



Project Management Exercises

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Role of the Project Manager

Exercise 1: Business Scenario - Problem Statement

You are the project manager for a global infrastructure project. The project is being delivered in another country, and you frequently travel to assist with receiving the necessary approvals and permits for construction. Your Project Sponsor is confident in your team's ability to finish the project under budget and ahead of schedule. An early completion incentive has been linked to the project to encourage you and your team.

After using parametric estimates in the planning process and developing a well-documented basis of estimates, you are confident that you can deliver the project within its budget and on schedule. However, it's not clear if you can deliver the project sooner than scheduled.

After an on-site meeting with local officials about the project's status, one of the officials pulls you aside to have a conversation. He tells you that he can get important government approval immediately, ensuring that the project's next phase is completed ahead of schedule. However, he asks you to pay him \$250 in US currency as an "administration fee."

What should you do as the project manager?

[See Solution](#)

Exercise 2: Business Scenario - Problem Statement

You wrapped up a project three months ago that produced spare parts for one of your customers. You successfully gained final acceptance and signoff by the customer on the deliverable.

Managing the project went well because your parts consistently met the quality metrics, fitness for use tests and passed all control charts. There was no indication of issues with quality and grade that would prompt a need for change.

A fellow project manager in the company is preparing for a similar project with a different customer, and they want to meet with you to glean insight on what to expect.

During your meeting, you discover an error in the results communicated in the deliverable that may potentially turn into a safety issue in the future which could affect thousands of customers. Although the risks involved with these newly discovered safety issues are very small, they could have a serious impact. How should you handle this?

[See Solution](#)

Planning Performance Domain

Exercise 3: Business Scenario - Problem Statement

You are the project manager of a new corporate initiative that is focused on revising and reclassifying the staffing positions in its Design Division. The project plan has been developed. Initially, there were some challenges as the teams adjusted to the new staffing positions. However, you have worked with the teams to provide insight on their roles and responsibilities, and everything is now progressing smoothly. The past five project team review meetings have shown that you are on schedule and 5% under budget.

Now, you are preparing a project status report for your upcoming meeting with the Project Sponsor. You are optimistic and excited about your project status despite the rocky start. Unfortunately, the meeting with the Project Sponsor did not go as planned. The Sponsor informs you that the deadline for the project needs to be moved up by 30 days and the budget will remain the same. The Sponsor has asked you to submit a plan of action on how you would accomplish this new deadline.

What should you do?

[See Solution](#)

Exercise 4: Business Scenario - Problem Statement

The ABC Fencing Line of Business (LOB) has been progressing for the past two years, and it is now ending. The new LOB is finally ready for its 'Go live' date and will become a new service option for the company. In the last week of work on the project schedule, only 10 of the 50 project team members involved in the project's life are needed to complete the remaining tasks that will take it to live.

You have already been assigned your next project, which starts in 4 weeks, and you are starting to transition into your new responsibilities.

What should you be concerned about as you try to close your project?

[See Solution](#)

Delivery Performance Domain

Exercise 5: Business Scenario - Problem Statement

Gina is a project manager with Bluedot Software Development and Web Design Company. A large, global customer contracts the company to design software that would allow them to capture service requests from thousands of potential clients, track existing client projects, and facilitate communication between them and their clients.

Gina has never led a project of this size but has successfully completed a similar project on a smaller scale. Therefore, Gina feels confident about her abilities to lead the project and will utilise historical information from her previous project to plan for this initiative.

During the planning process, Gina and her team conduct interviews and surveys and facilitate workshops to collect the necessary requirements needed to complete the project scope of work. They use these requirements to design and build the software system.

Unfortunately, during the final user acceptance testing of the software, which is required for customer sign-off, Gina's project team discovered the software design will not support the performance requirements when the system is under a load of several hundred users.

What happens now?

[See Solution](#)

Exercise 6: Business Scenario - Problem Statement

Brian, the project manager in a strong-matrix organisation, has been leading projects for his company for ten years.

The company has decided to streamline their operations and create policies and procedures to cultivate a culture that is more centred on driving customer excellence. Company leaders and staff members are slowly adapting this shift in mindset.

Brian's current project is 25% complete, ahead of schedule, and currently under budget.

Every two weeks, Brian schedules meeting with key stakeholders to review the project reports and metrics.

During the last stakeholder meeting, Brian was asked by one of the key stakeholders to add a new feature to the scope of work as a formal change request.

This stakeholder has just returned from an industry conference where he gained insight into some advanced technology that would increase the company's competitive position and result in a significant increase in market share. How should Brian handle this change request?

