

Assessing Bid Viability for the Organization

Executive Summary

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.

Bid viability decisions are becoming more and more important as is the associated visibility of Strategic Business Units (SBUs) 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 closeout.

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:

- *Revenue potential*: an evaluation of the long-term total revenue gained from a project investment. The impact of how much expenditure and available capacity required to execute a project is typically considered separately (during portfolio capacity planning). These factors combined give an overall indication of expended profit. However, in the first instance, revenue potential is used to indicate the potential size of the opportunity.
- *Contract type*: determination of the type(s) of contracts entered into between the project owner and the sellers/sub-contractors.
- *Portfolio Capacity Planning*: evaluation of the contractor(s) capacity and expertise to execute and deliver the project to completion.

All three of these points 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 to relieving symptoms rather than understanding and preventing the root cause in the medical world.

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 SBUs are the biggest risk drivers. Often SBUs that on paper appear very lucrative may actually be the most likely cause of reduced revenues (due to uncertainty). Uncertainty within a project can in itself stem from ranges of revenue and 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 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).

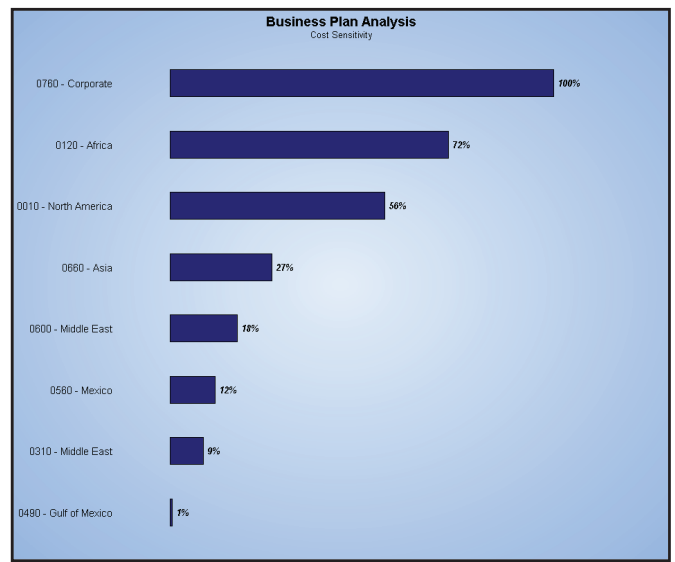
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Marathon Oil's use of Pertmaster to assist with decision-making during the project selection phase is an example of such analysis. Through the use of Pertmaster, Marathon's major projects teams can tell management, 'If you give us this much money, 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.

Figure 1 – Determination of the Key Risk Driving SBUs

ID	Description	Probability of Successful Bid	Mn 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	\$40,000,000
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	Lincaln	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
0350	Garfield	100%	\$750,000	\$1,500,000	\$2,500,000	\$1,500,000
0360	Arthur	100%	\$500,000	\$1,000,000	\$3,000,000	\$1,000,000

Portfolio of business units and associated projects



Business units ranked by degree of risk on the overall business

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 out specialist work that carries a high degree of risk, rather than engaging in a Time and Materials (TM) contract, a firm-fixed-price (FFP) or a fixed-price-incentive (FPIF) contract 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 illustrates the different contract types and their relative risk exposure level from both the buyer's and seller's perspectives. 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 (but safer) bid when mandated to enter into a high right type contract can lessen the potential impact of cost overruns during execution. In essence, the lowest bid is not necessarily the best bid.

