

# Reducing Risk in your SAS Environment

Brian Varney, COMSYS IT Partners, Portage, MI

## ABSTRACT

As all managers know, even when projects appear to be running smoothly, risk must be constantly assessed, mitigated and dealt with. This is an every day practice with projects but what about issues specific to your SAS environment as a whole? Are there issues that can arise during a project that may not be thought of during project planning? It is important to take into account anything that can add risk to your project. This paper will discuss issues that pertain to a SAS environment that can lead to risk now or down the road.

## INTRODUCTION

SAS is used in a variety of industries and applications. As a director, manager, administrator, programmer, analyst or information consumer, you are responsible for assessing, mitigating and addressing risk within your environment.

Although this may not be the focal point of your job description, it is paramount that the issues addressed in this paper are evaluated on a constant basis so that issues are avoided rather than popping up and adding stress, time and money to your project personnel and plans.

## RISK DEFINITION

Risk is a potential problem that can be avoided or mitigated. By performing appropriate planning and preparation, the negative connotation usually associated with risk can be turned into long term positives with regards to product quality, employee satisfaction and team harmony.

## PRE-PROJECT RISK ASSESSMENT

What could go wrong and how will we react?

## PROJECT RISK

Communicate with the project manager when you have the feeling that something is not going as planned or something just does not feel right on the project.

## POST-PROJECT RISK LESSONS LEARNED

In hindsight, how could we have prepared and reacted more completely and appropriately?

## SAS ENVIRONMENT

For the purpose of this paper, "SAS environment" pertains to anything that can impact the successful administration and usage of SAS software.

## RISK BY ROLE

Depending on your role, the issues that are considered as adding risk to your project may be completely different. But having an understanding of what other roles within your company need to consider may result in everyone on a team to think more completely about what could pop up as a project issue. Please keep in mind that depending on how your company is structured, these roles may not be consistent with your environment. There may be one person that is responsible for multiple roles or different responsibilities associated with the titles outlined in this paper. Assumptions for each role will be outlined within each section.

## DIRECTOR ROLE

The director role for the purpose of this paper is defined as the person or persons responsible for creating an environment that will allow the managers to successfully do their job in a consistent and repeatable manner. An example of this would be the "Director of Biostatistics". Some responsibilities of a person in the director role are:

- Ensure processes are in place for validation of SAS environment
- Ensure processes are in place for coding standard operating procedures
- Ensure processes are in place for validation / QC of SAS programs and output
- Set vision for training of SAS users

- Ensure processes are in place for development and communication of specifications
- Ensure documentation is in place for all processes
- Elicit feedback from team on how to improve processes

#### **MANAGER ROLE (PROGRAMMER/ANALYST MANAGER OR DATA MANAGER)**

The manager role for the purpose of this paper is defined as the person or persons responsible for managing people and processes as envisioned by the directors but at a more hands on and technical level. An example of this would be the “Clinical Data Manager”, “Manager of Programming for Phase I Studies” or “Manager of Programming for Cardiovascular Studies”. Some responsibilities of a person in the manager role are:

- Ensure SAS environment is operating as expected
- Ensure coding standard operating procedures are being followed
- Ensure processes are followed for validation / QC of SAS programs and output
- Evaluate experience and skills of team and coordinate training of SAS users
- Ensure data is clean and accurate for clinical programming
- Ensure processes are followed for communication of specifications
- Elicit feedback from team on how to improve processes

#### **ADMINISTRATOR ROLE**

The administrator role for the purpose of this paper is defined as the person or persons responsible for installing, updating, configuring, validating the SAS environment. The administrator may be from a programming group or from IT. Some responsibilities of a person in the administrator role are:

- Ensure SAS environment is operating as expected
- Ensure software is up to date as far as service packs and hot fixes
- Provide feedback to management on how to improve processes
- Elicit feedback from team on how to improve SAS environment

#### **PROGRAMMER ROLE**

The programmer role for the purpose of this paper is defined as the person or persons responsible for creating SAS programs to meet the specifications within the parameters of the standard operating procedures. Some responsibilities of a person in the programming role are:

- Ensure SAS programs are executing as expected
- Perform code reviews of others code
- QC output from others programs by writing independent code
- Follow processes for coding standard operating procedures
- Follow processes for validation / QC of SAS programs and output
- Take required training to stay current on SAS features and functionality
- Follow processes for communication of specifications
- Provide feedback to team on how to improve processes

#### **ANALYST/STATISTICIAN ROLE**

The analyst/statistician role for the purpose of this paper is defined as the person or persons responsible for analyzing the data. Some responsibilities of a person in the programming role are:

- Ensure SAS programs are preparing data appropriately for analysis
- Provide examples of code for complex statistical analysis
- QC statistical output from SAS programs
- Follow processes for communication of statistical specifications
- Provide feedback to team on how to improve processes

## **RISK: AN EXAMPLE OF THE IMPACT**

### **SCENARIO: UNCLEAR SPECIFICATION**

A measure for success on an efficacy variable is stated to be:

0-1 = "Failure"  
1-2 = "Marginal Success"  
3-10 = "Cure"

The specifications are not reviewed by a team but rather just by the programmer responsible for creating this efficacy variable. Therefore, the definition is not challenged for clarification on the boundary conditions and the programmer codes it. The value of "1" and the values between "2" and "3" are not handled as intended by the protocol.

As result, this ambiguous specification is found late in the process and much re-work is required over the weekend to meet the following week's deadline. On Sunday the team realizes that the rounding within the calculation for this efficacy variable was never paid attention to. The deadline is met but the team is stressed and overworked. Some finger pointing is probably happening in the team member's heads if not vocalized.

### **THE TEAM APPROACH TO REDUCING RISK**

The best way to avoid risk is to have checks and balances within your environment. Having representatives from each of the roles involved in project planning will lead to a more robust risk assessment and improve communication resulting in increased team harmony, better quality and less re-work. For example, someone from the analyst/statistical team may have good feedback on ways to improve communication of programming specifications. Or the SAS administrator may have good ideas on how to improve the efficiency of program code for their particular operating system. Regularly scheduled process improvement meetings with representatives from all of the roles will typically add significant value.

### **SPECIFICATION MANAGEMENT**

I would have to say that of all of the areas in the industry that could use improvement is the area of specification creation, management and communication. There are so many opportunities for improper specification management to add risk for inaccurate results, re-work and missed deadlines that I would suggest devoting significant attention to this area if you are not already.

### **CONCLUSION**

Issues that arise during a project can quickly lead to the addition of stress, time and money to a project if not planned for and/or avoided. Hopefully, this paper will help with project planning and management with regards to a SAS environment.

### **CONTACT INFORMATION**

Your comments and questions are valued and encouraged. Contact the author(s):

Brian Varney  
COMSYS Business Analytics Practice  
5220 Lovers Lane Suite 200  
Portage, MI, 49002  
Work Phone: 269-553-5185  
Mobile Phone: 269-365-1755  
Fax: 269-553-5101  
E-mail: [bvarney@comsys.com](mailto:bvarney@comsys.com)  
Web: [www.comsys.com](http://www.comsys.com)

SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration.

Other brand and product names are trademarks of their respective companies.