[See Solution](#)

Measurement Performance Domain

Exercise 7: Business Scenario - Problem Statement

Jan, the EVP of the manufacturing division, has commissioned Jack to lead a project initiative in her area of responsibility because of his attention to detail. Jack is working with his team to estimate activity durations so they can map out the schedule for the project. After a successful decomposition process of the scope statement of work, Jack is confident in his team's ability to capture the true work effort that needs to be estimated and scheduled.

In reviewing the activities to be estimated, Jack realises that a large number of the activities could benefit from some historical data and the use of mathematical parameters. This minimises his estimating risk for 60% of the activities. For the remaining activities, the team can research past practices and industry standards to come up with a range of estimates based on optimistic, pessimistic, and realistic durations.

What approach are Jack and his team likely to take to determine their estimates?

[See Solution](#)

Exercise 8: Business Scenario - Problem Statement

In one of Janice's project team meetings, her team reports the status of their assigned activities defined on the project schedule. About halfway through the meeting, a problem with the schedule is discovered as several activities are behind schedule.

After all the activities for this project phase are reported, the overall schedule is determined to be progressing at about 75% of what had been planned. Janice has to figure out how she can get the schedule back on track. How can Janice go about solving this scheduling problem?

[See Solution](#)

Exercise 9: Business Scenario - Problem Statement

Cynthia is a subject matter expert and Director of the Store Renovation Department. Because of her expertise and experience in managing store remodels for the corporation, she and her team are the 'go-to' people for many project managers.

Donnell is the Project Manager for one of the stores in the southeast region. Because of the age of the store, it has been classified as a Tier 1 Remodel, requiring more work and a higher budget allocation.

Donnell has a budget of \$850K to complete the entire schedule that has been defined for the project.

At the 30% mark of work completed on the project, Donnell's team has spent \$310K.

What does this tell Donnell about the status of his project? What should he do?

[See Solution](#)

Exercise 10: Earned Value Management

A software development project has four phases. Each phase takes a month to complete and is estimated to cost \$10,000 per phase. The phases are planned to be completed one after the other. Given the project status at the end of three months, calculate the CV, SV, CPI, and SPI.

| Project Phases | Month 1 | Month 2 | Month 3 | Month 4 | Status at the End of Month 3 |
|----------------------------|---------|----------|---------|---------|------------------------------|
| Requirement Definition | S-----F | | | | Complete, spent \$10,000 |
| Architecture & Design | | S-----PF | ---F | | Complete, spent \$12,000 |
| Development & Unit Testing | | | S----PF | | 50% done, spent \$9,000 |
| System Testing & Go Live | | | | | Not yet started |

| | | |
|----------------|-----------------|----------------------|
| Legend | | |
| S – Start time | F – Finish time | PF – Partly finished |

[See Solution](#)

Exercise 11: Earned Value Management

John is managing a three-month project to enhance a financial system. He is working on his EVM analysis to report to management on the project's status. Calculate the following based on the information given below:

Q1. John is comparing his actuals to the Earned Value of his project. He has finished the first month of his project schedule, and the earned value for his project is \$65,000. The actuals from the financial system are \$57,850. What is the CPI for his project?

Q2. Based on the CPI and a Budget at Completion (BAC) of \$200,000, what is the Estimate at Completion (EAC)?

Q3. John's management is interested in understanding how much more money is required for the project to be completed. What is the Estimate To Complete (ETC)?

Q4. John also needs to understand how his project is tracking against its schedule. After the first month of work effort, his Planned Value (PV) was \$60,000. What is the SPI for his project?

Q5. John wants to see if the positive SPI of the project will offset the CPI. He decides to rerun his EAC calculations. How can he incorporate both CPI and SPI?

[See Solution](#)

Principle : Build Quality into Processes and Deliverables

Exercise 12: Business Scenario - Problem Statement

You are a project manager with Ace Engineering Inc. Four months ago, you wrapped up a project that produced an ignition switch for an automotive company's ignition switch redesign. Managing the project went well because your parts consistently met your quality metrics and fitness for use tests and passed all control charts. There was no indication of issues with quality and grade that would prompt a need for change.

During a post-production quality audit, one of your company's test engineers discovers that a key chain with many keys could pull the key out of the ignition, causing a car to stall as it is driving. This could potentially cause serious injury as airbags would not deploy in an accident. Several hundred thousand cars have been sold with the ignition switch manufactured by the automotive company.

What should you do?

[See Solution](#)

Team Performance Domain

Exercise 13: Business Scenario - Problem Statement

Tanya is the project manager for a manufacturing project in a highly regulated industry. The room for error is very small with the varying environmental factors that govern the company's practices. Tanya's project can have a major impact on several areas within the company.

