Take Your Project Tracking System to a New Level -- Using SAS to Manage Your Projects

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Abstract

This paper presents an approach to build a project management system, base on a simple SAS/AF-based project tracking system. In addition to collecting and updating the project's status information, the system takes advantages of SAS's rich functionality and provides managers with process analysis tools to find and tackle the problems that slow the whole business process. By building the system with SAS, management can easily utilize the tracking data to enhance the system for the purpose of performing sophisticated modeling for the business process. This is one significant advantage for using SAS-based system over other over-the-shelf project scheduling and/or project management software. This paper illustrates a business application for clinical trial data processing in pharmaceutical industry.

Introduction

Ever since the introduction SAS/AF Frame Entry, the advantages of using SAS as a rapid application development tool in a SAS-installed environment has been obvious. It opened the door for non-traditional software development SAS users to set up simple and 'user-friendly' information management application. Project tracking systems are among those various applications which benefited by the SAS/AF capability. Some of those tracking systems went a step further, deploy the application in a SAS installed network. Hence, this network setup not only enabled tracking system to take project status updated information directly from the end-users, but also provides a structure to further integrate some advanced workgroup functions into the project management system.

In order to develop a good project management system, we need first answer the question of what to take to be successful in project management. The answer to this question is that a good project management consists of three important parts. There are, monitoring, planning and people's orientation.

An important part of project management is monitoring a project as it progresses. Once a project has been set in motion, upper management should be informed about project status through periodic reports. By constantly monitoring the work cycle, management can assess the amount of corrective action needed.

Planning is a way to better manage the time, resource to archive the project objective. It is not only responsible for initial project schedule set up and fine-tuning it with previous process data, but also need foresee the possible shortfall which might jeopardize projects' on-time delivery.

Modern, successful management techniques are beginning to recognize the need for a people's orientation. It is the project team actually carry out the tasks. So the good approach is try to get everybody involved in the project management process. The analogy is as simple as that if everyone in the team can better manage his tasks in a timely fashion, your project is in a good shape already.

Project Management System

Base on the discussion above, it is easy to conclude that a good project management system should address the following issues:

- Ease of use. It shouldn't take a specialist to divine the system's basic features.
- Flexible display options. Often you'll want to examine your project from a number of viewpoints. The more charts available to you, the better.
- Job-specific templates If the product comes with predesign templates for the kind of work you do, you will save a lot of time. It is specially important when the update data are input by end-user.
- Networking and communication facilitate. Almost nobody works on projects in isolation. Network enable the system will greatly benefited the collaborate business process.
- Advanced analysis options The system should not only provides managers with some planning tools, but also considers a upgrade path for the future enhancement when design the system.

Now lets take a look of SAS, see how we can accomplish the goals we have setup above. The heart of SAS/OR project management capability lies in Proc CPM - the Critical Path Method scheduling procedure. It takes the activity precedence, time, and resource constraints and working day information to determine a feasible schedule for the project with the shortest completion time possible. Other two important features in project management - project network diagram and Gantt chart (schedule bar chart) are taken care by Proc NETDRAW and Proc GANTT. Accompany with SAS/GRAPH, they provide system with many flexible display options. The following structure chart illustrates how those procedures are put into a project management system. These procedures each has many options. To simplify the system and make easy for typical daily using, the system can selectively choose some key options, and output data to allow managers perform other advanced analyses..

The whole system can be integrated with SAS/AF Frame entry. It has greatly shortened the time of prototype development. The user interface was designed to make it easy for all the users. Graphical icons and control objects such as push button, drop down list boxes, and navigation arrows were used wherever possible. Also whenever possible, we can designed different templates and screen for different users. SAS/SHARE is used to allow multiple users access the centrally stored the data. This concurrent access network model provides one of stand-out features comparing to other off-the-shelf project management software.

