

## “WHY ISN’T EXCEL GOOD ENOUGH”

### INTRODUCTION

ORCAS Project Controls was asked to support a biotech Owner on a significant scale-up project to take their drug from clinical trial manufacturing to full production levels. This project is both a retrofit and a facility expansion. It encompasses the procurement of all process equipment, base build and utility construction, equipment installation, start-up, commissioning, and validation. The project value is more than \$250MM with construction at approximately 40% of the total investment. The duration is about 22 months.

Our team was contracted to provide project controls’ services for the project. In addition, we were asked to assist with the bigger picture to “institutionalize” project controls for the company. In this capacity, ORCAS recommended processes, procedures, technology, and resources to formalize their project controls group.

One of their first initiatives was to get better control of the costs. The Owner initiated a cost workbook in Microsoft® Office Excel® to capture all known costs: budgeted, committed, and actual. Although it did hold cost data, it did not produce reports or analysis. When our ORCAS team recommended changing to a proven off-the-shelf project management program, the Owner had one question: “Why isn’t Excel good enough?” Why isn’t it the right tool to use to manage costs for a significant project, program, or enterprise?

To answer this question, we wrote a recommendation by comparing Microsoft® Office Excel® to Primavera’s Contract Manager. Although the response is specific to this particular Owner, we believe the answer addresses common challenges faced by many organizations. We would like to share that with you. In keeping with the spirit of the original paper, the only modifications made were to protect the identity of our client and project. Now, the paper, to answer “Why Isn’t Excel Good Enough” to manage costs for a significant project, program, or enterprise.

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## THE COMPARISON: EXCEL VS. PRIMAVERA’S CONTRACT MANAGER

### EXECUTIVE SUMMARY

Effectively controlling costs is critical for this project and future projects. To date on the project, a Cost Workbook in Microsoft® Office Excel® has been initiated to capture all known costs: budgeted, committed, and actual. The purpose of the Cost Workbook was to provide a temporary means to gather and manage cost information until a cost system was implemented. We continue to believe the best way to manage cost and support “institutionalizing” project controls is to use a proven off-the-shelf project management program, such as Primavera’s Contract Manager. To illustrate our recommendation, we provide this paper to discuss the Microsoft® Office Excel® Option and the Contract Manager Option.

### MICROSOFT® OFFICE EXCEL® OPTION

A Cost Workbook was created by the Owner in Microsoft® Office Excel® to capture current project costs. It includes several cost sheets which contain the detail information. A summary cost report rolls-up data for the following cost information:

- Budget
  - Approved Changes
  - Committed
  - Indicated Final
  - Spent
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Beyond the summarized cost report, there is minimal analysis or reports. Again, the initial intention of the Cost Workbook was to serve a temporary purpose.

The sources of cost information include the General Contractor, the Owner's Purchasing and Accounting, and cost data gathered from other Owner departments. All cost information is entered and managed by one person: the Senior Project Controls Engineer.

### Benefits

There are some benefits to using the Cost Workbook in Microsoft® Office Excel® for managing the cost information.

*Flexibility:* One of the key benefits is flexibility. Microsoft® Office Excel® provides a very flexible format. It's like an artist's palette-ready to create whatever you want.

*Familiarity:* Another benefit is familiarity. Everyone knows Microsoft® Office Excel®. This makes it easy and comfortable for people to use. It's usually the first place people start when they want to start tracking any type of data.

*Ease of Use:* Related to familiarity is ease of use. We all know how to use Microsoft® Office Excel®. There is no new software to learn. This makes it easy. With a more sophisticated spreadsheet, however, there will need to be training and great attention to detail and the rigor in which it is managed. With the current Cost Workbook there are different formulas and such which are new to even experienced Microsoft® Office Excel® users. In other words, it is a complicated spreadsheet.

### Negatives

Microsoft® Office Excel® isn't the best fit for every situation and need. It may be the first we turn to get things started, but it's important to evaluate if it fits the ultimate goal and purpose for the situation.

