CPM Schedule Analysis

Half-step Forward - Half-step Backward

Zero-step?

By Farid Saddik

It may very well be that Ron Winter never seems to take off his signature cowboy hat because he discovered it is the source of his scheduling concepts brilliance. No matter the source, Ron is a true visionary in the field of project scheduling.

About 8 years ago, Ron contemplated upon the concept of “Half-step” and introduced another concept he named at the time “zero-step”. To-date, scheduling professionals and most schedule analysis software have not caught on to this important yet. The adoption lag is not unusual. It took long before scheduling professionals started to adopt the half-step analysis as currently defined. Even now, the current half-step implementation is only partial.

To perform a proper half-step analysis, it must include the combination of half-step forward with one update (the currently defined half-step) and half-step backward from the next update (Ron’s Zero-step). One part is not complete without the other.

To simplify, on a project with a schedule which is perfectly updated without any changes whatsoever, the forward half-step schedule would match exactly its next update schedule, and the backward half-step schedule would match exactly its preceding update schedule, and both should not change the project or milestone completions, nor alter the critical path or its composition.

Well; most projects are not perfect, and their schedules are even less so.

Performing the 2-part half-step analysis at a minimum provides an insight on potential causes and amount of delay. The first part (forward half-step) studies and isolates the potential delay effect of progressing activities without the contamination of other schedule modifications. The second part (backward half-step) studies and isolates the potential delay effect of only the logic changes (generically used to express all changes other than normal activity progress) between two schedules before progressing activities. To avoid partial results that lack context, both parts of the analysis must be performed.

While at face value the two-part analysis seems simple, there are many preparatory and validation steps that must be taken to improve the reliability of the results. There is also a set of

recommended practices to observe during the analysis. Moreover, there are typically many exceptions which need to be evaluated, remedied, quantified, and documented.

From a scheduling mechanics perspective, general adherence to the AACE RP29-03 is a great start, even though the RP does not directly address the 2-part analysis. Ron Winter's paper mentioned is another resource.

Beyond the purist schedule analysis; and recognizing that such analysis is generally conducted in the first place to aid in associating and quantifying changes, the analyst should be cognizant of the likelihood of the complexities related to multiple and consequential changes. The analyst should also be mindful of the likely need to demonstrate causal links. To address those complexities and needs, a more granular Time Windows-based Forward/Backward half-step analysis may be required. The granular forward/backward half-step analysis is perhaps the strongest forensic analysis tool in a forensic analyst's grab-bag.

I would be remiss if I did not caution that, as with most scheduling forensics, performing only one type of analysis rarely yields complete or accurate and reliable results. Even the complete granular forward/backward half-step analysis is no exception, and the results thereof should be read in the context of the project schedule strength, completeness, relevance, validations, and accuracy as well as other analyses and contemporaneous project documentation.

It is also worth noting that while conducting some of this analysis using P6 is arguably possible, a proper forensics analysis tool that allows for targeted calculation parameters' choices will make the job a lot easier, faster, and more reliable. Moreover, if the analysis requires granularity, performing the task in P6 approaches impracticability.

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