

# myTaxiService

## Project Plan Document

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# 1 Introduction

## 1.1 Purpose

The purpose of this document is to take into account all the aspects of *myTaxiService* project and try to make some estimations in order to predict the project dimension and how much work is needed to create the final product. This is very important in order to provide the people who have to sell the product with all the information about price and time, parameters always taken into account by the customer.

## 1.2 Scope

In order to achieve what described before in this document we will use Function Point and COCOMO estimations in order to identify the size of the project and its cost. Then also a planning is made, in which time divisions and resources allocations show the consistency of the estimations made before. At the end a risk analysis is performed to consider all the possible problems that can compromise the project and how to eventually face them.

## 1.3 Glossary

### 1.3.1 Definitions

**Client / Passenger / User :** Is a person who signed up for this service and their interest is to call a taxi or reserve a ride.

**Taxi Driver :** Is a person who drives a taxi and would like to be called or reserved for a ride through this service.

### 1.3.2 Acronyms

**GPS:** Global Positioning System

**DD:** Design Document

**RASD:** Requirements and Specification Document

**COCOMO:** Constructive Cost Model

**USC CSSE:** University of Southern California - Center for Systems and Software Engineering

**ILF:** Internal Logical File

**EIF:** External Interface File

## 1.4 Reference Documents

- *myTaxiDriver* Specification Document
- *myTaxiDriver* Requirements and Specification Document
- *myTaxiDriver* Integration Tests Document

## 2 Project Size and Cost Estimation

In order approximate size and cost of the project it was decided to employ the function points method and the COCOMO estimation. The function points are calculated by considering five different function types and their weight, which depends on the difficulty of the function itself. The result obtained with such method is at the base of the COCOMO estimation, in fact the function points are the sizing method used, with the other parameters shown in Figure 2, to elaborate the final result.

### 2.1 Function Points


In the table below we are presenting how we have calculated function points for *myTaxiService* application.

Type	Detail	Simple	Medium	Complex	WEIGHTED SUM
ILFs	Clients	X			55
	Drivers	X			
	Ride	X			
	Drivers State and Position	X			
	Reservations	X			
	Queue		X		
	Zones		X		
TOTAL		5	2	0	
EIFs	Driving Licences	X			12
	GPS Coordinates		X		
	TOTAL	1	1	0	
Inputs	Registration		X		29
	Login	X			
	Logout	X			
	Call Request			X	
	Reservation Request			X	
	Reservation Deletion		X		
	Change Driver State	X			
TOTAL		3	2	2	
Outputs	Forwarded Call Request		X		26
	Call Confirmation	X			
	Forwarded Reservation Request		X		
	Reservation Confirmation	X			
	Reservation Rejection	X			
	Reservation Deletion	X			
TOTAL		4	2	0	
Inquery	Show Call Details		X		10
	Show Reservations List	X			
	Show Reservation Details	X			
	TOTAL	2	1	0	
TOTAL					132

Figure 1: Function Points

## 2.2 COCOMO Estimation

In order to make the COCOMO II estimation we've used the tool given by USC CSSE. In the following figures you can see settings and results.



**COCOMO II - Constructive Cost Model**

**Software Size**      Sizing Method

Unadjusted Function Points       Language

**Software Scale Drivers**

Precedentedness       Architecture / Risk Resolution       Process Maturity

Development Flexibility       Team Cohesion

**Software Cost Drivers**

**Product**      **Personnel**      **Platform**

Required Software Reliability       Analyst Capability       Time Constraint

Data Base Size       Programmer Capability       Storage Constraint

Product Complexity       Personnel Continuity       Platform Volatility

Developed for Reusability       Application Experience       **Project**

Documentation Match to Lifecycle Needs       Platform Experience       Use of Software Tools

