

MYTAXYSERVICE®

DESIGN DOCUMENT

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Version 1.1

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1. Introduction

1.1 Purpose

IN THIS DOCUMENT we focused on the design of myTaxiService® . Our purpose of this document is the interaction between users and the system. In this document the Architecture, Algorithm and User Interface of myTaxiService® will be provided with their descriptions.

Also this software design document will focus on the Taxi Service Management System.

1.2 Scope

The scope of this document is to provide Technical Design Document for the project myTaxiService® which is an online Taxi Service Management System. Below some scopes are explained.

1. Design Information detail should be well explained for the development phase.
2. There should not be any ambiguity in the information.
3. Representation of architectural system and data should be done in detail.
4. Representation of User interface and Algorithm Design of the system is concerned.

1.3 Document Structure

THIS DOCUMENT have three main chapters.

Chapter 2, Architectural design will be presented in details with sufficient subsections. Chapter 3, we will focus on algorithmic part, in our case will be Queue algorithm.

Chapter 4, the design of our user interface will be explained and shown more than what we have done in RASD. At the end of this document there will be some clarification about the consistency between RASD and DD.

Also in different parts of our document we will propose some diagrams such as Sequence diagrams or BCE diagrams. We should divide the entire process of myTaxiService® into sub-systems in order to be clear.

1.4 Glossary

- JEE : Java Enterprise Edition
- DB : Data Base
- DBMS : Data Base Management System
- RASD : Requirements And Specification Document
- TD : Taxi Driver
- TDs : Taxi Drivers

1.5 Reference Document

In THIS DOCUMENT we refer to the following documentation:

- IEEE Std 1016TM-2009 (Revision of IEEE Std 1016-1998) Standard for Information Technology—Systems Design— Software Design Descriptions
- International Standard ISO/IEC/IEE 42010 - First edition 2011-12-01 - Systems and software engineering — Architecture description
- Template For The Design Document provided by prof. Di Nitto
- RASD of myTaxyService® created by Kashfi Haghghi and Greselin

2. Architectural Design

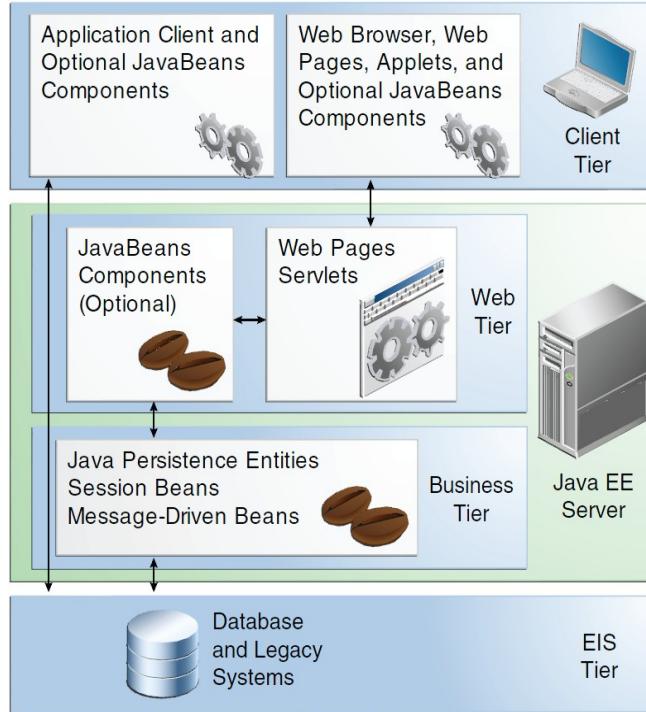
2.1 Architecture Overview

THIS CHAPTER provides a comprehensive view of the system component, both at a physical and logical level. First of all the system will describe the High level component (section 2.2) which will be elaborated in component view (section 2.3). After that our system will describe the deployment view in section 2.4 and section 2.5 will describe the dynamic behaviour of the system. The section 1.6 aims at explaining how the components interact each other. Moreover, the architecture of myTaxiService® will be based on JEE Architecture that has a four tiered architecture divided as:

- **Client Tier:** it contains Application Clients and Web Browsers and it is the layer that interacts directly with the actors. As far as our project is a web application and Mobile application the client will use a web browser and an application to access pages respectively.
- **Web Tier:** it contains the Servers and the Dynamic Web Pages that needs to be elaborated. This tier receives the requests from the client tier and forwards the pieces of data collected to the business tier waiting for processed data to be sent to the client tier, eventually formatted
- **Business Tier:** it contains the Java Beans that contain the business logic of the application, and Java Persistence Entities.
- **EIS Tier:** it contains the data source. In our case it is the database allowed to store all the relevant data and to retrieve them.

We have chosen a 4-Tier architecture in order to increase scalability and security, support multiple protocols and obviously different client and resources. All these things are possible with the linear relation between element in this type of architecture.

In the next image we can see the fundamental structure of JEE.



2.2 High Level Components

IN AN HIGH LEVEL description we are going to explain principal interaction between entity of our application.

In the client side we could have four types of interface:

1. Guest
2. Passenger
3. Taxi Driver
4. Administrator

1st one should be only represent general functions, such as information about service, seeing system situation (zones, queue, waiting time..) or registration.

2nd one should perform more functionalities, such as submit request or reservation, receive messages from admin or confirmation request (or a reservation), see reports about usage of application relatively to own account and do actions that a guest are allowed to do

3rd one should receive request (or reservation) from system, decide to accept or refuse it, receive messages from admin, set availability or unavailability option:

The 4th one must be principally a management interface: admin could not request or reserve a taxi but could send messages, delete user, edit datas or see reports

In the server side there is a system that process each command which arrive from client side. In fact it should be able to receive requests or reservations from passengers, forward them to taxi driver, should be able to receive decision from taxi drivers and each message involves an interaction with DB for require data and then updating the DB. System should also be able to modify directly datas in case of profile management or setting availability.

Regarding synchronous and asynchronous processes we can divide them in the following way:

- All statements that involve requests and reservation must be synchronous, because system will always know what is the current situation of the queue or the availability status of a driver. There are some constraint to follow, for example a Taxi Driver must receive only one request or reservation.
- All statements that involve messaging service should be asynchronous, with the exception of confirm messages (after that a driver has accept a request/reservation)

2.3 Components view

REGARDING THE COMPONENTS view we have decided an approach step-by-step and worked in three main steps.

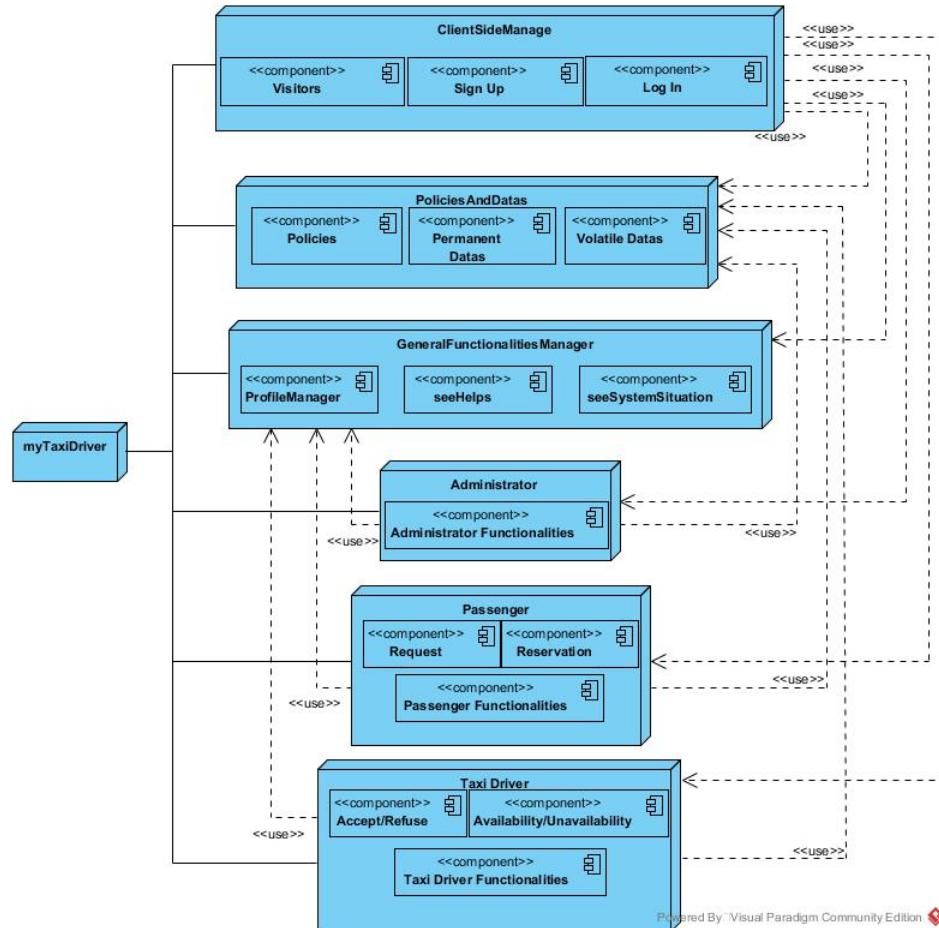
In the first one we have identify the subsystem of myTaxiService® in a very high level way, depending on the functionalitis that they should process. Some subsystems should be shared and each one will contain all that function that will be necessary to reach its goal. Below we have identified eight subsystems:

- Visitor sub-system;
- Sign up sub-system;
- Log in sub-system;
- Passenger sub-system;
- Taxi Driver sub-system;
- Administrator sub-system;
- Data sub-system.
- Policies sub-system

