PS.06

Pangs of Progress: Transition From P3 to P5

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*P*rimavera Systems has established itself as an industry leader in CPM scheduling software. Consequently, when it announced its upgrade from the standard Primavera Project Planner (P3) format to P3 e/c (at version 5.0 as of the writing of this paper, and subsequently referred to P5 herein), P3 users took note. P3 has worked successfully for thousands of clients for many years, but there are limitations that could be improved. These improvements, coupled with Primavera's announcement that it would discontinue support of P3, drive the migration from P3 to P5.

This paper is written in third person of a mythical person we'll call "Tom." Tom is educated in his trade, is an experienced CPM scheduler and has used P3 for many years. He works for a company who has successfully used P3 for many years. Indeed, Tom represents many of you, the readers, who likewise fit Tom's description.

THE BAIT

Tom's company landed a large contract to construct a self-anchored suspension bridge in the Bay Area of California, the Oakland version the 'Golden Gate Bridge.' The project has significant public visibility and will yield a beautiful, state-of-the-art structure built to modern seismic code. Tom was assigned to head up the scheduling efforts for the project, was given a budget and approached Primavera to acquire P3 licenses as required by contract with the public owner. A sales representative informed Tom that Primavera would no longer support P3 just two years into the planned seven for the contract, and instead presented P5 as the new version that would receive support throughout the project duration. New features of P5 were also presented, features that overcome some of P3's limitations and provide new ways to track and record project data.

An investigation and discussions with the owner commenced, and despite some reservation for learning curve on such an important project, ultimately the decision was made to go with P5. Key features of P5 that led to the decision included:

- Primavera support of P5 throughout the life of the project.
- Capabilities to have multiple users simultaneously share access and modify the same database in real time over the internet. The intent was to allow the contractor and the owner to view the same data together in executing the work.
- Enhancements and use of work breakdown structure features
- Expanded field lengths for project names, activity descriptions and activity codes
- Allowance for greater filtering combinations.
- All of the abilities of P3 were presumed to be rolled forward into P5 and either functioned similarly or had been improved.

Having reached the decision jointly, both parties were confident that use of P5 would benefit the project.

THE SWITCH

Tom assembled a team to assist him in preparing a baseline CPM schedule. The owner played an active role in developing a WBS conducive to the scope defined in the contract documents. Early on, Tom's team worked in Excel in preparing activities to import into P5. After a few weeks, it was time to finally create and populate the P5 database. Actual implementation and use of P5 proved to be much more difficult than originally anticipated. Where P5 had been sold as the improved generation of Primavera's CPM scheduling software, Tom and his team quickly discovered that despite some noticeable and appreciated improvements, P5 was actually incomplete, riddled with software 'bugs' and lacking in basic functionality conducive to the project environment. The pangs of progress were upon them and solutions had to be found.

The following subsections identify some of the fundamental nuances and deficiencies encountered while implementing the P5 software and developing the baseline schedule. For each issue a description is first given followed by a solution suggested by Primavera via telephone conversations or as posted on its website. Next, a work around solution developed by the contractor's team is presented. Finally, Primavera's planned action on the issue relative to release of P6, expected to be released about September 2007, is presented.

The list of issues is lengthy, but not comprehensive. The authors' intent here is to assist others in resolving common problems in minimal time that they too will likely encounter in

their switch from P3 to P5. Unfortunately, work arounds were not possible for every issue encountered.

THE ISSUES

- **Sharing of Data Between the Parties**—P5's architectural structure proved divergent from the individual goals of the contractor and owner.

  Primavera Solution: None provided.

  Work Around: The contractor desired confidentiality when investigating possible schedule acceleration scenarios, just as the owner also did when evaluating the contractor's officially submitted schedules. The basic architecture of P5, which allowed all users to see the same data from the same database simultaneously, was simply not conducive to meeting both parties' desires. Furthermore, the owner had different personnel who each desired to run their own scenarios on the schedule, which meant that even within their own organization they could not share the same database. This ability is not provided within P5 nor its inability disclosed by Primavera. Consequently, a work around was developed whereby the P5 database could be backed up and copied to individual PCs with active P5 licenses for the owner, whereas the another copy of the same database could reside on a licensed server for the contractor's team. (Refer to backup feature later in this paper.)

  To Be Addressed in P6: P6 will include 2005 SQL support, but Primavera has not stated whether this version will contain the backup and restore features.

- **Navigational Differences Between P3 and P5**—Some of the most commonly used navigational features within P5 differ from P3.

  Primavera Solution: Refer to P5 reference manuals.