Language and Toolset Experience       Multisite Development

Required Development Schedule

Figure 2: COCOMO Settings

### Results

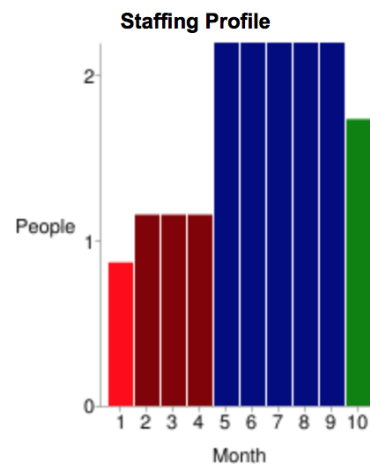
#### Software Development (Elaboration and Construction)

Effort = 16.8 Person-months  
Schedule = 9.3 Months  
Cost = \$0

Total Equivalent Size = 6996 SLOC

#### Acquisition Phase Distribution

Phase	Effort (Person-months)	Schedule (Months)	Average Staff	Cost (Dollars)
Inception	1.0	1.2	0.9	\$0
Elaboration	4.0	3.5	1.2	\$0
Construction	12.8	5.8	2.2	\$0
Transition	2.0	1.2	1.7	\$0



#### Software Effort Distribution for RUP/MBASE (Person-Months)

Phase/Activity	Inception	Elaboration	Construction	Transition
Management	0.1	0.5	1.3	0.3
Environment/CM	0.1	0.3	0.6	0.1
Requirements	0.4	0.7	1.0	0.1
Design	0.2	1.5	2.0	0.1
Implementation	0.1	0.5	4.3	0.4
Assessment	0.1	0.4	3.1	0.5
Deployment	0.0	0.1	0.4	0.6

Figure 3: COCOMO Results

### 3 Tasks, Schedule and Resource Allocation

Having to plan all the work around *myTaxiService*, first of all we have defined all the tasks to perform in order to arrive at the end of the project with a complete and functioning system.

In the following tables you can see all these tasks also grouped by type. A time for each task is also proposed and the resources have been allocated.

Nome	Durata	Inizio	Fine	Predecessori	Risorse
☐ <b>myTaxiService</b>	274g	15/10/2015	01/11/2016		
RASD	17g	15/10/2015	06/11/2015		Luca Riva, Jacopo Strada
Design Document	20g	09/11/2015	04/12/2015	1	Luca Riva, Jacopo Strada
☐ <b>Development</b>	200g	07/12/2015	09/09/2016	2	
Database	20g	07/12/2015	01/01/2016		Luca Riva
Account Manager	25g	04/01/2016	05/02/2016	4	Luca Riva
☐ <b>Application Logic</b>	125g	07/12/2015	27/05/2016		
Position Utilities	25g	18/01/2016	19/02/2016	4	Jacopo Strada
Notification Manager	30g	07/12/2015	15/01/2016		Jacopo Strada
Queue Manager	30g	22/02/2016	01/04/2016	7	Luca Riva
Call Manager	40g	04/04/2016	27/05/2016	7,8,9	Luca Riva
Reservation Manager	40g	22/02/2016	15/04/2016	7,8	Jacopo Strada
☐ <b>User Interface</b>	70g	06/06/2016	09/09/2016	5FI+5g,6FI+5g	
Web Application	40g	06/06/2016	29/07/2016		Luca Riva
☐ <b>Mobile Application</b>	70g	06/06/2016	09/09/2016		
Android	30g	06/06/2016	15/07/2016		Jacopo Strada
iOS	30g	18/07/2016	26/08/2016		Jacopo Strada
Windows Phone	30g	01/08/2016	09/09/2016		Luca Riva
Testing Document	14g	18/04/2016	05/05/2016	2	Luca Riva, Jacopo Strada
Integration Tests	10g	12/09/2016	23/09/2016	3,18	Luca Riva, Jacopo Strada
Deployment	15g	26/09/2016	14/10/2016	19	Luca Riva, Jacopo Strada
Go Live	5g	26/10/2016	01/11/2016	20	Luca Riva, Jacopo Strada

Figure 4: Tasks

These Gantt chart is reported in order to give a clear idea of how the team is planning to work on the various project's tasks, giving information about the expected necessary time to complete each of them. The length of the considered period was previously calculated with the COCOMO approach.

