

Introduction to SAS Business Intelligence/Enterprise Guide

Alex Dmitrienko, Ph.D., Eli Lilly and Company, Indianapolis, IN

ABSTRACT

This paper provides an overview of new SAS® Business Intelligence solutions, including Enterprise Guide®, Add-in for Microsoft Office® and Web Report Studio®, and provides a detailed description of the most popular of them, Enterprise Guide. Enterprise Guide has attracted much attention in the SAS user community because it offers an intuitive point-and-click interface and provides the user with a large number of standard data manipulation/summary tools. This paper introduces the latest version of Enterprise Guide (Release 3.0) as well as the new version that will be rolled out later this year (Release 4.1). It summarizes main features of this product such as Enterprise Guide tasks, project-centered programming, etc. This paper also demonstrates how SAS users can efficiently transition to the user-friendly environment provided by Enterprise Guide and increase their productivity by taking advantage of its unique tools.

INTRODUCTION

This tutorial begins with a high-level overview of SAS Business Intelligence products such as Web Report Studio and Add-in for Microsoft Office and offers a more detailed description of Enterprise Guide. It explains the essentials of using Enterprise Guide 3.0 by introducing the main components of the program and demonstrating how they interact with each other. The tutorial also describes the steps that need to be taken to quickly and efficiently generate data listings, summary reports and plots in Enterprise Guide. It focuses on the following topics:

1. Introduction to Enterprise Guide projects and tasks.
2. Importing data sets into Enterprise Guide projects.
3. Generation of publication-quality output and creation of reports.

The tutorial also provides a high-level description of new features available in Enterprise Guide 4.1 scheduled to be released at the end of 2005.

SAS BUSINESS INTELLIGENCE PRODUCTS

Three popular SAS Business Intelligence products can be arranged in the order of increasing power and complexity:

1. Web Report Studio is a simple web-based query and reporting tool. Web Report Studio provides an easy-to-use graphical interface, requires no installation and is targeted at various non-technical users.
2. Add-In for Microsoft Office was created to enable users to gain access to the power of SAS analytics and easily access SAS and other types of data directly from Microsoft Excel and Microsoft Word. Add-In for Microsoft Office is easier to learn and use than Enterprise Guide and is aimed at non-technical users with no SAS programming skills.
3. Finally, Enterprise Guide provides a powerful graphical user interface that facilitates common tasks such as data access, analysis and reporting in a Windows environment. Enterprise Guide offers an impressive selection of standard data manipulation and analysis tasks and provides a framework for developing new custom tasks. Enterprise Guide is a very powerful tool that can be used by SAS programmers as well as less experienced users who are new to the SAS System.

WEB REPORT STUDIO

Web Report Studio is a web-based tool that requires no installation and gives the user transparent access to data and to tools for performing data manipulation and data queries. All of the “actual work” is done on a remote SAS Business Intelligence server and the results are delivered back to the user.

A very attractive feature of Web Report Studio is its ability to work with stored processes which are essentially SAS programs with a user interface. Using stored processes built and deployed by SAS Business Intelligence developers, the user can access any SAS data set on a server and create new data sets or reports in a web-based (HTML) format. Since all of the basic elements (data and stored processes) are stored on a server, it is easy to maintain secure access to data, prevent the user from making accidental changes and update data or stored processes.

WEB REPORT STUDIO RESOURCES

For more information on Web Report Studio, see

1. Web Report Studio website, http://www.sas.com/technologies/bi/query_reporting/webreport-studio/.
2. Web Report Studio fact sheet, http://www.sas.com/technologies/bi/query_reporting/webreport-studio/factsheet.pdf.

ADD-IN FOR MICROSOFT OFFICE

Add-In for Microsoft Office is based on a simple idea of extending the functionality of Microsoft Office programs, mainly Microsoft Excel and Word (Add-In for Microsoft Office does not fully support Microsoft PowerPoint). Thanks to the new menus and tool bars that come with Add-In for Microsoft Office, Microsoft Office users can easily access powerful data access and data analysis features of SAS System.

MAIN FEATURES OF ADD-IN FOR MICROSOFT OFFICE

The following is a brief summary of main benefits of Add-In for Microsoft Office.

Add-In for Microsoft Office facilitates various data manipulation operations, for example, accessing data in most popular formats, sorting and querying data, etc. The user can open any data set that can be handled by SAS System as a Microsoft Excel spreadsheet and can work with arbitrarily large data sets by getting around the size limit (65,536 rows) imposed by Microsoft Excel.

Add-In for Microsoft Office lets users execute custom applications specific to their business. These applications include stored processes, tasks or SAS code created by SAS Business Intelligence developers (stored processes and code are stored on a SAS Metadata Server and tasks must be installed on the user's computer). Stored processes and tasks feature user-friendly interfaces, help eliminate the learning curve and enable less experienced users to quickly come up to speed with complex analyses or complex reports.

Lastly, the output created by stored processes and tasks is brought back to the Microsoft Office program from which the stored processes and tasks were run and thus the user can quickly share the results with their customers or colleagues or include them in Microsoft Office reports/presentations.

ADD-IN FOR MICROSOFT OFFICE RESOURCES

For more information on Add-In for Microsoft Office, see

1. Add-In for Microsoft Office website, http://www.sas.com/technologies/bi/query_reporting/addin/.
2. Add-In for Microsoft Office fact sheet, http://www.sas.com/technologies/bi/query_reporting/add-in/factsheet.pdf.

ENTERPRISE GUIDE

As was explained above, Enterprise Guide is the most powerful product in the SAS Business Intelligence family. It offers an intuitive point-and-click interface, provides the user with a large number of standard data manipulation/summary tools and a framework for developing new custom tools.

There are two concepts that play a key role in the Enterprise Guide environment: projects and tasks. To become an efficient Enterprise Guide user, it is important to familiarize yourself with these concepts.

Enterprise Guide project

External data sets (raw data) <i>Comma-separated files</i> <i>Excel spreadsheets</i>	SAS log files Output <i>Plain text and HTML reports</i>
SAS programs <i>Import external data sets</i> <i>Merge and manipulate data</i> <i>Produce data listings and summaries</i>	Notes <i>To do list</i> <i>Documentation</i>

Figure 1. A typical Enterprise Guide project

ENTERPRISE GUIDE PROJECTS

An Enterprise Guide project helps you organize your data sets, Enterprise Guide tasks, SAS programs, output and supporting documentation. A project looks and behaves a lot like a folder in a Microsoft Windows environment. It is great for storing work related to a certain (you guessed it) project.

