

Submission for Project Controls EXPO USA

## **The Development of Corrected and Summarized Schedules**

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Typical project schedules for large, complex projects are developed by the contractor to serve their purposes and comply with the contract. Our purpose is to indicate what is necessary to produce a project schedule that can stand up to Monte Carlo simulation in a schedule risk analysis (SRA) where the activity durations change from application of uncertainty and risk for each iteration.

Contractor's schedules are often found not to be compliant with industry best scheduling practices. The use of constraints, application of lags, presence of open-ended logic and other mechanical factors can be discovered by analysis, and we present results from real projects showing that. More difficult to discover is whether the logic is even correct given the sequence in which the project must be built. These errors have to be corrected so the schedule is a competent critical path method (CPM) schedule.

Correcting the errors and illogical linkage still leaves a schedule that is large (many activities) and cumbersome to understand and brief to management. There is much detail in compliant schedules that is not useful for SRA purposes. Even if the project scheduler has fixed the logic on the critical and near-critical paths, those may not be the most important paths for SRA. Also, the application of uncertainty and risk may cause the critical path not to be the path that is most likely to delay the project.

Fixing the contractor's detailed schedule may not be the best approach for an SRA. The contractor's scheduler may not agree or have the bandwidth to make the schedule compliant with best practices (although that should have been a criterion in the contract).

We often find that building a summary schedule from scratch can produce a schedule that is better than the contractor's schedule would ever be for SRA

purposes. The summary schedule may be built based on the work breakdown structure (WBS) that links well with the cost estimates and can be used for integrated cost-schedule risk analysis (ICSRA). The summary schedule (e.g., 500 – 2,000 activities) must be compliant with best practices, include all the work (cannot be summarized by eliminating work since that is effectively descoping the project). It should represent the paths that are (or could be in simulation) delaying the finish date. It should represent interactions between paths, phases and third parties (e.g., permitting agencies), contain all the key milestones and reflect realistic total float values. These schedules can be maintained and updated to remain a valuable tool for scenario analysis. They are nimbler than a detailed schedule and more easily briefed to management.

Fixing the detailed schedule as presented by the contractor may be infeasible but developing a summary schedule is a viable option to support SRA and ICSRA, plus being easier to understand and to communicate to management.

(This paper will have been presented in the AACE International 2022 annual conference in San Antonio, June 26 – 28)