An Online System for SAS® Information Exchange
Using SAS/AF®, SAS/FSP®, and SAS/SHARE® Software

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Introduction
This paper describes a menu-driven system developed to facilitate the exchange of SAS information at a large company. The system, called the SASINFOX System, is designed to allow SAS users to update personal information about themselves and their usage of SAS, to access the Usage Notes, to track in-house problems being handled by the Technical Support Department of SAS Institute, to exchange information related to the conversion to Release 6.06, to share user-written macros, to share programming tips and techniques, to keep informed about the In-House and Local SAS Users Groups, to access information about SAS training, to provide feedback to the administrator of the SASINFOX System, and to produce online and/or hardcopy reports regarding any of the above.

Conception of the System
As a new employee with a large pharmaceutical company in which SAS users were using the software for many varied purposes in several geographical locations, I was concerned to discover that there were no established methods of exchanging SAS information. Although an In-House SAS Users Group existed, it primarily focused on the use of SAS for statistical analysis. SAS software was being used for much more than this; a great many of the users were not even involved in statistical analysis. There were also some users who felt isolated because there were only a few programmers in their department. Some of these users were physically isolated from other users and had no idea who other SAS users were and what they were doing with SAS. I still recall identifying a user who was in my building by pulling graphics output off of the printer. This person was a contract employee, who along with graduate students and temporaries, would never be listed in the company-wide phone directory. Obviously, it was virtually impossible to identify all of the SAS users at the company, much less determine what they were doing with the software.

Events that Sparked Development
I felt that the first step I could take to remedy this situation was to reorganize the In-House Users Group. I developed a questionnaire regarding the reorganization and distributed it to all users on the group distribution list and to other users identified from operating system information. The overwhelming majority of respondents indicated that they wanted more contact with other SAS users, both ones they were aware of and ones they knew existed but did not know how to locate. I presented my idea for the SASINFOX System to the group and it was favorably received.

As I planned the development of the system, I considered additional components for the system. Some of these evolved out of various personal and group needs and one was an established system I had previously developed. The SAS problem tracking component of the system evolved out of a personal need. I began tracking several problems with the Technical Support Department at the Institute and needed a method to effectively manage my tracking numbers. I felt that other users perhaps needed a similar tool. Regardless, I felt that perhaps they would be interested in problems being tracked for other users. The Usage Notes component also evolved out of a personal need but was already established as a system on its own. I had previously created a menu-driven system on the IBM mainframe that allowed users to access the Usage Notes for the mainframe and the PC. The PC Usage Notes are distributed on diskettes, as is the rest of the software. However, not every user wants or needs the Usage Notes datasets on his/her PC. I had a great need to access these notes as I was developing a data entry system under Release 6.03 and was having problems with transferring data through the RLlNK. Therefore, I felt that transferring the Usage Notes to the mainframe would be the best solution.

The other components of the SASINFOX System evolved out of needs of the user community that I felt could be satisfied by inclusion in the system. I hope that the SASINFOX System will be the central, comprehensive repository for company-wide SAS-related information.

Components of the SASINFOX System
User Information Component
This component is dedicated to identifying SAS users and their interests and skills. Each user has access to update his/her personal information and to obtain information about other users in the database. The initial information in the database was entered from the responses to the questionnaire.

Usage Notes Component
This component grants access to the Usage Notes datasets sent to our installation by the Institute. The notes for each operating system are accessible in this component. It is read-only and is maintained by the administrator of the SASINFOX System with the assistance of the systems staff responsible for SAS installation.

Problem Tracking Component
This component provides users with a tool to manage their tracking numbers. If a user is not involved in this activity, then the information is available for reference and informational purposes. It is interesting to determine what kinds of activities other users are involved in by reading about the problems they are experiencing.

Conversion to Release 6.06 Component
This component of the system is dedicated to issues related to the conversion to 6.06. This component will reduce duplication of effort when stumbling upon issues that will require some time investment to solve. This is an open component, including information about any operating system, product, or facility. An example of the kind of information stored in this component is the change in printing from Display Manager Windows with the PRINT command. The syntax has changed and after one person investigates and solves this problem, there is no need for others to waste their time solving the same problem.

Macro Library Component
This component of the system will serve as a resource for documentation of user-written macros. For example, one department may be using a macro that wraps text on DATA _NULL_ reports. Another department may have a need for this type of macro, but may not have the expertise to write it. Once this type of macro has been developed, it just makes sense to publicize it so that other users will not duplicate the effort required to write it.
Tips and Techniques Component
This section is a catch-all for miscellaneous items at all levels of complexity. Examples of entries into this section may include how to reorder the variables in a dataset by using a RETAIN statement or how to easily obtain the number of observations in a dataset by using the POINT= option on a SET statement.

Users Groups Component
This section publicizes the activities of both the In-House Users Group and the Local Users Group, the Research Triangle Park SAS Users Group. Minutes of the meetings will also be included in this component. It is read-only and maintained by the administrator.