To strengthen the team's ability to deliver the project adequately without any infractions, the top players in those areas are selected to join Tanya's project team. This decision proves to be helpful.

A conflict arises between a stakeholder and one of the team members regarding how a task can be completed without violating government regulations.

Tanya has to meet with the team member and stakeholder to defuse the situation and resolve the conflict.

What is the most effective approach?

[See Solution](#)

Exercise 14: Business Scenario - Problem Statement

Robert is leading a significant project initiative for his company. This project is very intense and critical to the business. It will require all hands on deck.

Robert is task-driven and takes a no-nonsense approach. As a result, some project team members are afraid of him. They view Robert as someone who could damage their career, bonus potential, and work opportunities.

Because of this mentality, Robert's next team meeting is unproductive, and there is debate about who is responsible for the activities.

How should Robert handle this?

[See Solution](#)

Stakeholder Performance Domain

Exercise 15: Business Scenario - Problem Statement

Communication is 90% of a Project Manager's job; communicating status is a critical part of ensuring project success.

Your company is a crucial supplier for a major airline company; most projects are one to three years long.

A large, 18-month design and manufacturing project is about halfway complete when the original project manager leaves for another position, and you are asked to step in as the new project manager.

The project includes work performed by sub-contractors, and they have some key deliverables coming up. You need to understand the status of these deliverables.

How should you prepare yourself for the project manager role, especially as it relates to communication requirements?

[See Solution](#)

Exercise 16: Business Scenario - Problem Statement

Regina is managing a four-year international project, and she is a year and a half into the project. Her project team includes team members from three different countries. Because of the distance between team members, many have never worked together on a project.

Therefore, Regina has to work hard to map out suitable communication methods in her plan to reach everyone.

As the team nears the halfway mark on the project, Regina notices an influx in her issue log and a decrease in her team's productivity and engagement during project team meetings.

What are some things Regina can do to motivate her team?

[See Solution](#)

Uncertainty Performance Domain

Exercise 17: Business Scenario - Problem Statement

Cynthia is a subject matter expert and the Director of New Store Construction in Small Markets. As she has expertise and experience in managing complex store construction for the corporation, she has been appointed as the manager of a new, large, and complex construction project involving a gas station.

None of the previous construction projects included a gas station and convenience store component. Since this is a new initiative and a way for the company to diversify its business, this project is critical to the business, very visible to senior management, and can be a career maker or breaker.

The senior management team is anxious to see the project brought to life, but the company lacks a strong risk management process. The company would like Cynthia to prepare a risk response plan and submit it before the project's first milestone in 3 weeks.

What should Cynthia do?

[See Solution](#)

Project Work Performance Domain

Exercise 18: Business Scenario - Problem Statement

Scott is the Project Manager for a global project, which is very demanding and critical to his company. His Project Sponsor is confident in his team's ability to finish the project under budget and ahead of schedule.

To manage the huge demand, Scott must procure additional resources.

The additional resources would be responsible for activities requiring specific skills, which his project team lacks.

The customer has an incentive clause in the project's agreement that yields a bonus for early completion. Scott has a vision for the work the additional resources will complete, but scheduling problems will also require him to crash the critical path.

What contract should Scott establish to procure the additional resources?

[See Solution](#)

Critical Path Exercises

Exercise 19:

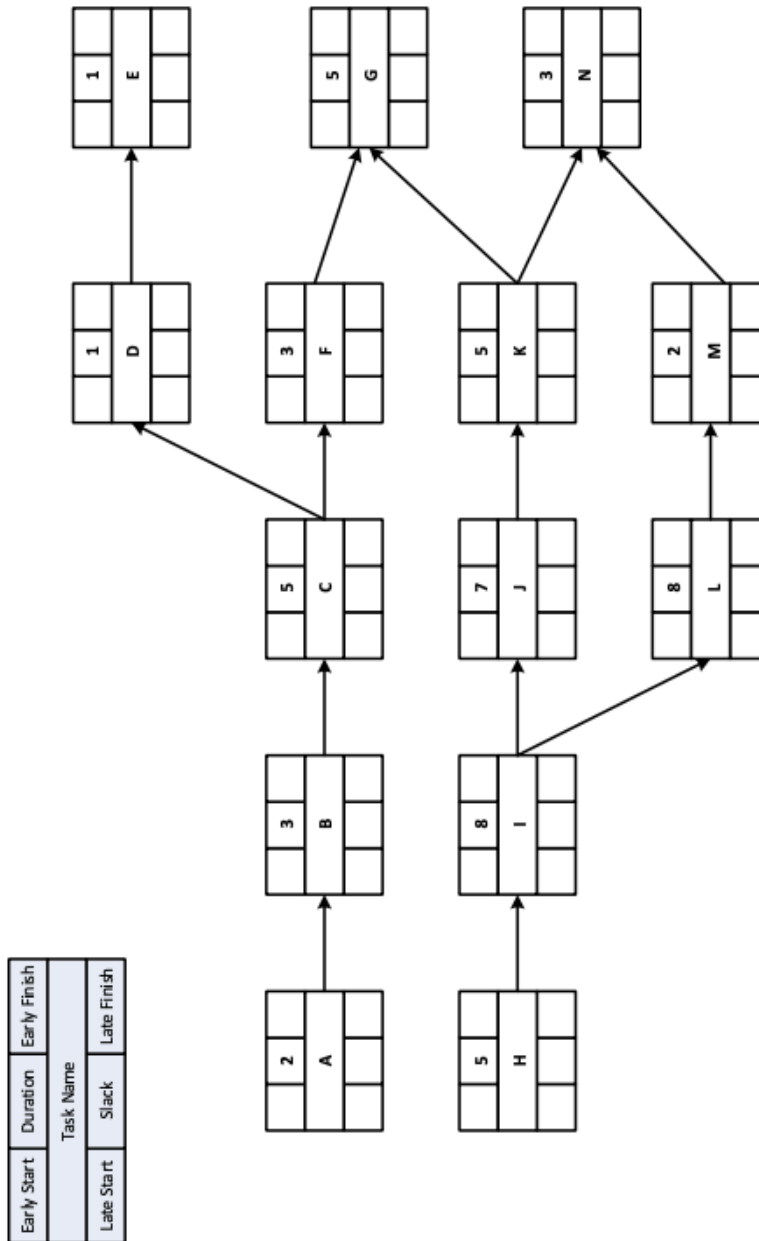
For the following table of information,

1. Draw the network diagram
2. List the network paths
3. Determine the critical path(s)
4. Determine the float for each activity

| Activity | Duration | Dependency | Float |
|----------|----------|------------|-------|
| Start | 0 days | - | |
| A | 5 days | Start | |
| B | 2 days | Start | |
| C | 3 days | A, B | |
| D | 5 days | Start | |
| E | 6 days | Start | |
| F | 4 days | D, E | |
| G | 2 days | C, F | |
| H | 5 days | G | |
| I | 7 days | G | |
| J | 3 days | H | |
| Finish | 0 days | I, J | |

[See Solution](#)

Exercise 20:



[See Solution](#)

Earned Value Analysis

Exercise 21:

You are a landscape contractor and have been requested to lay “cobble lock” around a commercial building. The area to be covered is 10,000 sq/meters. Your team can lay 1,000 sq/meters per day. The cost per square meter is €90. After four days of work, your foreman confirms to you that they have 48% of the work completed. You have spent €400,000. Calculate the following values.

| TERM | VALUE |
|--------------------------------------|-------|
| Budget At Completion (BAC) | |
| Planned Value (PV) | |
| Earned Value (EV) | |
| Actual Cost (AC) | |
| Cost Variation (CV) | |
| Schedule Variation (SV) | |
| Cost Performance Index (CPI) | |
| Schedule Performance Index (SPI) | |
| Estimate at Completion (BAC / CPI) | |
| Estimate to Complete (EAC - AC) | |
| Variance at Completion (BAC – EAC) | |

[See Solution](#)

Exercise 22:

You are working on a project to install lighting fixtures in a new 200-room hotel building. You need to install five identical fixtures in each room. The approved budget is €500,000, and the approved schedule is 14 weeks. At the end of 8 weeks, you have 110 of the rooms fully completed, and you have spent €250,000. Calculate the following values.

| TERM | VALUE |
|--------------------------------------|-------|
| Budget At Completion (BAC) | |
| Planned Value (PV) | |
| Earned Value (EV) | |
| Actual Cost (AC) | |
| Cost Variation (CV) | |
| Schedule Variation (SV) | |
| Cost Performance Index (CPI) | |
| Schedule Performance Index (SPI) | |
| Estimate at Completion (BAC / CPI) | |
| Estimate to Complete (EAC - AC) | |
| Variance at Completion (BAC – EAC) | |

[See Solution](#)

Role of the Project Manager

Solution 1: Business Scenario - Problem Statement

You deny the request to pay \$250 to the official.

