



Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

PROJECT MANAGEMENT

SIMULATION REFLECTIVE ESSAY

Department of Electronic and Computer Engineering (TCD)

Contents

| | |
|----------------------|---|
| Introduction: | 1 |
| Scenario C | 1 |
| Scenario F | 3 |
| Scenario G: | 5 |
| Conclusion: | 8 |

Submission By:
Fiyinfo luwa Adeniranye
17337200

Plagiarism Declaration: "I have read and I understand the plagiarism provisions in the General Regulations of the University Calendar for the current year, found at <http://www.tcd.ie/calendar>.

I have also completed the Online Tutorial on avoiding plagiarism 'Ready Steady Write', located at <http://tcd-ie.libguides.com/plagiarism/ready-steady-write>."

This work is all mine, except where used material is referenced at the end of the report.

Introduction:

In this assignment, I used the Project Management Simulation software by Robert D. Austin of Harvard Business Publishing Education. I was placed in the role of a **disaster response project manager** at **Romero Humanitarian Relief Services**, tasked with the provision of food, shelter, medical and other humanitarian assistance to help victims of a series of environmental disasters.

In each of the three Simulation Scenarios C, F and G, the key project parameters/objectives changed and in some, unanticipated events occurred randomly to test my ability to manipulate the levers of project management: scope, schedule, and resources. However, the degree of flexibility of the levers was not constant across all the simulations.

This report examines the evolution of my strategic thought process across three simulation scenarios as I attempted to optimize my project score by manipulating the **scope, schedule, and resources** of each scenario.

Scenario C

My initial strategy was to start with a **medium-skill level** team of 4 and **extensive outsourcing** to minimize cost and encourage **overtime**, as it allowed the workers more time to finish their tasks without impacting cost.

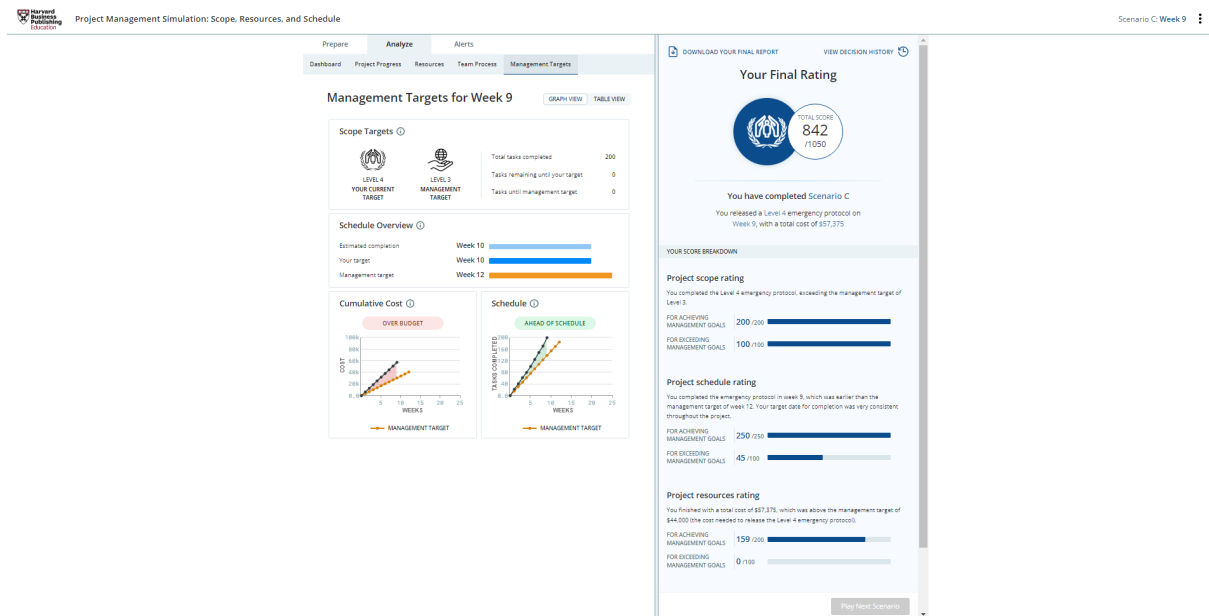
In Week 5, there was a disease outbreak which resulted in the project deadline being reduced by 5 weeks. I increased the team skill level, as the **team morale** and **stress** levels indicated that the workload was too high for a **Medium-skilled** team. I achieved a score of 693; project schedule and cost were overrun by 2 weeks and \$8,755 respectively.

