

THE ROLE OF THE SAS® SOFTWARE CONSULTANT (If The User Only Knew)

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ABSTRACT

The SAS Software Consultant (SC) is expected to keep pace with the expanding capabilities of the SAS system while providing support to a growing number of users. The SC may not be aware of all of the SAS-support resources available, especially if the primary job of the SC is something other than full-time support of SAS users. The average user almost certainly has no idea of what is available beyond the limited number of products, procedures, manuals, and help facilities that were introduced when he or she first learned to use the SAS system.

This paper describes the role of the SC in terms of responsibilities and available resources. Not only will it help the SC manage those resources, but it will serve as a guide to the user as to what help is available from, and in addition to, the SC.

INTRODUCTION

Knowledge is of two kinds. We know a subject ourselves, or we know where we can find information upon it.

-Samuel Johnson

Give a guy a fish and he'll be back in the morning for more; teach him how to fish, and he won't be calling you on the weekend.

-Bill LeBlanc

Only a few years ago, the SAS Software consultant (SC) could function with the aid of a half dozen manuals, the telephone number of SAS Institute (SI) tech support, and her own first-hand experience using the several products of the SAS system. Now, there are more users, more manuals, and more products. It is necessary to advance beyond those basic tools in order to keep up with the demands at a typical SAS-using installation. Such a task is made manageable by the expanding resources made available via electronic mail

networks. Information, which includes data, program code, zaps, alert notices, helpful hints, documentation, updates, etc., can be shared with minimal effort by users worldwide.

This paper will discuss the tools of tech support that are available to the SC. Informing users of these tools serves the interests of both the SC and of the users. From the SC's point of view, a well-educated user needs less support. From the user's point of view, more knowledge equates to less dependence upon others. Of no small consequence to either party is the fact that a more knowledgeable user is a happier user.

The successful SC is the person who can broaden his talents and those of the users so that everyone can become more self-sufficient in the problem solving process. The ability to navigate the electronic networks has become a prerequisite to any kind of self-sufficiency.

THE TOOLS AND TECHNIQUES OF TECH SUPPORT

Users clearly come for consulting with the expectation that they will be helped and they invariably want to be helped NOW, by someone who knows what she's doing. Short of knowing the answer outright to a user's question, nothing is more impressive than a consultant who either reaches for a trusty manual and turns to the right page for the answer, or who taps a few commands out at the keyboard and reads the answer off the terminal in a matter of seconds.

RTFM (Read The Friendly Manual)

Whether you are a user or a consultant (not mutually exclusive), you need access to the manuals, and in the case of the SAS system, I'm definitely talking plural. My idea of access does not mean that there are some manuals in the room down the hall. A copy of every manual that applies to any SAS product licensed at a

site is sent with those products to the designated Software Representative (SR), who may be the same person as the SC. This means that there should be a manual somewhere in the vicinity. Find or order the manuals that pertain to your products, and "possess" them.

Assuming the SC's bookshelf has everything, just what is it that you will find there? The SAS system's documentation is made up of the following: (nc=no charge; \$=you pay)

Publications Catalog (nc) -- lists all documents, order numbers, prices, and sometimes a short description.

Master Documentation Index (\$) -- there are master indices for SAS System documentation and for the SUGI Proceedings (see below). The master index for documentation is available on-line in release 6.07 in a product called SAS Lookup (MVS, CMS, VMS).

Introductory Guides (\$) -- basic introductory material. Examples: the SAS System, Base SAS software, PC SAS, SAS Graph.

Statistical Applications Guides (\$) -- discussions of selected statistical topics. Examples: regression, linear models, forecasting time series.

Product User's Guides (\$) -- documents all procedures in a product. Examples: STAT, ETS, OR, IML.

Usage guides (\$) -- demonstrates usage through practical examples and tutorials. Examples: Graph, SQL, Report, Connect.

Reference guides (\$) -- reference information, including syntax, options, settings. Examples: SAS Language, Graph.

Syntax guides (\$) -- quick reference summary of syntax. Examples: Graph, SCL.

Operating System Companions (\$) -- host system specific details. Examples: accessing disk and tape files, system options.

Annual SUGI Proceedings (\$) -- copies of all papers and posters presented at SAS User Group International conferences.

Technical Reports (\$) -- items of specialized interest, and changes and enhancements for new products and releases.

