The Effective Use Of SAS Institute Technical Support
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ABSTRACT
The technical support process provided by SAS Institute Inc. uses a wide variety of tools. This paper describes what those tools are and how they are used to provide efficient and effective technical support.

INTRODUCTION
The SAS Institute Technical Support Department defines technical support, in its broadest sense, to be "the Institute's obligation to ensure that its software products conform to published standards."

In order to achieve this goal the Institute provides its users many tools. These fall into three main categories:
1) Documentation
2) Training
3) The Technical Support Department

THE SITE REPRESENTATIVE
Every site has the opportunity and the obligation to select a SAS® Software Representative and a SAS Software Consultant. Actually a number of SAS Software Consultants may be selected, one for each software product the site has under contract. The SAS site representatives (the Software Representative and the Software Consultants) are used as central contact points at each site. They will receive SAS Communications® on a regular basis and copies of new manuals as they become available. The site representatives should also act as the focal point for questions directed to the Institute. They should ensure that questions are asked only once, not once for every user. They are responsible for maintaining a reasonable level of communication at their sites.

For the SAS® System under PC/DOS, the Technical Support Department accepts calls from site representatives only. Thus, it is vitally important that you keep us informed if one of your site representatives changes. If this happens, send a letter on company stationary to the Institute, addressed ATTN: CONTRACTS. We should be advised if any site representative changes, but for the PC product, it is especially important.

Since the Technical Support Department accepts PC calls only from site representatives, you should probably appoint different people to be Software Representative and Software Consultants. If your site licenses Base SAS®, SAS/STAT® and SAS/IML®, you are entitled to four representatives. Therefore, you can have four different people registered to call for PC support.

The SAS user is responsible for knowing who his site representatives are and how to contact them. On most operating systems, submitting HELP SITEINFO produces a synopsis of site information, including the names of the site representatives and how to contact them.

DOCUMENTATION
The Institute publishes a number of different types of user aids. Foremost among these are the Software Product manuals. The manuals describe the products and explain how they work. Of course, every user should have immediate access to the manual for any product he wants to use. Every major release of a software product will be accompanied by a manual. Some manuals include sections about generalized topics rather than just the software. For example, the SAS/ETS® User's Guide includes sections on time series data and modeling. These are general discussions of the topics and do not strictly relate to SAS/ETS syntax.

Another type of manual is the companion. These are intended to explain how SAS software products interface with various operating systems. They will give useful information on modifying the SAS environment and such things as making tapes and managing SAS data sets.

Anyone who regularly programs in the SAS System should be acquainted with the SAS® Applications Guide. This is one of the most valuable manuals, it provides examples of code for different types of jobs. Included are both DATA and PROC steps. Every SAS representative should have one of the manuals close at hand.

Course notes or SAS Views® are also available from the Institute. These are self-contained and provide useful information on coding techniques and the uses of various SAS software products.

Technical reports cover special topics related to SAS software. Examples are: "VSAM Processing" and "Probability Plotting". Of special interest to the site representatives are
U-103 "The SAS Consultant's Guide"
G-103 "Master Index to SAS Documentation"

SAS Communications is sent quarterly to all site representatives and provides information about new SAS products, third party vendor
products which are complementary to the SAS System and technical articles of current interest.

Another form of SAS publication is the SAS Sample Program Library. This is included on the installation tape or installation diskettes in the case of PC software. The Sample Library contains programs for different tasks which demonstrate how to code different types of problems. These include both DATA and PROC steps. The library contains an INDEX member that produces a subject index of the members of the library.

**USAGE NOTES**

Usage notes are an indexed collection of facts about the SAS System. Included are known bugs, documentation errors, and helpful hints for using the SAS System. The usage notes are included on the installation tape for mainframe and minicomputers and on the installation diskettes for PC systems. The notes are in the form of a SAS data set and include a screen so that they can be used with SAS/FSP® software. Although SAS/FSP software is not yet distributed on the PC, the usage notes data set can be moved to the host computer via RLINK and used with it there.

The primary benefit of using the usage notes with SAS/FSP software is that the keyword search facility is available. When the usage notes are entered, a number of descriptive keywords are entered in a key field. This enables the SAS/FSP user to do a string search by subject, error code, or other search item. For example, specifying a search word of “disk” in the Version 6 usage notes will bring up 5 separate usage notes relating to using hard disks, floppy disks or random access memory with the SAS System. The notes may also be accessed directly by observation number. If SAS/FSP software is not available, a program is available to print a hardcopy of the usage notes; in this case, they are printed in numeric order.