The following figure is a comparison of project management system and simple tracking system. In the structure chart for project management system, 'REPORTING' is actually a combination of listing and graphic displaying, which is consists of procedures of GANNT, NETDRAW, CALENDAR, GPLOT, GCHART, and PRINT, etc.. The intermediate data set is design to output to optional advanced analysis module. Such module can directly use some stand alone applications, such as XPROJMAN in SAS/OR.

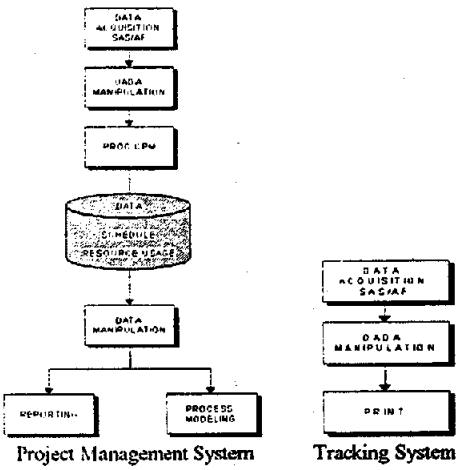

Figure 1 Comparison of Two Systems

Business Application

One of such an area we can use SAS project management system is in the clinical trail data processing (because SAS is widely installed). It is usual the departments involved have to take care of multiple projects, sometime over hundred, in a complicated collaborate business process setting. Next, we are going to show a prototype of a project management system for clinical trial data processing.

The system is consists of two major modules. One is mainly designed for project team to

update progress information. It is called as 'reporting' module. Essentially, it is a project tracking system, plus some of basic project management tools. The purpose is allow project team to actively involve in the management process. The other major part is designed for management. It includes monitoring and planning function. It is called as 'management' module. The next figure is the flowchart of this part.

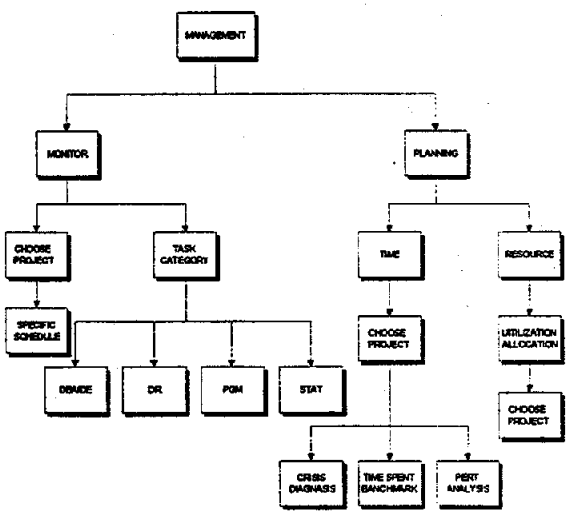

Figure 2 Management Module Flowchart

In the rest of this section, lets take a brief tour of the system.

The initial screen is designed for 'log in'. The purpose is for system security. At log in, each user is given a level of access, which is dictate by a pre-stored look up table. The system breaks into three modules. They are 'reporting', 'management' and 'system administration'. Each module is represented by an icon in main menu.

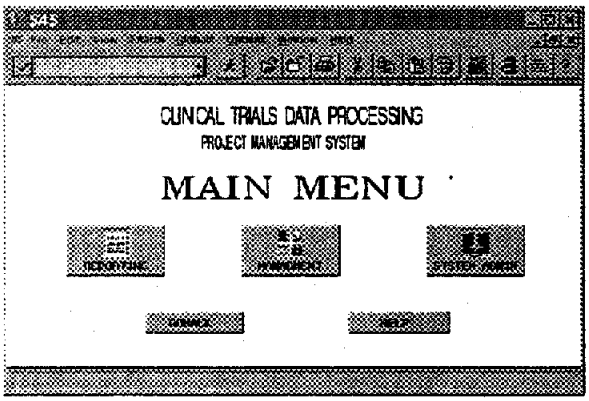

Figure 3 System Main Menu

First module is called as 'Reporting'. It is designed to allow each project team member to report project status. It also serves as a communication center to inform everyone involved in the project with up-to-date project status.

