

# COST MANAGEMENT: EXCEL VS. DEDICATED TOOLS

BY CHRIS REEBEN & STEFAN BAKKER

Everyone who is, or has been involved in project controls, knows that time is of the essence. A project that is currently heading towards completion within schedule and budget can quickly go wrong if warning signals are provided too late, or not at all. For every day that such a warning signal is delayed you lose the opportunity to take corrective action and prevent the delay or cost overrun from happening.

As a cost controller, you are continuously analyzing your project's forecast (also 'Estimate to Complete' or 'Latest Estimate'), the incoming commitments and actuals, and managing changes and trends. This makes for a labour intensive task, where the focus should be on analyzing trends and spotting potential overruns before they occur. Having been involved in various cost control projects in various organizations, I found that in reality too much time is spent in obtaining, transferring and converting data into the Excel spreadsheets used by the majority of organizations today.

After doing some research, I quickly found some crucial deficiencies and risks in the use of Excel sheets. With projects becoming bigger, using more complex technologies and with multiple stakeholders involved, the use of a dedicated cost management and earned value management (EVM) tool could be an

investment worth considering. Especially large EPC firms, who typically deal with a more detailed level of control than owners, staying in control of the project means the difference between profit or loss. In this article I will describe the possible benefits a cost management tool can bring, using my own experiences in cost control projects.

## CHALLENGES OF EXCEL

Excel is probably the world's most used software platform. From a simple spreadsheet to calculate your personal finances, to advanced spreadsheets with macros, built-in formulas and look-up tables used to manage multi-billion projects. The greatest strength of Excel is ironically enough also its biggest problem; the unlimited flexibility and applicability. I am therefore pretty sure that the challenges (and sometimes frustrations) I am going to describe here are familiar for 99% of the people working with Excel.

In most cases, the growth of an Excel sheet is a gradual process which is only visible when comparing the current magnitude of the spreadsheet with a situation years back. This doesn't have to be a problem, as long as the people working on the development of the spreadsheet remain active within the organization and are always available to clarify the logic behind the macros and formulas to 'regular' users. Unfortunately, this is rarely the case and people switch jobs all the time. Furthermore, cost controllers are usually no Excel programmers and the other way around, Excel programmers are no cost controllers.

When you have to find the logic behind an Excel spreadsheet composed by someone else, that is where things can get really ugly. One of the clients I have worked with in the past even nicknamed their Excel tool "The Beast".

When projecting this on the work of a cost controller, it is essential that you can

“Measurements are the key.

If you cannot measure it,  
you cannot control it.

If you cannot control it,  
you cannot manage it.

If you cannot manage it,  
you cannot improve it.”

James H. Harrington

rely on the figures and calculations where you base your actions on. On large and complex projects, where you could be facing thousands of control components, you do not want to check if every calculation adds up or if all your actuals are correctly updated. Yet, the bigger your Excel spreadsheet becomes, the more likely it will be that formulas or look-ups contain errors. Not being the developer or owner of the Excel spreadsheet makes it really hard and time consuming to locate the error and fix it. Time that could be spent on much more valuable activities. Of course, this only holds when the error is identified in the first place. In most cases errors are not even noticed within the vast majority of data. You can only imagine the impact this could potentially have on the end result of the project.

Another example where Excel has its limitations when it comes to cost control is keeping track of revisions. Of course, you can create a copy of your Excel control document and use it as a revision. However, keeping track of your revisions, let alone comparing them through time, is a tough job. In my experience, people tend to copy

the control document to their local machine as this is more "convenient". When at the same time a colleague decides to do the same, you quickly get two, three or even more versions of your control document, where no one has a clue anymore what the latest version is. Imposing restrictions to prevent this from happening is very hard, without at the same time limiting people in their permissions in the spreadsheet itself.