Usage notes often identify a zap (patch on minicomputers) that fixes a known bug. When you need a zap, it is usually obtained from the file of zaps included in the installation tape. If the zap is not in the file, the dial-a-zap facility is available for on-line retrieval of zaps. Zaps are not yet distributed for the PC software products.

**TRAINING**

To ensure the adequate dissemination of information on the SAS System, the Institute’s Education Division offers a full range of courses. Different types of instruction are offered in order to meet user’s needs. SAS Training® is published bi-annually and includes information on all types of training offered.

Public courses are taught at SAS Institute and have the advantage of the availability of the Institute’s computer facility. Hands-on lab sessions are part of the curriculum. Sites can also arrange for Institute instructors to teach courses at their site, using local facilities.

Also available from the Institute are video courses and a computer-based training package. Both can be used at the site at the convenience of the site personnel.

**THE TECHNICAL SUPPORT DEPARTMENT**

The final tool in the technical support process is the Institute’s Technical Support Department. The department maintains a staff of consultants to help sites resolve any problems that may arise with SAS software. Tech Support is available from 9:00 AM to 5:00 PM Eastern time Monday – Friday. Tech Support accepts problems by phone or mail.

You should understand who should call Tech Support and when it is appropriate to call. Whenever possible, the call should be made by your site representative. This is so Tech Support can maintain a central channel of communication with the site. The number of SAS users is in the hundreds of thousands, and there are only about 40 Tech Support consultants. It is simply not possible for Tech Support to handle calls from the entire user base. There are about 8,000 sites, and this means that there are about 200 sites per Tech Support consultant. This ratio is consistent with a high level of technical support. Thus, the objective of Tech Support is to handle support on a site level. For this reason, it is important that as much communication with Tech Support as possible be handled through the site representative. For PC software, we will accept calls from site representatives only.

It is important to understand when it is appropriate to call Tech Support. You should call Tech Support when:

1) You think you have found a bug in SAS software. Tech Support is an integral part in the bug fix process, and we need to know what bugs you encounter. We readily admit that our software, like everyone’s, contains some bugs. We are anxious to hear from you when you encounter one. Until we know about it, we cannot fix it. It is extremely helpful if you can run bugs on an earlier version of the SAS System which you might have installed and report how they behave on that release.

2) You are having problems with installation. Until you get SAS software installed, you cannot use it. We are anxious to help you get our product up and running on your machine. If you are a site representative having installation problems, by all means give us a call. Users should contact their site representative with PC installation problems. The representative will have installed the product already and can probably help you immediately.
3) You have discovered a documentation error. As hard as we try to keep our documentation correct, errors do creep in. Reported errors in documentation will be recorded in the usage notes and will be changed in the next release of the manual. The best way to report a documentation error is to use the "Your Turn" page at the back of every product manual.

4) You need hardware advice. Obviously we cannot help you decide which model mainframe computer you should purchase, but we can offer advice on what equipment, such as graphics devices, works with our software. We can be especially helpful if the site representative has questions about PC equipment.

5) You need advice on the use of SAS software products. We can offer generalized advice on the appropriate use of our software. We can usually tell you when the use of SAS products is appropriate.

It is equally important to understand when you should not call Tech Support. You should NOT call when:

1) Your question can be answered by looking in the documentation. As a matter of routine, you should always look in the manuals and the usage notes before calling Tech Support. Doing so will reduce the time it takes you to get an answer. When you call, you can be assured that we will check the manuals and the usage notes.

2) You need someone to write a program. We are happy to give generalized advice on the use of our software but we cannot write code for you over the phone. Consult the SAS Applications Guide and the Sample Library for examples of how to code different types of problems. Besides, code we write over the phone will not be very good.

3) You need a statistical consultant. We are happy to answer your questions about what algorithms we use and what numbers we produce but please do not ask us to suggest strategies for analysis.

4) Your site representative can answer the question. The site representative can answer most questions. He should also be made aware if you have a problem, in case someone else at the site has the same problem. He is also your best source of information on local installation questions such as available graphics devices and printers. You should ask your question of him before you call us. For PC software, if he does not know the answer, he should call us.

5) Your problem is not with SAS software. Tech Support is organized and equipped to support SAS software only, nothing else. If you are interfacing with someone else's software, we cannot help you with it. If you are having hardware problems, there is nothing we can do.

6) You do not have adequate information on your problem. When you call, the first thing we will ask for is your site number; please have it available. Before we can help you with your problem, we will need to know some pretty obvious information: what kind of computer you are using, what operating system, what release of SAS software, and what error messages you are getting. Before you call, take a minute and collect all the relevant information; we cannot help you without it.

