

Paper 192-2013

# The Successful SAS<sup>®</sup> Shop: 10 Ideas, Suggestions, and Radical Notions

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## ABSTRACT

A SAS shop might have as few as one or two SAS programmers, or as many as several thousand programmers, analysts, statisticians, data stewards, administrators, and help desk monitors. A SAS shop might be new to an organization, or it might have grown and evolved over a period of many years. Regardless of its size, age, or overall mission, some basic factors allow these groups of people to find satisfaction and reward in what they do. Of course, more pay, longer vacations, and better benefits might be high on the list, but these aren't usually factors that employees have direct control over implementing. On the other hand, numerous low-cost or organizational suggestions can be implemented with relative ease to increase satisfaction and productivity. This paper details 10 ideas, suggestions, and radical notions to ensure happy and productive SAS programmers.

## KNOWING THE ROLE YOU PLAY

It's easy for a member of a SAS shop to lose sight of the importance of the set of calculations or reports that you diligently produce day after day. Yes, there is satisfaction in the timely completion of the job, the orderliness of the results, and the consistency of the outcome. But if it isn't clear how this information benefits your organization, you're missing out on an extra helping of job satisfaction.

Step back and ask yourself whether you know where your efforts fit into the larger picture. Do you make it possible for the analysts to do their work by providing them with the necessary data? Do your results ultimately influence major decisions at your company? Was an item priced differently, or a claim paid differently, because of a report you ran? Did a new drug come one step closer to helping patients because of the studies you've been involved with? This sort of awareness brings a whole new meaning to your work.

If you don't know what role your work plays in your company's operations, ask. Perhaps there is a way to see your work "in action"—in the report that goes to the CEO, in some important decision that gets made or in the changes that take place on the manufacturing floor. Consider the impact that the lack of your data, report, or analysis would have. Would someone else have a much tougher time doing their work? Would some critical process take longer? And if the work that you do doesn't seem to have as great an impact as you would like, maybe there is a way to repackage or refocus it. Can you use a more interactive approach for delivering your output—perhaps in an online, HTML-based report rather than a hardcopy or text-based format? Can some innovation not only provide you with an opportunity to learn something new but also increase the impact or range of your efforts? Perhaps a presentation, poster, or demonstration that you'll see here at SAS Global Forum will spark your interest and give you new ideas for ways to broaden the contribution you make at your company.

## RECOGNITION

The SAS Customer Loyalty organization, of which I'm a part, presents a "Customer Royalty" award to team members who demonstrate special effort or come up with a great idea. In the first, second, and third quarters of the year, the award is a framed certificate. In the fourth quarter, it's a small, crown-shaped trophy. At a friend's company, an appreciation award of a bowl of candies is presented to the SAS programmer who writes the most inventive program or solves the toughest problem, and recipients are nominated by their peers. Do these ideas sound silly? On the contrary, recognition is hugely motivating, and knowing that your teammates appreciate what you do makes you feel great.

Recognition awards don't work if they seem like an entitlement (for example, when the same person receives it month after month), if not everyone feels they're possible candidates for the recognition, or if the award becomes a joke or a source of embarrassment. The gift has to be meaningful (like being able to park in the closest parking space for a month) and heartfelt (like a handwritten "Thank you!" from the boss). Regardless of how recognition is given or what form it takes, its value is that it acknowledges someone's efforts and sets them apart in a satisfying way.

In the SAS world, there are many ways to gain recognition. Have you thought of submitting a paper or poster to SAS Global Forum or to a regional, local, or in-house user group, or even starting a user group at your own company? Are you an active participant in a SAS community? (See the section later in the paper on user groups and communities.)

Are you known as the person at your company who always seems to catch everyone else's coding errors? Sometimes a sincere "Thank you" from a coworker can be as meaningful as a plaque or trophy!

## EDUCATION

Not long ago I had the opportunity to visit a group of SAS users at a large manufacturing company. A new member of the analytics team at this company told us that he had a lot to learn about the data and processes there, but he was concerned that he wasn't able to take the training he felt he needed. How could he do his job well, he asked, if he didn't have the most current knowledge and the most up-to-date techniques to solve the problems he was being asked to solve?

