

TIPS & TECHNIQUES

Assessing Bid Viability for the Organization

Accounting for Risk

by Dan Patterson

As the stakes continue to increase within the environment of large capital expenditure (CapEx) exploration and refining oil and gas projects, the need for competitive advantage during the strategic bid decision making phase is paramount. If an organization can identify areas of uncertainty in a project, then it can account for these in its proposal.

Mission-Critical Factors during Bidding

During the opportunity phase of corporate portfolio planning, there are three key factors to consider when appraising the viability of a project bid:-

- 1) *Revenue potential*: an evaluation of the long-term total revenue gained from a project investment.
- 2) *Contract type*: determination of the type(s) of contracts entered into between the project owner and the sellers/sub-contractors.
- 3) *Portfolio Capacity Planning*: evaluation of the contractor(s) capacity and expertise to execute and deliver the project to completion.

All three of these questions have to be considered and resolved as part of the 'go/no-go' decision-making process of capital investment planning. All three factors are heavily impacted by uncertainty. The process of project scheduling and estimating can, to an extent, minimize this uncertainty and attempt to assert a level of control. But, without continued risk assessment and reduction during the live project, this process is akin in the medical world to relieving symptoms rather than understanding and preventing the root cause.

Assessing Revenue Potential

During project selection, the individual contribution to overall corporate revenue potential is a key consideration. Performing a revenue risk analysis both validates corporate forecasts as well as pinpoints which Strategic Business Units (SBU's) are the biggest risk drivers. Often SBU's that on paper appear very lucrative, may actually be the most likely cause of reduced revenues (due to uncertainty). Uncertainty within a project can stem not only from ranges of revenue but also from the simple fact that not every project candidate within a portfolio is a certainty. Winning a project bid is far from guaranteed, so accounting for the probability of success is essential in the evaluation of a portfolio's revenue capacity. Assessing the portfolio impact of improving the chance of a successful project bid further provides a competitive advantage and allows us to consider not bidding for projects that will have a major impact on corporate forecasts if lost or which could come in at a cost well over budget.

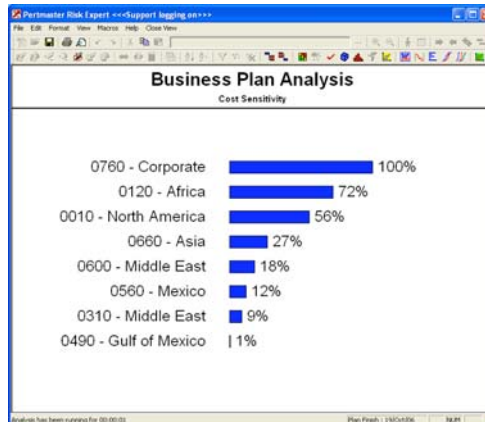
Figure 1 shows an example of a portfolio of projects (both pre-bid in the proposal phase, and projects already won). Projects in the pre-bid phase have assigned to them a probability of win. Further, each project has associated with it a range of potential revenue forecasts. Through a

Published in PM World Today - February 2007 (Vol. IX, Issue II)

revenue cost risk simulation (using Monte Carlo), we are able to report those business units that carry the highest degree of risk (in this case the Africa SBU).

Marathon Oil decision to deploy Pertmaster's project intelligence and risk analysis tool to assist with decision making during the project selection phase is a example of such analysis. Through the use of this tool, Marathon's major projects teams can tell management, 'If you give us this much money, here's the probability of meeting that goal.' Marathon now has the ability to realistically predict the allocation of both funds and time. Such an accurate assessment so early in the project lifecycle provides Marathon with a stronger selection of projects in their portfolio.