  Work Around: The manuals are merely a starting point, but do not list each of the nuances of P5. A few specifics that will save the new P5 user time include:

  - P5 does not allow the clicking and dragging of activities into different sequences within the same WBS category, but instead always defaults to the sort criteria. This feature is frequently used by schedulers in P3 to organize data into particular strings, but is simply not available in P5. Instead, data must be added in an activity code, for example, whereby the sort criteria is followed.
  - To find an activity in P5, the user simply selects the edit, find command. However, unless a cell is selected within the same column of data related to the search criteria, P5 will never find a match. For example, if you search for activity ID "CN1000" with a cell in the activity name column highlighted, P5 will return the result of not having found a match, even if the very activity highlighted possessed that CN1000 ID number.
  - P5 can only find activities that meet the active filter(s) criteria. There is no find "all activities" radio button to toggle like in P3, nor any prompt that

warns the user that only filtered activities present on the display can be found.
  - P5 does not allow new activities to be added via the predecessor/successor windows like P3 did. Activities can only be added using the "add" command or through importing.
  - Use of the "fill down" command in P5 sometimes highlights all activities under the active filter instead of just those you desire within a specific WBS. Thus, it is easy to inadvertently overwrite activity codes for other activities. There is no explanation for why P5 does this on occasion. The user must simply pay attention each step of the way to prevent unnecessary overwriting of data.
  - P5 imports using Excel data has been vastly improved, but is equally as particular regarding format of the data to import. Because data specific to the user is carried along with each import or export, import success was most frequent when editing an exported file from the same PC first (i.e., do not create your own import file as was common with P3 users for .wk1 imports).

  Addressing item a) above is listed as an enhancement request for P6. No information was found related to the others.

- **Spell Check**—The P5 dictionary is limited and misspelled words can be overlooked using the spell check application. Words like "submittal" and "install" are not included in the dictionary. In addition, the P5 dictionary does not allow the user to add words to the dictionary, as allowed in other software.

  Primavera Solution: When installed, the P5 dictionary file defaults to read only. This can only be changed by finding the dictionary file in Windows file manager and changing the attributes to read-write. The solution was found to be moderately effective in that it allows the user to add words to the dictionary, but the dictionary is user specific and not project specific (or database specific), when each user runs spell check, they must add the words or abbreviation to the dictionary.

  Work Around: Export Activity Descriptions into Excel and use MS spell check. Again, this is a tedious and cumbersome process rather than being able to do spell check in real time. In addition, as with all imports and exports, there is always the possibility of error.

  Not listed as an issue to be addressed in P6.

- **Software Functionality/Finest Hour**—All P5 activities are based on the finest hour (units in minutes), even though it appears that they are based on days. The calendars define the work day which controls the start/stop time for the activity. For example, an activity has a calendar that defines the work day ending at 4 p.m. and the successor activity shows the work day ending at 5 p.m., the successor activity will start at 4 p.m. Therefore all of the calendars must have the same work day hours or the successor activities will not start on the correct day.

Primavera Solution: All calendars must have the same work periods or else P5 will give erroneous start / finish date calculations which can cause erroneous start dates / end dates if calendars are not defined the same, even for a single work day.

Work Around: No known work around was found despite hours expended searching for one.

Not listed as an issued addressed in P6.

- **Finish Milestones / Software Functionality / Finest Hour:** Occasionally when using finish milestones for intermediate milestones, the successor activity starts at 8:01 a.m. as opposed to 8 a.m. as is typical. Since P5 is based on finest hour, the one minute error compounding each successive day, eventually causing the start dates and end dates to be incorrect by one day.

  Primavera Solution: Primavera recommends placing all Finish Milestones on a 24-hour calendar. However, when activities are placed on a 24-hour calendar, successor dates are still calculated incorrectly. In addition, under this scenario float is then calculated in hour-increments instead of days.

  Work Around: Use Start Milestones instead of Finish Milestones. Only use Finish Milestones for the final schedule milestones. Because this error is intermittent, it is frustrating not being able to trust use of Finish Milestones. The only way to be sure that date is scheduled correctly is to use Start Milestones.

  Not listed as an issue addressed in P6.

- **Real-Time Refresh / User Interface / Software Functionality**—Real-time refresh does not always show the updated, reorganized view.

  Primavera Solution: Use Shift-F2 or Tools Menu: Reorganize Now to refresh the view.

  Work Around: None found. It was also discovered that Shift-F2 is disabled on some computers.

  To Be Addressed in P6: Unknown

- **Backup Feature / User Interface / Software Functionality**—P5 does not have a backup or restore feature for the database.

  Primavera Solution: No solution offered.

  Work Around: Use MSDE and SQL commands to backup and restore the database. This approach provides direct access to the database through the operating system (not thru P3) and it is possible to inadvertently overwrite and/or delete the database. In addition, this is not a simple process and requires SQL programming knowledge.

  To Be Addressed in P6: P6 will include 2005 SQL support, but Primavera has not stated whether this version will contain the backup and restore features.

