**Ground Transportation System for Employers**

Some companies have the responsibility of transportation of employees. Such employers need a way to calculate the cost of providing this service to all or some employees. Some employees may live in the same area as other employees and hence they can travel together to save the company some money. This system provides the cost of this service depending on the type of vehicle used, number of vehicles needed, and the distance between the company and the area where a set of employees need to go.

The distributed Ground Transportation System provides the ability for companies to offer transportation of employees using one of three transportation types of vehicles. The types are a motorcycle, cab, or a bus. Each type has a different capacity with a standard rate per distance. The distance is based on zones. A zone is a location identifier that is assigned to the physical addresses (address of company as well as address of employees). The price is based on the distance i.e. zone to zone and type of vehicle.

This distributed system uses the following distributed objects:

*Company*:

The Company is a client in the system that has employees that need transportation. When the client starts the company generates/registers the number of employees with their address details (automatic random generation including the location of that company). This data is stored in the database. The company has an option to select the type of vehicle and also number of employees need transportation. The system then contacts the TMS object and a cost is returned. Since this is the client in our distributed system, it can have multiple instances.

*Transportation Management System (TMS)*:

The TMS has communication with three service providers which provide their own service. For example a cab service provider provides transportation using cabs only. Now, on receiving the request from the Client/Company, based on client’s choice of vehicle type TMS forwards the request to the service provider. TMS has contact with a public API to access weather information. If it is raining it will not forward the request to the motorcycle service provider since it cannot operate in the rain.

*Database*:

This object is responsible for generating/registering employees into the database for each client. It will also be used as the skeleton for interaction with the database.

*CabServices*:

This object will calculate how many cabs are needed to transport from one zone to another and the total cost. It has access to the database and can calculate cost of transport for all employees in each zone for all zones. A vehicle travels only to one zone.

*Motorcycle Services*:

This object will calculate how many motorcycles are needed to transport from one zone to another and the total cost. This type of vehicle cannot operate in the rain. It has access to the database and can calculate cost of transport for all employees in each zone for all zones. A vehicle travels only to one zone.

*BusServices*:

This object will calculate how many buses are needed to transport from one zone to another and the total cost. It has access to the database and can calculate cost of transport for all employees in each zone for all zones. A vehicle travels only to one zone.

The Ground Transportation System does utilize a public API. The system will use a public API from a weather service to determine if the vehicle can operate in current weather conditions.