Figure 1 shows that a typical Enterprise Guide project can contain multiple files including raw data, SAS programs written to merge the raw data and perform statistical analyses, SAS log files and output. All of the files in an Enterprise Guide project are saved together which considerably simplifies your life when you work with a large number of data sets and programs generated in a large clinical trial.

ENTERPRISE GUIDE TASKS

Enterprise Guide tasks are very similar to interactive templates (known as wizards) you will find in Microsoft Office programs. You can use a wizard to create a document template in Microsoft Word or a chart in Microsoft Excel. Likewise, an Enterprise Guide task is a wizard that asks you questions (sometimes lots of questions) and uses the answers to generate data sets, listings or summaries.

If you have SAS programming experience, you will note that an Enterprise Guide task is essentially a user-friendly SAS macro. Just like a SAS macro, a task takes certain parameters, generates SAS code and creates output or data sets. The definitive advantage of Enterprise Guide tasks is that they feature attractive point-and-click interfaces and are a lot easier to figure out and use than a typical SAS macro. As an illustration, Figure 2 displays a screen shot of an Enterprise Guide task (List Data task).

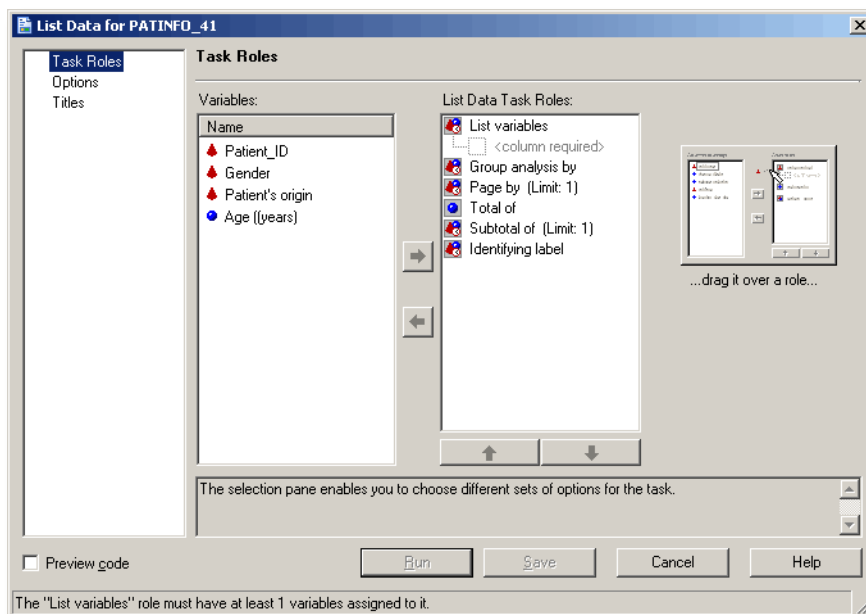


Figure 2. Example of an Enterprise Guide task

ENTERPRISE GUIDE TASKS

Enterprise Guide tasks are very similar to interactive templates (known as wizards) you will find in Microsoft Office programs. You can use a wizard to create a document template in Microsoft Word or a chart in Microsoft Excel. Likewise, an Enterprise Guide task is a wizard that asks you questions (sometimes lots of questions) and uses the answers to generate data sets, listings or summaries. If you have SAS programming experience, you will note that an Enterprise Guide task is essentially a user-friendly SAS macro. Just like a SAS macro, a task takes certain parameters, generates SAS code and creates output or data sets. The definitive advantage of Enter-

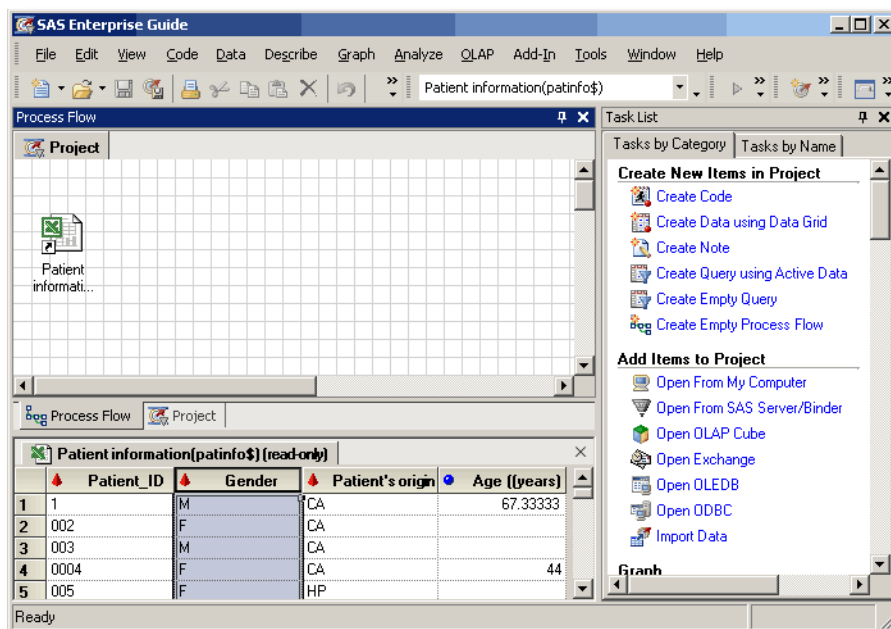


Figure 3. Enterprise Guide interface

ENTERPRISE GUIDE INTERFACE

Figure 3 displays the Enterprise Guide 3.0 interface with a menu bar, tool bar and several windows. As an Enterprise Guide user, you will deal mostly with the following three windows: Project window at the center, Workspace window at the bottom, Task List window on the right.

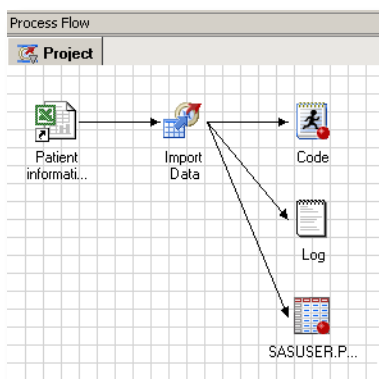


Figure 4. Project window

PROJECT WINDOW

The Project window shows the data sets and programs in your current project. Figure 4 displays a screen shot of a simple Enterprise Guide project in the project window. The individual files are represented by icons connected by lines. The lines help you visualize the links between related files. For example, the Excel spreadsheet is connected to the Import Data task to show that the task was run to import that particular spreadsheet. Further, the Import Data task is connected to the SAS program to indicate that the program was created by the task.

