

**Driven to precision - Part I**

Why do projects always seem to take longer and cost more than planned? There has been a huge amount of research undertaken in an attempt to find out why this phenomenon is, to many Project Managers, almost a fact of life. A number of conclusions have been drawn from this research. One conclusion that is worthy of re-examination is the fact that in most organisations Project Managers are driven to precision by the attitudes that exist towards project management - let us explain.



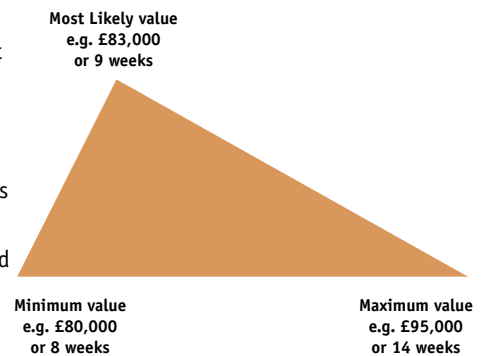
**We all know theoretically, although sometimes fail to acknowledge in practice, that project time and cost plans (schedules and budgets) are guesses, based on our best estimates.**

In some environments there is lots of historical data and expert knowledge around that can be used to make guesses as 'educated' as possible. Unfortunately where a particular type of project is being done for the first time in an organisation the chance of any guesses being correct is remote.

Estimating exercises repeatedly demonstrate that when someone is asked to provide a single point estimate for a parameter that there is very little chance that it will be correct. In contrast, if asked to provide a range with a given confidence level the actual value will probably fall within the range predicted. Based on this observation, some people would define an 'accurate estimate' as being a range of values that contains the correct value.

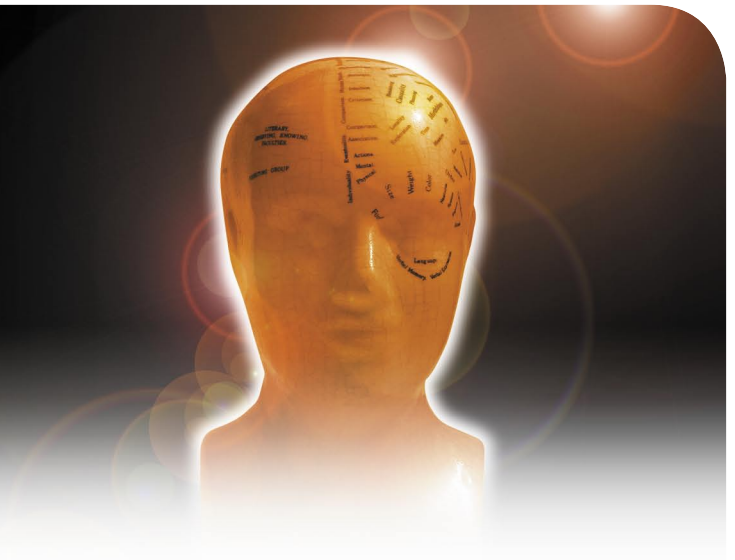
**Given this fact, there is a compelling logic for schedules and budgets to be developed using three point estimates.**

This means that rather than saying that the systems analysis costs for the project will be £84,296 we say that the minimum costs will be £80,000 the most likely £83,000 and the maximum £95,000.



Again, rather than saying that the time

taken to carry out the systems analysis will be 10 weeks what we should say is that the minimum duration is 8 weeks, the most likely 9 and the maximum 14. Unfortunately most estimating methods and tools, including the use of spreadsheets and 'standard' critical path analysis, are unable to cope with this type of estimate. You either need to use a project risk management tool such as Pertmaster™ or Risk Plus™ or a spreadsheet based tool such as @Risk™, Crystal Ball™ or Predict™. Using these tools will allow the true range of the likely outturn cost or end date to be established based on Monte Carlo simulation and a range of estimates. However if these tools are not available then a simple PERT formula can be applied and although this gives a single point outcome it does recognise the effect of both minimum and maximum values by calculating a weighted deterministic value.



### The PERT formula to derive expected value

$$\frac{\text{Minimum} + (4 \times \text{Most Likely}) + \text{Maximum}}{6}$$

6

However, despite the compelling logic to use three point rather than single point estimates, we (human beings) repeatedly convince ourselves that a single point estimate is sufficient and realistic. Why? As usual, it appears that human influences seem to over-ride our logic.

As Project Managers we tend to focus on answering the project sponsor's questions rather than the business needs. When a project sponsor wants to know when the project will finish and how much it will cost it is much simpler to give a date and financial amount rather than to say 'sometime between 29th November and 17th January and between £350,000 and £420,000'. Often providing ranges in this situation is culturally unacceptable and so Project Managers are driven to precision by the unrealistic expectations of stakeholders. If the Project Manager bows to pressure and says the project will be finished on 10th December with a final outturn cost of £361,000, it is highly likely that both of these predictions will be PRECISELY INCORRECT. If the project was finished on 9th January at a cost of £405,000 the project would be reported as being late and over budget, when really it wasn't.

The perceived need to respond to a request for precision 'sets us up' for later perceptions of failure and this is nonsense. We propose that an education process is needed for both the givers and the receivers of estimated parameters. Those who provide the estimates are the givers and they need to be aware of the level of uncertainty in each element of their estimate. Those who receive the estimates are the sponsor, client, customer or other such entity. These people need to realise that at the beginning of a project there is no way that the

exact end-date or cost can be predicted and if they believe that then they are deluding themselves. They need to realise that the only estimate that is true is one that is based on a range. Then, if the project's Business Case stands up at the extremes of the ranges there should be no worry. It is when the Business Case only stands up at the optimistic end of the range that problems begin.

With this education in place people should no longer feel forced to make precise estimates that undoubtedly turn out to be precisely incorrect.

There are lots of areas where project management can be improved to prevent projects failing to meet the business objectives they were conceived to address. If we can stop constraining ourselves by focussing too much on meeting arbitrary time and cost deadlines it would be a very valuable first step. For your next project try it - let's start a three-point estimate revolution!

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