Scheduling Ethics: Recognizing Gaming, Data Manipulation and Abuse in Project Schedules[1]

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ABSTRACT

Project teams face numerous schedule challenges and risks including: late part deliveries, unrealistic baselines, insufficient reserves/margins, inadequate resources, technical complexity, vague requirements, poor performance, and unanticipated changes. Unethical project scheduling practices can also pose a challenge to project success. Often, the pressure from customers, senior management and other stakeholders to stay on track and finish on time can foster an atmosphere in which gaming, manipulating or abusing the project schedule occurs to distort the schedule plan or hide performance problems. Sometimes the gaming is the result of over optimism and a desire to delay reporting bad news to allow time to "fix the problem." In other situations the abuse is intended to mislead or deflect blame for delays. This paper examines how to recognize schedule gaming, data manipulation, and abuse techniques, raises questions about ethics in schedule management when they are used, opens a dialogue on this often overlooked phenomena in planning and control, and offers ideas to mitigate unethical practices.

ETHICS IN PROJECT MANAGEMENT

"Okay, we're lying about the cost and schedule," a project manager stated in a leadership forum several years ago, "but otherwise some great things would not be built." This provocative statement might at first suggest that, as far as this project manager was concerned, it was acceptable to misrepresent or withhold factual programmatic information if it meant keeping his organization's projects funded. The statement also implies that in some organizations it is necessary to game, abuse and manipulate cost and schedule information to win the proposal, sell the project to the sponsor, keep senior executives "off our backs," or buy time to resolve problems and issues. Moreover, in an organizational culture that does not like bad news, ignores risk, punishes poor performance, or is unrealistically overoptimistic about plans and forecasts, unethical behavior in terms of cost and schedule management might be viewed as necessary for the survival of the project or contract.

According to the Project Management Institute's (PMI) Code of Ethics and Professional Conduct, project practitioners "do not engage in or condone behavior that is designed to deceive others, including but not limited to, making misleading or false statements, stating half-truths,

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providing information out of context or withholding information that, if known, would render our statements misleading or incomplete."

In other words, honesty is part of the profession, and unethical behaviour, such as gaming the project schedule, is wrong. Yet, in some organizations the focus on schedule success is so paramount it can contribute to a climate of unethical practices. Being late can have extreme consequences: lost incentive or award fees, liquidated damage penalties, loss of revenue due to late product launch, potential non-selection for new business due to poor past performance, and cost overruns as resources are added or diverted to the problem areas in the project schedule. Moreover, many project managers are optimistic by nature and overoptimistic in practice, a behaviour that promotes unrealistic project schedules and forecasts. And when risks become problems, managers may resort to questionable schedule gaming tactics to buy time for fixing problems, or to shift the blame for delays to other stakeholders. Therefore, project managers must be aware of potential schedule gaming and discuss the consequences of unethical schedule practices with their teams and suppliers.

GAMES PROJECTS PLAY

"Gaming the system" means using the rules, policies and procedures of a system like scheduling against itself for purposes other than for which they were intended. In other words, schedule inputs and outputs can be altered from conditions which are known to be true in order to create an intended and often misleading effect. For example, the critical path can be overridden to divert attention off the real critical path; activity durations can be padded by managers to hide slack or margin when confronted with "challenges" directed by their project or functional leadership to meet unrealistic schedule goals; schedule logic can be altered to shift the cause for delays from the supplier to the customer; durations for activities planned in the future can be reduced to offset the impact of poor performance, creating the impression that major milestones or project completion remain on track. Status can be omitted or even falsified.

Schedule gaming, data manipulation and abuse practices may be prevalent in some organizations, or isolated occurrences in others. Conversely, these unethical practices may simply be due to bad habits or a lack of discipline on the part of some project managers, other managers, or even project schedulers. These practices could even be due to poor judgment or lack of familiarity, experience and training with proper scheduling processes, or simply a by-product of over-optimism. The examples that follow are intended to provide project managers and teams with a framework for uncovering deceptive scheduling practices and for promoting self-examination and dialogue among project practitioners on recognizing intentional unethical gaming, data manipulation and abuse of project schedules.