Despite a cost overrun of over +20%, my **resources** rating was 13% off from the maximum rating for achieving the cost target. I noticed that a higher-skilled team completed almost twice the number of tasks with less problems, meaning I would theoretically be able to cut the **project schedule** in half by starting with a **high-skilled** team. This would allow me attempt to complete a Level 4 protocol which only required 15 more tasks than a Level 3 protocol but would gain me an additional 100 points.

To implement this strategy, I used a **Medium-High skilled** team of 5 and **no outsourcing** to improve team cohesion, which would lead to less coordination problems and more net tasks completed weekly. I also set the project completion target to Week 8 to incentivize the team to complete the project much earlier and save costs. However, halfway through the simulations, the team became stressed and uncoordinated, which forced me to increase the target completion date to Week 12, **team skill** level to **High**, and **outsourcing** to “**Some Primary tasks**”.

I achieved a score of 753 on my initial run with this strategy. The Level 4 protocol was completed in Week 11, but the cost overrun was \$22,600 which greatly reduced my **Project resources rating**. I gained the 100 points for exceeding the scope target and the team process and schedule ratings were slightly higher, because the **high-skilled** team was far less stressed and more time-efficient.

My subsequent runs of the simulation were aimed at increasing my **project resources, team process and project schedule ratings** as much as possible. My strategy to achieve this involved using a **High-skilled team** throughout the duration of the project to complete it in the shortest time possible. The slightly higher weekly resource cost was compensated for by the increased **project scope** and decreased **project schedule**. I kept **outsourcing** to “**Some Primary Tasks**” and scheduled an increasing number of stand-up and status review meetings to keep the team coordinated up until the completion of the single prototype, after which they were gradually reduced to allow the team more time to complete the tasks required to deploy the **Level 4 protocol** in Week 9 (record time).