*Flexibility:* Some of the top benefits of using Microsoft® Office Excel® can also be negatives. For example, flexibility in managing cost information may not provide the best results. With a completely open framework, there are no "best practices" or cost control intelligence built into Microsoft® Office Excel®. Yes, it does a great job with formulas, but it doesn't know the rules of cost control and management. This intelligence must be developed into Microsoft® Office Excel® by cost control professionals to make it successful.

*Fragility:* The current Cost Workbook is not strong and robust as a standard system would be. It requires a great deal of user knowledge, discipline, and rigor to manage. It is more subject to human error.

*Architecture Limitations:* As a spreadsheet, there are inherent limitations to size, security, and functionality. More work needs to be done to make spreadsheets "perform" with the same rigor a simple database would do naturally. This is why many spreadsheets start as the idea or prototype and migrate into a homegrown database application or are replaced with an off-the-shelf software package.

*Homegrown Applications:* There is always a place for creating one-off programs to perform unique functions in an organization. Our company, as an example, has built more than 20 systems over the years, but over time we look more and more to "buy" solutions if they are available and are a good fit.

Homegrown applications often start with a few spreadsheets, grow into complex workbooks, and then grow into a database system of some sort. The development cost over the years is far greater than the cost of purchasing a standard package.

One of our largest clients did exactly this. They evaluated Contract Manager and decided it had more functionality than they needed at the time so they started developing a few spreadsheets. Overtime, this turned into an Access database system. After a few years of developing functionality into their homegrown system, it has most of the key functionality of Contract Manager. They have spent a significant undisclosed amount of money to create something which already exists. For many benefits and reasons, this client is again considering the purchase of Contract Manager. Now they may get to pay for it twice.

The benefits of purchasing a standard package are huge when there is a good fit: minimal set-up time, no development effort today and in the future, no development or maintenance cost, no IT support/maintenance, etc. In the case of project cost control systems, there are many good options to consider. One of the leading industry solutions is Primavera's Contract Manager.

## PRIMAVERA'S CONTRACT MANAGER OPTION

Primavera's Contract Manager can support many functions; it provides a central collaborative environment for project team members to manage day to day project information, documents, cost, changes and risk, allowing the team to stay on top of every detail and more efficiently assist in the preparation, review and administration of all contracts relating to a project. For this paper, the focus is the cost function.

### Benefits

*Robust:* A standard system like Contract Manager is very robust. Primavera is a mature, feature rich web based application that provides executives, project managers and supporting team members a complete picture of the project health. Primavera has dedicated 20 years to create intelligent business rules for cost control, ensuring high levels of security, providing strong database engines, and providing workflows that assist in effective cost control. It is strong and dependable.

The current Cost Workbook in Microsoft® Office Excel® is more fragile. It requires the user's knowledge and diligence to ensure the results are dependable. As such, it is more subject to human error. The checks and balances are not "built-in" to the design as they are in Contract Manager. There is higher overall risk of errors.

*Projects, Programs, Portfolios:* Contract Manager is an enterprise-based tool for managing cost and all aspects of project administration. It is designed to manage entire enterprises with many projects, programs, and portfolios of projects. It is scalable to also just meet the needs of one project. With the enterprise power, there are great benefits for managing multiple projects. The current Microsoft® Office Excel® -based Cost Workbook is designed for only one project.

*Multi-user/Multi-company Access:* Contract Manager is designed for multiple users and multiple companies to access and manage the information. The General Contractor and other companies can be granted access to their specific cost data and enter it independently.

Cost data can be entered and managed by the specific people accountable and responsible for the data. One person doesn't have to enter or manage all cost data.

*Business Processes / Best Practices:* Contract Manager is a combination of good business processes and best practice. There are built in processes which ensure "good practice" is followed.

