

An Oracle White Paper
June 2009

Successfully Managing Contract Risk by Forming Win-Win Relationships

Executive Overview

This white paper identifies some of the risks involved with contract project work and explains how a formal risk assessment can help alleviate those risks. As a result of risk analysis, strong collaborative relationships can be formed with contractors, and projects can be completed on time and on budget. Oracle's Primavera Risk Analysis addresses this need as a risk analytics solution that allows companies to model risks and analyze the cost and schedule impacts of mitigating them—in the process, taking much of the uncertainty out of project and portfolio management.

Introduction

Regardless of your industry, projects are inherently risky. Project success depends not only upon a project plan that accurately models the scope of work required to complete the project, but also upon developing a win-win relationship with contractors, who are responsible for a portion of the deliverables. Both general contractors (or “prime contractors”) and subcontractors should complete a formal risk assessment so that the impact of potential events can be understood and appropriate responses planned.

Uncertainty in Project Management

Managing a project can be compared to playing a game of chance such as roulette or blackjack—the odds of project success are often very slim, unless you, in Las Vegas parlance, “play your cards right.” To ensure success, project planners and schedulers outline activities and deliverables with a minute level of detail and produce the smartest-possible plans and cash flows. However, the most important factor when planning and forecasting is often forgotten—uncertainty. Uncertainty in any project can render even the best-laid plans useless. Yet uncertainty is arguably the most overlooked aspect of project management at both the planning and execution phases.

A formal risk management program should be carried out not to eliminate project uncertainty, but to understand the impact of potential events and to plan for an appropriate response. With risk management, planners understand and accept calculated risks when placing their bets rather than blindly gambling their assets on unknown factors—like betting the ball will land on red in a spinning roulette wheel.

The goal of risk management is to understand the impact of potential events and to plan for an appropriate response. With risk management, rather than blindly gambling assets on unknown factors, planners understand and accept calculated risks when placing their bets—like the probability of a roulette ball falling into any red number.

Risk management is frequently considered in the earliest stages of project analysis, such as during a portfolio analysis, to determine whether a project is a good fit for the company. Once the project is past the initiation

phase, very little formal risk management is carried out. This is the main reason that many detailed plans fall by the wayside. Yet, if risk assessments are done at both the bid assessment and bid creation stages, more uncertainty can be eliminated from the project and better relationships can be built with contractors.

Risk in Contractor Relationships

The purpose of entering into a relationship with a contractor is to employ additional capabilities—at a mutually beneficial price—that are not available internally. For example, companies enter into such agreements if they lack a sufficient number of direct resources or require specialist skills. They might also want to delegate some of their responsibility or risk exposure by sharing the work with another party. Because contractors assume some risk, it is essential to determine the degree of risk being transferred and to assess how much new risk is taken on by employing the contractor. The contractor could alleviate a critical resource constraint, but if the required work cannot be completed to a specific quality level, the benefit of transferring the work is diminished by the additional burden of managing for quality.

Similarly, the contractor must also fully understand the scope of work and the timescale of delivery when agreeing to the contract. Expectations from both parties need to be mutually recognized and agreed upon. Using formal risk management techniques essentially reduces the uncertainty regarding such expectations.

Risk, like responsibility, goes downhill. In any project, the general contractor is responsible for delivering a product or service to the client according to certain specifications, such as time, cost, and quality. If a portion of this work is again subcontracted, some of the associated risk is transferred to the subcontractor—even though the general contractor ultimately manages the overall risk. This “waterfall effect,” illustrated in Figure 1, spreads responsibility across multiple parties, but the total degree of risk within a project is still the same or greater. Unfortunately, risk can actually increase with any additional uncertainties that the subcontractor introduces.

