SE2 Requirement Analysis and Specification Document

Edoardo Giacomello Mattia Fontana

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1 Introduction

1.1 Purpose

This document represents the Requirement Analysis and Specification Document (RASD). The main goal of this document is to completely describe the system in terms of functional and non-functional requirements, analyse the real need of the customer to modelling the system, show the constraints and the limit of the software and simulate the typical use cases that will occur after the development. This document is intended to all developer and programmer who have to implement the requirements, to system analyst who want to integrate other system with this one, and could be used as a contractual basis between the customer and the developer.

1.2 Scope

The scope of MyTaxiService is to manage a taxi service in a more efficient way, along with an emprovement in the interaction between the customers and the service providers.
In particular, the following goals have be highlighted by the stakeholders:

1.2.1 Goals

1. Providing the passenger a ***simplified access*** for making real-time request for the taxi service, according to appropriate ***usability metrics***.
2. Providing the passenger the possibility to reserve a taxi for a later moment.
3. Providing the passenger a clear confirmation of the taxi ride hes requesting for.
4. Providing the passenger an estimation of the waiting time for a taxi ride.
5. Providing the taxi drivers a ***simplified access*** for receiving and handling transportation requests from the passengers.
6. Guaranteeing a fair management of the taxi queue, in term of minimizing the passenger ***waiting time***.
7. Providing ***system developers*** a programmatic interface to further extend the system.

1.2.2 Actors and Stakeholders

Customer The person(s) who requested the developing of the system. Also referred as Government in the assignment text.

Passenger The person who avails of the taxi service, in particular those who make a request for a Taxi ride.

Taxi Driver The employee which is in charge to meet the passenger and take him to the desired location

User General term for describing whoever interacts with the system interfaces. It can be a passenger, a taxi driver, a system developer, a system administrator, etc.

System Developers The persons which are qualified and in charge to extend the present system with additional features or services

1.3 Definitions, Acronyms, Abbreviations

1.3.1 Definitions

Simplified Access Human-to-Machine interaction that satisfy some usability metrics

Usability Metric Precise measurable requirements that an interface has to satisfy in order to provide an efficient and easy experience to the user.

Waiting time Time in minutes between the submission of a request and the arrival of a taxi.

1.3.2 Acronyms

1.3.3 Abbreviations

1.4 Reference Documents

- Specification Document: Assignments 1 and 2 (RASD and DD).pdf.
- Specification Document:Project Description And Rules.pdf
- IEEE Std 830-1998 IEEE Recommended Practice for Software Requirements Specifications.

1.5 Document Overview

The following part of this document will focus on a deeper analysis of the goals highlighted by the stakeholders in addition to some assumptions that must hold in order to keep the system properties valid. The last part of the document will exhibit the software requirements that resulted from the goals examination along with some scenario and use cases that will offer the stakeholders a better comprehension of the final system.

2 Overall description

This section will cover the overall description of the product. In particular it will put this product into the perspective of other products or systems.

2.1 Product perspective

The MyTaxiService system will partially replace any former traditional system that is based on phone calls with a new interactive system based on mobile and web interfaces.
The decision of completely dismissing the former phone call system in favor to the new one will be left to the customer, since MyTaxiService requires the passengers to access a web interface or a mobile application, which is still generally not accessible by some users.
The project will therefore consists to release a web application and a mobile app which are not integrated with any other existing taxi management service. The system is created to improve the possibility to connect with the taxi service for requesting a taxi, that is based on phone calls. With this system, the taxi service can provide a fast and innovative system that allow to manage the user request rapidly, without any loss of time. Both the mobile application and the web interface are connected to the central system and allow the user to know in real time the waiting time, the taxi occupation and their location, and allows to make a taxi request receiving a rapid response. The application will furthermore provide a programmatic interface for the integration with future systems and extensions.

2.1.1 System Interfaces

1. MyTaxiService mobile application will run on tablets and smartphones
2. MyTaxiService web application will run on every terminal which is provided an internet connection and a web browser

2.1.2 User Interfaces

2.1.3 Hardware Interfaces

2.1.4 Software Interfaces

2.1.5 Communications Interfaces

2.1.6 Memory Constraints

2.1.7 Operations

2.1.8 Site Adaptation Requirements

2.2 Product Functions

2.3 User charateristics

2.4 Constraints

2.4.1 Regulatory Policies

2.4.2 Hardware Limitations

2.4.3 Interfaces to other applications

2.4.4 Reliability Requirements

2.4.5 Criticality of the application

2.4.6 Safety and Security Consideration

2.5 Assumptions and Dependancies

2.5.1 Assumptions

1. The city is already divided in Taxi Zones of approximately 2x2 km each.

2. Taxis or Taxi Drivers are assumed to be in possession of a mobile device that 1) have GPS functionalities and 2) is capable of establishing an internet connection with the facility in which the system is hosted. In the case one of these assumption does not hold, the Taxi driver must contact his referent in order to solve the issue.

3. The number of taxi in service are at least equal to the number of zones. **Rationale**: In this way, in the case that a zone queue is empty, an incoming request is guaranteed to be served by at least one taxi in an estimable time by propagating the request to adjacent zone and forwarding the request to the first taxi that is either available or have the scheduled arrival location in that zone.

4. The service is currently running a traditional system based on phone calls

3 Specific Requirements