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SAS® Enterprise Guide for All!

Jennifer and Steven First, Systems Seminar Consultants, Madison, WI, United States

ABSTRACT

SAS Enterprise Guide is for everyone! Analysts can immediately begin working with SAS Enterprise Guide to perform analysis and generate reports, all without knowledge of the SAS® language. Experienced programmers can leverage SAS Enterprise Guide's functionality for improved efficiency and methodology. Users can also use SAS Enterprise Guide to simplify organizing SAS processes, graphing, reporting, and developing flexible systems. There are a few potential hurdles and considerations for migrating to SAS Enterprise Guide, but they can be easily overcome with planning and a clear ROI. SAS Enterprise Guide will allow your organization to increase efficiency, leverage unutilized functionality, and streamline your processes!

INTRODUCTION

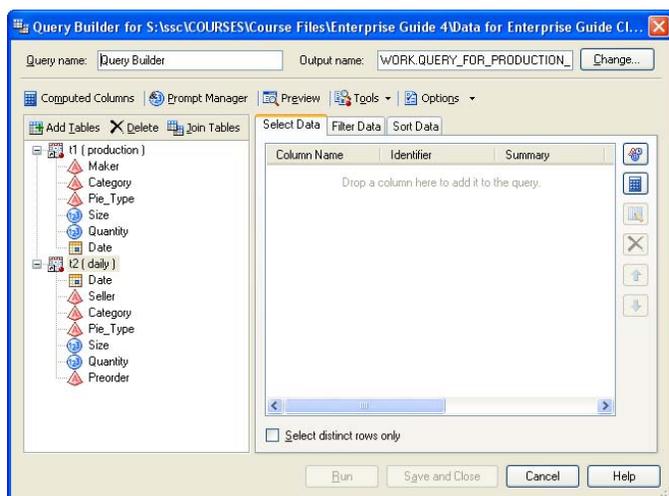
Enterprise Guide is an interface for SAS Software. It allows a user to code SAS programs in a "Process Flow" or use point-and-click interfaces to modify, analyze, and report data. It can increase the efficiency of your programming staff, who can leverage both the coding and the wizard interfaces. Enterprise Guide also empowers non-technical users with SAS "Guided Analytics", allowing them to manipulate data, create reports and graphs, and conduct analysis, all without having to become an expert coder. Enterprise Guide is a wonderful tool for organizing all SAS processes in a central "Project". SAS users can organize code, results, and logs in a flow-chart like system that offers overall management of entire SAS processes. Enterprise Guide is a comprehensive Enterprise Wide Solution that truly has something for everyone.

EMPOWER NON-TECHNICAL USERS WITH SAS "GUIDED ANALYTICS"

LIBERATE YOUR IT DEPARTMENT AND ANALYSTS

Many SAS users do not have an IT background and/or do not have the time to learn to become expert coders. These users may need to conduct simple data manipulation, statistical analysis, and distribute reports. While SAS is an excellent tool for these job duties, analysts may struggle with how to complete tasks without extensive knowledge of SAS coding practices.

Many organizations do not have IT staff that is dedicated to creating SAS queries and reports, and in these cases, the analysts must create their SAS processes alone. In the organizations that do have IT staff that is dedicated to assisting analysts with SAS programming, IT staff is usually very busy and managing a heavy workload. This can lead to analysts waiting for simple queries, reports, and small modifications. With the point-and-click interfaces of Enterprise Guide, analysts can complete many of these tasks on their own.