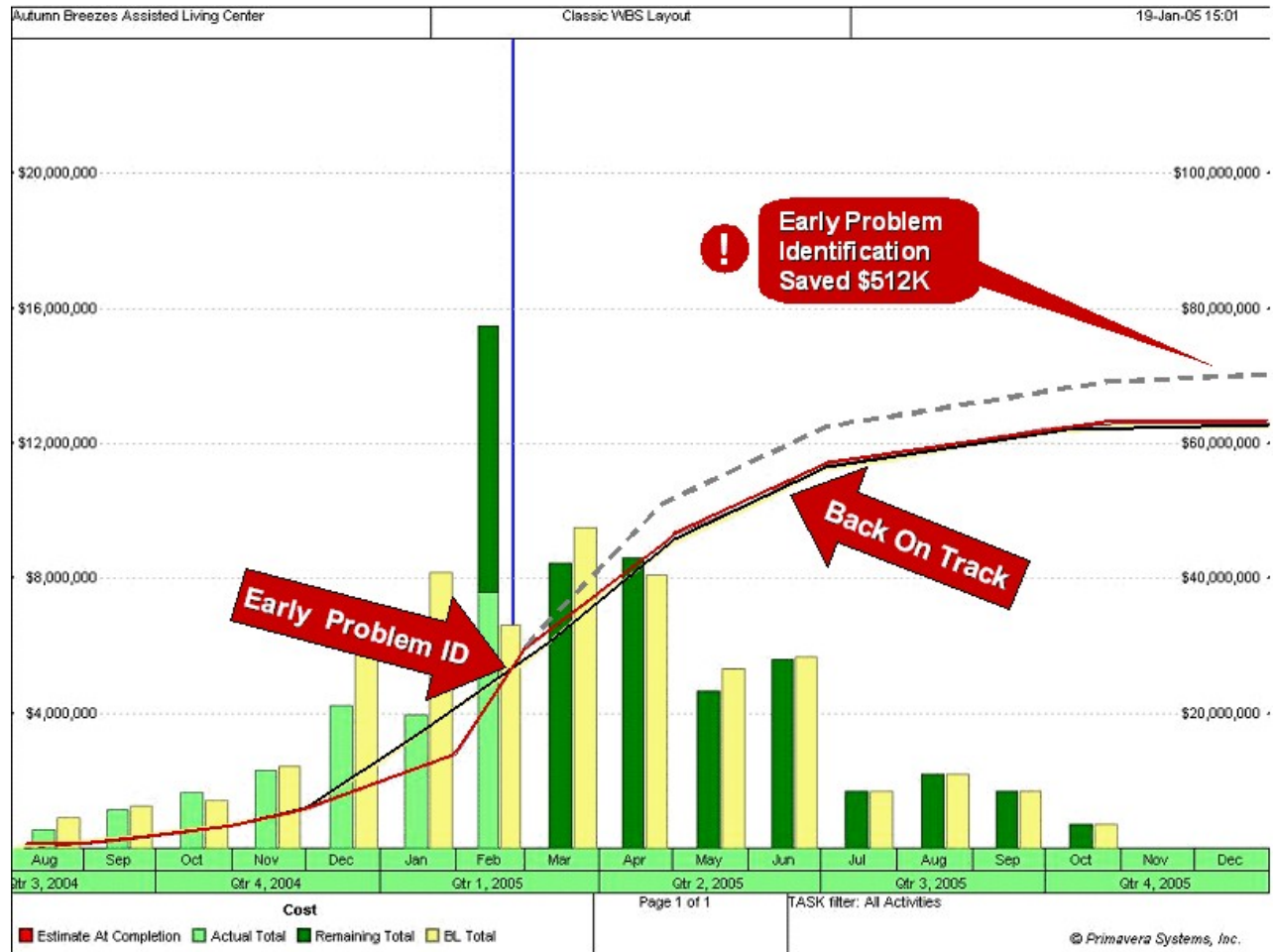
In Contract Manager, there are safeguards against unorthodox cost control and management. It facilitates good business practice. On the other hand, Microsoft® Office Excel® is wide open and free to develop any process, good or bad. It relies heavily on a senior cost professional to design, implement, and maintain. Whereas Contract Manager has years of this "experience" built into it, Microsoft® Office Excel® requires someone to design this "experience" into the workbook.

Because of the rigor in security, data management and processes, Contract Manager is Sarbanes Oxley Act (SOX) compliant. Primavera's Contract Manager provides an auditable, enforceable process that is not only repeatable, but promotes consistency of process throughout the entire organization. Contract Manager allows the project team to track potential costs and schedule impact as well as a complete history of all changes including causation, reason and resolution.

