Politecnico di Milano
School of Industrial and Information Engineering
Master course in Computer Science and Engineering
DEIB Department

Design **D**ocument (DD)

Moreno SARDELLA - 859239

Academic Year 2015–2016

Abstract

Purpose: this document represent the Design Document (DD) of MyTaxiService project, in order to guide its development.

Scope: design the architecture of the MyTaxiService project.

Brief summary: the main activity concerned with modeling the project architecture defining the components and how the interaction among them works.
In order to do this, there was a «software design principles» study, which implies a fairly deeper knowledge of UML diagrams and both logical and physical architectural solutions.

Contents

List of Figures

List of Tables

Introduction

0.1 Purpose

This document represents the Design Document (DD), describing the high level aspects of the MyTaxiService project design (according to the RASD document), in order to guide the development phase.

0.2 Scope

The Design Document shows the main aspects of the MyTaxiService project, in terms of logical and architectural components and sub-components.
They are described both from the software and hardware points of view. It is also shown how they interact each other.

0.3 Definitions, acronyms and abbreviations

0.3.1 Definitions

- **Login**: the procedure through which a guest, entering his credentials, authenticates as a user.
- **Logout**: the procedure though which a user disconnects himself/herself from the system.
- **System**: the whole MyTaxiService service (includes app and website).
- **Sign up**: the procedure through which a guest registers herself/himself to the service creating a new account.

0.3.2 Acronyms

- **ID**: Identifier
- **DD**: Design Document
- **ETA**: Estimated Time of Arrival

- **GUI**: Graphic User Interface
- **OS**: Operating System
- **RASD**: Requirements And Specifications Document
- **UML**: Unified Modeling Language

0.4 Abbreviations

- **w.r.t**: with respect to

0.5 References

Requirements And Specification Document: "RASD".
The structure of this document follows the standard "IEEE Recomended Practice for Architectural Description of Software".

0.6 Overview

This document is composed by four part:

1. Architectural Design: high level informations about the product with more focus about the logical functions of components, how they are mapped into physical parts and how their interfaces are made.
   The use cases defined in RASD are rediscribed in a more low level through sequence diagrams.
2. Algorithm Design: definition of the most relevant algorithmic part of the MyTaxiService project.
3. User Interface Design: app and web GUIs and releated user experience.
4. Requirements Traceability: mapping of the requirements defined in RASD into previous designed components.

Chapter 1

Architectural Design

1.1 Overview

This chapter describes the system, from both physical and logical point of view. First of all, a high level view shows its components, which are described in a more deeper level in section 1.3.
Then, there is a deployment diagram of the physical tiers (section 1.4), followed by the runtime system behaviour (section 1.5).
The section 1.6 aims to make clear how the the components interact each other, defining their interfaces.
Finally, section 1.7 summarizes the implemented architectural patterns and styles.

1.2 High level components and their interaction

There are 3 main layers that represent a high level overview of the myTaxiService components.

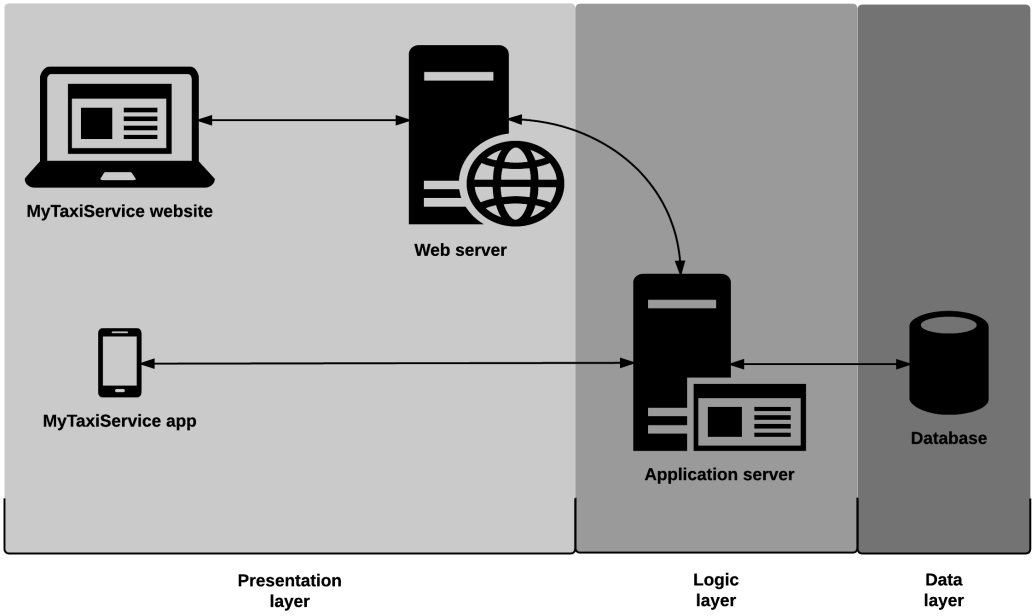

Figure 1.1: High level layers of MyTaxiService

Presentation layer: it is the front-end side of the system, dealing with the direct interaction with the user, who can use the service in two ways:

- via app, which communicates directly with the application server
- via web browser, which communicates with the web server, which provides the dynamic web pages querying the application server.

Logic layer: it is composed by the application server which cares about the whole business logic of MyTaxiService, handling all the operations between users and database.
Data layer: it is the database of MyTaxiService, w.r.t. the class diagram reported in RASD.

1.3 Component view

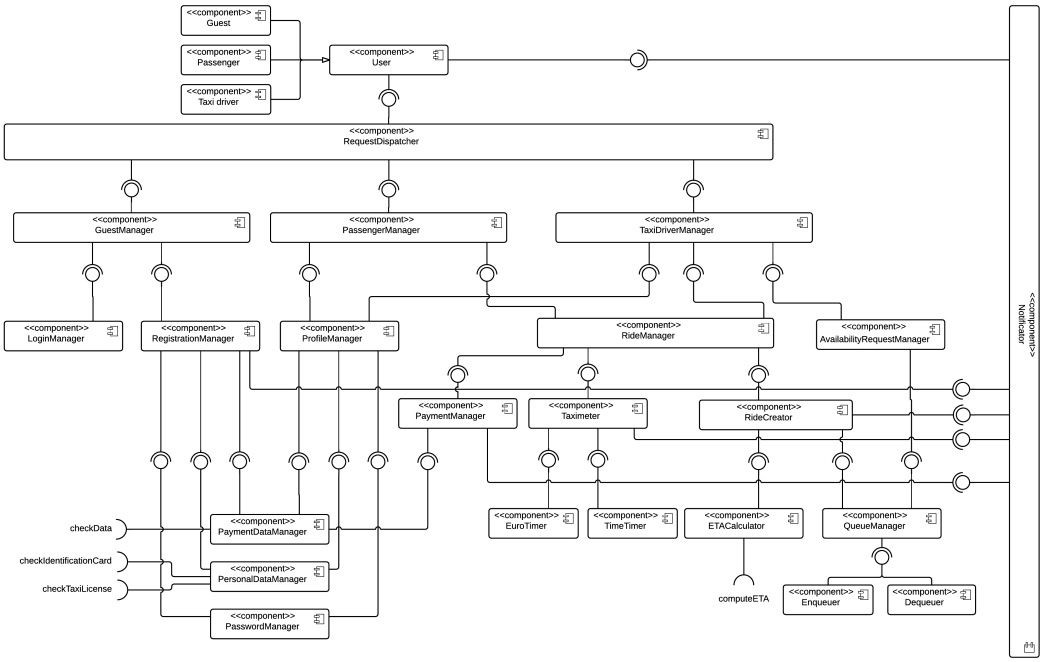

Figure 1.2: Component diagram of MyTaxiService

Chapter 2

Algorithm Design

Chapter 3

User Interface Design

Starting from the following Use Case diagram

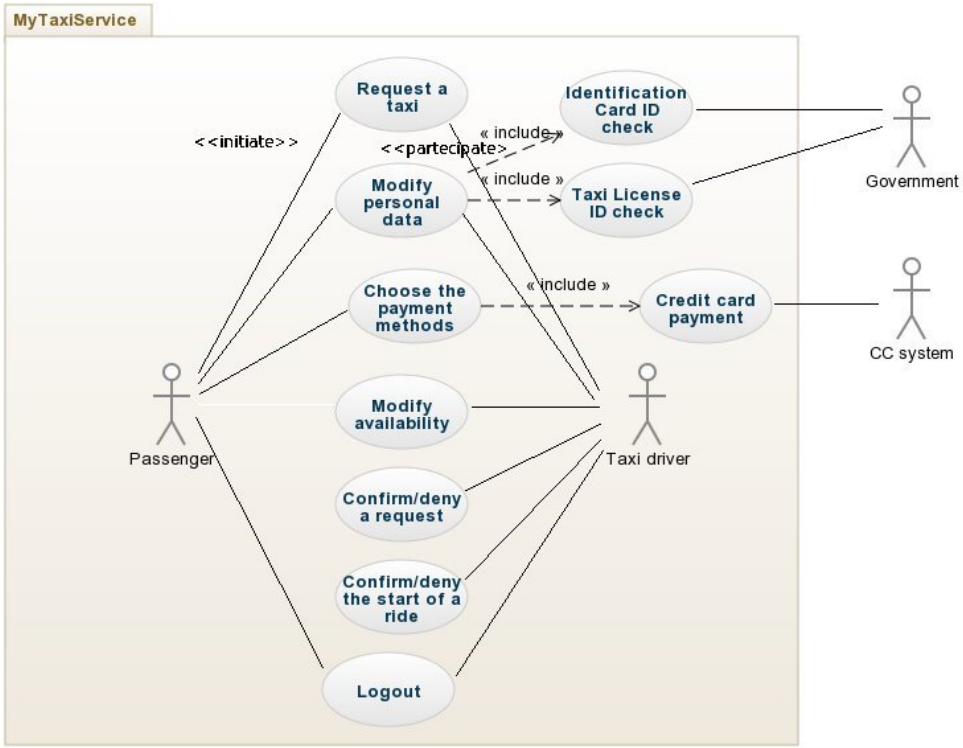

Figure 3.1: Use Case diagram of MyTaxiService

here are the user experience from the point of view of both passenger and taxi driver.

