

Reaping the Benefits of Project Controls

By

Using a smart integrated system to cut costs on capital projects

The Problem

Facility owners are continually finding ways to reduce their project costs by streamlining their operations and leveraging new materials and process technologies. When it comes to project controls, though, few Alberta facilities owners and engineering companies consider the use of an integrated project controls system as a cost reduction measure. Even fewer have invested in a reputable, integrated project controls system that helps them follow industry best practices. As a result, accountability for project deviations is vague, and diagnosing project health is difficult. The inefficiencies, overruns, and schedule delays flowing from this lack of adherence to best practices all come at the owner's expense. This article will analyze the causes of this state of affairs and recommend an inexpensive solution which will allow savings of at least 5% of the total project cost.

The Causes

The main causes of the present underutilization of project controls are the current competitive state of the industry and the fact that lifetime operating cost continues to be the dominant cost for facility owners. Owners often ask engineering companies to cut the rates for their services. This typically creates a ripple effect: cutting rates results in reduced quality and deviation from proper project controls standards, which often results in the use of disparate systems for cost control and supply chain management. The author believes that cost cutting measures which focus on reducing rates will frequently increase the total project cost.

Operating costs vs. capital costs

A facility's lifetime operating costs are typically higher than its initial capital project cost, so capital cost is often seen as being of little importance from an accounting point of view. As a result, a specific project's being over budget or delayed may not get much attention from owners, as it is not the governing factor for the determination of profits or return on investment.

Charge-out rates

Clients continually put pressure on their contractors and consultants to reduce their rates. Indeed, the hourly or daily rate often seems the only appropriate measure that clients can use to reduce costs. Consequently, the makeup of the project team is frequently based on low-rate, reimbursable personnel deficient in required skills. This results in the exact opposite of what the client wanted. Continual project overruns occur even while many personnel are working at reduced rates of 20%. It's hard to escape the conclusion that reducing rates increases project costs rather than reducing them.

Standards, procedures and regulations

Project controls rules are not enforced in the same way as those for pure engineering disciplines. Project controls best practices are not mandated or regulated, even though there are documented best

practices, new standards such as ANSI Standard 748 (Earned Value), and associations such as PMI, AACE and FIATECH promoting excellence in project controls. This often results in the use of questionable software tools for planning, procurement, material management, cost control and document management.

Disparate systems

Some owners are aware of the risk of substituting spreadsheets for genuine project controls and have started to take a closer look at using real project control systems and skilled resources. Other owners support the spreadsheet approach, believing that its simplicity and their employees' familiarity with it offset any potential risks. The spreadsheet approach's inefficiency is actually attractive to engineering companies; since every hour is chargeable, inefficiency increases revenue. An efficient purchased project controls system, by contrast, is typically viewed as an overhead cost. Engineering companies have a difficult time rationalizing this as an investment, despite its long-term benefits.

Purchasing

Procuring services and materials has changed dramatically over the past couple of decades. A purchase order used to be the accepted method of providing the authorized transaction / documentation according to the company's governance rules. Today, many service and material orders/commitments are done by phone with verbal agreements, and quite often require prepayment. While this approach may shorten the bid, evaluation and award period, it often comes with a significant cost to the end user, and rarely improves delivery. Suppliers are more than happy to accept informal orders; they can add anything they may have been missed on the original request and get paid for it. No real accountability for budgets/costs exists, as there is no definitive scope of supply to begin with. Planning in such circumstances is virtually nonexistent, and the typical management approach is one of knee-jerk reactions to unqualified requests.

Receiving

Instead of focusing on the receipt of goods and services as per the commitment the supplier has made to the buyer, many owner companies focus on speeding up the supplier's invoicing/payment process. This is simply the collection of the incurred commitments for unplanned work after the work is completed. This approach can provide companies with actual information more quickly than they have had it in the past, but it does nothing to help plan or manage work, nor does it provide a forecast / estimate to complete in terms of cost and schedule.

The Solution

Integrated project controls system

Project managers and project owners need to recognize the benefits of an integrated project controls system that adheres to best practices. An integrated system provides the central/common repository where project team members post their work and have timely, "un-doctored" and consistent reports, forecasts and plans.