*Change Management Advantage:* One of the biggest risks on a project is effectively and proactively managing change. Increased visibility of potential change such as an accurate change forecast is the best method of reducing the overall cost and schedule impact of change on a project.

One of the best attributes of Contract Manager is the ability to manage change and to have visibility of the status of change. To manage cost on a project, the Project Manager needs visibility of the "potential" cost changes, the likelihood of their approval and the status of their approval.

We can set-up the approval workflow in Contract Manager and track every step. We know how many changes are waiting for the Project Manager's approval and how many are waiting for the final processing by Purchasing. Even more important, we identify change early so we can proactively mitigate the impact of the change. The following graph illustrates the benefits of early identification:



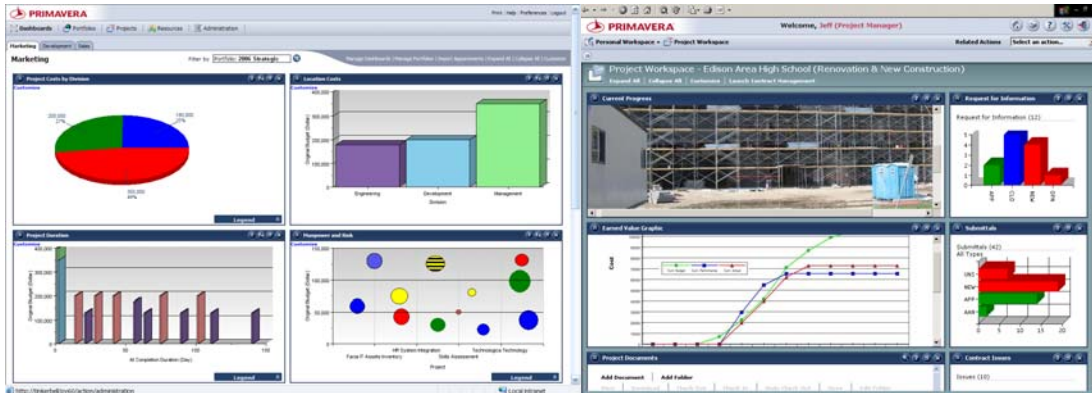
Contract Manager gives us more visibility than any other cost system we know of today. Most systems only identify the final negotiated price of a change. In the current Cost Workbook based in Microsoft® Office Excel®, the original and final negotiated price is captured. But, the approval process and status of the process is not captured.

*Visibility:* Contract Manager provides better visibility to cost information and performance. In Microsoft® Office Excel®, the users need to know where to go to "find" the information. In Contract Manager, this information summarized and presented in a dashboard format to specifically target the needs of the individual. Furthermore, when using an Microsoft® Office Excel® based system, the user(s) usually create the management reports and push them out, or "publish" when they are requested.

In Contract Manager, the information is available "real time" in the format pre-configured for each manager.

On our recent projects, we are finding the management team' requests for reporting is increasing. More and more time is dedicated to creating presentations and reports so management is well informed. It is more efficient when the reports pull from well managed and reliable data; It is also more efficient when the manager can view a dashboard or click on a standard report to get the majority of their needs met.

Dashboards in Contract Manager can be created to include a variety of project scorecard data, Key Performance Indicators (KPIs) and executive reports. Example of dashboards:



Additional standard reports and custom reports are available in Contract Manager. Reports can certainly be created using Microsoft® Office Excel®. They are not as simple or robust, require more work to develop and maintain, and require a seasoned cost person to create, validate, and manage.

*Traceability:* Contract Manager does an excellent job with traceability of where the information originates and changes. All cost data relates back to a cost "document". This gives precise traceability to the origin of all data. In a spreadsheet, there is just a number. Often time, the user may add a note to identify the origin but it is not typically an official approach of tracing numbers to a source document. In the current Cost Workbook in Microsoft® Office Excel®, there are notes used in this way. There is also some traceability of what is changed. For example, when a forecast price changes, a new line (record) is added to illustrate the old vs. new forecast price. The traceability to the actual cost "document" in Contract Manager is more rigorous and provides a precise trail of events.