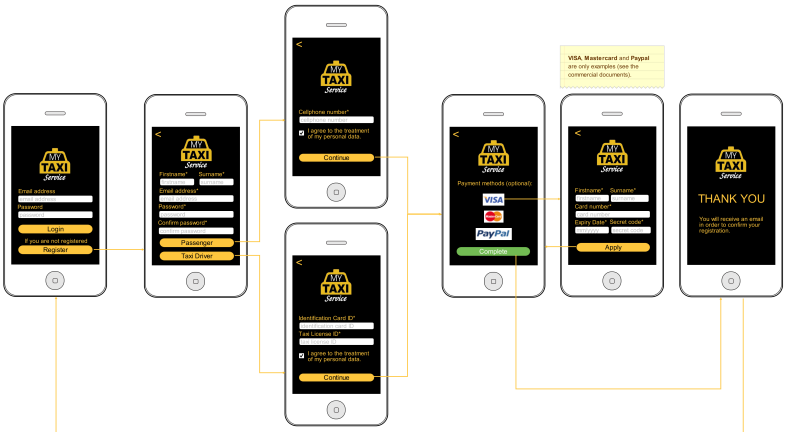

Figure 3.2: App GUIs - Registration

3.1 Passenger side

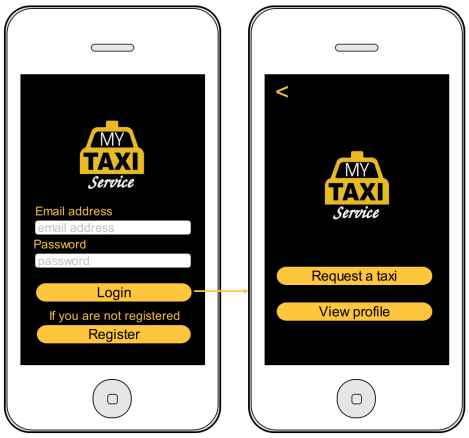

Figure 3.3: App GUIs - Passenger - Login

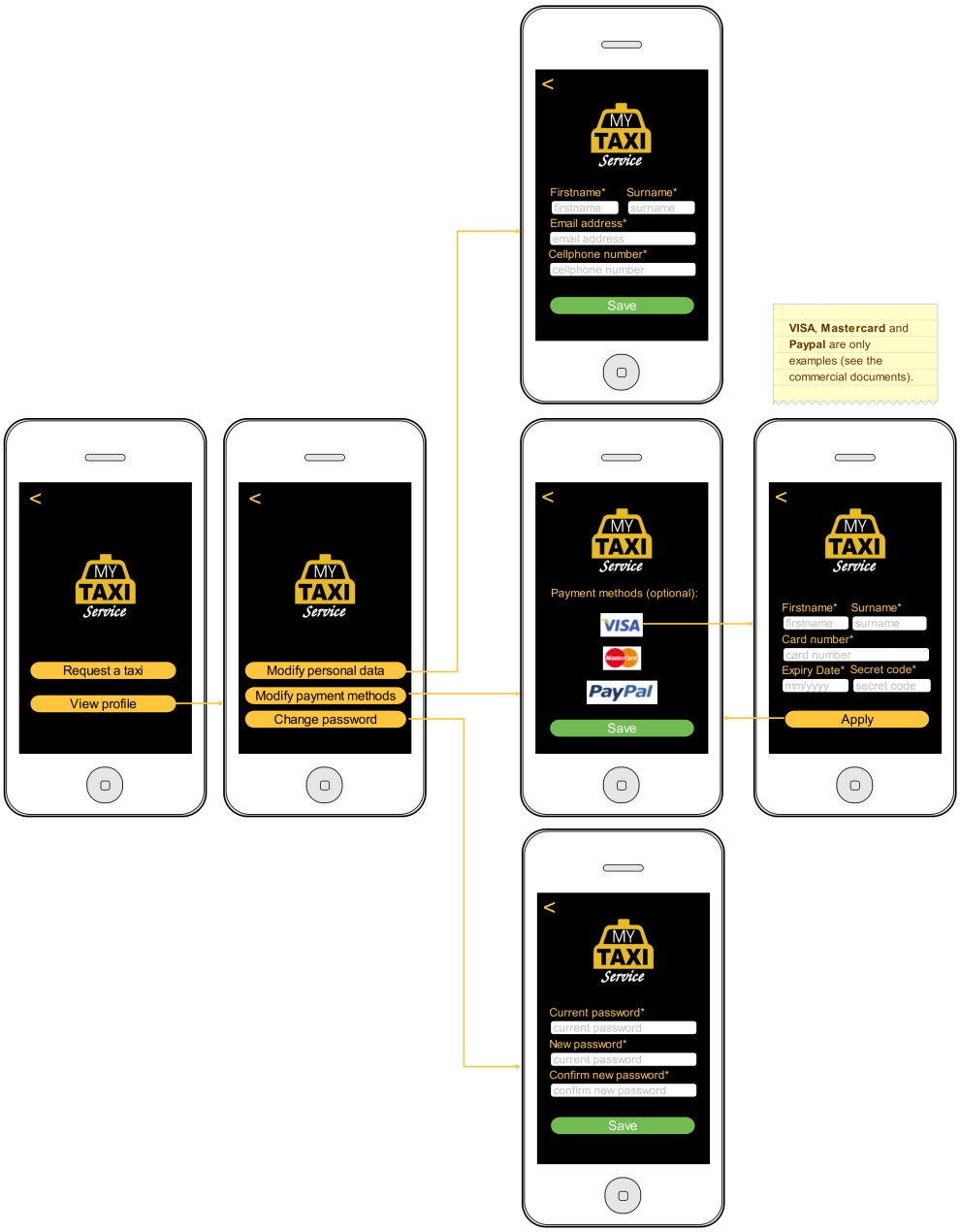

Figure 3.4: App GUIs - Passenger - View Profile

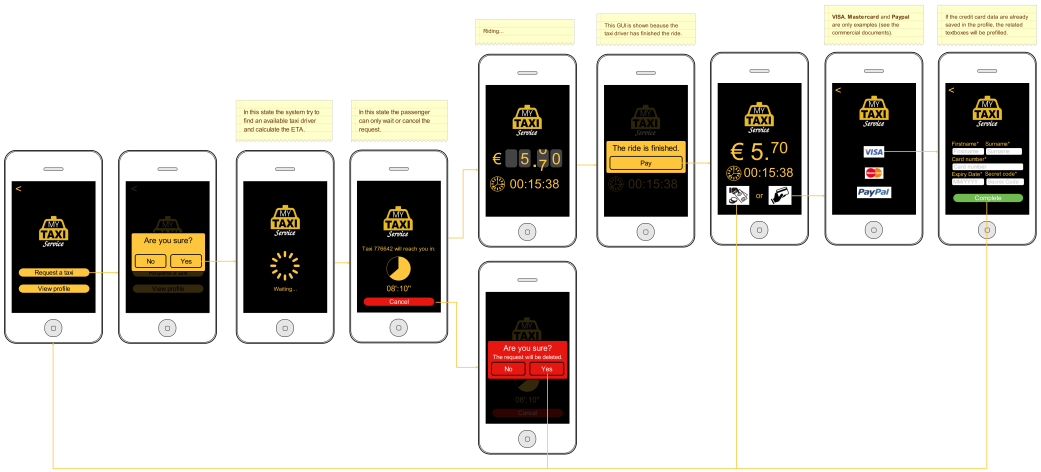

