Procurement and Project Management

Bringing certainty to project procurement

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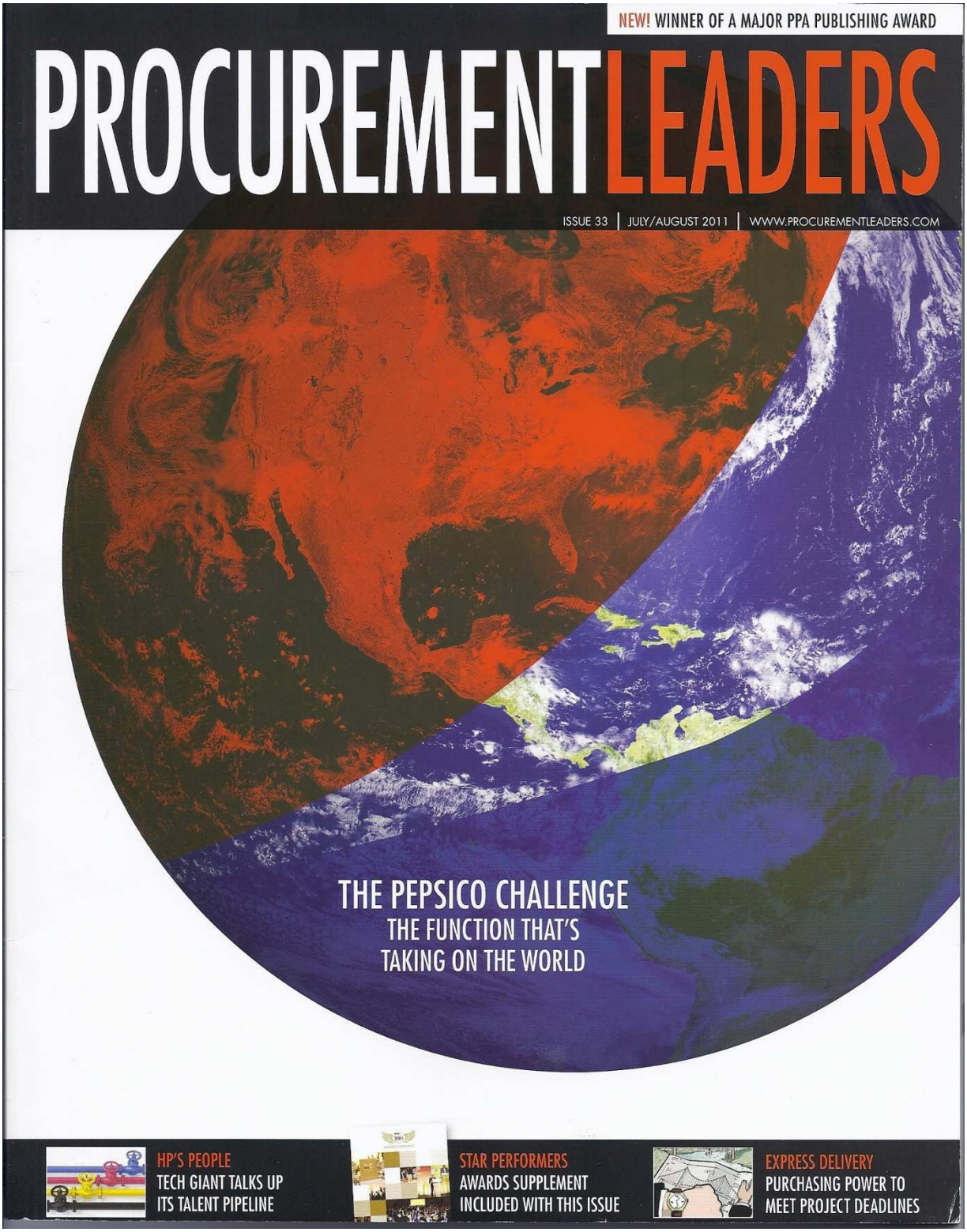


There was a minor error in the published article. The 3rd (last) sentence in the 3rd paragraph should read....

However, many of the methods we use try to force certainty onto the project rather than accepting its uncertain nature and managing accordingly.

Projects and their associated procurement are one of the final frontiers for professional procurement. Although the fundamentals which underpin category management or strategic sourcing are just as valid, their application is more complex than simply aggregating requirements and leveraging the volume.

