Requirement Analysis and Specification Document

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Introduction

1.1 Purpose

This document aims to describe, specify and analyze the software requirements for *My Taxi Service.*
My Taxi Service is needed to provide a passenger-friendly interface to interact with the city's taxi service, and ensure a fair management of the city-wide taxi deployment.

1.2 Scope

The passengers should be able to use an application (either mobile or browser based) to request a taxi through the system, which in turn should answer with the ETA and identification code of the incoming tax.
The passengers should be compelled to provide their current location to the system, for their request to be accepted.
The taxi drivers should be able to use a mobile application to communicate their availability to the system, and accept or refuse incoming calls.
The system shall manage a queue of taxis for each taxi zone[1].
The system shall receive GPS location data from each taxi, and use that information to assign each taxi to a taxi zone; an available taxi is automatically placed into the taxi queue belonging to the taxi zone it currently occupies.
The system shall remove a taxi from the queue upon receiving a confirmation in which the driver accepts an incoming call; a further confirmation is also sent back to the driver. If a taxi (driver) does, on the other hand, refuse an incoming call, the system shall move it to the bottom of its taxi queue.
The system matches a passenger's position to a taxi zone, and uses that information to forward the call to the first taxi available in the relative taxi queue.
The system shall provide an Application Programming Interface, to make room for future improvements.

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[1]Partition of the city

1.3   Goals

The passengers must be able to:

G1 Transmit its position and the desired destination to the system, thus initiating the Request of a taxi

G2 Receive the code and the ETA of the incoming taxi

G3 Reserve a taxi for a certain time

G4 Request a shared ride

G5 Receive the fee amount he need to pay in case of a shared ride

The taxi driver must be able to:

G6 Answer a passenger request

G7 Render him/herself available to the scheduler

G8 Render him/herself unavailable to the scheduler

G9 Receive informations about the fees of the passengers in case of shared ride

The system must be able to:

G10 Offer a programmatic interface to enable the development of additional services

1.4   Definitions, Acronyms and Abbreviations

Passenger: the person who needs to call a taxi.

System: the automatic part that manages the service.

ETA: estimated time of arrival.

Taxi zones: the geographical partition of the city, non overlapping, with and average size of $2Km^2$.

Queue: a list of available taxis in the corresponding taxi zone. It is managed as a FIFO queue.

GPS: global position system.

Shared ride: a passenger shares the ride with other peoples that start from the same zone, and go to the same direction

1.5 Reference documents

1.6 Overview

Overall description

Specific requirements