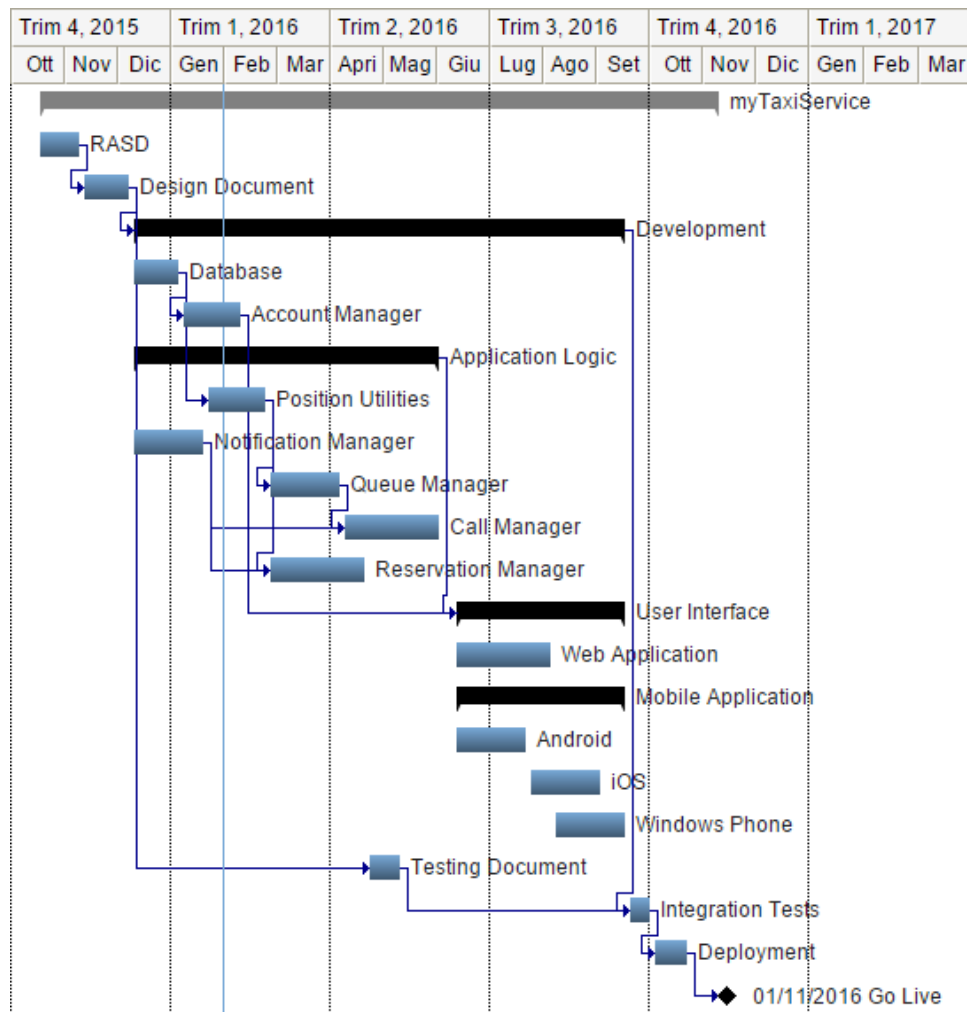


Figure 5: Gantt Chart

The last two following charts describe the tasks that each member of the team has to perform and how much time they have to perform it.

