A Schedule Analysis Tool Comparison & Benefits of Relying on Traditional Schedule Integrator Expertise and Cross-Checks

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Learning Objectives

- Comprehend how real practices and examples of differing results from schedule analysis tools provide insight and lessons learned for practitioners.
- Analyze the value and pitfalls of relying solely on schedule assessment and analysis tool results.

Elements of this approach

- Overview Model Comparison
- Schedule Analysis Tool Comparison Approach
- Comparison of 14 Point Assessment Across Schedule Analysis Tools
- Supplemental Assessment – DI-MGMT 81861A Requirements
- Summary & Lessons Learned for Practitioners

Overview Model Comparison - Benefits

- Show Accuracy & Likelihood of obtaining similar schedule analysis results
- Document variability observed among schedule analysis tools
- Insure sound traditional schedule integrator practices and procedures
- Establish cross checks when encountering different analysis results
- Insure sound decisions by leadership when relying on schedule analysis results
- Establish foundation for future research into schedule analysis tool results

Schedule Analysis Tool Comparison Approach

- IMS data used in both XML & MS Project format
- Source file = 12000 network driven tasks over 4 year period
- Project 20% complete and tracked against a fully populated baselined schedule
- Source schedule analysis tool - DCMA 14 point schedule assessment
- Utilized same IMS data on each schedule analysis tool

Comparison of 14 Point Assessment Across Schedule Analysis Tools

- 14 point assessment results documented into a general performance database for comparison
- Listed the metric, title of metric, tool general performance, recommendations for cross-check and coefficient of variation percentage
- Highlighted areas where data was highly consistent, consistent, some overestimation, some underestimation, inconsistent, and highly inconsistent

Findings – Tool General Performance Results

METRIC	*TITLE*	TOOL GENERAL PERFORMANCE RESULTS	*RECOMMENDATIONS*	COEFFICIENT OF VARIATION %
1	LOGIC	SOME OVERESTIMATION	CROSS CHECK	173
2	LEADS	HIGHLY CONSISTENT		
3	LAGS	SOME UNDERESTIMATION	CROSS CHECK	40
4	RELATIONSHIP TYPES	HIGHLY INCONSISTENT	CROSS CHECK	41
5	HARD CONSTRAINTS	HIGHLY CONSISTENT		
6	HIGH FLOAT	HIGHLY CONSISTENT		
7	NEGATIVE FLOAT	HIGHLY CONSISTENT		
8	HIGH DURATION	HIGHLY INCONSISTENT	CROSS CHECK	40
9	INVALID DATES	HIGHLY CONSISTENT		
10	RESOURCES	HIGHLY INCONSISTENT	CROSS CHECK	87
11	MISSED TASKS	SOME OVERESTIMATION	CROSS CHECK	101
12	CRITICAL PATH TEST	INCONSISTENT / NR	CROSS CHECK	NA
13	CRITICAL PATH LENGTH INDEX (CPLI)	INCONSISTENT / NR	CROSS CHECK	NA
14	BASELINE EXECUTION INDEX (BEI)	HIGHLY INCONSISTENT	CROSS CHECK	110

Tool General Performance Results

- Several areas where all tools were consistent in recording a calculated equal results
- Other areas where tools showed some underestimation and some overestimation
- Highly consistent designation applied whether metric had calculated numbers or a zero value – important since this shows in some cases *ALL* tools had calculated equal results
- Highly inconsistent designation is most impactful finding = indicates areas in the 14 point where differences in values were computed
- Highly inconsistent result was encountered in several areas
- Cross checks were recommended when inconsistent results were encountered – manual cross check by schedule integrator
- Coefficient of variation (CV) was calculated to show % of dispersion around the mean of data – example, relationship types showed over 40% variability of the data results