- **Export Projects / User Interface / Software Functionality**—When using the .xer file format to export schedules, the layout does not export with the file. This means that when the file is imported, the new user will not see the same view as the previous user.

Primavera Solution: Export the layout file separately. If there are multiple layouts, each layout must be exported individually.

Work Around: Use MSDE and SQL commands to backup and restore the entire database. This allows users to have the same layouts and filters. This solution allows direct access to the database and it is possible to inadvertently overwrite and/or delete the database. In addition, this is not a simple process and requires SQL knowledge and programming knowledge.

To Be Addressed in P6: Yes.

- **Filter Exports / User Interface / Software Functionality**—The filters do not export with the layout files as a separate file that will be shown in the filter menu. The filter is applied to contents of the schedule, but P5 does not show that the data is being filtered on the filter list. It shows that all activities are being displayed. When using an import layout that contains a filter, the user may end up using a filter that cannot be seen, making it so data may be filtered without the knowledge of the user.

  Primavera Solution: No Solution

  Work Around: Use MSDE and SQL commands to backup and restore the entire database. This allows users to have the same layouts and filters. However, this is a direct access to the database and it is possible to inadvertently overwrite and/or delete the database. In addition, this is not a simple process and requires SQL programming knowledge.

  To Be Addressed in P6: Yes.

- **Activity Code Dictionaries, Calendars, Project Codes and Resource Codes - User Interface / Software Functionality / Data Entry:** P5 does not allow the import of Activity Code Dictionaries, Calendars, Project Codes or Resource Codes.

  Primavera Solution: A Primavera employee has created an Excel spreadsheet entitled "Dictionary501.xls" that uses Visual Basic programming language and macros to bypass the P5 front end and allows the user to enter data directly to the SQL database via standard spreadsheet input. This requires the installation of the SDK feature from Primavera. This spreadsheet is not an officially released product from Primavera, and therefore Primavera warned to use it at your own risk.

  Work Around: No known solution. Because the spreadsheet bypasses the P5 front end, it renders the user susceptible to making data entry errors. The spreadsheet allows duplicate entries and data can be easily erased. Also, not all of the worksheets within the workbook are active. Trial and error yielded success in importing Activity Codes.

  Not listed as an issue to be addressed in P6.

- **Group and Sort - Interface / Software Functionality / Data Entry**—The sort under the Group and Sort feature does not always sort the data correctly. This is most apparent with user added columns such as activity codes.

  Primavera Solution: No known solution.

  Work Around: No known work around.

Not listed as an issue to be addressed in P6.

- **Reports - Interface / Software Functionality**—The report editor is not user friendly and not intuitive to use. Customizing reports is very difficult.

  Primavera Solution: No known solution

  Work Around: Trial and error approach proved sufficient, but took more time than reasonably expected to complete seemingly simple aligning of rows and columns, for example.

  To Be Addressed in P6: Yes

- **Data Changes - User Interface / Data Refresh**— When working in a network environment, changes are not committed to the database and cannot be viewed by other users until the user entering the changes presses the F5 key.

  Primavera Solution: No known solution

  Work Around: No known work around other than to hit the F5 key frequently.

  Not listed as an issue to be addressed in P6.

- **Finish Constraints**—Finish constraints default to 14:59 PM for finish time.

  Primavera Solution: Primavera states that this error was corrected in Service Pack 2 and should not occur once Service Pack 2 is installed.

  Work Around: Even after upgrading to Service Pack 2, this was still found to be an issue. Because P5 is based in finest hour, this error changes Start / End dates for successor activities. Check constraint times when constraints are added.

  Not listed as an issue to be addressed in P6.

- **Start Constraints**—Start constraints default to 8:01 AM for start time and therefore can cause calculated float values to be off by one day.

  Primavera Solution: Primavera states that this error was corrected in Service Pack 2.

  Work Around: Even after upgrading to Service Pack 2, this was still an issue. Again because P5 is based in finest hour, this error changes Start / End dates for successor activities. Check constraint times when constraints are added.

  Not listed as an issue to be addressed in P6.

- **Date Calculations - Real-time date Calculations**—Unlike P3, P5 does not automatically change the end date of an activity when the original duration is changed.

  Primavera Solution: The user must reschedule (press F9) to see the results of the duration change.

  Work Around: No known work around. Rescheduling the project requires waiting while the software calculates the schedule. If the user is working in a network environment with a slow network connection, this can cause the user to lose hours of productivity.

  To Be Addressed in P6: Yes.

- **Float Calculations - Interface / Software Functionality**— P5 calculates total float on a project by project basis only, not across multiple projects. P5 allows the user to have multiple projects under the same EPS structure and to create logic links between activities in differing projects. Even though P5 allows the activities to be linked together across different projects under the same EPS, the calculated float values do not carry from one project to the next because logic links crossing to a different project are treated as constraints.