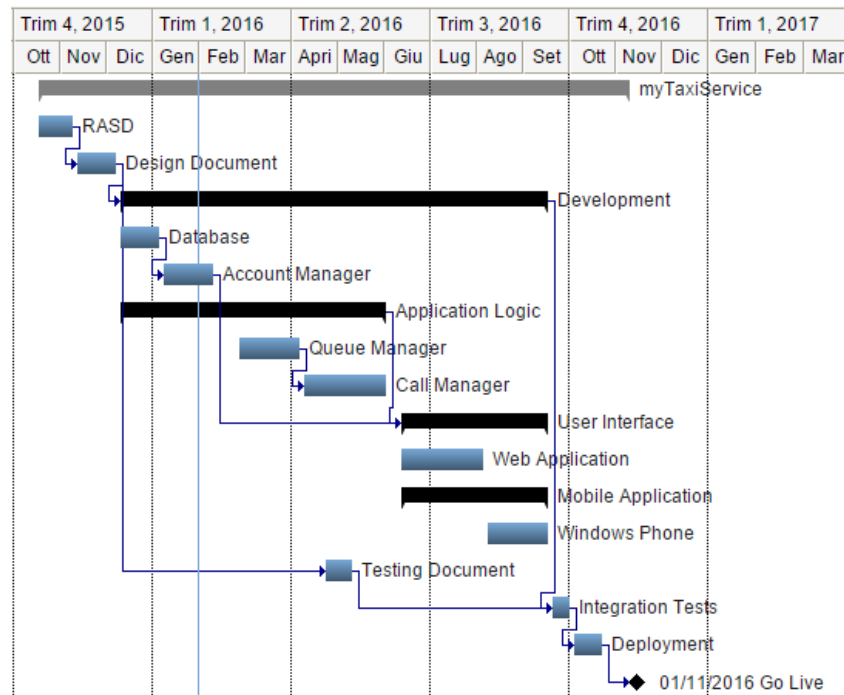


Figure 6: Luca's Tasks

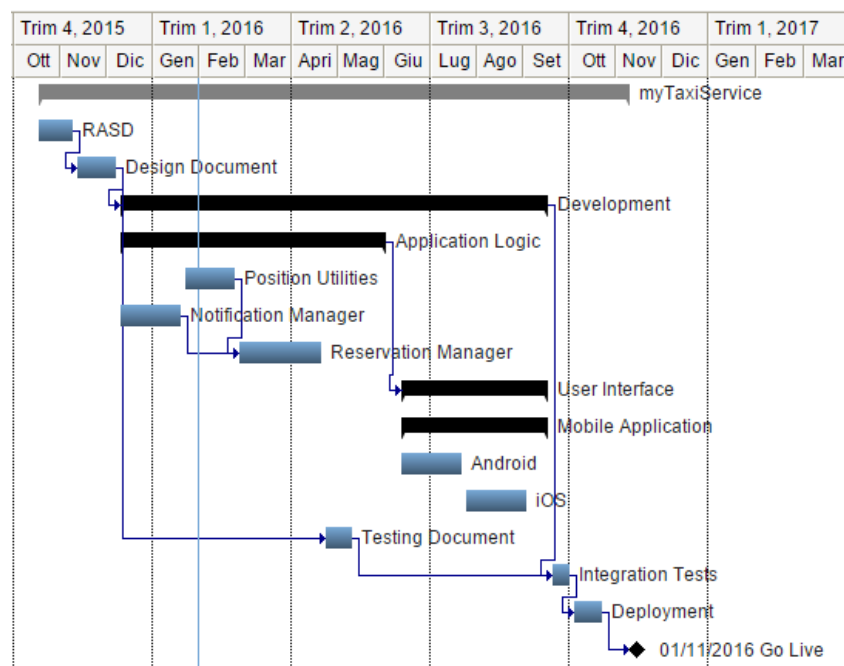


Figure 7: Jacopo's Tasks



## 4 Project Risk

This table reports the possible risks that may compromise the project and how we are prepared to prevent or eventually face them.

<b>Risk</b>	<b>Probability</b>	<b>Effects</b>	<b>Strategy</b>
Personnel shortfalls	moderate	serious	Predict the time necessary in order to develop the project as accurately as possible, also considering possible periods of illness or impossibility to work in general
Developing the wrong software functions	low	catastrophic	Elaborate a clear and precise requirement analysis and present it to the clients in order to acknowledge if what was understood coincides with the requests. It is also important to keep in contact with the IT department of the customers to avoid taking crucial decision without consulting them
Shortfalls of externally performed tasks	low	catastrophic	Always keep in mind eventual alternatives and write a software which is not too much attached to a specific API, so that it would be possible to change the external provider much faster.
Failure to gain users commitment	moderate	serious	Convince the stakeholders to invest also in advertisement both in the city and on the Web
Inadequate estimation of required resources	moderate	catastrophic	Convince the stakeholders to buy hardware with more performances and simplify as possible the most computational parts of the software
High level of level of technical complexity	low	serious	Evaluate the possibility to address a consultant to help in the most critical parts of the development
Customer financial problems	moderate	catastrophic	Develop a project which is scalable and adaptable to other circumstances in order to be sold also in other markets to new clients

