Project Reporting
<MeteoCal>

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Contents

1 Introduction

1.1 Purpose

The following document represents the Project Reporting Document of the project Travel Dream. The goals of this document are:

- Report the Function point analysis
- Report the COCOMO analysis and compare the estimation of the effort with the real applied effort

1.2 Definitions, Acronyms, Abbreviations

1.2.1 Definitions

Definition	**Explanation**
User	Registered and authenticated member of the application
Event	Information about location, date and participants of users appointment
Event Organizer	The User who owns the event
Event Participant	User who participates the event created by the Event Organizer
Invitation	Request of participation to an event send by the Event Organizer to the Event Participants
Calendar	The set of events scheduled for the user
Visibility	The privacy setting (Public or Private) of a calendar or an event of the system
Weather Conditions	Information about weather condition related to event
Notification	A message send from the system to the users

1.2.2 Acronyms

Acronym	Explanation
EO	Event Organizer
EP	Event Participant
MG	Matteo Gazzetta
AF	Alessandro Fato
FPA	Function Point Analysis
ILF	Internal Logic Files
EIF	External Interface Files
EI	External Input
EO	External Output
EI	External Inquiry
UFP	Un-adjusted Function-Point

1.2.3 Abbreviations

Abbreviation	Explanation
MC	MeteoCal
DB	Database

2 Function Point Analysis

2.1 Short Overview

FPA measures the size of an application system in 2 areas: the specific user functionality and the system characteristics. The end result is a single number called the Function Point index which measures the size and complexity of the software product.

2.2 Function Types

Source	Simple	Medium	Complex
ILF	7	10	15
EIF	5	7	10
EI	3	4	6
EO	4	5	7
EQ	3	4	6

ILF Homogeneous set of data used and managed by the application.

EIF Homogeneous set of data used by the application but generated and maintained by other applications.

EI Elementary operation to elaborate data coming form the external environment.

EO Elementary operation that generates data for the external environment.

EQ Elementary operation that involves input and output. Without significant elaboration of data from logic files.

2.3 Internal Logic Files

Function	Complexity	FP
User	Medium	10
Calendar	Simple	7
Notification	Simple	7
Event	Medium	10
Forecast	Simple	7
Weather	Simple	7
Location	Simple	7
Setting	Simple	7
Total FP	**62**	

2.4 External Input

Function	Complexity	FP
Login	Simple	3
Logout	Simple	3
Registration	Simple	3
Login/Registration Social	Medium	4
Create Event	Medium	4
Edit Event	Medium	4
Delete Event	Simple	3
Add Participant	Simple	3
Cancel Participation	Simple	3
Accept Participation	Simple	3
Decline Participation	Simple	3
Accept Suggestion	Simple	3
Decline Suggestion	Simple	3
Change Setting	Simple	3
Add/Remove Preferred Cal	Simple	3
Total FP	**48**	

2.5 External Output

Function	Complexity	FP
Check ThreeDays Event Bad Weather	Complex	7
Check OneDay Event Bad Weather	Simple	4
Check Weather	Medium	5
Total FP	**16**	

2.6 External Inquiry

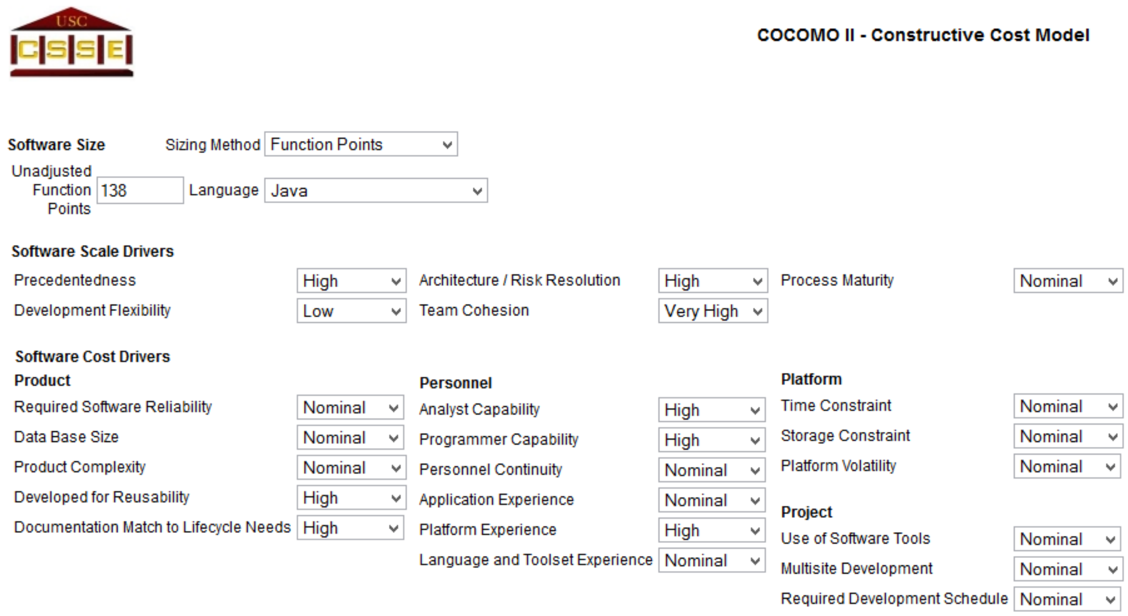
Function	**Complexity**	**FP**
Show Event	Simple	3
Search Public Event	Simple	3
Search Public User's Calendar	Simple	3
Search User to invite	Simple	3
Total FP	**12**	