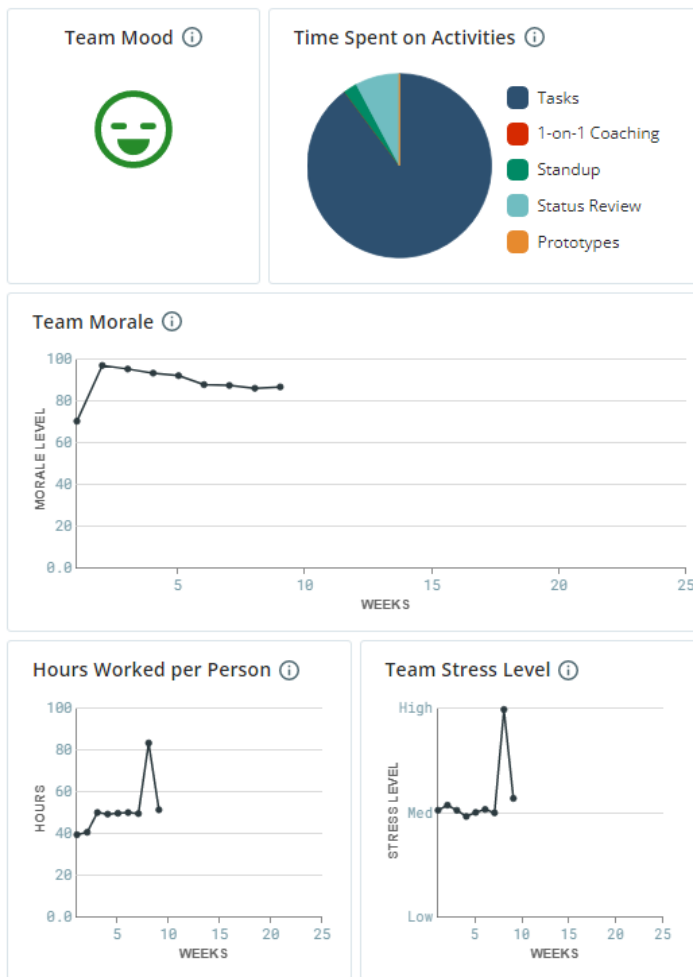
Scenario C: Final Rating

Decision History

| WEEK | TARGET SCOPE | TARGET COMPLETION | TEAM SIZE | TEAM SKILL LEVEL | OUTSOURCING | PROTOTYPES | MEETINGS | OVERTIME |
|------|--------------|-------------------|-----------|------------------|--------------------|------------|---|------------|
| 1 | Level 4 | Week 10 | 5 | High | Some Primary Tasks | 1 | One-on-one: 0 Standup: 5 Status review: 2 | Allowed |
| 2 | Level 4 | Week 10 | 5 | High | Some Primary Tasks | 1 | One-on-one: 0 Standup: 6 Status review: 2 | Allowed |
| 3 | Level 4 | Week 10 | 5 | High | Some Primary Tasks | 1 | One-on-one: 0 Standup: 6 Status review: 2 | Encouraged |
| 4 | Level 4 | Week 10 | 5 | High | Some Primary Tasks | 1 | One-on-one: 0 Standup: 6 Status review: 3 | Encouraged |
| 5 | Level 4 | Week 10 | 5 | High | Some Primary Tasks | 1 | One-on-one: 0 Standup: 8 Status review: 3 | Encouraged |
| 6 | Level 4 | Week 10 | 5 | High | Some Primary Tasks | 1 | One-on-one: 0 Standup: 8 Status review: 4 | Encouraged |
| 7 | Level 4 | Week 10 | 5 | High | Some Primary Tasks | 1 | One-on-one: 0 Standup: 7 Status review: 3 | Encouraged |
| 8 | Level 4 | Week 9 | 5 | High | Some Primary Tasks | 1 | One-on-one: 0 Standup: 7 Status review: 3 | Encouraged |
| 9 | Level 4 | Week 10 | 5 | High | Some Primary Tasks | 1 | One-on-one: 0 Standup: 5 Status review: 2 | Encouraged |

Scenario C: Decision History

Team Process for Week 9

[GRAPH VIEW](#)
[TABLE VIEW](#)


Scenario C: Team Process Week 9

Scenario F

Scenario F left no room for scope adjustments. Management's scope target was set to the maximum **Level 4 protocol**.

My initial strategy was to hire a **Medium-High** skilled team of **4**, with "**Some Primary Tasks**" **outsourcing**. This would keep me slightly above the cost target, improve team cohesion, and reduce the time-to-completion of the project and thus, cost.

However, Murphy's Law would prove true in this Scenario; everything that could go wrong, did and at the worst time possible.

