Ride With Me

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Motivation & Objective

There are three major ride-hailing apps dominating the Singaporean market: Grab, ComfortDelgro, and Gojek. Grab is the most popular, with a 74% usage rate compared to ComfortDelgro's 12% and Gojek's 11%. Grab has introduced a surge pricing model that has made ride-hailing very expensive.

The project's goal is to create a cloud-based application called "Ride with Me" that allows users to carpool with others heading in the same direction, providing a more cost-effective option.

Target Users

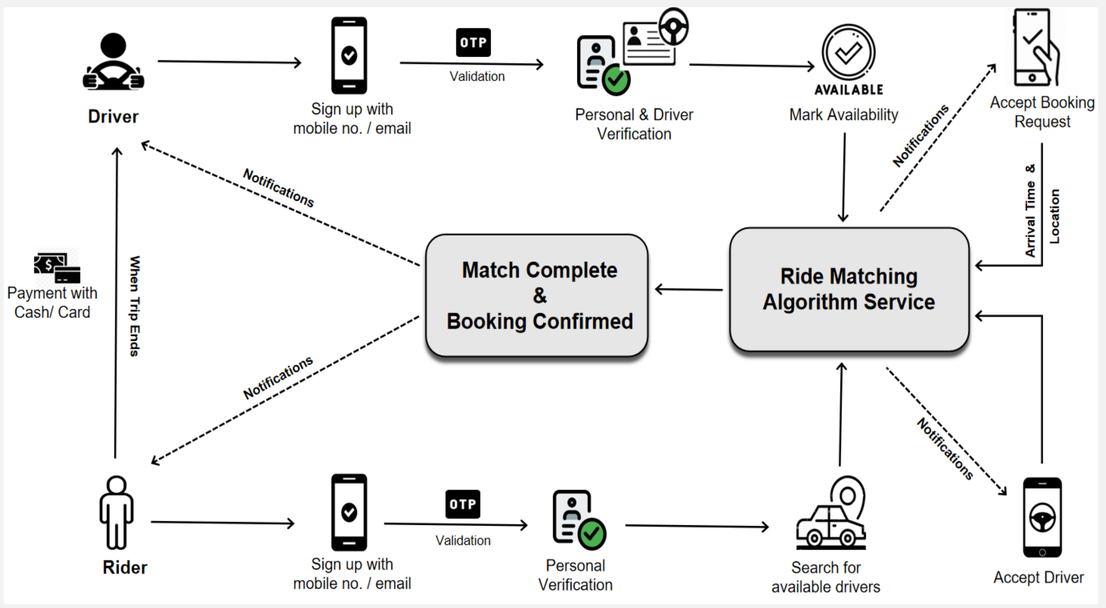
The best opportunity for car-pooling is usually on weekday mornings and evenings when there is a large movement of people and traffic across various locations in Singapore. This movement is a consequence of professionals heading to or returning from their workplace. Hence, our main target users are professionals and young adults.
Professionals who own cars and drive to work will form the driver customer base. On the passenger front, professionals and young adults who are early on in their careers and prefer an economical ride will form the passenger customer base.

Approach

Main components:

- Front-end user interface (UI)
  - Module for user authentication – allows drivers and riders to register for a new account or login to an existing one. This includes a form to enter user and account details.
  - Module to request for a driver or rider – allows users to enter their trip information (start and end locations) and the desired pick-up time. Based on the routing algorithm, users are given an option choose their driver / rider and confirm their choice.
- Back-end application logic
  - Module for user authentication – invokes a user registration API which stores user and account details into a database and a login API which reads from the database to verify login credentials.
  - Module for route matching – takes the users' start and end locations as inputs and invokes Google's Routes API which provides distance and travel time information. Module for user notifications – based on the route matching results, this module sends information to a server .Based on that, notifications are sent to drivers and riders through the application.
- Data storage
  - Module for relational database service (RDS) – stores user and transactional data used by *Ride with Me*