Preferential Sequencing. Preferential sequencing is the intentional manipulation of IMS network logic by a supplier in a manner which impacts, or is more likely to impact, the supplier's deliverable commitments to the customer. This form of gaming can result in a skewed or contrived critical path, masked schedule performance on the part of the supplier, or delay claims. Consider the schedule in Figure 1. Here the government customer accepted the contractor's IMS baseline (denoted by the narrow and smaller black bars and milestones) which included the

delivery from the government of "component A" which the contractor planned to integrate first in its integration flow. In reality, components A, B and C can be integrated in any sequence, but the contractor put component A first in the flow to provide margin for delivery of its own components, B and C. If component A is delivered on time, its integration activity can be accomplished as scheduled. However, assume that component A from the government is delayed, impacting the start of the contractor's integration sequence.

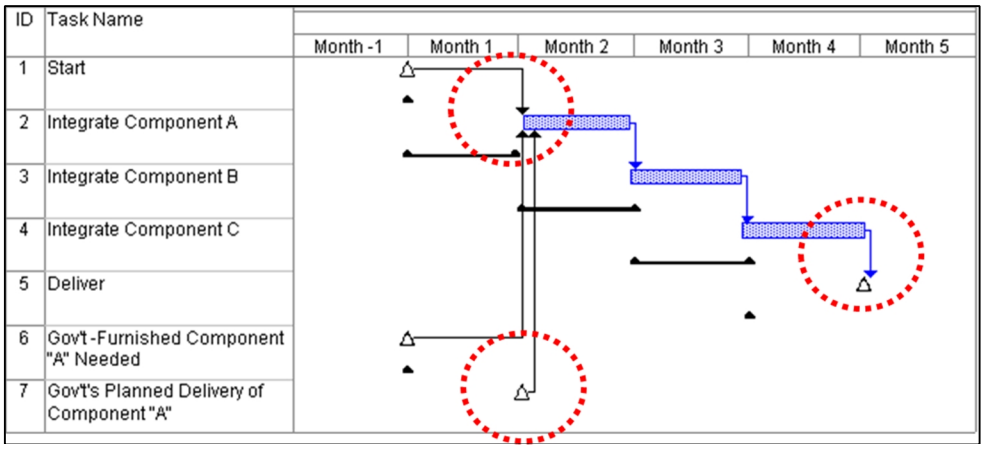

Figure 1. Supplier's schedule before and after component A impact.

In this situation, the contractor claims a schedule impact even if, in fact, components A, B and C can technically be integrated in any sequence. A constructive supplier-customer working relationship might allow for a mutual workaround to this problem with no adverse impact to either party. Alternatively, a strained, confrontational relationship may lead to a schedule impact claim from the supplier who may have intentionally planned the integration sequence in this manner to exploit such as situation.

Duration Padding. Managers may resort to padding activity durations on some or all of their tasks to protect against arbitrary cuts or unrealistic challenges from functional or project management, provide a hedge against risk, or hide slack. The goal, of course, is realistic and achievable activity durations. Padding durations could contribute to cost growth, misleading critical or secondary paths, erroneous slack, or incorrect resource planning. Even worse, padded activity durations can become self-fulfilling as work expands to fill the time available. Suppose a manager pads his or her activity durations by 10 percent. This duration padding could actually result in a later than planned delivery for the manager's product. Perhaps the manager is trying to protect against a perceived risk. In that case, formally identifying the risk in the project risk register would provide a better way to address it. By identifying a risk, the potential need for more time is recognized without manipulating the schedule.

Duration Compression. When implemented correctly, crashing or fast-tracking are suitable schedule compression techniques which can recover lost time or provide a means to complete work early. However, artificial or mandated reductions in activity durations, often to offset actual delays in predecessor activities, mask true schedule performance and increase the risk of delivering on time. In some situations, project schedulers are directed by management to

compress downstream durations to avoid reporting delays. This can result in added risk and possibly understated estimates at completion for the associated control accounts. For example, the top portion of Figure 2 is an example of a baseline schedule with delivery on 8/31. The middle portion of Figure 2 illustrates the impact on the baseline before any compression of durations, with the forecast completion of integration & test extending to 9/10 with -6 days of total slack. Finally, the bottom portion of Figure 2 shows how compressing the durations of activities #3 and #4 return the projected delivery to 8/31. A discussion about the justification for the revised downstream duration estimates on activities #3 and #4 should precede these adjustments.