Education is important for many reasons, not the least of which is that it equips people to use SAS in the most effective way possible. For a new user of SAS or of a particular SAS product, getting up to speed is critical to quickly becoming productive. Training classes show you what to do to get started, ensure that you see progress quickly, and give you confidence that you can move forward. In addition, every maintenance release and major new version of SAS includes numerous enhancements and new features. Any one of these might prove extremely beneficial to you, but again, without the proper training, you might never know about them.

Getting to take a training class is also a sign of recognition: it's an acknowledgment of the valuable role you play and the greater value you will provide by having additional knowledge and skills. This recognition is an added benefit of being allowed to partake in training.

However, organizations are often on a tight budget and might be concerned about the expense of sending people to training. Luckily, there are many options, with a range of costs, training media, and scheduling possibilities, that can enable SAS users to gain the benefits of education without costing their organization a lot of money.

Did you know, for example, that companies can prepay for SAS Training Points that provide a substantial discount on the cost of training? And if it isn't possible to travel to a SAS Training Center, multi-user e-learning (online training) courses and live web courses are also available and can be paid for with SAS Training Points, too. The SAS Education Division's web address is <http://support.sas.com/training/>.

Having no training budget is no excuse for not taking advantage of the vast array of information available free of charge at <http://support.sas.com>. The Knowledge Base tab has links to an enormous number of videos on a variety of subjects, from *Creating a SAS Dashboard* to *Using User Defined Formats* to *Fitting Frailty Models with the PHReg Procedure* (search for "videos"). These videos provide quick answers on a wide range of topics and are available whenever you want to view them.

In addition, <http://support.sas.com> has papers, SAS Notes, code samples, documentation, and tutorials that can help answer a question, provide examples, and give you good ideas. And again, there is no charge for any of this material.

## COLLABORATION AND TEAMWORK AMONG MY TEAMMATES AND WITHIN MY ORGANIZATION

The traditional picture of the SAS programmer used to be of someone who worked in isolation, wrote magically powerful (but uncommented) code that no one else could understand, let alone debug, and took the decoder ring with him when he changed jobs or left the company. This image has, of necessity, changed. The complexity of problems to solve, the need for governance of sensitive data, the huge size of data, regulatory control, the use of servers or virtual environments instead of exclusively PC-based processing, and many other evolutionary changes to the workplace have led to more interconnected, and sometimes more complex, environments. Even so, SAS programmers are often surprised to learn that others in their own group or at their own company are battling with the same data access or data collection problems, the same complex manipulation tasks, or the same difficult algorithms or formulas.

For example, consider a manufacturing company that has an extensive list of product codes and their associated descriptive names. It's likely that at any given time, numerous SAS programmers have logic in their programs to associate the product codes with the descriptive names in order to produce a more readable report. Whenever a new product code is added to the product line, all those SAS programmers must hunt through their programs to add the new code to their logic. And if someone doesn't get the memo, then their program will produce invalid results.

What if someone were to create a custom format that associates the product codes with the descriptive names, and stores it in a format library that everyone can access? A "format" describes how a value appears in a report. SAS provides many formats (such as the dollar. format, which adds the dollar sign and commas to a numeric value). You can also create your own custom formats to meet your own specific needs. What if the person who created the

custom format also took it upon herself to keep the format up to date, adding new product codes whenever they were announced? A simple technique has ensured that everyone is accessing the same set of information, thus guaranteeing consistency and saving everyone a lot of time—through collaboration and teamwork! Custom formats and format libraries are documented both under [Base SAS®](#), and in the online help that is associated with your SAS editor or with SAS® Enterprise Guide®.

Besides format libraries, other ways to “share the wealth” include %include code, macro libraries, stored processes, and user-written functions and procedures (developed using the FCMP procedure). Extensive documentation of all these coding techniques is available at <http://support.sas.com>. As long as the SAS community has physical (or, as appropriate, metadata-driven) permission to access the libraries and catalogs, this common repository of knowledge is available anytime. In addition, there’s potentially great motivation to contribute to the knowledge store if doing so can provide recognition for your efforts.

