ABSTRACT
This paper summarizes a SAS/AF® menu driven application developed for project management. In the pharmaceutical industry, project management is a vital, yet time consuming task. At Marion Merrell Dow Research and Development we must be aware of the status of many clinical trials and be able to summarize the time a trial has spent in a certain phase of development.

This project schedule system facilitates project management by creating and storing pertinent dates associated with the phases of development of projects, especially clinical trials, in a SAS® dataset using SAS/FSP®. The progress of the projects is graphically displayed over a specified period of time using SAS/GRAPH®. This system enables analysts, managers, consultants, clinical research associates and M.D.'s to manage their projects, as well as their work load, efficiently and effectively.

SYSTEM OVERVIEW
To gain access to the Project Schedule System, the user enters the command SCHEDULE in the TSO panel. This command represents the command procedure containing the operating system commands needed to reference the SAS Data Library, an AF Catalog and a plotfile, and the call to the SAS system. Entering "SCHEDULE" causes the primary menu for the system to be displayed (See Figure 1). In this panel the user selects one of the five options:

1. Edit existing dataset
2. Create new dataset
3. Develop schedule graph
4. Help
5. Exit

DESCRIPTION OF OPTIONS AND SUBOPTIONS
Before a schedule graph can be developed (option 3), a dataset must already exist or the user must create one. Option 1 (See Figure 2) allows an existing dataset to be edited while option 2 (See Figure 3) allows a new dataset to be created. Option 4 provides general help by presenting an overview of the system. Finally, option 5 exits the SAS system.
MAIN.MENU
Select Option ===> Press END to return.

WELCOME TO THE PROJECT SCHEDULE SYSTEM

PLEASE ENTER OPTION:
1. EDIT EXISTING DATASET
2. CREATE NEW DATASET
3. DEVELOP SCHEDULE GRAPH
4. HELP
5. EXIT

EDIT.PROGRAM

Command ===> 
IF YOU WANT TO KNOW WHAT DATA SETS ARE AVAILABLE ENTER AN X: 
AND ENTER "END" AT COMMAND LINE

NAME OF DATASET TO BE EDITED: 

TO START EDITING DATA SET TYPE "END" AT THE COMMAND LINE
TYPE "CANCEL" AT THE COMMAND LINE TO RETURN TO MAIN MENU
CREATE PROGRAM

Command --->

IF YOU WANT TO KNOW WHAT DATA SETS ARE AVAILABLE ENTER AN X: _
AND ENTER "END" AT COMMAND LINE

NAME OF NEW DATA SET: ________________

NOTE: IF AN EXISTING DATA SET IS SPECIFIED IT WILL BE ERASED!!!

TO START ENTERING DATA TYPE "END" AT THE COMMAND LINE

TYPE "CANCEL" AT THE COMMAND LINE TO RETURN TO MAIN MENU

EDITING AND CREATING DATASETS

Both option 1 and option 2 display SAS/FSP screens which have been modified to facilitate easy data entry, even by a novice user. These screens prompt the user to enter the name of the dataset to be edited or created. The user must simply type an "X" in the appropriate field to run a PROC CONTENTS, resulting in a listing of the available datasets. This option is useful in that the names of the existing datasets are readily available and also prevents overwriting datasets when a new dataset is created. By specifying the dataset to be edited or created, a SAS/FSP data entry screen is generated (See Figure 4). Data entry fields appear which allow pertinent information corresponding to project schedules to be entered or modified.
FIGURE 4

Command ===> 

---- YOU ARE NOW IN DATA ENTRY MODE ----

TO ADD A PROJECT TYPE "ADD" AT THE COMMAND LINE

Project: __________________________

Phase   Start (mm/dd/yy)  Stop (mm/dd/yy)

| Development | __/__/__  __/__/__ |
| Clinical    | __/__/__  __/__/__ |
| Processing  | __/__/__  __/__/__ |
| Finalization|   (date)  __/__/__ |
| Analysis    | __/__/__  __/__/__ |
| Report      | __/__/__  __/__/__ |

Notes: ________________________________________________

TO EXIT DATA ENTRY MODE TYPE "END" AT THE COMMAND LINE

The data entry screen shown in Figure 4 allows input of the project description, notes and the date ranges which correspond to each phase of the project development. The first phase, Development, is the time in which the protocol is designed and reviewed, the case report forms or remote data entry screens are drawn up for collection of the data, and a command file which specifies variable names, labels and formats, and edits the data is written. The Clinical phase is the time range the actual clinical trial occurs from start to finish. The Processing phase involves entry and editing of the data. The Finalization field specifies the date the database is closed and ready to be analyzed. The Analysis phase consists of the time span of statistical analysis of the data. Finally, the Report phase represents the time span needed to summarize the project results to be presented in a written report to the appropriate agency.
DEVELOPING A SCHEDULE

Once the pertinent dates corresponding to the phases of a project have been recorded in a dataset, a project schedule graph can be developed. By choosing option 3, the schedule graph program screen (See Figure 5) is displayed and prompts the user to enter the name(s) of the dataset(s) for which a schedule graph is to be displayed. The user may enter up to three datasets to be set together and graphically displayed at one time. Again, typing an "X" in the appropriate field creates a listing of the available datasets. In addition, the user must input the range over which the schedule is to be displayed in months and years. Also the title for the schedule graph may be specified. Submitting this screen produces the project schedule graph which can be viewed if the user is working on a terminal with graphics capabilities. It can also be spooled to a plotter to produce a hard copy of the project schedule graph (See Figure 6).

FIGURE 5

CALENDAR PROGRAM

Command ==> IF YOU WANT TO KNOW WHAT DATASETS ARE AVAILABLE, ENTER AN X: _

FOR WHAT DATA SET(S) DO YOU WANT A SCHEDULE DISPLAYED?

_________ __________ __________

OVER WHAT RANGE (MM/YY)? (___/___) TO (___/___)

WHAT IS THE TITLE? ____________________________

TO EXECUTE TYPE "END" AT THE COMMAND LINE

TO RETURN TO THE MAIN MENU TYPE "CANCEL" AT THE COMMAND LINE

CONCLUSIONS

This Project Schedule System is a useful tool for managing projects. This system creates both a permanent dataset which provides a record of pertinent dates corresponding to certain projects, and a schedule graph which graphically outlines the progression of the project through the various stages of development.

This SAS/AF application enables the user to simply select menu items and enter field values in program screens, rather than editing and submitting their own SAS programs to the operating system. By virtually eliminating programming time, programmers as well as non-programmers can manage projects and display schedules efficiently.

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### PROJECT SCHEDULE FOR ANYDRUG

**UPDATED: 8–1–90**

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<tr>
<td>Protocol 2 PROPHYLACTIC</td>
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<td>Protocol 3 JOHNSON</td>
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Original graph shown in color