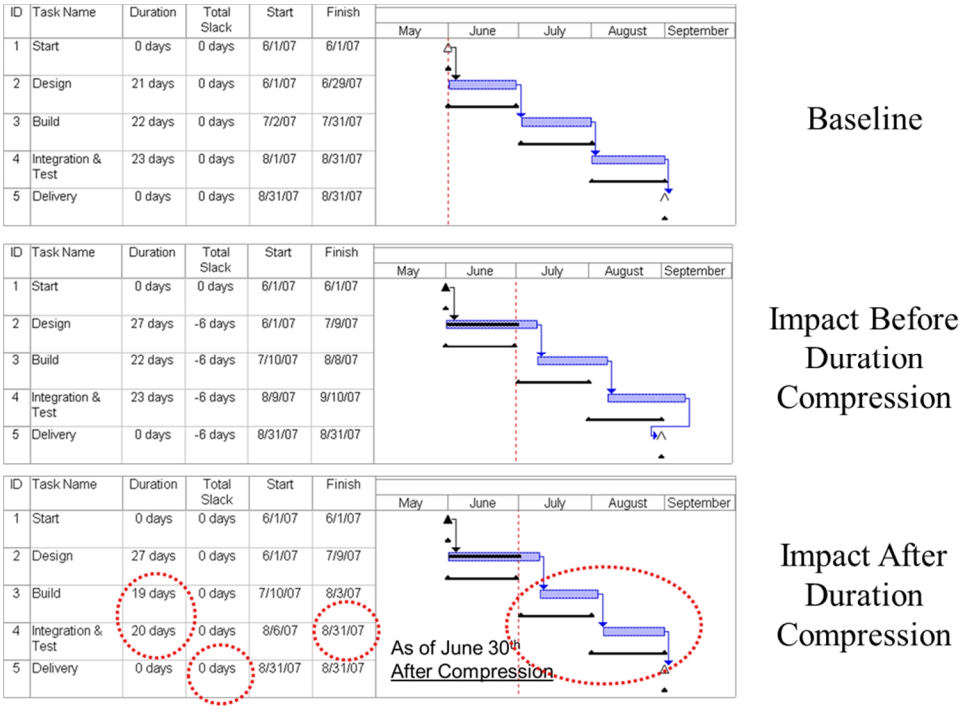

Figure 2. Chronology of duration compression.

Hiding Slack/Float. Slack in the schedule offers flexibility to work around obstacles that could impact both internal and external deliverables. However, slack is sometimes concealed to artificially keep pressure on a supplier to meet a deliverable, or to provide a manager with a hidden buffer to protect a delivery date "just in case." Unfortunately, hiding slack can lead to managing the wrong priorities, or diverting attention and resources to an inaccurate critical path. While the padding of activity durations discussed previously is one way to hide slack, other techniques include manipulating calendars assigned to activities in the IMS, applying inappropriate hard constraints on activities or milestones, or incorporating artificial lags into the predecessor relationship between two activities. Figure 3 illustrates a logical relationship between activities B and C containing no lag – the total slack is +13 days relative to the 9/28 contract delivery.