From a broader perspective, collaboration and teamwork within an organization are also fostered through the development of an analytical center of excellence (or analytic competency center). An analytical center of excellence provides a structured and strategic approach to enhancing and expanding the use of analytics in the organization. It operates with executive sponsorship and ensures adherence to standards and best practices. To gain a better understanding of this internal organization, see Anne Milley’s article [Make the Most of Your Analytical Talent](#).

## DIVIDE AND CONQUER

Let’s carry the notion of teamwork and collaboration a bit further. In your SAS shop, is each person responsible for handling every step of a process, from accessing the data to producing the output? There are huge advantages, certainly, to knowing how to perform each step. Knowing where to find data; knowing how to access and collect it, manipulate it, explore it, and analyze it; knowing how to formulate and answer the appropriate questions; and knowing how to produce the required report, model, or other sort of output are very empowering. Knowing the entire process and all the required steps ensures that you are minimally dependent on others and you can work at your own pace.

However, is this really the most efficient way to work? Is being “minimally dependent” on your teammates a positive thing? Can you honestly say that you like all the steps in the process equally, or that you are equally adept at all steps? Perhaps it’s agony for you to search out the different data sources and to do the work necessary to combine and transform the data. I have talked to people whose organizations outsource data management: campaign data is collected by one outside vendor, and sales data is stored somewhere else. It can take several days to collect the right data extracts from these different “owners.” The SAS users might be nearly idle until the data arrives, and if the data isn’t exactly what they wanted, they must resubmit their request and the waiting game starts again. Alternately, perhaps you know that your skill at performing modeling tasks on the data is a bit weak; you know there are people in your group who excel at this, but they are busy with their own projects.

How’s this for a radical notion: what if your SAS shop could “divide and conquer”—identify each person’s strengths and preferences, and delegate tasks accordingly? Someone very strong in data access and collection might get the task done in less time than you can, and he might even really like the work! After the data is collected and manipulated, he can pass it to the next person in line, who explores the data, determines where the gaps are and what analysis might be feasible, and so on. She, in turn, passes the further manipulated data to the folks who are whizzes at SAS® Enterprise Miner™ or SAS/STAT®, they perform the “heavy lifting” but don’t especially enjoy the delivery of the results—the graphing, application development, reporting, web-deployed output, and so on. So someone else takes over at this point to produce the compelling report for management.

Most teams have more work to do than they can manage, so in this scenario it is unlikely that anyone is “sitting around” waiting for someone else to get done with their task. Multiple projects can be progressing at the same time, each at a different stage in different people’s hands. You feel a great sense of accomplishment when you have completed your part and passed it along to someone else; a job well done now enables a team of people to celebrate.

I had an opportunity to share this idea with a SAS shop. It was interesting to watch the body language of the people in the audience. The team members were leaning forward, nodding in agreement, perhaps thinking about whether this idea might work for them. Some might even have been remembering a project where just this sort of teamwork took place. On the other hand, the team’s manager sat with his arms crossed, as if withdrawing from the discussion. Afterward he told me that he didn’t think this idea would work at all, because everyone needed to know how to do every task, and he couldn’t imagine the team being able to coordinate themselves well enough to get something like this started. Of course, he knew his team better than I did, but I wondered whether he was underestimating his team’s ability to try something new and to see whether it might work successfully. This idea definitely won’t work everywhere, but it could be worth considering.

## CONFERENCES, USER GROUPS, AND COMMUNITIES

As you have probably realized, all the ideas that have been introduced about fostering a successful SAS shop are related to one another and are often interdependent. A terrific way to be recognized for your efforts, to foster team collaboration, and to benefit from educational opportunities is to participate in SAS user groups. Nearly every large city and every region of the country hosts local and regional SAS user group meetings; many corporations also host their own in-house SAS user groups. And of course there is SAS Global Forum, in addition to the large regional conferences such as NESUG and SESUG, which are held in the fall. The complete list of user groups can be found at <http://support.sas.com/usergroups/index.html>.

User groups and conferences are wonderful places to network with other people—to compare notes, share ideas for solving problems, offer and receive suggestions, learn new topics, enjoy some socializing, and return to work invigorated by the high energy of the event. There is nothing like being with a large number of people with whom you have something significant in common—SAS!