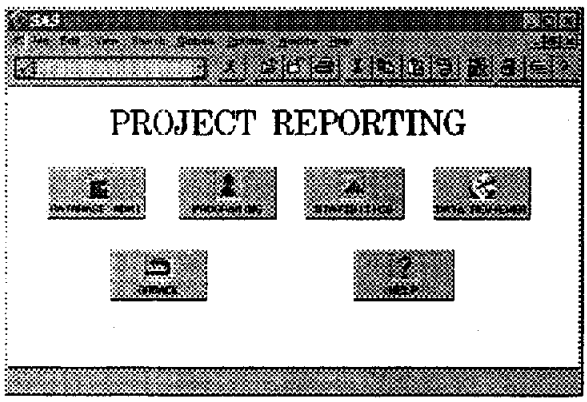

Figure 4 Project reporting screen

An end-user choose certain job function icon ready to enter the data. The system will provide the activities assigned to this user within current time frame, base on the activity's assignment information. The next screen is an example.

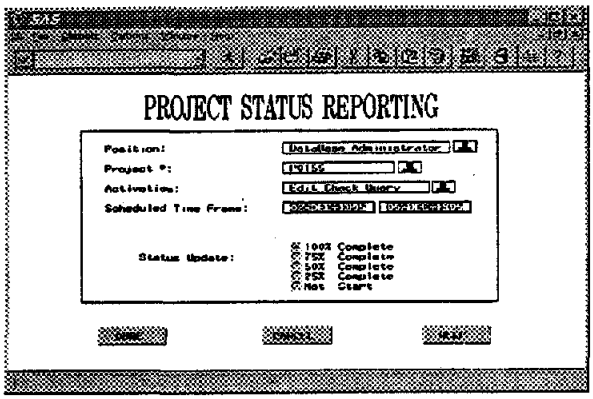

Figure 5 Project status update

The reporting module is not just for data entry. It also provides the progress information for a specific project. The next screen informs an end-user with his predecessor activities' status. So he can adjust his plan accordingly. This is also very important when work on multiple concurrent projects. It is also a handy time management tool for every team member in the project.

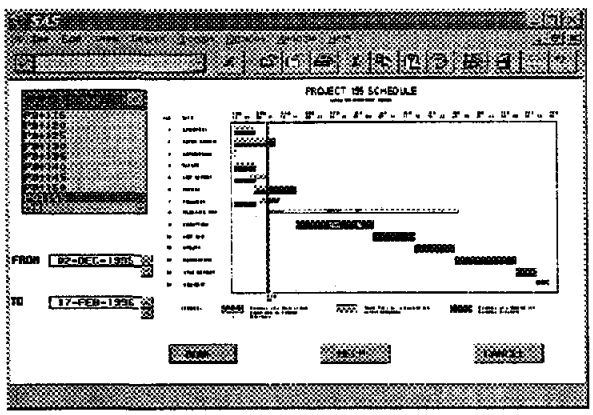

Figure 6 Updated status for a specific project

Certainly, a project manager needs get a clear picture of what's going on. His attention is not only on one specific project, but might be a profile of all the studies in the department. Here is a screen if manager wants to know all his cardiovascular studies' progress.

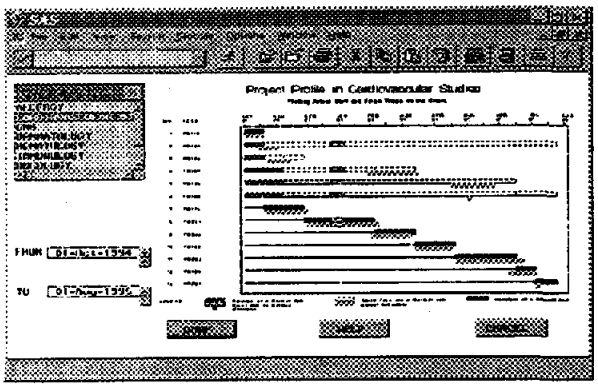

Figure 7 Profile of cardiovascular studies

With SAS's rich analysis tools, we can use the project data to develop certain benchmark of certain task and/or activity. The screen shown below is an example of benchmarking unit days spent on the projects (per patient).

