

## Paper #2017

# Am I getting the most Value of my SAS installation Dollars? Seven Areas to explore

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## ABSTRACT

Would you agree that the value of SAS® for your organization comes from transforming data into actionable information, using well-prepared human resources? This paper presents seven areas where this potential SAS value can be lost by inefficient data access, limited reporting and visualization, poor data cleansing, obsolete predictive analytics, incomplete SAS solutions, limited hardware use, and lack of governance. This paper also suggests what to do to overcome these issues.

## INTRODUCTION

In our many years as SAS consultants, we have received the question about getting the most value of a SAS installation. One time in Michigan at a healthcare organization, the executive mentioned he had several people across his organization approach him about issues related to the inefficient deployment and use of SAS. There was also a perception that the organization could or should be using SAS more effectively as a strategic advantage in certain situations.

This is a very common concern since organizations pay good money for their SAS software and wonder if they are squeezing the most value of those dollars. Managers think about SAS value particularly when it is renewal time! They want to know: what is SAS, how it is used across their organization as well as what are the challenges for them in fully leveraging SAS in their environment.

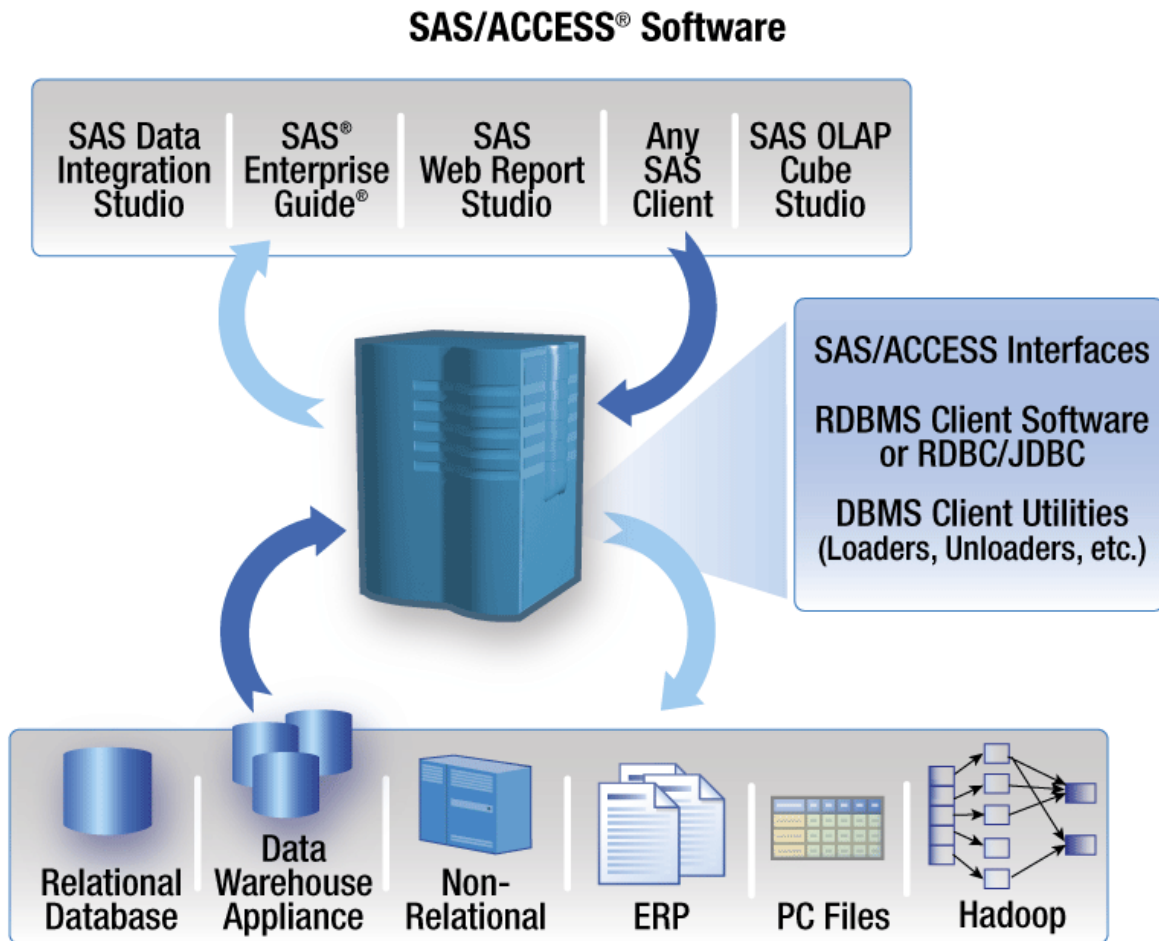
Managers don't even know what they have in terms of SAS software very often. Does it sound weird? It is. Especially considering the amount of money they are paying. But if you are in this category don't feel bad. SAS licensing is so confusing and there are so many products and bundles that we have encountered this situation many times worldwide!

