

Developing Applications for Enterprise Information Delivery with SAS/EIS® Software

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INTRODUCTION

The process of information delivery involves using technology to integrate your organization's two most valuable assets—people and data. Accessing the various pools of data that are stored in various database management systems, file formats, and on various operating platforms should be the first place you start in defining your information delivery strategy. Turning that data into information so that the various consumers of that information can determine its meaningfulness is the second major hurdle you must cross. The final stage of your information delivery process (*process*—because it's never-ending) centers around getting that information to the right people at the right time in a format that's easy enough for them to digest and appealing enough to make them appreciate the information, as well as the ease and usefulness of the process.

This process sounds as if it would take a lot of forethought, planning, development and support time. However, the SAS® System has been used for many years to develop, support, maintain, enhance, and perfect this process for millions of users.

IMPLEMENTING AN EIS

There are many reasons to implement an EIS within your organization, the main one being to improve communications between levels of management. Keeping the lines of communication open helps everyone involved in the organization make sound business decisions, which is key to the success of your company. Another reason is to turn the mountains of data collected on a daily basis into a readily understood format so that all the decision makers are accessing the same information.

Some issues must be addressed prior to building your EIS application. What hardware platform will be used to build the EIS? What platform will your users have when running the EIS? Where does the data that drives the EIS reside and in what form (relational data base, flat files, and so on)? The tool you use to develop your EIS should be robust enough to handle your data in its current form on the hardware platforms you have already invested in. Like other applications written with the SAS System, your EIS applications can be built on one platform and ported to any other platform supported by the SAS System.

The entire process of accessing your data, turning it into information, and presenting it to your users has been an easy process for the SAS System to address for years. Now, however, SAS/EIS software makes the applications development environment much richer because of its object-oriented and fully expandable approach.

SAS/EIS SOFTWARE: IN GENERAL TERMS

SAS/EIS software is truly a productivity tool for applications developers. Their time to develop customized, full-featured, easy-to-use applications to aid in the decision-making process is greatly reduced using SAS/EIS software. Even though EIS has traditionally stood for Executive Information Systems, these decision-support applications can be used by many levels of the decision-making hierarchy at any organization. Like any other SAS application, SAS/EIS applications can be developed on any platform supported by the SAS System and then ported to any other platform. Since various levels of your company probably run on various platforms, this portability

also aids your applications developers and makes efficient use of their development time.

SAS/EIS software can complement the information delivery process that's already well-established at your organization. It can take advantage of applications already in place and make your enhancement capability much easier and greater.

Specifics

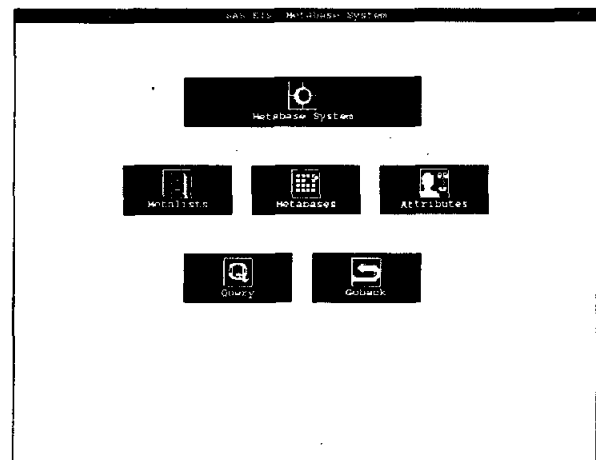
SAS/EIS software is written with SAS Screen Control Language (SCL). This SCL application relies heavily on SAS/GRAPH® software and on the FRAME technology introduced in Release 6.07 of SAS/AF® software. It represents SAS Institute's first move into object-oriented programming, containing 27 prewritten objects to aid in developing EISs. The traditional EIS features of exception reporting, data navigation through drill down, hotspotting, and traffic lighting are all easily accomplished using SAS/EIS software. True strengths of SAS/EIS software are the expandability of the product and the integration with the SAS System for information delivery.

Metabase System

The metabase system is the data management portion of SAS/EIS software that enables you to specify how data sets and variables can be used in SAS/EIS applications.

The components of the metabase system include

- **Metadists** — a master list of the metabases devoted to a project
- **Metabase** — a master SAS data set containing information about the SAS data sets registered in it
- **Attribute dictionary** — a SAS data set containing attributes available for the purpose of registering SAS/EIS resources.



Display 1 The Metabase System

Several objects in SAS/EIS software take advantage of this system to give you more intelligent lists of variables and data sets. Through the metabase system, SAS/EIS software is given useful information

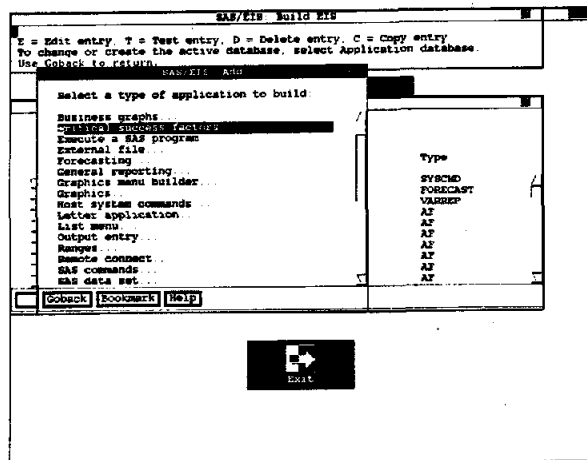
about your data, such as whether a data set contains critical success factor data or which variables in a data set are forecasting variables, and so on.