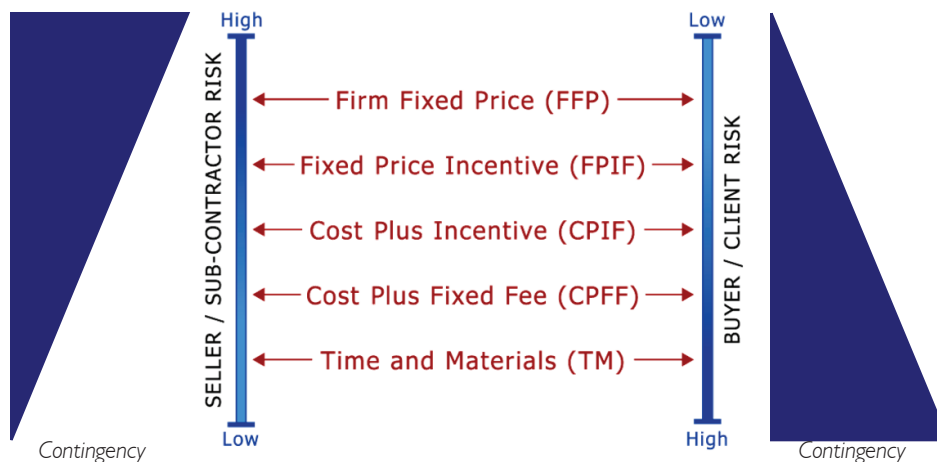
Portfolio Capacity Planning

Winning a project is in essence a liability to a corporation (the seller/contractor) until the point of successful completion and hand over 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.

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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

Figure 2 – Contract Type and Risk Exposure



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 Pertmaster for scheduling scarce specialized resources (such as suitable diving vessels) based upon the uncertainty of the associated time window. Fiona Banister states "the use of Pertmaster...helps us to determine the projects that fit best with our overall program and makes the most economic sense".

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 budget under-allocation, and 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.

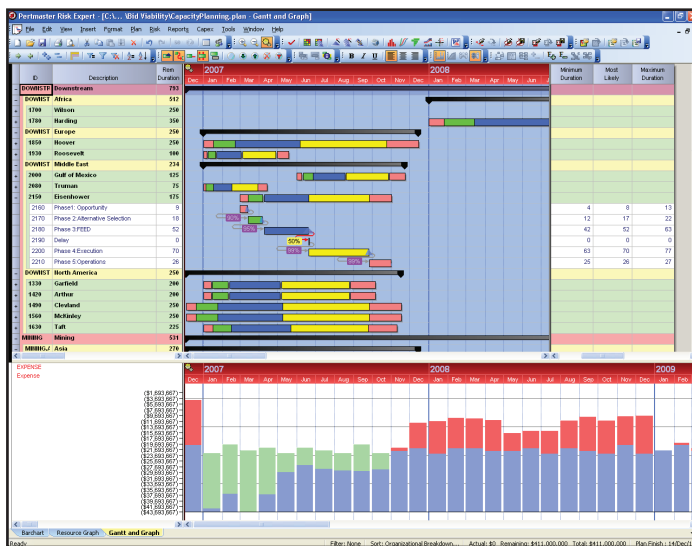
About Primavera Pertmaster

Primavera Pertmaster is a full lifecycle risk analytics solution integrating cost and schedule risk management. Pertmaster provides a comprehensive means of determining confidence levels for project success together with quick and easy techniques for determining contingency and risk response plans. 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 combined form the basis of a 'risk adjusted schedule' which today is becoming the norm within the planning and scheduling process.

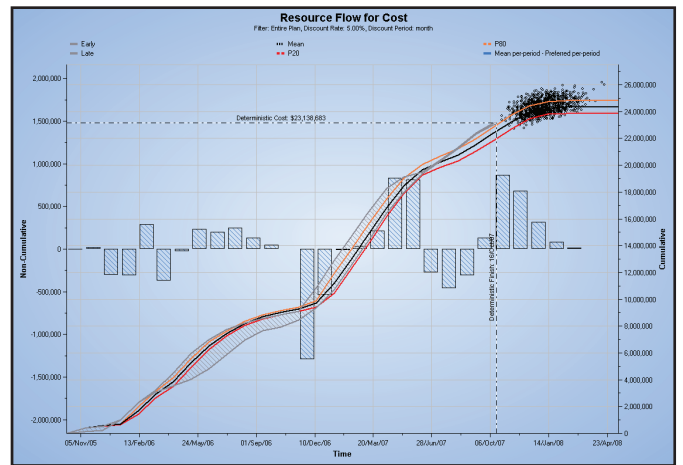
About Primavera

Primavera is a software company who provides business solutions for a project-driven world. The company helps organizations identify which projects are most important, and makes it easy for people to work collaboratively on those projects and deliver them successfully. Primavera solutions are industry specific and highly scalable, with the power to support global enterprises. Primavera solutions have ensured the success of projects collectively worth more than \$5.5 trillion, including the management of IT projects that span the globe, the complex manufacturing of high tech products, construction of the world's tallest buildings, ongoing multi-billion dollar oil discovery projects, and space exploration. For more information, visit www.primavera.com or call +1.800.423.0245.

Figure 3 – Capacity Planning



Probabilistic Capacity Planning



Cashflow/Capacity Analysis



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