industry.AI | BLP Group Company

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1. Introduction

1.1 Purpose

This document aims to explain the operational procedure on how to use web-based Track.AI Monitoring System. It also explains the features of tracking and geofencing System.

1.2 Scope

The scope of this document covers:

- Explaining the features of Track.AI Application.
- Activities of users.

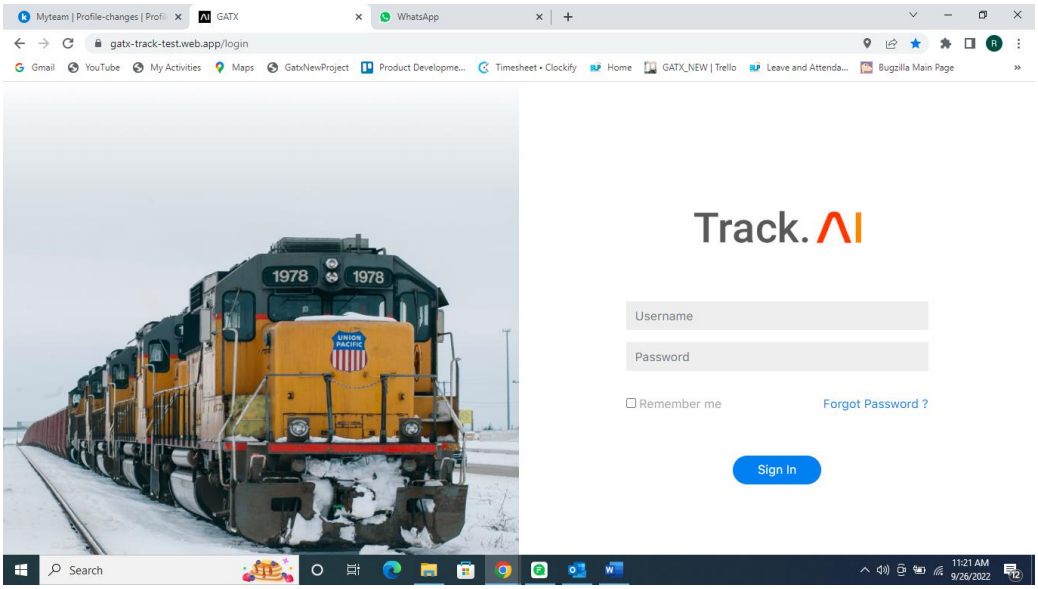
1.3 URL or Web site address

It will be available for each customer

2. Track.AI Monitoring System

GATX gives dynamic overview dashboard for monitoring and comparing all the important tracking and tracing of Railway wagon with ecstatic visualization. It also provides live visualization of Alerts and Recommendation using AI and ML models.

Once a user enters the URL address of GATX System in his/her browser, the following screen will be displayed. User has to enter the username and password provided by BLP for logging to the GATX System.
Enter the username-
Password-

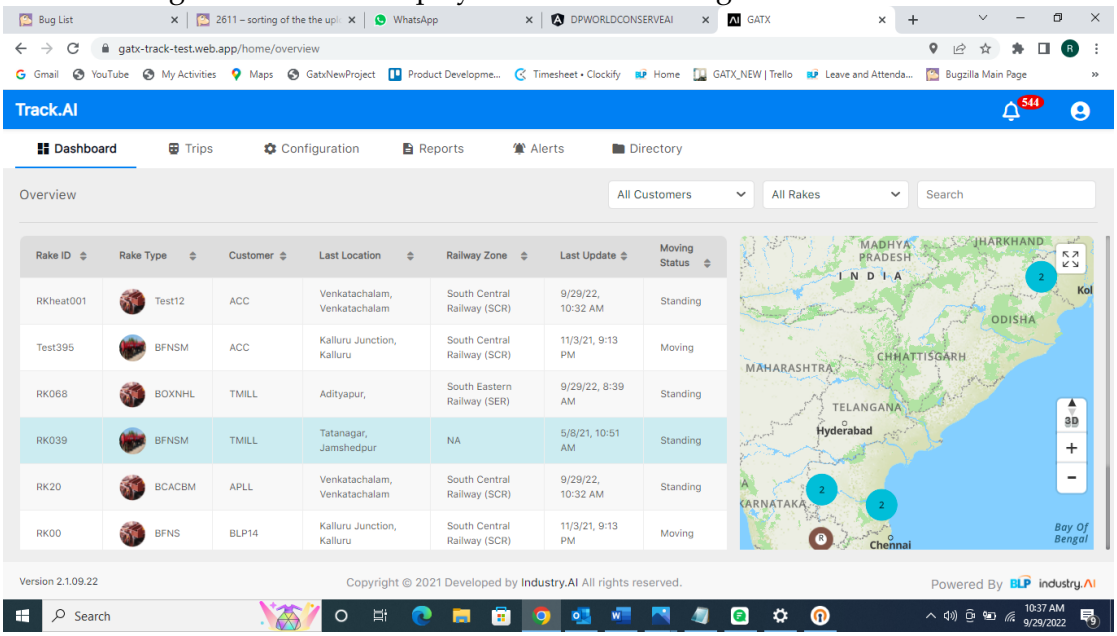


Click on Remember me if you want to remember your credential in the web browser Forgot password functionality will help to recover your password if you forgot your password. It is OTP based authentication system.

On successful login, user will be navigated to Dashboard Screen.

3. Dashboard Overview

In this Dashboard screen you can monitor all the Rake id listed, Rake type, Customers, location, Moving status.
The following screen will be displayed on successful login.



The user can also monitor the dropdown functionality of customers wise, and rake wise. There is also one search functionality i.e., capable of holding all possible search related to this screen. In the Map my India you can trace live locations of Rake on the

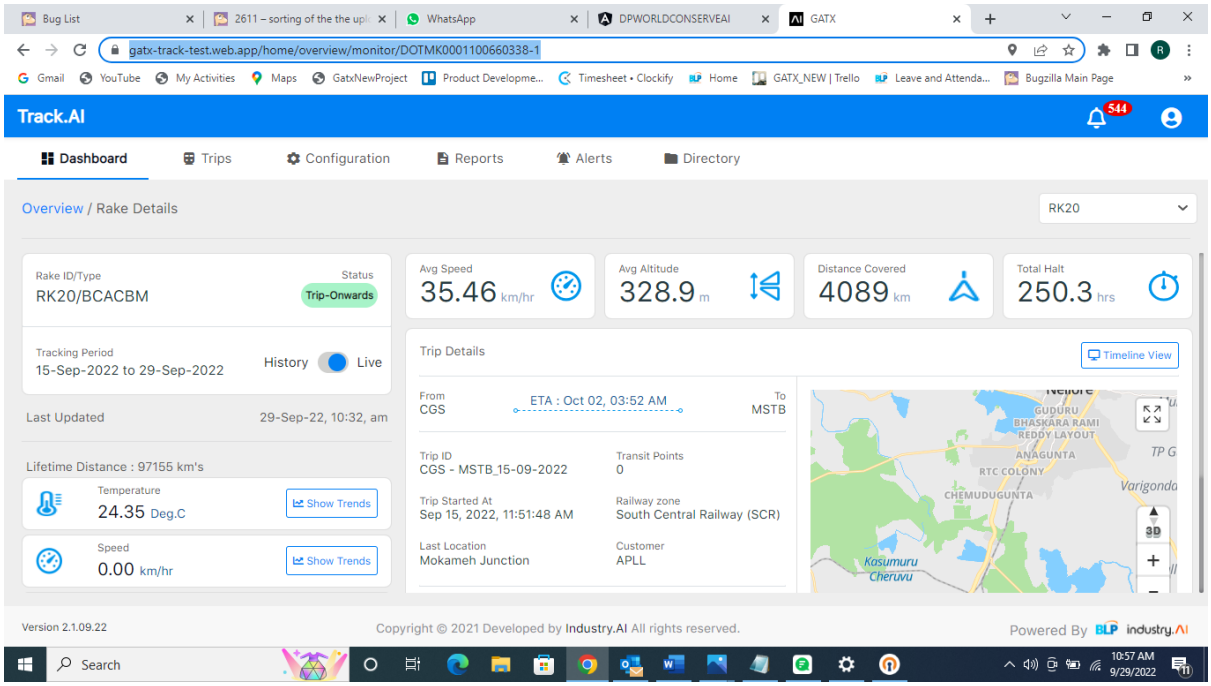
track. It will give clear view where exactly our Rake is.

4. Rake details page

URL: It will be available for each site

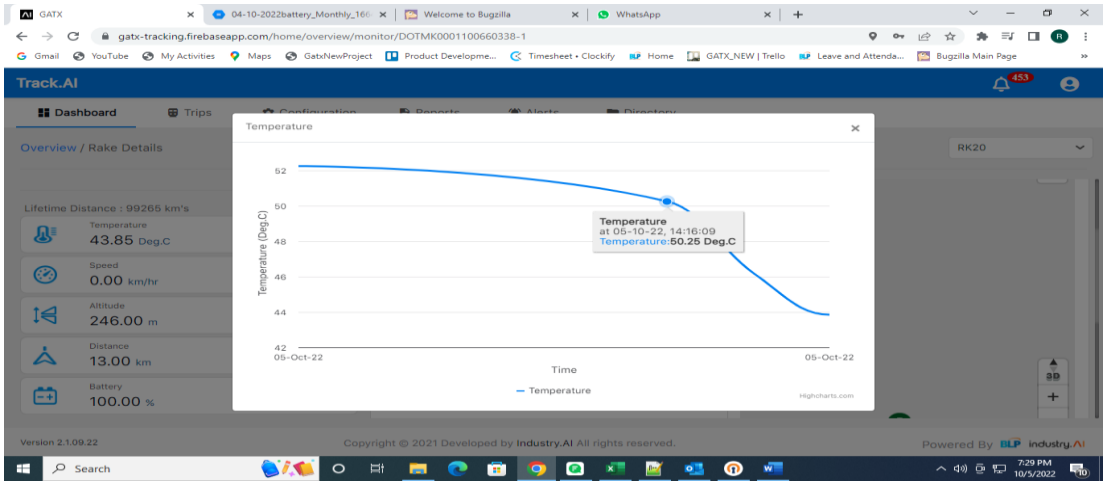
You can access this page by clicking the hover on dashboard page.

In this screen we have a filter Rake wise through that we can see details of Rake. Here we can see Rake ID/Type and status of trips. We can see the KPI like Avg Speed, Avg Altitude

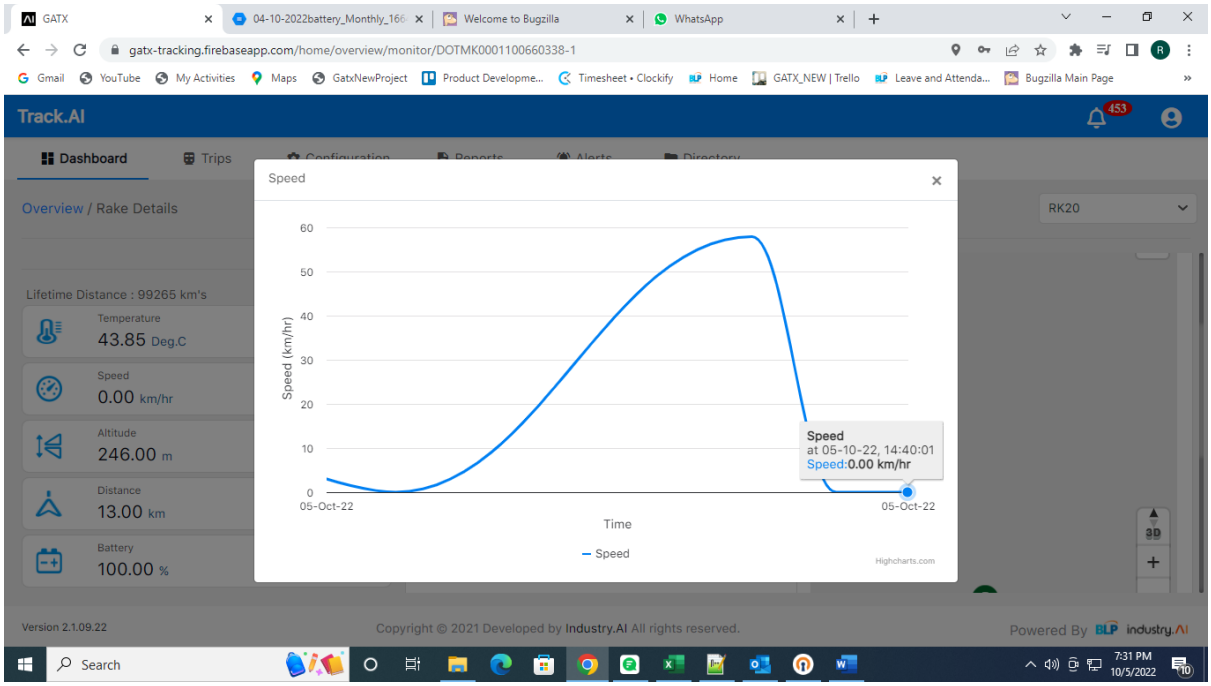


Distance covered, Total halt and trends of Temperature, speed, Altitude, Distance and battery. There is also one more functionality called timeline view.