When questions arise or auditors visit a project, it makes it easier to provide answers when you can easily access the history and source of the information.

*Ball in Court-Who's Desk is it on?* Whereas it's hard for Microsoft® Office Excel® to manage or facilitate workflow, this is the heart of Contract Manager. Primavera uses the concept of "ball in court" to keep track of who has which documents and who is holding up the process. This is a proactive approach to moving the process, whether it's a review or approval, through as efficiently as possible.

*Operability:* Contract Manager is process-based to help guide the user through each key process, from creating budgets and commitments to generating forecasts to documenting the actual. Contract Manager is also a web based solution that provides a contemporary Graphical User Interface (GUI) similar to current web based technology. Contract Manager's interface and navigation is intuitive and consistent throughout. The solution relies on hyperlinks to allow users to easily navigate between solution areas and information.

The dashboard approach allows the users to view and compare program and project information. The dashboard not only places user configured information at his/her fingertips; that information is linked to the actual records. Users can drill down to the actual originating cost "document" to understand cost summaries and key performance indicators.

This ability in Microsoft® Office Excel® is extremely challenging without complex macros or programming. Tracing reports and summary information to the source is typically a manual process.

*Beyond Cost Control:* Contract Manager has a great cost module, but there are several other benefits that can be implemented over time to support project management.

Some of the other benefits include the following:

- Meeting Minutes (Action Items)
- Submittals
- RFI's
- Drawing Management
- Notices
- Dunning Letters

### Negatives and Risks

*It's Different:* Currently, the Owner's project is using Microsoft® Office Excel® to manage cost. The operation of Contract Manager is different as described above. There will be a learning curve to master a new system. Because the project team is small and there is only one person currently managing cost, this should not be a significant obstacle. The longer the project team uses the Cost Workbook in Microsoft® Office Excel®, the harder it will be to change.

*Project Status:* By changing from Microsoft® Office Excel®, it will be necessary to back track and enter the historical data into Contract Manager. In addition, it would be recommended to manage both concurrently until the new system is completely rolled-out and in production.

*Implementation:* Contract Manager will require implementation time and resources.

*Upfront Cost:* There will be an upfront cost of software and implementation. Overall, this cost should be less than developing a full-fledged cost management system over time and the associated maintenance costs.

*Commitment:* The system or software selected is only one piece of effective cost control. The more important is the people and their level of commitment to the program. Contract Manager takes a strong commitment from management and the users to be successful. It also takes a time commitment to establish the processes, implement the system, train on the system, and use it.

*ROI:* The use, benefits, and forecast of upcoming projects drives when the investment will pay for itself. For example, if strong cost control system can save the project from even one significant error the system could pay for itself on this initial project. Or if the system can save on one significant change order or reduce the impact of a significant change the system could pay for itself.

If the focus and need of a cost system is only for the current project, then the decision to migrate to a more robust system is more difficult. The rewards for just one project have to offset the cost of doing so. Based on the dollar value and duration of the project, we believe there is still a great benefit to implement a cost control system.

The benefits grow over time as your department takes on more projects, even if they are of a smaller scale. And if you want to institutionalize project controls for the department and the entire organization, then a system such as Contract Manager is even a better fit.

## RECOMMENDATION

We recommend the Owner select a proven project management system that can manage costs. We recommend Primavera's Contract Manager to facilitate the team to effectively manage cost and proactively forecast and save cost. Even if it was installed for just this one project, we believe there are enough opportunities to reduce risk and reduce the overall cost to make the implementation investment pay back significantly to the project. If we can save just ½ of 1% of the \$280,000,000, that equates to \$1,400,000. The estimated implementation cost for Contract Manager for this scenario is just under \$100,000.

Another way to look at this is General Contractor's GMP contract at \$100MM, with all savings going back to the Owner. If we,

by using a robust cost control system, limit their costs to say \$99 MM, instead of \$99.5 MM without the system, then the Owner will save an additional \$500,000, or \$400,000 net after the cost of the system.