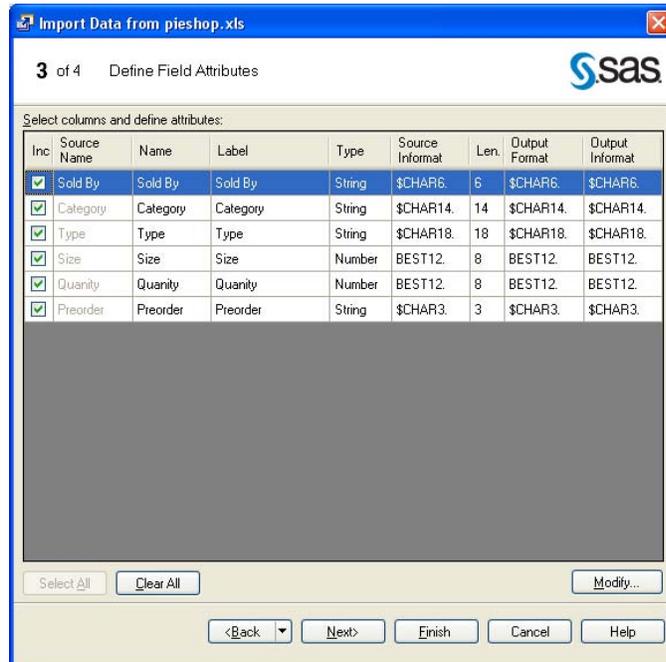
Display 1. The Query Builder in SAS Enterprise Guide 4.3

Display 1 shows an example of what analysts can do in Enterprise Guide. Within this one point-and-click interface, analysts can join tables, select variables, filter data, sort data, change the dataset they are working with, compute

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columns, set up prompts, dedup observations, change query options, add titles and footnotes, limit output, and more. It is all very intuitive, easy to understand and use, and makes these tasks easy for non-programmers. Behind the scenes the Query Builder builds code that can be reused, modified, and further utilized. So, these simple tasks do not require the support of a SAS programmer in IT.

Analysts can access a variety of data sources, including SAS, Excel, and databases. With the appropriate privileges and SAS products (ex: SAS/ACCESS for Oracle, Integration Technologies, etc.) analysts can access virtually any data source, across platforms. This all can be done through a GUI.



Display 2. Step 3 of 4 of Enterprise Guide's Import Data Wizard

As data is imported (shown in Display 2), the data can be modified, including dropping field, changing variable attributes. In this example, using Excel, we can specify which worksheet and range of cells to import. Other options, can be specified as well. And this is all completed without any coding.

REPORTING, GRAPHING, AND TEMPLATES FOR ANALYSTS

Enterprise Guide also allows end users to create and modify custom reports, including the use of graphs and custom templates. In many organizations, analysts are dependent on others to create simple reports and graphs. Then if they want any changes, even to something as simple as the color of graphs, they need further assistance. Enterprise Guide empowers users to leverage all the power of SAS reporting capabilities in easy point-and-click interfaces.

ANALYSTS CAN TRANSITION INTO PROGRAMMING

In a fast paced business world, very few people have the time to learn a new programming language and learn how to integrate it with their business applications. When using Enterprise Guide, analysts can use point-and-click interfaces for the majority of what they are doing. When they do not find the functionality they are looking for in these ready made interfaces, they can generate shell code and learn how to program as the situation necessitates.

So, for example, a user may generate a PROC TABULATE report using a wizard but find that the results are not quite what they are looking for. When seeking SAS assistance, they realize they could get their required results with a PROC TABULATE option. So, they can use the shell code, manually code the option and get exactly what they want. But through that process, they better understand what is going on behind the scenes, and next time they don't get their exact desired results, they will delve into the coding world again. It can also make it easier for an analyst to debug their SAS process. So, analysts can gain better understanding of what is going on behind the scenes, but they can do so as needed and maintain their maximum efficiency.

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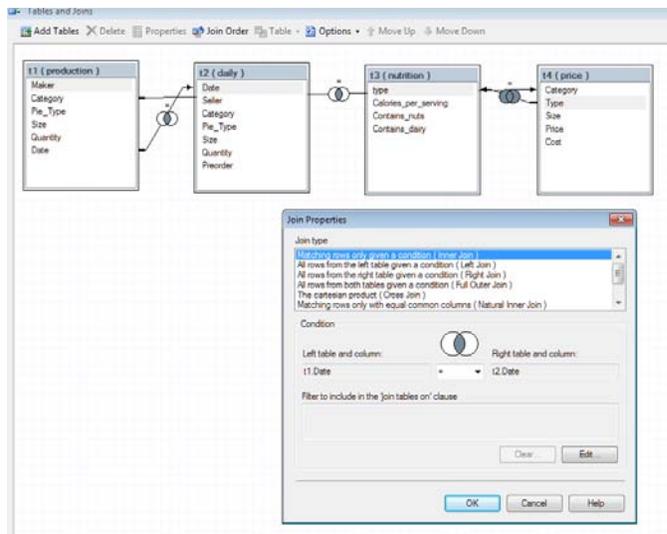
CONTINUED ROLE OF IT