Figure 3.5: App GUIs - Passenger - Manage a ride

3.2 Taxi driver side

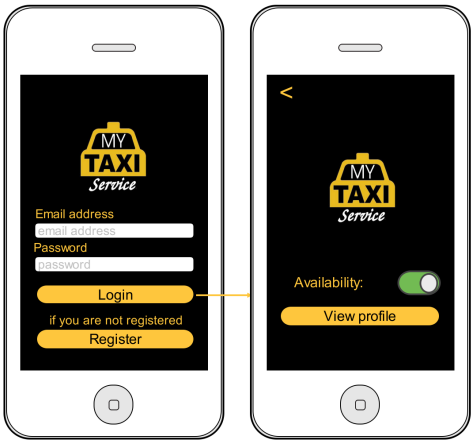

Figure 3.6: App GUIs - Taxi driver - Login

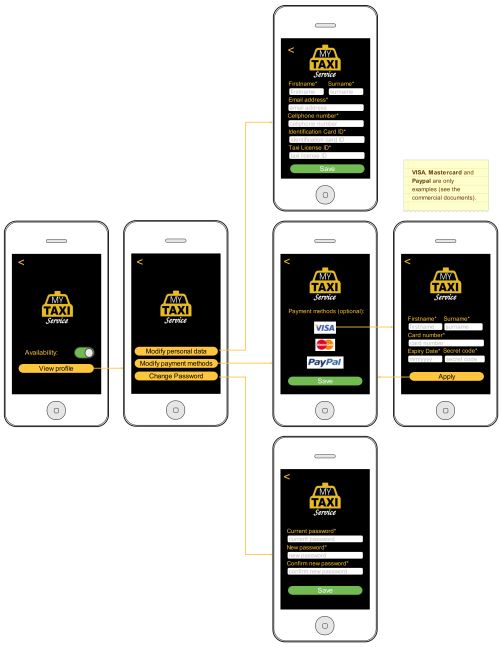

Figure 3.7: App GUIs - Taxi driver - View profile

Figure 3.8: App GUIs - Taxi driver - Set availability