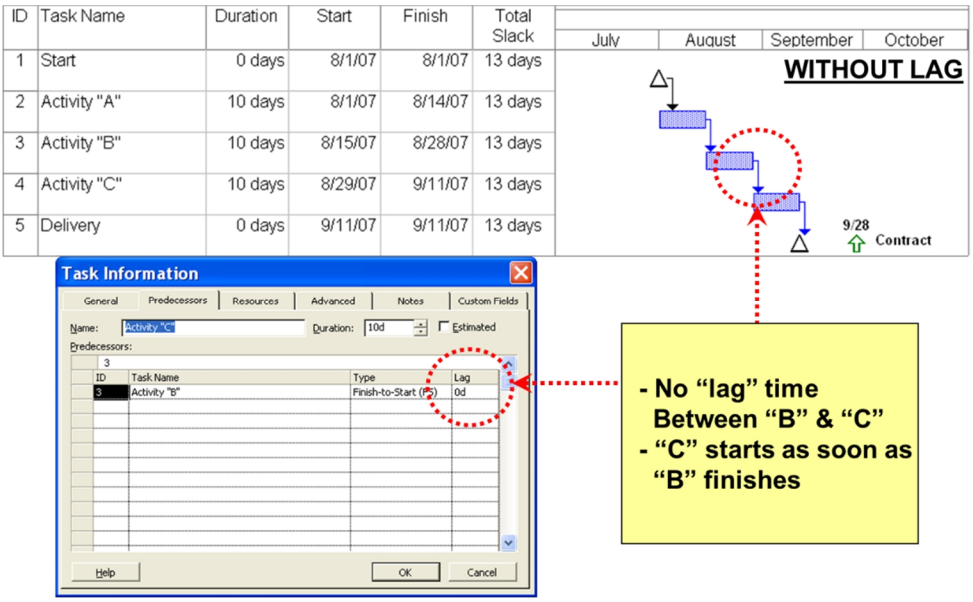

Figure 3. No lag between activities B and C.

However, as illustrated in Figure 4, the insertion of a 5 day lag between activities B and C reduces the total slack to only +8 days, effectively concealing some slack.

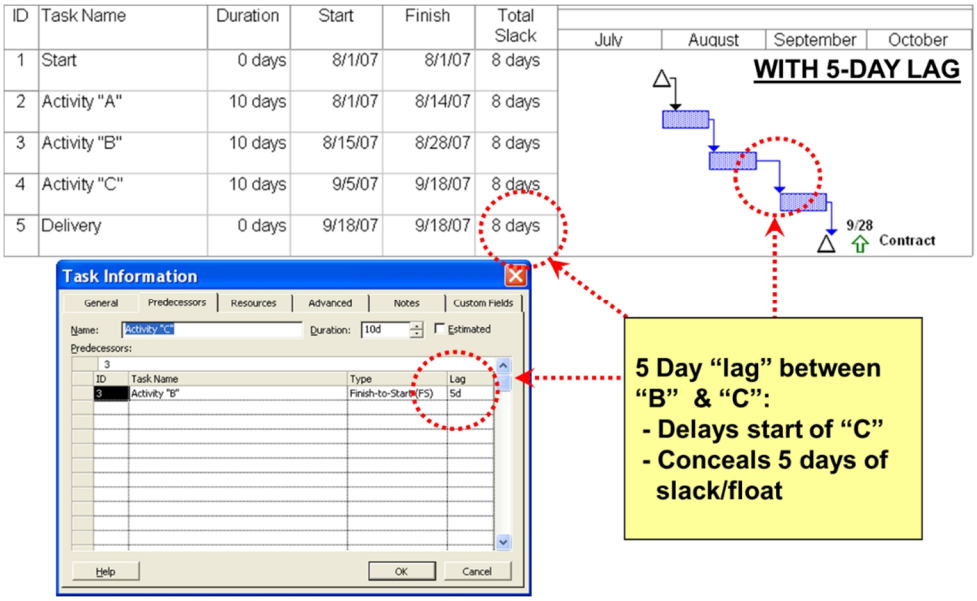

Figure 4. Effect on slack with 5 day lag added.

Documenting the reason for lags (and leads) in the IMS could help in avoiding their inappropriate use.

Abusing Project Logic. Abuse of the dependencies between IMS tasks is often driven by the intent to disguise the project's true schedule position. This intentional alteration of logic could be to mislead a stakeholder about the status of a deliverable. Alternatively, it may be due to the

project leadership's desire to find time to correct a new problem while not drawing attention to its potential impact. Consider the chronology in Figures 5, 6 and 7. As Figure 5 indicates, the project is forecasting a 9/11 delivery with +3 days total slack to the 9/14 commitment referenced with the Finish No Later Than (FNLT) constraint.

ID	Task Name	Duration	Start	Finish	Total Slack
1	Start	0 days	8/1/07	8/1/07	0 days
2	Design	10 days	8/1/07	8/14/07	3 days
3	Build	10 days	8/15/07	8/28/07	3 days
4	Test	10 days	8/29/07	9/11/07	3 days
5	Delivery	0 days	9/11/07	9/11/07	3 days

Figure 5. Delivery forecast ahead of 9/14 commitment.

However, as Figure 6 indicates, a late design activity threatens the 9/11 forecast and 9/14 commitment deliveries, with total slack now at -2 days.