Of course IT's support of analysts will still be important. Analysts may still need to rely on IT staff for programming expertise for complex data manipulations, specialized reports, production processes, and other complex issues. However, with a good majority of day to day tasks, analysts can be rather self sufficient.

INCREASE EFFICIENCY OF YOUR PROGRAMMING STAFF

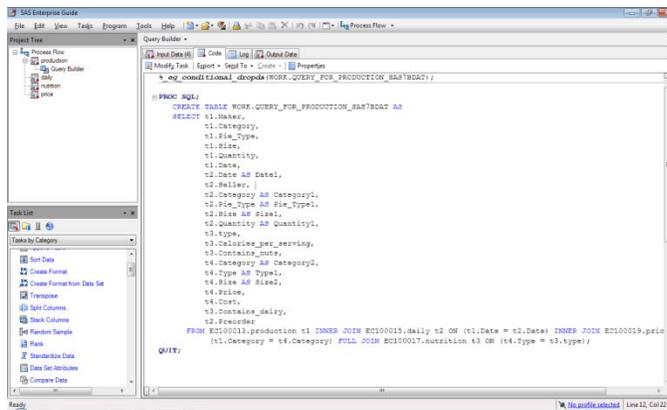
Experienced SAS programmers can also greatly benefit from the use of SAS Enterprise Guide. One way to leverage Enterprise Guide is to use it to do the heavy lifting. Programmers can use wizards in Enterprise Guide to complete tasks such as joining many tables, creating reports, filtering and querying data. Programmers can complete many of the tasks through wizards quicker than if they were to code it from scratch. The processes also are less error prone.

For example, it can be cumbersome to join several tables (Enterprise Guide can do up to 32 tables at once!). It is easy to misspell a variable name, miss a comma, or incorrectly spell a SAS key word. A programmer can join tables within a wizard in a fraction of the time. Enterprise Guide will attempt to find which variable to join the tables by or the programmer can manually tell Enterprise Guide how to join the tables. You can specify what type of join you want and other options as well.



Display 3. Joining Tables in SAS Enterprise Guide

Programmers can use the code that is generated behind the scenes, and they can also modify it.



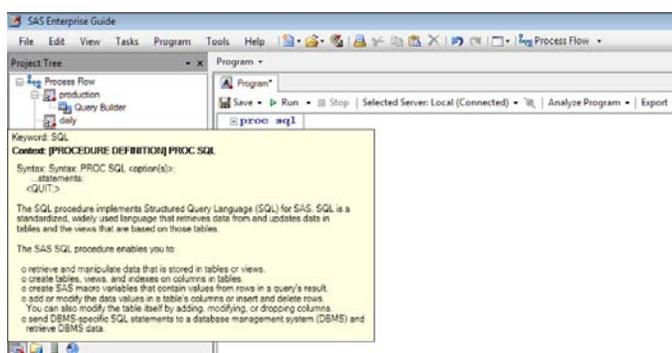
Display 4. Code Generated by SAS Enterprise Guide when merging several tables

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This is just one example of how programmers can increase efficiency by leveraging the best of Enterprise Guide's wizards, along with expertise programming knowledge to modify code as required for advanced features.

