

DESIGN DOCUMENT



POLITECNICO
MILANO 1863

Figure 1: Politecnico di Milano

version 1.0

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1 Introduction

1.1 Purpose

The purpose of this document is to provide more technical details about the CarSharing System software application

This document is directed to developers and is necessary to state these aspects of the developing system:

- high level architecture
- runtime view
- choosed architectural styles and patterns
- algorithm design of key components
- possibly include some extensions of the user interface defined in RASD

1.2 Scope

CarSharing is a web-based software application that helps car-sharing companies to increase usability of their service, by providing more convenient way of renting electric cars for clients via smartphones, hence helping clients to use the service in a more comfortable way. Thus, the software is targed only to:

- Users

System allow clients(Users) to locate available electrical cars, with all relevant information about it (inluding current battery fulness, address, registered number) nearby or in the specific area.

After selecting the car, user can reserve it for up to one hour. When a user reaches the reserved car, system allows the user to unlock the car via button in the web-app. As soon as the engine ignites, the system confirms that the car is now occupied and user can see current charges through the screen in the car.

User can leave the car for a short period of time without missing the car occupation. When the user is no more needs the car, he presses the "Stop the trip" button, system locks the car and collect the money from the bank

account, provided by user during registration. From this point the car is no more controlled by the user no more and it be becomes available again. System, in order to restrain the behaviour of users, and to encourage virtuous behaviours of users, carries out some reward and punishment features. Also the system uses external web-services to present the location of cars and to manage payments.

1.3 Definitions, Acronyms, Abbreviations

- RASD: requirement analysis and specification document
- DD: design document
- SMS: short message service; used to notify users 15 minutes before the reservation time expires, also used for a short period suspensance warning. A SMS gateway is needed to use it.
- SMS gateway: it is a service which allows to send SMS via standard API.
- MVC: model view controller.
- URL: uniform resource locator

1.4 Reference Documents

- RASD produced before 1.1
- Specification Document: Assignments 1 and 2 (RASD and DD).pdf

1.5 Document Structure

2 Architectural Design

- Introduction
 - Purpose
 - Scope
 - Definitions, Acronyms, Abbreviations
 - Reference Documents
 - Document Structure
- Architecture Design
 - Overview: High level components and their interaction
 - Component view
 - Deployment view
 - Runtime view: mostly contain sequence diagrams to describe the way components interact
 - Component interfaces
 - Selected architectural styles and patterns
 - Other design decisions
- Algorithm Design
- User Interface Design
- Requirement Traceability
- Effort Spent
- Reference

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