WORKSPACE WINDOW

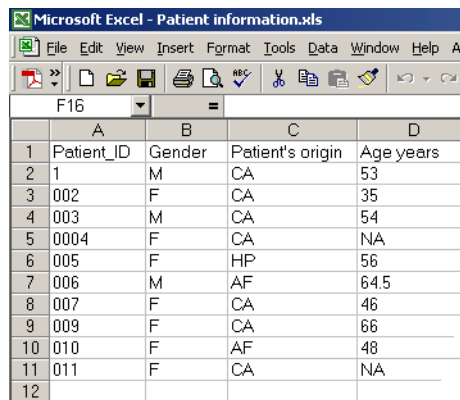
The Workspace window is used for viewing/editing data sets, SAS programs, output or log files in the current project. For example, to view a log file, double-click its icon in and it will be opened in the Workspace window.

TASK LIST WINDOW

This window displays built-in tasks as well as custom tasks developed by Enterprise Guide users. For your convenience, the tasks are grouped by category, for example, Data or Regression analysis. To launch a task from the Task List window, you need to double-click it. If the task requires a data file (for example, all statistical tasks need an input data file), it will use the currently selected data set in the Project window. If no data set is selected, the task will ask you to specify an input data set.

ENTERPRISE GUIDE INTERFACE VERSUS SAS INTERFACE

It is interesting to compare the Enterprise Guide interface (for example, Project window) with the standard SAS interface featuring the Editor, Log, Output and Explorer windows. The SAS interface is designed to support a single program. If you run several programs in a row, their output will be placed in the same window. Likewise, the log files of the individual programs will be combined and put in the log window. A different approach is adopted in the Enterprise Guide environment. Enterprise Guide creates log and output files for each SAS program and can keep all intermediate output files if the program is executed multiple times. This option will help you keep track of multiple versions of your SAS programs and document the changes in each new version of the program.



	A	B	C	D
	Patient_ID	Gender	Patient's origin	Age years
1	1	M	CA	53
2	002	F	CA	35
3	003	M	CA	54
4	0004	F	CA	NA
5	005	F	HP	56
6	006	M	AF	64.5
7	007	F	CA	46
8	009	F	CA	66
9	010	F	AF	48
10	011	F	CA	NA
11				
12				

Figure 5. Patient information spreadsheet

SIMPLE ENTERPRISE GUIDE PROJECT

To demonstrate what it takes to create a simple project in Enterprise Guide, consider an Excel spreadsheet (*Patient information.xls*) displayed in Figure 5. This spreadsheet contains patient demographic information from a small clinical trial. There are four columns in the spreadsheet representing patient's ID, gender, origin and age. The first row shows variable names.

Suppose that you are interested in producing the following two reports from the spreadsheet:

1. Listing of patient demographics.
2. Tabular summary of patient demographics which will include descriptive statistics (mean and standard deviation) of patient's age and number (percentage) of patients in each gender and origin group.

To generate the two reports, you will need to go through the following steps:

1. Open the Patient information spreadsheet in Enterprise Guide.
2. Convert the spreadsheet into a SAS data set using the Import Data task.
3. Produce a listing of patient demographics using the List Data task.
4. Create a tabular summary of patient demographics using the Summary Table task.

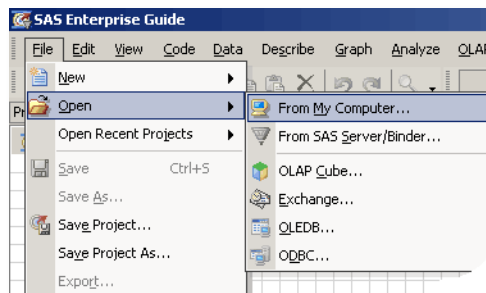


Figure 6. Open Patient information spreadsheet

OPEN PATIENT INFORMATION SPREADSHEET

To open the Patient information spreadsheet in Enterprise Guide, go to the File menu, select

File → Open → From my computer

and choose the folder where the spreadsheet is located.

Note that you can use the same steps to open any external data file or a data set. If a SAS data set you would like to open is stored on a remote SAS server, you need to select

File → Open → From SAS server/binder

CONVERT PATIENT INFORMATION SPREADSHEET INTO A SAS DATA SET

The Import Data task can be used to convert a variety of non-SAS data sets into a SAS format. Enterprise Guide can handle quite a few non-SAS formats, including Microsoft Access, Microsoft Excel, Microsoft Exchange and HTML. Before invoking the Import Data task, note that the data in Figure 5 exhibit a number of problems. First, some of the variables names include embedded spaces (*Patient's origin* and *Age years*) and thus need to be modified before the spreadsheet is converted into a SAS data set. Secondly, the patient ID and patient's age suffer from inconsistent formatting. The patient ID was saved as a character variable with one, two or three leading zeros. Similarly, the patient's age was entered with a variable number of decimal places. Lastly, some of the age values were not collected and entered as character values (*NA*). These values should be turned into SAS missing values represented by a dot (.). The described problems need to be addressed during the conversion process.

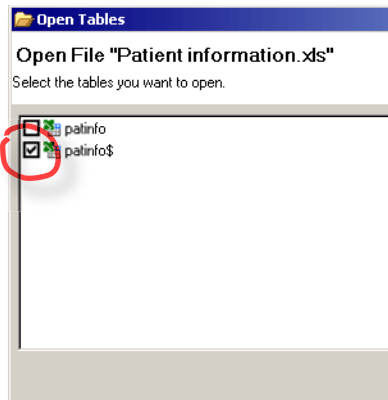


Figure 7a. Select the spreadsheet.