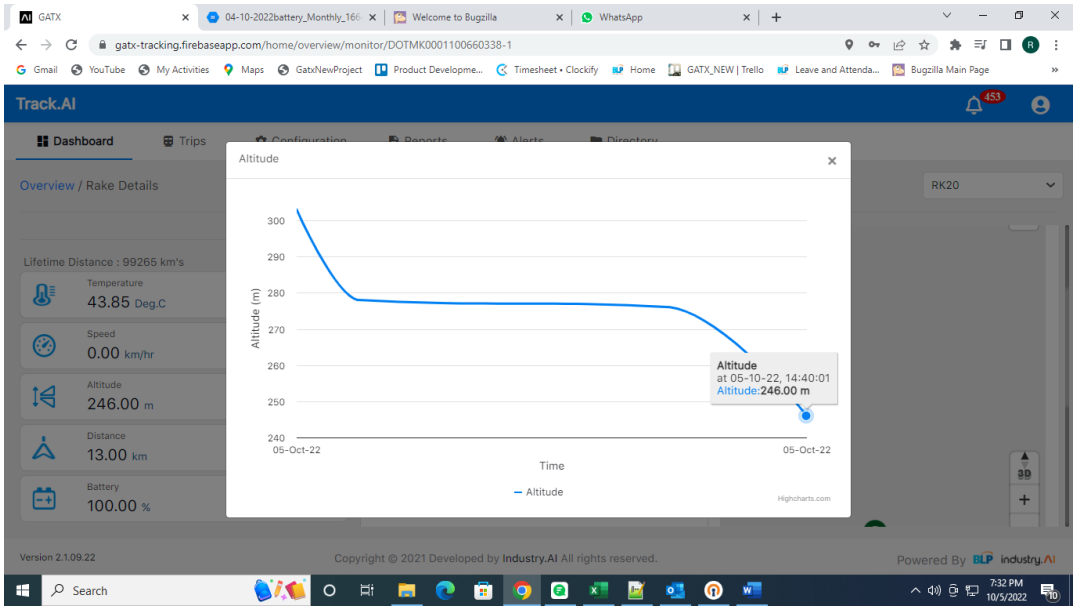
This is the trend of Temperature in degree c.



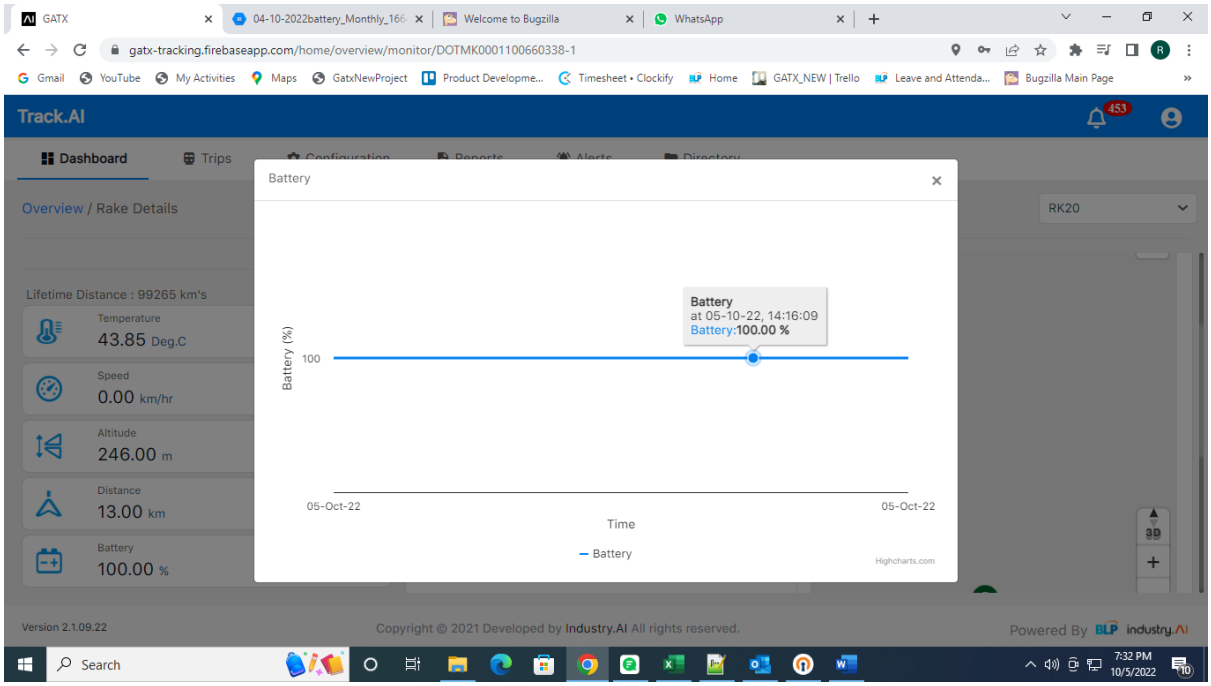
This is trend of speed.



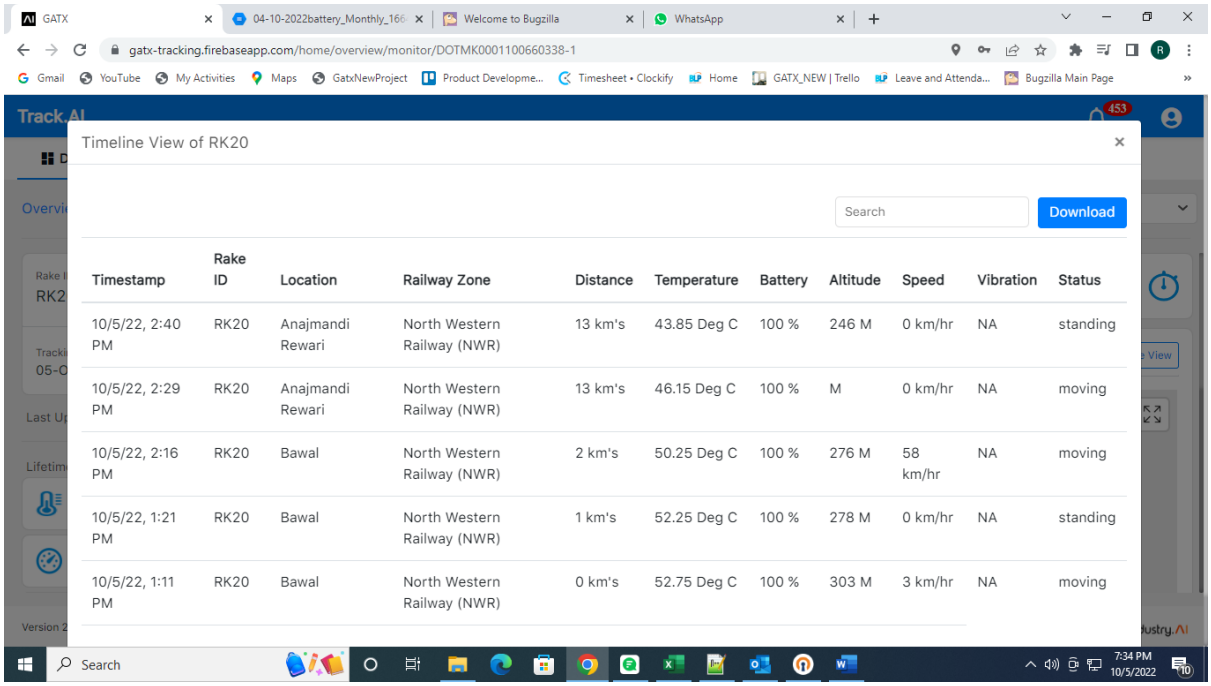
This is the trend of Altitude.



This is trend of Battery percentage



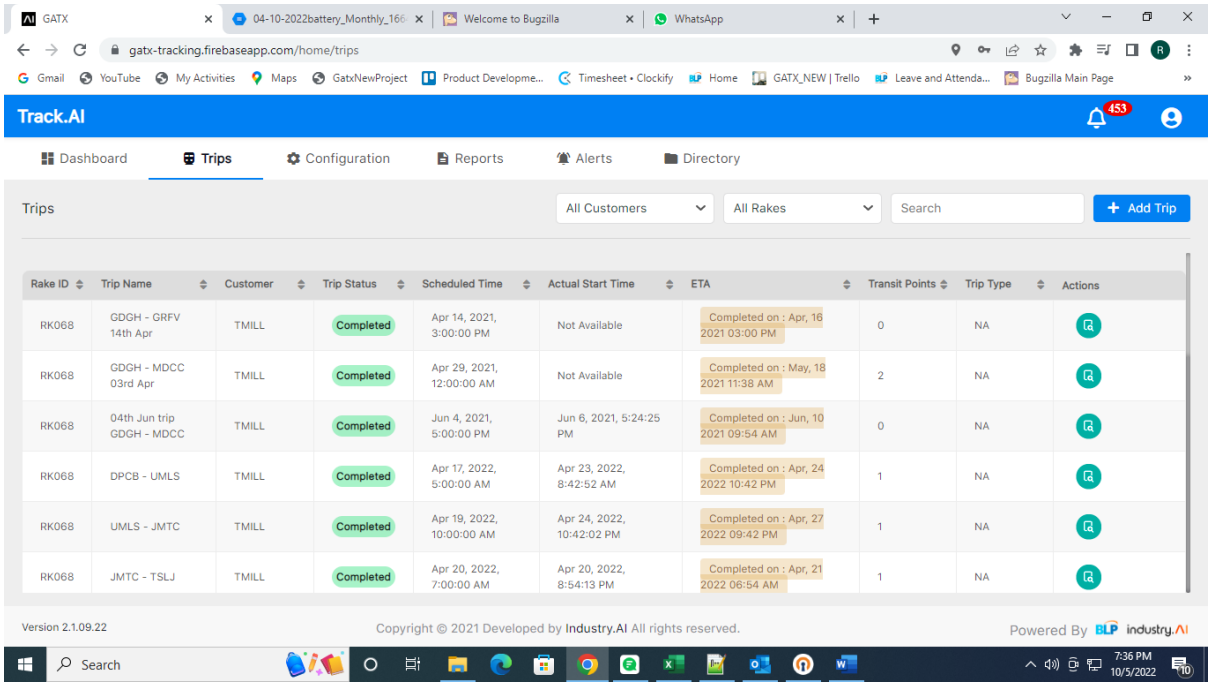
Timeline view of Rake



Trips:

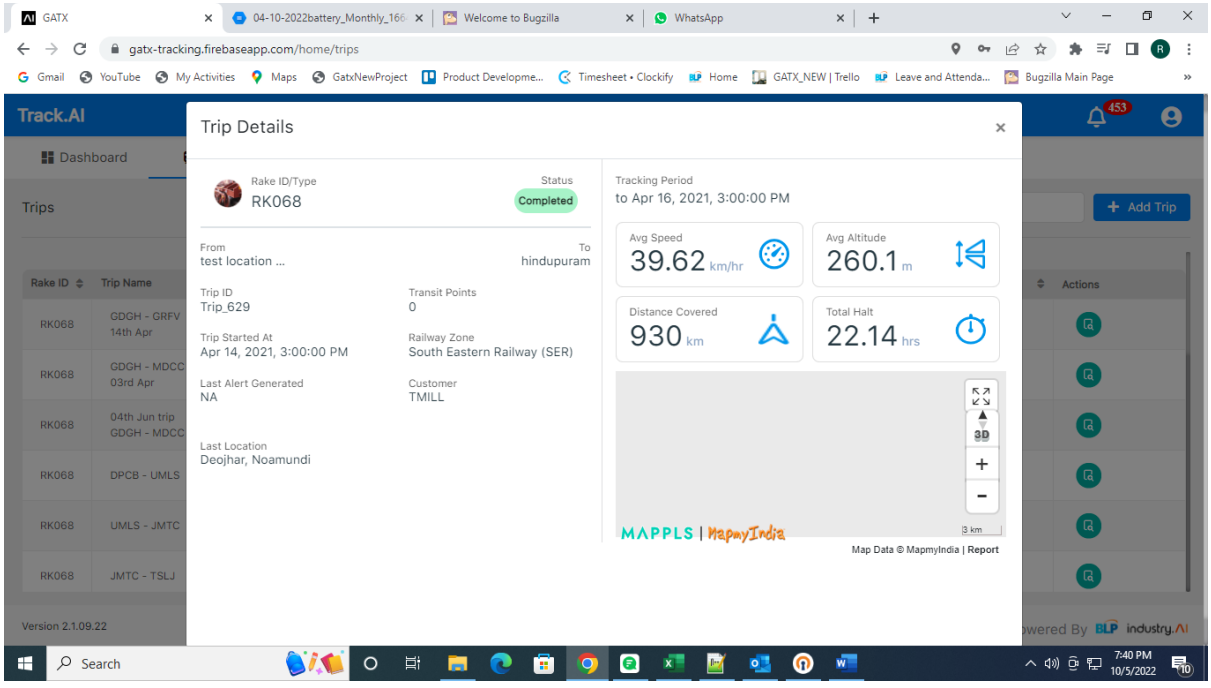
Trips screen contain Rake id, Trip name, Customer, Trip status, Scheduled time, Actual start time, ETA,Transit point, Trip Type and Action.