Consultants Guide (\$) -- Technical Report U-117

Training materials (\$) -- video, online, and instructor-based training materials.

Books by Users (\$) -- books about SAS written by non-SI authors sold through the SI publications department.

SAS Communications® (nc) -- news, profiles of SAS-using companies, new product announcements, technical hints, publication order forms.

SAS Training® (nc) -- details on training materials, course schedules.

Observations™ (\$) -- articles describing areas of technical specialization. Examples: transporting files between systems, maximizing sort efficiency in VMS.

SASware Ballot® (nc) -- survey of desired new features. The top vote-getting items are considered for development in future releases.

Reference Library Service (\$) -- for an annual fee, you receive most tech reports and manuals published by SI during that year. This does not include documents published before the year you subscribe.

SAS Notes (Usage notes)

As documented in Tech Report U-116: "the SAS Notes data set consists of corrections to the documentation, known software problems, available fixes or circumventions, common errors and misconceptions, information not included in the documentation." The SAS Notes will indicate whether problems have been fixed or not, and if so, the names of applicable zaps (see below).

The SAS Notes data set is included with the initial software installation shipment. Updated versions were issued upon the request of the SR, but now can be downloaded from FTP.SAS.COM (see below). All operating systems and all products are covered in the SAS Note file.

Since the SAS Notes data set is a SAS data set, it can be manipulated like any SAS data set. There are several SAS programs included with the initial shipment that will assist in manipulating the file. A "Select" program lets you select observations that pertain to your operating system and SAS products; a "Print" program allows you to print copies of the notes; a "Zaprept" program, available for MVS and CMS systems, lists zaps that are available for the current release, and shows which problems have been fixed.

If you have FSP, you can browse the SAS Notes with FSBROWSE. If you do not have FSP, the SUPPORT facility included on the distribution tape will enable you to read the notes. You can also write your own SAS program to deal with them. Look it up in the SUGI Proceedings Index. Someone has already done it.

ZAPS are fixes or patches to problems in the SAS code. Beginning with release 6.07, SI preapplies zaps to "maintenance modules" which are shipped to you and are used to replace problem modules. For prior releases, "loose" zaps are individually applied to problem modules by the SC or the systems person. The maintenance documentation starting with version 6.07 includes a listing of zaps pre-applied to modules.

Loose zaps may still be obtained and applied to specific modules between maintenance releases. Zaps may be downloaded from the OCSF, or FTP'd from SI. (If this is clear to you, you're doing fine! OCSF and FTP are explained in the Appendices.)

Sample Program Library

The initial software installation shipment also includes a set of hundreds of sample programs. Each program includes or generates its own data and illustrates the functioning of a SAS procedure or technique. These programs usually correspond to the ones that are shown as examples in the manuals. The file names are often related to the volume and chapter of the printed example. You can copy these programs from the system disk to your own workspace and then experiment on the use of a new procedure with your own data.

Now we enter the electronic realm. This is where

the real fun begins.

SAS-L

SAS-L is an E-mail discussion "list" that has over 1000 world-wide SAS-using subscribers. SAS-L is the userid of a list at a "node" served by a "listserver". For example, SAS-L@VTVM2, SAS-L@UGA, SAS-L@MARIST are SAS-L lists at three different nodes. You can subscribe to SAS-L at UGA, for example, by sending this E-mail message to LISTSERV@UGA:

SUBSCRIBE SAS-L <your full, real name>

Any message sent to the list (SAS-L@node) is distributed by the listserver (LISTSERV@node) to all subscribers. A rule of thumb: administrative requests are sent to the listserver (LISTSERV@node); SAS questions are sent to the list (SAS-L@node). The contents of the mail traffic ranges from pleas for help with specific problems, to warnings about "bugs", to discussions on the best way to round-off numbers. You do not have to actively participate by publicly asking questions. Much can be learned by passively attending to the many daily messages. You can see and learn the names of people who are knowledgeable in certain areas. Thus, if you are too shy to publish your ignorance in front of 1000 people, you can contact someone privately via E-mail.

All messages on SAS-L are archived, and the archives can be searched by anyone, whether she is a list subscriber or not. Appendix 3 shows details of how to search the SAS-L archives. The capability to search the SAS-L archives will tremendously increase your ability to solve problems. Turnaround time for a search is on the order of minutes. Whether you are an SC or a user, the ability to negotiate SAS-L and its archives will prove to be the biggest, cheapest boost to your productivity and independence.