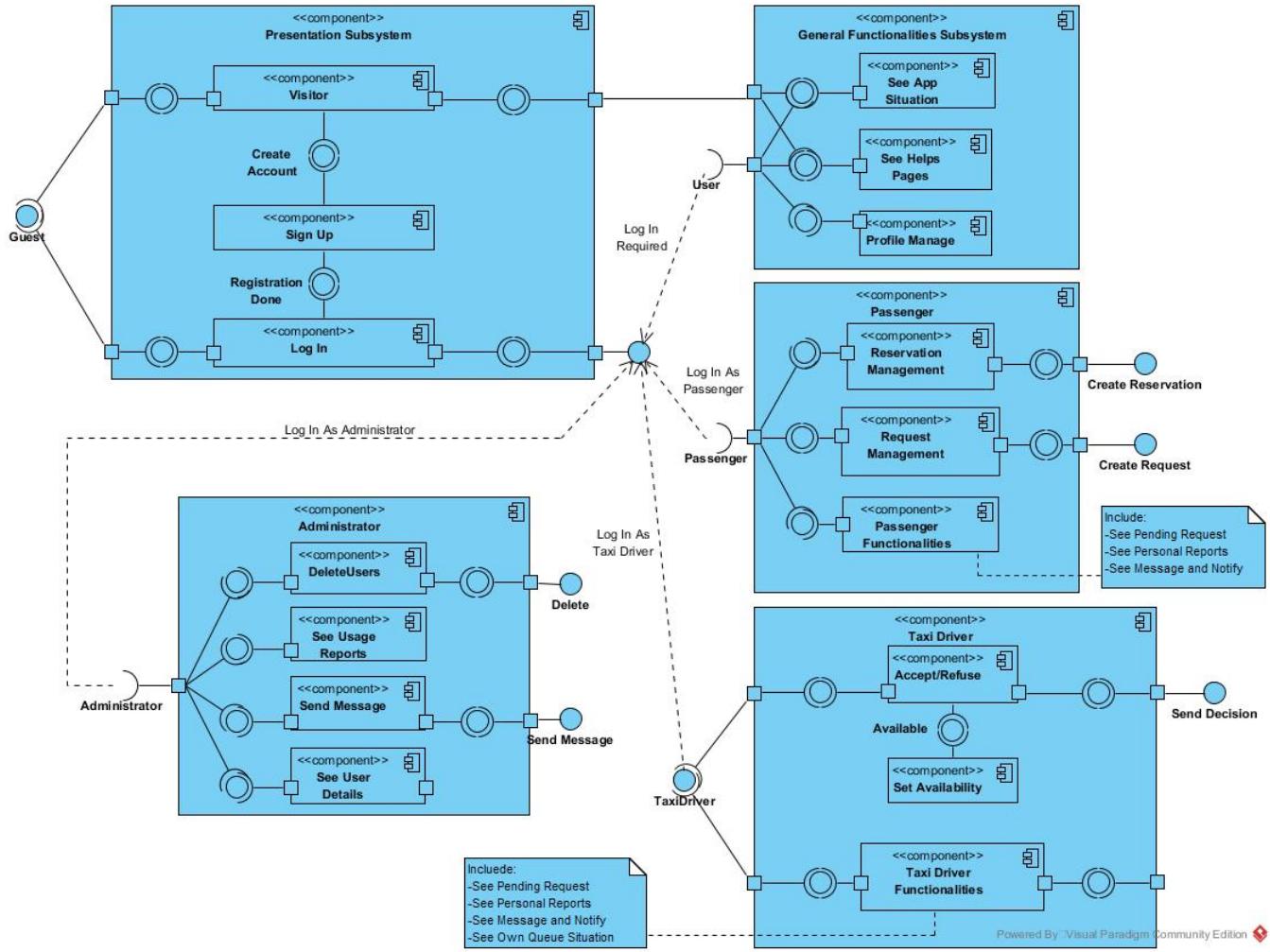
After the first idea we have done the following combination :

- Visitors, Log In and Sign Up subsystem could be considered as a unique entity that will allow to connect people with system. This subSystem will be installed in presentation server and each request, message or decision from user to system or from system to user will pass here.
- Policies subsystem should be considered as a part of DB subsystem because, for example for datas in the DB, each subsystem will need to access on policies rules.
- Some general functionalities, which is independend by the type of log in, will merge in a subsystem called 'General Functionalities Manager'. For general functionalities we mean 'profile managing', 'see queue situation' and 'see helps' pages

After this clarification we have put in evidence of which part of each subsystem will need. We have indicate with <<use>> this type of relation.



In conclusion we describe in more detail in order to clarify all.



2.4 Deployment view

P HYSICALLY, CLIENT APPLICATION myTaxiService® should be installed on mobile device, such as smartphone or tablet, or should be executed via browser.

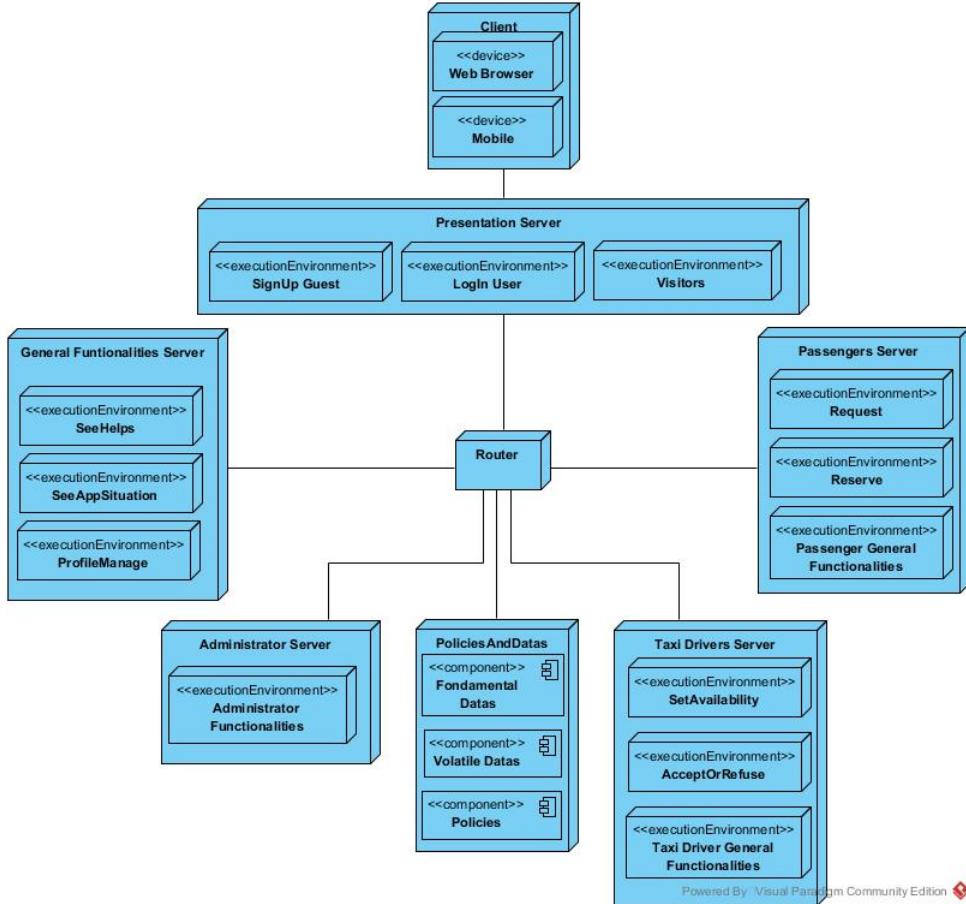
Regarding server side we must consider the use of different servers which will execute different operation in a concurrent way. In this way, there should be a backup server if a server was down.

The access to DB (that will be only one) must be synchronous, so we should avoid that two servers work simultaneously on the same record.

We should divide our DB in two parts:

1. A more 'persistent' part which will contain all datas that must be stored for long period, such as profile datas or ride information by drivers or requests/reservations information by passenger
2. A more 'temporary' part which will contain all datas regarding queues, pending request or reservation that are waiting for the taxi driver allocation.

In this way we could protect datas consider with their importance : if the temporary part will goes down, the foundamental datas will not lost.



Our choices have been dictated by following ideas:

- we have decided to dedicate a server to forwarding operations between system and users, in this way we have added another level of protection because user cannot communicate directly with server that perform the service.
- there will be a server dedicated to general functionalities: profile management will require privileges (given by sign up and log in), seeHelps and seeAppSituation could be used by all, also guest that will use visitors privileges.
- servers will communicate via a router and all communication for user must pass by Presentation Server. During the document Presentation Server

2.5 Runtime view

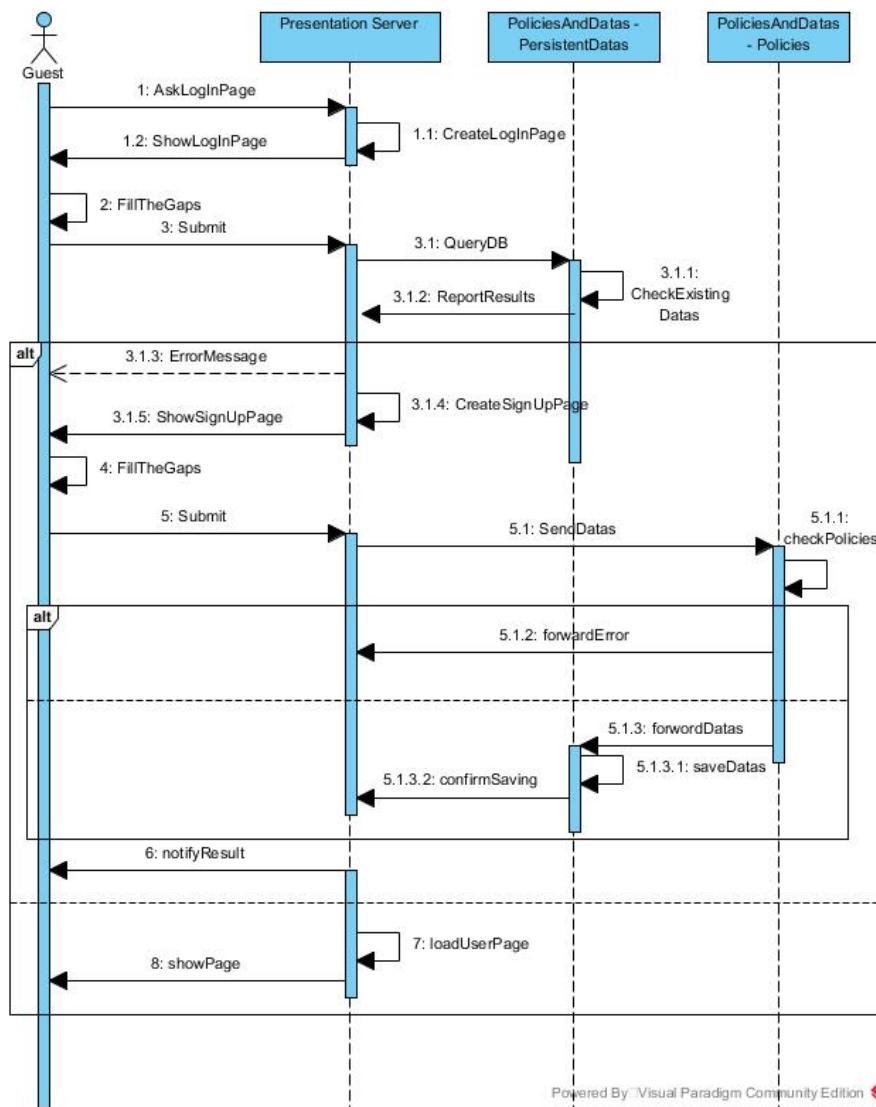
Sequence diagram of RASD but more in detail

NOW WE WANT to focus our attention on how components must act in order to reach their goals and for doing this we have decided to use sequence diagrams.