ID	Task Name	Duration	Start	Finish	Total Slack
1	Start	0 days	8/1/07	8/1/07	0 days
2	Design	15 days	8/1/07	8/21/07	-2 days
3	Build	10 days	8/22/07	9/4/07	-2 days
4	Test	10 days	9/5/07	9/18/07	-2 days
5	Delivery	0 days	9/14/07	9/14/07	-2 days

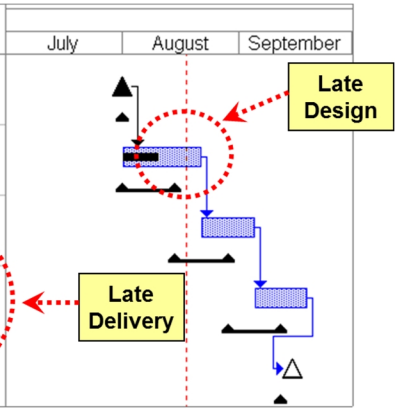

Figure 6. Late design threatens delivery.

Figure 7 illustrates how manipulating the project logic by changing the Finish to Start (FS) dependency between the build and test activities to a Finish to Finish (FF) dependency with a 5 day lag artificially forces the forecast delivery back to 9/11. In this example, the FS dependency is mandatory – the build and test activities cannot overlap. Providing a rationale for any dependencies other than FS as well as for lags can help address this situation.

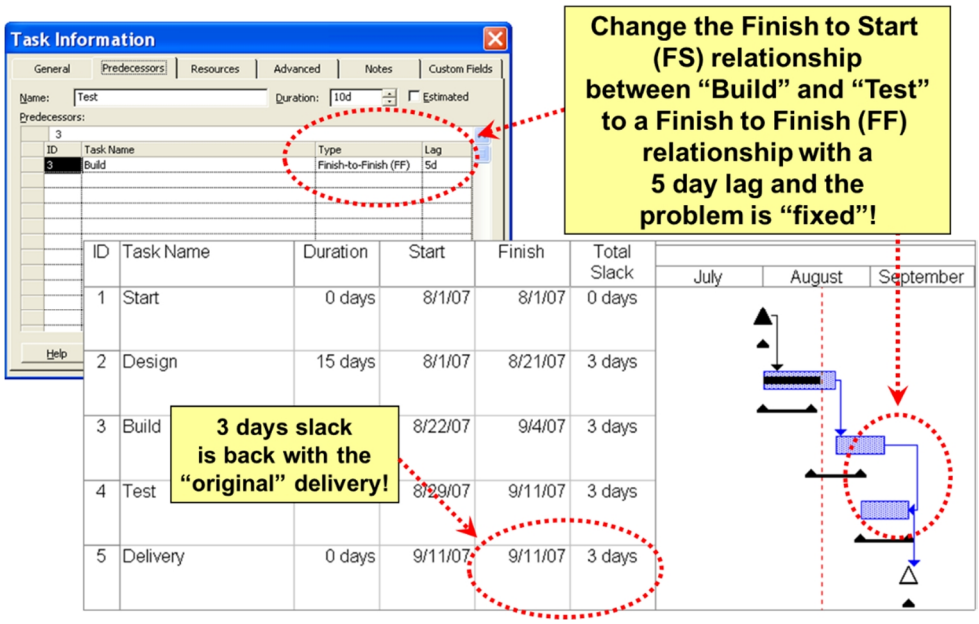

Figure 7. Effect on delivery with finish-to-finish and 5 day lag.

Inflating Schedule Margin. In many organizations executive leadership and other stakeholders carefully track funded schedule margin. Adding slack days and non-working days such as holidays and weekends in the funded margin total artificially inflates the amount of available margin. Slack and margin are not the same thing, and these should be tracked separately.

Misusing Project Calendars. Manipulating work calendars assigned to IMS activities can result in forecast completion dates earlier than programmatically feasible. The inappropriate manipulation might consist of designating non-working days such as holiday shutdowns and weekends as working days in project calendars allowing activities to be scheduled over known non-working periods.

Frequent Rebaselining. To avoid accountability to a schedule baseline, projects or contractors may simply decide to reset the baseline. While there are acceptable reasons for replanning, setting a new schedule baseline to erase the record of past performance is changing the plan to reflect performance instead of managing performance to achieve the plan. Customers and contractors or projects and sponsors should discuss the rationale for rebaselines to avoid surprises and confusion.