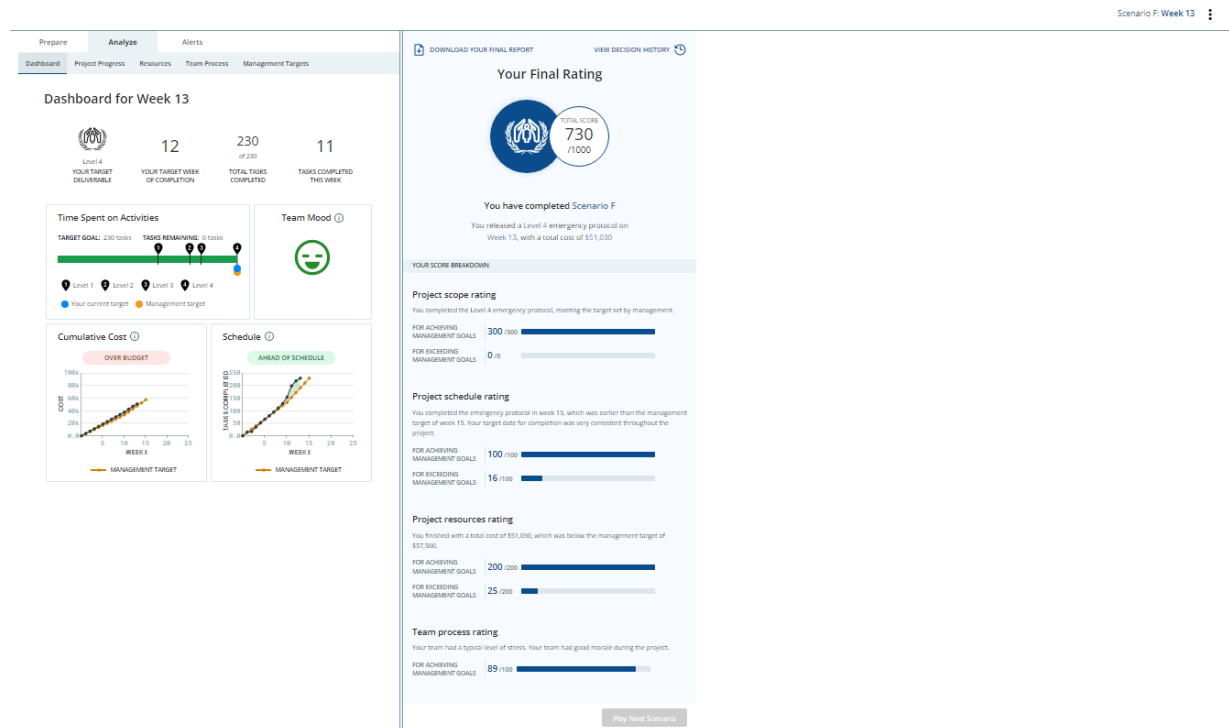
In Week 5, a logistical problem increased the number of tasks to 230 and in Week 7 an accident rendered the team's key members unable to work for a few weeks. I added an additional member and increased the number of weekly meetings to alleviate the stress on the team and speed up the project process. In Weeks 11, 14 and 15, there were even more unexpected events which stressed the team. To combat this, I reduced the number of weekly meetings from Weeks 11-16 to allow the team more time to complete tasks. At the end of the simulation, I scored 602.

After a few more runs with this strategy, my scores got progressively worse, especially when the logistical problem was caught in later weeks. There was a longer **project schedule**, higher **cost overrun** and lower **process rating** due to increased team stress and decreased morale.

I refined my strategy to catch the logistical problem earlier by **increasing prototyping** and **extensive outsourcing**. **Increased prototyping** allowed the team to detect problems earlier; less tasks were completed in the early stages of the project meaning the setback would be less severe. **Extensive outsourcing** alleviated the additional stress associated with the task increase from prototyping.

As a result of **increased prototyping**, the logistical problem was caught in Week 2 (an improvement from Week 5). I gradually increased **team skill level** from **Medium** to **High** and **outsourcing** as the problems started rolling in to help the higher skilled team complete more weekly tasks. At the end of this run, I achieved a score of 671 and completed the project in Week 13. I noticed the errors in Weeks 14 and 15 did not occur when the project was completed in Week 13, yet my **team process rating** was only at 64. The cost overrun was much lower at \$4,144.

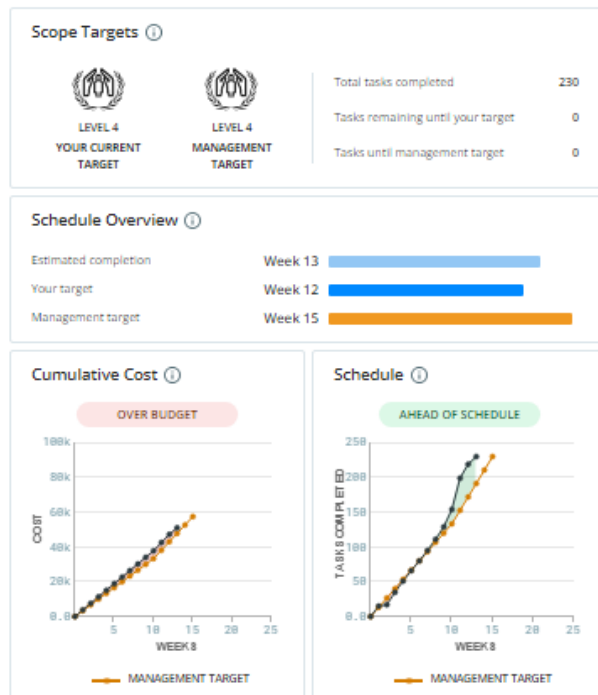
My final strategy was to increase the **process** and **resources ratings** by using a **Medium-High** team and **extensive outsourcing** from the onset. The average weekly cost was approximately \$500 less with no impact on the **project schedule**. I also scheduled more meetings to combat the negative impact of **extensive prototyping** on team co-ordination.