In next sections we will propose sequence diagram with the concept already presented in RASD but with more details with respect to the new assumption done during the writing of this DD.

2.5.1 Sign Up or Log In

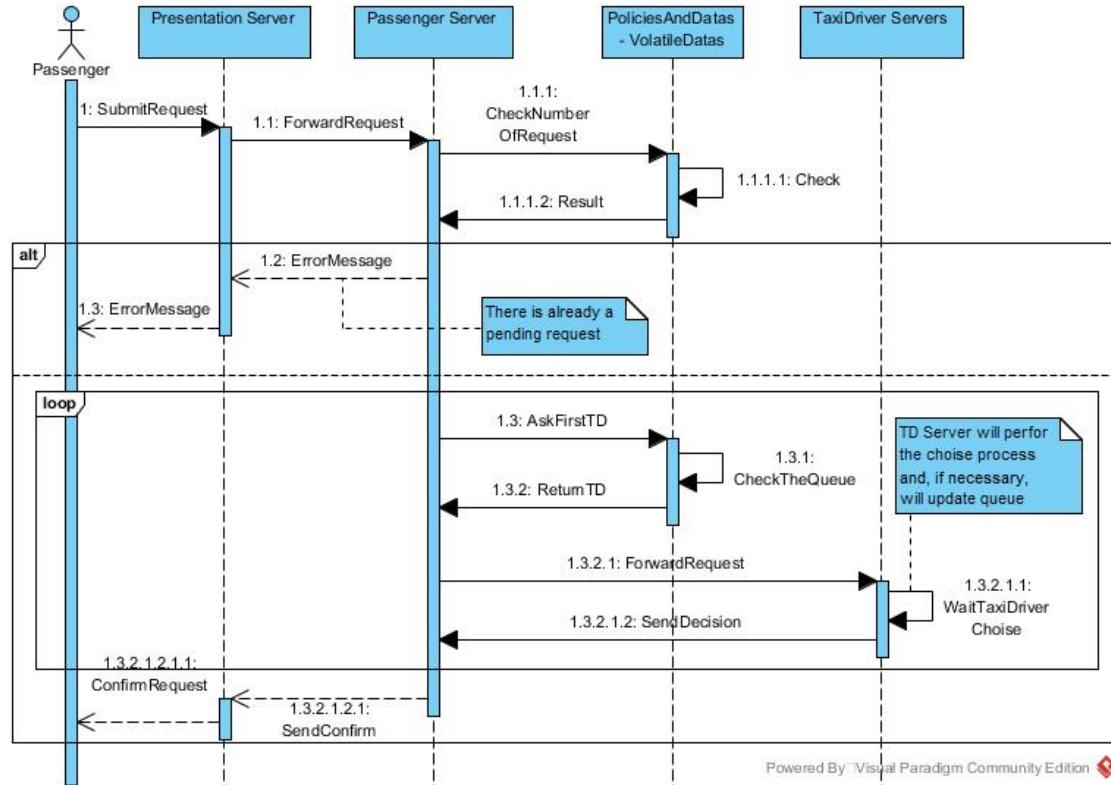
The diagram explain how components interact when a guest tries to log in, but he does not have any account .



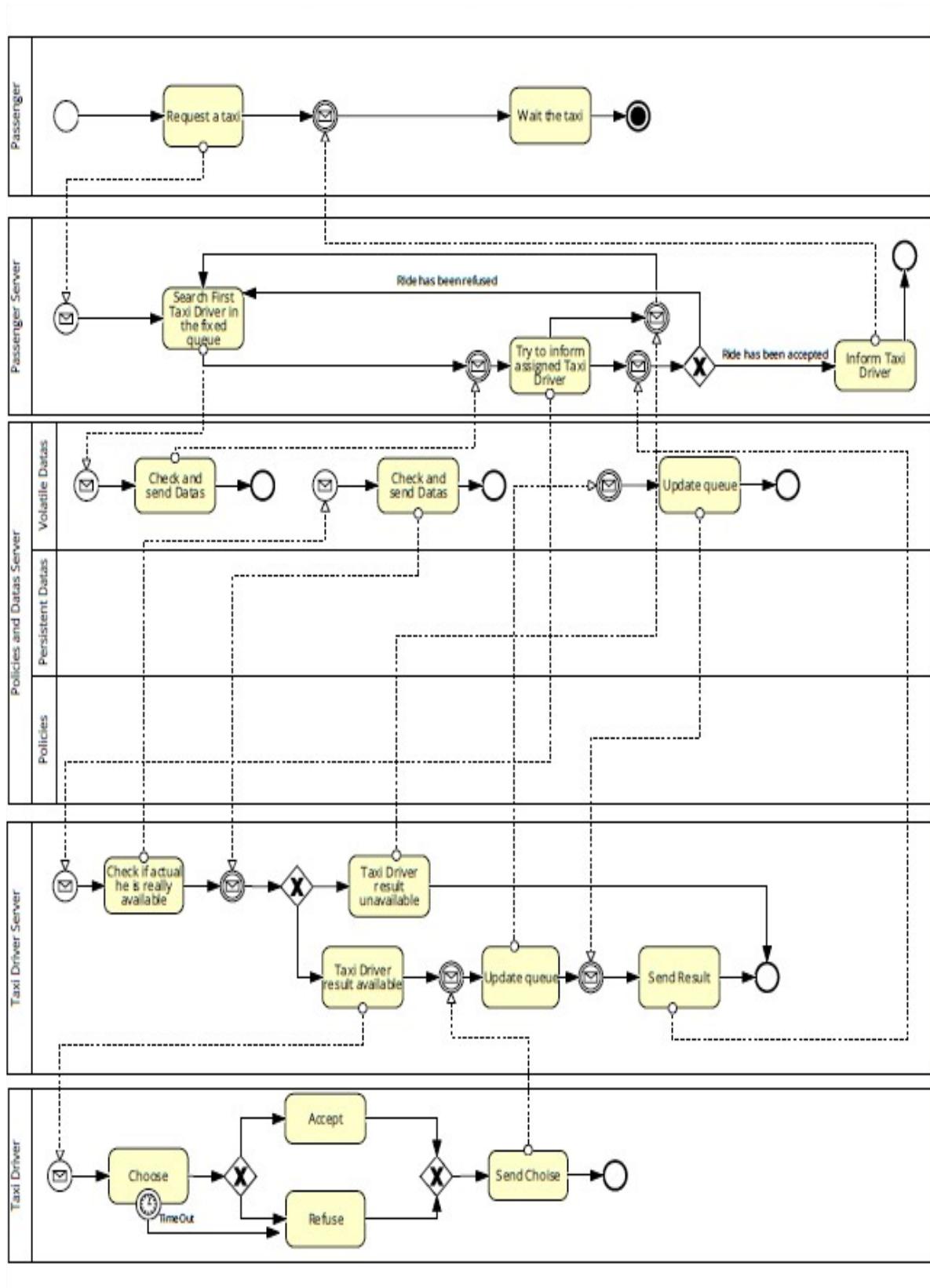
2.5.2 Request, Reservation and Taxi Driver

