allows daily commuters to rent, ride & share bikes, for a hassle-free transit within congested cities — available via its **iOS** & **Android app**.

With over 8,500 bikes and 500 scooters, Yulu looks to **decongest urban traffic** & **air pollution** by providing a scalable, affordable and clean solution for the first mile, last mile and short distance commute.

Problem

Yulu required a flexible framework built for **quick scaling** — that can handle large volumes, as their platform grows increasingly popular — integration with a **real-time monitoring system**, while also providing dynamic ad-hoc **analytics** & **reporting**.

Key Requirements

- Demand and prediction accuracy for inventory target-level determination.
- Effective optimiser for vehicle routing with hundreds of stations, using meteorology forecast prediction and real-time location coordination.
- Smartphone applications for iOS and android.
- Instantaneous analytics & reporting dashboard.

Solutions

7 Integrated solutions enabling a **scalable**, and **easy-to-use** platform for users to access bike sharing services.

1. **Regressor**

   Regression model to predict station pickup demand based on historical data.

2. **Data Exchange Hub**

   Streamlined complex data integration environment facilitating Fleet Telematics using sensors, IoT.

3. **Fleet Management Software**

   Real-time bike location monitoring, Re-balancing of bikes based on supply & demand prediction, Defect & maintenance management.

4. **CRM Integration**

   Quick data analysis & insights about customer's history, support lifecycle, retention and profitability outcomes.

5. **Billing Management System**

   Flexible architecture that supports dynamic pricing, clean & accurate invoicing, user-friendly account management, reduces bottlenecks and speeds up billing operations.

6. **Mobile Apps**

   Integrated mobility apps for customer and fleet management built using Swift, React, Java.

7. **Advanced Analytics Dashboard**

   Real-time and unified view reporting dashboard built as an event-driven Node JS application.

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How We Made Yulu Work

01

Bikes are **IoT enabled**, and allows users to rent dockless bicycles via the 'Yulu Bikes' mobile app.

02

The **user journey** begins via app booking just like booking a cab. Bikes can be unlocked via QR codes.

03

Once the bike is booked and then unlocked, Yulu charges the user per each half hour of **usage**.

04

Able to identify **demand scenarios,** and make predictions about performance based on traffic.

05

Once the trip is completed, it can be left at any **docking station** located throughout the city.

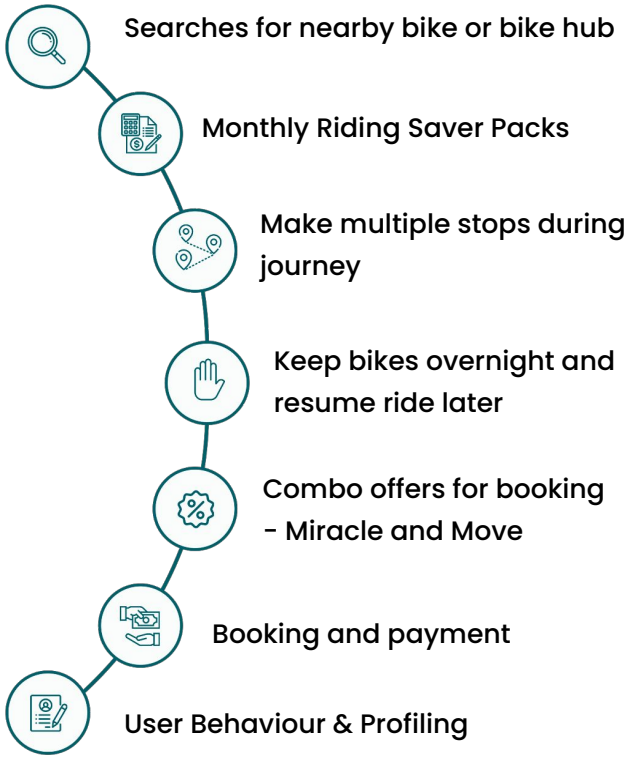
CUSTOMER MOBILITY APP

An integrated urban **mobility app** to book & track trips, monitor bike health, report bike issues, check personal stats, and win rewards.

The app allows users to view personal health stats such as calories burnt, distance covered and time elapsed for quick tracking.