Scenario F: Final Rating


Management Targets for Week 13

GRAPH VIEW TABLE VIEW




Scenario F: Management Targets

ADVANCED TO WEEK 2

 **Logistical problem, caught early**

A new method for transporting aid to the field that your team had been counting on is now looking like it will not work as planned. As a consequence, you will need to devote additional effort to further develop the method, or perhaps even substitute an alternative approach. This will increase the number of tasks you need to complete. However, work you did to learn from operational prototypes allowed you to identify the issue early.

 **Recommendation**

Your team is discovering a high number of problems, leading to extra work. This is putting your schedule at risk.

Scenario F: Week 2 - Logistical Problem Alert

This strategy resulted in a score of 730. It is also quite feasible that increased team coordination in moments of crisis would help keep a project on schedule. However, the communication must be **effective**, or it could negatively impact team morale and task completion.

Scenario G:

My initial strategy in this scenario was to hire a **Medium-High** skilled team of 4, with “**Some Primary Tasks**” **outsourcing**. This would keep me slightly above the cost target, improve team cohesion, and potentially reduce the time-to-completion of the project and thus, cost.

However, Murphy’s Law would also prove true in this Scenario. In Week 2, many members of the team experienced problems transitioning to home offices and maintaining a good work-family life balance. To combat this, I employed a **High-skill level** team and used **extensive outsourcing** to keep

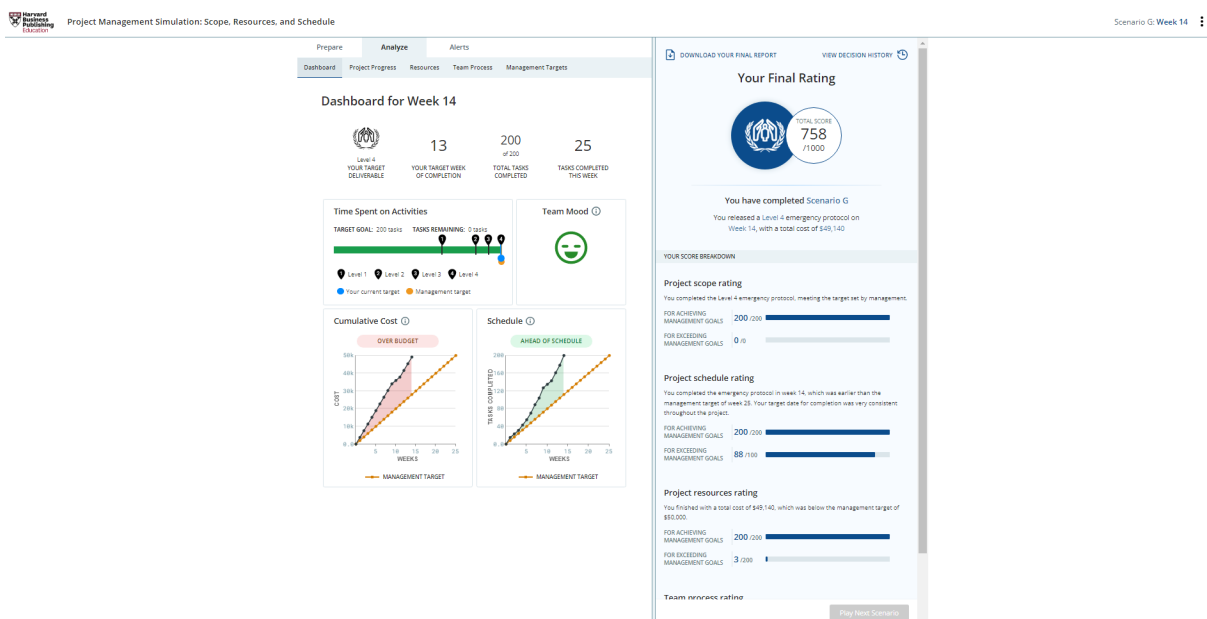
the manage costs and complete more weekly tasks. I also increased the daily meetings and one-on-one coaching slightly to improve team cohesion and understanding of tasks.

