// The Art and Science Behind Successful Risk Workshops

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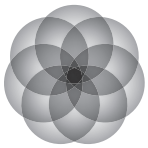

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Introduction

Despite the project risk software tools available today, the process of conducting a risk workshop, and subsequent risk model development, continues to be a major headache for many projects and often is at best, an evil necessary that is executed simply to follow company or project protocol.

With this perception, getting a project team engaged and onboard with the risk assessment process can often be as challenging as building the risk model itself.

So, why the big challenge? After living and breathing project risk management for over a decade, I have come to the conclusion that the reason is this: when conducting a risk workshop, too many projects rush towards the end goal without really understanding how to get there or in many cases, not fully understanding the benefits as to why they are even doing a risk workshop in the first case.

This paper discusses how a well-structured balance of risk process combined with sound workshop facilitation can provide more value to a project's bottom line than most typically ever realize. Imagine a silver bullet that enabled you to objectively determine accurate project costs; requirements for, and allocation of, contingency; strategic insight into which projects should be considered for organization portfolio inclusion; and, as a project manager most importantly, a true indicator as to how realistic the plan is, against which you are being held accountable for during execution. Sound too good to be true? Read on…

The Risk Assessment Process

If the objective of a risk assessment is to determine risk exposure, required contingency and confidence as to whether the plan is adequately realistic, then the process needs to critique not only the risks impacting the project but also the plan itself.

Think of risk on a project as the 'anti-plan'. We can go to great lengths to develop the perfect schedule or cost estimate but then during execution if either the scope changes (uncertainty) or unforeseen events occur (risk events), then the plan is immediately out of date and not reflective of what needs to be done for a successful on time, on budget completion. With this, the taming of two moving parts should be considered:

1) All events, uncertainties and risk factors that may impact our 'best laid plan'

2) The plan itself – consider the extreme case of a project with no risk: if the plan is inaccurate or incomplete then there is still a high chance the project will still not finish on time/to budget.

To give ourselves the best chance of developing a sound model, consider the following four steps that will give us a framework for our risk assessment.

Step 1: Schedule Review
Step 2: Risk Identification
Step 3: Model Development and Analysis
Step 4: Interpretation of the results

Step 1: Schedule Review

Building a risk model against a sound schedule basis and/or cost estimate is paramount to successful risk assessment. Apply risk and uncertainty to a structurally weak schedule and the results will be as weak as the plan itself.
Some practitioners and tools today offer checks for quality of schedules. However, simply running a set of checks isn't sufficient. Accepting scheduling best practices such as the absence of open ends, out of sequence updates, lags on links etc, there is a further layer of intelligence that needs to be applied. Running computed schedule checks is certainly a good first step but then more importantly, working with the planning team to understand the presence of these so called errors and justification as to the absence of perhaps certain areas of detail, ensures that the schedule basis is as accurate and realistic as possible.

Based on facilitation of countless project risk assessments, Acumen has developed a series of thresholds that act as quality and performance indicators enabling accurate determination of the suitability of a project plan for risk assessment.

This early assessment of the plan also ensures team buy-in on the risk assessment. Without this initial prep work and collaboration with those involved in the development of the plan, the workshop itself often gets misconceived as a witch hunt from which a defensive team then offers little insight into the true risk drivers within their project.

Step 2: Risk Identification

The pitfalls to avoid during risk identification warrant a thesis unto themselves: having a sound risk identification process is key to the successful assessment of project risk exposure.

Risk Events, Risk factors or Uncertainty Ranges?

Over recent years, sources and types of risk have been reasonably well documented. Project teams are generally well educated as to the types of different risk ranging from risk events and uncertainty factors to weather events, rig availability and other risk sources. For this very reason, when the team is brought together in a risk workshop, it is critical to truly identify how these risk types not only interact and potentially drive each other but also how big an impact they truly have on the project. Approximating them all under the umbrella of a 'risk range' will lead to tenuous results at best.

Avoidance of Analysis Paralysis

Estimate uncertainty is largely a result of incomplete or varying scope. Typically, uncertainty is modeled using the likes of three point estimates (for example +/- 10% range around the deterministic duration). However, in a risk workshop that may have anywhere up to twenty highly opinionated team members, completing a walkthrough of a detailed schedule gaining consensus can be extremely challenging. To overcome this, consider using uncertainty factors. Rather than expecting a workshop team to quantify minimum and maximum ranges to the nth degree, adopt a factor-based system as shown in table 1 below.