Name	Description	Probability of occurrence	Min Revenue	Likely Revenue	Max Revenue	Total Revenue
0760	Corporate		\$0	\$0	\$0	\$80,150,000
0010	North America		\$0	\$0	\$2,007	\$14,000,000
0030	Washington	75%	\$750,000	\$10,000,000	\$12,000,000	\$10,000,000
0040	Adams	75%	\$3,000,000	\$3,000,000	\$6,000,000	\$3,000,000
0050	Jefferson	75%	\$500,000	\$1,000,000	\$4,000,000	\$1,000,000
0120	Africa		\$0	\$0	\$0	\$30,600,000
0130	Madison	95%	\$5,000,000	\$8,000,000	\$13,000,000	\$8,000,000
0140	Monroe	100%	\$5,000,000	\$7,000,000	\$7,000,000	\$7,000,000
0150	Jackson	100%	\$4,000,000	\$5,000,000	\$6,500,000	\$5,000,000
0160	Van Buren	100%	\$2,000,000	\$4,000,000	\$6,000,000	\$4,000,000
0170	Harrison	90%	\$1,000,000	\$3,000,000	\$6,000,000	\$3,000,000
0180	Tyler	100%	\$500,000	\$1,000,000	\$2,500,000	\$1,000,000
0190	Polk	100%	\$350,000	\$500,000	\$1,500,000	\$500,000
0200	Taylor	100%	\$200,000	\$500,000	\$1,000,000	\$500,000
0210	Fillmore	100%	\$250,000	\$500,000	\$1,000,000	\$500,000
0250	Pierce	70%	\$500,000	\$1,000,000	\$3,000,000	\$1,000,000
0260	Buchanan	90%	\$50,000	\$100,000	\$200,000	\$100,000
0270	Lincoln	75%	\$10,000,000	\$10,000,000	\$15,000,000	\$10,000,000
0310	Middle East		\$0	\$0	\$0	\$9,300,000
0320	Johnson	100%	\$1,500,000	\$2,250,000	\$3,500,000	\$2,250,000
0330	Grant	100%	\$1,000,000	\$2,000,000	\$3,000,000	\$2,000,000
0340	Hayes	100%	\$500,000	\$750,000	\$1,000,000	\$750,000
TOTALS						\$80,150,000



Portfolio of Business Units and associated Projects

Business Units Ranked by Degree of Risk on the overall Business

Figure 1 – Determination of the Key Risk Driving SBU's

Determination of Acceptable Contract Conditions

As part of the bid delivery, determination of liability and risk exposure drives the decision making process as to the type of contract to enter into (both between owner and contractor and contractor and sub-contractor). When sub-contracting specialist work that carries a high degree of risk, rather than engaging in a Time and Materials (TM) contract, the likes of a firm-fixed-price (FFP) or a fixed-price-incentive (FPIF) should perhaps be considered where the buyer will be responsible for any delays and overruns. Performing a risk analysis provides visibility into which types of work carry such a liability and so better supports a decision as to bid/contract type.



Figure 2 – Contract type and Risk Exposure

Figure 2 illustrates the different contract types and their relative risk exposure level from both the buyer and seller's perspective. Further, the greater the risk level adopted, the greater the

amount of contingency required. Consideration of adding contingency to a bid to form a higher priced (but safer) bid when mandated to enter into a contract on the high-right-side of figure 2 can lessen the potential impact of cost overruns during execution.

Portfolio Capacity Planning

Winning a project is in essence a liability to a corporation (the seller/contractor) until the point of successful completion and handover to the client. A lucrative project usually has high stakes as well as high potential gain and examination of the ability to execute according to plan lessens the chance of taking on an attractive looking project that is actually likely to fail. In isolation of other projects (planned and underway), a project may be highly viable in terms of successful completion but, within a world of competing in-house resources, specific skill sets and contracted services (such as shipyards), project failure is often a direct result of factors external to the project and not inherent to the project itself.

Capacity planning is not a new concept but the forecasting of over and under allocation of resources, skill sets and budgets all fall short when uncertainty of schedule is not considered. However, combining traditional capacity planning techniques with a Monte Carlo simulation approach provides additional confidence levels regarding closeness to over-capacity thresholds. Determining how sensitive an SBU is to availability of resources enables strategic planners to better time-phase projects and allow for potential time and cost overruns.