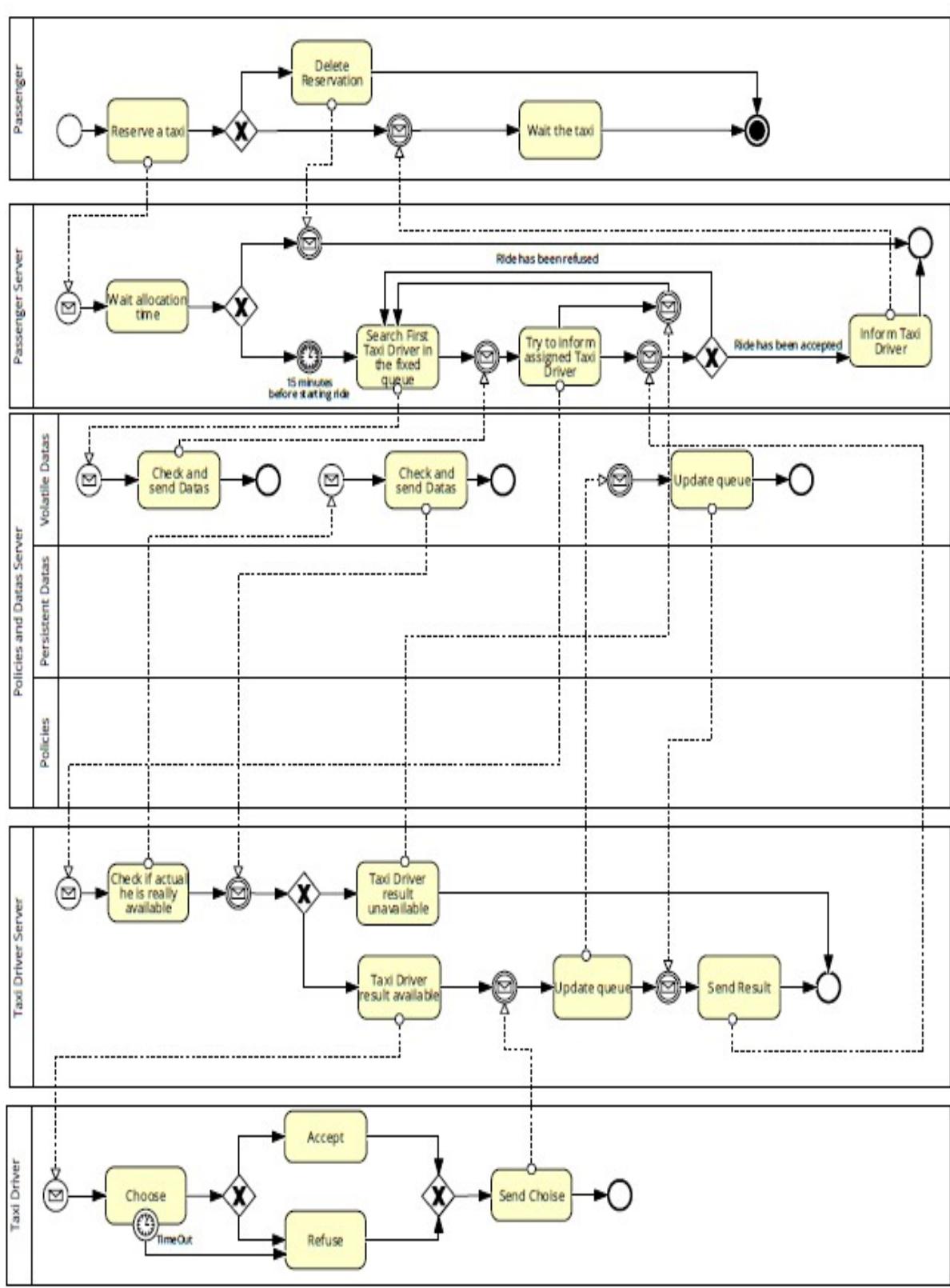
Request and Reserve

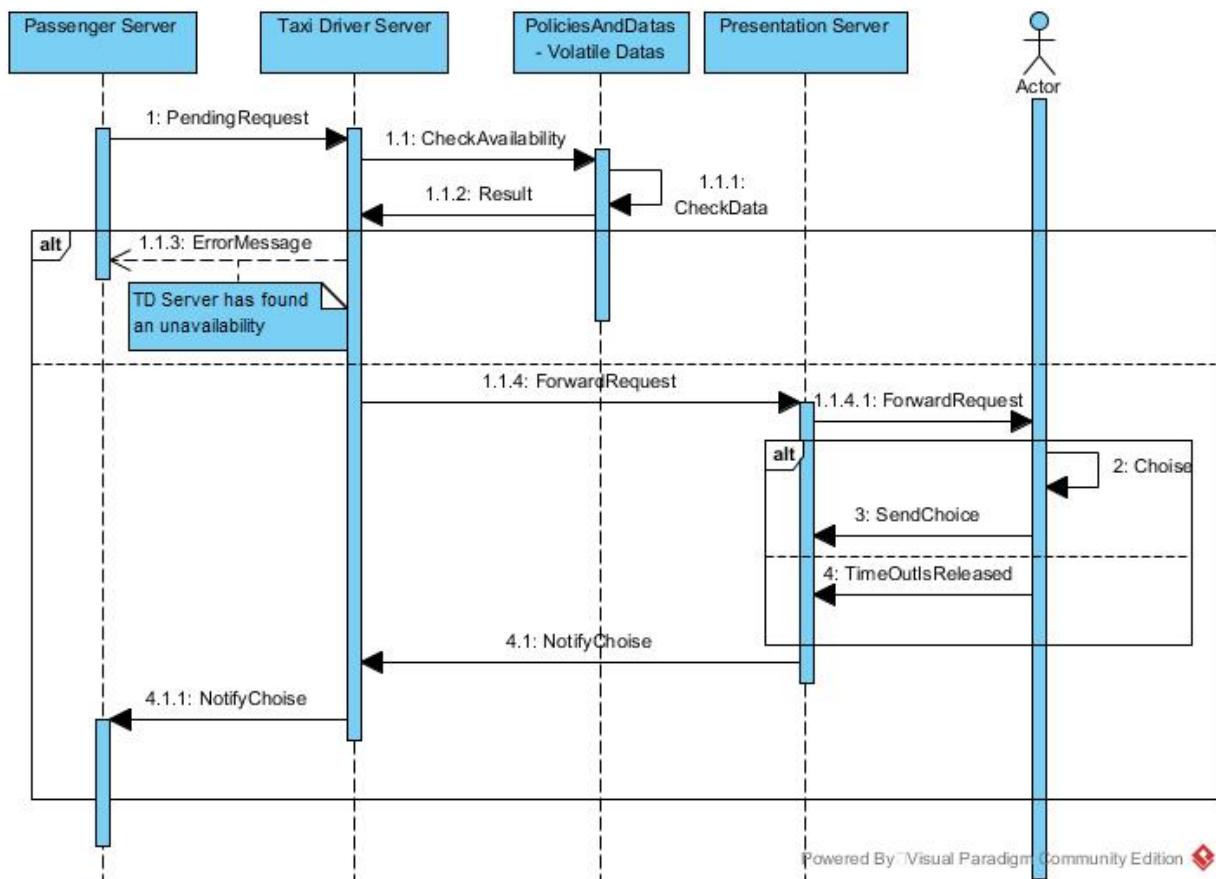
For request and reservation we have decided that it is better to propose both type of diagrams: sequence diagram restrict us to focus only on one part, BPMN diagrams allow to have a global view of situation because of merging request (or reservation) with the Taxi Driver Choise.



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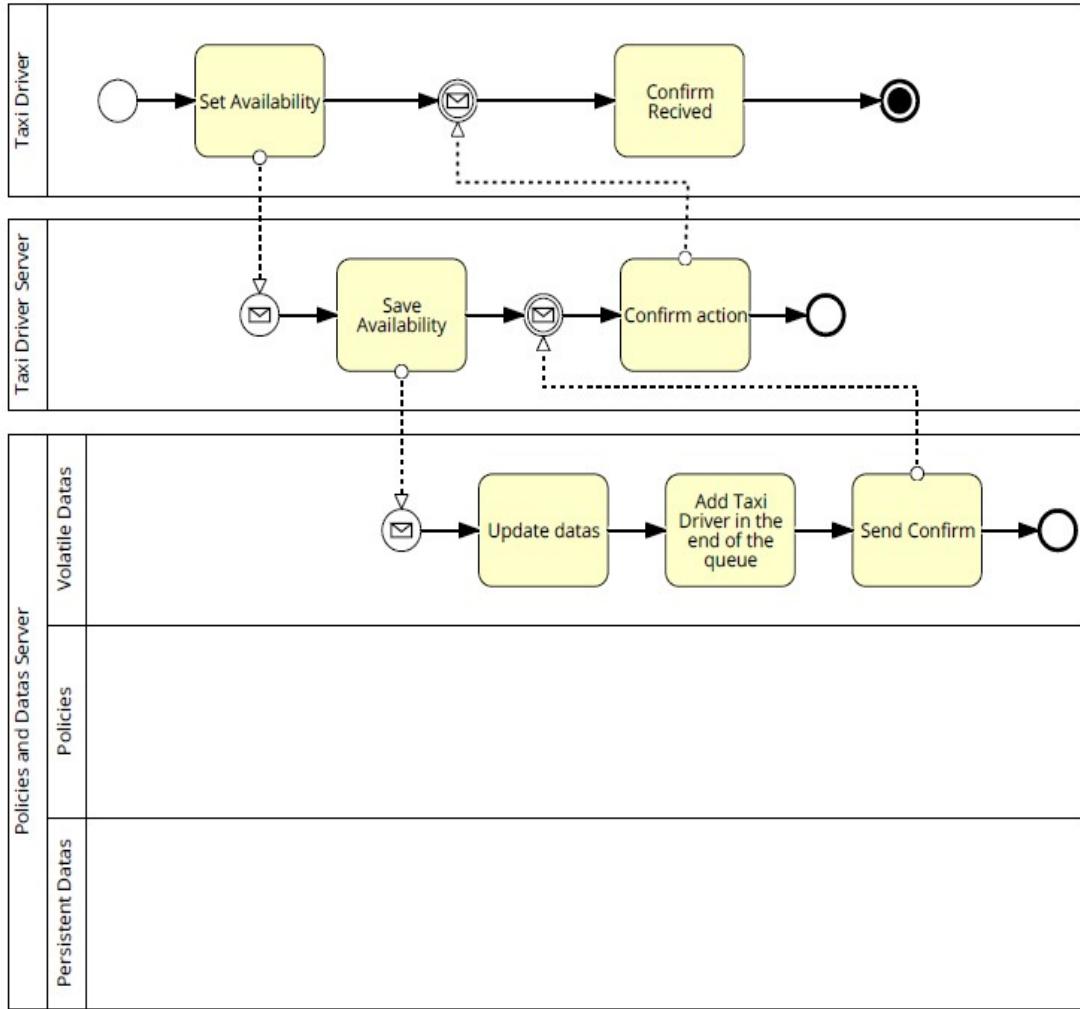