Training Component
This component is also read-only and maintained by the administrator. It contains information about all types of in-house SAS training (e.g., CBT, video, and instructor-based).

Feedback Component
This section allows the users to provide feedback to the administrator. This feedback may include suggested improvements to the system, desired features of the system, and SAS-related issues may also be addressed in this section. If so, the administrator will pass the information along to the appropriate person(s). For example, suppose a user has indicated that s/he uses the base product, the macro facility, SAS/GRAPH, and SAS/STAT® under MVS and the base product, SAS/GRAPH, SAS/STAT, SAS/IML®, and the RLINK with the IBM Mainframe under DOS. The keys field for this user would be:

MVSBASE MVSMACRO MVSGRAPH MVSSTAT DOSBASE DOSGRAPH DOSSTAT DOSIML DOSRLMVS

Note that although SAS/STAT is not a full-fledged product under MVS 5.18, it is being treated as though it were to indicate whether or not the user is a statistical user. Also note the last keyword. It indicates that the user is transferring information using the RLINK with the IBM. If the user also indicated that s/he uses the RLINK to go to the VAX, the keyword DOSRLVMLMS would also appear in the list.

The keyword list is to allow operating system and product or facility specific searches through the database. It is also used to produce reports. The user is able to identify the keyword associated with a particular field by using the HELP key on that field. For example, to find out the field name of the indicator for usage of the base product under DOS, pressing the HELP key on that field would indicate that the name was DOSBASE. This way, the user does not have to issue a STRING command on a particular field. The string command has been defaulted to the KEYS field for the string DOSBASE.

The reason I chose not to rely on the users identifying the products/facilities by typing them into some sort of field is because not all users are aware of the official name for a product or facility they may be using. A user brought this fact up at the demonstration of the prototype of the SASINFO System and her point was well-taken. For example, a person may state, "I type SIGNON and then ....", yet may not recognize the term RLINK. This type of issue is sure to be compounded with the conversion to 6.06. To expand this example, the term RLINK will not be correct anymore. In this case, a facility, the RLINK, will become a product, SAS/CONNECT™. It may be unrealistic to expect all users to stay abreast of the changing product and facility names.

Another cause for confusion is the variation in the release numbers. In order to help alleviate some of this confusion, I have included the current production version of SAS under each operating system on the screen display. This will encourage users to be aware of this information.

I chose not to include position title to encourage users to contact others on the basis of what information they found in the database. A title can be misleading in terms of actual function, usage, and knowledge of SAS software. Some sort of indicator of skill level seemed to be a desirable qualifier for the information about a user but I decided against this because of the subjectivity of the rating.

The variables in the database that indicate usage of a particular product are displayed on the screen under the relevant operating system(s). The user merely has to X the field beside the appropriate product. When the user exits the screen, a keys field is created using the X’d fields. For example, suppose a user has indicated that s/he uses the base product, the macro facility, SAS/GRAPH, and SAS/STAT® under MVS and the base product, SAS/GRAPH, SAS/STAT, SAS/IML®, and the RLINK with the IBM Mainframe under DOS. The keys field for this user would be:

MVSBASE MVSMACRO MVSGRAPH MVSSTAT DOSBASE DOSGRAPH DOSSTAT DOSIML DOSRLMVS
The usage of 5.18 and 6.06 are treated separately because there are some major differences in the versions. Also, Glaxo Inc. will retain Release 5.18 as the production version under MVS and VMS for several months after Release 6.06 has been declared production by the Institute. For example, a user may indicate that s/he uses SAS/AF under MVS. However, there is a big difference in using AF under 5.18 and AF under 6.06. Eventually, the indicators for 5.18 will be dropped from the system. More than likely, this will coincide with the removal of that version from the operating system or possibly, when it replaced as the in-house production version.

Comments are encouraged and can be used by the user for any purpose. The comments are included on reports for this component and perhaps best serve to supplement the information about usage. For example, a user may indicate that s/he uses the base product under VMS and the RLINK with the VAX but may also add in the comment fields that this is primarily for transferring data. S/he may comment that s/he is not truly a 'SAS on the VAX' user. This may be important to a user attempting to identify all VAX users. Another use for comments is to elicit information from other users or to express a desire for contact with other users (e.g., 'I'm looking for someone to collaborate with me on a SUGI16 paper regarding the incorporation of SAS/GRAPH output with various word processing packages.').

Usage Notes Database
The read-only Usage Notes database is actually more than one dataset. It contains a copy of the datasets for all three operating systems sent to our installation and is updated when we receive an updated tape or set of diskettes. The administrator of the system is responsible for maintenance of this database.

Problem Tracking Database
This database, in addition to the usual user demographic information, date last updated, and keys fields, also includes the tracking number supplied by the Institute, the name of the person in Technical Support handling the problem, comments to describe the problem, and the relevant operating system(s) and product(s)/facility(s).