If you have a new approach to using SAS, have developed an interesting SAS application, follow some process that has simplified your job or the jobs of others, have a novel way of solving a problem, or have even found a handy use for a tried-and-true SAS procedure or function, you should consider writing a paper and presenting it at a user group meeting. If you have never written a paper before, you can get lots of encouragement and guidelines from the SAS web (and the World Wide Web). For example, an excellent place to start is Dianne Louise Rhodes's paper [So You Want to Write a SUGI Paper? That Paper about Writing a Paper](#). Perhaps a less stressful way to start than delivering a paper at a regional or global user group meeting is to share a quick tip or useful coding suggestion at your own company's in-house user group or in a Coder's Corner type of format at a local or regional conference, or even over lunch!

If attending a conference isn't possible, or if, after attending a conference, you still crave the company of lots of SAS users, consider joining one or more SAS communities, listed at <https://communities.sas.com/community/support-communities>. These communities are forums where you can ask questions and get great answers, pose ideas, and share information. You can also read and respond to the numerous blogs listed at <http://blogs.sas.com/content/>. There is no shortage of ways to broaden your SAS knowledge and your SAS circle of peers and acquaintances.

## A STRONG SAS ADMINISTRATOR

After a SAS shop evolves from a few users running Foundation SAS<sup>®</sup> (Base SAS<sup>®</sup>, SAS/STAT<sup>®</sup>, SAS/GRAPH<sup>®</sup>, and so on) on their PCs to many users running Foundation SAS, the business intelligence framework, or SAS solutions on a combination of platforms, the need for a strong SAS Administrator increases tremendously. This individual (or, in some large SAS shops, this team) is responsible for the “care and feeding” of the SAS environment, and is critical to the success of the SAS shop.

A SAS Administrator's background varies—he or she might have come from the business side of the house, from the IT organization, or from a career in SAS programming. But a SAS Administrator must know and understand all three worlds (business, IT, and SAS) in order to best serve the SAS community. First, it helps to understand the nature of the business and the contribution the SAS shop makes to the success of the business. Second, it is necessary to understand and appreciate SAS software and the value it can bring, which products are licensed, how SAS users go about their work, what they need to get their work done, and, ideally, how to write and debug SAS programs. And finally, the SAS Administrator should understand such matters as keeping the software up to date by applying hot fixes, knowing what to expect during a migration to a new release, and how to manage the metadata that supports the SAS environment.

Specifically, the tasks of the SAS Administrator include installing SAS software (or coordinating the installation with IT), applying SAS renewal licenses, applying hot fixes and maintenance releases, installing client software such as SAS Enterprise Guide on the users' desktops, running backup and recovery, and managing metadata (which includes registering data source and target metadata, creating libraries and registering tables, creating and assigning users and groups, and so on). This list might sound extensive, but a great deal of training, assistance, and help is available to shorten the learning curve.

How do SAS Administrators gain the skills they need? A good place to start is with the training classes called [SAS Platform Administration 1: Essentials](#) and [SAS Platform Administration: Fast Track](#). There is also a course offered in e-learning format called [SAS 9 Intelligence Platform Administration](#).

Additionally, there are excellent blogs geared to the SAS Administrator: [SAS Administrators: Providing Maximum Benefit](#), by LeRoy Bessler, PhD; [Protecting Your Metadata Protections](#), by Paul Homes; [http://blogs.sas.com/content/supportnews/tag/sas\\_admins/](http://blogs.sas.com/content/supportnews/tag/sas_admins/); <http://blogs.sas.com/content/sgf/tag/sas-administrators/>; and many others (see the Featured Blogs page, <http://blogs.sas.com/content/>, and search for “Administration” or

“Administrator”). Extensive documentation can be found at <http://support.sas.com/dsearch?ct=&qt=Administration&col=suppprd&nh=25&qp=&qc=suppsas&ws=1&qm=1&st=1&k=1&rf=0&oq=&rq=0>. There are also numerous papers, SAS Notes, and other materials to help SAS Administrators in their effort to support the SAS community.

In addition to having technical knowledge about the SAS environment and familiarity with the business, the SAS Administrator might also be responsible for managing or advising SAS programmers. This responsibility requires expertise in “soft skills” such as problem solving, team motivation, project scheduling and assignment, time management, skills assessment, and liaising with upper management.