2.7 Compute UFP

UFP = ILF + EI + EQ + EQ = 62 + 48 + 16 + 12 = **138**

3 COCOMO Analysis

The effort analysis was made considering the previous UFP and filling out the form at http://csse.usc.edu/tools/COCOMOII.php, which are specified levels of the various cost drivers, the staff, the platform and the overall project.



COCOMO II - Constructive Cost Model

Software Size Sizing Method: Function Points

Unadjusted Function Points: 138 Language: Java

Software Scale Drivers

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

Software Cost Drivers

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

Figure 1: COCOMO Setting

The final result shows an **Effort** equal to **19.6 months person**, and one **Schedule** equal to **9.8 months**. The number of lines of code required for the completion of the product are equal to **7314 SLOC.N** The *number of people* working in parallel is equal to about **2** (**Effort** / **Schedule**).

At this point it is possible to compare these estimates with actual data. The team that developed the application MeteoCal consists of two people, and therefore consistent with the estimate of N. The number of logic code lines,from the Sonar analysis, is indicated below for each module of the project:

- *MeteoCal-ejb* 3,120 (+ 1407 OWN JAPIs)
- *MeteoCal-EJBClient* 949
- *MeteoCal-web* 1,349

The total value of lines of code is equal to **5418 SLOC** (6825). This value is lower by 26% (7%) over the **estimated 7314 SLOC**. The site estimate the SLOC using the factor 53 because we use JavaEE and not standard Java we calculate a more accurate SLOC using the factor 46 for *JavaEE* from the table of this site. So the new estimated value is **138 * 46 = 6384 SLOC** which is greater than 15% (or lower than 7%) of our real SLOC.

The total time of work, ranging from requirements analysis through implementation and testing of the system, inclusive of hours grinding of documents is equal to **320 hours**, and the total time available was about **102 days** (4 Months). The estimated person month effort is nominal and equal to **320** / **(40 * 4) = 2**. It depends on the number of hours of work expected profits in a month, and varies according to the internal policies of the organisation and the activities planned. Being a project carried out in the context of a course on Software Engineering and not with reference to the data related to past projects, you can not give a margin of error on the indexes estimated with respect to a production process already established in the past. The following tables set out the effort and the schedule, which runs from the first stage of inception, with the feasibility study and the planning of activities, until the phase transition which makes verification and validation of the product from the point of the client who commissioned it.

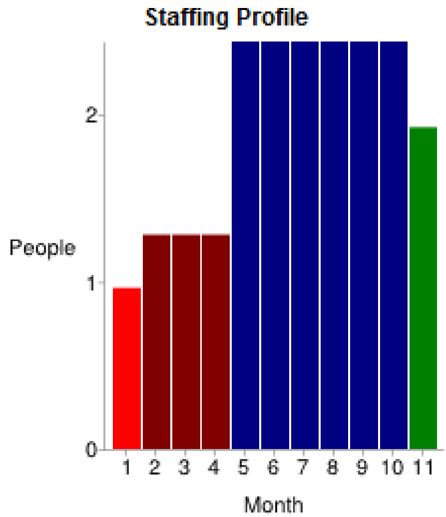
Software Development (Elaboration and Construction)

Effort = 19.6 Person-months
Schedule = 9.8 Months
Cost = $0

Total Equivalent Size = 7314 SLOC

Acquisition Phase Distribution

Phase	Effort (Person-months)	Schedule (Months)	Average Staff	Cost (Dollars)
Inception	1.2	1.2	1.0	$0
Elaboration	4.7	3.7	1.3	$0
Construction	14.9	6.1	2.4	$0
Transition	2.4	1.2	1.9	$0



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

Phase/Activity	Inception	Elaboration	Construction	Transition
Management	0.2	0.6	1.5	0.3
Environment/CM	0.1	0.4	0.7	0.1
Requirements	0.4	0.8	1.2	0.1
Design	0.2	1.7	2.4	0.1
Implementation	0.1	0.6	5.1	0.4
Assessment	0.1	0.5	3.6	0.6
Deployment	0.0	0.1	0.4	0.7

Figure 2: COCOMO Result

4 Conclusion

You can see from the estimated values obtained using the COCOMO model are very different from the real ones. Given the size of the project, the number of features and the limited time and resources available for the construction, it was necessary to proceed quickly (especially on the main features not) to be able to deliver the project on time. Most likely in a working environment (and not teaching) the time necessary for the realization of the application would have been higher, also by virtue of a greater attention would be paid to that during writing of the code, in order to reduce the number of possible errors introduced. It would be also possible to perform a greater number of test and treat more the look and feel