An example of this can be seen through Venture Production’s use of a project intelligence and risk analysis tool for scheduling scarce specialised resources (such as suitable diving vessels) based upon the uncertainty of the associated time window. Fiona Bannister, project controls leader at Venture states “Using Pertmaster...helps us to determine the projects that fit best with our overall program and make most economic sense”.

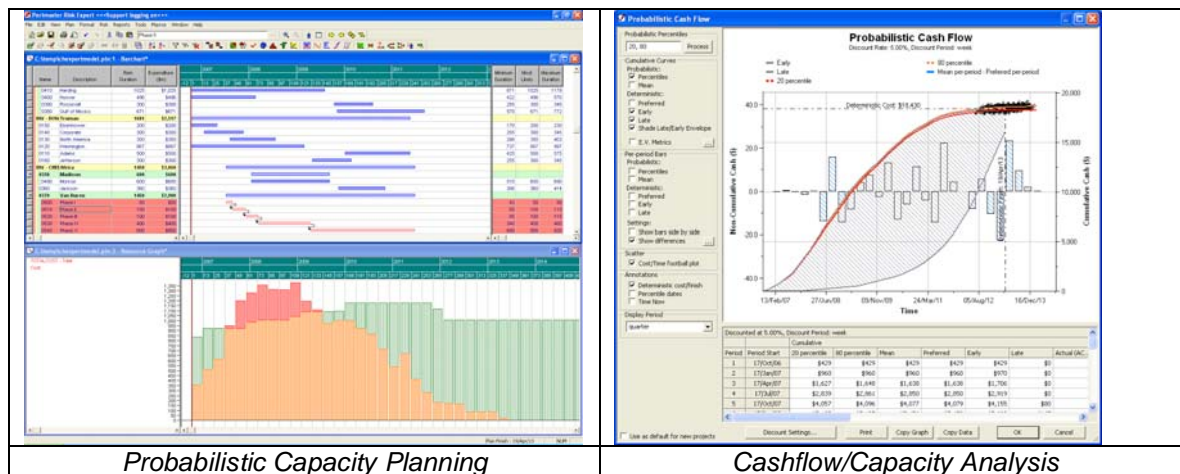


Figure 3 – Capacity Planning

In parallel to project time-phasing and prioritization, the ability to forecast long-term budget requirements is key. Again, determining the impact of potential schedule overruns on individual projects within an SBU helps to expose periods of not only budget under-allocation but equally

importantly budget over-allocation. Allocated funds within a budget period that are not needed are regarded equally as poorly as periods lacking necessary funds to complete planned work.

Conclusions

As the stakes increase on major CapEx projects, bid viability decisions are becoming more and more important as is the associated visibility of SBU success at the board and stakeholder level. Consideration of potential revenue generation in the context of high risk project environments helps determine both bid values and the type of bids (contract types) that should be pursued. A further benefit to adopting a highly risk-savvy corporate culture at such an early phase within a project lifecycle (well before traditional project management techniques come into play) is the continuation and dissemination of cost and revenue information and intelligence from project opportunity phase through bid planning and execution all the way through to closeout.

About the Author:



Dan Patterson



Dan Patterson is a vice president for Primavera Pertmaster, a provider of project risk and analysis software for Project and Portfolio Management (PPM) environments especially in oil and gas exploration, engineering, manufacturing, construction, aerospace, defence and government. With over ten years of project management experience, Dan is an expert in IT product development, specifically in the field of project portfolio management. Before joining Pertmaster, Dan was responsible for the overall development and product marketing of web-based project management applications including the first fully web-based PM portal and a powerful qualitative risk management solution. Other areas of expertise and interest include project risk management, construction management and the use of Artificial Intelligence (AI) for planning and control. Dan currently lives in Houston, Texas, is a certified PMI PMP, and holds a PhD in Civil Engineering from the University of Nottingham, UK. Some 7,000 projects around the world incorporate Pertmaster solutions to help management model and control risk and uncertainty in project portfolio planning, costs, resource requirements and schedules. Dan manages the North America territory and is responsible for all market and business development in the US for Primavera Pertmaster. For more information, see www.pertmaster.com