It also indicates the amount of **carbon emissions** saved for each trip.

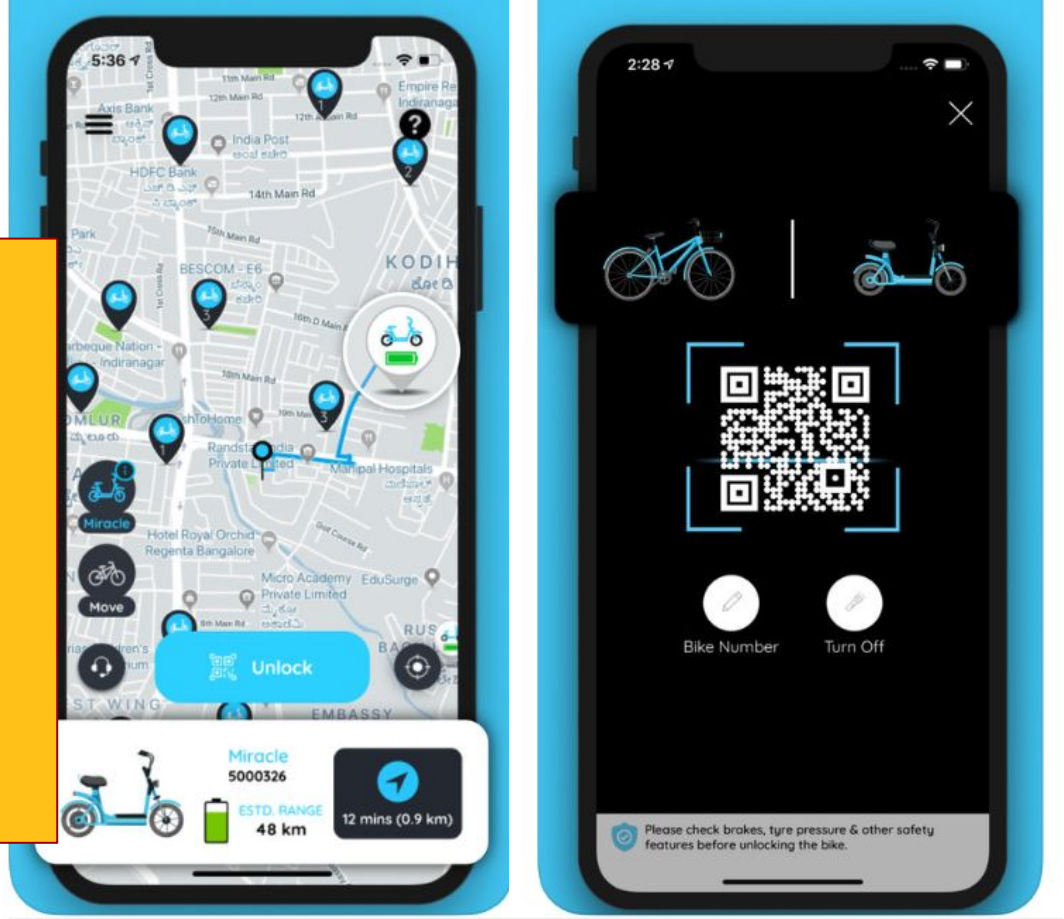
KEY FEATURES



CUSTOMER APP JOURNEY

After installing the app, a user can locate the nearest '**Yulu zone**' on the map, and see a list of available bikes nearby.

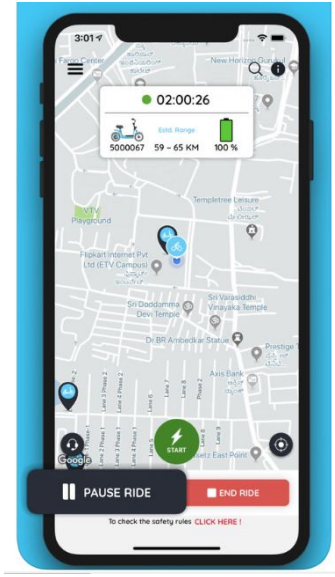
To **begin the ride**, the user unlocks the e-Bike by scanning the QR code.