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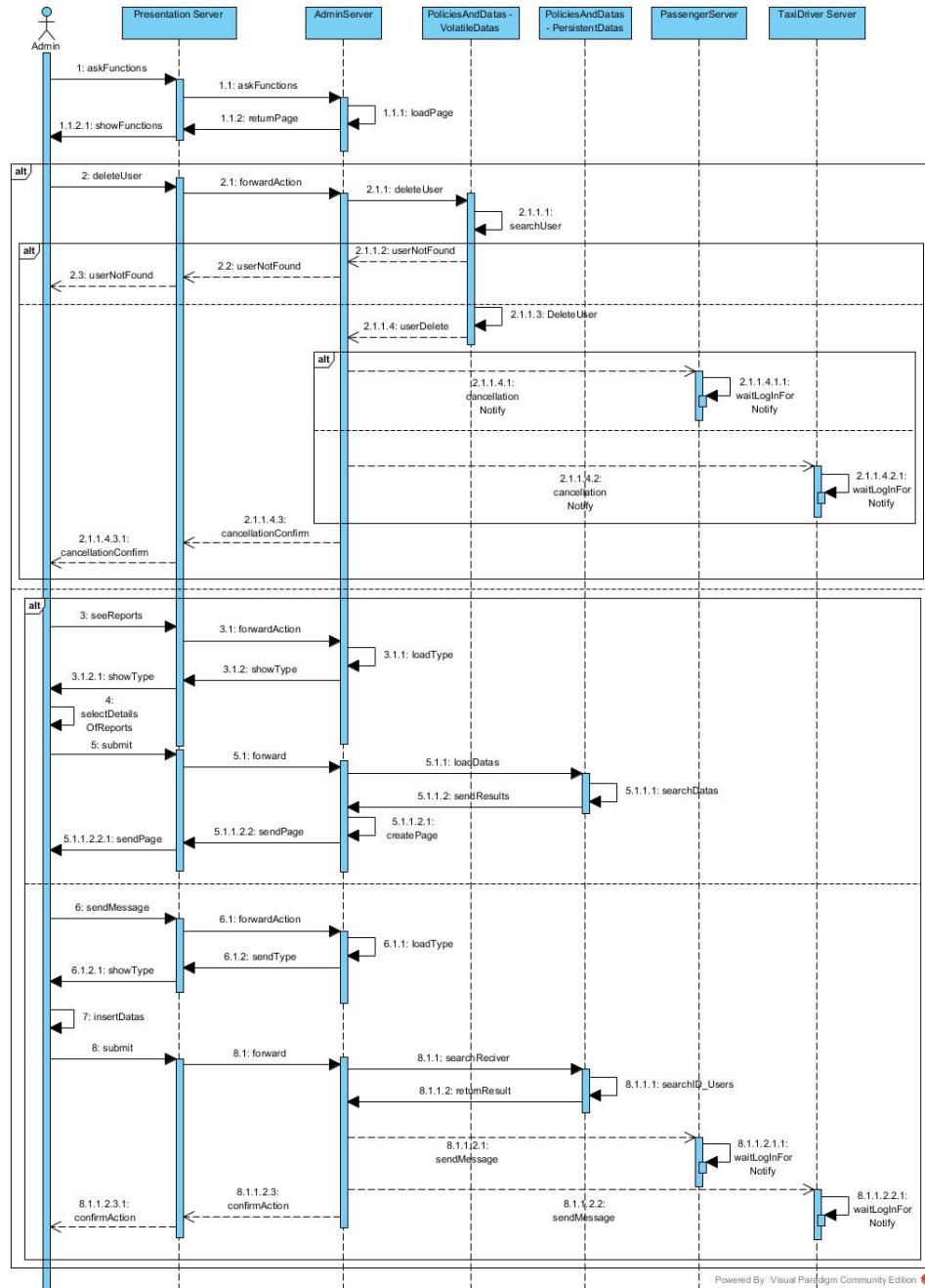
Availability

For availability it is better to use the BPMN diagram because it allows to explain in which part of DB we have decided to store that datas that change frequently during service usage



2.5.4 Admin Functionalities

For this part we have decided to use sequence diagram because it is more clear to explain multiple possibilities of admin with it.



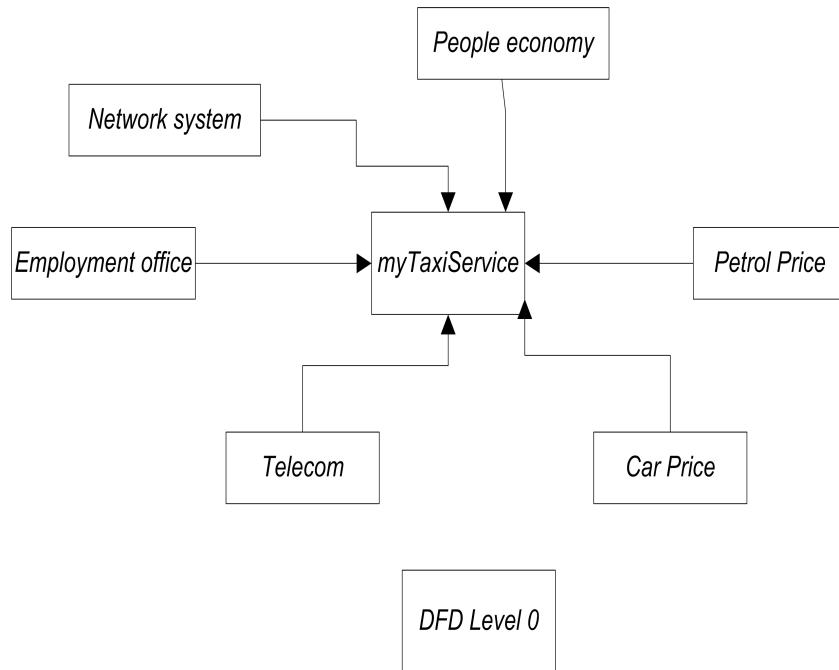
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2.6 Component interfaces

IN THIS SECTION we are going to draw DFD diagram in two levels: Level 0 and Level 1.

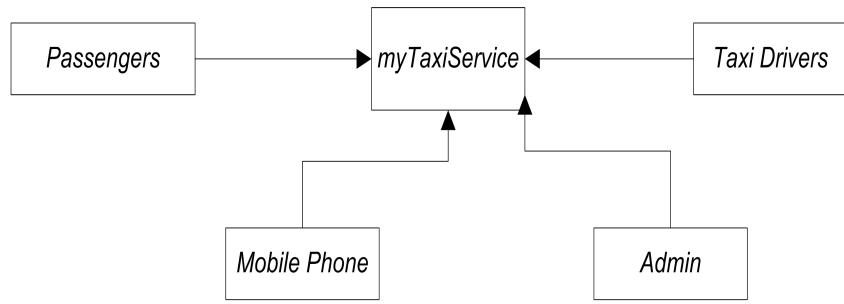
Level 0:

in this level the outside factors which affect on our system will be discussed. Below we can see some outside factors.



Level 1:

in this level we are going to explain the factors that affect our system from inside of the system.



DFD Level 1

2.7 Selected architectural styles and patterns

IN THIS FINAL part there is a short explanation of our design decision. For all the sections we have used a step-by-step approach because we have faced the document as a refining job. We have exposed our ideas and then we have tried to clarify each part more in details.

- The choice of this architecture (JEE) has been done in order to increase the security of our datas and because we have different types of client to manage (web browser and mobile).
- In Component view we have started the analysis of each component, we have divided our system with respect to functionalities, in order to create a balanced product, increase scalability and explain how these components will interact.
- In the deployment view we have used an architectural model presented as 'Deployment Diagram' by our tool (Visual Paradigm) and we have tried to clarify which should be the physical structure that will accommodate our system and how server will be connected. We have thought different ideas for this part but as specify in details in the section reserved, that one could be the best.
- The runtime view has been shown through sequence diagram because in our opinion it is a good way to clarify how the subsystems that we have thought will be coordinated. With this approach we don't need to use long description or less clear diagram.
- Component interface is been presented in order to explain any input or output parameters used and created by our components.

Regarding patterns, we have identified that, the following one could be useful for our system:

- Singleton : it allows us to create only one instance of an object, so all process should refer to that one. In our case, we could create only one instance for the Database, and only when it is necessary
- Proxy: it allows us to insert an additional layer between our server and user. we have already decided that there will be a presentation server that will be positioned between the router and the user but with a proxy also that one will be protected. In the specific situation, a Protection Proxy could provide different clients with different levels of access to some objects
- Facade: it permits us to hide the complexity of our subsystem providing simple interface to modules that must interact with them
- Adapter: it is useful regarding user interfaces, we will use it to convert an interface to another because we don't know preventively if a user will use a mobile device or a web browser.
- Strategy: it permits us to manage in a dynamic way the difference between request algorithm and reservation algorithm: we will create a class for each algorithm and each one will implement the same interface, for example 'createRide'.

3. Algorithm Design

IN THIS PHASE WE will propose our idea about algorithm for the management of the queue. We have decided to use natural languages and clarify all with some diagrams. Concept that we should apply is not very sophisticated but it is not necessary for managing a concatenated sequence of records.. If we should see in detail what is stored in our DB, we should see a lot of records that are concatenated each other with some reference. We have decided that DB will save each time a record that will contain 4 datas:

- *ID_TD*: that contains the *ID_TaxiDriver* of the *TaxiDriver* that we are considered.
- *ID_Previosly*: that must contain *ID_TaxiDriver* about the *Taxi Driver* that is before him in the queue. If *Taxi Driver* is the first of the queue, this data will be empty (it will contain *NULL*).
- *ID_Last*: that will be set with something different to *NULL* only while *Taxi Driver* is the last in the queue, in the other cases it will contain *NULL*.
- *ID_Zone*: here is stored the *ID* of the zone of the queue where *Taxi Driver* has been added.

Now we will proceed with the analysis of principal cases in which our algorithm should be necessary.