We have a dropdown functionality of Customers, Rakes and search.



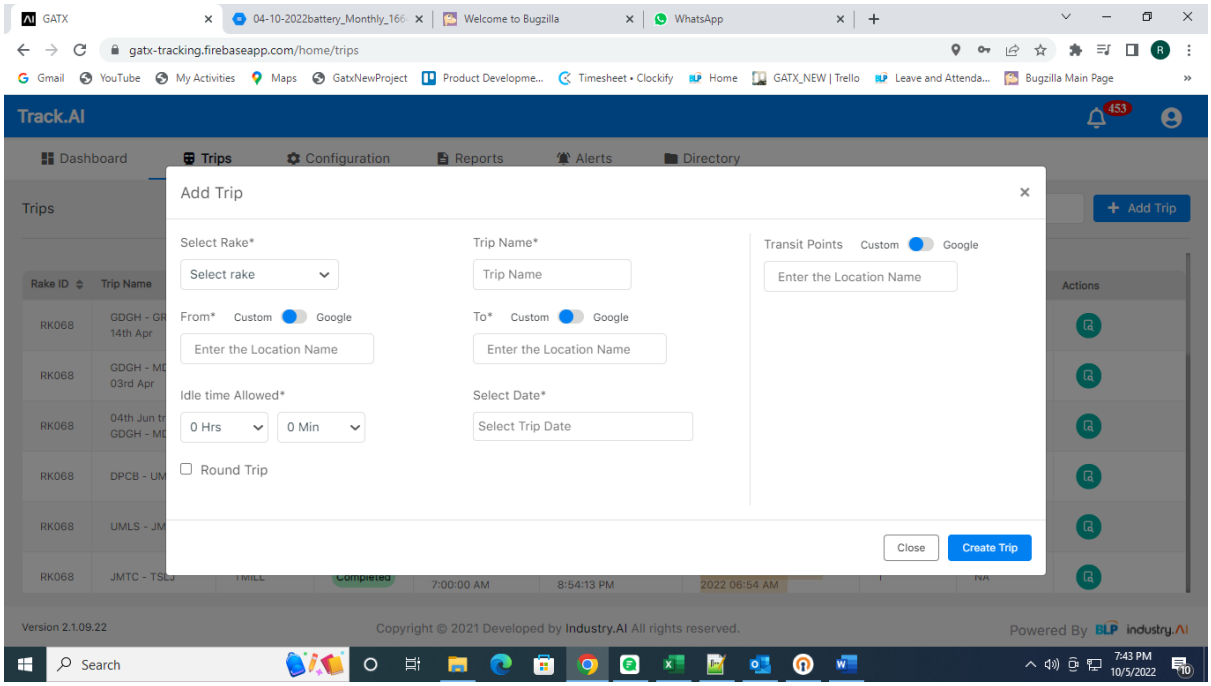
Under action section we can view given below screen:

This screen describe Avg speed,Avg altitude,Distance covered, total halt and Map my India.



We have functionality of add trips as well:

Here we can enter the input like Rake, Trip name, transit points, Idle time allowed, select date etc. and can create new trips.



We have a pagination feature as well. We have sorting functionality of each column that will help the user to sort the item based on their convenient.

Configuration Page:

This page is configured for 4 types of users

- **Super admin**
- **Admin**
- **Manager**
- **User**

Super admin having all the access He/she can create/update/delete admin, Manager and Users.

Details of each user has been mentioned in test case documents.

Configuration page contain following items:

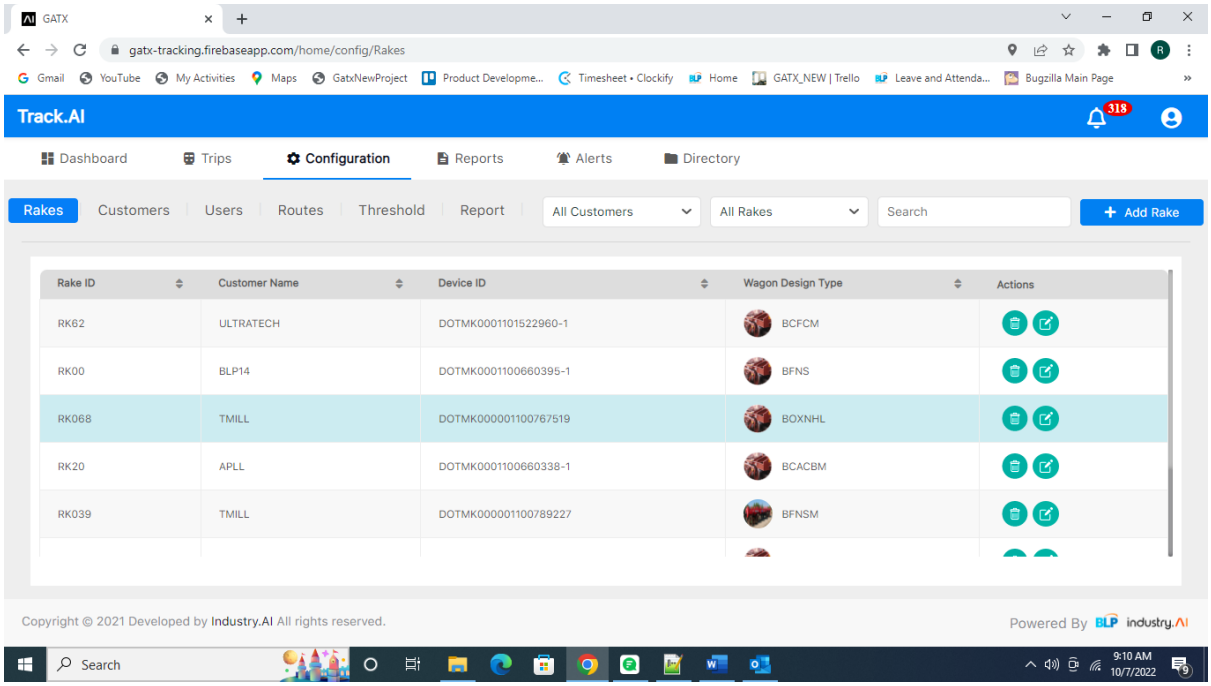
- **RAKE ID**
- **CUSTOMERS**
- **USERS**
- **ROUTES**
- **THRESHOULD**
- **REPORT**

To configure Rake, we have to follow below steps:

- Click on add Rake
- Select the device id from the drop down which already added by backend team
- Give the manual device id
- Select wagon design type
- Select the customer which already available in drop down

- Give the device status
- Click on "Add Rake"

After adding the Rake, you will get below screen



In Action section we have a functionality of edit the Rake and delete the Rake. This access is only given to Super admin.

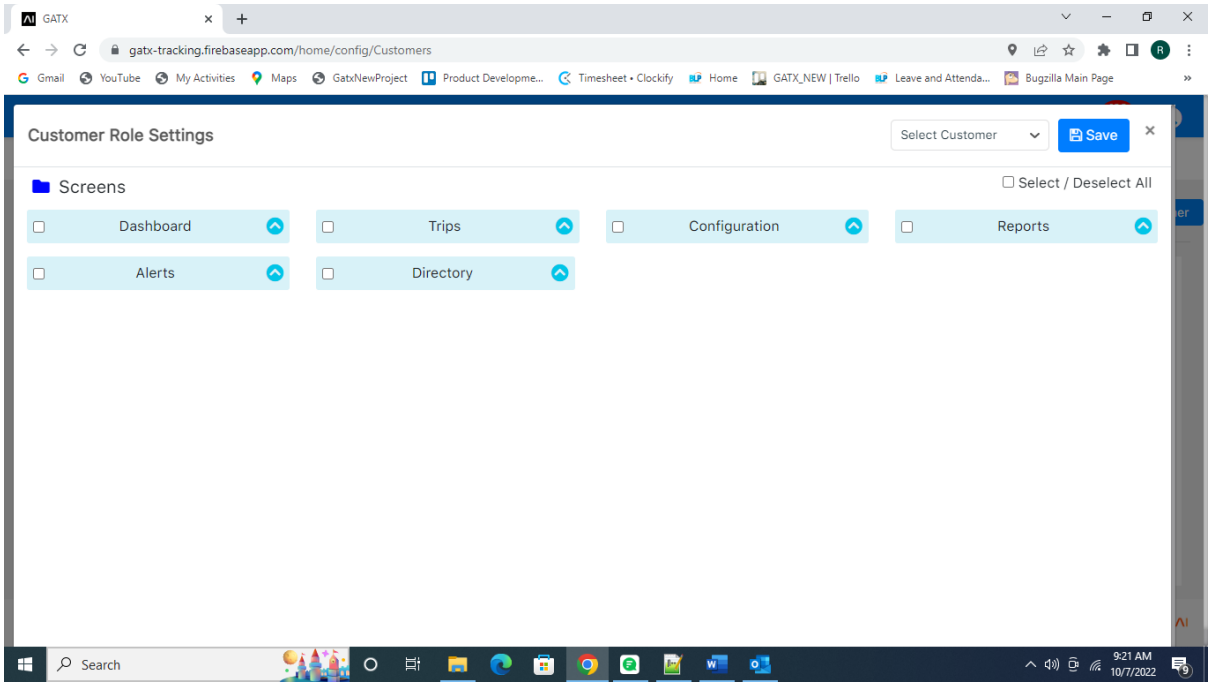
Customer configuration:

In this page we have a drop-down functionality of customer selection, Search functionality

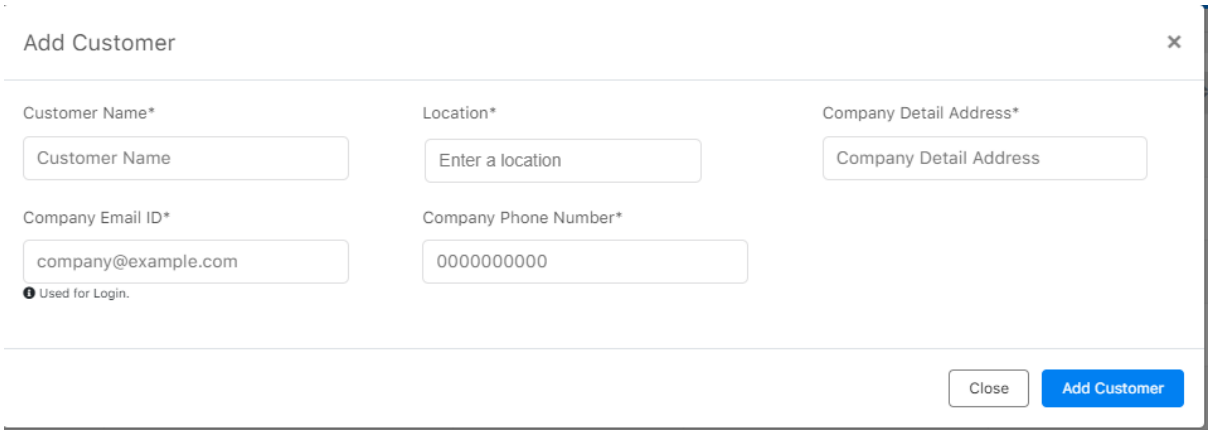
Super admin can configure the customer and can perform following operation:

- Can give the page access according to their requirement
- Can add the customer
- Can delete the customer
- Can edit the customer

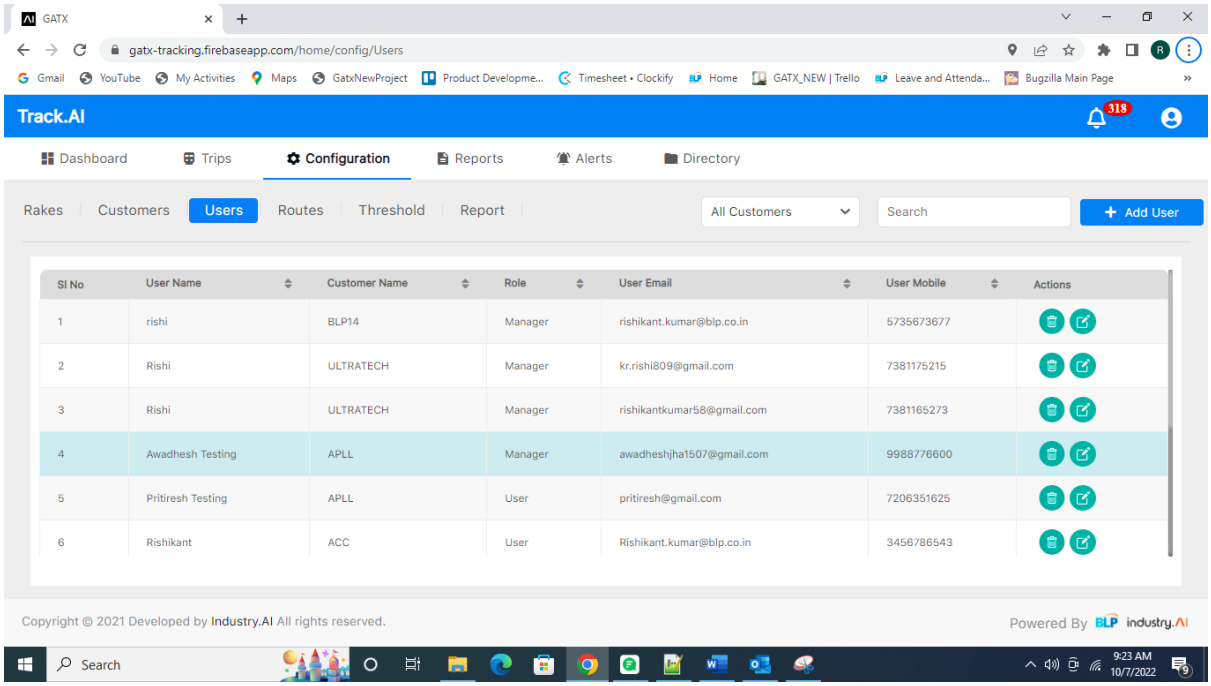
Below is the screenshot for page access functionality:



Below is the screen for customer creation:



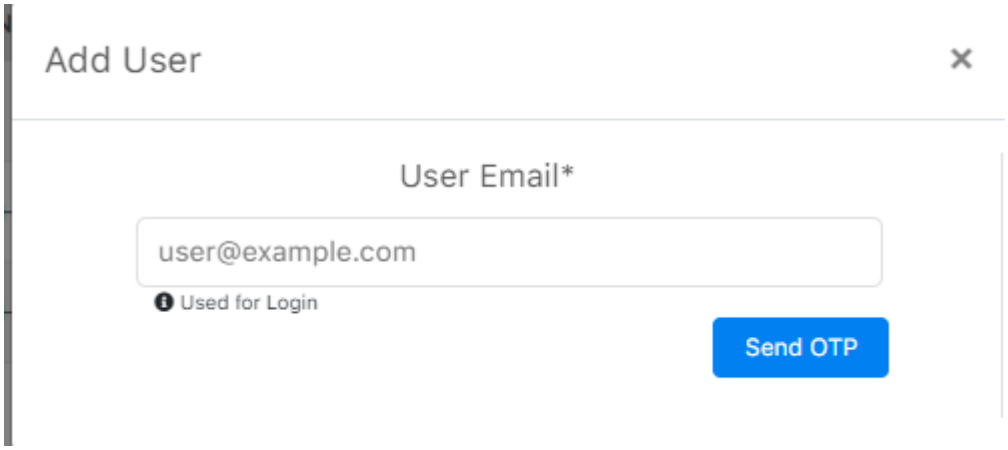
User configuration page:



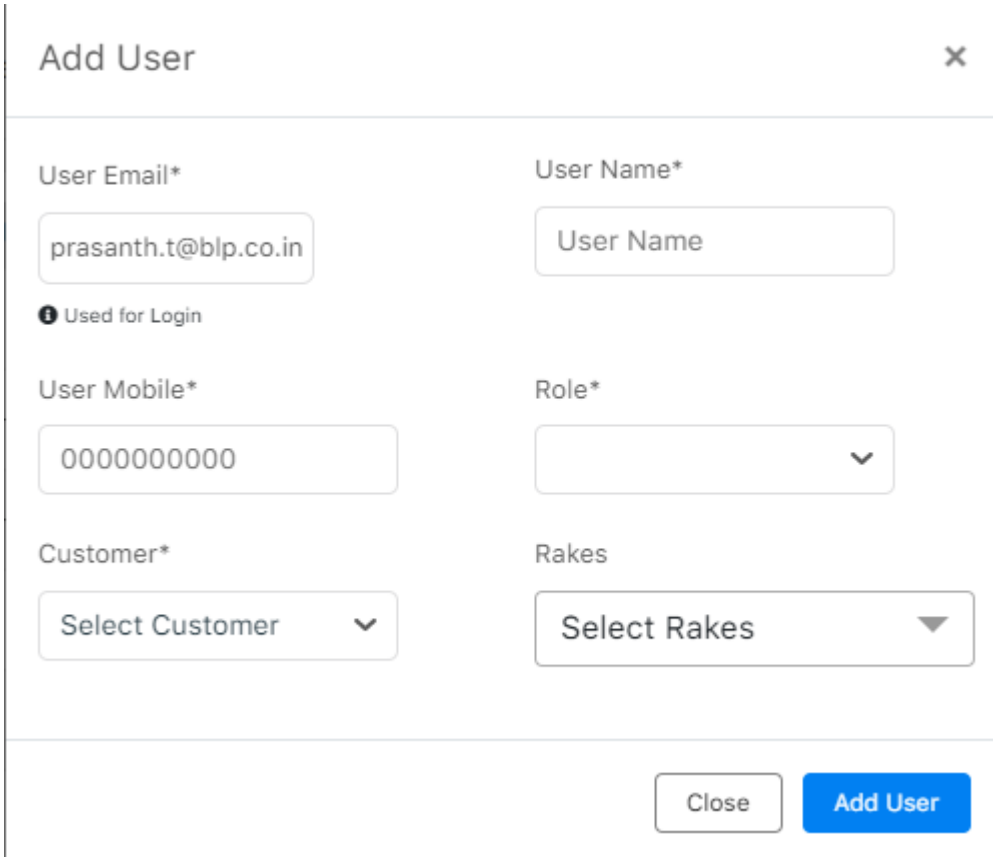
This screen explain details of user created the super admin or admin like SI NO,User name, Customer name, Role, User Email, User mobile and action. Apart from that we have drop-down functionality of customer selection, search functionality.

Steps to create User and assigning the Role:

- Enter the functional Email id in give below screen:



Click on send OTP



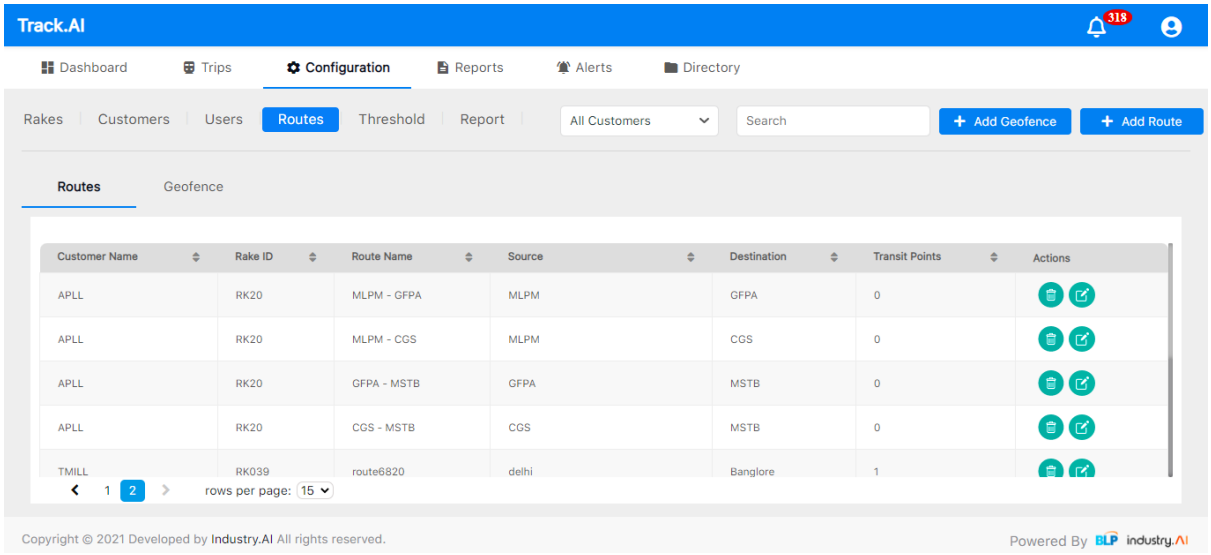
Enter the following details:

- Enter User Name
- Enter the user mobile
- Select the role you want to give the user
- Select the customer for which you want to create the user
- Select the Rake you want to assign the user
- Click on add user

You can see the user details in user listing page.

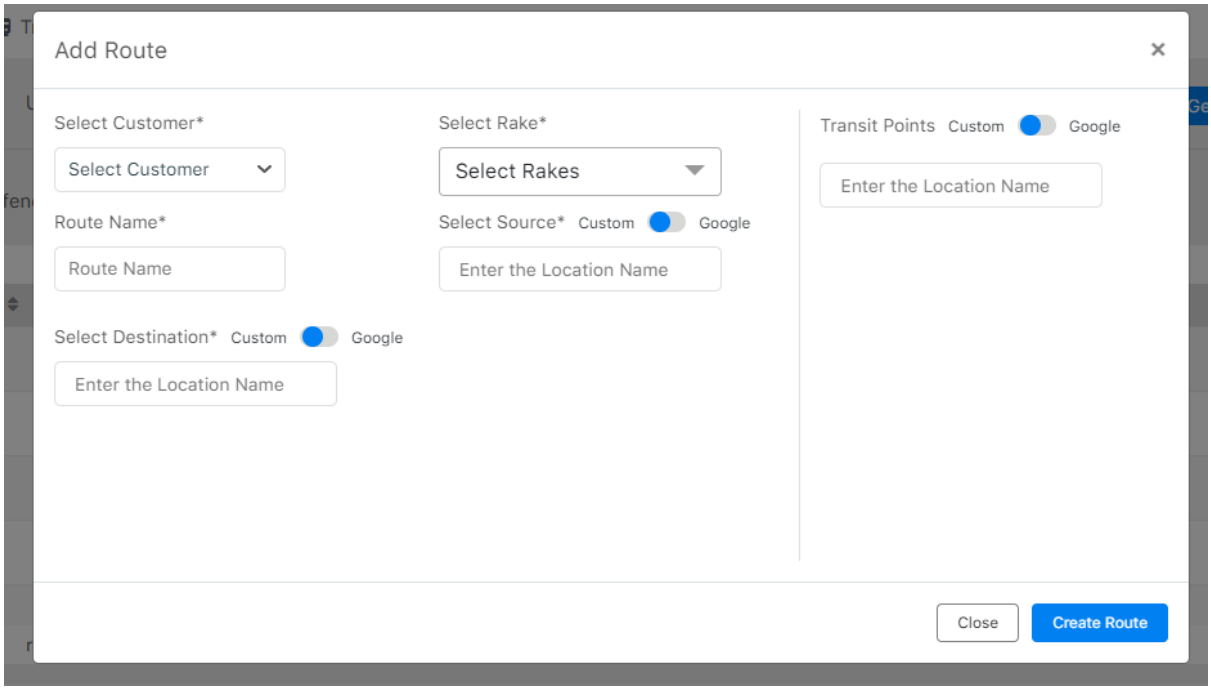
Routes configurations:

In this configuration we have a functionality of "add Route" and "Add Geofence". Apart from that we have pagination functionality. Route is generally created for auto trip as per customer requirement.



