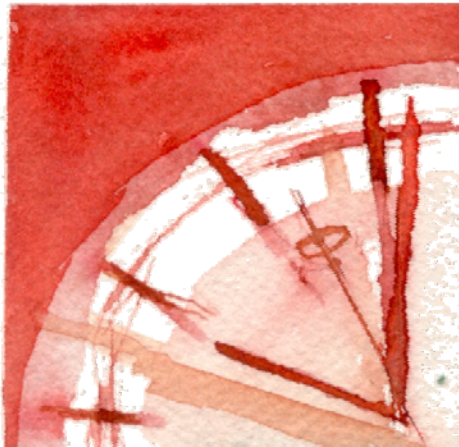


PROJECT CONTROL

ASSIGNMNETS – FORMULATION



Authors:

Nerea Toledo Gandarias

Jose Ramon Otegi Olaso

This work is published under the [Creative Commons License](https://creativecommons.org/licenses/by-nc-sa/4.0/).



Table of contents

Theme 5. Practical Exercises 3
Theme 6. Computer-based exercises..... 6

INTRODUCTION

This document presents the assignments that the students taking this subject should complete in order to acquire the competences and the skills expected.

In order to do so, two different activity types have been considered. On the one hand, practical exercises that can be done using pen and paper are introduced. On the other hand, with the goal of mastering the topics covered in the subject, computer-based activities are introduced.

Theme 5. Practical Exercises

EXERCISE 1

Consider that you are managing a project and that you have the following information:

- The original project cost is 1000 staff-days
- The original project schedule is 10 months
- Planned value at 4th month is 340 staff-days
- Actual costs at 4th month are 370 staff-days
- Earned value at 4th month is 320 staff-days

Given that information, respond to the questions below:

1. What is the current cost shortfall in as measured by the Cost Variance (CV)?
2. What is the current work productivity as measured by the Cost Performance Index (CPI)?
3. What is the current schedule shortfall in as measured by the Schedule Variance (SV)?
4. What is the current schedule efficiency as measured by the Schedule Performance Index (SPI)?
5. What is the Estimated Cost at Project Completion (EAC)?
6. What is the intensity of work required to finish the work within the available funds? Consider that the available funds can be either the original project budget or the computed estimation.

EXERCISE 2

You are the Project Manager of a Project that it is expected to be completed within 18 months, with an original budget of 300.000€. Currently, you are at the end of the 9th month and at the end of month 6 a risk took place that put in danger the project. The contingency planned defined for this risk considered hiring resources and the cost of them was included in

the total budget of the project. However, due to the expertise required of one of the resources, you had to spend additional 15.000€/month.

Considering that your Actual Costs are the costs estimated for this month plus the additional costs of the contingency plan, and that the progress of the project is 75% of what has been planned for this month, answer to the following questions. Assume that the cost distribution is uniform.

Complete the table below:

Variable	Value	Variable	Value
BAC		CV	
PV		SV	
EV		CPI	
AC		SPI	

Based on the obtained results, answer to the following questions:

- What is the status of the project? Do you think that it has been correctly planned?
- Assuming that the occurred deviations will continue, how much do you estimate that will cost finishing the project? Justify the obtained value.

EXERCISE 3

A customer (homeowner) hires a contractor to tile five identical rooms in his home. The customer purchased the tiles and the contractor will be reimbursed for labor only. Because the tiles are difficult to work with, the contractor assumes two days per room at eight hours per day and a 100€ per hour. The planned cost is 8.000€ but overtime will also be paid, if necessary, at the same rate of 100€ per hour.

The first room was completed in three days because of difficulty in workmanship and getting an understanding of how to use these special tiles. This included two hours of overtime. The second room was completed in two days. Using EVMS, what information would be presented to the homeowner at the end of the first week (day 5)?

EXERCISE 4

You work for a company that manufactures high tech electronic equipment. You are the project manager responsible for the development of a new type of Handset for 5G applications. The project life cycle is made up of the phases in the WBS below. We need to purchase one oscilloscope. Each control account plan (CAP) is planned to be completed one after the other. Today is the end of Month 5.

