

Improving Estimating and Cost Management on IT projects

There is plenty of well documented research about how poorly costs are managed on IT projects. This article will propose 5 ways project estimating and cost management can be improved.

The often quoted 2003 Chaos report from the Standish Group indicated an average cost blowout of 43%, other studies such as Jorgensen and Molokken put it more at 30%. Either way, there is almost a cynical expectation within organisations and senior management that costs will blow out on IT projects.

As a comparison, in Engineering and construction projects cost blowouts are the exception rather than the norm. It is recognised that maturity in planning, estimating, risk and cost management is quite high in these industries. It should also be recognised that these industries have a defined cost focused role in the Quantity Surveyor. In IT projects there is no Quantity Surveyor, the cost and estimating roles are spread between the Project Manager, Project Support staff, Sponsor, Finance and sometimes Business Analysts.

IT projects are typically governed by Steering Committees, comprising managers from the business who sometimes lack experience in Project estimating and Cost management. We see basic errors like confusing Forecast and Budget, focusing on year to date rather than at completion cost. We see confusion between Budget and Funding approval processes, scope changes without budget change, limited consideration of Earned value and so on. We see senior managers referring to Contingency as “fat”, cultures where Contingency is unable to be included in estimates or where Contingency gets “used up” or removed from projects.

Learning from other industries in terms of estimating and cost management techniques will help, but recognition of the unique nature of IT projects is needed to adapt these techniques to address the fundamental differences. We believe the five keys to estimating and cost management on IT projects are as follows. (Note, in the following WBS or Work Breakdown Structure means the breakdown of project scope, not a schedule hierarchy)

Vary estimating techniques depending on the nature of the WBS element

There are many theories on estimating, covering approaches such as Time boxing (defining time and resourcing to suit), Delphi technique (getting a number of independent estimates), Heuristics (published ratios, e.g. 30% planning:30% build:40% testing), Parametric modelling (e.g. Functional Point Analysis) and the

good old Guesstimate. What it isn't clear is that different techniques are appropriate for different scope elements.

While requirements are more often than not estimated using Time boxing, elements such as Testing are better estimated using modelling based on scope, e.g. manhours per test case x number of test cases. Many IT projects have streams of activities in parallel, for example at the same time technology is being designed, so too should the business processes. In a similar way that multi storey building schedules are defined by the "critical trade" floor cycle, so too can IT projects be planned based on the critical activity with non critical activities fitting into similar time frames. Hence the non critical activities will more often than not be estimated through Time boxing.

Ideally two independent estimating methods should be used for each WBS element then a reconciliation made.

Detailed plan, estimate and control by WBS element

One of the issues faced by many IT projects is that the schedule, labour model and cost control systems are not integrated. One of the recognised ways to integrate these systems is by tying them together using the WBS code (relate scheduled tasks to a WBS code, relate labour models to a WBS code and relate Cost accounts to a WBS code).

Each WBS element should have a detailed schedule, focusing on dependencies (inputs and outputs) as well as the usual tasks, milestones, predecessors, resources etc. Each WBS schedule forms part of the jigsaw puzzle which makes up the master schedule. If resourced, manhours can be extracted by WBS element then scaled up to form the resource model. If no resources exist in the schedule then at least dates can align with the resource model. The resource model can then be rated up, added to fixed costs in a financial model and an overall estimate formed. The same model would then be adapted for forecasting an estimate to complete as the project progresses.

Include and manage contingency

IT Project Managers are getting better at identifying and managing Risks and Issues. One area that is not often addressed is the need to fund response plans (prevention and/or mitigation). A risk allowance must be formed to fund the management of risks where tangible costs will be incurred.

While IT projects will always estimate and fund testing, they rarely allow for the associated rework. Since it is known bugs will occur in developed software code (hence you test), it should also be recognised that rewrite of code and retesting

will be needed. Rework is an unknown but will almost certainly be needed against many scope elements, not just testing.

Projects need time contingency. It is interesting how many schedules do not include time contingency. This is fundamental for costing as the overhead costs (Admin, Project Management etc) will be required longer. Construction projects have always allowed for inclement weather, so too should IT projects allow for unknowns.

An allowance for complete unknowns should also be made, e.g. error based rework, “in scope” scope changes, etc. If you were to extend your home you would allow extra, say 10% for unknowns, so too should IT projects. Given the typical cost over run of IT projects was 43%, it is logical that some level of contingency is required to provide decision makers with certainty.

The concept of “the contingency budget has been used up” is totally illogical. Regardless of budgets, to get from the current state of the project to completion will always require contingency in your forecast.

Educate Senior Managers

One of the more difficult aspects of cost estimating and management is informing senior managers (Steering committee members) who don't have a background in project based cost management. Finance people in particular focus on budget vs. actual, particularly year to date whereas a different mindset is needed for project budgeting and cost performance reporting. Terminology is particularly confusing, especially where some words are used out of context. We recommend adopting the PMBOK terminology, reinforcing concepts of Forecast vs. Budget. While the words and acronyms may be new for some of them, constant use of the correct terminology will reduce confusion.

Earned Value sometimes comes up in discussions with senior management but is often misunderstood. Application of Earned Value is beyond some Project Managers, either due to knowledge or through systems and processes not supporting it.

For a simpler approach to cost performance reporting than Earned Value, try Googling “Gate Value Method”.

Project Managers will need to be assertive, especially where contingency is concerned and where cost forecasts are extending beyond what is funded or what is palatable. Project Managers should carefully maintain budgets and ensure forecasts are based on their best estimates, not be bullied into changing them.

Feed history into future estimates

One of the best estimating tools is History. The Construction industry has learnt this with repositories such as Rawlinsons capturing and feeding back history into future estimates. The IT industry is only now starting to realise this, with the best example being the database being kept by the International Software Benchmarking Standards Group. We can only hope that the industry expands this into testing, design and other areas.

Meanwhile IT PMOs have a huge role to play, collecting and feeding back historical data. Through Post Implementation Review data and Lessons Learned, the PMOs can provide organisations with excellent metrics and “rules of thumb” data for future projects.

PMOs can also provide an independent oversight of estimating data and ensure that contingency is included or clearly spelt out as being excluded from cost data so decision makers are better informed and can fulfill their governance role.

About the author

Martin Vaughan is a Senior Consultant and Director of Core Consulting Group who has specialised in Project Management across Construction, Defence and IT. With a strong interest in education, Martin has been active in the Project Management profession, helping to define standards and competencies, particularly around Cost and Schedule.