POLITECNICO DI MILANO

Software Engineering 2 Project

myTaxiService

Project Plan Document

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Contents

1 Function Point Estimation

1.1 Internal Logic Files

The system includes a number of ILFs that will be used to store the information about users, reservations and taxi requests. The system stores information about users, it saves: an username, email, password, name, surname, phone number and date of birth as a String. Taxi Drivers also have availability time and status which are also String. To manage the taxis, the system stores their position. Reservation are composed of a start position, end position and a scheduled time and a reference to a taxi. Taxi requests are composed of a start position and a reference to a taxi. The system also stores a data structure for the queue management.

ILF	Complexity	FP
User	Average	10
Reservation	Average	10
Request	Low	7
Queue management	High	15
Total:		42

1.2 External Logic Files

The system has to manage the conversion between GPS coordinate and addresses using the data obtained from external geo-map APIs. This is a simple operation as it involves few data fields.

ELF	Complexity	FP
Coordinates	Low	5
Total:		5

1.3 External Inputs

The client application allows any king of user to perform the following interactions with the system: login/logout (simple operations) and register/edit profile (average operations). Passengers can request/reserve taxis (complex operations) while taxi drivers can set their availability and accept taxi requests (simple operations).

EI	Complexity	FP
Login/Logout	Low	2 x 3
Register/Edit	Average	2 x 4
Request Taxi	High	6
Reserve Taxi	High	6
Set Availability	Low	3
Accept Taxi Request	Low	3
Total:		32

1.3.1   External Inquiries

The application has to show to any kind of user his profile, to passengers informations about an incoming taxi, and to taxi drivers their reservation status. These are all simple operations except the incoming taxi one because it involves three entities (passenger, taxi driver and taxi manager)

EQ	Complexity	FP
Uer Profile	Low	3
Incoming Taxi	Average	4
Reservation status	Low	3
Total:		10

1.3.2   External Outputs

The application has to show notifications to inform the taxi drivers about incoming requests and reservations. This is a simple operation

EO	Complexity	FP
Notifications	Low	3
Total:		3

1.4   Resuming

Function Type	Value
Internal Logic Files	42
External Logic Files	5
External Inputs	32
External Inquiries	10
External Outputs	3
Total:	92

1.5   COCOMO Estimation

To evaluate the COCOMO II and determine the effort required to complete the software project we also use an online tool that helps us to do some calculus (http://csse.usc.edu/tools/COCOMOII.php). We add the report of that site and the choice made about the Scale Driver to obtain that result.

COCOMO II - Constructive Cost Model

Software Size Sizing Method [Function Points ▼]

Unadjusted Function Points [92] Language [Java ▼]

Software Scale Drivers

Precedentedness	[Low ▼]	Architecture / Risk Resolution [Nominal ▼]	Process Maturity [High ▼]
Development Flexibility	[Low ▼]	Team Cohesion [Very High ▼]	

Software Cost Drivers

Product

		Personnel		**Platform**	
Required Software Reliability	[High ▼]	Analyst Capability	[Nominal ▼]	Time Constraint	[Nominal ▼]
Data Base Size	[High ▼]	Programmer Capability	[High ▼]	Storage Constraint	[Nominal ▼]
Product Complexity	[Nominal ▼]	Personnel Continuity	[Low ▼]	Platform Volatility	[Low ▼]
Developed for Reusability	[Low ▼]	Application Experience	[Nominal ▼]		
Documentation Match to Lifecycle Needs	[Nominal ▼]	Platform Experience	[Nominal ▼]	**Project**	
		Language and Toolset Experience	[Nominal ▼]	Use of Software Tools	[Nominal ▼]
				Multisite Development	[High ▼]
				Required Development Schedule	[Nominal ▼]

Maintenance [Off ▼]

Software Labor Rates
Cost per Person-Month (Dollars) [2000]

Results

Software Development (Elaboration and Construction)

Effort = 16.1 Person-months
Schedule = 9.2 Months
Cost = $32132

Total Equivalent Size = 4876 SLOC

Acquisition Phase Distribution

Phase	Effort (Person-months)	Schedule (Months)	Average Staff	Cost (Dollars)
Inception	1.0	1.1	0.8	$1928
Elaboration	3.9	3.4	1.1	$7712
Construction	12.2	5.7	2.1	$24421
Transition	1.9	1.1	1.7	$3856

Staffing Profile
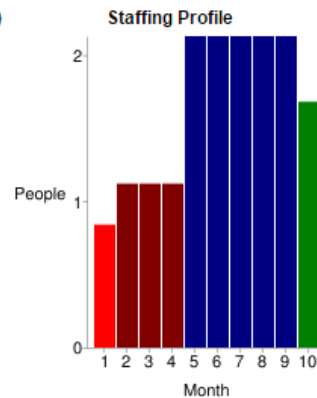
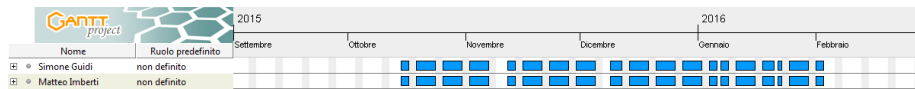**Software Effort Distribution for RUP/MBASE (Person-Months)**

Phase/Activity	Inception	Elaboration	Construction	Transition
Management	0.1	0.5	1.2	0.3
Environment/CM	0.1	0.3	0.6	0.1
Requirements	0.4	0.7	1.0	0.1
Design	0.2	1.4	2.0	0.1
Implementation	0.1	0.5	4.2	0.4
Assessment	0.1	0.4	2.9	0.5
Deployment	0.0	0.1	0.4	0.6

2 Task Scheduling
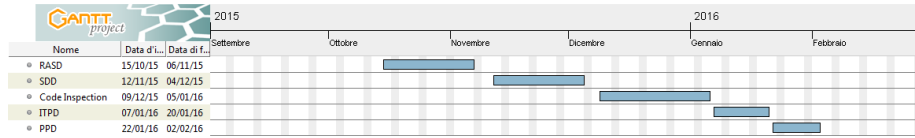
3 Resources Allocation

Both resources have to work full time on the project and for each assignment they need a certain amount of time (that varies from assignment to assignment, within a range of about 2 to 10 hours) for brainstorming and deciding how to divide the task in order to work in parallel and have both the same amount of work.

4 Risk Management

Potential risks:

Risk	Probability	Effects	Solution
Loss of data	Low	Catastrophic	Avoided by uploading project data on github platform
Resources illness	Moderate	Serious	Partially avoided by allowing working at home
Geolocalization system goes down	Low	Serious	Mostly avoided by choosing a very reliable geolocalization system such as Google Maps