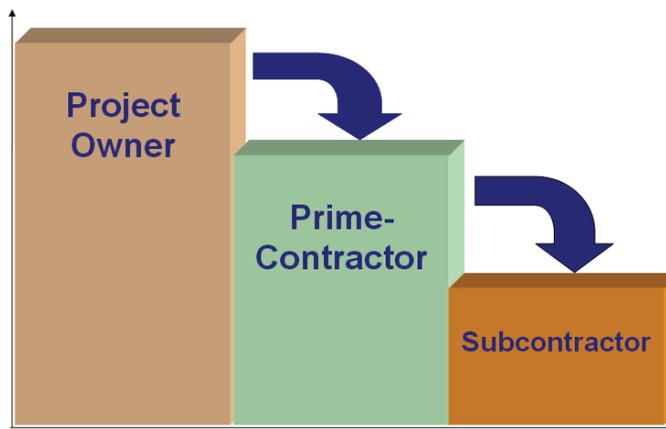


Figure 1. The waterfall effect spreads responsibility for risk across multiple parties. The project owner maintains the most risk but shares some with the prime contractor and subcontractors.

The Contractor’s Point of View: What Work Should Be Subcontracted?

For a general contractor, the most important aspect of subcontracting work is defining and tracking the subcontractor’s goals and milestones. Under a formal risk management program, a subcontractor’s schedule is typically a risk-analyzed plan that has been adjusted based on the degree of risk present in the scope of work. If the subcontracted work is high risk, the baseline schedule is adjusted accordingly. However, the incentive schedule could still be based on the original schedule. This serves two purposes: first, it protects the general contractor from subcontractor cost and schedule overruns; second, it provides the subcontractor an incentive to ensure that the high-risk areas of work are completed to specification. Such schedules (commonly called percentile date schedules) are based on confidence factors for completing work. A general contractor might put work out for tender using a P50 schedule, yet offer bonuses

using a P20 schedule. That is, the initial schedule offers a 50 percent chance of the work being completed on time, and the more-aggressive schedule presents a 20 percent chance of being completed on time.

Figure 2 is a typical cost-risk histogram showing a projected 47 percent chance of completing the project on budget. From this, a detailed P50 and P20 schedule (shown in Figure 3) can be determined and used in the context described earlier.

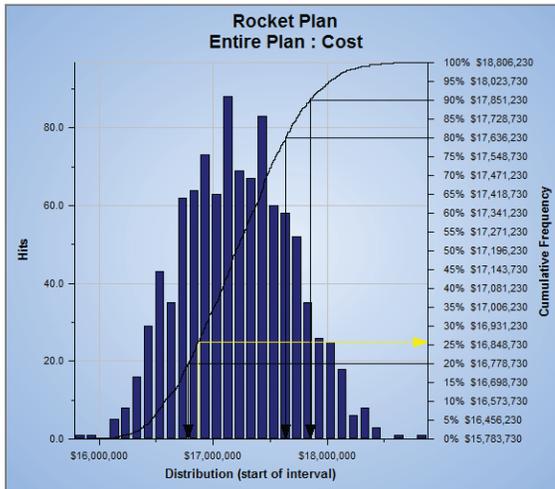


Figure 2. The cost-risk histogram forms the basis for completing percentile date schedules such as in Figure 3.

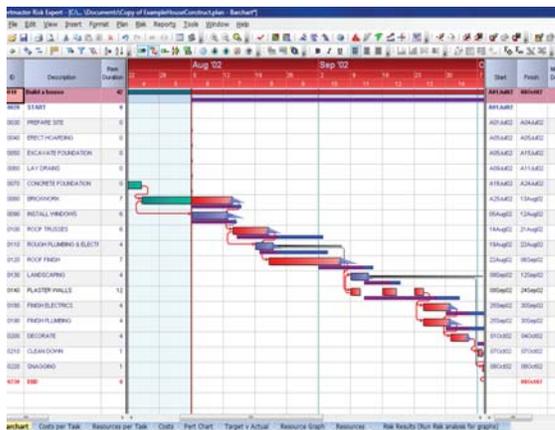


Figure 3. A detailed P50 and P20 schedule is calculated from the cost-risk histogram in Figure 2. These percentile date schedules can drive contingency analysis.