Steps to create Routes:

Click on add Routes Button you will get below screen:



- Select the customer you want to create the Route
- Select the Rake assigned to that customer
- Enter route name
- Enter the source location name
- Enter the destination location name
- Enter the transit points
- Click on create Route

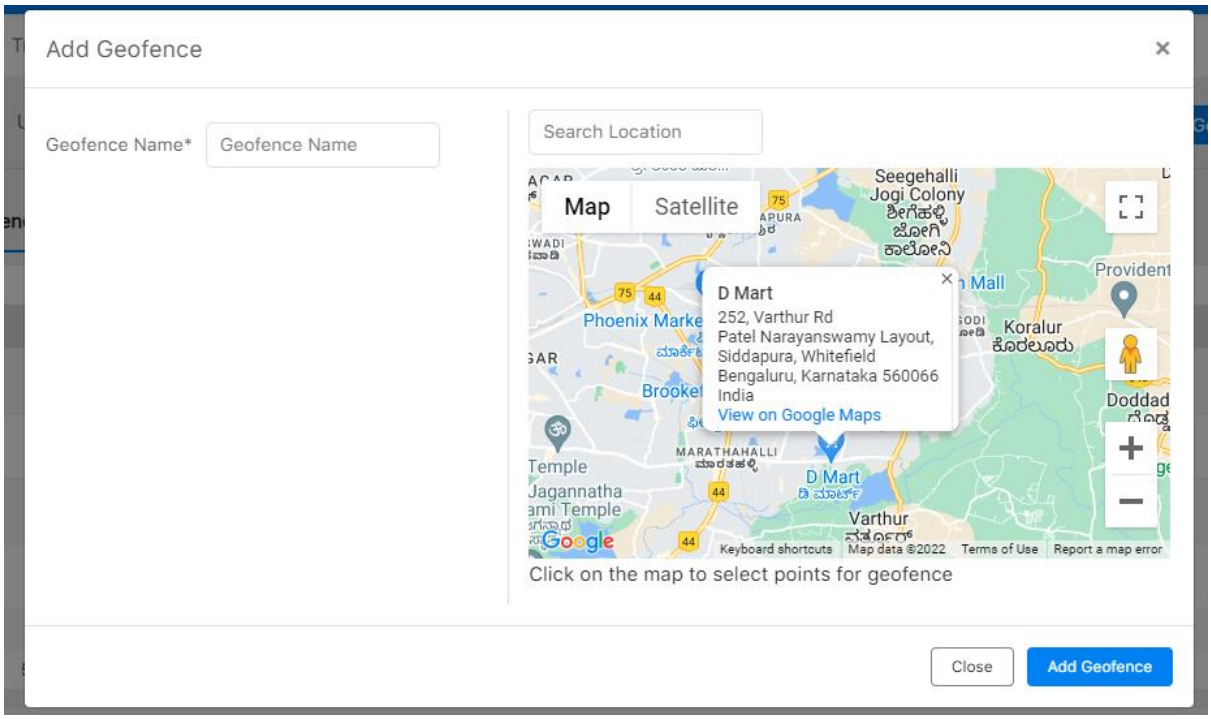
You can see newly created Route in Route screen

Geofence configuration: Geofence is generally used to create for get the alert while going out from the created geofence. Already created geofence is used for manual trip

creation as a source and destination and customer agree on that. List of created geofence can be seen the source and destination of manual trip creation.

Please follow below steps to create Geofence:

Click on "Add Geofence" you will get below screen



- Enter the Geofence name
- Search the location
- Click on locations (Map my India) you want to create the Geofence
- Click on "Add Geofence"
- You can see the created Geofence in Geofence listing page
- If You want to reset the selected location you can click on reset button

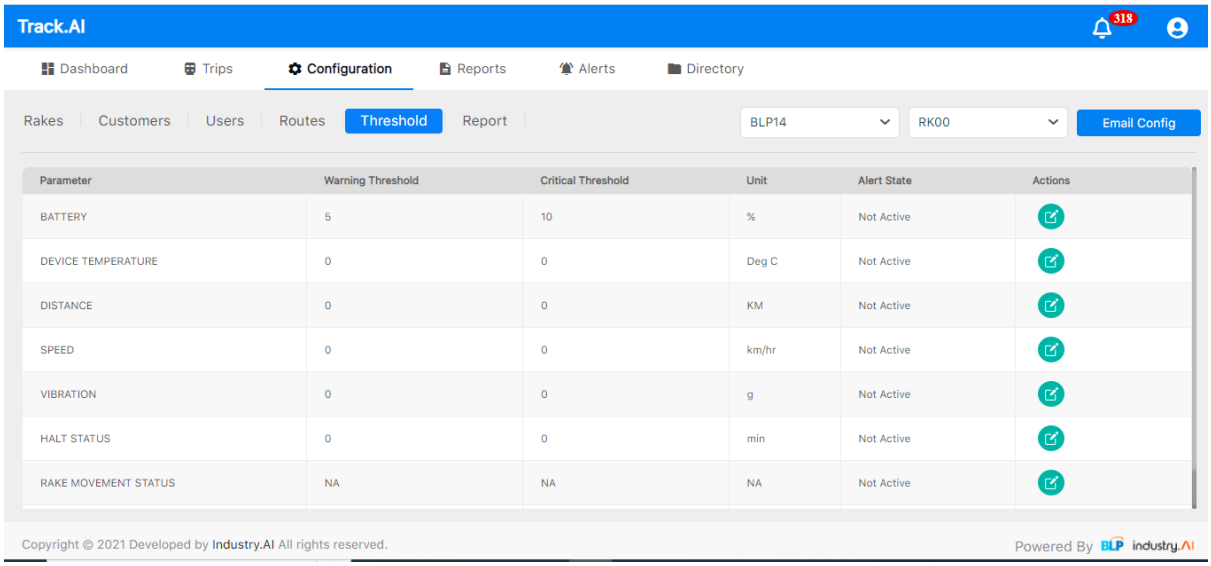
Threshold Configurations:

The below mentioned screen indicates Threshold of different parameter like Battery, Device temperature, Distance, Speed, Vibration, Halt Status, Rake movement Status, Geofence status. You can set warning threshold as well as Critical Threshold.

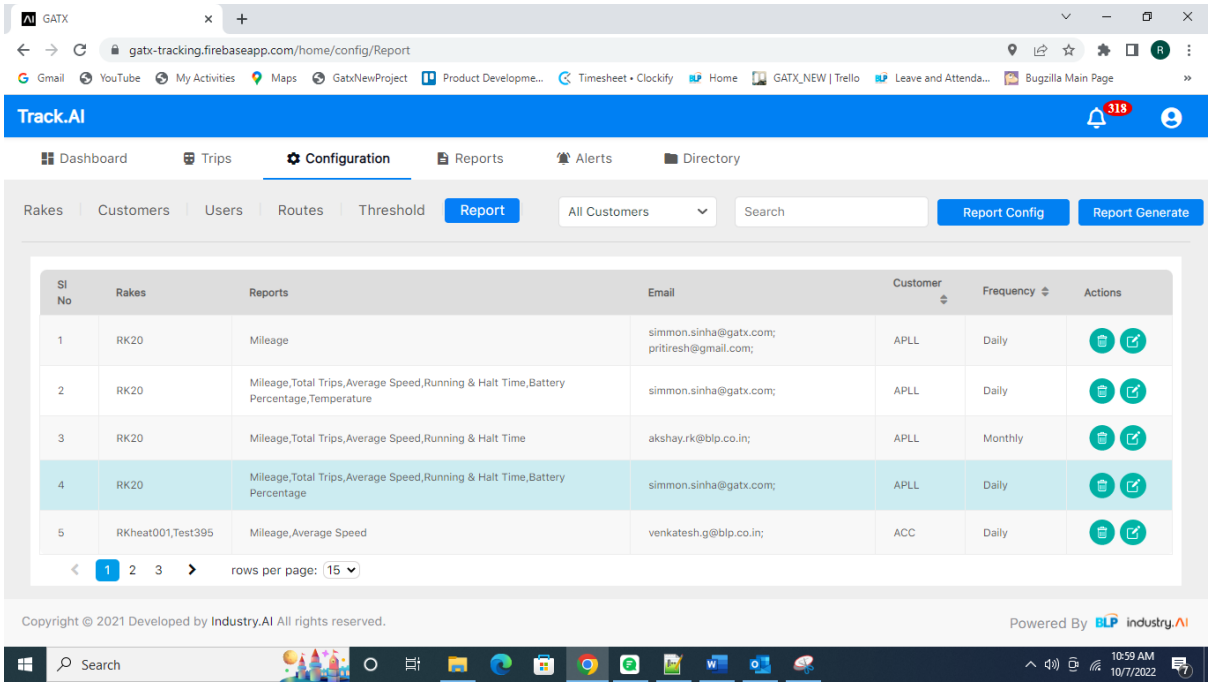
Through Action button you can manually configure the threshold (Can set the Threshold and can activate the alert).

Through Email configure button you can configure the mail to respecting mail id.

Screenshot:



Report Configuration:



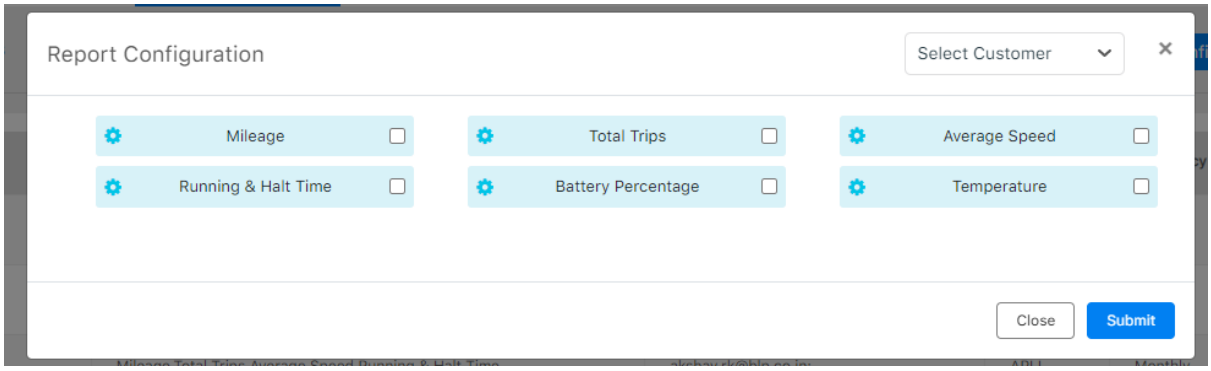
In this screen we can see the Rake, Reports type, Email assigned, Customer, frequency of reports, and Action button. We have a pagination functionality as well.