UICSTAT Archive

There is a public archive at the Computer Center of the University of Illinois at Chicago that can be accessed over BITNET from LISTSERV@UICVM or over INTERNET through anonymous FTP from host UICVM.CC.UIC.EDU. This archive contains SAS programs, macros, metagraphics device drivers, and anything else posted by SAS users. General information can be obtained by sending this E-mail

SESUG '93 Proceedings

message to **LISTSERV@UICVM**:

GET UICSTAT README

If using Anonymous FTP (see Appendix 1), logon as "anonymous", and change directories to UICSTAT with the CD command (i.e., CD UICSTAT).

SI Tech Spt

The usual method of telephone tech support (919-677-8008) offered by SI has been expanded through the following electronic facilities:

ACP (Automated Call Processing, 919-677-8118) for new problems provides quicker phone access to specific SI tech support personnel through a telephone voice-mail menu system, provided you know the codes describing the content area of your problem. Tech report U-117 lists the content area codes.

OCSF (Online Customer Support Facility, 919-677-8155) provides a dial-up bulletin board-like service where users can read and post mail messages, download files, view SI announcements, order publications, and view schedules of training classes. An ASCII terminal and modem are required to use the OCSF.

FTP.SAS.COM allows users to transfer files to and from SI via FTP Anonymous. SI maintains a read-only directory of usage notes and zaps available for downloading.

TSNEWS-L is a read-only E-mail list used by SI to distribute problem alert notices.

EMITS (Electronic Mail Interface to Tech Support) provides a medium in which SC's and SR's can communicate problems to SI tech support personnel. Appendix 8 gives details about registering with EMITS.

Appendix 1

Some Network Fundamentals

Internet is a world-wide system of electronic networks. It supports three functions: **TELNET**, which allows one to remotely log in from a computer at one Internet site to a computer at another Internet site; **SMTP**, which handles E-mail transactions; and **FTP** (File Transfer Protocol) which allows one to log in to a host site and upload and download files.

BITNET is a world-wide network of educational and research institutions. It can connect to Internet via "gateways", as can many other commercial E-mail networks, such as AT&T Mail and MCI Mail (see Appendix 9). These gateway connections, however, allow only for mail access, not **TELNET** and **FTP** access to Internet.

LISTSERV is a computer program on someone's computer that manages a mailing list. One of many lists is **SAS-L**. You inform the listserver that you want to subscribe. The listserver then sends you a copy of every message sent to the list, and distributes your list messages to all members of the list. The distinction between a listserver and a list is important. You send administrative messages like "subscribe", "unsubscribe", "get", and "help" to the listserver; you send important messages like "why doesn't this #&\$%#! array work?" to the list. To get a list of listservers, send the message "LIST GLOBAL" to any listserver.

NODE is the **BITNET** or **INTERNET** name for a computer site. A **BITNET** E-mail address takes the form: userid@node, and can be as simple as **BLEBLANC@UMIAMIVM**. An **INTERNET** address is usually a bit longer, with the node being expressed as several pieces separated by periods, e.g., **BLEBLANC@UMIAMIVM.IR.MIAMI.EDU**. The **EDU** (or **MIL**{itary} or **COM**{mercial} or **CA**{nada} or **AU**{stralia}) at the end is a tip off that it is an **INTERNET** address.

File Transfer can be done in several ways. You can "mail" a file to someone. Be aware that the file will be preceded by "header" information, i.e., who it's from, date, time, etc. You can get a file from a listserver by using the "GET" command. If you are at an **INTERNET** site, you can "FTP" a file.

Anonymous FTP is a way to log in to another

INTERNET computer and get files from it. Your userid is the generic name "anonymous". If a password is needed, it is usually your personal E-mail userid or the word "guest". There are lists of "anonymous FTP sites" showing what content areas they cover and what the logon requirements are. **Archie** (see below) can assist in locating software at Internet sites. You can get text, graphics, PC programs, and more from these sites.

When using **Anonymous FTP**, it is vital to pay attention to the case (upper/lower) of file and directory names. Always type in the same case as shown in any examples or listings.

Archie is an interactive database of **Anonymous FTP** sites available via **Telnet** and mail.