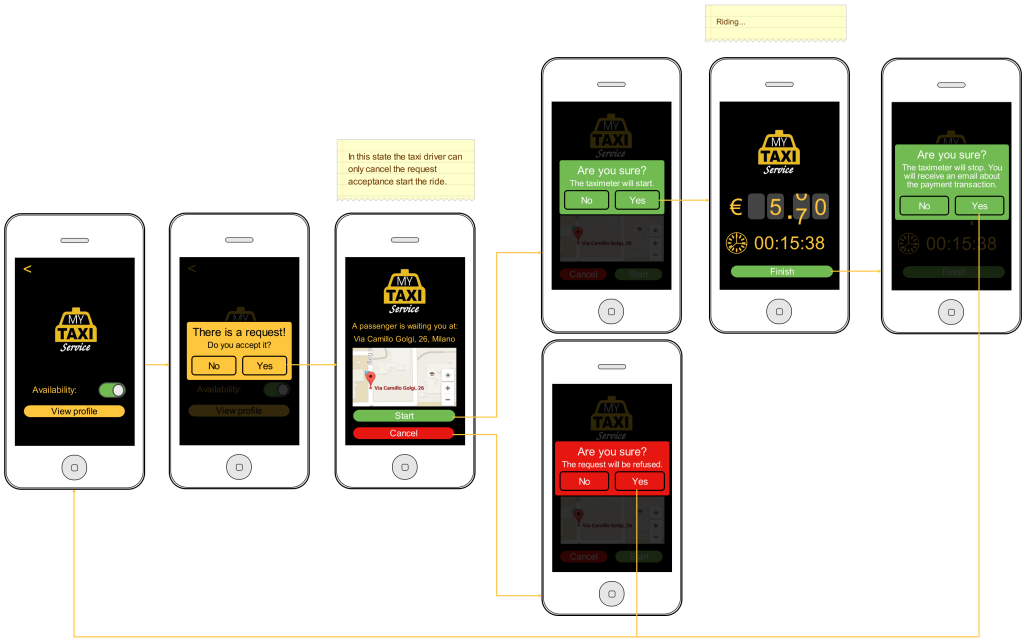

Figure 3.9: App GUIs - Taxi driver - Manage a ride

Chapter 4

Requirements Traceability

Appendix A

Document Informations

A.1 Effort

Approximately **50 hours** have been spent making this document.

A.2 Tool Used

- **LyX**: www.lyx.org
- **Moqups**: https://moqups.com/