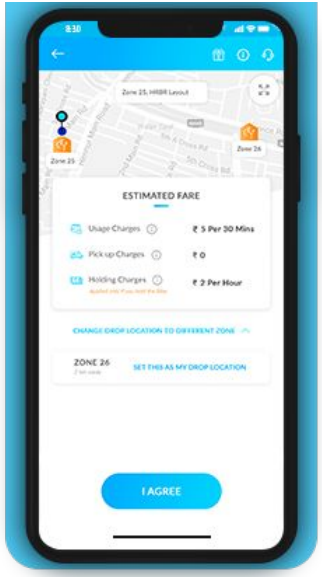
CUSTOMER APP JOURNEY

Once the e-Bike is **unlocked**, a user can access a variety of features.

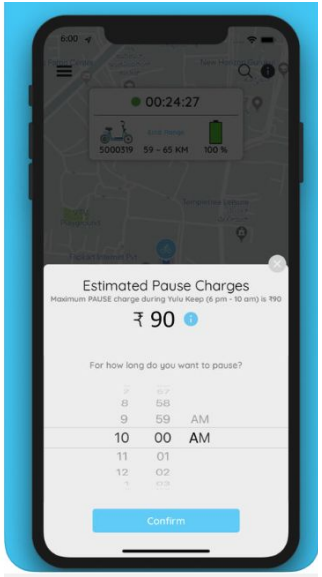
Make Multiple Stops while Riding



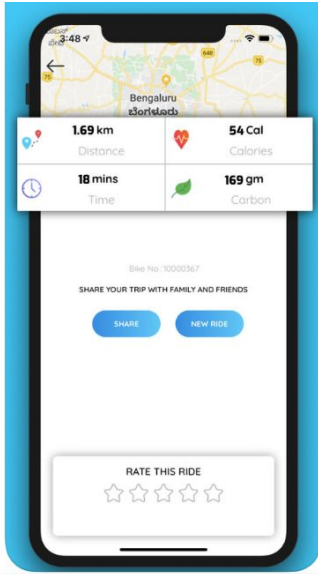
Get Fare Estimation



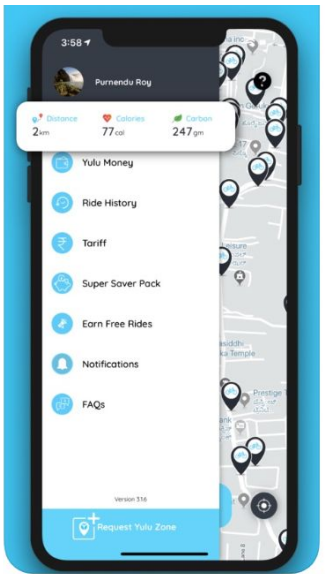
Pause ride and keep the bike overnight



Monitor Carbon Footprint



Track user's ride stats



Key Results

CUSTOMER MOBILITY APP PERFORMANCE

4.7★
Avg. User Rating

#24
In Travel

1M+
Installs

+500k
Unique Users
New Users in 2018-19

2 hours+
Fleet Productivity
Average Vehicle Activity

8k+
Total Fleet Strength
Number of Bikes Integrated

+45.9%
Expected Growth
New Users added each Month

99.49%
Driver Safety
Daily Crash-free usage

98.7%
Demand Forecasting Rate
Predicting Rebalancing Needs

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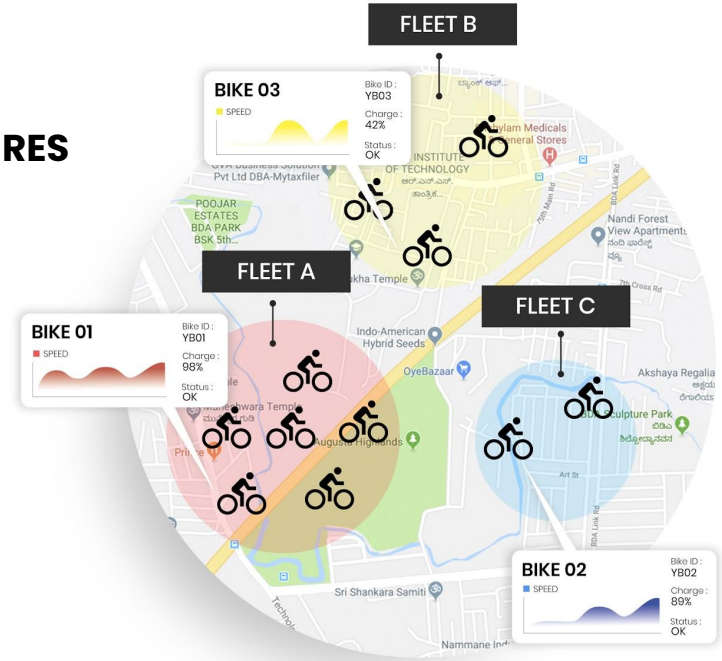
FLEET MANAGEMENT APP