You want to keep your project on a positive path to ensure success. Further, your project team would like to earn an incentive for their hard work. However, paying the official money would be considered a bribe.

Therefore, the next step for you, as the project manager, is to meet with the sponsor and report the offer made by the official.

Solution 2: Business Scenario - Problem Statement

You should first get in touch with your old Project Sponsor and management to communicate your findings both verbally and in writing (formally). Then you and/or the sponsor should communicate your findings to the customer.

According to PMI's Code of Ethics and Professional Conduct, you must "uphold the policies, rules, regulations, and laws that govern your work, professional and volunteer activities."

Planning Performance Domain

Solution 3: Business Scenario - Problem Statement

You need to schedule a team meeting to discuss your strategy and plan for implementing the change. After reviewing your change management plan, your team should first look at the remaining work to be completed to assess what it would take to complete the activities. This relates to the triple constraint of scope, budget, and schedule and other measurable constraints such as quality metrics, risk reassessment, and resources. Then, the team can brainstorm and analyse how to adjust the calendar accordingly, see if there are opportunities to reduce scope, work overtime, and still meet the budgetary constraint.

After approaching the problem using the triple constraint and change management process, you will be able to create a new viable plan of action so that you will both meet the new deadline and not compromise on the integrity of the deliverable. Using the triple constraint and change control process is an excellent framework for assessing change and making decisions around change.

Solution 4: Business Scenario - Problem Statement

With you and many of the team members leaving the project, you need to ensure that everyone contributes to the Lessons Learned process before leaving.

Some team members could be apprehensive about contributing because they do not see the value or benefit in this process and feel you could have done it on your own. In that case, you need to explain that lessons learned, and historical information are valuable because they give insight and a potential starting point for new projects.

You should inform the team that this is also part of the updates to Organization Process Assets, which is necessary to close the project formally.

Delivery Performance Domain

Solution 5: Business Scenario - Problem Statement

This is a significant blow to Gina and her team. They had captured the customer requirements accurately but had not anticipated how to support the non-functional requirements for the load and performance of the system.

With this being a software design issue, the team has to rewrite the core architecture of the software, which requires all components of the systems to be retested before the customer sign-off.

Because of the team's inability to adequately define the requirements without cutting corners, the rework impacts Gina's project in several ways:

- Increased cost
- High risk of customer dissatisfaction
- Missed schedule deadlines
- Low morale of project team members

The project needs to assess the impact and likely requires a Change Request for schedule and budget impacts.

Solution 6: Business Scenario - Problem Statement

As this was a formal request by a key stakeholder, Brian should follow the agreed-upon Change Request process.

This would include analysing the costs and benefits of the proposed request and providing alternatives to minimise the impact on cost and schedule.

Once this analysis is complete, Brian can present his findings to the Sponsor and Stakeholders for their decision.

Measurement Performance Domain

Solution 7: Business Scenario - Problem Statement

Jack and his team have decided to use a parametric estimation technique for a large number of activities and have decided to use a three-point estimate for the remaining activities. This is also known as PERT.

Solution 8: Business Scenario - Problem Statement

To aid in the decision-making process, Janice needs to schedule a follow-up meeting with her team to evaluate the impact of this delay on the triple constraint. The delivery of the scope, budget, and schedule, along with quality expectations, resource availability, and risks, has to be evaluated so that she can present a strategy for correcting the project's schedule delay to the Project Sponsor.

Due to the team's assessment, Janice can decide to add additional resources to the scheduled activities on the critical path. Before crashing the critical path, the team can identify a series parallel to free up more resources that can be reallocated to the critical path activities. Using these schedule compression techniques, Janice could increase the project's productivity rate to 95%.

Solution 9: Business Scenario - Problem Statement

Donnell's project is 30% complete and has a total budget of \$850K. The earned value at this point is \$255K; however, the project's actual costs are \$310K. The Cost Performance Index (CPI), EV/AC , is at .82. Which means that the project is spending only 82 cents of every dollar productively.

Donnell is especially concerned as the project has not yet reached the halfway mark. His previous Tier 1 remodels had a better CPI at this point in the project. The project has faced some unexpected events (unknown unknowns), which the team had neither planned for nor anticipated based on past performance. The money allocated in the management reserve can cover most of the expenses, but not all.

After evaluating the root cause of these risk factors, Donnell can link the problems to the age of the store and the fact that none of the previous stores completed in the remodel initiative was as old. Donnell is asked to reassess the risk and collaborate with their structural engineer to re-evaluate the remaining activities, so he can determine a revised budget and an estimate of what is needed to complete the remaining activities based on new information.