These decisions proved helpful, however, after a few runs with this strategy, I achieved maximum scores of 647 and 675: meeting both the **project scope (Level 4)** and **schedule target (Week 15)** and falling 7 points short of the **resources target**. The project schedule graph revealed that the average rate of task completion was barely higher on transitioning to a **High-skill team** from a **Medium-skilled** one. This indicated that the protocol could still be completed with a **Medium-High skill team**, thus reducing resources expenditure with no impact to the **project schedule**.

An analysis of the project ratings also revealed that the **schedule and resource** ratings had significant room for improvement; the **team process** rating was already at a high of 82. However, compromising either **schedule** or **resources** made no difference as the two ratings were negatively correlated (with a correlation coefficient of approximately -1).

I was content with a score of 675 until I was made aware of the fact that setting the **project schedule** target to 25 weeks for the first week of the simulation resulted in management revising the project deadline to 25 weeks. This made it possible to avail of the 100 extra points for exceeding the **schedule** target.

After a few runs with this strategy, I achieved higher scores of 746 and then 758, which I was content with.

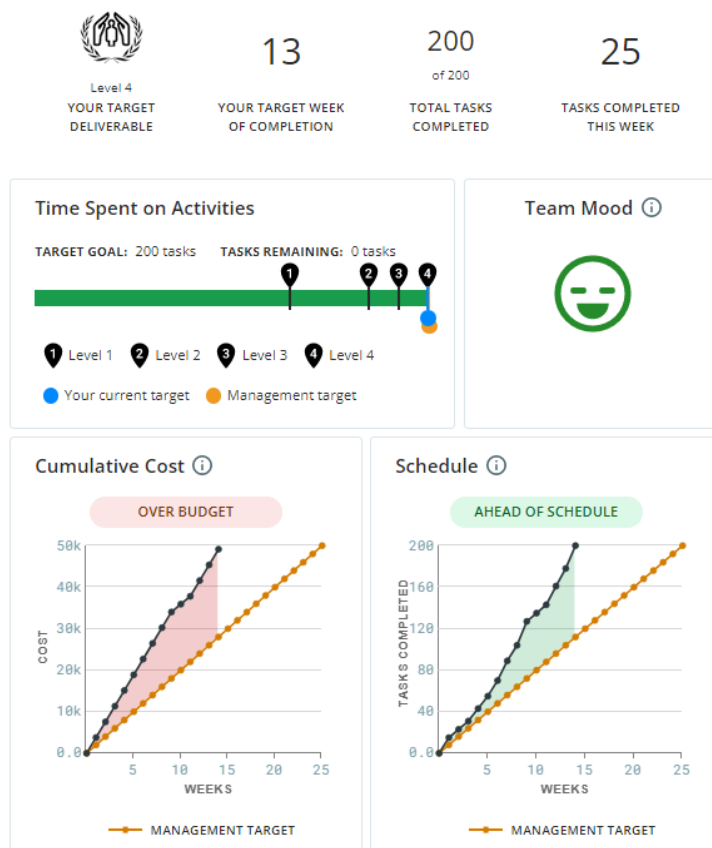


Scenario G: Team Score and Dashboard

While this extreme deadline extension is possible in a real-world scenario, it is highly unlikely. However, seeing as the Scenario G was riddled with unexpected setbacks from the onset, alerting management of a potentially unrealistic deadline early on proved helpful. I learnt about the importance of analysing both internal and external factors affecting a project, especially in its initial stages. This helps create more realistic targets in project management.