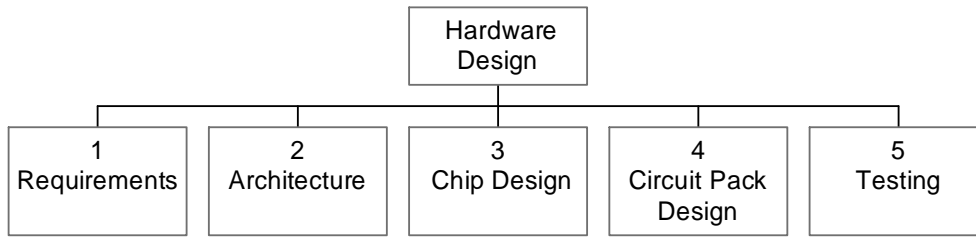


Figure 1: WBS of the project under evaluation

Next, the Gantt diagram of the project and the budget assigned to each task is represented.

Task	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Budget
Requirements	X						20.000 €
Architecture		X					20.000 €
Chip Design			X				30.000 €
Circuit Pack Design				X	X		60.000 €
Testing						X	20.000 €

At month 5, the project manager collects this information:

Task	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Status at the end of Month 5
Requirements	X						22.000 €
Architecture		X					19.500 €
Chip Design			X	X			30.500 €
Circuit Pack Design				X	X		75% complete, 48.000 € spent
Testing							Not started

With that information, analyse the status of the project applying the EVM method.

Theme 6. Computer-based exercises

The following exercises are proposed to be completed using a computer. Preferably, a software such as excel should be used in order to properly solve them. Nevertheless, a software with similar purposes can also be used.

EXERCISE 1

We have a project with the following planning:

Task	Predecessor (FC)	Duration (weeks)	Budget (€)
A		1	500
B	A	4	10.000
C	B	1	1.500
D	B	1	1.000
E	D	1	1.000
F	C, E	4	2.000
G	F	2	8.000
H	G	2	5.000
I	C, E	4	8.000

In week number 13, we have the following report:

Task	State (% completed)	Real beginning	Duration (weeks)	Real Cost (€)
A	100	As expected	As expected	1.500
B	100	1 week later	2 weeks more	9.000
C	100	3 week later	1 week more	2.500
D	100	As expected	As expected	1.000
E	100	As expected	As expected	1.000
F	100	As expected	As expected	750
G	0	As expected	As expected	0
H	0	As expected	As expected	0
I	10	At week 12	As expected	1.000

Analyze the status of the project using the EVMS considering the following situations:

- Assume a 50/50 distribution for the cost of the tasks for computing the EV. That is, if the task has started, assign 50% of the cost and when it has finished the other 50%.
- Assume a uniform distribution of the total cost of the tasks for computing the EV.

EXERCISE 2

A company has gained a public bid to conduct a project in the construction sector. The conditions of the contract are the following:

- Beginning of the contract: February 2018
- Target contract cost: 2.500.000 €
- Cost limit: 2.700.000 €
- End of contract: November 2018
- Duration: 10 months

Each month, the contractor sends a report called CPR (Cost Performance Report) that has the PV, EV and AC values, schedule variation, cost variation and the estimated final cost (LRE). This report was sent to the cost analyst and after evaluation, it was sent to the Project Manager, which was the final responsible of the project. The information of the CPR is shown next:

	PV	AC	EV	BAC	LRE
march-18	1.824.282,00 €	2.464.174,00 €	1.538.160,00 €	2.500.000,00 €	2.500.000,00 €
april-18	2.169.235,00 €	2.667.030,00 €	1.995.156,00 €	2.500.000,00 €	2.750.000,00 €
may-18	2.255.473,00 €	2.692.698,00 €	2.115.866,00 €	2.500.000,00 €	2.750.000,00 €
june-18	2.384.831,00 €	2.778.978,00 €	2.364.159,00 €	2.500.000,00 €	3.000.000,00 €
july-18	2.427.950,00 €	2.793.085,00 €	2.401.357,00 €	2.500.000,00 €	3.000.000,00 €

Using the information of the CPR, analyze the performance of the project in July 2018 in terms of schedule, cost and estimate its final cost and duration. Provide a complete analysis using the EVMS, and graphically show the trend of the analyzed parameters.

- Are the estimations of the contractor realistic?
- Conduct a sensibility analysis varying the performance index in the estimation of the final cost.