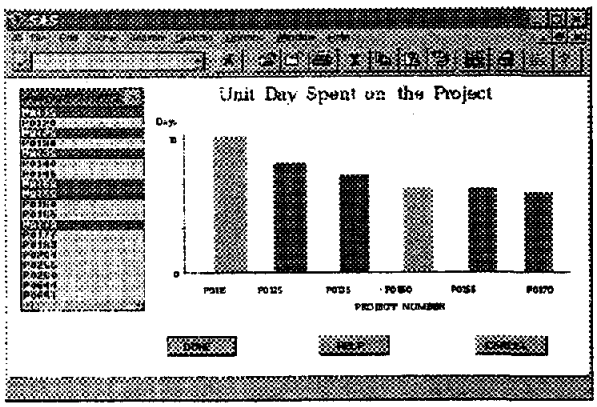

Figure 8 Benchmark of time spent on the projects

The next screen is for resource management. Obviously, it is very important for a manager to plan future studies. By comparing different studies, manager can further find out the way to improve the efficiency in resource allocation.

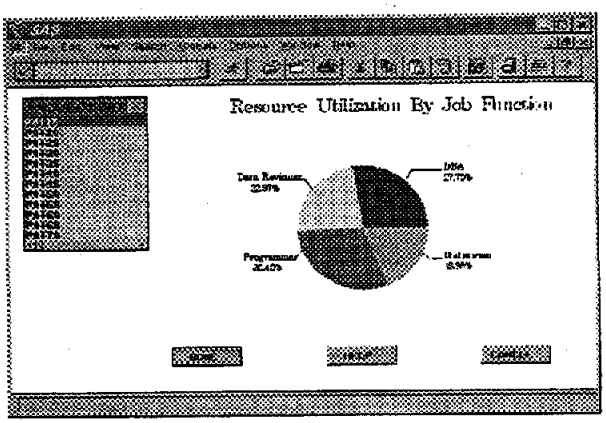

Figure 9 Resource allocation chart

It is important to have a flexibility in expanding the system to accommodate more sophisticated analysis features such as decision analysis (DA) and project profile evaluation. This system has left room for extending its ability to perform more analyses. One limitation we want to point out is that this system is based on an assumption of relative fixed step sequence in the whole process. A self-adapted predecessor-successor relation system is very complicate. Obviously, it is beyond the scope of a day to day management system used at department level.

CONCLUSION

The SAS based project management system is a refinement of simple tracking system. When fully utilize your SAS software, it doesn't require a huge investment and much effort to take your tracking system to a new lever. Our experience also proves that SAS/AF and SAS/OR are extremely powerful tools that grant application programmers the ability to develop 'user friendly' systems to perform variety of project management tasks.

REFERENCES

James Sun, Connie Li, (1996), "Fine-tuning of Project Management of Clinical Trial Data Processing with SAS," Proceeding of 21st SAS User Group International Annual Conference, Chicago, IL

James Sun, Connie Li (1996), "A SAS-based Project Management System for Clinical Trials Data Processing," Pharmaceutical Industry SAS User Group Annual Conference, San Diego, CA

D. J. Penix, (1995), "The TIMELOG Tracking System Developed with SAS/AF Frame Technology". Proceedings of 20th SAS User Group International Annual Conference, Orlando, FL

Faith Renee Sloan, (1994), "Biostatistics Study Management System Using SAS/AF Software FRAME Entry", Proceeding of 19th SAS User Group International Annual Conference, Dallas, TX

David Hartman, (1995),"Project Tracking System Using SAS/AF Software", Proceedings of North East SAS User Group Annual Conference, Philadephia, PA

SAS Institute, Inc. (1993), SAS/OR User's Guide: Project Management, Version 6, First Edition, Cary, NC

SAS Institute, Inc. (1993), SAS/AF Usage and Reference, Version 6, First Edition, Cary, NC

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