- **AVAILABILITY/UNAVAILABILITY**

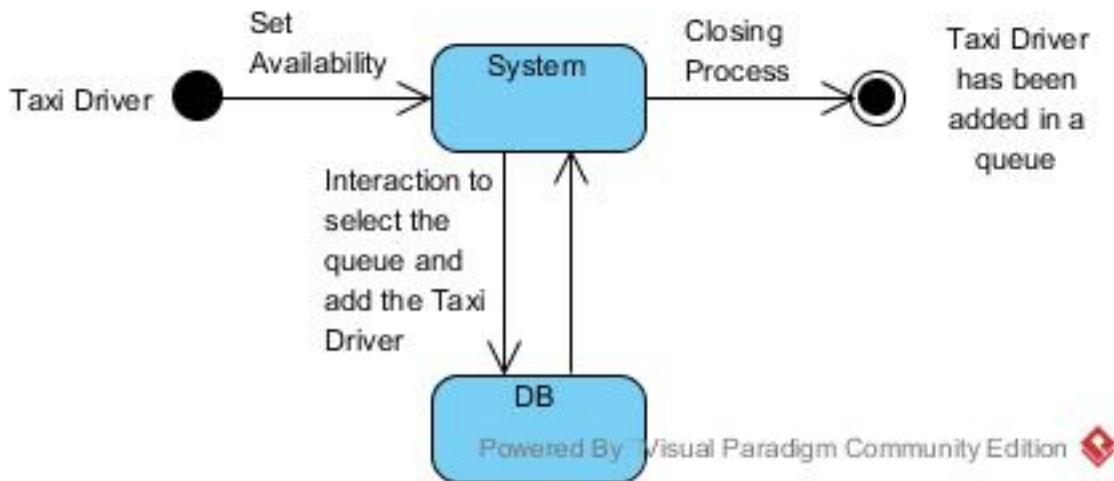
When a *Taxi Driver* will set availability option, the action will be received by *Taxi Driver Server* that will check, with an interaction with DB, which zone needs to a largest number of *Taxi* (in order to satisfy our clients) and will communicate to DB to create a new record and set *ID_Zone* equals to the zone selected. After the choice, *Taxi Driver* must be added on the queue.

Let us suppose that Tommaso is the last *Taxi Driver* in the queue and Giacomo is the new entry. *Taxi Driver Server* will do following steps:

- it will query DB on which is the *Taxi Driver* with *ID_Last* different to *NULL*.
- DB will find a record which contain *ID_TaxiDriver* of Tommaso and communicate it.
- *Taxi Driver Server* communicates to DB to modify the record that has just been created and setting *ID_TD* with *ID_TaxiDriver* of Giacomo, *ID_Previosly* with *ID_TaxiDriver* of Tommaso and *ID_Last* with *NULL*.

- At the end ID_Last of the record that contain ID_TD equals to ID_TaxiDriver of Tommaso will be set with something different to NULL.
- If the query had been empty, both ID_Previously and ID_Last will be set on NULL.
- DB informs Taxi Driver Server that the action has been performed.
- Taxi Driver Server informs Taxi Driver that he is in the queue.

In digram we want to bring our the events flow, so 'System' will indicate the group of servers that interact with DB.



• INFORMING A TAXI DRIVER ABOUT A REQUEST

In this moment we have a Passenger that have done a request, Passenger Server must find the first TD in the queue after an interaction with DB. The steps that will be complete are:

- Passenger Server queries DB on which is the record with ID_Previously equal to NULL : the corresponding ID_TD will be the Taxi Driver on top of the queue.
- Passenger Server forward request with the ID_TD found to Taxi Driver Server
- TD Server check if TD is really available.
- If he is not available (maybe he changes his state in that moment), TD Server informs Passenger Server and it will try to check the queue situation a second time.
- If he is really available Taxi Driver System informs that Taxi Driver about the request and will start a timeout while waiting an answer.

- **UPDATE QUEUE**

In this moment our system will have a pending request and should happen three different cases:

1) Taxi Driver accept the request

Here system should update the entire queue. This action will be done by Taxi Driver Server before to send a confirm message to Passenger Server. We can do the following step: Taxi Driver Server will order to DB to delete record that have ID_TD equals to the ID_TaxiDriver of TaxiDriver that has accepted the allocation. As final system will order to DB to set on NULL the data which has ID_Previusly equal to to the ID_TaxiDriver of TaxiDriver that system is removing from the queue

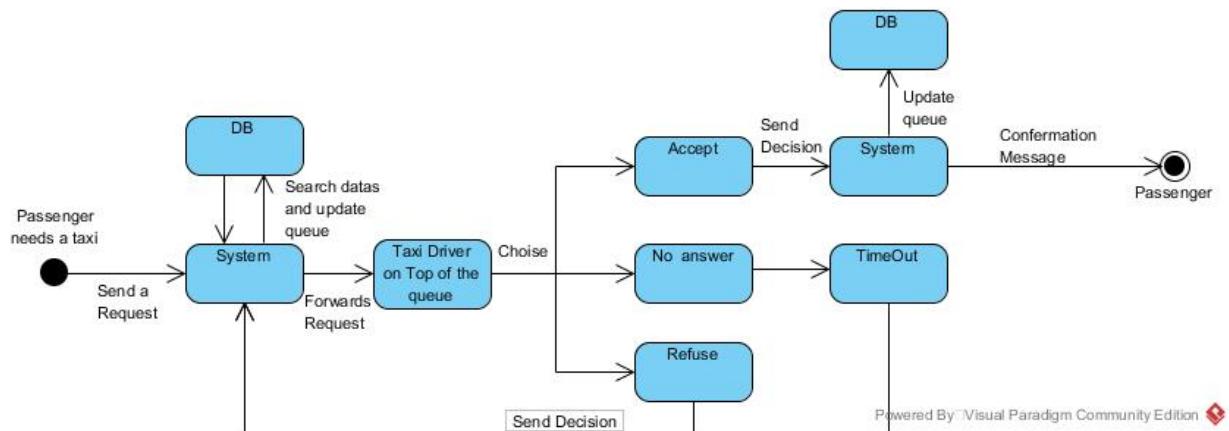
2) Taxi Driver refuse the request

This action will be done by Taxi Driver Server before to send a negative message to Passenger Server. TD Server will query to DB which is the record of that queue that has ID_Last different to NULL. The system will set ID_Previusly of the Taxi Driver that has refused the request with the ID_TD of the last Taxi Driver in the queue and invert the two ID_Last (so there will be always only one ID_Last different to NULL). As final action ID_Previusly that contain ID_TaxiDriver of Taxi Driver that has refused the request, will be set on NULL, so the associated Taxi Driver will be the new first of the queue

3) TimeOut is released

Actions will be like if Taxi Driver had refused the request

As for first diagram, now we will try to bring out the event flow, without components details.



4. User Interface Design

AS EXPLAINED AND discussed in RASD the user interface of myTaxiService® is expected to be used via Web App and Mobile App, below it is explained in more detail the User Interface of both methods.

4.1 Web Application:

4.1.1 General Pages

This section includes some pages that everyone can see and use, with some basic features of the Website.

4.1.1.1 Home Page

This page is the main page which shows the advertisement of the system. A guest could see some basic feature in the home page. In this page there are several items and include lots of linked pages such as: Sign up, Login, contact, About us...



4.1.1.2 About Us

This page shows some information about how the system is working, who can use this website and what is the benefits of this system.

The screenshot shows a web browser window for 'myTaxiService®'. The URL in the address bar is <http://www.mytaxiservice.com/Aboutus.php>. The page header includes the date '30/12/2009' and the site's logo 'myTaxiService®'. A search bar is located at the top right. Below the header is a navigation menu with links for Home, Sign Up, Sign in, Contact Us, About Us, and Help. The main content area contains two sections: 'General Information:' and 'History:', both of which are currently empty. At the bottom left, there is a small calendar for August 2009 showing the 29th as the current date. The status bar at the bottom of the browser window says 'Connected'.

4.1.1.3 Contact Us

This page shows several ways of making connection with the operator by Email, Telephone number or Facebook.

The screenshot shows a web browser window for 'myTaxiService®'. The URL in the address bar is <http://www.mytaxiservice.com/contact.php>. The page header includes the date '30/12/2009' and the site's logo 'myTaxiService®'. A search bar is located at the top right. Below the header is a navigation menu with links for Home, Sign Up, Signin, Contact Us, About Us, and Help. The main content area contains three input fields for 'Email:', 'Telephone:', and 'Address:', all currently empty. To the right of these fields is a large empty box labeled 'Google Map'. At the bottom left, there is a small calendar for August 2009 showing the 29th as the current date. The status bar at the bottom of the browser window says 'Connected'.

4.1.1.4 Sign Up

The Sign up page is divided into two categories. Passengers and Taxi Drivers. Regards to the user type, some specific information will be needed.

Passenger

Passenger sign up includes the following information : First name, Last name, Email, Telephone, Address, Num, Cap, Provincial, Username, Password, Retype Password

myTaxiService®
http://www.mytaxiservice.com/signup.php
SIGN UP
Taxi Driver Passenger
First Name: [] Last Name: []
Email: [] Telephone: []
First Name: [] Address: [] Num: []
Cap: [] Provincial: []
UserName: [] Password: []
Retype Password: []
Save Cancel
Connected

Taxi Driver

Taxi Driver sign up includes the following information : First name, Last name, Email, Telephone, Address, Num, Driving license number, Taxi plate number, Cap, Provincial, Username, Password, Retype Password

myTaxiService®
http://www.mytaxiservice.com/signup.php
SIGN UP
Passenger Taxi Driver
First Name: [] Last Name: []
Email: [] Telephone: []
First Name: [] Address: [] Num: []
Driver license number: [] Taxi plate number: []
Cap: [] Provincial: []
Password: []
UserName: [] Retype Password: []
Save Cancel
Connected

4.1.1.5 Password Forgot

This page is designed for who forgot their password.

Forget Password

EMAIL:

Submit

Connected

4.1.2 User Specific Pages

This part includes some pages in which a registered user can access to them.

4.1.2.1 Passenger pages

Home Page

This page is designed specifically for passengers which allow them to do variety actions such as: Request or Reserve a taxi, Profile managing, Report and Cancel Request or Reservation.

Hello Mohsen Sign Out

Profile Managing Report Cancel Request \ Reservation

Request

Reserve

| | | | | | | |
|----|----|----|----|----|----|----|
| S | M | T | W | T | F | S |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| 29 | 30 | 31 | | | | |

Connected

Profile Managing

This page is made for Passengers in which profile information such as Edit, Add and Delete can be done. Profile photo is changeable and some pencils can be seen beside the text boxes which mean that, only these information can be modified.