Would you agree the value of SAS for your organization comes from transforming data into actionable information using well prepared human resources? If so, let's look at seven areas where this potential value can be lost:

1. inefficient data access
2. limited reporting and visualization
3. poor data cleansing
4. obsolete predictive analytics
5. incomplete SAS solutions
6. limited hardware use, and
7. lack of governance.

## INEFFICIENT DATA ACCESS

SAS has great capabilities as a 4GL to extract, transform, integrate and load data in both structured and unstructured data repositories (EDWs, Marts, RDBMs, data lakes). We have found that **SAS installations are frequently poorly tuned** and therefore subject to delays and contentions with other applications. **SAS installations can also be incomplete** because IT managers don't understand or have the perception that SAS does not operate on relatively new technologies such as Hadoop clusters. It is also common that organizations have stopped at the SAS Base level use and have not moved into SAS Enterprise Guide, a newer interface. Another possibility is that the organization may have been using SAS EG but are not using SAS Data Integration suite of products. This makes the overall SAS data management operation obsolete and clumsy. Figure 1 below shows how SAS can work to facilitate data access from multiple data sources using practical interfaces.

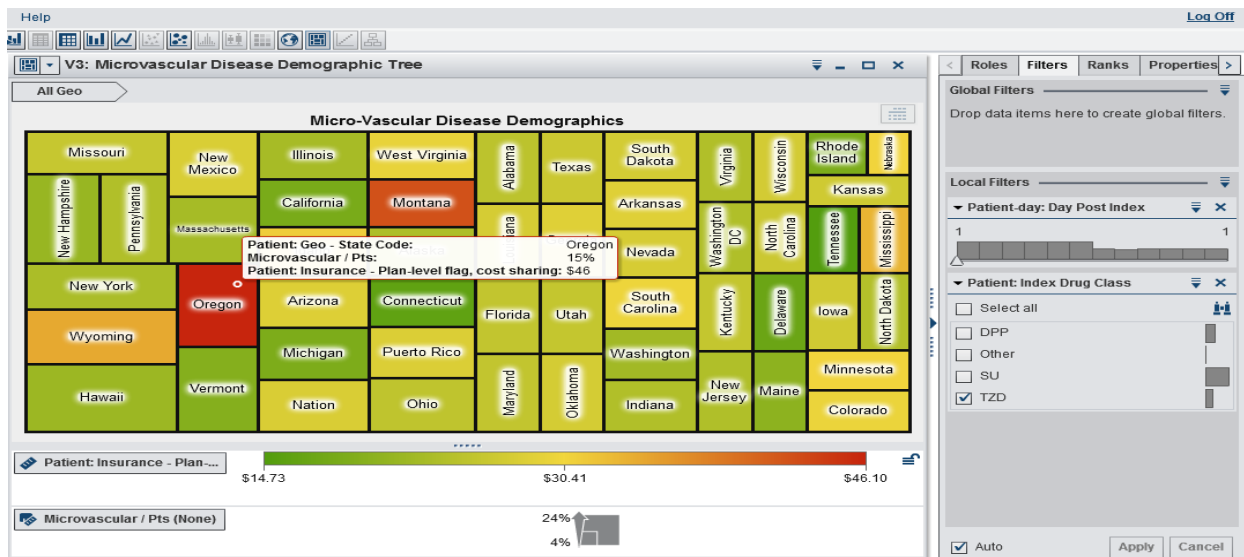


**Figure 1. SAS can Facilitate Data Access from Multiple Data Sources**

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## LIMITED REPORTING AND VISUALIZATION