Solution 10: Earned Value Management

| Term | Calculation | Value | Interpretation of the Answer |
|----------------------------------|----------------------------------|----------|--|
| Planned Value (PV) | $\$10,000 + \$10,000 + \$10,000$ | \$30,000 | By third month, \$30,000 worth of work should have been completed. |
| Earned Value (EV) | $\$10,000 + \$10,000 + \$5,000$ | \$25,000 | The accomplished work is worth \$25,000. |
| Actual Cost (AC) | $\$10,000 + \$12,000 + \$9,000$ | \$31,000 | The amount actually spent is \$31,000. |
| Cost Variance (CV) | $\$25,000 - \$31,000$ | -\$6,000 | The project is over budget by \$6,000. |
| Schedule Variance (SV) | $\$25,000 - \$30,000$ | -\$5,000 | The project is behind schedule. |
| Cost Performance Index (CPI) | $\$25,000 / \$31,000$ | 0.80 | \$0.80 worth is got out of every dollar spent. |
| Schedule Performance Index (SPI) | $\$25,000 / \$30,000$ | 0.83 | The project is progressing at 83% of the originally planned rate. |

Solution 11: Earned Value Management

Q1. CPI is calculated as EV/AC . $CPI = \$65,000/\$57,850 = 1.12$

Q2. EAC is calculated as BAC/CPI . $EAC = \$200,000/1.12 = \$178,571$

Q3. ETC is calculated as $EAC - AC$. $ETC = \$178,571 - \$57,850 = \$120,721$

Q4. SPI is calculated as EV/PV . From our previous calculations, EV was \$65,000.
 $SPI = \$65,000/\$60,000 = 1.08$

Q5. EAC can also be calculated as $AC + [(BAC - EV)/(CPI * SPI)]$. Based on our previous answers we can determine: $\$57,850 + (\$200,000 - \$65,000)/(1.12 * 1.08) = \$169,438.69$

Principle : Build Quality into Processes and Deliverables

Solution 12: Business Scenario - Problem Statement

Although you are no longer working on the project, you and your company are still responsible for the project's outcome to the stakeholders. Therefore, first, meet with the project sponsor to inform the customer.

In an attempt to minimise nonconformance costs and their impact, a recall of all parts needs to be executed. The team needs to be reassembled to evaluate the failed test and determine the root cause of the failure and its effect using the fishbone diagram. This will help the team determine how to move forward regarding corrective action.

Team Performance Domain

Solution 13: Business Scenario - Problem Statement

Tanya should get all parties to focus on the end goal and persuade them to reach a consensus to meet their commitment.

After redirecting their energy to the customer's needs and points of agreement, Tanya should convince both sides to pull together and collaborate to pick an approach that presents a win-win scenario.

Solution 14: Business Scenario - Problem Statement

The fact that project team members view Robert's power as an example of penalty power is a sign that the team needs some team-building exercises.

Team building will help the team get to know each other more and develop trust in each other.

Then, Robert needs to evaluate his HR Management plan to see if he has a RACI chart for his project to help define who is responsible for what activities. This will aid in minimising confusion within the project team.

Stakeholder Performance Domain

Solution 15: Business Scenario - Problem Statement

The project manager should start with the full project management plan. This document serves as a guide for the team and all stakeholders by setting expectations of what the team plans to do to

PMP also includes the three baselines; the project manager can use them as a guide to measuring the project's current status.

As it specifically relates to communication, the communication plan would provide details on what needs to be distributed and why, how, when, and to whom it would be disseminated. It would also specify the roles and responsibilities for communication.

Solution 16: Business Scenario - Problem Statement

The issue log can be used to communicate issues on the project, like areas of confusion, disagreement, concern, etc. Therefore, Regina can take the information and analyse the causes of the problems. She will be able to determine the root causes and the corrective actions needed to resolve the issue.

In her investigation, she should link the areas of confusion to her lack of consideration of noise factors that prevented clear communication during web meetings and her lack of attention to cultural differences.

Regina should also incorporate cultural awareness activities in her meetings going forward to increase respect for one another, minimise future communication barriers, and increase the team's cohesiveness.

Uncertainty Performance Domain

Solution 17: Business Scenario - Problem Statement

As the company lacks a risk management structure and has handled risk poorly in the past, Cynthia should first search internally for risk experts. Internal experts would be knowledgeable of risks that exist within the business as it deals with construction.

She should then identify subject matter experts external to the organisation who are knowledgeable about risk management related to convenience stores with a gas station component.

Another viable resource would be the historical documents around risk from previously completed projects, pointing out other stakeholders and/or SMEs who can contribute to the risk response planning process.