The screenshot shows a web browser window titled "myTaxiService" with the URL "http://www.mytaxiservice.com/ProfileManaginPage.php". The page is titled "PROFILE". At the top left, it says "Hello Mohsen" and has a "Sign Out" button. On the left, there's a "MyProfile" section with a placeholder profile picture and a "Change" link. The main area is titled "Complete Name" and "Summary". It contains input fields for "Username", "First Name", "Last Name", "Email", "Telephone", and "Address", each with a small edit icon to its right. At the bottom are "Save" and "Cancel" buttons. The status bar at the bottom says "Connected".

Taxi Request

This page is designed for Requesting a taxi. There are some spaces that should be fulfilled by passenger for example, the start point and the destination of the ride.

The screenshot shows a web browser window titled "myTaxiService" with the URL "http://www.mytaxiservice.com/PassengerRequestPage.php". The page is titled "REQUEST A TAXI". At the top left, it says "Hello Mohsen" and has a "Sign Out" button. On the left, there are "Reserve" and "Request" buttons. The main area has input fields for "Start Point" and "Destination Point". At the bottom are "Submit" and "Cancel" buttons. The status bar at the bottom says "Connected".

Taxi Reservation

This page is designed for taxi Reservation. In addition to determining start point and the destination point a passenger should specify the time of the reservation.

The screenshot shows a web browser window titled "myTaxiService®" with the URL "http://www.mytaxiservice.com/PassengerReservePage.php". The page header includes "Hello Mohsen" and "Sign Out". The main title is "RESERVE A TAXI". Below it are two buttons: "Request" and "Reserve". The form contains three input fields: "Start Point", "Destination Point", and "Time Of Reservation". At the bottom are "Submit" and "Cancel" buttons. The status bar at the bottom left says "Connected".

Report

This page is designed for Passengers to get report of how much money do they spend for riding in the specific period of time and get report from the detail of any rides include Start point, End point and the date of the ride.

The screenshot shows a web browser window titled "myTaxiService®" with the URL "http://www.mytaxiservice.com/Report.php". The main title is "REPORT". The form has "From:" and "TO:" fields with date pickers for "Augus 2009". Below them are "Search", "Reset", and "Export to PDF/Exel" buttons. A table displays four taxi rides with columns: Number, Start Point, Destination Point, Date, and Price. The status bar at the bottom left says "Connected".

| Number | Start Point | Destination Point | Date | Price |
|--------|-------------|-------------------|------------|---------|
| 1 | Iamberate | ponzia | 11/25/2015 | 50 euro |
| 2 | piola | souza | 08/18/2014 | 70 euro |
| 3 | garibaldi | loreto | 06/5/2015 | 65 euro |
| 4 | san babila | duomo | 01/29/2015 | 25 euro |

4.1.2.2 Taxi Driver pages

Home Page

This is the main page of Taxi Drivers in which lots of buttons and links can be seen. In addition to specifying the availability or unavailability option it includes profile managing, request\reservation form and report pages. Moreover a taxi driver can see the Request and Reservation notification in this page.

The screenshot shows the 'myTaxiService®' home page for a taxi driver named 'Francesco'. At the top, there are links for 'Profile Managing', 'Requests', 'Reservations', and 'Report'. Below these are two buttons: 'Available' and 'Unavailable'. Two large rectangular boxes labeled 'REQUEST' and 'RESERVE' contain the text 'Brief Information about Request' and a 'View All' button. At the bottom left, it says 'Connected'.

Profile Page

In this page a taxi driver can Edit, Add and Delete some personal information such as: Email, Telephone and Address

The screenshot shows the 'myTaxiService®' profile page for a taxi driver named 'Mohsen'. The page title is 'PROFILE'. It features a 'My Profile' section with a placeholder image for a profile picture and a 'Change' link. To the right is a 'Complete Name' field. Below this is a 'Summery' section containing fields for Username, First Name, Last Name, Email, Telephone, Address, License number, and Taxi Plate Number. At the bottom are 'Save' and 'Cancel' buttons. At the very bottom left, it says 'Connected'.

Passenger Request

This page is designed for Taxi drivers in order to know about the details of the rides such as: Start and destination point and the price of the ride. Google map is created to help taxi drivers find their passengers.

The screenshot shows a web browser window titled "myTaxiService®" with the URL "http://www.mytaxiservice.com/TaxiDriver Request.php". The page is for a user named "Francesco". At the top right, it shows the date "30/12/2009". On the left, there are two tabs: "Reservation" (which is selected) and "Requests". Below the tabs, there is a section labeled "Passenger status" containing fields for "Start Point:" and "Destination Point:". To the right of these fields is a "Price Calculator:" input field. In the center, there is a large rectangular area labeled "Google Map". On the right side of the main content area, there are two buttons: "Accept" and "Refuse". At the bottom left of the main content area, there is a "Connected" status indicator.

Passenger Reserve

This page is the same as the previous page but the only difference is that the time of reservation can be seen by a taxi driver. In addition, a google map is located in the bottom of the page.

The screenshot shows a web browser window titled "myTaxiService®" with the URL "http://www.mytaxiservice.com/TaxiDriver Reserve.php". The page is for a user named "Francesco". At the top right, it shows the date "30/12/2009". On the left, there are two tabs: "Request" (which is selected) and "Reservation". Below the tabs, there is a section labeled "Passenger status" containing fields for "Start Point:", "Destination Point:", and "Reservation Time:". To the right of these fields is a "Price Calculator:" input field. In the center, there is a large rectangular area labeled "Google Map". On the right side of the main content area, there are two buttons: "Accept" and "Refuse". At the bottom left of the main content area, there is a "Connected" status indicator.

4.1.2.3 Administrator Pages

Home Page

This page is designed for administrator in which he\she can do some actions on profile managing, users and get report from the system. In the middle of the page some cutting edge news will be shown.

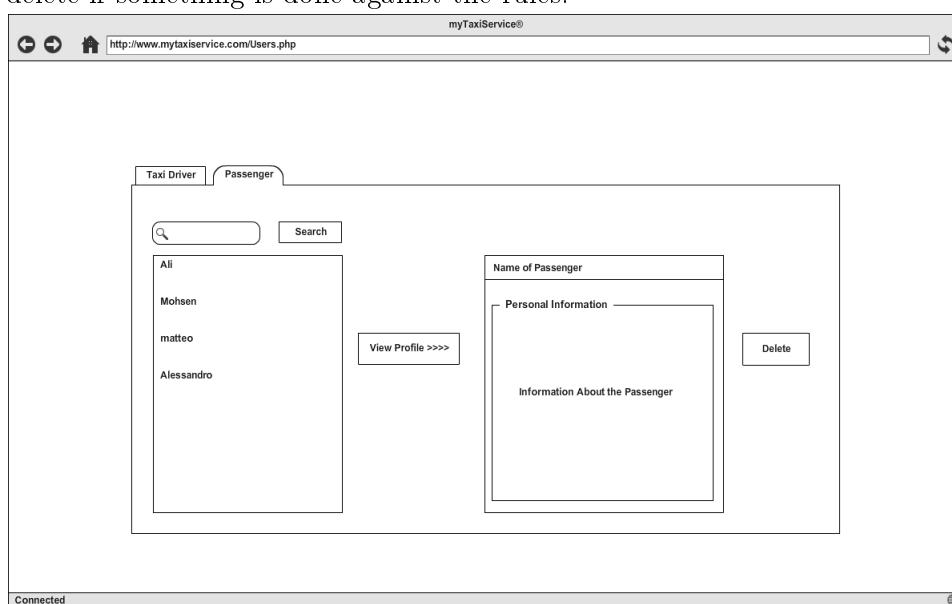


Users Management

This page is divided into two tabs, Passengers and Taxi Drivers.

Passengers:

In the passenger tab the administrator can search any passengers and see their profile and delete if something is done against the rules.



Taxi Drivers:

In this tab the administrator has the power of searching a taxi driver, see his\herprofile page and delete his\her account if it is needed.

The screenshot shows a web browser window titled "myTaxiService®" with the URL "http://www.mytaxiservice.com/Users.php". At the top, there are tabs for "Passenger" and "Taxi Driver", with "Taxi Driver" being active. Below the tabs is a search bar containing a magnifying glass icon. Underneath the search bar are two buttons: "Search" and "All taxi Drivers". A list of names is displayed: Vincenzo, Dario, Davide, and Alessandro. To the right of this list is a button labeled "View Profile >>>". Further to the right is a detailed profile box with a header "Name of Taxi Driver" and a section titled "Personal Information". Below this is another section titled "Information About the Taxi Driver". On the far right of the profile box is a "Delete" button. At the bottom left of the main content area is a "Connected" status indicator.

Message

In this tab the Administrator can send a message to every user, only taxi drivers or passengers in order to inform them about the possible changes in the future.

The screenshot shows a web browser window titled "myTaxiService®" with the URL "http://www.mytaxiservice.com/Report.php". The title bar "REPORT" is centered at the top. Below the title, there are tabs for "Reports" and "Messages", with "Messages" being active. In the center of the page is a large text input field with the placeholder text "Write a message". To the right of this input field are three buttons: "Send To All", "Send To Passengers", and "Send To Taxi Drivers". At the bottom left of the main content area is a "Connected" status indicator.

Report

In this tab the administrator can aware of cars status and if needed send damaged cars to be repaired. Also administrator can get report of the monthly income of the service, profits, losses and total budget of the system

The screenshot shows a web page titled "REPORT" under the "myTaxiService" header. At the top, there are navigation icons and a URL bar showing "http://www.mytaxiservice.com/Report.php". Below the title, there are two tabs: "Message" and "Report", with "Report" being active. On the left, there is a table showing car details:

| Number | Car type | Made Year | Driver Name | Damage |
|--------|----------|-----------|-------------|--------|
| 1 | BMW | 2012 | Mohsen | 10% |
| 2 | Benz | 2015 | Matteo | 7% |
| 3 | Audi | 2014 | Vincenzo | 2% |

To the right of this table is a form field for "Number" with a dropdown menu labeled "To be repaired". Below this is another table showing monthly financial data:

| Num | Date | Salary | Profit Monthly | Loss monthly | Total Budget |
|-----|-----------|--------|----------------|--------------|--------------|
| 1 | 12/9/2015 | 2 | | | |
| 2 | 18/7/2013 | 39 | | | |
| 3 | 26/1/2016 | 83 | | | |

On the far right, there is a section for calculating monthly income with fields for "Income Per Month", a "Calculate" button, and a result input field.