Percentile date schedules can also form the basis for contingency calculations. A contingency cost reserve is typically allocated as a lump sum to account for risk events and to estimate uncertainty, causing a variation from the planned schedule. Contingency can be derived by comparing the cost of the deterministic project plan to that of a P80 schedule. If the deterministic schedule is calculated at US\$2.5 million and the P80 schedule is calculated at

US\$2.8 million, then a contingency of US\$300,000 is needed to ensure that the P80 schedule is achieved, regardless of any risk events that might occur.

The Subcontractor’s Point of View: Should We Accept the Contract?

For a subcontractor, knowing the probability of completing the required work on time is critical to determining if doing the work will be beneficial. A risk analysis can be the deciding factor for the subcontractor when determining whether to enter a bid. Often a risk analysis will force a higher bid by the subcontractor. However, a higher bid that is backed up by a risk analysis illustrating why the work is high risk often justifies the higher bid price. Bids with detailed risk analyses are often the winning bid—even if the price is higher.

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Additionally, being able to determine if a proposed schedule is realistic is key when negotiating incentives and bonuses. The most lucrative bonuses are irrelevant if they can never be realistically reached. If the schedule is not realistic, then determining the aspect of work that has the highest risk is very valuable because it provides additional decision support and negotiating power.

Figure 4 shows a typical risk tornado chart depicting the key risk drivers in the schedule. From a subcontractor’s point of view, the primary risk responsibility in this example lies with the fabrication task A140 from the general contractor and not with the tasks assigned to the subcontractor. As such, this risk driver would not be a major concern for the subcontractor. Instead, the responsibility falls to the general contractor to ensure that preturnaround planning was completed successfully. The subcontractor might find it useful to include a clause about this in the contract.

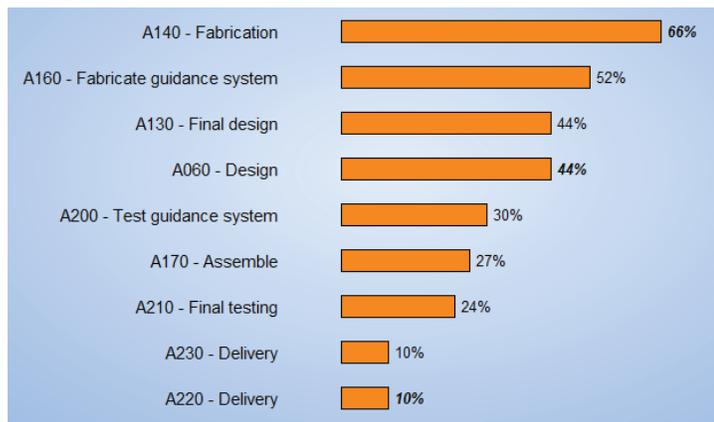


Figure 4. Key risk drivers in the schedule are identified in a risk tornado chart.

A risk tornado chart can help identify the main risk driver in a project. If managing that risk does not fall within the subcontractor's control, then it is useful to include a clause in the contract limiting the subcontractor's liability should the risk event occur.

Primavera Risk Analysis

When creating and assessing bids, Oracle's Primavera Risk Analysis can help to assess risk levels and increase transparency between contractual partners. Primavera Risk Analysis is a full lifecycle risk analytics solution integrating cost and schedule risk management. It provides a comprehensive means of determining confidence levels for project success together with quick and easy techniques for determining contingency and risk response plans. Further, it provides an objective view of required contingency to account for cost and schedule uncertainty as well as analyzing the cost effectiveness of risk response plans. These features combine to form the basis of a risk-adjusted schedule that can help you build win-win relationships with your contractors and clients.

Conclusion

Contractors and subcontractors are both exposed to risk within a project. As such, it is equally important to both parties to complete a formal risk assessment. Understanding the risks involved and managing risk response through standard response types such as mitigation and added contingency further ensure project success. However, it's a fine line between applying too much contingency or risk mitigation and not implementing a risk response at all. But with the correct methodologies and tools in place—such as Oracle's Primavera Risk Analysis—the odds of establishing a win-win relationship between the contractor and the subcontractor go up significantly.



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