

Case Study: Monte Carlo Cost and Schedule Assessment of \$2.1B Capital Project

The Ask:

Large projects (>\$1B capital), carry a significant ‘general risk’ level due to their size and complexity, putting significant strain on management and leadership resources. For this reason, it is essential that a comprehensive Monte Carlo assessment be performed to provide an accurate forecast of the probably project duration and cost. The client requested Primecore to develop a probabilistic schedule for its large capital project (\$2.1B capital) and to establish and report to the Board of Directors the likely timeline to commercial production and associated capital cost.

The Approach:

Primecore assigned our in-house risk management expert and applied a standard approach which has been successfully employed on several business-critical capital projects and programs.

- Primecore’s first step was a detailed review of the deterministic schedule with the various stakeholders whose responsibility was the delivery of the different project elements. The objective was to ensure that the schedule is appropriately structured with the correct logic and appropriate activity durations. General variability was then applied based on recent and past performance on this project and similar ones.
- Primecore then facilitated several risk workshops to capture the risks (threats and opportunities) associated with executing the project. Each risk is assigned an owner, mitigation and associated timeline, a probability and impact (pre and post mitigation). This risk register provides the basis for generating the event based variability on the project.
- The schedule is then reduced to its critical elements to form a ‘risk based schedule’, and a simulation of the likely outcomes is run to provide the project end dates at various levels of probability (60% probability P60 is the most likely end date, 80% probability P80 is the date that gives appropriate certainty for business purposes).

Outcomes:

In this case the project team had not built in the performance related variability and associated event-based variability into the schedule. When Primecore ran the simulation, it was found that the project was likely to require an additional ten months execution time and \$400M to bring the project to completion.

The Board approved the amendment and retained Primecore to provide independent reporting at the quarterly board meetings.