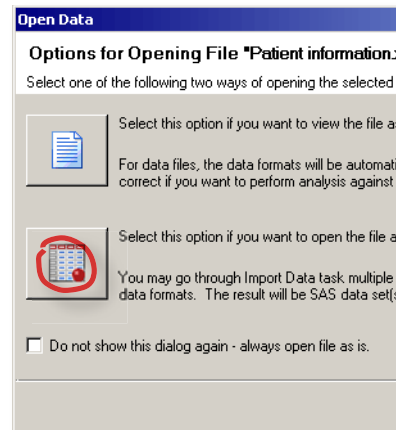
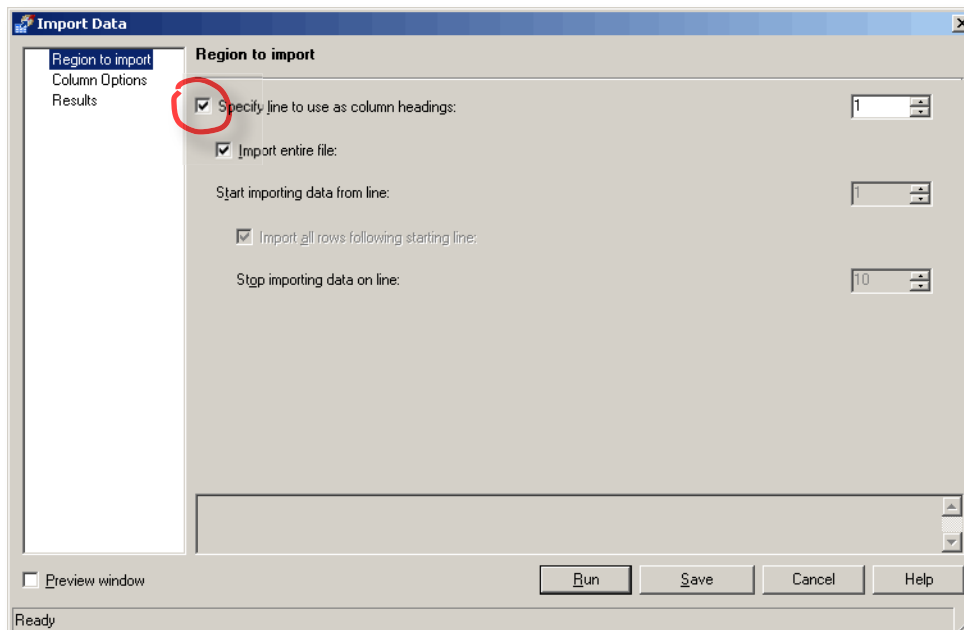


Figure 7b. Indicate that the spreadsheet needs to be converted into a SAS format.

To convert the Patient information spreadsheet into a SAS data set, select the spreadsheet's icon in the Project window and double-click the Import Data task in the Task List window.

The Import Data task will display the screen shown in Figure 7a. Check the box next to the *Patinfo\$* worksheet. On the second screen (Figure 7b), select the second option (convert into a SAS format). This will bring up the main module of the Import Data task that will import the Patient information spreadsheet as a SAS data set.

The conversion process goes through the following three steps: specify the region to import, define column options and specify the name of the resulting SAS data set.



Check the top box to tell the Import Data task the first row in the spreadsheet contains variable names (see Figure 8). Otherwise, Enterprise Guide will create generic variable names (Column1, Column2, etc).

Figure 8. Specify the region to import.

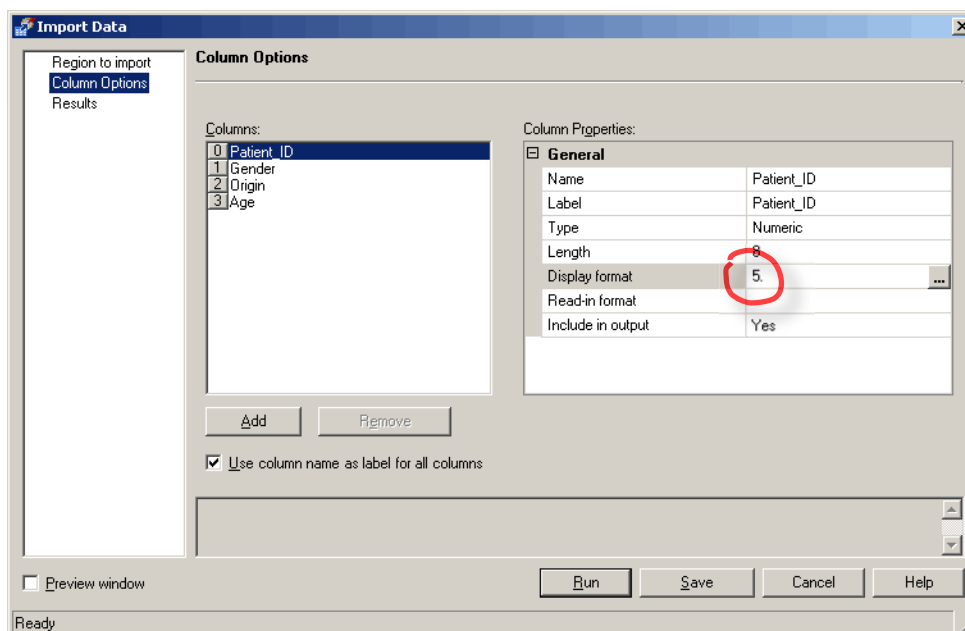
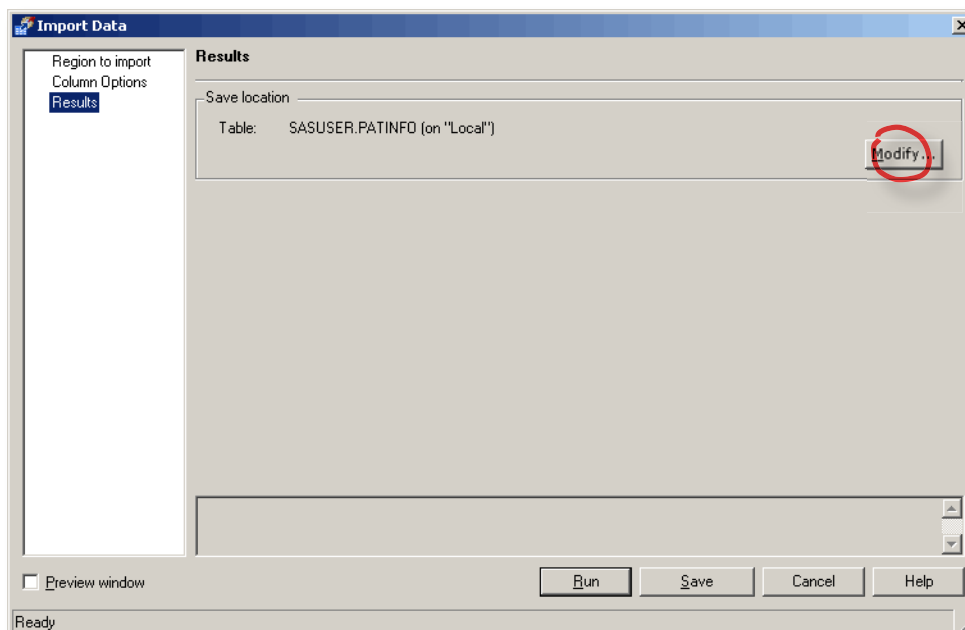


Figure 9. Define column options.

As was indicated on the previous page, the patient demographic data exhibit a number of problems that need to be fixed during the conversion process. The Import Data task gives you much more control over the variable attributes than the import routine in the standard SAS environment, which makes it easy to modify variable names and formats in the Patient information spreadsheet.