There are many aspects of procurement which differ significantly in a project environment. This article looks at just one aspect – the management of uncertainty.

Projects are unique, one-off activities where the outcome cannot be predicted. It is not a production line where there are few variables and we have historical performance data. However, many of the methods we use to try and force certainty onto the project rather than accepting its uncertain nature and managing accordingly.

The well-known critical path method, along with contracts which do not address the true nature of uncertainty, introduce a time and cost premium that we don't even realise is there.

Managing uncertainty

Although we all understand uncertainty, we don't like to acknowledge it in business.

If I was to ask how long it takes to get served in a coffee shop, most people would say between one and 15 minutes. If I were to insist you chose a single time, your answer would depend on the implications of your answer. If you were on the way to an important business meeting, you probably would not go for coffee unless you had 20 minutes to spare. If it was less critical you might use the average of eight minutes.

In work, though, we don't like the answer "it depends". We like our suppliers to take their 'fair share' of the risks and uncertainties. In order to have a project plan with a high chance of success we get as many fixed quotations as possible from suppliers. Although this is eminently logical – and it is the usual approach on many projects – it could be costing 30% more than it need do. The only assumption behind this claim is that a significant element of the project's cost base comes from duration-related costs (for example, people and hire/rental charges). This is a reasonable assumption on many projects.

In the coffee shop example, knowing the average was eight minutes had no impact on deciding you would need 20 minutes when an important meeting was your next appointment. Also, if you were served in one minute it wouldn't help much as the meeting would not start any sooner.

The same effects apply on projects when managed using the critical path planning approach. With most project managers saying: "I want certainty that you will achieve this" they get a time that has a high degree of confidence. Putting a commercial contract in the middle hardly encourages an average number to be quoted by a supplier.

Projecting variables

This means project programmes are based on a collection of 'conservative' estimates. With the management of uncertainty and variability being pushed down to the lowest level tasks in this way the total project can have around 20-30% of unnecessary time and cost built in with no clear visibility. Time and cost are directly related in resource-dependant activities such as design, engineering, management and construction and also for the project overheads such as accommodation, facilities and plant.

SUMMARY

Trying to secure any certainty on notoriously unpredictable projects can be an unrealistic and frustrating proposition. But by managing the uncertainty, significant savings really are possible on major projects, without compromising on the scope and with little use of fixed prices. In this article, Ian Heptinstall, a procurement consultant with PMMS Consulting Group explains how this is achievable and provides examples of a number of large projects where the results speak for themselves.

Experienced project managers will be getting frustrated at this point. "If there is so much excess time in my plan, why do we almost always have problems with time and cost? By this logic, projects should be a walk-in-the-park". But as we know, they're not. Suppliers and work package owners are not consciously padding their time and cost estimates. After all, their experience tells them the time will be needed.

The problem is that on a project, the ups and the downs don't average out; in reality, work expands to fill the time available and if something can go wrong, it usually will.

If you've got four weeks to do a task, 99 times out of 100 this is enough. In fact, on average there is only two weeks work involved, so you don't need to start it yet. With two weeks to go, you make a start only for an unexpected problem to crop up. Before you know it, you're working late, calling in favours and you have delivered the task two days late.

So what happens if you start the task now, none of the usual problems arise and it is finished in eight days – more than two weeks early. Does the project benefit from this efficiency? Rarely. The owner of the work package will be reluctant to admit they have finished in 40% of the time planned. They would worry

that their future packages may have their estimates cut, or even that they get disciplined for over-estimating. Much more likely is that they put it aside until it is due, redo some of the work, or fine-tune their solution. Even if the project manager is informed, it is unlikely the downstream resources would be available to take advantage of an early finish – they wouldn't be ready.

So, in general, the benefit of early task finish is lost to the project, whereas the pain of a late finish is cumulative.

Managing projects differently

One method that takes account of this phenomenon and manages projects accordingly is Critical Chain Project Management (CCPM), developed by Dr. Eli Goldratt. This method schedules project tasks based on their average expected times and introduces time buffers to accommodate the expected variability. The management focus is on the consumption of these buffers rather than individual tasks.

Figure 1 shows a simple comparison of Critical Path (top) and Critical Chain (bottom).

