



First there was earned value management – now comes earned schedule. What is it and how does it work? **Michael Higgins** explains.

Can you tell the time?

TRADITIONALLY, earned value management (EVM) has used indicators and predictors to assess the future out-turn cost of projects. But if a project starts to slip, those indicators may no longer be reliable.

Something more was needed. Enter earned schedule.

EVM works on three simple elements – budgeted cost of work scheduled (BCWS) which is the scope with budget over time, budgeted cost of work performed (BCWP) which is the performance against the scope planned and actual cost of work performed (ACWP) which is the spend against the project (Figure 1).

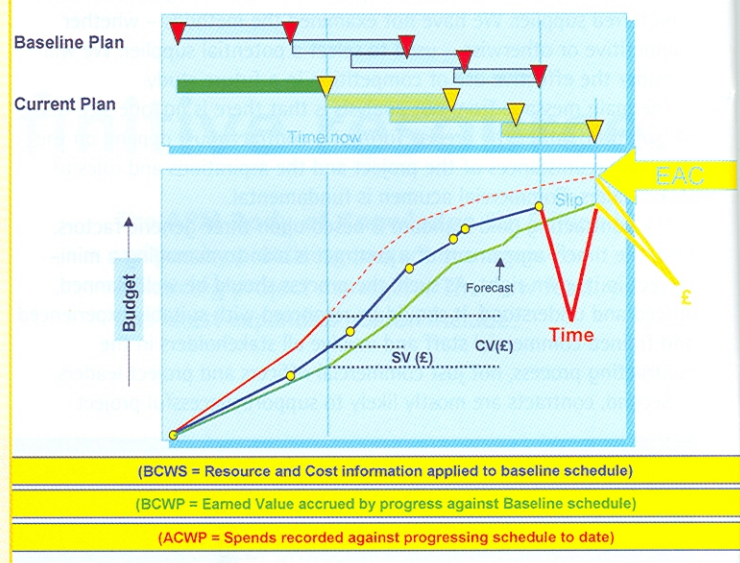
Using these three elements, EVM provides formulae which calculate the predictors and indicators such as cost performance index (CPI) which is simply the rate at which the project is performing and the independent estimates at completion (IEAC) which is an estimated cost at completion that EVM mathematically calculates to give control account managers an indication as to the out-turn cost if the performance continues as it has been.

EVM also provides indicators for schedule elements such as schedule performance index (SPI) and highlights schedule variances (SV). However these behave erratically for projects behind schedule and lose predictive ability over the last third of the project. To tackle this, earned schedule has been developed.

Earned schedule is a relatively new concept, which is currently being developed in the USA by Walt Lipke and in Australia by Kym Henderson. It uses the same data as traditional EVM but adds new formulae which parallel the EVM indicators and predictors for cost by providing time-based indicators of schedule performance and the ability to predict the completion date and duration of a project.

The problem with traditional EVM is that schedule variance will always return to 0 and the SPI will always return to 1 upon completion of an activity or project. This fails to indicate whether time slippage is likely to

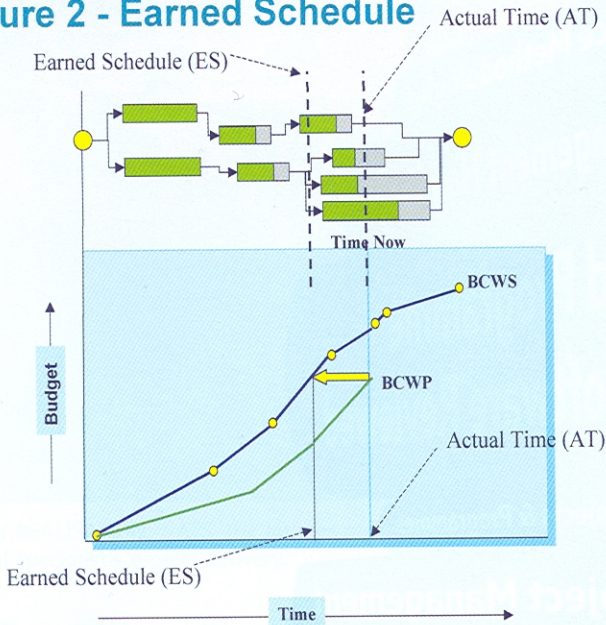
Figure 1 - Traditional EVM



occur on a programme or even if a task has slipped.

Earned schedule overcomes this problem by allowing an analysis of the earned value achieved compared to the planned value in terms of time (see Figure 2). In the same way that the CPI and IEAC can challenge the final predicted costs of a project, earned schedule can be used in conjunction with critical path analysis to assess the realism of a project's scheduled finish date and provoke questions and analysis of schedule performance.

Figure 2 - Earned Schedule



Although in its infancy within the UK, earned schedule has been implemented within the Defence Procurement Agency (DPA) at the integrated project team level on the Nimrod MRA4 programme, forming part of their EVM analysis reports.

Wing Commander Rob Woods commented: "EVM has been part of the project control system on the Nimrod MRA4 programme for several years and its use is now mandated within the DPA for Category A, B and C programmes during demonstration.

"The advantages offered by earned schedule present another tool to improve our project management efforts and to inform the decision-making of the senior management teams. Indeed, it should provide a most useful link between traditional earned value analysis and traditional project schedule analysis – a link that appears to have been missing from traditional EVM theory and practice."

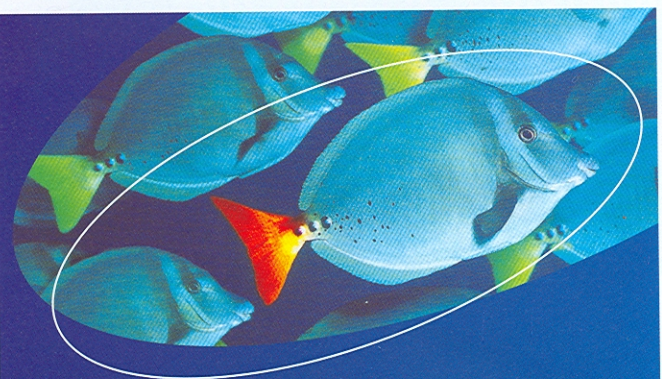
Currently the main issue that the Nimrod MRA4 IPT faces when using earned schedule is the limitation of toolsets to perform 'drill-down analysis'. This is a real opportunity for EVM software developers to add earned schedule analysis and techniques into their toolsets.

The DPA has identified the benefits and, as EVM has been mandated by the UK Ministry of Defence, earned schedule will not be in its infancy for long.

Further information, including earned schedule papers and presentations and an Excel-based calculator are available from www.earnedschedule.com.

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