To give an example, select the *Patient_ID* variable in the left-hand pane and change its type to *Numeric* and display format to *5.0* (see Figure 9). Next, select the *Patient's origin* variable and change its name *Origin*. Finally, select the *Age years* variable, rename it to *Age*, change its type to *Numeric* and display format to *5.0*.



To complete the conversion process, you can specify a name for the SAS data set that will be generated by the Import Data task. Note that this is an optional step and you can skip it if all you are planning to do is clicking-and-pointing. However, if you are going to write SAS code and refer to the newly created data set in your programs, it is prudent to choose a descriptive name, for example, PATINFO. To do this, click the Modify button and specify the new data set's name (see Figure 10).

Figure 10. Specify the data set name.

SASUSER.PATINFO				
	Patient_ID	Gender	Origin	Age
1	1	M	CA	53
2	2	F	CA	35
3	3	M	CA	54
4	4	F	CA	
5	5	F	HP	56
6	6	M	AF	65
7	7	F	CA	46
8	9	F	CA	66
9	10	F	AF	48

Figure 11. PATINFO data set displayed in the Workspace window.

Now you need to click the *Run* button and the Import Data task will create a SAS data set from the Patient information spreadsheet. The data set will be displayed in the Workspace window (Figure 11).

Note that the patient's origin and age variables have been renamed and the formatting of the patient ID and age variables is now consistent.

Additionally, to help you identify the type of each variable in a data set, Enterprise Guide has added small icons to column headings. The blue sphere and red pyramid denote numeric and character variables, respectively.

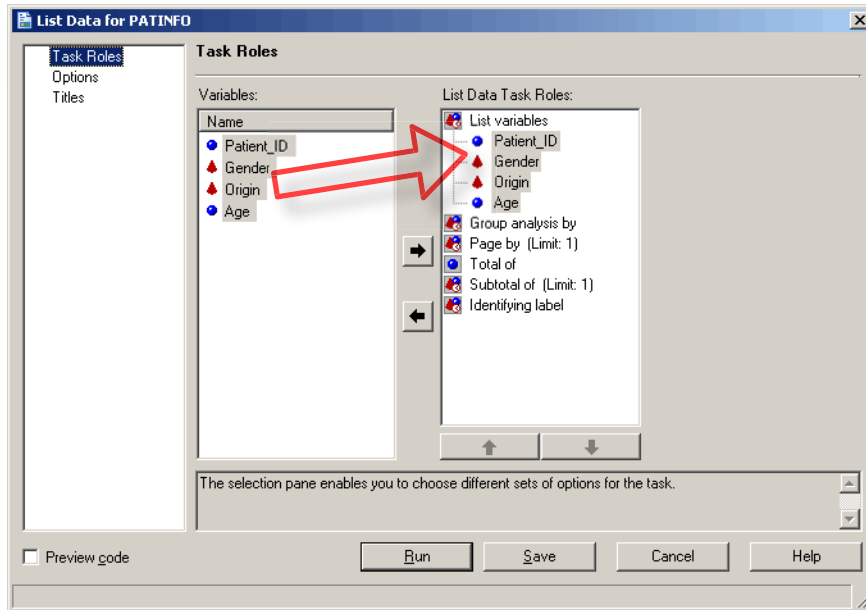
PRODUCE A LISTING OF PATIENT DEMOGRAPHICS

Publication-quality data listings are easy to create in Enterprise Guide using the List Data task included in the Describe section of the Task List window. To demonstrate how this Enterprise Guide task operates, consider the patient demographic data in the PATINFO data set.

Generating a listing of patient demographics involves three steps:

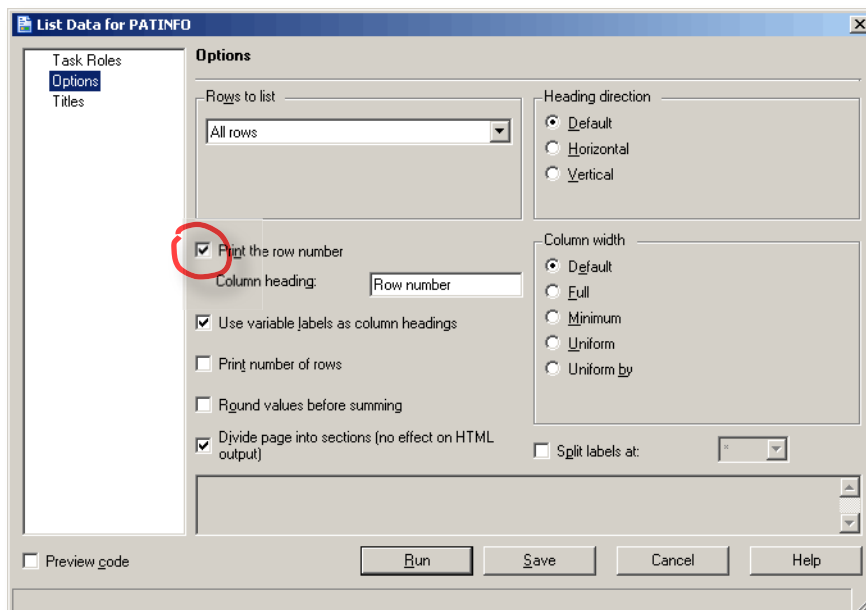
1. Click the PATINFO data set in the Project window. Enterprise Guide will highlight the data set's icon.
2. Select the List Data task in the Task List window.
3. Set up the report options and execute the task.

The List Data task has a very simple structure and offers only a small number of options. These options are briefly reviewed below.



First, you need to specify the variables (*Patient_ID*, *Gender*, *Origin* and *Age*) that will be included in the listing (see Figure 12). To do this, select these variables in the left-hand pane (Variables pane) and drag them to the List variables category in the right-hand pane (List Data Task Roles pane).

Figure 12. Select variables.



Here it is generally prudent to accept the default settings. The only option you can consider changing is printing the row number since the patient ID variable will serve as an identifier for individual rows in the listing. To disable row numbers, uncheck the *Print the row number* box.

Figure 13. Specify the listing options.