Table 1: Risks

## 5 Appendix

### 5.1 Software and Tools used

**ShareLatex:** This web application was used to redact this document in a collaborative way.  
(<https://it.sharelatex.com/>)

**Ganterr:** This web application was used to create the Gantt chart  
(<https://www.smartapp.com/ganterrforgoogledrive/>)

**Csse COCOMOII tool** This web application was used to evaluate the COCOMO  
(<http://csse.usc.edu/tools/COCOMOII.php>)

**Google Sheets** This web application was used to calculate Function Points  
(<http://sheets.google.com>)

### 5.2 Hours of Work

We spent approximately the following amount of hours to redact this document:

**Riva Luca:** 10

**Strada Jacopo:** 10

### 5.3 Gantt Chart in higher resolution

Here is the Gantt Chart in a higher resolution in order to see better the granularity of tasks.

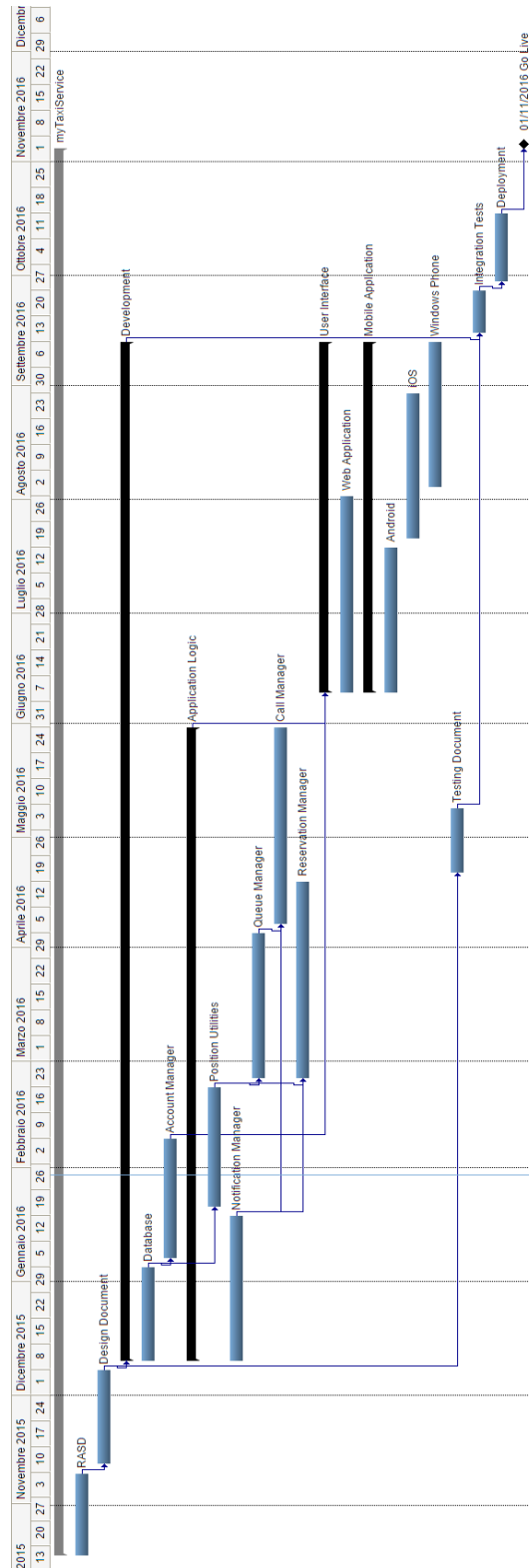


Figure 8: Gantt Chart in higher resolution