Risk Factor	Best Case (optimistic)	Worst Case (pessimistic)
Very Conservative	75%	100%
Conservative	85%	105%
Realistic	95%	105%
Aggressive	95%	115%
Very Aggressive	100%	125%

Table 1 – Uncertainty Factors

Again, based on experiences from countless risk workshops, I have found teams are more engaged and objective about risk ranging when thinking in terms of degree of realism/aggressiveness. Map this back to an agreed upon quantitative score using a mapping such as table 1 and the result is an extremely consistent and manageable means of risk loading uncertainty during a risk workshop.

This technique also ensures that team members don't inadvertently include risk events in their uncertainty ranges.

Black Swan Risks

There has been a lot of noise made about black swan, extreme or so called 'strategic risks' in recent publications. Yet in so many risk workshops, we still today, have to guide the team away from slipping into the World War III type risks that result in ridiculously skewed results. Impact of risk is of course a key consideration, but is it valid to include a major risk event in a risk model that only has a 1 in 500 chance of happening during the life of the project? Separate out risks that may impact the organization from those of the project.

Avoidance of Double Dipping

A similar pitfall to avoid is that of 'double dipping'. Risk 'double dipping' occurs when the impact of a risk event is included in the general uncertainty range (often applied as a min, most likely, max range of uncertainty) as well as being defined as an impact from a risk event.

"What is the appropriate level at which to risk load a schedule?"

This a question posed frequently. The answer is simple: we can only report down to the level at which we risk loaded a schedule. If we want to be able to determine contingency spread at a level 3 within a WBS, then the schedule needs to be risk loaded to at least this level. The flipside to this is that if we are working on a 10,000 activity schedule, it is simply not practical to risk load that many activities in a risk workshop.

Again, through an evolved process, Acumen has developed a highly effective means of risk loading 'enough but not too many' activities to ensure a balance of sufficient detail and manageability for the team. This balance typically results in the order of magnitude of two hundred risk factors/ranges being identified that then get applied to the various disciplines/WBS groupings/sub sections within the project as a whole.
One of the benefits of this approach is that of continued maintainability of the risk model beyond the initial risk workshop.

Loudest Doesn't Always Win

Successful risk workshop facilitators have one key objective: to determine consensus from the workshop team on realistic risk input values that will then be used to develop the risk model. Risk workshops benefit from not having traditional project or organizational hierarchical protocol. A domain expert should have as much say as the PM when it comes to risk identification. In a recent workshop I worked with a highly passionate and somewhat argumentative team, so I implemented a 'wooden spoon'

system as to 'who had the floor'. As the facilitator, I simply passed the spoon to the team member wanting to voice an opinion. This forced the team to present well thought out and structured arguments surrounding risk values and the net result was a controlled, consensus driven set of highly accurate risk inputs.

It's OK to Admit We Have Risk in Our Project

All too often, project teams are optimistic in their assessment of risk exposure. A risk workshop should not be a destructive project moaning session. Instead, it should be viewed by, and presented to, the team as a means of gaining consensus on project confidence and subsequently what is needed to increase that confidence level.

Step 3: Model Development and Analysis

Once we have obtained the risk and schedule inputs (the building blocks of the risk model), we then need to build a sound model against which to analyze. Over the years, I have seen many approaches to risk model development yet in reality, very few truly hold water. Due to the logistical challenges of risk loading very large schedules, one approach is to create a manual rollup summary of the project and risk load this. This approach is extremely dangerous: the task of re-creating equivalent logic on a summary schedule that truly represents the inner workings of the detailed basis schedule is extremely difficult and at best is an approximation.
Equally, shortcuts such as focusing on and risk loading of, the critical or near critical activities can give a skewed perception and can obscure risk hot spots or areas of the project highly sensitive to risk.

Avoidance of Central Limit Theorem

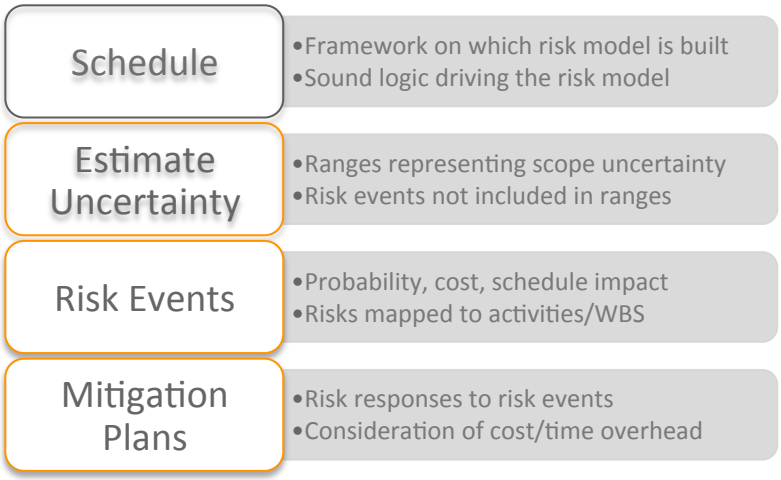
A proven approach is to identify and risk load both risk events and estimate uncertainty at a suitable reporting summary level within the schedule, with the detailed activities inheriting these summary ranges/risk events. A major pitfall to avoid here is that of Central Limit Theorem (CRT): a well-known phenomenon caused by hierarchical, equal and opposite data cancelling each other out. In schedules, this has the effect of summary activities not reflecting the true range of risk that is held within the child activities. This can easily be overcome through the use of risk correlation but must be considered when building the model.