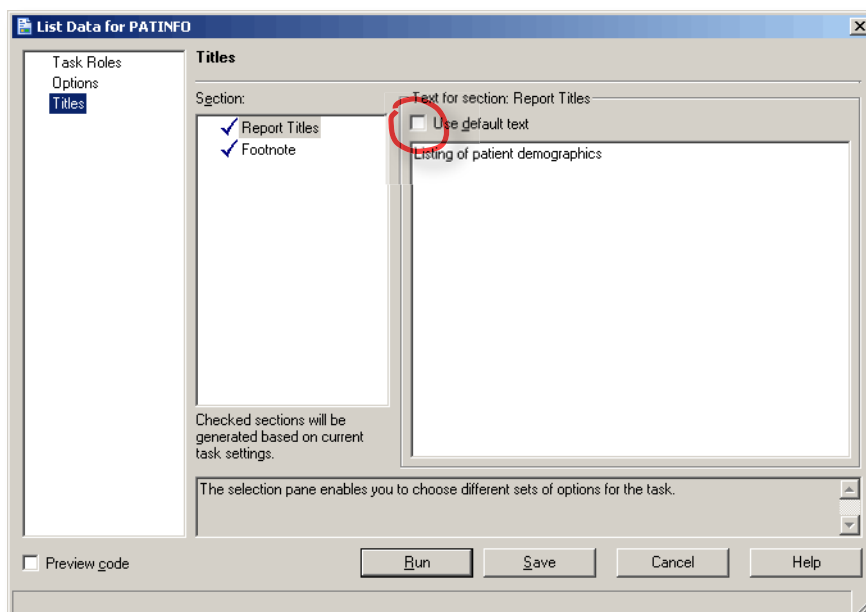


Figure 14. Specify the report title and footnote.

To override the default title and footnote provided by the List Data task, uncheck the *Use default text* box as shown in Figure 14 and specify the report title and footnote specific to your project, for example, *Listing of patient demographics* (title) and *Project ABCD* (footnote).

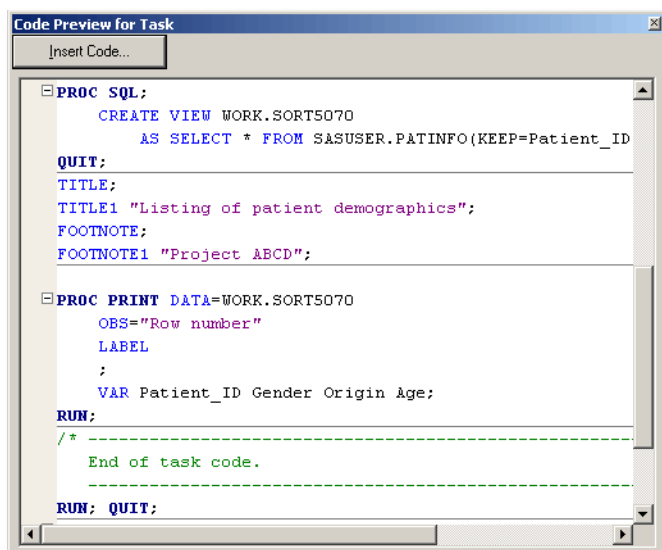


Figure 14. Preview the SAS code generated by the List Data task.

If you check the *Preview code* box located to the left of the *Run* button, the List Data task will display the SAS program it has built based on the parameters you specified.

The program looks very simple:

```
proc print data=work.sort5070 label;
var Patient_ID Gender Origin Age;
run;
```

Although the program is short, it is important to remember that there is much more to executing the List Data task than the PROC PRINT code. Depending on your output settings, Enterprise Guide can generate the listing of patient demographics using an HTML, RTF (rich text format) or Adobe PDF format. This is achieved by invoking the SAS Output Delivery System (ODS) and the best part of it is you don't need to worry about the details of ODS programming. Enterprise Guide will automatically add the ODS code to the program!

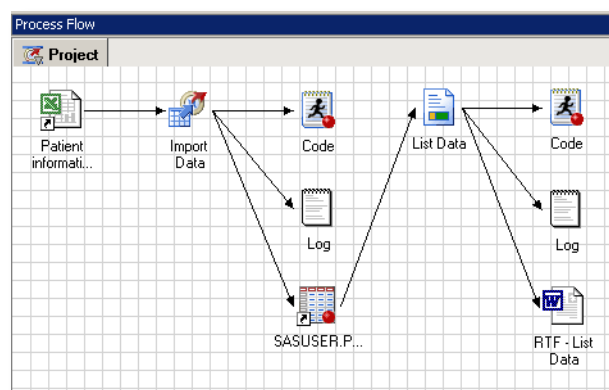
Listing of patient demographics				
Row number	Patient_ID	Gender	Patient's origin	Age years
1	1	M	CA	33
2	2	F	CA	35
3	3	M	CA	54
4	4	F	CA	.
5	5	F	HP	56
6	6	M	AF	65
7	7	F	CA	46
8	9	F	CA	66
9	10	F	AF	48
10	11	F	CA	.

Figure 15. Listing of patient demographics.

When you are finished, click the *Run* button and Enterprise Guide will submit the program generated by the List Data task to the SAS System. Once the program is finished running, Enterprise Guide will retrieve the listing of patient demographics and display it in the Workspace window. The resulting data listing is displayed in Figure 15. Note that Enterprise Guide generated the listing in an RTF format and thus it can be easily copied and pasted into a Microsoft Word document (for example, a study report) or Microsoft PowerPoint presentation.

PROCESS FLOW DIAGRAM

As the List Data task was running, Enterprise Guide was modifying the process flow diagram in the Project window by adding the SAS program, log file and output.



Looking at the diagram displayed in the Project window (see Figure 16), you can quickly review the work you have done and check the log files for warnings. You can also modify options in the Import Data or List Data tasks by double-clicking on their icons.

Figure 16. Project's diagram in the Project window.



PRODUCE A SUMMARY OF PATIENT DEMOGRAPHICS

Along with data listings, Enterprise Guide can generate other types of publication-quality reports including summary tables. Version 3.0 comes with four built-in tasks for creating summaries of numeric and character variables. They are all included in the Describe section of the Task List window (see Figure 17).

The following is a brief description of the four data summary tasks.

Figure 17. Data summary tasks.

SUMMARY STATISTICS TASK

This task generates summary tables as well as basic plots (for example, box plots and histograms) for numeric variables. It is based on PROC MEANS and you can request any summary statistic supported by this procedure.

SUMMARY TABLES TASK

The Summary Tables task is an extension of the basic Summary Statistics task. The task relies on PROC TABULATE and will enable you to construct very complicated summary tables for both numeric and character variables. You can customize virtually any attribute of the resulting summary table from text font and size to cell alignment and background color. With this task, you can produce great-looking output for various types of study reports as well as pharmaceutical manuscripts.

ONE WAY FREQUENCIES TASK

This is a very basic task for computing frequency counts and generating histograms for character variables (one variable at a time). The task is based on PROC FREQ.