Gopher is a user-interface program that makes **FTP** connections for you when you select an item in a menu.

Appendix 2

Subscribing to SAS-L

There are several **SAS-L** listservers on **BITNET**: **LISTSERV@MARIST**, **LISTSERV@UGA**, **LISTSERV@VTVM1**. Two on **INTERNET** are: **LISTSERV@VM.UTCS.UTORONTO.CA** and **LISTSERV@VM.MARIST.EDU**. You can send your subscription request to any one of these "listserv userids". It will figure out which is closer, and that listserver will serve you. You will receive a welcome message from the listserver congratulating you for joining, telling you how to unsubscribe, maybe offering a few rules, etc. You will then start to receive messages from the list (**SAS-L**). The "list userid" (note the distinction!) could be **SAS-L@MARIST** or **SAS-L@VTVM2**, etc., depending on which node ends up serving you. You send your **SAS** related mail to the list, not the listserver!

True story: there was a guy who sent a message **TO THE LIST** that was intended for the listserver, instructing it to conceal his id! You will love **SAS-L**!

To subscribe, send the following one-line message to any of the above listserv userids:

Subscribe **SAS-L** <your full, real name>

There are lists for users of other statistical packages.

For example, SPSSX-L@UGA and BMDP-L@MCGILL1 perform similar functions for users of those products. The procedure to subscribe to those lists is the same as that for subscribing to SAS-L.

Some other useful commands you can send to any listserver:

```
HELP          (no explanation needed)
INFO GEN      (general listerv info)
INFO REFCARD  (user commands)
```

Appendix 3

Searching the SAS-L Archives

You need not be a subscriber to SAS-L in order to access the archives. If you are interested in performing searches in the archives, you will need to send an E-mail message to a "listserv userid". Some nodes you may use are: MARIST, UGA, VTVM1, VTVM2. Your note should look like this:

```
//
DATABASE SEARCH DD=RULES
//RULES DD *
SEARCH xxx IN SAS-L
INDEX
/*
```

Fill in the target string (xxx) with the topic you want to search for. For instance, if you wanted to look for messages that discussed random sampling, the "SEARCH" command in the fourth line would look like this:

```
SEARCH random sample IN SAS-L
```

Send the file to:

```
LISTSERV@node
```

where a node for SAS-L could be one of the following: MARIST, UGA, VTVM1, VTVM2. (The archives at MARIST go back the furthest, approx 1986).

A message will be returned to you that lists the Message Number, Date, Size, and Subject from each message that has the target string in it. For example, the above request might return the following E-Mail message to you:

> Index

Item #	Date	Time	Recs	Subject
000463	91/02/03	13:25	19	Stratified sampling
000672	91/04/19	20:34	134	Reviews of DP procs
001542	92/08/14	3:12	12	Hypertext '92

Suppose that on the basis of the subjects listed in this message, you decide that #463 and #672 look like something you want. You would request that a copy of those messages be sent to you by sending another request to the same listserver, requesting a printout of them. The "PRINT" request would look like this:

```
//
DATABASE SEARCH DD=RULES
//RULES DD *
SEARCH random sample IN SAS-L
PRINT ALL OF 463 672
/*
```

Note that you keep the same target string in the "SEARCH" line, but that you replace the command INDEX with the command PRINT, followed by the number(s) of the message(s) that you want printed. The listserver, in this case, would send you a printout of messages #463 and #672.

Appendix 4

Using the UICSTAT Archive

You can access the SAS program archive at the University of Illinois at Chicago either through the BITNET address LISTSERV@UICVM or through Anonymous FTP to UICVM.CC.UIC.EDU. If using the listserver, send any or all of these commands to LISTSERV@UICVM:

```
GET UICSTAT FILELIST
GET UICSTAT README
GET LISTSERV FILELIST
```

If using Anonymous FTP, log in as user ANONYMOUS. No password is necessary. Change directories to UICSTAT by typing: CD UICSTAT. The "DIR" command will give you a listing of files in the directory. Use the "GET" command to get the file you want.

Appendix 5

OCSF

The Online Customer Support Facility (OCSF) is a menu driven facility that provides you with dial-up access to SAS Institute's Technical Support services. Using the OCSF, you can:

- upload files
- download fixes
- view Institute announcements
- order SAS Institute publications
- view a schedule of Institute training classes currently offered

In addition, SR's and SC's can use the OCSF to report new problems or add information to problems previously reported through the OCSF.