Integrating Uncertainty and Risk Events

One of the most overlooked inputs in risk model development is that of risk event integration. Risk loading estimate uncertainty and running a Monte Carlo simulation is commonplace but, in reality the impact of such uncertainty diminishes into insignificance

when the larger impact of risk events are considered. In light of this, it is paramount that risk events get properly integrated into the uncertainty risk model prior to running a risk analysis. Linked to this, is that of the analysis of mitigation. Too often the impact of mitigation is subjectively assessed without analytically determining the cost/benefit of planned mitigation as part of the integrated risk model.

In short, the risk model should contain the following inputs:



These four inputs form the basis of the risk model that can be analyzed using a Monte Carlo simulation.

Often, mystery surrounds the mechanics of a Monte Carlo simulation and yet in reality, it is extremely straightforward. The simulation is nothing more than a normal schedule time analysis (CPM technique) with each iteration taking into account the risk and uncertainty variables that the team has identified. Run enough of these simulations and a well-defined pattern will emerge in the form of risk results.

Step 4: Interpretation of Risk Results

The Danger of Reporting Confidence Levels

One of the biggest misperceptions about risk reporting is to focus on the confidence level derived from a risk histogram. Why is this an issue? It can be a highly misleading metric. The confidence level metric describes the chance or probability of achieving the project completion date. After many years of risk analyzing projects of known low risk, I began to question why so many of these turned up very low 'confidence levels'. Further investigation into this has revealed a phenomena known as merge bias. In layman's

terms, merge bias occurs due to multiple parallel paths ultimately having to converge on an activity or project completion milestone. Even with minor risk and uncertainty, the chance of each of these predecessor paths completing on time and not having an impact on the node point is very low. In fact, it is a compound probability effect. Extrapolate this throughout the project in its entirely and you soon realize that the confidence level metric needs to be used in caution.

Range, Range, Range

The range of uncertainty gives context to the confidence level. In addition to reporting the confidence level, report on the range of uncertainty and even better, report this range as a percentage of remaining duration. Reporting to the board that you have a 15% range of uncertainty on your project is more useful than reporting that you only have a 3% of hitting the completion date. A small confidence level doesn't necessarily indicate a high-risk project…

How to Report Contingency

Too often contingency values are thrown around in absence of a confidence level. A contingency of 30 days is meaningless unless we can understand the confidence level at which this is being reported. The exact same project may have 90 days required contingency if the required confidence level is 90% instead of say 50%. The 'take home' here is to always report and request contingency amounts within the context of a specified contingency level.

Conclusion

Like most systems, a risk analysis is only as good as the basis upon which the model is built. Throw erroneous risk ranges at a schedule and the results will be equally erroneous. Instead, by pursuing a well structured, third party facilitated risk workshop, you ensure accurate inputs and model development.

Equally important is the intelligent interpretation of results. Risk exposure can be a difficult topic to report and so it is key that the likes of risk range and required contingencies are reported in a meaningful way within context of the given project.

Checklist for a Successful Risk Workshop

Listed on the next page is a checklist of guidelines recommended when considering conducting a risk workshop. It is these factors that have enabled Acumen to have continued world-class success with risk assessment workshops.

Risk Assessment Checklist

- ☑ Tune the team into why you are having a risk workshop
- ☑ Conduct pre-workshop discovery sessions
- ☑ Employ a 3rd party workshop facilitator for truly independent assessment
- ☑ Perform a well structured workshop – know the project schedule prior
- ☑ Adopt risk factoring during the workshop – avoid statistics at all costs
- ☑ Don't overlook risk registers and risk events – they carry large impact
- ☑ Brainstorm mitigation plans during the workshop
- ☑ Keep the workshop group to a manageable size
- ☑ Leave team hierarchies outside of the workshop – everyone has their say
- ☑ Understand model limitations such as merge bias and central limit
- ☑ Report intelligently: be wary of confidence level reporting in isolation
- ☑ Hold periodic workshops in alignment with the likes of project/gate reviews

Additional Information

If you would like further information about Acumen's risk assessment workshops, please visit our website at http://projectacumen.com or contact info@projectacumen.com.