People

People are key to utilizing any system effectively. Owners and engineering companies need to hire key project control resources who are motivated, skilled, educated, and disciplined to maintain the project plan or take corrective measures when necessary. The high demand for such people means that the cost for providing and promoting training to junior and intermediate personnel may need to be incorporated into project budgets.

Integrated smart project controls technology

The preferable project controls solution for the engineering and construction industry is a single point data entry solution which integrates and automates project data in real time via the internet. The benefits of such a solution are realized by maximizing the use of the software for all functions of cost control, change management, procurement, contract management, material management, planning, financial transactions and vendors' document control. Additional benefits are realized through integral performance measurement methodologies and project portfolio analysis.

Benefits

The adoption of best practice methodologies in project controls yield benefits for facility owners and engineering and procurement services alike.

The benefits of a smart project controls system include access to real-time, accurate and credible data, ensuring systematic reporting across projects and the assurance that comes from knowing project controls best practices are actually inherent in the system. A smart integrated system means data integrity (as the data lives in a secure database, not an editable spreadsheet), SOX compliance, traceable transactions and progress reporting based on metrics. The system empowers managers to make proactive decisions based on experience and reliable data, rather than reactive ones based on a combination of old and new inaccuracies and inefficiencies.

Best practice methodologies simplify and streamline the management of engineering companies, resulting in fewer changes, better decision-making ability, and less chaos. That means lower resource requirements per project and smoother project delivery. It also means a more motivated and stable team with happy clients who are likely to provide work in the future.

Owners benefit from lower project costs, better project scheduling and improved project quality. For facility owners, the most important benefit of a proper integrated project controls system is the savings realized by reduction in inefficiencies. Statistics based on an actual project (see Table 1) show these savings to be at least 5 percent on capital projects. This translates to 5 million dollars in savings on every 100 million dollar portion of a project.

TABLE 1: Projected savings as a result of an investment in integrated smart project controls technology

Heavy Oil Plant	Historic Ratios Engineering			Saving	Historic Ratios Total Project			Saving
Engineering design	30%	\$30.1	2%	0.60	10.0%	\$100,235	19.6%	\$19,686
Drafting	52%	\$52.1	2%	1.04		\$0		
Procurement/receiving								
invoice processing	10%	\$10.0	100%	10.02		\$0		
Project controls	3%	\$3.0	100%	3.01		\$0		
Management	5%	\$5.0	100%	5.01		\$0		
	100%	\$100.2	Savings	19.69		\$0		
			19.6%					
Equipment					18.1%	\$181,159	1.0%	\$1,812
Bulk material					35.9%	\$358,898	2.0%	\$7,178
Construction Labour					36.0%	\$359,707	6.0%	\$21,582
					100.0%	\$1,000,000	Savings	\$50,258
Savings on total project excluding owner's savings							5.0%	

All \$ figures are in thousands

Data collected by OnTrack Engineering Ltd from real projects in the Heavy Oil Industry in 2010.

The largest saving shown in the example above is 6% for construction. However, published studies in Alberta by Dr. George Jergeas, P. Eng. and commissioned by Alberta Finance and Enterprise (Improving Construction Productivity on Alberta Oil and Gas Capital Projects, May 2009, Page 5), available at http://albertacanada.com/documents/Improving_Construction_Productivity.pdf), indicate 14.6% loss of productivity due to lack of material control. An integrated system for controlling procurement, deliveries and storage of material on site can eliminate this problem.

The second largest saving shown in Table 1 is in procurement, invoice processing and project controls. Testimonials from users show that they can do 3 to 4 times more volume with an integrated project controls system than with Word, Excel and other integrator software.

Conclusion

Engineering companies are required to comply with all the engineering standards for design, but fail to thoroughly adopt best practices in project controls due to the imposed competitive rates. Facilities owner companies can reap huge benefits from a small investment in financing engineering companies' acquisition of software and training of personnel, including their own. The investment required is no more than 1% of the projected savings. On a 1 billion dollar project, this translates into an investment of \$500,000 yielding a savings of 50 million dollars!