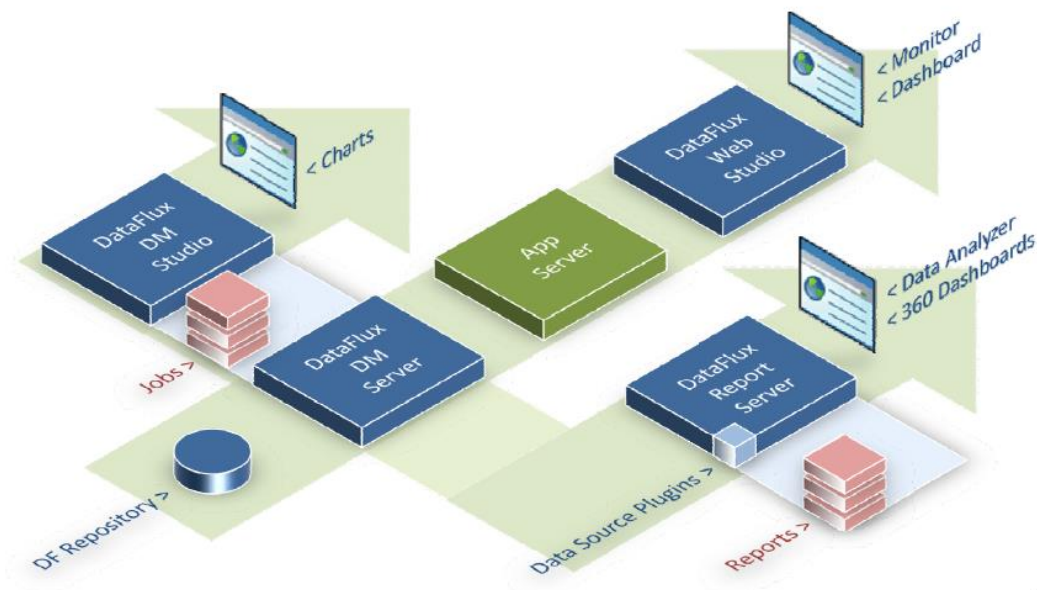
SAS BI has the capability to produce reports, dashboards, and mobile reports. Many times, **nobody knows how to use SAS BI software**. We believe, one reason is the traditional SAS BI products (SAS Business Intelligence components including Web Report Studio, Information Map Studio, SAS Information Delivery Portal and the SAS Add-In for Microsoft Office) were developed as modules and therefore managers have a hard time trying to figure out how these modules come together or what they do. The new generation of SAS BI products, like SAS Visual Analytics, are bundled a bit better but they still have technical requirements like the SAS LASR that makes these products harder to implement when compared with competitive products like Tableau, BO and Microsoft Power BI. Figure 2 below shows an example of a heat map displaying demographics for a large data set of microvascular diseases. SAS has nothing to envy to other competitive BI products.



**Figure 2. An Attractive Display using SAS VA for Medication Adherence**

## POOR DATA CLEANSING

If your data sources are not reliable then it is virtually impossible to get the value of your SAS installation. At a board of directors meeting of a large mobile operator in Africa, they told us they would regularly have different version of the “truth” depending on who was reporting. This had created a **lack of trust in the data and in the mechanisms** to bring the data from source to consumption. This is critical. Your SAS Data Management software (Dataflux) should have good matching, survivorship and cleansing rules to deliver quality data downstream. Otherwise, data consistency and value are compromised. This situation hinders fact-based decision making – a significant value generator! When used properly, SAS Data management can provide providing data profiling, data quality and integration. Figure 3 below shows three different components of SAS Data Management used in profiling, data quality and data integration.

