

# Integration Test Plan

Matteo Maria Fusi, Matteo Locatelli

### **0.1 Document version**

- 1.0 - 2/2/2016: first release

### **0.2 Time Spent**

- Matteo M. Fusi: ~6h
- Matteo Locatelli: ~6h

### **0.3 Software used**

- Lyx (used to write this document)

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# 1 Introduction

The sake of this document is to define a plan for the implementation of the software needed by the mytaxi service specified by the attached RASD (see *1.3 List of referenced documents* for further details). This document also include a cost estimation based on the Function Points / COCOMO method: in this way it will be possible to know an estimation of number on source lines of code, effort and number of people required to finish the project in a reasonable amount of time. After that a schedule of tasks will be proposed. In the end a list of possible risks that could slow down the development will be shown to the reader.

## 1.1 List of definitions and abbreviations

Also see referenced RASD for definitions and abbreviations.

## 1.2 List of referenced documents

- RASD v 1.0.1 : [link](#)
- Design Document v 1.1.0 [link](#)

# 2 Cost estimation

## 2.1 Function points

### 2.1.1 Internal logic file

Name	Difficulty	Cardinality	Function Point
Zone	simple	2	7
Taxi driver	simple	1	7
Performance	complex	1	15
<b>Total</b>	<b>ILF</b>	4	<b>28</b>

### 2.1.2 External interface file

Name	Difficulty	Cardinality	Function Point
GoogleMapsService input data	complex	1	10
<b>Total</b>	<b>EIF</b>	1	<b>10</b>

### 2.1.3 External input

Name	Difficulty	Cardinality	Function Point
Taxi login/logout	simple	2	3
Taxi status update	simple	1	3
Taxi ride acceptance/refusal	simple	2	3
Costumer send request	medium	1	4
Customer send reservation	medium	1	4
Customer accept/refuse out of zone offer	simple	2	3
<b>Total</b>	<b>EI</b>	<b>9</b>	<b>29</b>

### 2.1.4 External output

Name	Difficulty	Cardinality	Function Point
Taxi send ride offer	medium	1	5
Taxi login response	simple	1	4
Customer Ride acceptance/refusal	simple	1	4
Customer Ride offer	simple	1	4
<b>Total</b>	<b>EO</b>	<b>4</b>	<b>17</b>

### 2.1.5 External inquiries

The system is simple, so inquiries do not exist.

$$EIN = 0$$

### 2.1.6 Unadjusted Function Points

Basing on the results obtained in the previous sections we obtain the following UFP value:

$$UFP = ILF + EIF + EI + EO + EIN = 28 + 10 + 29 + 17 + 0 = 84$$

## 2.2 Cocomo

### 2.2.1 Source Lines of Code

Using the table listed at this link we use a value of 46 becuae we suppose tthat the software will be written using a high level language like J2EE.

$$SLOC = 46 * UFP = 46 * 84 = 3864SLOC \approx 3.864KSLOC$$

### 2.2.2 Effort

The estimated effort depends on nominal cost drivers and scale drivers. Thus, the EAF factor will be 1 and The E factor will be equal to 1.0997. So the effort will be:

$$effort = 2.94 * EAF * KSLOC^E = 2.94 * 1 * 3.864^{1.0997} \approx 13 \frac{person}{months}$$

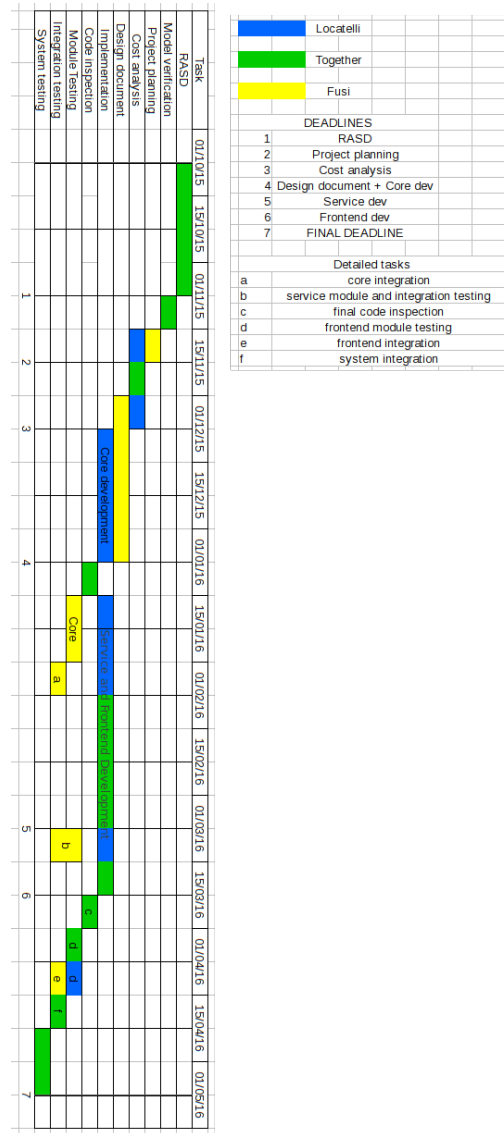
### 2.2.3 Duration

$$duration = 3.67 * effort^E = 3.67 * 13^{0.3179} = 8.29months$$

### 2.2.4 Number of people

$$N_{people} = \frac{effort}{duration} = \frac{13}{8.29}people = 1.57people \approx 2people$$

### 3 Project Schedule



#### 3.1 Resources allocation

The allocation criterion of people on tasks is based on the assumption that a person will be the responsible of every task and the other person will help the other as much as possible in terms of time and effort. The tasks are divided in the way that every member of the team has assigned the same amount of work.

- Matteo M. Fusi: responsible of requirement analysis, model verification,

project planning, design document and module & integration testing

- Matteo Locatelli: responsible of cost analysis, implementation & development, code inspection and system testing.

It's remarkable that important tasks of the development such as the requirement analysis and the final system testing are executed by the entire team. Code inspection must also be executed together because different points of view are important. The development and the testing tasks are executed in parallel for the sake of speed up the entire project.

## 4 Possible risks

The possible risks that we can encounter during the planning and the developing of the mytaxi application are:

1. a change in the organization of the taxi service during the developing process, like the introduction or the deletion of a zone of the city. This issue can be resolved guaranteeing a flexible application that can be easily modified during the development process.
2. a change in the requirements after the RASD document has been completed. This can cause a delay in the developing process, because the RASD must be modified, along with other documents or the code if the coding phase has already begun.
3. an inaccurate cost estimation, caused by the statistical nature of the FP and Cocomo II, that can't provide an exact value of the costs that the application requires. This means that the actual costs could be smaller (this doesn't represent a problem) or bigger, meaning that additional money has to be invested in the application development.
4. problems with the testing and/or integration phase, this means that if one of these two steps show some error in the code, it has to be corrected and then tested and integrated again, causing a delay in the development time.

The maximum estimated delay in the process is 2 months; in the case of a delay another viable option is to release the application on the scheduled day without the reservation functionalities, that can be added later by means of an update.