Inappropriate Use of Constraints. Misuse of constraints on activities or milestones in the IMS can override schedule logic and result in artificial or inaccurate critical paths, the suppression of slack, or forced completion dates. Customers and sponsors should consider an IMS requirement to document the rationale for constraints other than As Soon As Possible (ASAP) used by their suppliers and projects.

Multiple Schedule Books. It is not uncommon for some organizations to establish schedules that support internal operating plans in advance of contractual or sponsor commitments in order

to provide a buffer or margin that increases the probability of on time deliveries. However, those situations should be mutually understood by contractor and customer, or the project and sponsor. If the contractor's or project's intent is to work to one schedule, but report performance to stakeholders using another, the potential for abuse exists. An example of this situation might be a project that operates to the IMS "early dates" but reports progress to customers or stakeholders against a baseline set to the "late dates."

Excluding Project Scope from the IMS. Intentionally not including, or even removing, work scope from the IMS could distort the true critical path and inhibit insight into schedule risk.

Forcing Success-Oriented Schedules. A recurring theme in some organizations is for the project leadership or functional management to demand managers to commit to unrealistic, "success oriented" schedules under the mistaken belief that this will incentivize early or on time completion. This abuse can lead to team conflict as managers are held accountable for meeting unrealistic schedule objectives. Success-oriented schedules leave little flexibility to work around problems, meaning the managers must execute exactly to the baseline – or be late.

Manipulating Performance Metrics. Metrics such as the Baseline Execution Index (BEI) can be made more favorable by including level of effort tasks, which will always be on time, in the calculation. Not properly revising the schedule baseline or frequent rebaselining can also distort these metrics. BEI is normally calculated using the early finish dates in the baseline numerator, but calculations using the late finish dates in the numerator result in a more favorable metric when in fact a bow wave of unachievable work may be building.

Under Reporting Schedule Risk. Probabilistic schedule risk analyses (SRAs) can provide helpful insight into the confidence level of finishing the project on time. However, when the SRA indicates a lower probability of completion than stakeholders expect or require, arbitrarily decreasing duration uncertainty ranges, or risk event probabilities or impacts can artificially improve the confidence level.

Misrepresenting Schedule Status to Stakeholders. Claiming completion credit for work that is not finished, not reporting milestone slips that occur or are projected to occur, or claiming schedules or status are "under review," "awaiting approval," or "preliminary" are signs of potential misrepresentation of the true schedule situation and hiding key information from stakeholders. In some cases, multiple schedule gaming techniques are applied to mislead customers or other stakeholders. Figure 8 illustrates how a supplier disconnected a mandatory predecessor dependency driving a major project milestone within the IMS so the deliverable associated with the milestone would no longer appear to be impacting it – even though the deliverable was contractually required in support of the customer milestone. The supplier also changed a Must Finish On (MFO) milestone constraint, which had previously provided insight into total slack erosion by tracking the trend of negative slack against the milestone, to an ASAP constraint. This removal of the MFO constraint eliminated the calculation of negative slack and incorrectly conveyed a schedule improvement.