NEW PROGRAMMER FEATURES IN ENTERPRISE GUIDE 4.3

With the new release of Enterprise Guide 4.3, the software has truly become a programmer's tool. One of the best enhancements in Enterprise Guide 4.3 is the new Syntax Suggestion. With this new feature, as one is typing a SAS keyword, SAS will display a list of potential keywords that one can click on to use in code. Another exciting addition to the new software is the Integrated Syntax Help. This feature is available simply by mouse-over or clicking F1 over a SAS keyword. A box appears which offers the syntax for the keyword, as well as a brief description of the keyword. Both of these features mean that users can continue to improve my SAS coding abilities and take advantage of new options, functions, etc., all without needing to remember the syntax for every keyword. This new feature is sure to change the programming experience of every programmer, from novice to expert. Enterprise Guide 4.3 has many more exciting new features as well, including displaying libraries and data members, parentheses matching, program formatting, and more.

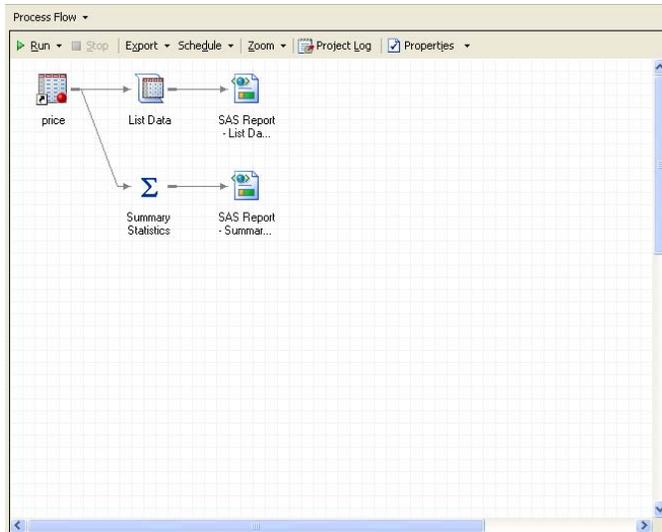


Display 5. Example of Integrated Syntax Help in Enterprise Guide 4.3

SAS PROCESS ORGANIZATION

SAS Enterprise Guide provides a comprehensive interface for organizing an entire SAS process. A SAS user can organize all of their programs, data, reports, logs, and documentation for a particular business process into one flowchart like file, called a "Project." "Sticky notes" can be used to further document the overall process. This organization simplifies process comprehension, updates and standards across the organization. SAS processes created in Base SAS can be imported in an Enterprise Guide "Project" and displayed as a "Process Flow."

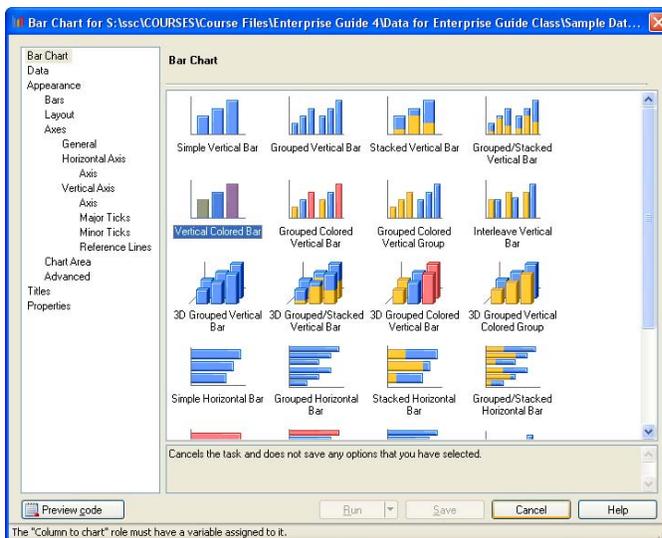
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Display 6. Example of SAS Enterprise Guide's Process Flow

EASILY CREATE USEFUL, BEAUTIFUL GRAPHS

Creating graphs in Enterprise Guide is simple. The user does not need to remember SAS/GRAPH syntax, and graphs can be completed in a fraction of the time. Users can create graphs with a point-and-click interface that constructs a variety of graph formats, including: bar charts, pie charts, line plots, scatter plots, area plots, donut charts, bubble plots, contour plots, box plots, and more. Many users who had previously exported data to Excel to graph can now easily create great looking graphs right within SAS.



