

## Exercise 2

### *Cost Management*

Distribution: **12.12.2005**

Deadline: **21.12.2005**

Presentation: **09.01.2005**

Total points possible: 20

The homework should be done in pairs of two.

It is recommended to solve the problems by hand and on paper, without the support of project management software.

Do not forget that the presentation slides are part of the solution.

The solution can be dropped into the mailbox next to the entrance to the F-Floor hallway.

Do not forget to put your names and email addresses on your solution!

The box will be open from 19.12.2005 until the evening of 21.12.2005.

It can also be sent to:

`ipe@se.inf.ethz.ch`

as a PDF document.

Name: \_\_\_\_\_

Student-ID: \_\_\_\_\_

Email: \_\_\_\_\_

Name: \_\_\_\_\_

Student-ID: \_\_\_\_\_

Email: \_\_\_\_\_

## Your Tasks

The first four tasks are related to a six-month IT-project. Various figures of the project are presented in the appendix.

Tasks 5-9 are neither related to this project nor to each other.

1. **Cost Budgeting:** Table 1. in the appendix gives you the figures of the initial cost budgeting of the project. Fill in the appropriate cells by calculating the total costs of month 1 to 6, the three cost elements, and the whole project. *(2 points)*
2. **Planned Values:** Use Table 1. to fill in the appropriate cells of Table 2. in the appendix by calculating the Planned Values of month 1 to 6, the three cost elements, and the whole project. *(2 points)*
3. **Variance Analysis:** Table 3. in the appendix gives you the Earned Values and Actual Costs for month 1, 2, and 3. Use Table 2. and Table 3. to fill in Table 4 in the appendix. If there are multiple possible formulas to use then argue for your choice. *(3 points)*
4. **Performance Reporting:** Describe with your own words in what shape the project was in month 1, 2 and 3. What steps do you think the Project Manager has taken after month 1 to achieve this? *(3 points)*

## Additional Tasks

5. What would you predict about the final performance of this project if the project budget is \$10,000,000? Explain your prediction. *(2 points)*

Period	Actual cost for period	Budgeted cost for period	Work completed for period
Month 1	\$2,500,000	\$2,200,000	\$2,000,000
Month 2	\$1,000,000	\$1,200,000	\$1,500,000
Month 3		\$5,000,000	
Month 4		\$1,600,000	

6. You are the Project Manager of a two-month manufacturing project which has a budget of \$500,000 and 50 construction workers. The project charter was signed by senior management. Due to the short period of the project, all staff was hired in the first week. Performance reporting is done weekly. Halfway through the project the Schedule Performance Index is 0.89 and the Cost Performance Index is 0.91. How would you explain these figures based on the information given above? What would you do to solve the situation? *(2 points)*

7. Although the stakeholders thought there was enough money in the budget, halfway through the project the Cost Performance Index is 0.7. To determine the root cause, several stakeholders audit the project and discover the project cost budget was estimated analogously. Although the task estimates add up to the project estimate, the stakeholders think something was missing in how the estimate was completed. What do you think was missing? Explain your answer. *(2 points)*
8. Consider the following three projects:  
**Project A** is a two-year project of \$48,000. After two months the CPI is 0.8 and the SPI is 0.9.  
**Project B** is a three-month project of \$10,000 and after two months the SPI is 1.2 and CPI 0.9.  
**Project C** is a one-year project of \$20,000 and one month before its deadline the TCPI is 110%.  
What do you think about these projects? Which one would you be most worried about? Why? How would you bring the troubled projects back on track? *(2 points)*
9. You are Project Manager of an IT-project of \$100,000. The activity to design the most important module is budgeted for \$10,000 and estimated to take two weeks. Two days before the deadline the chief software architect tells you that the design of the module is 80% completed. What is the earned value of this activity? *(2 points)*

## APPENDIX

All figures are given in U.S. Dollars.

Cost Element	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Total Cost
<b>Hardware</b>							
- Purchase HW	0	20000	120000	2000000	0	0	
- Install HW	0	0	8000	12000	12000	0	
<b>Software</b>							
- Purchase SW	0	30000	0	0	0	0	
- SW Labor	20000	38000	34000	30000	30000	20000	
<b>Project Management</b>							
- Client Interface	15040	15040	17296	16208	15456	7360	
- Project Plan	6400	0	0	0	0	0	
- Tracking	704	7040	8048	7392	7056	3360	
- Status Meeting	352	3488	3680	3520	3360	1600	
<b>Total Cost</b>							

**Table 1. Initial cost budgeting**

Cost Element	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Total Cost
<b>Hardware</b>							
<b>Software</b>							
<b>Project Management</b>							
<b>Project Total</b>							

**Table 2. Planned Values**

Cost Element	EV Month 1	AC Month 1	EV Month 2	AC Month 2	EV Month 3	AC Month 3
<b>Hardware</b>	<b>0</b>	<b>0</b>	<b>20000</b>	<b>20000</b>	<b>152000</b>	<b>152150</b>
- Purchase HW	0	0	20000	20000	140000	140000
- Install HW	0	0	0	0	12000	12150
<b>Software</b>	<b>10000</b>	<b>5000</b>	<b>80000</b>	<b>85000</b>	<b>115000</b>	<b>125000</b>
- Purchase SW	0	0	30000	30000	30000	30000
- SW Labor	10000	5000	50000	55000	85000	95000
<b>Project Management</b>	<b>22496</b>	<b>23040</b>	<b>48064</b>	<b>48070</b>	<b>77088</b>	<b>77060</b>
- Client Interface	15040	14720	30080	30020	47376	47480
- Project Plan	6400	7200	6400	6400	6400	6900
- Tracking	704	800	7744	7700	15792	14880
- Status Meeting	352	320	3840	3950	7520	7800
<b>Total Cost</b>	<b>32496</b>	<b>28040</b>	<b>148064</b>	<b>153070</b>	<b>344088</b>	<b>354210</b>

Table 3. Cumulative Earned Value and Actual Cost for month 1, 2, and 3

Question	Earned Value Term	Abbreviation and Formula	Month 1	Month 2	Month 3
What is the efficiency at which tasks are getting done from a financial point of view?					
How fast does the project progress in relation to the expected progress?					
How much will the project cost at completion?					
What is the efficiency that must be achieved to complete the project within budget?					

Table 4. Variance data for month 1, 2, and 3