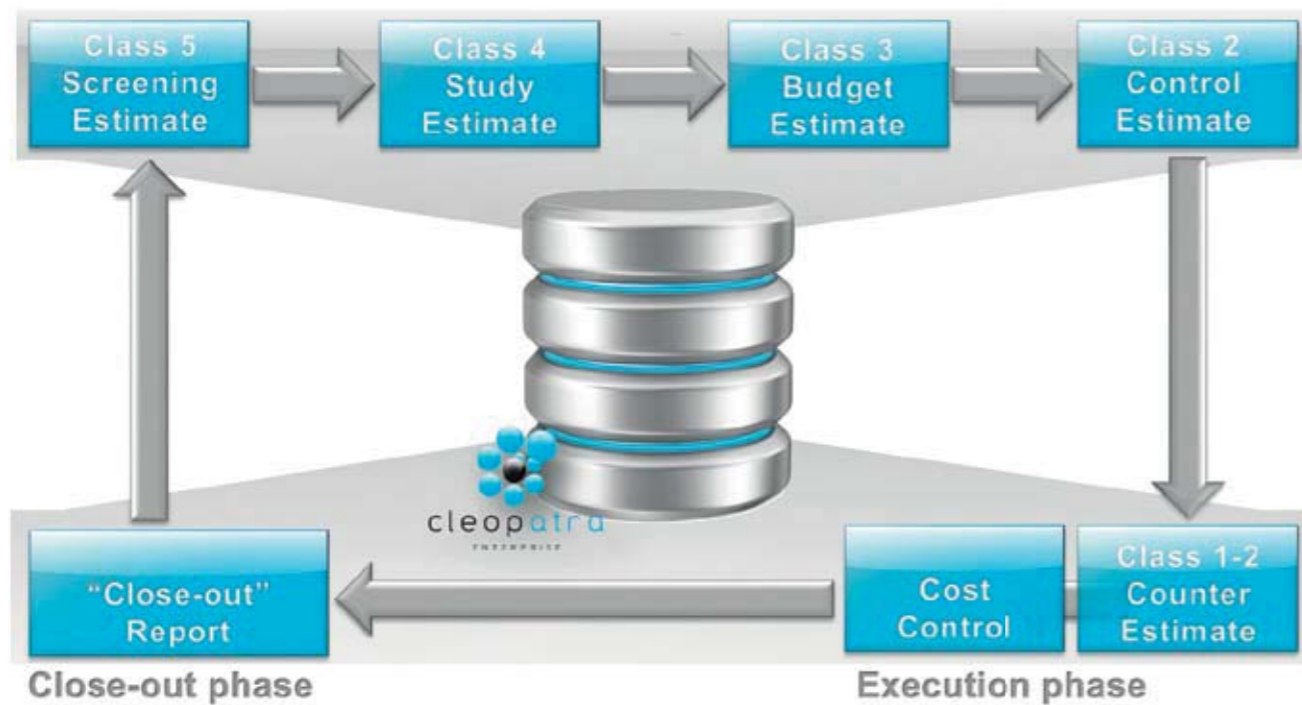
Finally, project managers are generally most interested in per project reporting and a dashboard overview of the project performance. Consistency in the reporting configurations are important for project managers, so that they know where they can find the information that matters and can easily compare project reports with each other. Having Excel to produce consistent reporting output can be challenging. In most cases, a summary sheet can be produced, but anything more than that will soon become problematic. In cost control, a great variety of reports are often required, such as: ▶

Description	Original Budget	Revised Budget	Committed	Actual (YTD)	To Complete	Forecast at Completion	Over / Under (YTD)	Variance (YTD)	Proj. Cost
Plant A	1,081	1,111	872	796	315	315	-75	871	713
Plant B	899	911	688	652	259	259	-37	651	513
Compressors, Blowers & Fans A	358	355	181	182	176	176	1	181	181
Compressors, Blowers & Fans B	899	899	507	470	391	391	-37	470	327
Parasoles A	325	325	308	292	16	16	-16	292	276
Parasoles B	164	164	111	111	53	53	-53	111	111
WALKER SYSTEM	873	873	843	843	30	30	-30	843	753
Heat exchangers	512	512	511	511	1	1	-1	511	511
GRAND TOTAL	5,085	5,111	4,000	3,796	1,315	1,315	-205	3,796	3,000

Account	Original budget cost	Approved changes	Transfers	Revised budget cost	Commitments (Previous)	Commitments (To Date)	Expenditures (Previous)	Expenditures (To Date)	ETC (Previous)	ETC (To Date)	EAC (Previous)	EAC (To Date)
Account	6,981,500.69	43,395.69	0.00	7,024,896.38	3,004,400.58	3,074,436.53	1,799,997.92	1,604,412.80	1,869,510.72	3,754,496.73	3,148,449.00	3,438,049.00
Unassigned	62,618.16	0.00	0.00	62,618.16	6,313.37	80,509.62	40,540.27	1,838.44	42,096.71	52,918.16	127,114.41	6,313.37
Grand total	6,981,500.69	43,395.69	0.00	7,024,896.38	3,010,713.95	3,154,946.15	1,840,538.19	1,606,251.24	1,911,607.43	3,807,414.89	3,154,762.37	3,444,362.37

## INITIATION THROUGH CLOSE-OUT PHASE



- Monthly financial overview
- Forecast variance
- Cashflow
- Changes
- Progress / EVM
- Trend report
- Accruals

Dedicated cost management tools often have a built-in reporting manager that can quickly and consistently produce these reports, whereas Excel requires a lot of manual processing every time again to get the desired output.

Do not get me wrong. I am not saying that Excel is by all means a recipe for disaster. It has its upsides as well and by offering a great deal of flexibility it could work for some organizations. However, I found that dedicated cost management tools can eliminate many

of the aforementioned concerns and at the same time bring a lot of additional benefits, which will make the investment worthwhile for many organizations.

### DEDICATED COST MANAGEMENT TOOLS

Various cost management solutions are available on the market today, that recognize the imperfections of Excel as a cost control system. Some of the more well-known cost management solutions are for example EcoSys, Ares Prism and Cost Engineering's own Cleopatra Enterprise. These tools each try to overcome these imperfections and usually promise to be easier to maintain and less prone to errors. Of course, individual cost management solutions can have their own flaws and are in no case a "magic tool", but generally speaking they offer a great deal of improvement over Excel.

