COST ESTIMATION AND SPECIFICATION DOCUMENTS

Project of Software Engineering 2

WEATHER-CAL

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Revisions

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Chapter 1

Introduction

1.1 Purpose

The purpose of this document is to present the cost estimation for the Wheater-Cal system. It will estimate the effort required and the costs for the analisys and the development of the application using, respectively, the UFP and COCOMO II methods. This document is intended for both the stakeholders and the developers of the system. Stakeholders of the system are the client, which is our teacher and their assistants, composing the group that will evaluate our project, the testers, which are a team with our same project and our same tasks and the developers, which are the authors of this document.

1.2 References

[1] Center for Systems and Software Engineering, *COCOMO II online estimation tool*, Ray Madachy

[2] Paolo Polidori, Marco Edemanti, *Design Document for WeatherCal project*, 2014.

[3] Paolo Polidori, Marco Edemanti, *Requirement analisys and specification document for WeatherCal project*, 2014.

Chapter 2

UFP effort estimation

2.1 Estimation

2.1.1 ILF Internal Logic Files

File name	Weight	FPs
Calendar	Simple	7
Event	Complex	15
Ownership	Simple	7
User	Simple	7
Participation	Simple	7
User group	Simple	7
Weather value constraint	Simple	7
Weather state constraint	Simple	7
Total		64

2.1.2 EIF External Interface Files

File name	Weight	FPs
OpenWeatherMap	Medium	7
Google Timezone	Simple	5
Google Maps	Simple	5
Total		17

2.1.3 EI External Inputs

File name	Weight	FPs
Login	Simple	3
Logout	Simple	3
Sign in	Medium	4
Manage participation	Simple	3
Create event	Complex	6
Edit event	Complex	6
Delete event	Simple	3
Invites management	Complex	6
User search	Complex	6
Total		40

2.1.4 EIQ External Inquiries

File name	Weight	FPs
Personal schedule	Complex	6
Notifications	Complex	6
Other users' schedule	Simple	3
Local weather info	Medium	4
Bad weather notification (owner)	Complex	6
Bad weather notification (participant)	Medium	4
Total		29

2.1.5 EO External Outputs

Since there are no external outputs in our system, no FPs will be added.

2.1.6 Summary

The total FPs for the project are $64 + 17 + 40 + 29 + 0 = 150$. The number of source line code is so $150 * 50 = 7500$. We used 50 as SLOC/FP factor as an average among J2EE (46), Java (53) and Javascript (47).

2.2 Comparison with actual values

From the UFP estimation we resulted in having to develop a $7,5$ KLOC, which is pretty close to the reality:

Language	files	blank	comment	code
Javascript	12	29	108	468
Java	53	842	860	4568
CSS	5	110	43	1367
JavaServer Faces	4	46	2	821
XML	10	1	22	255
HTML	4	0	0	94
Maven	1	0	182	93
SQL	1	0	0	1
SUM	100	1028	1217	7667

Chapter 3

COCOMO II cost estimation

3.1 Software evalutaion

We can use the SLOC number obtained using the UFP method for estimating the COCOMO costs. We derived the scale drivers and the cost drivers using the tool referenced at [?].

Software Development (Elaboration and Construction)	
Effort	26.4 Person-months
Schedule	14.1 Months

Acquisition Phase Distribution			
Phase	Effort (Person-months)	Schedule (Months)	Average Staff
Inception	1.6	1.8	0.9
Elaboration	6.3	5.3	1.2
Construction	20.1	8.8	2.3
Transition	3.2	1.8	1.8

Software Effort Distribution for RUP/MBASE (Person-Months)				
Phase/Activity	Inception	Elaboration	Construction	Transition
Management	0.2	0.8	2.0	0.4
Environment/CM	0.2	0.5	1.0	0.2
Requirements	0.6	1.1	1.6	0.1
Design	0.3	2.3	3.2	0.1
Implementation	0.1	0.8	6.8	0.6
Assessment	0.1	0.6	4.8	0.8
Deployment	0.0	0.2	0.6	1.0

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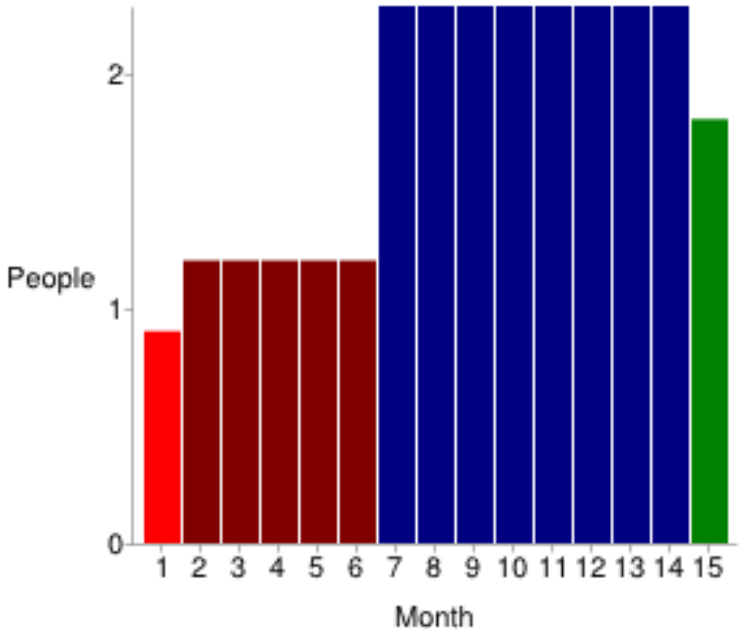

Figure 3.1: Staffing profile

3.2 Deductions and conclusion

The COCOMO II estimation reported that there would be needed a total of 14.1 months and 1.7 people making of a total of 26.4 people-month for developing this project. Considering the data reported by the Office of the Chief Financial Officer of the University of California, Berkeley an average of 180 hours per month were spent between Dec. 2014 and Jan. 2015. This makes so a total of 4752 hours-people and 2538 total hours estimated for completing this project. Actually, we spent a total of 445 + 283 hours, divided for each person involved in the project. This is the 15% of the estimated cost, meaning that this software can be considered as very immature in its development , that the estimation parameters were overrated for the real characteristics of this project and, obviously, that the COCOMO II model is not an exact model of the reality but just an approximated model.

Time Reporting

	Paolo Polidori	**Marco Edemanti**
CE document writing	2 hours	2 hours

List of Figures

Listings