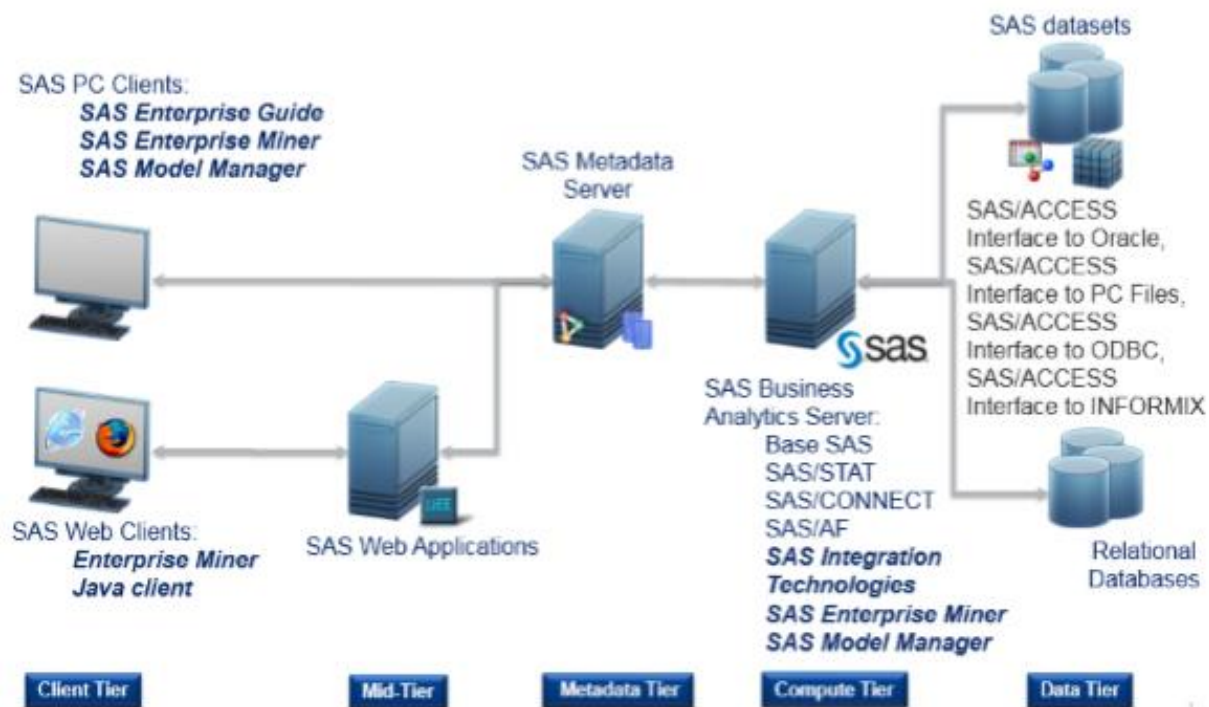


**Figure 3. SAS Dataflux for Profiling, Quality and Integration**

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## OBSOLETE PREDICTIVE ANALYTICS

Predictive analytics is the area where typically more value is created in the SAS installation. However, we have found that scientists without training or exposure to best practices become stagnant in SAS STAT and SAS ETS and never evolve into using more automated tools like SAS Enterprise Miner or solutions like SAS Model Manager that deliver **additional capabilities to produce more and better models**. We are not even mentioning SAS Viya, the new, high performance analytics architecture unveiled last year by SAS at its user group conference in Las Vegas. A Spanish bank can leverage efficient modeling to run more than one hundred marketing campaigns per month using SAS Customer Intelligence. Can your team do the same? Predictive analytics, including Artificial Intelligence and Machine Learning, is one typical way to leverage SAS software to generate exponential value. Figure 4 below shows an example of a Model Management architecture.