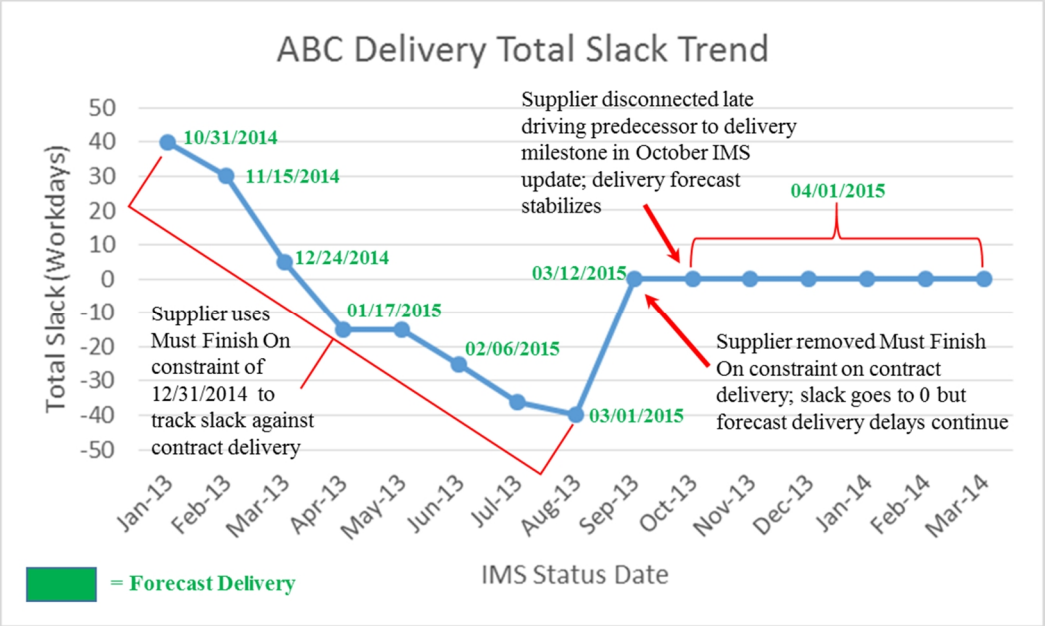

Figure 8. Misrepresenting schedule status to stakeholders.

MITIGATING SCHEDULE GAMESMANSHIP

Fundamentally, gaming, data manipulation, and abuse of project schedules is a choice: to either engage in ethical scheduling practices or not. If you are concerned about schedule gamesmanship in your organization, on your project, or with a contract you oversee or manage, examine areas such as:

Organizational Culture. Does leadership encourage reporting bad news or schedule performance challenges in order to understand them so timely, decisive corrective action can be taken? Or does the organization punish or blame the project manager or supporting managers for poor schedule performance? Does the organization have a history or track record of "buying in" to projects or contracts with unachievable cost and schedule estimates to win the job? Are success-oriented schedules the rule? These conditions can contribute to an atmosphere where schedule abuses could emerge.

Schedule Management Processes. Does a Project Management Office (PMO) provide support to projects? Are there documented scheduling processes, best practices, lessons learned, templates and other guidance available? Are scheduling training courses available to project teams? Are schedule "health checks" performed against guidelines such as the Defense Contract Management Agency's (DCMA) 14 Point Assessment criteria which can screen the IMS for constraint types, missing logic and lags for further examination?

Continuous Improvement. Continuously striving to improve schedule management in organizations can further reduce the potential for unethical schedule practices. Other ideas projects can consider for improvement include:

- Pre-negotiated contract options for customer-provided information, equipment or material to accommodate potential delays
- Automated "schedule compare" reports to screen for logic and duration changes from one period to the next
- Provision in IMS deliverables from suppliers to document duration changes as well as use of lags and hard constraints
- Independent schedule assessments to validate schedule confidence including margin adequacy
- Giver/receiver lists to support valid horizontal schedule integration, reducing the potential for abusing project logic
- Schedule peer reviews of the IMS and schedule management processes prior to setting the schedule baseline

CONCLUSION

Unethical scheduling practices may not be widespread throughout the project management profession. However, instances of gaming, data manipulation, and abuse of project schedules may not be isolated occurrences either. How much or little over-optimism on the part of project practitioners, fear of reprisal by organization leadership due to bad schedule news, loss of award and incentive fees from missed milestones, and other factors could contribute to the unethical behavior is not known. Whether schedule gaming, data manipulation, and abuse could exist in your organization or among your partners and contractors is risk worth examining.

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Walter Majerowicz has over 25 years' experience in project planning and control, including schedule management, earned value management and risk analysis. He is currently Chief Operating Officer at Integrated Project Analytics, LLC and owner of Walter Majerowicz Consulting in Maryland, USA. Previously he held positions with ASRC Aerospace Corporation, Computer Sciences Corporation, Boeing and Lockheed Martin.

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Mr. Majerowicz holds an MBA from the University of Baltimore and a Certificate in Technology Management from the California Institute of Technology. He is a certified Project Management Professional (PMP) with the Project Management Institute (PMI) and has been a frequent speaker at project management conferences. He is currently an Adjunct Lecturer with Georgetown University's Project Management Certificate Program. Major award and honors include the NASA Goddard Outstanding Mentor Award, the NASA Public Service Medal, the PMI Distinguished Contribution Award, and the NASA Exceptional Public Achievement Medal.

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