Display 7. Example of a bar chart interface in Enterprise Guide

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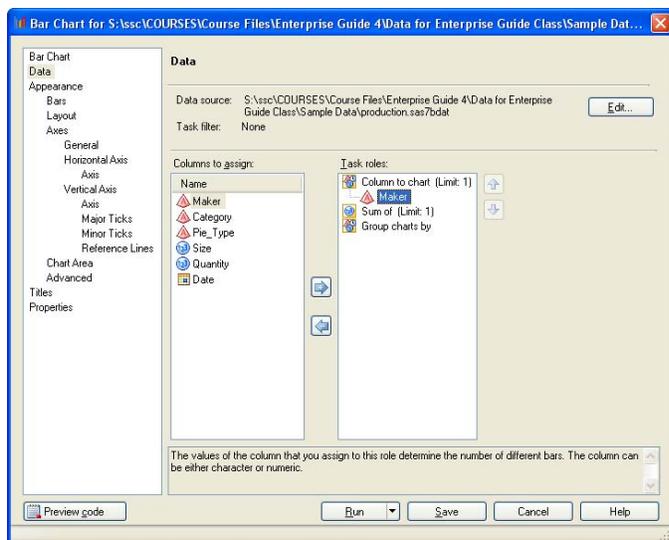


Figure 8. Example of assigning data roles for graphing SAS Enterprise Guide

Output formats for graphs include: ActiveX, Java, GIF, JPEG, ActiveX image, Java image, and SAS EMF. ActiveX and Java, generate interactive graphs. Interactive graphs can change the graph type or properties, without re-running the SAS process.

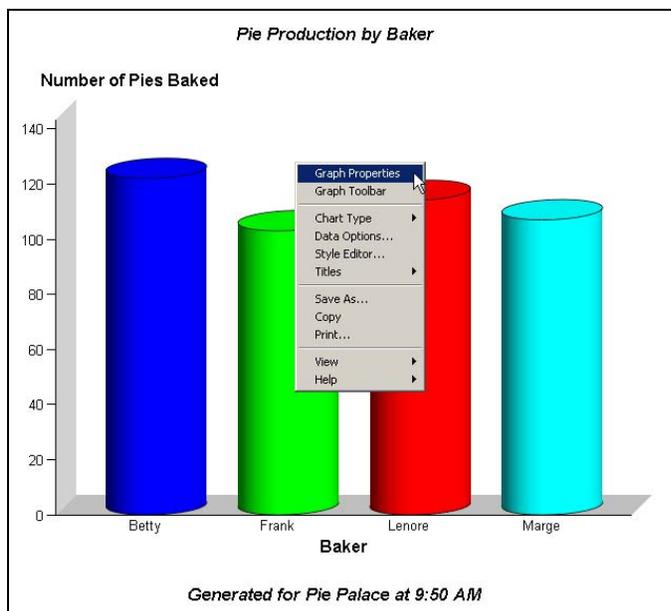


Figure 9. A graph created in SAS Enterprise Guide

SIMPLE, COMPLETE REPORTING PACKAGES

Task results can be generated in the following formats: HTML, PDF, RTF, SAS Report, and Text. For many organizations, it is easy to create sharp looking, standardized reports. Enterprise Guide users can easily create and apply cascading style sheets that define styles, fonts, color, and include logos or other pictures. Each of these elements is easy to manipulate on a very specific level, so it easy to get reports that look just exactly how a user wants. These templates can be stored and reused. With this functionality, it is easy to create attractive, consistent reports across an enterprise.

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Reports are also easy to package in SAS Enterprise Guide. With a few clicks, a user can package multiple reports for easy distribution to important decision makers. Reports can include charts, titles, text, images, and more. Reports can easily be emailed or scheduled distribution.