TABLE ANALYSIS TASK

This task creates two-way and more complex summary tables for character variables. Unlike the One-Way Frequencies task, the Table Analysis task enables you to compute frequency counts for multiple character variables and provides you with more control of the table's layout.

TABULAR AND GRAPHICAL SUMMARIES OF PATIENT'S AGE

You can use the Summary Statistics task to generate simple tabular and graphical summaries of the only numeric variable included in the PATINFO data set (*Age*). As in the case of producing a listing of patient demographics, it takes three steps to generate a summary table:

1. You need to choose the PATINFO data set by clicking on its icon in the Project window.
2. Select the Summary Statistic task in the Task List window.
3. Set up the parameters of the summary table/plot and run the task.

These steps are illustrated below.

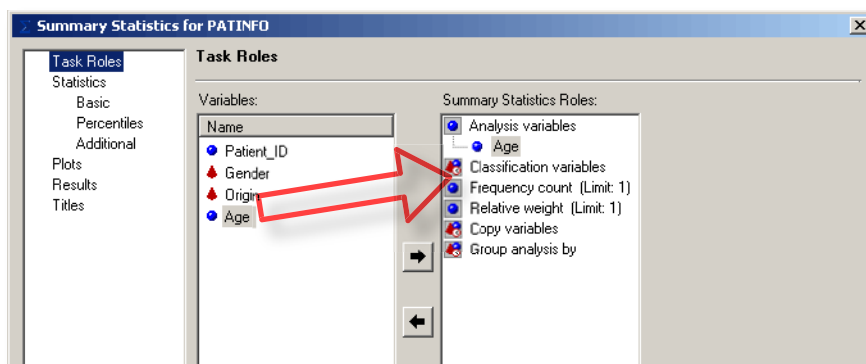


Figure 18. Specify analysis variables.

The first step in generating a summary of the patient's age variable involves the specification of the analysis variable (see Figure 18). Select the Age variable in the left-hand pane (Variables pane) and drag it to the Analysis variables category in the right-hand pane (Summary Statistics Roles pane).

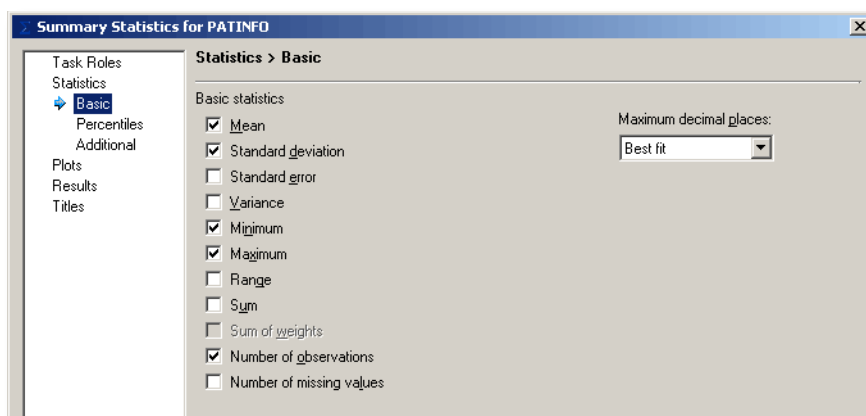


Figure 19. Specify descriptive statistics.

Now you need to select the descriptive statistics that will be included in the summary table (see Figure 19). The default statistics (Mean, Standard deviation, Minimum, Maximum, Number of observations) will suffice in most practical situations.

If necessary, you can request percentiles and advanced statistics such as p-values and confidence intervals by clicking on the Percentiles and Additional categories.

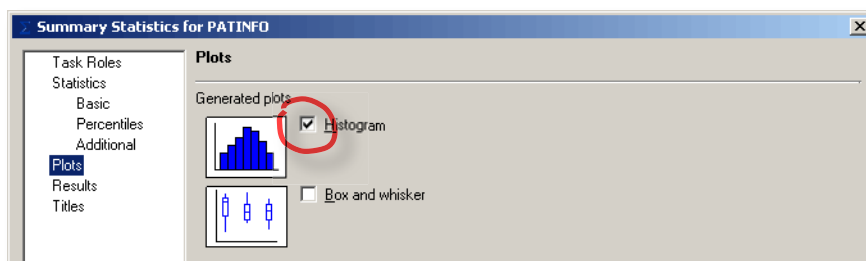


Figure 20. Specify graphical summaries.

To request a graphical summary of the patient's age, check the appropriate box (see Figure 20). For example, if you check the Histogram box, the Summary Statistic task will create a histogram of the age values. The histogram will help you examine the distribution of the patient's age and find values that are not consistent with the rest of the data (known as *outliers*).

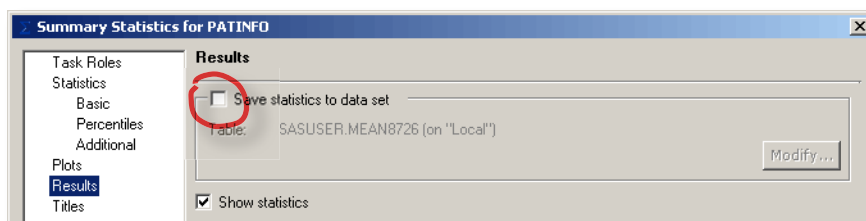


Figure 21. Specify the output data set.

If necessary, the computed descriptive statistics (for example, mean age) can be saved in a SAS data set (see Figure 21). To do this check the *Save statistics to data set* box and specify the name of the output data set. This feature comes in handy when you would like to include the computed statistics in another report. Here you can leave the box unchecked.

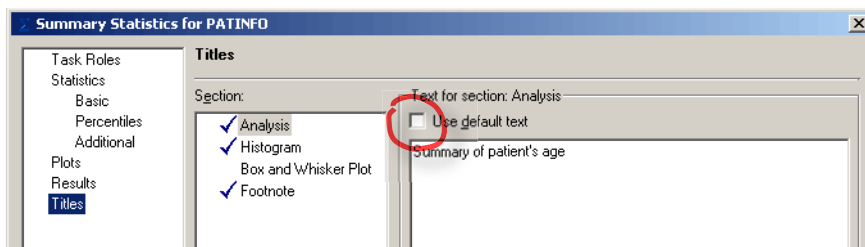


Figure 21. Specify titles and footnote.

Lastly, you can specify the titles for the tabular and graphical summaries as well as a footnote. Uncheck the *Use default text* box (see Figure 22) and specify the two following titles and footnote:

Summary of patient's age (table title),
Histogram of patient's age (plot title)
 and
Project ABCD (footnote).

