Cost Estimation and Project Plan

myTaxiService

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1 Cost Estimation

1.1 Function Points

Number of Function Types:

Weights for function types are takes from this table:

FP Type	Low	Avg	High
EI	3	4	6
EO	4	5	7
EQ	3	4	6
ILF	7	10	15
EIF	5	7	10

1. Internal Logic File:

   Application stores information of these data structures:

   Users - Simple 7
   Taxi - Simple 7
   Zone - Simple 7
   Request - Medium 10
   Reservation - Medium 10
   Payment Information - Medium 10

   TotalILF = 3*7 + 3*10 = 51

2. External Interface File:

   Application interacts with external APIs - Maps (for locations, and routes) and PaymentAPI (for transactions):

   Location - Simple 5
   Transaction - Simple 5

   TotalEIF = 10

3. External Inputs:

   The application can interact with user or driver.

   User:

   Login/Logout - Simple 3
   Registration - Simple 3
   Edit profile information - Simple 3
   Add address/payment - Simple 3
   Delete address/payment - Simple 3
   Cancel Request/Reservation - Medium 4

   Driver:

   Declaring availability - Medium 4
   Accepting/Declining rides - Simple 3

   TotalEI = 10*3 + 3*4 = 42

4. External Inquiries:

   Users can request or reserve a taxi ride, and they can request information about it or their profiles:

   Request/Reservation - Complex 6
   View profile - Simple 3
   View all Requests/Reservation - Simple 3
   View single Request/Reservation - Simple 3

   TotalEQ = 2*6 + 5*3 = 27

5. External Outputs:

   Application can cause these output actions:

   Dispatch a taxi - Simple 4
   Refund - Complex 7

TotalEO = 4 + 7 = 11

Total number of FPs we get by adding up all these values:

UFP = 51 + 10 + 42 + 27 + 11 = 141

1.2 COCOMO

As the first step we calculate number of source lines of code (SLOC):

We can get this number from UFP, by multiplying it with an average number of lines of code per function point for Java (AVC). For Java AVC = 53

SLOC = AVC * UFP = 53 * 141 = 7473

Next we are to calculate the Effort needed in Person - Months. We do it from the effort equation:

Effort = 2.94*EAF*(KSLOC)^E

EAF - Effort adjustment factor derived from Cost Drivers

E - Derived from Scale Drivers

For Cost Drivers we selected all Nominal values, except for Reusability factor, which we considered as High (because this application might be used in other similar systems, or other towns etc.). Therefore *EAF = 1.07*

For Scale Drivers the values for Precedentedness, Risk Resolution, Process Maturity are Low (because the team members don't have much experience in this field), and the values for Flexibility and Team Cohesion are High. Therefore value of E is calculated in the following way:

*E = 0.91 + 0.01*sum(ScaleDriver weight) = 1.1*

Finally we get the Effort value:

Effort = 2.94*1.07*(7.5)^1.1 = 28.9 Person - Months

Duration of the project is calculated in the following way:

Duration = 3.67*(Effort)^E ~ 12 Months

If we assume that the cost per person (CPP) for this project is 1000 €, we get the total cost:

Cost = Effort * CPP = 28900 €

2 Tasks, Schedule and Resource Allocation

Documents	Started	Finished	Duration	Work done and hours spent	
				Ranjithkumar	Petar Korda
Requirement analysis and specification document	2nd Week of October 2015	2nd Week of November 2015	32 days	Part of goal identified, UML diagrams designed ,possible scenarios identified-22 hrs	Part of goal identified, UI designs ,Alloy modeling-22 hrs
Architecture and algorithmic design	2nd Week of November 2015	1st Week of December 2015	20 days	Algorithmic design part-15 hrs	Architecture design part-15 hrs
Review of the gathered Information	1st Week of December 2015	2nd Week of December 2015	7 days	Both of us Worked together for 10 hrs each	
Integration and Test planning	2nd Week of December 2015	4th Week of December 2015	18 days	Test cases design and planning-15 hrs	Integration design and Planning-15hrs
Cost Estimation and Planning	2nd Week of January 2016	3rd Week of January 2016	10 days	COCOMO estimation and Planning-2 hrs	Function Point Estimation and planning -2 hrs

After these 5 stages, next tasks are: Development, Integration & Integration Testing, Beta Testing and finally Release of the application.

Project Development

The complete development of the project takes at least six months and it involves following three stages

- ***Core system*** **-** Server application
- ***User application*** **-** Front - end
- ***Driver application*** **-** Front - end for the driver

The ***core system*** development involves four sub stages as follows:

[1] Development of Zone module-15 days
[2] Development of action module-2 months (One team member develops the part for Requests, other for Reservations)
[3] Development of User account module-15 days

[4] Development of Payment and refund module-1 month (Split the work between both team members)

Development of [1] and [2] can be done parallel with one team member working on [1] and the other on [2].

The ***User application*** development involves two sub stages as follows

Mobile application-Android application will be developed by one person and IOS application will be developed by another person and this process takes 20 days to get completed.

Web Application-Both of us works together to finish this app in 10 days.

The ***Driver application*** can be created by both the person working together in a month.

3 Risks

Some of the risks that the project myTaxiService might face are:

- Team size and lack of experience - The lack of the experience might prolong the duration of the project development. Additional expert might be needed
- Lack of time - Since both team members have responsibilities on the university, the time they are to devote to this project might not be enough
- Hazards - injuries, illness, etc.
- Customer risks - customer might want to change some requirements which would prolong the project duration