Although there might be a lot to learn at first, the SAS Administrator ensures a stable, reliable SAS framework for SAS users. He or she “translates” the needs of SAS users into language that IT can understand, addresses problems by working with SAS Technical Support, and responds to the changing needs of the SAS community. A SAS Administrator at a large pharmaceutical company told me that one of his most important tasks is to properly set expectations among the nearly 70 SAS users he supports. Some of them would like a new SAS product or a new source of data or an improvement in the performance of the system TODAY. He provides them with guidelines for what is reasonable and why some requests can’t be met right away. A SAS Administrator can make the difference between a successful SAS shop and an unsuccessful SAS shop and is, in short, critical to the smooth operation of the SAS environment.

## **A STRONG EXECUTIVE SPONSOR**

The Executive Sponsor is often the person who brought SAS software into the organization, and as a result has strong personal, professional, and financial motivation to see SAS succeed. He or she is a visionary who understands the value that SAS provides, whether it is to increase profits, decrease expenses, improve product quality, more precisely predict necessary cash on hand to pay for service or warranty claims, more accurately market new offers to specific customers, and so on.

I have heard the Executive Sponsor referred to as the “Captain of the Ship” who ensures that the SAS team is heading in the right direction. Although not always directly involved in the day-to-day activities of SAS users or even necessarily part of their chain of management, he or she nevertheless keeps the higher-level executives apprised of how projects are advancing; provides justification for the continued spending on SAS renewals, additional staff, new IT infrastructure, and so on; and offers ongoing inspiration to the SAS users. The Executive Sponsor can sometimes broker an improved relationship between the business and IT, if necessary, and can remove obstacles to improving infrastructure and modernizing software. In short, the Executive Sponsor ensures that SAS has a purpose in the organization, and he or she has a personal stake in ensuring that SAS users have what they need to be successful. After all, if SAS users are successful, the Executive Sponsor is successful, too.

On the flip side, when the existence of SAS at an organization is shaky, often the reason is either that the Executive Sponsor has left the company or taken on a different role, leaving the SAS shop “directionless” or “adrift,” or that the SAS shop doesn’t have a strong SAS Administrator (see the previous section).

## **STRONG INFORMATION TECHNOLOGY (IT) SUPPORT**

The IT organization within a company typically manages and owns the hardware, infrastructure, and data that keep the organization running. Often, IT doesn’t know anything about SAS, except that SAS often seems to play by its own rules, which are different from rules for Microsoft and IBM products. Because the optimum operation of computer resources and the availability of vast amounts of data are so essential to the SAS shop, it is essential for IT to understand the value that SAS has to the organization. In the best-case scenario, IT is included from the beginning in discussions about how SAS will be used, how to set up the SAS environment, the SAS maintenance and release schedule, how to streamline the delivery of data to SAS users and analysts, how to perform backup and recovery operations for SAS, and so on. The head of the IT organization at a large health provider seemed to have an epiphany as he listened to how SAS was being used at his company; he remarked that he saw how essential it was that he and his team work closely with SAS users to ensure that they had what they needed to do their jobs.

In the worst case scenario, however, it almost seems as if IT takes delight in finding ways to stymie the efforts of SAS users to get things done. I have heard horror stories about elaborate systems for requesting data, extensive delays in receiving data, changes made to the system (unbeknownst to SAS users) that affect access permissions, servers and data sources renamed so programs no longer work, servers scheduled for maintenance when jobs are running, and more. One SAS Administrator told me that his organization’s IT department insists on making SAS fit into its model, instead of appreciating the flexibility and fluidity of SAS. IT “goes by the book,” he said, and he did not mean it as a compliment!

Sometimes these sorts of roadblocks have led SAS users to find ways around the problems, such as running queries directly against transactional data (never a good thing to do) and retrieving enormous amounts of data “just in case” it’s needed. These acts of desperation invariably backfire, straining the relationship with IT even further.