As a summary, the key reasons to switch from Microsoft Office Excel® to Primavera's Contract Manager follow:

1. Opportunity for Error. Primavera's Contract Manager is an established, best of breed application whose calculations, reporting and coding structures are embedded in the tool and do not have to be created for each project spreadsheet, and are not subject to human error. The opportunity for a math error in a complex spreadsheet increases over time as the spreadsheet becomes more complicated and/or simply grows in size.
2. Reduce Risk of Change. With the features of Contract Manager and the ability to set-up workflows, you can identify changes early and mitigate the risk. Further, if any significant changes occur you have full documentation about that change at your finger tips. Even though there is a good relationship between you as the Owner and the General Contractor today, we recommend the Owner's systems and information to be as good if not better. If there is every a dispute over a change, we want you as the Owner to have all the advantages possible.
3. Quickly Scalable. Growing Microsoft® Office Excel® into an effective cost system or project management system will take time and resources. Contract Manager has all the power to manage multiple projects, multiple users, and all project management processes and information today. It is easily scalable to grow from one project and one user into meeting the needs of entire enterprise with multiple projects, portfolios, and users.
4. Improved Visibility, Communication, and Collaboration. Microsoft® Office Excel® doesn't promote visibility, communication, or collaboration. Today, the Senior Project Controls Engineer will have to "push" out all cost information and reports as requested. With Contract Manager, standard reports are available with the click of a button and dashboards communicate the project health to management.

One of the best ROIs for Contract Manager is the visibility provided in a standardized way to the owner in accordance with the key indicators the owner cares about like 'errors and omissions', unforeseen conditions' and 'scope changes'. With this approach, people are informed and the team can take action. This is much more proactive.

5. Good Process and Good Business. Primavera Contract Manager is Sarbanes-Oxley Act (SOX) compliant because it supports good process and good business. Primavera Contract Manager provides an auditable, enforceable process that is not only repeatable, but promotes consistency of process throughout the entire organization. Contract Manager allows the project team to track potential costs and schedule impact as well as a complete history of all changes including causation, reason and resolution.

## ALTERNATIVE DECISION

Alternatively, if you chose to use the Cost Workbook in Microsoft® Office Excel® instead of a standard cost control system, we recommend some improvements and further development:

- Develop "Ease-of-Use" Features and Safeguards
- Create Cross-Checks and Validation
- Add "Source" Traceability
- Develop the User's Manual
- Create Reports
- Create Analysis Output and Key Performance Indicators

In addition to the physical improvements to the Cost Workbook, we recommend you hire at least one additional Cost Engineer to assist in entering and managing the cost information as well as validating and reporting the cost information. In lieu of a robust system, we recommend some additional human horsepower.

Also, the strategic Project Controls Manager will need to provide more guidance and support on the cost side to ensure the results from the Cost Workbook in Microsoft® Office Excel® are meaningful and truly assist in controlling costs and reducing risk on the project.

## SUMMARY OF RESPONSE

In summary, we want the best solution that works for you as the Owner. Our recommendations are based on our experience and lessons learned from many projects and companies who share similar challenges. Further, our recommendations are based from a third-party and independent perspective. We have no business relationship with any of the vendors presented in the recommendation where there are any financial incentives for making such recommendations. And finally, this recommendation is written and provided to you at our cost.

Our team will strongly support your decision for either option and continue to do whatever we can to make this project and your vision a success.

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## THE OWNER'S DECISION

This Owner decided "Microsoft® Office Excel® wasn't good enough" to manage costs for their significant project! This Owner agreed with the above recommendation and decided to implement a robust cost solution -- Primavera's Contract Manager.

Although this paper we have shared with you addresses the specific response to the Owner and project, we believe many other organizations and projects face similar challenges. Microsoft® Office Excel® certainly brings great value in many situations, but it's not the right choice for all situations, especially when you are managing costs for millions of dollars on a high risk, time-to-market driven project. For project controls decisions you make in your organization, we encourage you find the right fit for your project, program, and enterprise requirements.