The aim of this simulation was to maximise the overall project score, and this strategy worked flawlessly.

Dashboard for Week 14



Scenario G: Team Dashboard

The **team process** rating suffered slightly, and the team **stress level** and **average hours worked** peaked from Weeks 11 - 13, at the expense of exceeding management's **schedule** and **resources** goals.

Team Process for Week 14

GRAPH VIEW TABLE VIEW

Copy to Clipboard

| WEEK | HOURS WORKED PER PERSON | TEAM MORALE | TEAM STRESS LEVEL | HOURS SPENT IN MEETINGS | HOURS SPENT ON PROTOTYPES | HOURS SPENT ON TASKS |
|------|-------------------------|-------------|-------------------|-------------------------|---------------------------|----------------------|
| 14 | 52 | 85% | 122% | 8 | 0 | 45 |
| 13 | 83 | 70% | 200% | 8 | 0 | 75 |
| 12 | 82 | 67% | 200% | 8 | 0 | 75 |
| 11 | 80 | 77% | 176% | 8 | 0 | 72 |
| 10 | 51 | 68% | 112% | 8 | 0 | 43 |
| 9 | 53 | 80% | 122% | 8 | 0 | 45 |
| 8 | 52 | 79% | 117% | 8 | 5 | 39 |
| 7 | 53 | 79% | 121% | 9 | 5 | 40 |
| 6 | 53 | 79% | 123% | 9 | 5 | 40 |
| 5 | 53 | 79% | 121% | 9 | 5 | 40 |
| 4 | 52 | 76% | 118% | 9 | 5 | 39 |
| 3 | 58 | 75% | 150% | 5 | 9 | 44 |
| 2 | 53 | 81% | 126% | 5 | 8 | 40 |
| 1 | 49 | 94% | 90% | 5 | 4 | 40 |

Scenario G: Team Process Rating Table

Conclusion:

There were a host of learning outcomes from the Scenario Simulations.

First was the causal relationship between the three levers of Project Management: scope, schedule, and resources. Each of the scenarios had different project cost, schedule, and scope targets, which depended variably on each other. **Project Scope** was pre-emptively defined and could not be compromised later in the project lifecycle without severe repercussions, as expected in a real-world scenario. Setting a larger scope (within reason), however, had a positive effect on project quality, as it motivated workers to complete more weekly tasks.

Project Resources are limited, making project planning and resource scheduling very important to avoid cost and schedule overruns. Different scenarios required different types of scheduling; resource-constrained and time-constrained, which had different effects on resources and schedule.

However, no amount of planning and preparation can justify a rigid approach to project management (Murphy's Law). My problem-solving skills were tested when unexpected events occurred at various points in the scenario timelines (especially scenarios F and G). Just like a real-world project manager, I had to learn how to react decisively and make well-timed decisions under immense pressure to help keep the project on track by adjusting flexible simulation parameters: team size, skill level, etc. This, combined with close monitoring of team morale and stress levels, could literally make, or break project.

The **Project Management Simulation** was a highly practical experience that gave me valuable insight into the world of project management. Prior to this, I had little-to-no idea of the requisite role of project managers in the Engineering.

References:

- <https://twproject.com/blog/what-is-project-crashing-and-how-to-get-the-most-out-of-it/>
- https://ec.europa.eu/environment/enveco/growth_jobs_social/pdf/studies/ExecSumm%20Resourc%20labour%20productivity.pdf
- <https://nerdytom.com/the-harvard-project-management-simulation-game/>
- Hazır, Ö. (2015) 'A review of analytical models, approaches and decision support tools in project monitoring and control,' International Journal of Project Management, 33(4), pp. 808-815. Web.
- <https://intaver.com/sensitivity-analysis-for-project-management/>
- <https://www.theengineeringmanager.com/growth/your-levers-scope-resources-and-time/#:~:text=Instead%2C%20you%20have%20three%20levers,project%20is%20going%20to%20deliver>
- <https://www.nutcache.com/blog/planning-resource-scheduling-is-key-to-project-management/>