We have majorly two functionalities:

- **Report Config**
- **Report Generate**

Steps to Report Config:

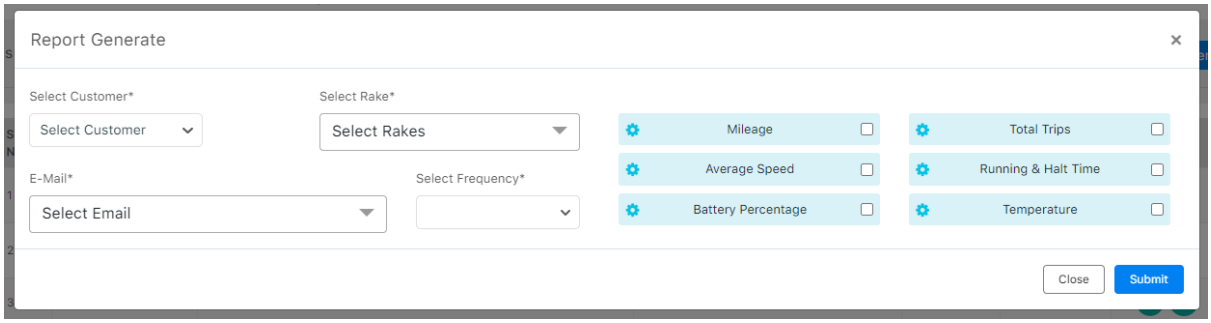
Click on Report Config button you will get below screen:



- Select the customer from drop down you want to configure the report:
- Check the button you want to get the reports for that particular customer
- Click on submit
- Your report configuration done

Generate Report:

To generate the Report, click on "Generate Report" you will get below screen:

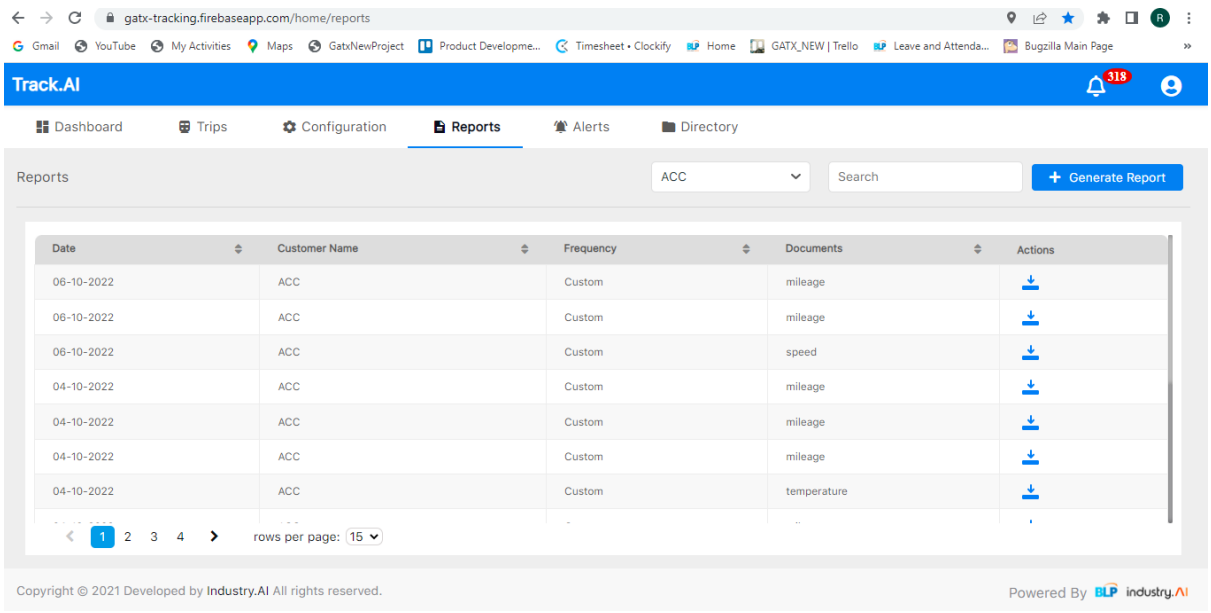


- Select the customer from drop down
- Select the Rake
- Select the Email Id
- Select the frequency you want the report
- Check the Reports you want to generate
- And click on submit

User will receive the mail according to the configured item:

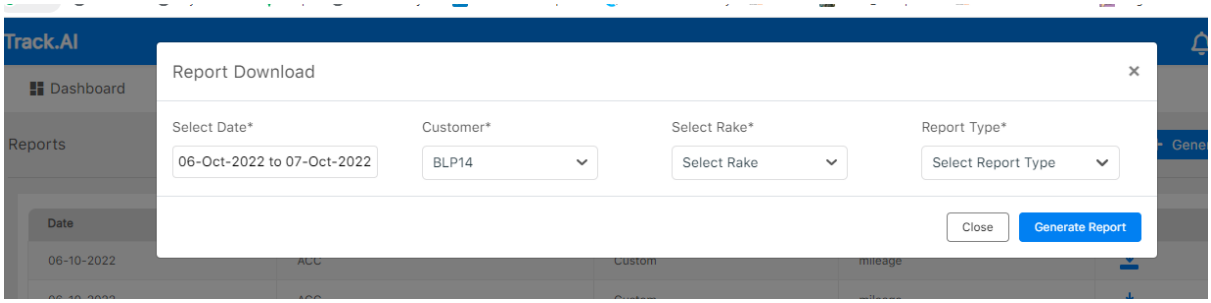
Reports:

In this screen we have drop-down for customer selection, search functionality Pagination functionality:



Steps to generate the Reports:

- Click on "Generate Report" you will get below screen:

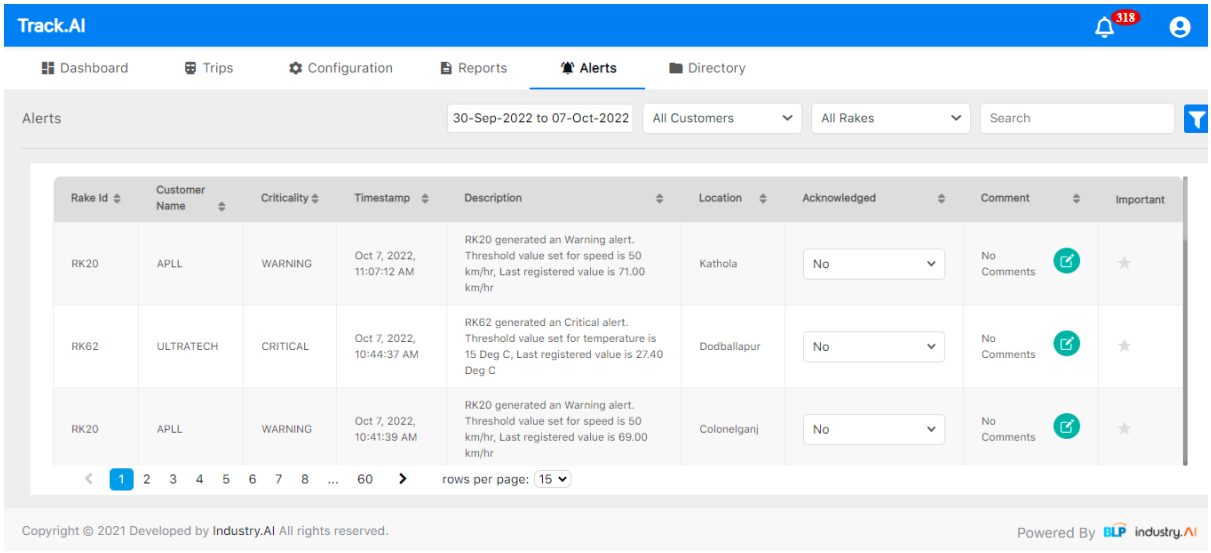


- Select the date Range
- Select the customer
- Select the Rake
- Select the Report Type
- Click on Generate Report

You will get one pop up message that "Your report is getting generated" and reports you can see in report listing page.

Alert Screen:

In this screen we have multiple functionalities Like date selection, Customer selection drop-down, Rake selection drop-down and search functionality.



This page also explains Rake id, Customer details, criticality of alert, Description of alert, location where alert generated, Acknowledged functionality.

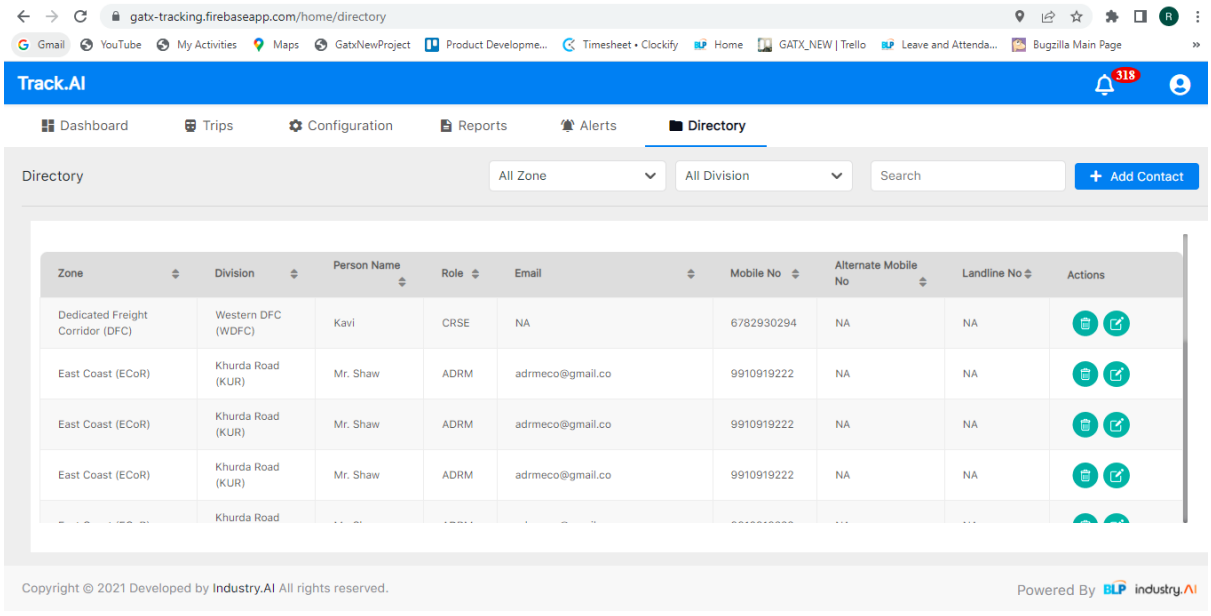
We can put the comment under comment section. We can mark importance of alert by clicking on "*". We can navigate the page by using pagination functionality.

Directory:

In this page we have a functionality of "zone selection drop-down "Division selection

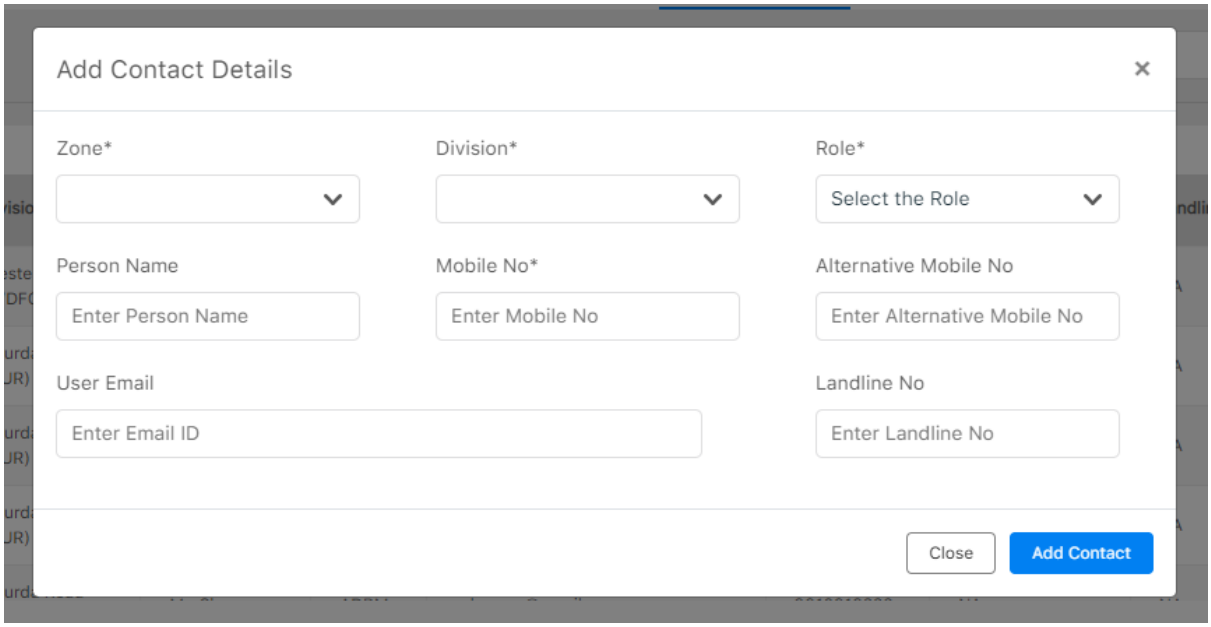
Under listing page, we have Zone, Division, Person Name, Role, Email, Mobile and Actions:

We have "Add Contact" functionality as well.