Conversion to 6.06 Issues Database
This dataset contains demographic information about the user entering the observation as well as the date the observation was last updated. There are variables to indicate the relevant operating system(s), product(s) and/or facility(s) for the observation. An identification number is also created by the system to use for reference and cross-reference. For example, this database contains the usual information about the user entering the observation as well as the date the observation was last updated. There are variables to indicate the relevant operating system(s), the relevant product(s) and/or facility(s), the date last updated, and a system-generated identification number.

Feedback Database
The feedback database contains the usual information about the user entering the observation. However, in this case, the user may choose to remain anonymous. There are fields to describe the feedback. All information is entered into the comment fields. This database is not available for browsing by the general user base. The information is entered into a work observation that is appended to the database by the system. The administrator is the only one with access to this information. S/he may choose to divulge the information in this database to the general user base, if appropriate.

Tips and Techniques Database
This database contains the usual information about the user, comment fields to describe the tip or technique, a keys field, the relevant operating system(s), the relevant product(s) and/or facility(s), the date last updated, and a system-generated identification number.

Users Groups Database
This read-only database is maintained by the administrator. It contains two types of observations. The first is an advertisement of an up-coming meeting, whether it be an In-House or Local Group meeting. The second type of observation is a brief description of the meeting. In addition to the two identifier variables (type of observation and which Users Group), there is a system-generated identification number for reference.

Training Database
This database is a read-only one maintained by the administrator. It contains a variable to indicate the type of training being described (e.g., CBT, video, instructor-based), the availability of the training, a keys field, the date last updated, comments to describe the training, and the contact person responsible for the training.

Tips and Techniques Database
The feedback database contains the usual information about the user entering the observation. However, in this case, the user may choose to remain anonymous. There are fields to describe the feedback. All information is entered into the comment fields. This database is not available for browsing by the general user base. The information is entered into a work observation that is appended to the database by the system. The administrator is the only one with access to this information. S/he may choose to divulge the information in this database to the general user base, if appropriate.

Design of the User Interface
Conversion issues
Because development began on the system before 6.06 was available, I was unable to take advantage of the new features. However, because conversion was imminent, I designed the system so that major portions of the code would not have to be rewritten. For example, the code to produce the reports is not stored with the AF screens, but rather, it is stored in an autocall macro library that is usable under 5.06. However, there will be a need to recreate some screens taking advantage of Screen Control Language and features such as the Extended Tables facility.

One problem with converting the SAS/MACRO System to Release 6.06 is the unavailability of SASSHARE. This product is not scheduled for release until 6.08. This problem will be worked around by granting write-access immediately before editing with an immediate release and by allowing browsing to take place on a copy of a dataset, thus eliminating long shared access which would prevent exclusive access. Most importantly, the system will allow the user to create a work observation that will be appended to the permanent version of the corresponding dataset. This last method will prevent unnecessary exclusive access granted to a slow typer!
Screen Design
Efforts have been and will be made to keep the system as dynamic as possible and to help ease the conversion to 6.06. An example of this is the use of macro variables initialized at system invocation to fill in fields on the program screens as opposed to hardcoding the text. For example, the fields that are used to identify the production version of SAS under each operating system, are actually macro variables initialized at invocation and filled in on the screen when it is pulled up. This facilitates maintenance of the system as well as ensuring that the most up-to-date information is presented in the system.

Another effort at simplifying the use of the system is to use the same screen design when appropriate, for related uses. For example, the screen that is used to indicate operating system, product, and facility usage, is nearly identical to the screen that is used for choosing reports off of this database. The SAS/FSP screens were designed so that they were both informative and easy to read on a screen and on paper. They were also designed to elicit complete and accurate information from the users.

Reporting Capabilities
The user may choose whether s/he would like the desired report to be presented online or to be sent to a specified printer. The reports are designed so that they are aesthetic and informative in either medium.

Help Facility
SASINFOX System help is available in addition to help that is relevant to each component of the system. Help for using SAS/FSP is also available for those who do not have much experience using this product. Field level help is also available when appropriate.

Usage Monitoring
Usage of the system is monitored by the administrator. The information collected includes the user Id of the user, the date and time of use, and the components of the system that were used during the session. Reports are available for the administrator.

Summary
This system was designed to support increased communication between SAS users at Glaxo Inc. and to provide a centralized method for the exchange of SAS-related information. Other components will be added to the system, if feasible, while those facilities that are not successful will be removed. A possible addition is the SUPPORT tutorial that will be supplied by the Institute on the production 6.06 tape. This tutorial, in part, documents the major compatibility issues between Version 5 and Version 6.

It is anticipated that the SASINFOX System will become a popular system at Glaxo Inc. and will be a valuable resource to a wide range of users - from beginners to experienced programmers, new employees to managers.

1SAS Institute has dropped the apostrophe in Users when referring to Users Groups.

2I presented a paper at the Spring '90 PHARMA SAS meeting describing one problem I discovered with transferring data through the RLINK. Copies are available.

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