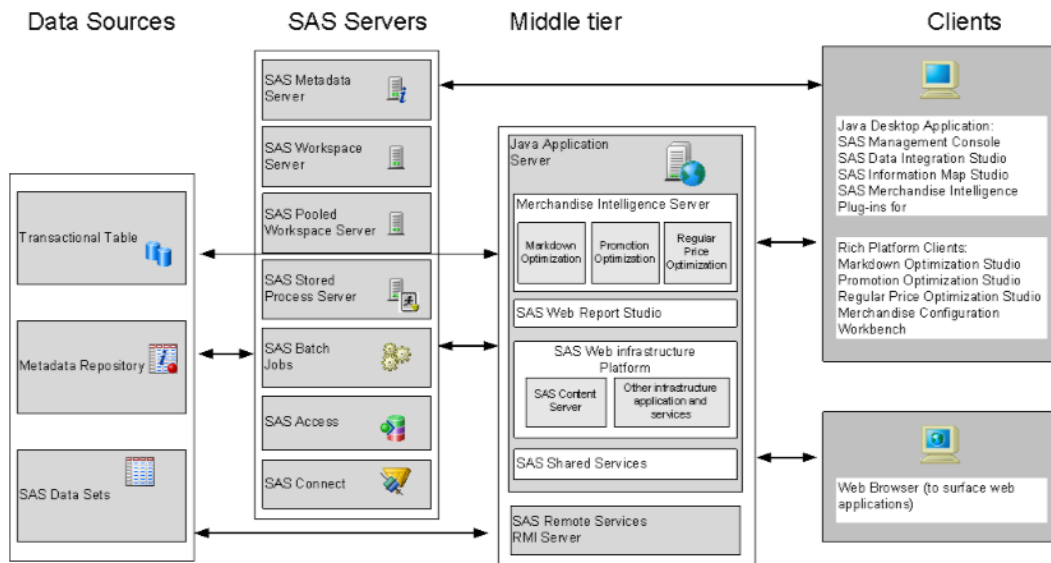


**Figure 4. SAS Model Manager Architecture Example**

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## INCOMPLETE SAS SOLUTION

**What about my SAS solution?** Most SAS solutions are a collection of base modules plus specialized modules like SAS EM as well as some customized modules specific to an application domain i.e. healthcare fraud framework, gaming patron value optimization, service part optimization, retail merchandizing, etc. These solutions have been created organically. Sometimes these modules perform poorly because they are either being used partially in a modular fashion or the solution has not been integrated properly. Figure 5 below shows a typical architecture of a SAS Retail Merchandizing solution.

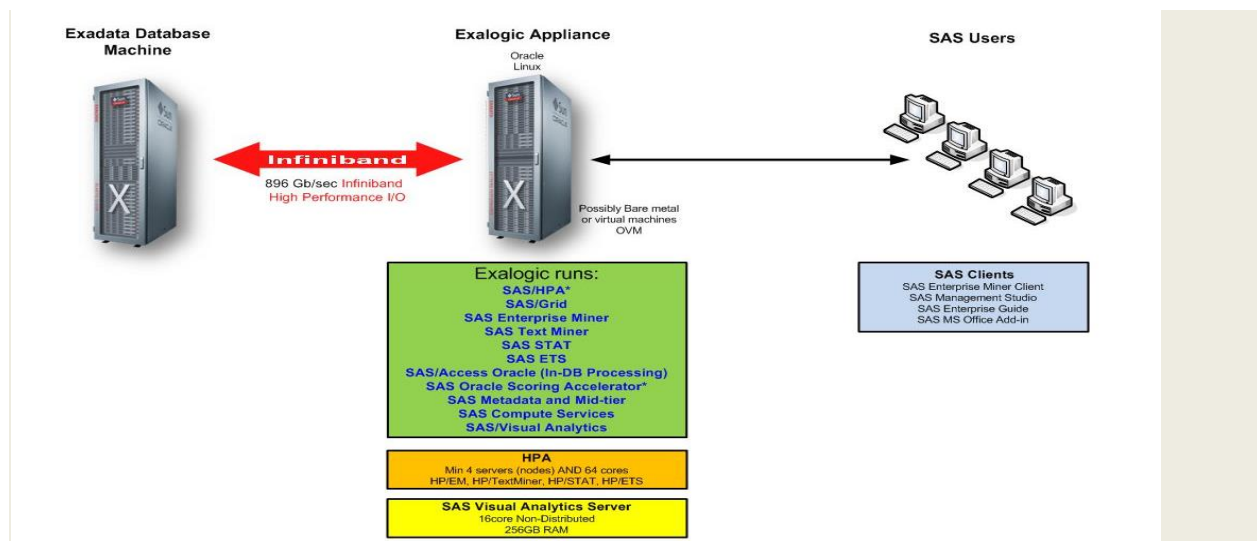


**Figure 5. Example SAS Retail Solution Architecture**

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## POOR HARDWARE PERFORMANCE

Many organizations operate in silos supported by departmental computers. For instance, it could be government vs. commercial silos. Or finance, marketing, customer support, and HR silos. These SAS computing silos provide little strategic advantage for licensing, hinder the effectiveness of economies of scale and make it difficult to improve hardware performance. Look beyond departmental computing to unleash the value of your existing hardware using new technologies like SAS GRID that bring the promise to provide additional performance and throughput. The SAS Grid Manager components make grid-enabled SAS applications available to a variety of SAS customers. For example, SAS DI Studio and SAS Enterprise Miner have enhanced their integrated development environments (IDE) to provide grid automation by automatically generating SAS code for applications that are enabled to execute in a grid. Figure 6 below shows a high performance architecture based on SAS GRID and SAS VA running on an ORACLE environment.