Findings – Tool Percentage (%) General Performance Results

METRIC	TITLE	TOOL PERCENTAGE (%) GENERAL PERFORMANCE RESULTS	RECOMMENDATIONS	COEFFICIENT OF VARIATION %
1	LOGIC	SOME OVERESTIMATION	CROSS CHECK	173
2	LEADS	HIGHLY CONSISTENT		
3	LAGS	SOME UNDERESTIMATION	CROSS CHECK	14
4	RELATIONSHIP TYPES	HIGHLY INCONSISTENT	CROSS CHECK	14
5	HARD CONSTRAINTS	HIGHLY CONSISTENT		
6	HIGH FLOAT	HIGHLY CONSISTENT		
7	NEGATIVE FLOAT	HIGHLY CONSISTENT		
8	HIGH DURATION	HIGHLY INCONSISTENT	CROSS CHECK	41
9	INVALID DATES	HIGHLY CONSISTENT		
10	RESOURCES	HIGHLY INCONSISTENT	CROSS CHECK	87
11	MISSED TASKS	SOME UNDERESTIMATION	CROSS CHECK	9
12	CRITICAL PATH TEST	CONSISTENT / NR	CROSS CHECK	NA
13	CRITICAL PATH LENGTH INDEX (CPLI)	INCONSISTENT / NR	CROSS CHECK	NA
14	BASELINE EXECUTION INDEX (BEI)	SOME OVERESTIMATION	CROSS CHECK	1

Tool Percentage General Performance Results

- Several areas where all tools were consistent in recording a calculated equal results
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- Highly consistent designation applied whether metric had calculated numbers or a zero value – important since this shows in some cases *ALL* tools had calculated equal results
- Highly inconsistent designation is most impactful finding = indicates areas in the 14 point where differences in values were computed
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- Coefficient of variation (CV) was calculated to show % of dispersion around the mean of data – example, high duration showed over 40% variability of the data results

Findings – Tool General Tool Counts

TOOL COUNTS	TOOL GENERAL TOOL COUNTS	*RECOMMENDATIONS*	COEFFICIENT OF VARIATION %
TOTAL TASKS	HIGHLY CONSISTENT		
INCOMPLETE TASKS	HIGHLY CONSISTENT		
COMPLETED TASKS	SOME UNDERESTIMATION	CROSS CHECK	1
BASELINE COUNT	SOME UNDERESTIMATION	CROSS CHECK	54

Tool count results

- Metric results or values calculated are based on consistent tool counts
- Many metric formulas are grounded in the number of incomplete tasks
- Many instances where the tool had same number of counts for total and incomplete tasks while other areas were different for completed and baselined task counts
- Would expect to have confidence that the tool is representing the correct counts consistently
- Area where cross checks are recommended when inconsistent results were encountered – manual cross check recommended by schedule integrator

Summary & Lessons Learned for Practitioners.

- Areas where all tools recorded a calculated equal result and where tools were consistent in measuring equal values.
- Areas where each of the tool results had a different value for the value of that specific metric.
- Instances of inconsistencies identified in the tool count stated result and the number of deficient tasks that were listed.
- Be cautious in relying in the consistency and accuracy of schedule analysis tool results.
- You may encounter different computed results across industry standard tools that have been vetted for accuracy & adherence to DCMA guidelines and standards.
- Recommend that tool vendors conduct reliability checks on their tools to resolve any inconsistencies

Summary & Lessons Learned for Practitioners.

- Schedule practitioners may want to implement manual cross checks of the data file using traditional schedule integrator expertise
- This study highlighted the importance and implementation of traditional schedule integrator practices
- Study provides an understanding on the consistency of various schedule analysis tool results and should help improve the reliance of these crucial schedule analysis factors for sound decisions.

QUESTIONS?

- What are your thoughts on the variability in the results of this tool comparison study?
- How often do you conduct cross checks on the data results of your off-the-shelf schedule analysis tools?
- Would you change any future schedule practices based on these findings?
- What are your thoughts on how this might affect your future 14 point and EVAS metrics reporting?
- Would these results impact decision making?

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