CUSTOMIZED CLOUD FRAMEWORK

A Solution to identify spatial distribution of electric bikes distributed across the city, using demand-based prediction and real-time performance data.

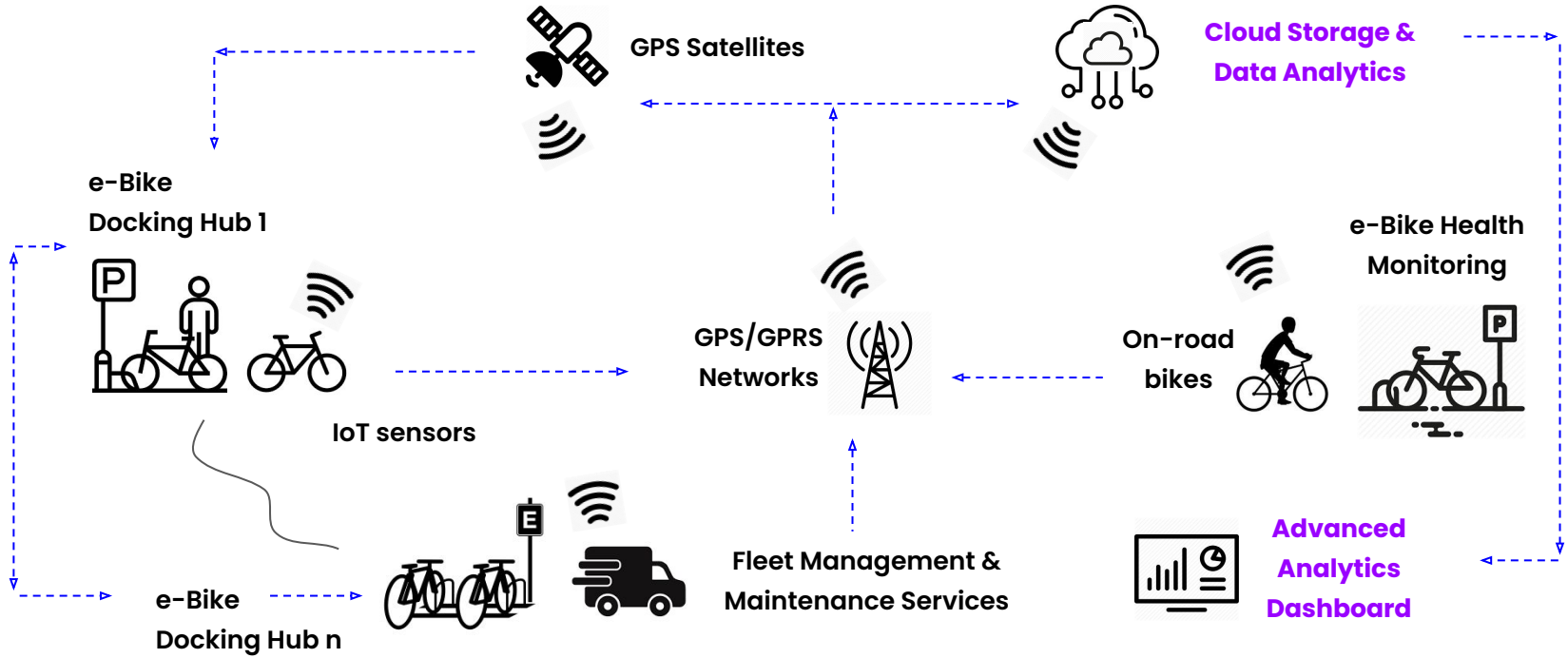
KEY FEATURES



- Mobile App Unlock
- Fleet Management
- Performance graph
- Geo-Location & Geofencing
- Real-Time executive Support
- User Behavior & Profiling
- Remote Diagnosis