After the key players are in place, Cynthia can work with them to go through the identification and prioritisation process of risk leading up to their plan's development.

Project Work Performance Domain

Solution 18: Business Scenario - Problem Statement

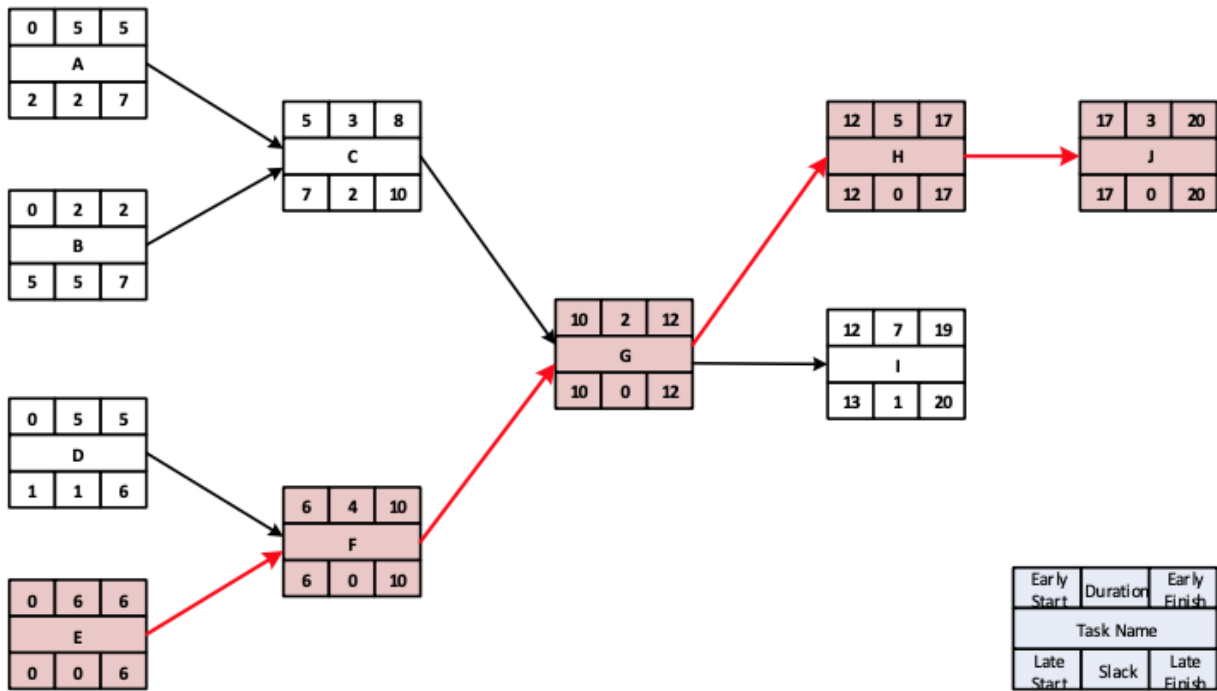
Although Scott wants to complete his project early so that the team can receive the bonus for early completion, he has to pick a less risky contract based on the scope of work.

Out of the available contracts, the best choice for Scott is the Time and Material Contract, which gives him more flexibility.