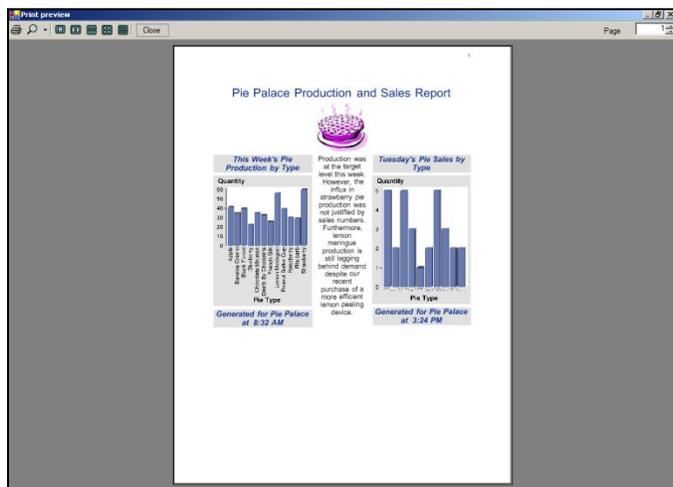


Figure 10. Example of a packaged report in Enterprise Guide

SOME THINGS TO CONSIDER

MISSING FUNCTIONALITY

There is some functionality that is not available or is limited in Enterprise Guide, including the following. However the internet abounds with documentation and ideas about how to address these items:

- DDE
- X STATEMENT AND SYSTASK (need special permission that may be difficult to get from administrator)
- SAS/AF Applications
- %WINDOW
- Statements, PROMPT options on LIBNAME statements, and interactive environments such as the Report window
- DATA step debugger
- SAS statements that require user interaction and that do not work well in a SAS batch program
- THE ENDSAS STATEMENT

INTERNAL RESISTANCE

You may encounter some internal resistance at your organization. Many experienced users have processes that work, and if it's not broke, why fix it? Non-programmers may have fear that the software will be technical or that they will not be able to understand or use it. The best way to deal with both of these situations is to simply allow these users some hands-on time. Once programmers see how easy they can use their current processes and how it will streamline future development, they will fall in love. And once analysts see the results they can achieve with ease, they will be ecstatic.

LOGISTICS OF IMPLEMENTATION

SAS Enterprise Guide is packaged as part of Base SAS, so there is no additional software investment. Enterprise Guide is a PC product. Many users have Enterprise Guide and aren't even aware of its existence. Depending on the complexity of an enterprise's environment, they may require IT assistance to install and support it. You may need additional products to access different data types and platforms. Users may also require IT assistance to set up their servers, metadata servers, and define workspace.

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CONCLUSION

Enterprise Guide really has something for everyone. It allows users to streamline and standardize process, increase efficiency and capabilities. There may be some resistance at first to using a new interface for SAS, however once users get some hands-on time with the software, they will never so back. Enterprise Guide is truly an enterprise wide software for the future.

REFERENCES

Bangi, Audimar. 2010. "SAS® Programmer's Paradise: New Goodies in SAS® Enterprise Guide® 4." Proceedings of the SAS Global 2010 Conference. Cary, NC: SAS. Available at <http://support.sas.com/resources/papers/proceedings10/137-2010.pdf>.

ACKNOWLEDGMENTS

We would like to acknowledge Benjamin First, a fellow SAS Enterprise Guide user. He brings his programming background to Enterprise Guide, and is always finding ways to "think outside the box." He has served as a mentor for us with SAS Enterprise Guide, and is always eager to help with questions and ideas.

RECOMMENDED READING

The Little SAS Book: SAS® Enterprise Guide
SAS® For Dummies®

CONTACT INFORMATION

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

Name:	Jennifer and Steven First
Enterprise:	Systems Seminar Consultants
Address:	2997 Yarmouth Greenway DR
City, State ZIP:	Madison, WI 53711
Work Phone:	608-278-9964
Fax:	608-278-0065
E-mail:	jfirst@sys-seminar.com , sfirst@sys-seminar.com
Web:	www.sys-seminar.com

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