It may be helpful for you to understand how Tech Support is organized and how we process problems. We have two levels of consultants, first and second. You should understand how they differ and what to expect of each.

First-level consultants are responsible for initial phone contacts with users. They are expected to handle your initial calls in one of two ways: resolve the problem on the spot or take a description of your problem and give you a tracking number. The first-level consultant needs to track your problem, please assist him by giving a clear description and having all relevant information at hand. Remember, SAS software is quite extensive, and it is impossible for anyone to be expert at all of it. For this reason, first-level consultants specialize in various areas of the SAS System. When you call, the receptionist will ask you in what area of SAS software you are having problems. Giving her a clear indication of your problem will ensure that you will get a first-level consultant who is well versed in your problem area. Areas of first-level specialization include:

- PC Problems with any PC Procedure or PC hardware. Any problem with SAS software running under PC/DOS should be identified as PC. A problem with PROC REG under PC/DOS should be identified as a PC problem.
- IBM systems - Problems with any IBM operating system.
- Portable systems - Problems with any minicomputer operating system.
- Full Screen - Problems with SAS/FSP and SAS/AF® software products.
- Graphics - Problems with SAS/GRAPH® software or graphics devices.
- PROCS and MACRO - Problems with any SAS procedure or the Macro facility.

Other

Second-level consultants are responsible for problems not resolved by first-level consultants on initial contact. When a tracking number is given to a user, his problem is assigned to a second-level consultant. The user can expect to
be contacted by the second-level consultant for follow-up within 24 hours of the initial contact (except weekends). Second-level consultants are highly specialized and are considered experts at their assigned areas of responsibility. In addition, second-level consultants are expected to keep a good working relationship with the programmer who writes the SAS code for which they are responsible. When a problem reaches a second-level consultant, he must resolve it; there is no other place to pass it. Remember that for the second level consultant to adequately research your problem you may have to send your data or program code for study.

If the second-level consultant determines that the user has discovered a bug, he will enter it into the usage notes, it will automatically be reported to the programmer responsible for that area. Long before that happens, however, the second-level consultant has contacted the programmer by phone to let him know that a new bug has been reported. The programmer may write a zap for the bug or determine that it cannot be fixed until the next release. Problem resolution may take several forms. The consultant may suggest to the user a way to correct the problem, he may confirm that the user has found a bug and tell him how to work around it; or he may supply a zap to correct the problem. Rarely, a fix may not be possible until the next release. Problem resolution should be swift and satisfactory to the user.

To facilitate the work of the consultants and to ensure that problems are not lost, Tech Support uses a computerized problem-tracking system. On initial contact, when the user is assigned a tracking number, a screen is created and moved to the OUTSTANDING file. The OUTSTANDING file is a temporary holding area where problems go before being accepted by a second-level consultant. When a problem is moved to the OUTSTANDING file, it is assigned a second-level consultant’s name. Any consultant may accept any problem in the OUTSTANDING file if he feels he can resolve it. If no consultant claims a problem in short order, it is the responsibility of the consultant to whom it was assigned. The point of the OUTSTANDING file is to give all consultants a chance to see what problems have been reported. Often, problems occur repeatedly and a consultant may be familiar with it and be able to easily resolve it. By the end of each day, all problems in the OUTSTANDING file have been accepted and the file is empty.

When a problem is accepted by a consultant, it goes to his WORK file. From there, the consultant will record all user contacts and progress with the problem. If he and the user feel the problem is resolved, the consultant may tag it so, and it is moved to the archive file, which is moved to tape at the end of each week. At this point the tracking number will no longer be available. If you have a tracking number from a problem which has been resolved, the consultant cannot use it to locate your problem.

When placing the initial call to Tech Support, be sure you have your site number available since it is requested on the first screen of the tracking system. Consultants are instructed not to take calls where no site number is given.

When you receive a tracking number, it is important to give it when calling Tech Support. You may need to call to give more information on your problem or to return a call from the consultant. The tracking number is the key to locating your problem and having it available will speed the entire process.

CONCLUSION

The technical support process described in this paper is intended to ensure that SAS software performs as close to published standards as possible. The effective use of the system requires that the users be aware of the various tools available to them and their appropriate uses. Users should be aware that SAS documentation and the site representatives are the foundation of the technical support process. By supporting SAS software on a site basis rather than an individual user basis, the Technical Support Department can provide the kind of quality support the product and its users deserve.

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