Power EnJoy

Requirements Analysis and Specification Document

Redaelli Marco 877622, Zanoli Francesco 877471

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Contents

Chapter 1

Introduction

1.1 Purpose

This document represent 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 software described in this document is a new digital management system for car-sharing service that exclusively use electrical cars. Nothing like this software already exists so the development of it need to start from zero. The software main goal is the simplification of the car sharing service and the management of the reservation and the usage of electric cars. It can be applied to different small and big city and even in a large urban area and it's composed by a mobile application who permit to the user to interact with the system and a web platform that explain to the users all the procedure to access to the service. There are two type of users:

- Visitors: all the visitors have access to the login and registration page on the mobile application and will be also able to visit the information part of the website that include FAQ page and Home page
- Registered user: this user can, after the registration, reserve a car, drive it, park and charge in the predefined area and finally it can reports problems of the system.

After the login the user can look for nearest car and reserve it, he will than have 1 hour to get to the car open it and start the renting. At the end of his ride the user have to park the car in a safe area and if it's necessary/possible plug it into recharge. Besides the specific user interfaces for users, the system offers also APIs to enable the development of additional services on top of the basic one.

1.3 Definitions, acronyms and abbreviations

Definitions

- User: Someone registered on the system
- Visitor: user that has not registered nor logged in
- System: the union of software and hardware to be developed and implemented
- Parking area: it is a reserved area, predefine by the system, where I can park the car but I cannot recharge it.
- Safe area: it is a reserved area, predefine by the system, where I can park the car and plug it into charge.
- Free car: The car is visible on the map and available for a reservation
- Reserved car: The car is not visible on the map and the user who reserved it didn't access yet.

Acronyms

- RASD: requirements analysis and specification document
- AES: Advanced Encryption Standard
- FIFO: First In First Out
- ETA: estimated time of arrival
- API: application programming interface
- GPS: Global Positioning System

1.4 References

- Software Engineering 2 Project AA 2016/2017: Assignments AA 2016-2017

1.5 Overview

This document is essentially structured in four parts:

- Introduction: it gives a description of the document and some basical information about the system. It also identifying the stakeholders and the actors involved
- Overall Description: it gives general information about the software and hardware product, constraints and assumptions
- Specific Requirements: this is the core of the document. It describes the functional and non-functional requirements combined with some scenarios. There is also a class diagram that gives an overall representation of the system
- Appendix: it provides informations that are not considered part of the actual RASD. It includes: software and tools used, alloy implementation, project group organization

Chapter 2

Overall Description

2.1 Product perspective

2.2 Product functions

2.3 User characteristics Constraints

2.4 Assumptions and Dependencies

Chapter 3

Specific Requirements

3.1 External Interface Requirements

3.2 Functional Requirements

3.2.1 Registration

Purpose Visitors can register to PowEnJoy through mobile application. This operation requires the visitor to fill a registration form with personal data and accept PowEnJoy terms and conditions, including personal data policies, according to local law. The system requires the visitor personal information as name, surname, and birthday, payment information (as a credit card or a paypal account) and proof of the possesion of a valid driver license If any of the previous requirements are not met or any input is invalid, the registration fails and the system asks the visitor to repeat the process. Other- wise, a verification email containing the password of the account is sent to the provided email address. To validate his account the visitor needs to login one time with the provided password.

Scenario Meg is a student. She has heard about PowEnJoy and, finding it an easy and ethical way to travel, wants to subscribe to it. Therefore, she download the mobile application from the store and clicks on Register in the main screen. She fulfil the form, accepts the term and conditions and she click Confirm. However, the system cannot verify Meg's driver license because she forgot to put the photo that prove the possession of it. It therefore asks Meg to take the picture from her mobile's camera. Once she has enter everything correctly she click on Confirm, this time the application valid his credential and tell to meg to check her emails, she will find the confirmation of the correct registration and the given by the software. Meg read her emails and can finally open the application again and login with the given password and the email she gave before.

User case description

Name: User registration

Actors: Visitor

Entry conditions: There are no entry conditions

Flow of events:

- The visitor arrive to the home page of the application, as is not logged in is redirect to the login/registration page
- The visitor enter his personal information, his driver license, a photo of his driver license and some payment method
- The visitor clicks on the confirm button
- The application suggest the user to read his emails to receive the password
- The visitor login after read the password

Exit conditions: The visitor is redirect to the home page of the application

Exception: The information furnished by the visitor are not correct or ambiguous as the following case:

- The Email has not the correct format
- The Birthday is not at least eighteen years ago
- The Payment method is not valid
- The information's of the driver license don't correspond with the information furnished by the visitor
- The Driver license is not valid

Also the visitor could had forgot to enter some requested camp or to accept the Terms and Conditions. In all this case, the system does not send any mail to the visitor but notifies him that an error has been made and allows to input the incorrect data again

Diagrams

Functional Requirements

- Visitor can abort the registration process at any time.
- The password in the email must be used within 1 day, otherwise the registration is deleted along with the visitor?s info.
- Registration form contain the following information (fields):

  - Email address.
  - First name.
  - Surname.
  - Address.
  - City.
  - Postal Code.
  - Credit card code.
  - Expiration date of the credit card.
  - Secure code of the credit card.
  - Driver license code.
  - Expiration of driver license.
  - Photo of a driver license.
- Email address cannot be the same as ones from other PowEnJoy users.
- Password must contain at leat 8 characters and at maximum 20 characters.
- The photo of the driver license must be taken by the camera of the mobile.

3.3 Performance Requirements

3.4 Design Constraints

3.5 Software System Attributes

3.6 Other Requirements

Chapter 4

Annex

Revision

In the following are listed the differences between versions:

1. First version

Hours of work

In the following are listed the hours of work that each member of the group did:

1. Marco Redaelli: *hours*
2. Francesco Zanoli: *hours*