Steps to add contact:

- Click on Add Contact button you will get below screen:

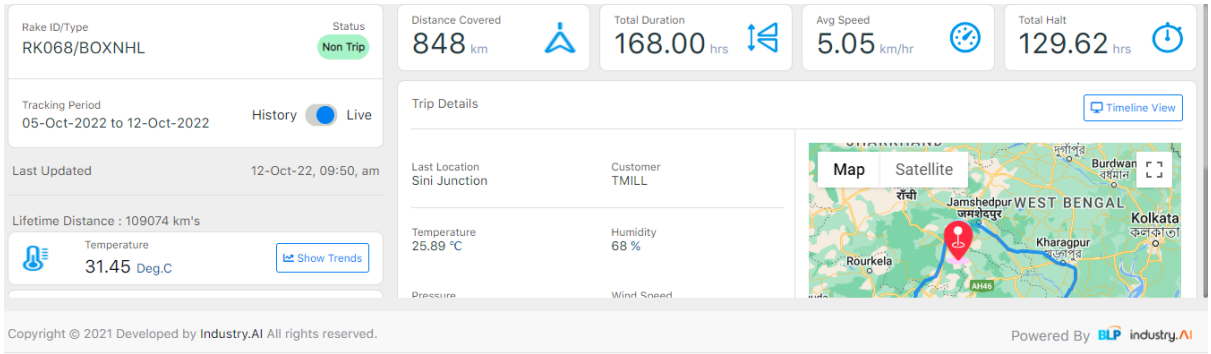


- Select the zone
- Select the division
- Select the predefined Role You want to give
- Enter Person Name
- Enter the Mobile Number
- Enter the User Email
- Enter the Alternate Mobile number
- Click on add contact button

Your contacts will be visible on Directory page.

KPI:

KPI used in Rake Details page:



- Distance covered: By default, we are showing last 7 days data that is captured through that particular Rake id in live view. As per customer requirement we can saw maximum 60 days data in the form of Historical view
- Total Duration: This KPI indicate that how time Rake/wagon has to reach the destination. For live view we are showing last 7 days data

- Average Speed: Through this KPI we are showing Average speed of Wagon by using total distance covered the Rake/Wagon and Average time taken(hr)to reach the destination.

Formula

Average Speed= (Total distance covered(km))/ (Total Avg Time in hr.)

In live view we are verifying last 7-day data for this particular page and Historical maximum we can show last 60 days.

- Total Halt: This is the halt hour during moving wagon. Halt hour we can get by using the timeline view document.

Formula

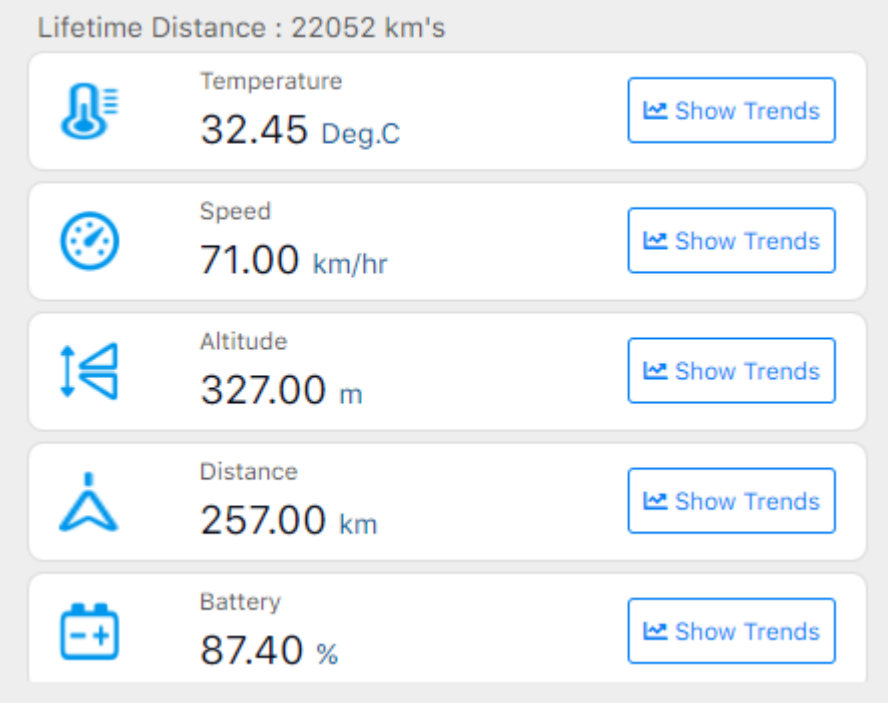
Halt Hour = (Standing timestamp) – (Moving timestamp).

Timestamp	Rake ID	Location	Railway Zone	Distance	Temperature	Battery	Altitude	Speed	Vibration	Status
10/12/22, 9:50 AM	RK068	Sini Junction	South Eastern Railway (SER)	848 km's	31.45 Deg C	55.9 %	174 M	50 km/hr	NA	moving
10/12/22, 8:51 AM	RK068	Sini Junction	South Eastern Railway (SER)	847 km's	26.75 Deg C	55.7 %	215 M	0 km/hr	NA	standing

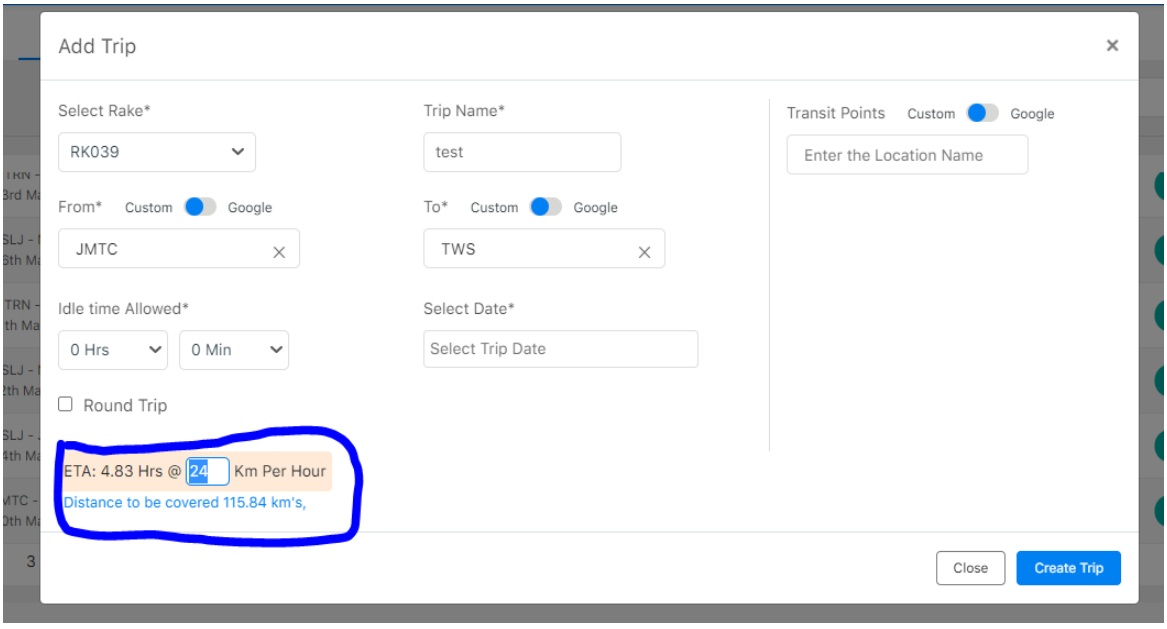
- Lifetime Distance: The total distance travelled by the Rake since it is installed.
- Temperature: There is two types of temperature one is weather and one is Rake device. Weather temperature directly used to come from weather API implemented in our application and device temp used to come from device sensor
- Humidity: This value is also coming from weather API.
- Pressure: This value is also coming from weather API.
- Wind Speed: This value is also coming from weather API.

Below shown KPI belongs to device installed in Wagon:

All the KPI values shown is the Screen is directly coming from Sensor



- ETA: Based on Total distance from source and destination and Average speed of the Rake/Wagon we used to calculate the ETA.As per current customer requirement for Moving Rake this calculation will happen based on historical value and for manual trip creation it is editable. Below screenshot is for better understanding:



Reports Page KPI

- **Mileage:** We are showing here Average milage day wise, week wise and month wise

Total Avg Distance: Average distance covered during selected Time range, it can be for one, one week, months according to customer requirement

Formula

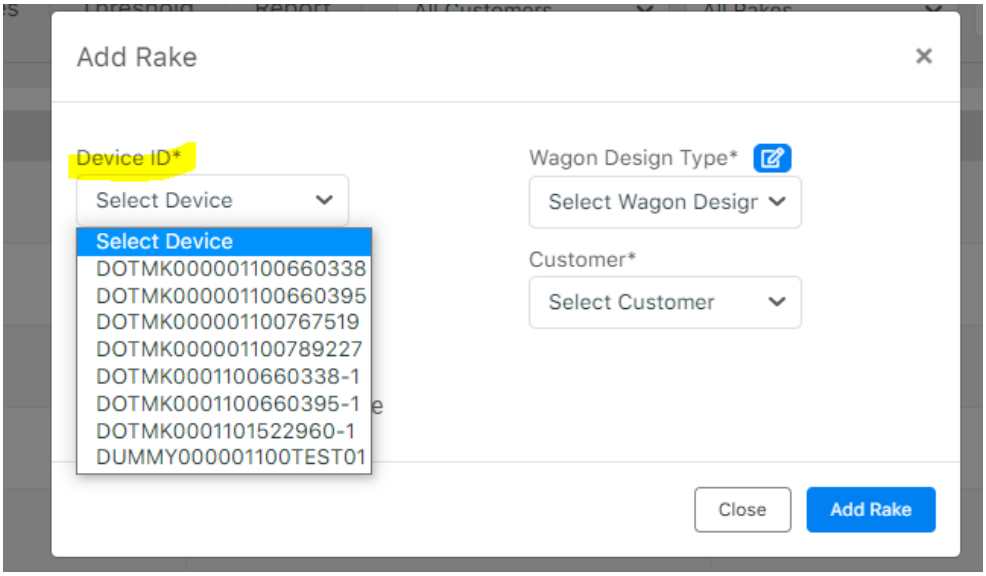
Average Mileage per day(km/hr): = (Total Distance covered for the selected time range)/ (Total days in between that time range)
Average Mileage per Week(km/hr): = ((Total Distance covered for the selected time range)/(Total week during that time range)
Average Mileage per month(km/hr): = ((Total Distance covered for the selected time range)/(Total month during that time range)
Cumulative Mileage: This is total mileage based on selected time range and based on historical data.

- **Speed:** We are showing here Average Speed Day wise, week wise and month wise

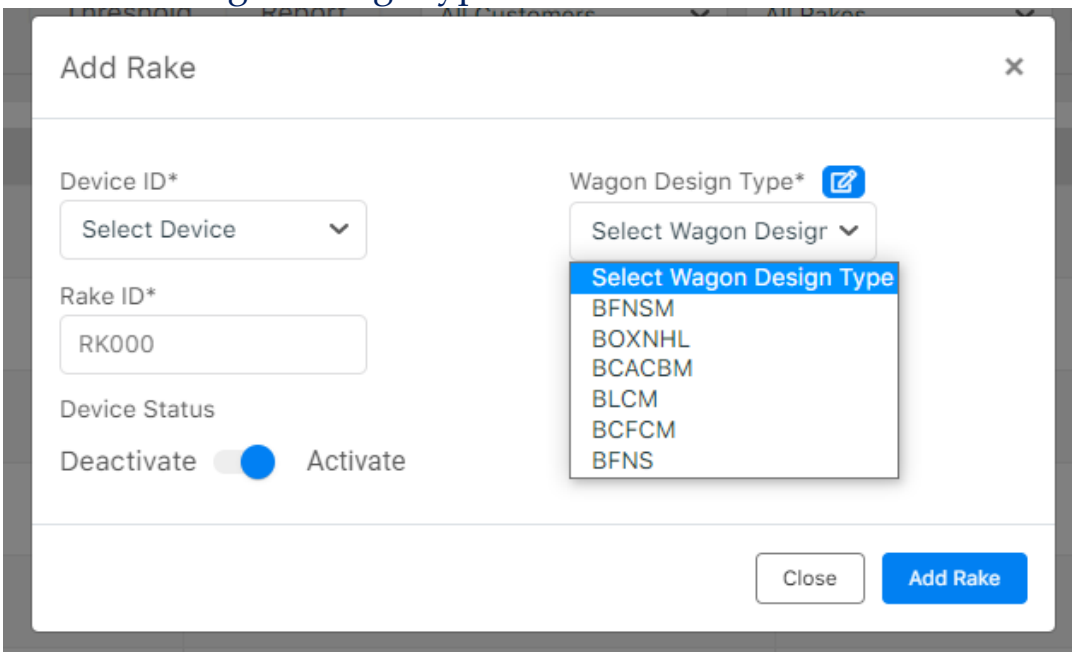
Formula

Average Speed per day(km/hr.): = (Total Distance covered for the selected time range)/ (Total days in between that time range)
Max speed/day: This is the maximum speed achieved by the wagon on that particular day
Min Speed/day: This is the Minimum speed achieved by the wagon on that particular day. It could be zero as well if the wagon is not moving

