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➔ Project - Airline Booking

Our team is developing a website for booking airline tickets . The team consists of 3 students.

Using COCOMO and based on the team size (small) & experienced (low), the concerned project could be categorized as “Semi - Detached”. Based on the prior similar projects, project size could roughly be around 1300 LOC. This would serve as the basis for estimation of different project parameters using BASIC COCOMO, as shown below:

Effort = $a*(KLOC)^b$ PM

TDEV = $2.5 * (Effort)^c$ Months

For “Semi - Detached” category of project values of a, b, c are 3.0, 1.12 and 0.35 respectively. So, the projected effort required for this project becomes

Effort = $3.0 * (1.3)^{1.12}$ PM

= 3.0 * (1.34) PM

= 4.024 PM

So around 4 person - months are required to complete this project. With this calculated value for effort we can also approximate the development time required :

TDEV = $2.5 * (Effort)^{0.35}$ Months

= $2.5 * (4)^{0.35}$ Months

= 4.05 Months

So, the project is supposed to be completed by Four months. However, estimation using BASIC COCOMO are largely idealistic.

Let us refine them using INTERMEDIATE COCOMO. Before doing so we determine the Effort Adjustment Factor (EAF) by assigning appropriate weight to each of the following attributes.

Cost Drivers	Ratings					
	Very Low	Low	Nominal	High	Very High	Extra High
Product attributes						
Required software reliability	0.75		1.00	1.15	1.40	
Size of application database		0.94	1.00	1.08	1.16	
Complexity of the product		0.85	1.00	1.15	1.30	1.65
Hardware attributes						
Run-time performance constraints				1.11	1.30	1.66
Memory constraints				1.06	1.21	1.56
Volatility of the virtual machine environment			1.00	1.15	1.30	
Required turnabout time			1.00	1.07	1.15	
Personnel attributes						
Analyst capability		1.19	1.00	0.86	0.71	
Applications experience		1.13	1.00	0.91	0.82	
Software engineer capability		1.17	1.00	0.86	0.70	
Virtual machine experience		1.10	1.00	0.90		
Programming language experience		1.07	1.00	0.95		
Project attributes						
Application of software engineering methods	1.24	1.10		0.91	0.82	
Use of software tools	1.24	1.10		0.91	0.83	
Required development schedule	1.23	1.08		1.04	1.10	

The cells with red backgrounds highlight our choice of weight for each of the cost drivers. EAF is determined by multiplying all the chosen weights. So, we get

$$\mathbf{EAF = 1.72 \ (approx)}$$

Using this EAF value we refine our estimates from basic COCOMO as shown below

$$\mathbf{Effort|_{corrected} = Effort * EAF}$$

$$\mathbf{= 4.024 * 1.72}$$

$$\mathbf{= 6.921 \ PM(approx)}$$

$$\mathbf{Tdev|_{corrected} = 2.5 * (Effort|_{corrected})^{c}}$$
$$\mathbf{= 2.5 * (6.921)^{0.35}}$$

$$\mathbf{= 4.9 \ months \ (approx)}$$

After refining our estimate it seems that five months would likely be sufficient for completion of this

project. This is still a rough estimate since we have not taken the underlying components of the software into consideration. Complete COCOMO model considers such parameters to give a more realistic estimate.