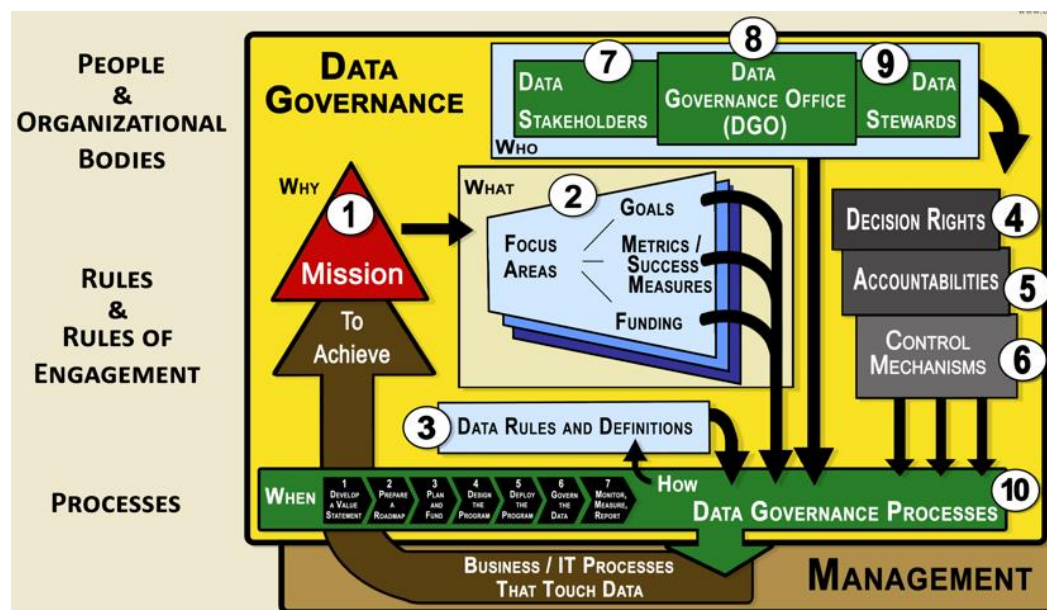
**Figure 7. SAS HPA, Grid and VA on Oracle Architecture**

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## LACK OF GOVERNANCE

Look around and beyond SAS. Perhaps best practices sharing do not exist and there is a **lack of governance**. Has the information delivery process come to a screeching halt? Develop processes and procedures to unleash the power of the SAS team. For instance, find out if there is an internal data dictionary or business glossary. Do you have data stewards? Do you have too many data stewards? You may find that there are some issues in transforming data to information which are perceived as "too difficult to correct". This situation handicaps the ability to derive value from SAS. To create a data governance program, you can use a framework like the one from the Data Governance Institute presented below | Figure 7.



**Figure 7. DGI Framework from the Data Governance Institute**

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## CONCLUSION

What can you do? Evaluate your installation. We include several basic points to keep in mind below :

- Review your SAS license and figure out what you have and what you should use.
- Conduct an assessment to break down business requirements and determine how best to leverage the existing SAS tools within your environment to meet project objectives. Eliminate tools not needed.
- Create a SAS toolset. Design and develop SAS standard macros, small applications, and other utilities to expedite SAS programming activities and data analysis/review
- Perform SAS programming quality control checks against source data and document all data issues
- Evaluate and improve existing SAS analytic models
- Evaluate cost of using SAS GRID
- If appropriate, build and operationalize analytical models within the SAS Grid environment, leveraging tools and data from various sources (Teradata, Hadoop, Excel files, MySQL, Oracle etc.)
- Review your SAS solution for completeness and integration
- Ensure all SAS programming activities and processes performed are conducted according to standard operating procedures and good programming practices
- Create a SAS group to provide guidance to team members on SAS solutions, best practices, and standards

If you need help evaluating your situation, reach out. There are several forums to share knowledge and best practices. Ask questions to experts with in-depth knowledge of SAS software. Ask for tips on configuring the software

to best suit needs, above all look for experts with experience in your specific SAS solution.

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Data Governance Institute, [www.datagovernance.com](http://www.datagovernance.com).

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