Functional DOT Devices:

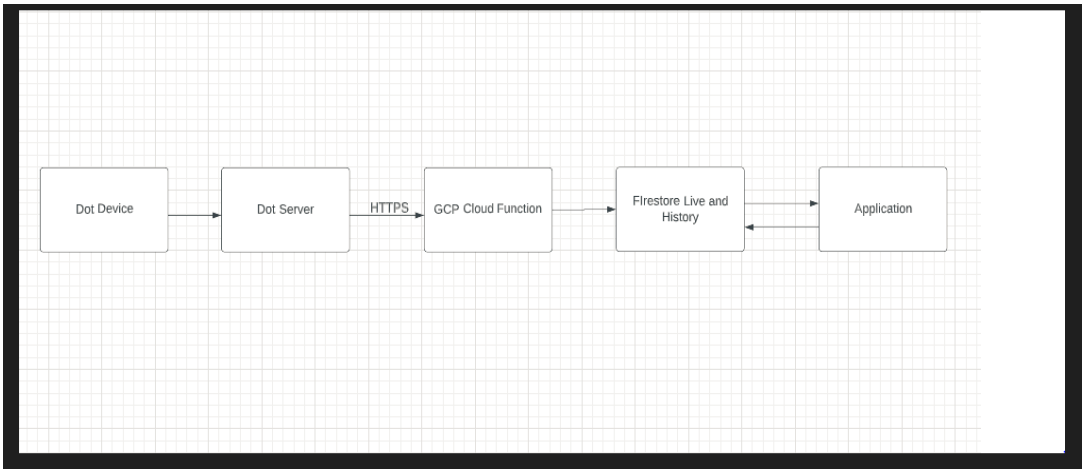


Available Wagon Design type:



Architecture Diagram:

Below is Architecture Diagram of the GATX Application



Technologies used in GATX Application:

Back-End: Node JS
Front-End: Angular

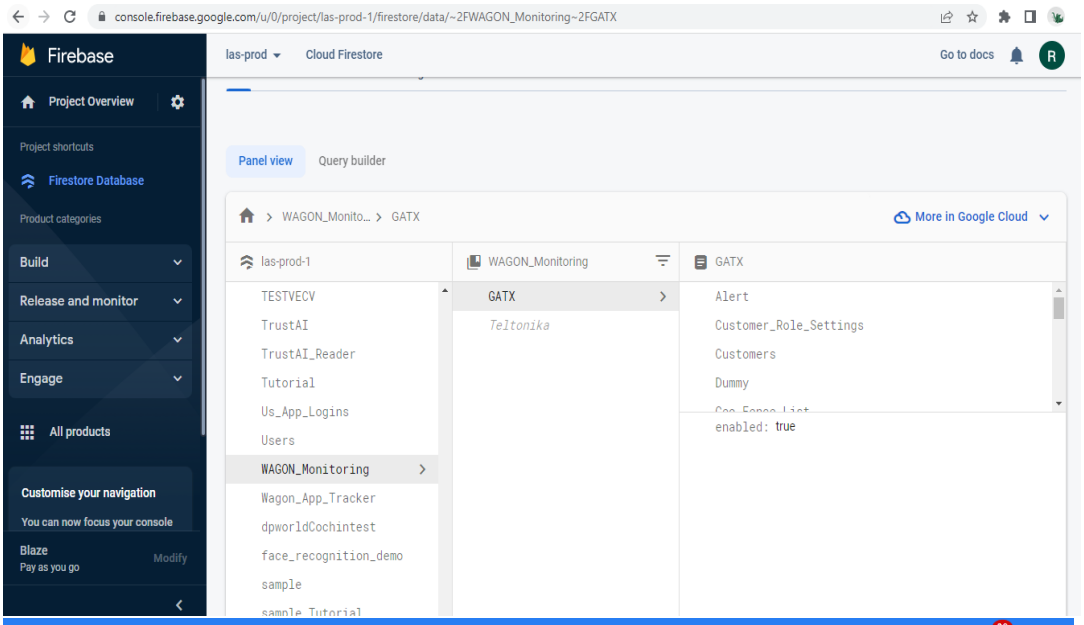
DATABASE: Fire store

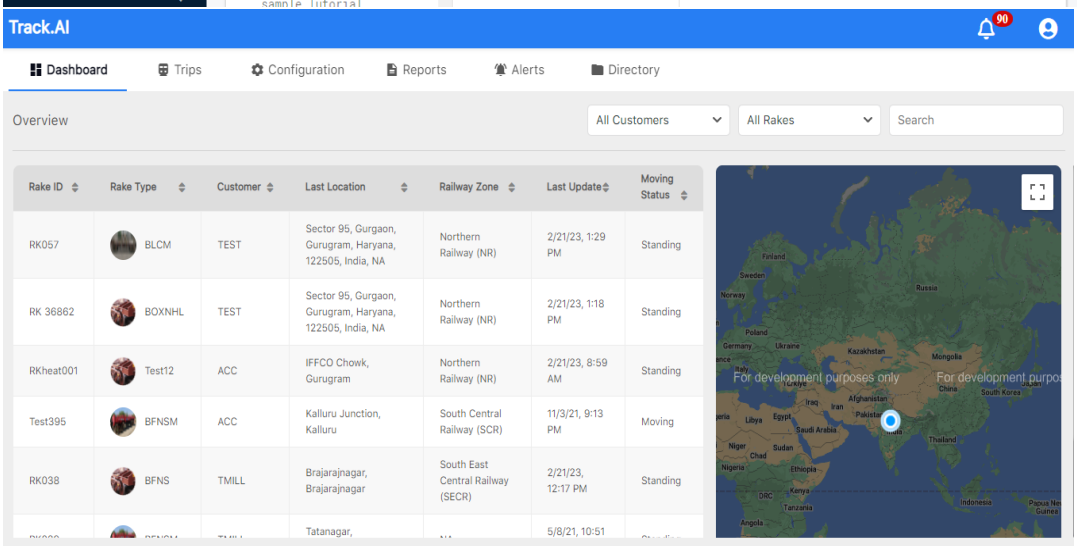
Database Mapping:

URL: URL of cloud database

Collection Name	UI Menu	URL Mapping
`Alert`	Alerts page	URL of respective page
`Customer_Role_Settings`	Add user	URL of respective page
`Customers`	`Customers`	URL of respective page
`Geo_Fence_List`	Geofence	URL of respective page
`HistoricalTrip_Details`	Trips	URL of respective page

HistoryData		Sensor data for custom date range
LiveData		Sensor data for 15 min frequency
Railway_Official_Contacts	Directory	URL of respective page
Railway_Zone	Zone drop-down	URL of respective page
Rakes	Config/rake	URL of respective page
ReportConfig	Config/Report	URL of respective page
ReportGenerate	Report	URL of respective page
Reports_Info		User who is generating the report
Route_List		URL of respective page
Sensel_HistoryData		**NA**
Sensel_LiveData		**NA**
Threshold		URL of respective page
Trips		URL of respective page
Users		URL of respective page
Wagon_Design_Type		URL of respective page


console.firebase.google.com/u/0/project/las-prod-1/firestore/data/~2FWAGON_Monitoring~2FGATX
Firebase
las-prod
Cloud Firestore
Go to docs
Project Overview
Project shortcuts
Firestore Database
Product categories
Build
Release and monitor
Analytics
Engage
All products
Customise your navigation
You can now focus your console
Blaze
Pay as you go
Modify
Panel view
Query builder
WAGON_Monito...
GATX
More in Google Cloud
las-prod-1
WAGON_Monitoring
GATX
TESTVECV
TrustAI
TrustAI_Reader
Tutorial
Us_App_Logins
Users
WAGON_Monitoring
Wagon_App_Tracker
dpworldCochintest
face_recognition_demo
sample
Teltonika
Alert
Customer_Role_Settings
Customers
Dummy
enabled: true


Track.AI
Dashboard
Trips
Configuration
Reports
Alerts
Directory
Overview
All Customers
All Rakes
Search
Rake ID
Rake Type
Customer
Last Location
Railway Zone
Last Update
Moving Status
RK057
BLCM
TEST
Sector 95, Gurgaon, Gurugram, Haryana, 122505, India, NA
Northern Railway (NR)
2/21/23, 1:29 PM
Standing
RK 36862
BOXNHL
TEST
Sector 95, Gurgaon, Gurugram, Haryana, 122505, India, NA
Northern Railway (NR)
2/21/23, 1:18 PM
Standing
RKheat001
Test12
ACC
IFFCO Chowk, Gurugram
Northern Railway (NR)
2/21/23, 8:59 AM
Standing
Test395
BFNSM
ACC
Kalluru Junction, Kalluru
South Central Railway (SCR)
11/3/21, 9:13 PM
Moving
RK038
BFNS
TMILL
Brajarajnagar, Brajarajnagar
South East Central Railway (SECR)
2/21/23, 12:17 PM
Standing
Tatanagar,
5/8/21, 10:51
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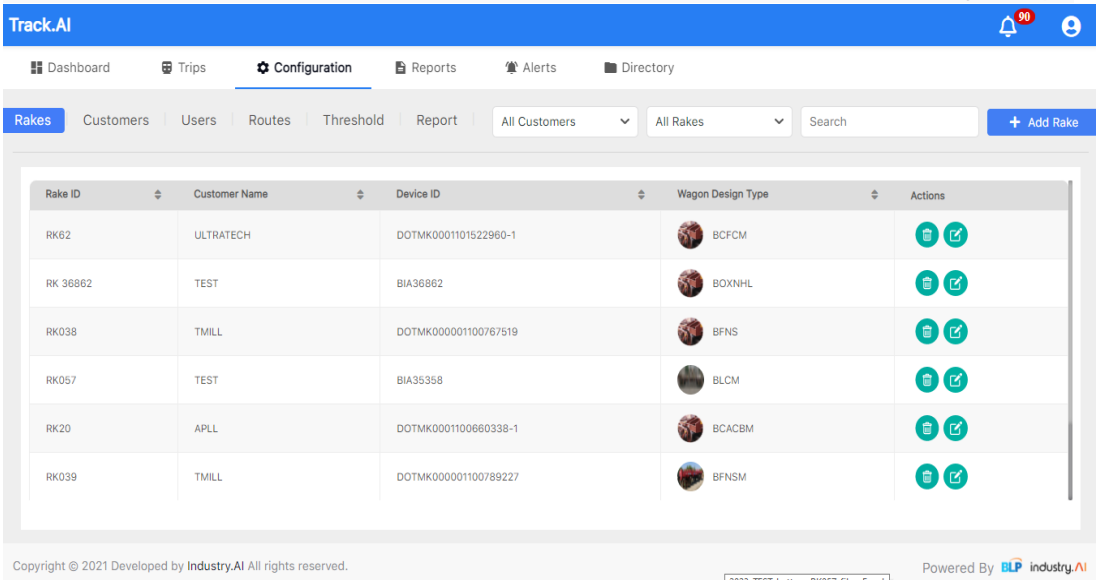
Track.AI
Dashboard
Trips
Configuration
Reports
Alerts
Directory
Rakes
Customers
Users
Routes
Threshold
Report
All Customers
All Rakes
Search
+ Add Rake
Rake ID
Customer Name
Device ID
Wagon Design Type
Actions
RK62
ULTRATECH
DOTMK0001101522960-1
BCFCM
RK 36862
TEST
BIA36862
BOXNHL
RK038
TMILL
DOTMK000001100767519
BFNS
RK057
TEST
BIA35358
BLCM
RK20
APLL
DOTMK0001100660338-1
BCACBM
RK039
TMILL
DOTMK000001100789227
BFNSM
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