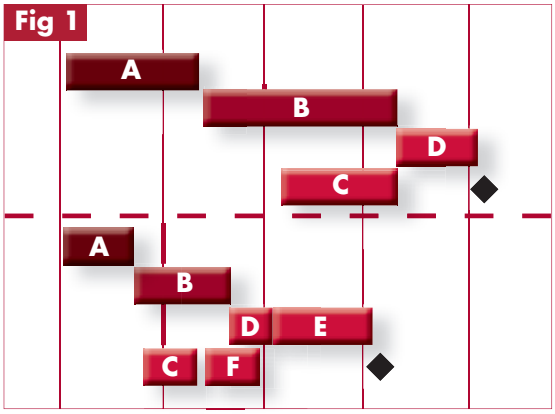
Tasks A, B and D are the Critical Path tasks and C is required to do D. The upper plan is based on the traditional approach, where the durations are those with a high likelihood of being achieved.

The lower CCPM plan is different. The tasks are planned based on the average time. The allowance for variability has been consolidated into a buffer, E. There is another buffer, F, added to ensure that any overrun of C doesn't compromise the Critical Chain (ABD).

A project buffer (E) of half the time that would have been included in individual tasks is sufficient to ensure an earlier completion date with greater certainty than would otherwise be the case.

The key to using CCPM on projects is realising that it is a behavioural change as much as a methodology change. Applying CCPM requires trust and collaboration across the project team, as well as supportive procurement and contracting approaches. Implementing CCPM will not automatically bring cost savings, although it will reduce the duration of projects and increase the reliability of promised completion dates.

Fig 1



Selection and contracting implications

CCPM is extremely difficult to implement with traditional contracting approaches, though it really suits a project partnering approach. It facilitates collaborative project procurement, where the team is selected early in the process.

Any project client who demands 'certainty' of budget and programme is not going to make the inherent risk go away, but they will inhibit the kind of open, team-wide behaviours that are necessary with CCPM. As a client you don't have to be aggressive – asking for fixed-price, lump-sums for your major work packages on a project will have exactly the same effect.

Many people involved in projects will find this approach strange and counter-intuitive. Your suppliers won't believe there is any excess time in their quotations and they are unlikely to have any experience in the approach.

Implementing CCPM and its associated commercial arrangements is a major change programme, involving both internal and external stakeholders. It is not an easy solution, but it could be a very profitable one. The business impact of bringing in your projects for 70-80% of the expected cost and much sooner than otherwise planned, must be well worth the pain of managing the change.

Early days

CCPM is still relatively new as an approach – the first implementations were only 20 years ago. It is not a change that can only be applied in a single function, it needs to be implemented holistically and is a major behavioural change. Also it is a collaborative approach, which significantly reduces the requirement for 'policing', which, to many, will be seen as risky.

Like other procurement examples of collaboration, although the benefits are significant, it is still fairly rare in practice. You need truly trusting relationships and have to implement it in a way which reduces the risk of a non-collaborator exploiting the situation.

Maybe the time is ripe for procurement to advance on that final frontier of projects, armed with a tool that really could have an impact and add significant value to the business. PL

WHO IS USING CRITICAL CHAIN PROJECT MANAGEMENT?

- Seagate, the global supplier of hard drives and storage products, uses Critical Chain Project Management (CCPM) for its new product introduction process. It helped to move from being a market follower to market leader.
- The US military uses it extensively in its repair and maintenance centres. At Cherry Point it doubled the annual throughput from 23 to 46 aircraft with the same plant and same resource.
- Alcatel-Lucent reduced lead times by up to 25% and delivered 45% more projects with the same resource.
- BHP Billiton's engineering design of an Iron Ore plan was reduced by 25% and gained five weeks over an eight-month programme.
- In Japan, the Ministry for Land, Infrastructure & Transport uses CCPM for all its public works projects. That includes around 20,000 projects a year. The approach started with a single, small contractor struggling with how to make money in the very hard financial environment that was Japan in 2004.

Ian Heptinstall is a consultant with PMMS Consulting Group. Prior to joining PMMS he was supply chain director with a major construction company in the UK. Qualified as a chartered engineer, Ian worked as a project manager before moving into procurement over 16 years ago.