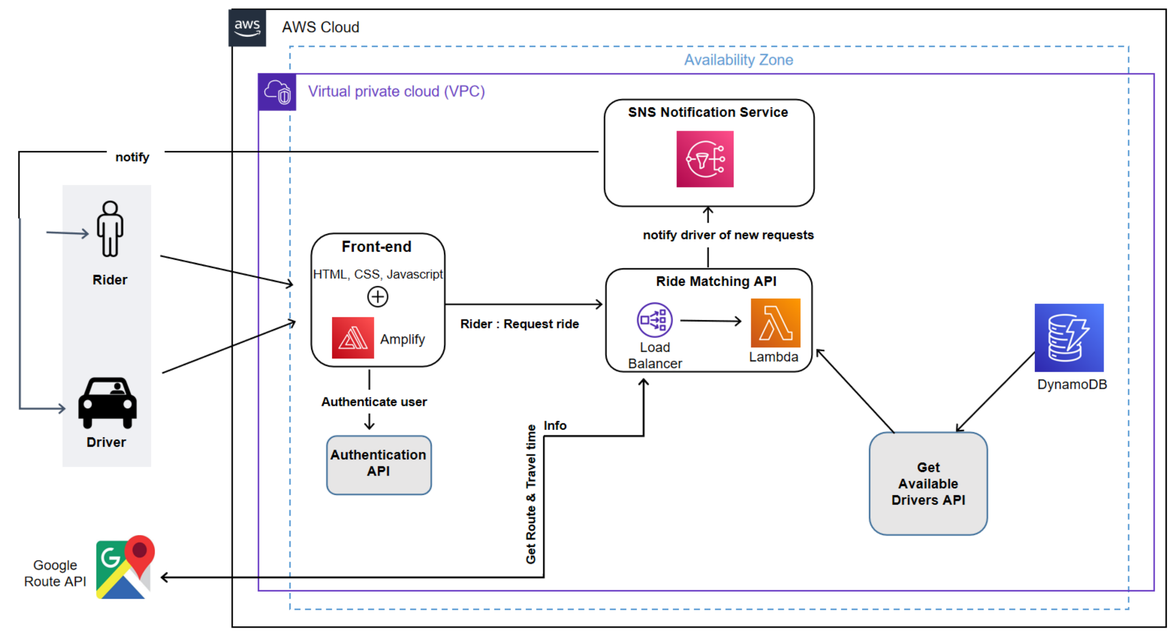
User Journey



Implementation

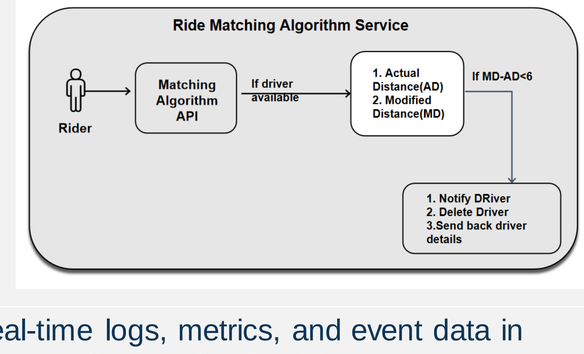
***Ride With Me* is a SaaS application implemented using AWS services. The Front-end UI is created using HTML,CSS and Javascript.**

Google Routes API	The Google Routes API helps find the ideal route from point A to B, calculates ETAs and distances for matrices of origin and destination locations.
AWS API Gateway	We use API Gateway as the bi-directional interface to connect the front-end to the back-end logic.
AWS Amplify	It enables web and mobile application developers to easily create, deploy, and manage scalable and secure cloud-powered applications. We used Amplify to host our front-end UI code. It uses Elastic Load Balancing (ELB) to distribute incoming traffic to multiple instances of the application
AWS Lambda	It is used to implement back- end logics & calls different API services. We use Lambda to handle the POST and GET requests sent from Amplify via API Gateway, including getting the starting and final destination of users from DynamoDB and matching drivers with riders. It provides auto-scaling capabilities to the application.
AWS DynamoDB	We use DynamoDB to store our users' and cars' information. This includes the user's name, mobile number and email, among others. For the cars, this includes the license plate number and model, among others.
AWS SNS	We use AWS Simple Notification Service(SNS) as a reliable and scalable way to send notifications to drivers and riders.



System architecture

Project Demo - https://main.dsonn1b7hjj5h.amplifyapp.com/



AWS CloudWatch	It collects and visualizes real-time logs, metrics, and event data in automated dashboards to streamline application infrastructure and maintenance.

Revenue Model

The primary mode of revenue will be through a commission on each trip facilitated by our platform. This would be in the form of a 10% fee applied on the payment received by the driver.

Secondly, we also propose a freemium model where the basic service of requesting for a car-pooling driver or rider is free but a fee applies to premium services such as package delivery.

Lastly, we propose to charge companies on a pay-as-you-use basis depending on the number of their employees using *Ride with Me*.