Profile

In this page the administrator can change some information such as his\her profile photos or the fields that have a pencil beside them.

The screenshot shows a web page titled "PROFILE" under the "myTaxiService" header. At the top, there are navigation icons and a URL bar showing "http://www.mytaxiservice.com/ProfileManaginPage.php". Below the title, there are links for "Hello Mohsen" and "Sign Out". On the left, there is a "MyProfile" section with a placeholder image and a "Change" link. To the right, there are two main sections: "Complete Name" and "Summary".

Complete Name

Summary

Fields in the "Summary" section include:

- Username: [input field]
- First Name: [input field]
- Last Name: [input field]
- Email: [input field]
- Telephone: [input field]
- Address: [input field]

At the bottom of the page are "Save" and "Cancel" buttons.

4.2 Mobile Application

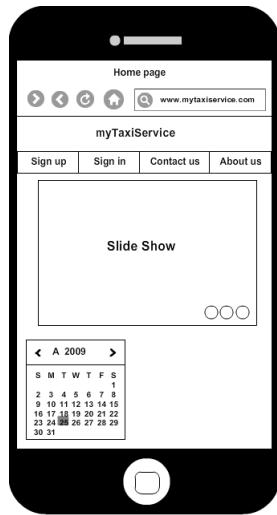
In this part we are going to draw Mobile interface but with some restriction in compare with the Web interface.

4.2.1 General Pages

In this page everyone can use these pages in other words they are public pages.

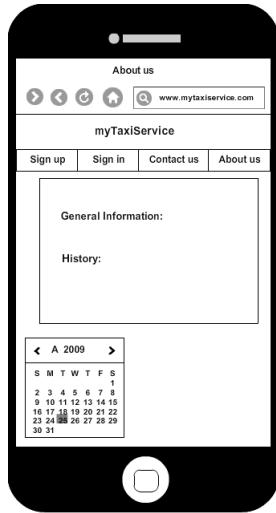
4.2.1.1 Home Page

This is our main page which includes: Sign up, Sign in, Contact us and About us pages with some slide show in the middle of the page and a calendar.



4.2.1.2 About Us

In this page we can see some General Information about the way that system works and the benefits of using this system and a brief history of our system.



4.2.1.3 Contact Us

By using this page everyone can get in touch with our system by sending an email, Telephone and address.



4.2.1.4 Sign Up

The Sign up page is divided into two categories. Passengers and Taxi Drivers. Regards to the user type, some specific information will be needed.

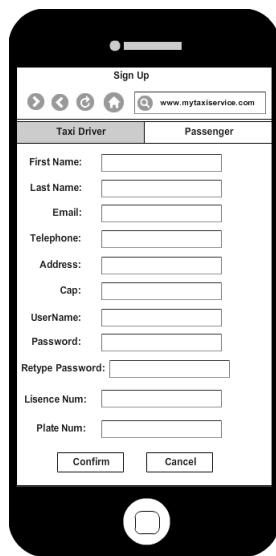
Passenger

This page is designed specifically for passengers which includes particular information that should be fulfilled by a passenger such as : First name, Last name, Email, Telephone, Address, Cap, Username, Password, Retype Password



Taxi Driver

In this page a Taxi Driver should fulfill some specific information which is designed only for them these information include: First name, Last name, Email, Telephone, Address, Num, Driving license number, Taxi plate number, Cap, Username, Password, Retype Password



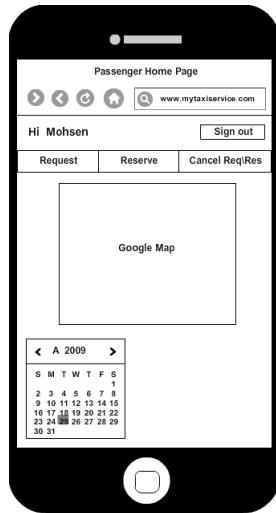
4.2.2 User Specific Pages

This part includes some pages in which a registered user can access to them.

4.2.2.1 Passenger pages

Home Page

As can be seen this page is designed for passengers which includes Request, Reserve and cancelation part. Also there is a google map that can be used with a calendar below that.



Taxi Request

In this page a passenger can request a taxi by entering start point and destination point. Moreover there is an check mark option for disable people that want to request and equiped taxi.



Taxi Reservation

This page is the same as request page with this difference that a passenger should specify the time of reservation.



Cancel Request\Reservation

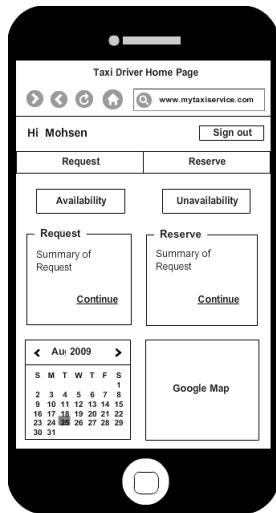
This page is designed for Passengers in order to allow them to cancel their request or reservation.



4.2.2.2 Taxi Driver pages

Home Page

In this page a taxi driver can set the availability\unavailability option and there are two links that a taxi driver will decide whether accept\refuse a request or a reservation. Moreover a taxi driver can see the Request and Reservation notification in this page.



Accept\Refuse Request

This page is designed for accepting\refusing a request. A taxi driver can see the start point and the destination point of a passenger. Also there is a button which calculate the price of the ride. Moreover a Google map is created to help taxi drivers find the location of passengers.



Accept\Refuse Reserve

This page is the same as the previous page but the only difference is that the time of reservation can be seen by a taxi driver. In addition a google map is located in the bottom of the page.



4.1.2.3 Administrator Pages

Home Page

This page is the panel of Administrator in which there are two main links in it: 1) Users 2) Report. Also there is an slide show about news and thetechnology advertisement with a google map and a calendar on the bottom of the page.

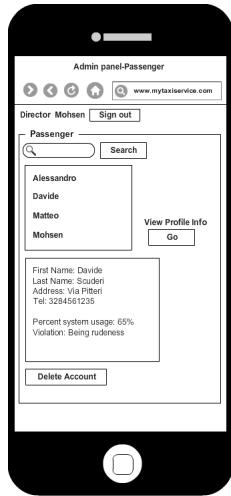


Users Management

This page is divided into two tabs, Passengers and Taxi Drivers.

Passengers:

In the passenger tab the administrator can search any passengers and see their profile and delete if something is done against the rules.



Taxi Drivers:

In this page the administrator can search any taxi driver and see his\her profile page and delete his\her account if it is needed.



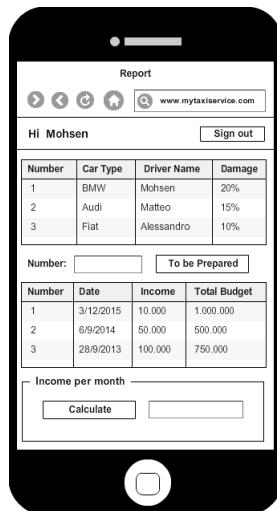
Message

In this page the Administrator can send a message to every user, only taxi drivers or passengers in order to inform them about the possible changes in the future.



Report

In this page the administrator can see the cars status and if needed send damaged cars to be repaired. Also administrator can get report of the monthly income of the service, and total budget of the system



5. Requirements Traceability

REGARDING REQUIREMENTS that we had exposed in RASD, we will propose the consistency between that document and DD.

Functional Requirement are explained in the following parts:

Sign Up Requirements can be verified in subsection 2.5.1 and 4.1.4;

Log In Requirements can be verified in subsection 2.5.1 and 4.1.1;

Request Requirements can be verified in subsection 2.5.2 and 4.2.1;

Reservation Requirements can be verified in subsection 2.5.2 and 4.2.1;

Accept/Refuse Requirements can be verified in subsection 2.5.2 and 4.2.2;

Queue Management Requirements can be verified in section 3, that is reserved totally to the queue algorithm;

Administrator Functionalities Requirements can be verified in subsection 2.5.3 and 4.2.3;

Profile Management Requirements can be verified in subsection 4.2.1, 4.2.2 and 4.2.3.

Non Functional Requirement are also verified.

Regardig *User Interface requirements*, they can be verified in section 4. We have the main page, as we had supposed in RASD, and we have done some updating in personal pages described in the previus document. We have decided to create more than one page (with all informations) , so the application will be more user-friendly but we have respected all details expected.

Users Characteristics requirements have been respected with the insertion of an age-control system during sign up and the possibility to require a special taxy during request or reservation.

As last, it can be observed that *Constraints* are guidelines of all DD : we have reserved a part for all types of Policies and in case of future expansions will be easy add new local policies, privacy policies or other; we have provided a multi servers product so we could have a balanced load during days with striks; we have provided to reserve a part of DB for those datas that need more protections

6. Final Considerations and References

IN OUR OPINION is not necessary to have a document with a lot of details in the first version. In thi way during the future update will be more easly review the concept. During the drafting of the document we have keep on mind what we had explained with RASD, in order to not create any contradiction.

In architectural part we have tried to create a very scalable product : with differents subsystem should be less difficult add new functions on one of them or change the structure of one of them.

For the algorithmic part we have prefered natural languages in order to not insert any constraints reguarding programming language.

In user interface part we have followed the idea that we had already presented in RASD, in order to create a sort of continuity between documents.

In some sections we had a very cautious approach because we had never seen the parts that were requested. In future version we may bring also importand upgrade with the objective of obtain a more complete document

Extra documentation consulted:

- Business Process Model and Notation (BPMN) - Version 2.0 provided by OMG (Object Management Group)