In order to use the OCSF, you need an ASCII terminal (or a combination of hardware and software that emulates one), and a modem that supports either 1200 or 2400 baud. To access the facility, dial (919)677-8155.

You must be a registered user of the OCSF to use any of the features mentioned above. To establish an account, enter the following responses as prompted:

First Name: NEW
Last Name: USER
Site Number: 00000000
Password: NEWUSER

Once the above information is entered, you will be prompted to enter your specific information. Your account will be available for use within 24 hours.

If you would like to use some of the features above but you do not have an account, you can use the Guest Account. This account is available for every function except reporting problems and leaving messages that require a response. You can use the Guest Account by entering the following responses as prompted:

First Name: GUEST
Last Name: ACCOUNT
Site Number: 11111111
Password: SAS

The OCSF and all of its functions are documented

in SAS Technical Report U-116, *A Guide to the SAS Notes, Sample Library, SUPPORT Application, and Online Customer Support Facility, Release 6.07.*

You can also receive help by selecting the H(elp) option on any main menu.

Since several functions of EMITS and the OCSF overlap, you can choose either facility. Keep in mind that you need to have a dial-up capability to use the OCSF, which means making a long-distance phone call; EMITS only requires the capability to send E-mail.

Some services provided through the OCSF are not available currently through other electronic services provided by the SI. These functions include:

- ordering SAS Institute publications
- viewing Institute training course schedules

If you need these capabilities, you should use the OCSF.

Appendix 6

Using FTP.SAS.COM

You can upload and download files to SI tech support via Anonymous FTP to FTP.SAS.COM. Under the "techsup" directory are the subdirectories "upload" and "download". You may send files to the "upload" directory. The "download" directory is read-only, and contains, among other things, usagenote and zap subdirectories, each further subdivided by operating system. When changing directories and getting files, pay attention to the case of the directory and file names, as they vary, and it makes a difference in how you type the names.

Some useful files in the /techsup/download/announce directory:

"services" -documentation for SI's support services (contributing to most of appendices 5-8 of this paper)

"sascomm.index" -an index of all articles appearing in SI's SAS Communications®

Appendix 7

TSNEWS-L

TSNEWS-L is a listserver maintained by SAS Institute.

It lists alert notes, problem alert letters, general technical support announcements, and fixes. This is not a discussion-type list, like SAS-L. You do not post messages to it. It is used to retrieve SI supplied information.

To subscribe to TSNEWS-L, send the following one-line message to LISTSERV@VM.SAS.COM:

SUBSCRIBE TSNEWS-L <your full, real name>

To obtain a listing of available files, send this E-mail message to LISTSERV@VM.SAS.COM:

INDEX TSNEWS-L

Once you have determined the filename and filetype of an interesting file, you can "get" it with the command:

GET <filename> <filetype> TSNEWS-L

The SAS Communications® index can be retrieved from LISTSERV@VM.SAS.COM by submitting the following two-line message to the listserver userid:

GET SASCOMM1 ANNOUNCE TSNEWS-L
GET SASCOMM2 ANNOUNCE TSNEWS-L

The first file contains items A-S. The second file contains items T-Z.

Appendix 8

Instructions for using EMITS

You need to be registered to use EMITS. You must be a SAS Software Consultant or SAS Software Representative to register. All E-mail should be sent to SUPPORT@SAS.COM and each E-mail message must contain the text "EMITS" in the subject field.

To register and get help, send the following five-line message to SUPPORT@SAS.COM:

```
./register= <your name>  
./site= <your site number>  
./company= <your company name>  
./phone= <your phone number>  
./help
```

Control records should begin in column 1. That is, the './' must begin in column 1. You will be notified via E-mail when your account has been added. When your registration is accepted, you will receive a detailed message, complete with examples, of how to use EMITS.

Appendix 9

Some commercial E-mail providers, annual rates, fee for short message:

AT&T Mail: 1-800-624-5672; \$3/mo; \$0.50 to send; no charge to receive
MCI Mail: 1-800-444-6245; \$35/yr; \$0.50 to send; no charge to receive
Sprint Mail: 1-800-736-1130; \$15 + connect charge; \$0.05/1000 characters send/receive

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