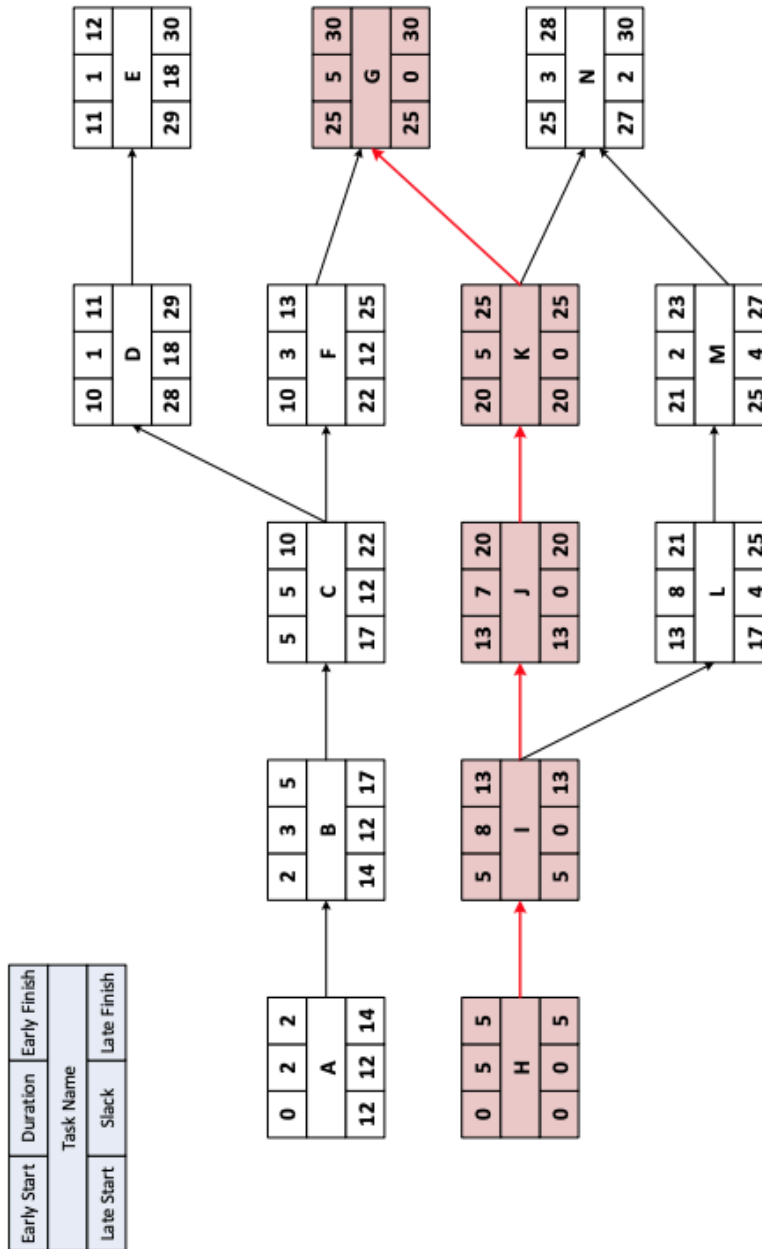
Fixed Fee contracts require a well-defined scope of work, and Time and Material is the only option that accommodates open-ended work arrangements.

Critical Path Exercises

Solution 19



Solution 20



Earned Value Analysis Exercises

Solution 21

| TERM | VALUE |
|--------------------------------------|--|
| Budget At Completion (BAC) | 10,000m ² X €90 per sq meter €900,000 |
| Planned Value (PV) | 10,000m ² / 100m ² per day = 10 days. The project should last ten days. After four days, 40% of the work should be done. €900,000 X 0.4 (40%) = €360,000 |
| Earned Value (EV) | EV = BAC X Percentage of Work completed EV = €900,000 X .48 (48%) = €432,000 |
| Actual Cost (AC) | AC = €400,000 (you have spent) |
| Cost Variation (CV) | CV = EV - AC CV = €432,000 - €400,000 = €32,000 |
| Schedule Variation (SV) | SV = EV - PV SV = €432,000 - €360,000 = €72,000 |
| Cost Performance Index (CPI) | CPI = EV/AC CPI = €432000 / €400000 = 1.08 |
| Schedule Performance Index (SPI) | SPI = EV/PV SPI = €432000 / €360000 = 1.20 |
| Estimate at Completion (BAC / CPI) | BAC / CPI €900000 / 1.08 = €833,333 |
| Variance at Completion (BAC – EAC) | BAC – EAC €900,000 - €833,333 = €66,666 |

Solution 22

| TERM | VALUE |
|--------------------------------------|---|
| Budget At Completion (BAC) | BAC is given in the question and is €500,000 |
| Planned Value (PV) | The project should last 14 weeks After eight weeks (8/14), 57.1% of the work should be done. $€500,000 \times 0.571 (57.1\%) = \mathbf{€285,500}$ |
| Earned Value (EV) | After eight weeks, 110 rooms are done. 110/200rooms = 55% completed (Earned) EV = BAC X Percentage of Work completed EV = €500,000 X .55 (55%) = €275,000 |
| Actual Cost (AC) | AC = €250,000 (you have spent) |
| Cost Variation (CV) | CV = EV-AC CV = €275,000 - €250.000 = €25,000 |
| Schedule Variation (SV) | SV = EV-PV SV = €275,000 – €285,500 = (-€10,500) |
| Cost Performance Index (CPI) | CPI = EV/AC CPI = €275,000 / €250,000 = 1.10 |
| Schedule Performance Index (SPI) | SPI = EV/PV SPI = €275,000 / €285,500 = 0.96 |
| Estimate at Completion (BAC / CPI) | BAC / CPI $€500000 / 1.10 = \mathbf{€454,545.45}$ |
| Variance at Completion (BAC – EAC) | BAC – EAC $€500,000 - €454,545.45 = \mathbf{€45,454.54}$ |