  Primavera Solution: No known solution

  Work Around: Place the projects into a single project file and use the first layer of the WBS as the name of each project. This approach allows total float to be calculated correctly. With this solution, however, the user loses some of the flexibility and functionality of the software.

  Not listed as an issue to be addressed in P6

- **Printing**—The print engine in P5 is very slow and requires a large amount of memory to spool the print jobs.

  Primavera Solution: No Solution

  Work Around: Buy and work on faster computers with more memory.

  To Be Addressed in P6: Yes, but it is not known to what degree.

- **Timescale - Interface / Software Functionality**— Timescale options are limited. P5 does not allow dynamic scaling of the timescale as P3 did.

  Primavera Solution: No solution

  Work Around: None. Wide screen displays were found better accommodating to this limitation of P5.

  To Be Addressed in P6: Yes

- **Activity Notes - Interface / Software Functionality / Data Entry**—P5 does not allow the user to import or export notes for activities.

  Primavera Solution: None

  Work Around: It is impractical for everyone on the project to have P5 software on a PC with access to the database. Therefore, exporting of data is crucial to preparing reports that are accessible to everyone. Exporting notes was made available by creating a user-defined text column for a notes field instead. This column can then be imported and exported.

  Not listed as an issue to be addressed in P6.

- **Reorganize Automatically - Interface / Software Functionality / Data Entry**—P5 automatically reorganizes the data whenever an activity is added, or pasted in. It will also automatically assign activity IDs based on available ID numbers. So, if the user attempts to paste a block of activities in a certain area of the project and say for example, that the sort is based on activity IDs, these newly added activities will automatically be spread throughout the project chronologically based on their numerical values. Regrouping this block of activities is very tedious and time consuming.

  Primavera Solution: Turn off the auto-reorganize feature.

  Work Around: Even though there is a check box that allows the user to disable the auto-reorganize feature, this

setting only works about half of the time. Complaints to Primavera of such were met with disbelief and no solution. Therefore, use of Excel imports was adopted as the primary means for adding blocks of activities.

Not listed as an issue to be addressed in P6.

- **Project View - Interface / Software Functionality**—P5 will automatically expand previously collapsed data categories of the WBS when certain commands are executed.
  Primavera Solution: None
  Work Around: Unfortunately, none. Here's a common case scenario: You now have the exact view that you want, you've minimized the WBS portions that you do not need to see and you add an activity. You use Shift-F2 to reorganize the project and all of a sudden every part of the WBS is expanded and you've lost the view that you want. This unwelcomed event happens when using Shift-F2 (to reorganize the data), when editing the activity code dictionary, when changing column widths and in executing many other commands. With activity counts exceeding several thousands, losing your place in a database on a computer screen takes time to scroll back and find your prior working area.
  Not listed as an issue to be addressed in P6.

- **Summary Bar Float Values - Interface / Software Functionality**—Summary bar float values are meaningless. They do not consistently show the high or low values for the float values for activities summarized.
  Primavera Solution: None
  Work Around: Ignore the float values in the summary bars and instead, rely upon the individual activity data, but with caution as to the use of constraints as mentioned earlier herein.
  Not listed as an issue to be addressed in P6.

- **Row Heights - Interface / Software Functionality**—P5 will randomly 'forget' the assigned row heights, even if they are set within the layout. In addition, P5 does not allow the user to define the row height for different categories, such as levels of the WBS.
  Primavera Solution: None
  Work Around: None
  To Be Addressed in P6: Yes.

- **Group and Sort - Interface / Software Functionality**—The group and sort bars cannot be narrowed. This takes up the usable visible space on the left side of the computer screen causing more scrolling time and wastes paper real estate on the print outs.
  Primavera Solution: None
  Work Around: None
  To Be Addressed in P6: Yes

- **Compatibility With Microsoft's Vista Operating System**—As of early February 2007, Microsoft's Vista operating system is not tested or supported for P5.
  Primavera Solution: Primavera is planning on testing and supporting Windows Vista for Primavera version 6.0 sched-

uled to release sometime in September 2007. Primavera is also planning on testing and supporting Windows Vista for a Service Pack of P5, but has released no date for when it would be available.
  Work Around: Do not upgrade to Microsoft Vista until after Primavera has made P5 compatible with it.

D espite the frustration in overcoming P5 nuances and software bugs, P5's advantages outweigh what it lacks in comparison to P3. P5's longevity appears certain as Primavera continues to enhance and patch the software. Given the size and complexity of the project and the number of people involved in preparing the baseline schedule, P5's ability to allow multiple users onto the same database allowed the team to complete the baseline schedule sooner than would have been possible in P3. The final product was likewise better organized using P5's WBS features, more easily navigated, more detailed and ultimately more comprehensive.

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