Summary of patient's age

The MEANS Procedure

At yu Analysis Variable : Age Age years				
Mean	Std Dev	Minimum	Maximum	N
52.8125000	10.0638586	35.0000000	66.0000000	8

Figure 22. Summary of patient's age.

To generate the tabular and graphical summaries of patient's age, click the *Run* button. Enterprise Guide will execute the SAS code built by the Summary Statistics task and display the output in the Workspace window.

Figure 22 depicts the tabular summary of patient's age in an RTF format. As was noted above, you can easily insert this RTF summary into any Microsoft Word document or Microsoft PowerPoint presentation.

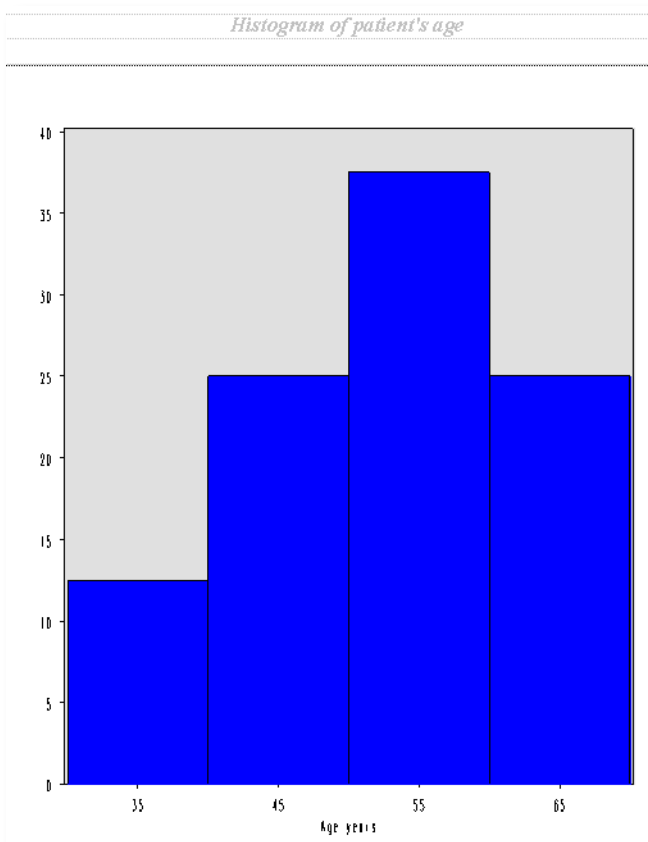


Figure 23. Histogram of patient's age.

Further, Figure 23 displays the histogram of patient's age produced by the Summary Statistics task. To copy the plot, right-click on it and choose Copy. After that you can paste into any Microsoft Office document.

ENTERPRISE GUIDE 4.1

The new version of Enterprise Guide (Version 4.1) is scheduled to be released at the end of 2005. The following is a brief summary of new features available in Enterprise Guide 4.1.

REPORT INTEGRATION

A great new feature of Enterprise Guide 4.1 is the introduction of SAS reports. SAS reports are XML-based documents that can include multiple results (for example, multiple plots). This new feature enables the user to combine analyses in one convenient report by dragging them from the Project window. The user can easily change the report layout and modify the formatting on the fly.

STORED PROCESS

One of the biggest improvements in Enterprise Guide 4.1 is related to stored process authoring. A stored process is essentially a SAS macro with a point-and-click interface. While Enterprise Guide has supported the creation and management of stored processes for a long time, Enterprise Guide 4.1 takes stored processes authoring to the next level. To give an example, the new version of Enterprise Guide makes it very easy to turn a complex process flow (sequence of linked data sets, SAS programs or Enterprise Guide tasks and output) built by a user into a stored process and make it available to other users. Other interesting features include the use of macro variables in stored processes to automate repetitive tasks, extension of parameterized queries to parameterized projects and a new tool (Stored Process Mover) to facilitate the transfer of stored processes between SAS metadata servers.

PROCESS FLOW

The process flow view in the Project window has been considerably enhanced. First of all, the process flow view now supports dependencies. For example, the user can create a link between several elements (for example, Enterprise Guide tasks) and a SAS program to indicate that this program should not run until the tasks are finished. This feature comes in handy when various elements in a process flow are executed on different servers and it is important to control the order in which the process flow nodes are processed. Secondly, users can now print process flow diagrams to help visualize the structure of an Enterprise Guide project.

ENTERPRISE GUIDE TASKS

Enterprise Guide 4.1 lets the user decide whether or not a task should stay up after the user has clicked the Run button (the Enterprise Guide 3.0 default is to hide the task interface). With this new feature, the user can run a task, review the results and easily modify the task parameters without having to reopen it.

Enterprise Guide 4.1 comes with more than 10 new built-in tasks (they will be almost 80 standard tasks in Enterprise Guide 4.1). Just to mention a few, there is a useful data characterization task that provides a quick summary of all variables in a data set. Another useful task is a publishing task that can be used with scheduled projects. When added at the end of a process flow this task can automatically save or publish the results.

The Enterprise Guide team has also made an extensive effort to modernize some of the existing tasks. One example is the Query Builder task. The task has been streamlined based on feedback from Enterprise Guide users, for instance, most important/popular data management operations have been moved to the first screen of the Query Builder wizard.

CONCLUDING REMARKS

The tutorial provides an overview of important features of SAS Enterprise Guide with emphasis on topics that play a key role in pharmaceutical applications (data management, analysis and presentation):

1. Enterprise Guide and its main components (Enterprise Guide environment, projects and tasks).
2. Basic data management tasks such as importing external data files.
3. Creation of publication-quality output in Enterprise Guide, e.g., data listings (List Data task), summary tables and plots (Summary Statistics task).

The tutorial emphasizes differences between the standard SAS environment under Microsoft Windows and Enterprise Guide. Enterprise Guide offers quite a few improvements over the standard SAS environment and comes with numerous helpful features that will be appreciated by SAS users.

For more information about Enterprise Guide, see

1. SAS web site (http://www.sas.com/technologies/bi/query_reporting/guide),
2. Business Intelligence SAS Users Group's web site (<http://www.bisug.org>).

Sign up for the Business Intelligence SAS Users Group (BISUG) membership to receive access to information on SAS Business Intelligence products including free Enterprise Guide tutorials, papers presented at recent SAS conferences and custom tasks submitted by Enterprise Guide users.

CONTACT INFORMATION

Your comments and questions are valued and encouraged. Contact the author at:

Alex Dmitrienko
Eli Lilly and Company
Lilly Corporate Center
Indianapolis, IN 46285
Work phone: 317-277-1979
Fax: 913-402-7239
Email: Dmitrienko_Alex@lilly.com

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