The solutions to these problems are communication and education. The earlier IT is brought into the discussion and the more it is viewed as a key partner, the easier it is to work through the problems and find common ground. The need for cooperation increases as companies embrace “big data” and must find ways to store and access it. Compromise and coexistence can occur by agreeing on guidelines related to how and when to access data; understanding the type of work that SAS users do (“heavy” analytical work versus “lighter” filtering, querying, and report generation) and how this work will affect system performance; properly tuning the environment for SAS; developing an operational data store separate from the transactional data; running big production jobs on a predetermined schedule; keeping IT in the loop if special projects will cause additional stress on the environment; and so on.

As a starting point for engaging IT, here is some material to review and share: [IT and CIO Enablement](#) (many additional links provided here), [Big Data Analytics: Future Architectures, Skills, and Roadmaps for the CIO](#), [Guidelines for Preparing your Computer Systems for SAS](#), and [How to Maintain Happy SAS9 Users](#).

## **STRONG COLLABORATION AMONG THE EXECUTIVE SPONSOR, THE SAS SHOP, THE SAS ADMINISTRATOR, AND INFORMATION TECHNOLOGY**

As described earlier, a strong SAS Administrator, a strong Executive Sponsor, and a supportive IT organization are essential to the success of a SAS shop. But unless these parties are in close and regular contact with SAS users and with each other, much time and energy can be wasted.

Imagine the following scenario. IT maintains the servers on which SAS is installed and keeps them in top running condition. IT performs routine maintenance on the servers overnight on the last Thursday of the month. The SAS shop isn’t aware of this time frame and hasn’t been affected by it, as far as anyone can tell. However, the Vice President of Marketing asks the SAS shop to run some particularly large jobs as part of a special project; the programmers need a couple of weeks to get all the coding done, and they are ready to run the job against the production data on—you guessed it—the last Thursday of the month. The jobs fail because the servers are temporarily shut down as part of routine maintenance and the jobs don’t automatically restart. Instead of having results to review in the morning, the programmers have logs with abend errors in them.

Or consider this scenario. The SAS Administrator applies hot fixes to the current version of SAS. She doesn’t let the SAS users know in advance that she is going to do this. The users are concerned that these hot fixes might slightly change their report output results or appearance, but now they don’t have an easy way to know whether changes have occurred.

Both of these situations could have been avoided through communication. Any changes that are made to infrastructure by IT, to processes by the Administrator, to the business mission by the Executive Sponsor, or in data access or system demand by SAS users is going to have an impact on the other parties. Being prepared for changes (and in some cases taking appropriate precautions) can save a great deal of pain later on.

Some organizations hold regular meetings of stakeholders. Other organizations develop timelines for maintenance, upgrades, production jobs, and other events that have wide-ranging impact and are sure to notify everyone about any changes. Some organizations have e-mail LISTSERVS, newsletters, SharePoint sites, or bulletin boards (physical or electronic) for posting such information. Online dashboards and scorecards can keep everyone current on the state of projects, profits and losses, or whatever else the SAS shop helps monitor. As suggested earlier, in-house SAS user groups can also be great forums for sharing information—and might be even more effective if IT and the Executive Sponsor are invited!

Another way to foster team spirit and mutual responsibility is to occasionally hold meetings of the SAS users, Executive Sponsor, SAS Administrator, and IT offsite, at a restaurant, miniature golf course, bowling alley, sports bar, or park. Getting to know all the people who are critical to running a successful SAS shop on a friendly basis can do wonders for increasing everyone’s willingness to help each other. This in-person socializing might not be possible at large organizations that are spread over different geographical sites, but even if just a portion of the SAS team is physically located in any one place, each of those separate groups could enjoy a few hours of socializing on the same designated day. Where it’s feasible, this opportunity to connect in a fun, non-work environment can be quite beneficial.

## CONCLUSION

A successful SAS shop requires much more than properly functioning SAS software. Executive sponsorship and a strong support infrastructure, in its many forms, are necessary. Members of the SAS team need to see the value of the work they do and know that it is recognized. They also need the opportunity to have training, to be challenged in their work, to collaborate with their organizational peers, and to network with their larger SAS community peer group.

Although the 10 areas discussed here seem to be fairly universal, you might have observed other essential ways to ensure a successful SAS shop. Please feel free to share your stories with me!

## CONTACT INFORMATION

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