One of the main advantages of these systems is the possibility to establish a

standard approach and methodology in cost control throughout the organization. A cost management solution will enforce users to work within set boundaries and adhere to the methodologies set by the organization, while maintaining a sufficient amount of flexibility. For example, certain breakdown structures can be included as a standard, while keeping the possibility to add additional (breakdown) structures if needed. Especially when these standards and methodologies are based on best practices from the industry, a big step in the overall project performance can be made.

Working with standards also applies in reporting. The more advanced cost management solutions usually have an integrated report manager, where reports can be configured and saved as a template for use throughout and across projects. Reports can therefore be generated much faster. When a cost management system is set up correctly, reports can be produced at the push of a button.

Having been employed as a project controls manager on some major projects, I quickly found that you should focus less on the individual figures of a project and more on the overall project dynamics. Where are we going, what trends do we see, how is our progress? Those are the things you should worry about and the answers to these questions should be readily available. Most cost management solutions have for example built-in indicators and Key Performance Indicators (KPIs) that will attract your attention to those parts that really matter. In general, these tools have the capacity to alert you of potential problems before they occur (through trend registers), giving you the option to mitigate instead of trying to control the damage.

Time is of the essence in cost control. For one of the projects where I was consulting as a project controls manager, the project was already in progress. Since there was a

sure that I would have been able to come up with the adjusted forecast in much less time. That would have left more time for the client to decide on the continuation of this project, before it passed the 'point of no return'. Also, some of the causes for cost overruns might still have been mitigated.

A good cost management tool will have capabilities you will not find in Excel that saves a lot of time. For example, most tools have a direct integration with accounting and scheduling tools for the exchange of data. In cost control this is not a one-time exercise, so being able to save even a few minutes each time you import your actuals from the Enterprise Resource Planning (ERP) system, is very helpful. Also, tools usually are better suited in handling large quantities of data, whereas Excel can quickly choke when you try to handle thousands of control components and the calculations behind them.

**“You should focus less on the individual figures of a project and more on the overall project dynamics”**

feeling that the forecast (ETC or LE) was in no way reflecting the real situation, I had to dig deep in the project's dynamics and control components and identify the trends that were likely to cause the expected overrun. Since the client was doing their cost control in Excel, I had to spend valuable time in understanding, checking and analyzing the spreadsheet. If I would have had the required information in a structured overview, such as a trend register, snapshots and forecasts in a system, I am

Maybe the most important advantage of tools such as Cleopatra Enterprise is the ability to close the loop between estimating and project controls, which is also the theme of the 2015 Cost Engineering Event. In the example of Cleopatra Enterprise, the tool incorporates complete support for both cost estimating and cost control. This makes it possible to transfer your original budget prepared by the estimators to your cost control module and keep a link to your (often ▶

more detailed) estimating components. All without leaving the application or having to make difficult conversions. During the project it is even possible to use the advanced estimating techniques for the bigger change- or variation orders.

Not only from estimating to cost control, but also the other way around it is important to close the loop. Many organizations underestimate the value

## THE FUTURE LOOKS BRIGHT

Thinking about all these benefits and possibilities cost management tools have to offer, I can only conclude that there is still a lot to win in the way most organizations do cost control. Sometimes it is hard to imagine that large multinational companies still rely on Excel for one of the most important disciplines determining

Implementing a cost management tool will require some effort and people will need some time to get used to the new capabilities away from their 'trusted' Excel spreadsheets. From my experience I can only say that it is worth it. In the end, all that matters is to 'stay in control'!



of using the project close-out as a benchmark and feedback loop to the estimating department. Cleopatra Enterprise allows you to do in-depth comparisons between your actuals and original estimate and update the cost database used for estimating to allow for better, more accurate estimating.

the project success. Especially since most other disciplines, such as planning, finance and estimating are usually done in dedicated systems. Your estimate can be spot-on, but without doing your cost control in the right way the project can still go bad really quickly.



### ABOUT CHRIS REEBEEN

Chris Reebeen is a Senior Cost Engineer for Cost Engineering Consultancy. With more than 10 years of experience in the fields of cost estimating and cost control, Chris has worked on numerous challenging projects in a wide range of industries. Currently, he is leading the project team involved in the estimation of the ITER Project (Nuclear Fusion) in France.

Chris will give a presentation about the successful implementation of cost engineering tools on May 6<sup>th</sup>, 14:50, Room B. Furthermore, he will present a showcase of the latest Cleopatra Enterprise Cost Management module on May 6<sup>th</sup>, 17:25 in room C.

### ABOUT STEFAN BAKKER

Stefan Bakker is Sales Engineer for Cost Engineering Consultancy. For many years, Stefan has advised numerous companies in the industry who were looking to improve their work processes using dedicated cost engineering software tools. This involved everything from the initial identification of the company's requirements, to the system evaluation process and eventual implementation of a dedicated cost engineering system that is supported throughout the organization.