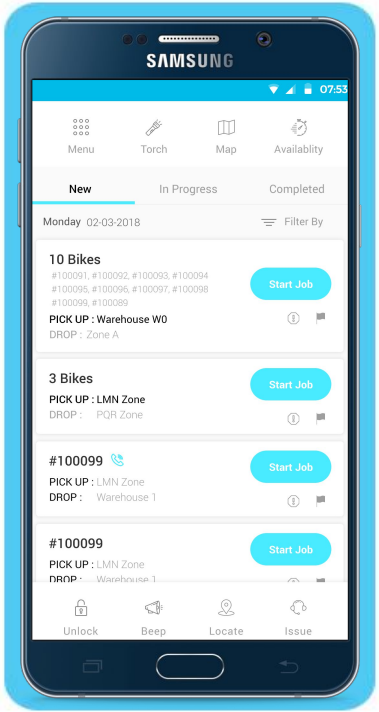
FLEET MANAGEMENT ARCHITECTURE

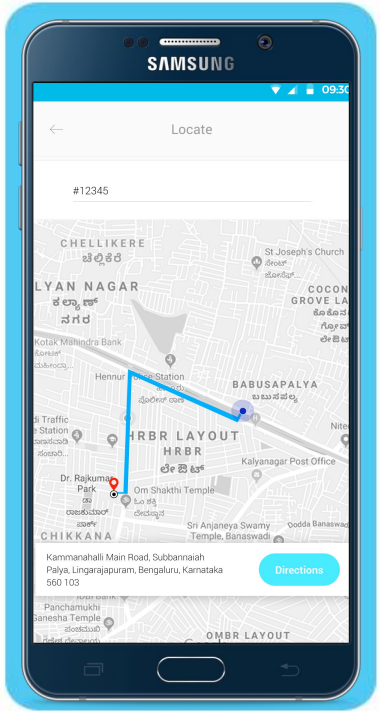
The **Solution** enables Yulu to scale its bike performance monitoring capabilities. With **analytics**, Yulu can predict maintenance requirements and better manage service supply chains.

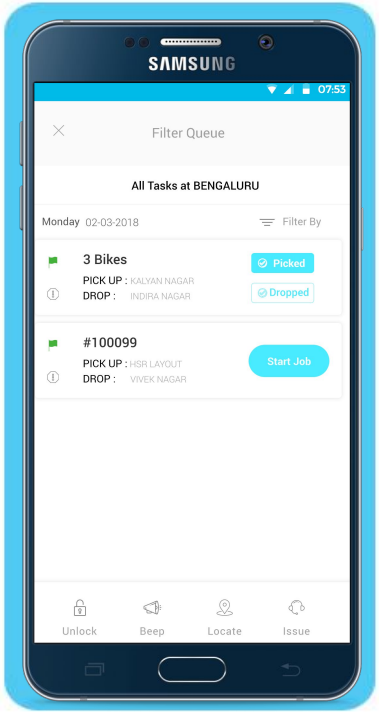


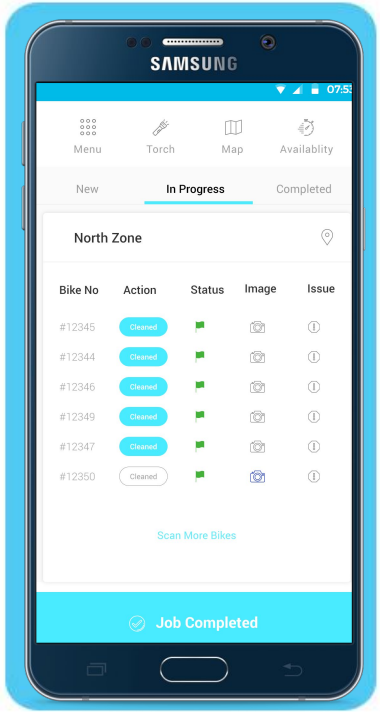
Fleet Management App Journey

Assign Daily Tasks → View Tasks By Location → Coordinate Same Area Pickups → View Status of 'In Progress' Tasks









