COMPUTER SCIENCE AND ENGINEERING

PROJECT OF SOFTWARE ENGINEERING 2

Project Plan

POLITECNICO
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Summary

1.Introduction

The principal scope of “project plan” document is the time and resource analysis to support the development phase.
For the analysis the Functional Point approach has been used.

To evaluate the effort the COCOMO model has been used.

2.Functional Point Approach

With Functional Point Approach I can evaluate the effort needed for the design and implementation of a project and for each functionality I can evaluate the realization complexity.

The functionalities list has been obtained from the “RASD” document.

Number of Functional Point based on functionality and relative complexity:

Function type	***Simple***	***Medium***	***Complex***
Internal Logic File	7	10	15
External Interface File	5	7	10
External Input	3	4	6
External Output	4	5	7
External Inquiry	3	4	6

The principal functionalities are:

- ***Internal Logic File***
  All the application data stored in database.
  The number of ILFs will be used to store information about taxi, user, journey cost and city zone.
  I adopt simple weight for all events and entities

because have a simple structure with a small number of fields (4 x 7 = 28 FPs) .

- ***External Logic File***

This represents the interaction between application and the rate cost of journey that depends on the location.

I adopt a medium cost because have a medium complex structure (1 x 7 = 7 FPs).

- ***External Input***

  This part represents the interaction between user and application to allow him/her to:

  - Login/Logout: simple structure (3 x 1 = 3 FPs).

  - Became a registered user: simple structure (3 x 1 = 3 FPs).

  - Call a taxi: medium structure (4 x 1 = 4 FPs).

  - Estimate the cost: medium structure

(4 x 1 = 4 FPs).

- ***External Output***
  - Email send to confirm registration: simple structure (4 x 1 = 4 FPs).

  - Notification after call taxi with time and code taxi: medium structure (5 x 1 = 5 FPs).

  - Notification after estimation cost: medium structure (5 x 1 = 5 FPs).

  - Notification after insertion of invalid parameter: simple structure (4 x 1 = 4 FPs).

- ***External Inquiries***

  This part is empty, because the user cannot request particular information about, for example, other user.

  Total FP number: 67 Fps.

3.COCOMO Approach

To pass from FP to SLOC we use an average conversion factor of 46 as described at:

http://www.qsm.com/resources/function-point-languages-table

67 FPs ∗ 46 = 3082 SLOC

Result of COCOMO analysis:

COCOMO II - Constructive Cost Model

Software Size Sizing Method: Source Lines of Code

	SLOC	% Design Modified	% Code Modified	% Integration Required	Assessment and Assimilation (0% - 8%)	Software Understanding (0% - 50%)	Unfamiliarity (0-1)
New	3082						
Reused		0	0				
Modified							

Software Scale Drivers

Precedentedness	High	Architecture / Risk Resolution	Very High	Process Maturity	Nominal
Development Flexibility	Nominal	Team Cohesion	High		

Software Cost Drivers

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

Maintenance Off

Software Labor Rates

Cost per Person-Month (Dollars) 1800

Calculate

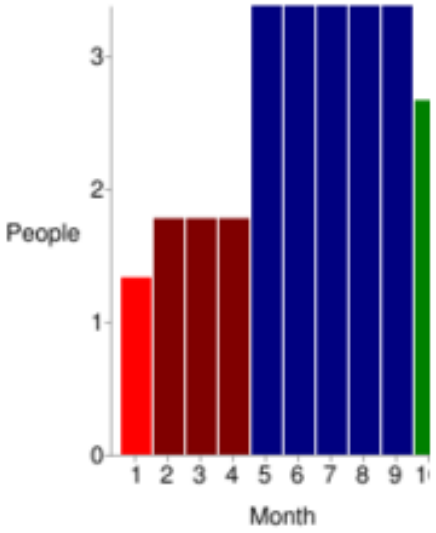
Results

Software Development (Elaboration and Construction)

Effort = 23.5 Person-months
Schedule = 8.5 Months
Cost = $42343

Total Equivalent Size = 3082 SLOC

Staffing Profile



Acquisition Phase Distribution

Phase	Effort (Person-months)	Schedule (Months)	Average Staff	Cost (Dollars)
Inception	1.4	1.1	1.3	$2541
Elaboration	5.6	3.2	1.8	$10162
Construction	17.9	5.3	3.4	$32181
Transition	2.8	1.1	2.7	$5081

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

Phase/Activity	Inception	Elaboration	Construction	Transition
Management	0.2	0.7	1.8	0.4
Environment/CM	0.1	0.5	0.9	0.1
Requirements	0.5	1.0	1.4	0.1
Design	0.3	2.0	2.9	0.1
Implementation	0.1	0.7	6.1	0.5
Assessment	0.1	0.6	4.3	0.7
Deployment	0.0	0.2	0.5	0.8

4.Conclusion

Here are listed the real hours of works, included in Development Time Document, spent for the project.

• Requirements Analysis and Specifications Document:

– Vincenzo Riccardi: ~55 hours.

• Design Document

– Vincenzo Riccardi: ~40 hours.

• Code Inspection

– Vincenzo Riccardi: ~35 hours.

• Integration Test Plan

– Vincenzo Riccardi: ~30 hours.

- Project Plan

– Vincenzo Riccardi: ~8 hours.

The total hours of work spent during all phases of the project are 168 hours

168 hours/ (40 ∗ 4) hours = 1.05 Person/Months

I suppose that a man can work 40 hours in a week so 40*4 is a number of hours that man works in a month.