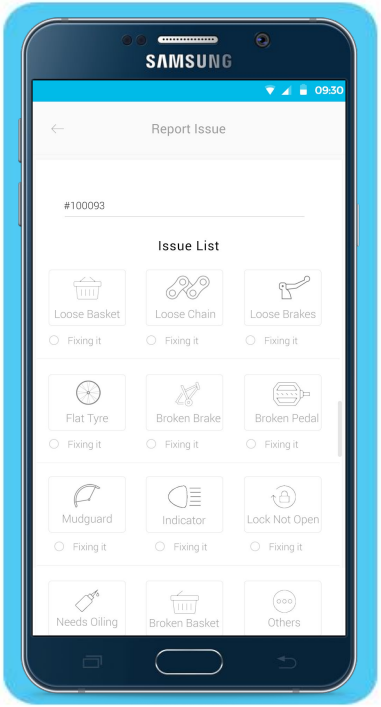
Fleet Management App Journey

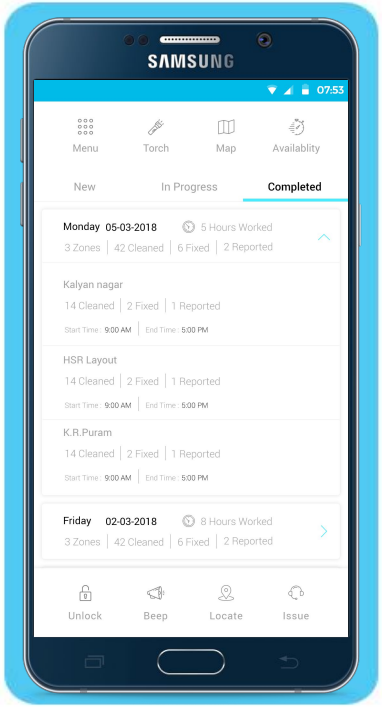
Bike Safety Issues Quick Resolution

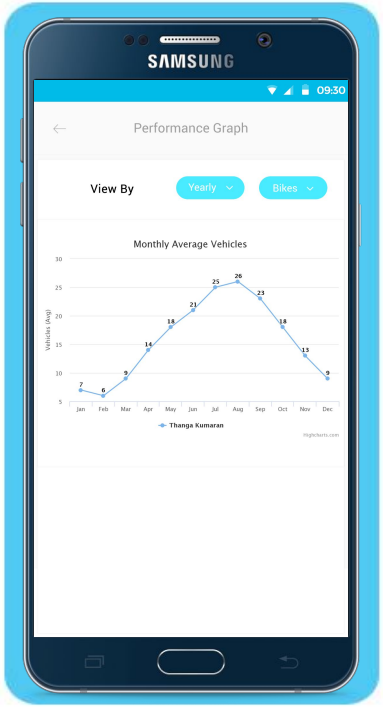
View History of Completed Tasks

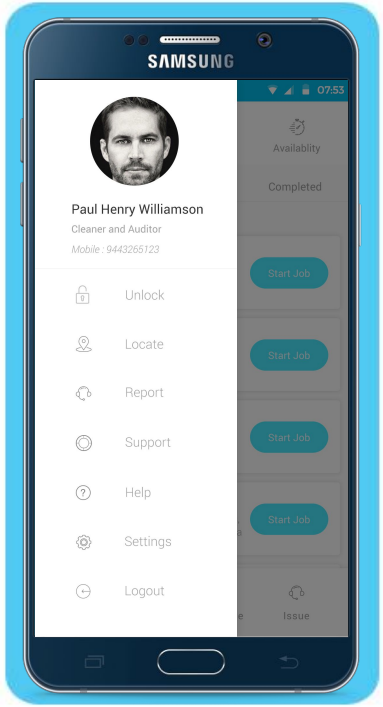
Work Performance Graph

User Behavior & Profiling









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