The metabase system basically enables you to extend knowledge of data sets and variables in data sets.

You can also define attributes of your own, which can then be assigned to data sets or variables. A full set of query and set functions is provided so the metabase system can be used in your personal applications as well.

Objects

There are 27 objects supplied with SAS/EIS software. Of particular interest are the EIS-specific objects described here:



Display 2 List of Objects

Variance Report

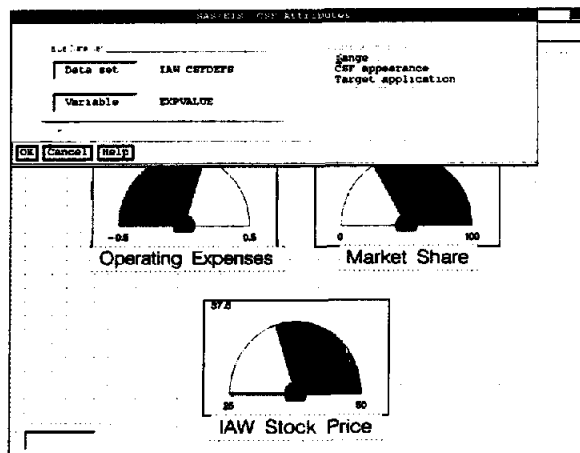
The Variance Report object requires that the ACTUAL, BUDGET, and DRILL variables be defined in your metabase system and then computes the variance. It provides dynamic, data-sensitive drill down, hotspotting, exception reporting (with traffic lighting, if desired), and arrows for navigational purposes. You can also make ad hoc changes to the statistics and drill down hierarchy while viewing the report produced, graph the data, or send the report to the printer.

Business Graphs

One type of business graph object, the Chart object, uses ANALYSIS and DRILL variables defined in your metabase system and produces pie, horizontal, or vertical bar charts. These charts are data-sensitive and provide dynamic drill down. As with variance reports, you can make ad hoc changes to the statistics and drill down hierarchy as well as the chart type, or send the graph to the printer.

Critical Success Factors

The Critical Success Factors (CSF) object requires variables in your metabase system to be defined as CSF variables. Specific attributes and ranges can be defined for the CSF appearance and target applications can be associated with the CSF.



Display 3 Creating a CSF Object

Graphics Menu Builder

The Graphics Menu Builder object enables you to build menus in your EIS that contain icons, SAS/GRAPH output, graphics text, text, CSFs, push buttons, and some special control characters. Any of these choices can have hotspots and be linked to other applications. A click-and-drag approach is used to build the regions in your menu. Then you point and click to fill the region.

Forecasting

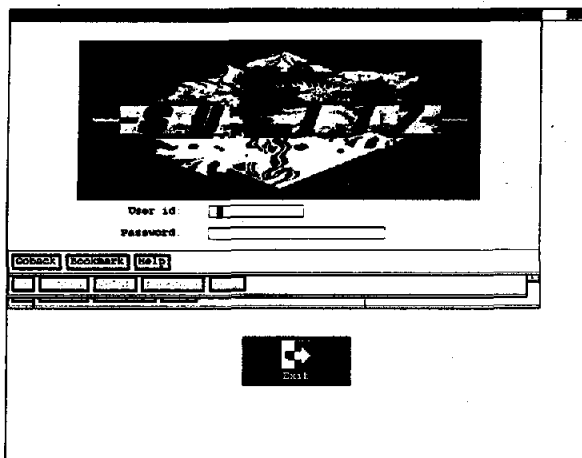
The Forecasting objects require DATE and FORECAST variables and, for a multivariate forecast, X variables in your metabase definitions. Then, based on whether your data are univariate or multivariate, they produce either a simple forecast or perform step-wise autoregression. The forecast is data-sensitive, so when your independent variable values change a new forecast is produced.

Security

The Welcome object gives you the ability to maintain security in your EIS. This object lets you define to SAS/EIS software a SAS/AF program that will do the security checking and then tell SAS/EIS software whether to allow the user to proceed.

There are several options when defining the method of security to SAS/EIS software. A verification program of some kind is required. You can choose to have SAS/EIS software display a logon screen upon entering the system and require the user to enter an ID and password. This screen is not required in order to check authorization, but without it your program will only receive the ID of the person trying to gain access. You also have the option of checking access only once upon entering the system or of checking authorization for every application accessed.

If you choose to have a logon screen, your user will be presented with a welcome screen if they are permitted access. You can customize the text and appearance of this screen.



Display 4 Sample Welcome Screen

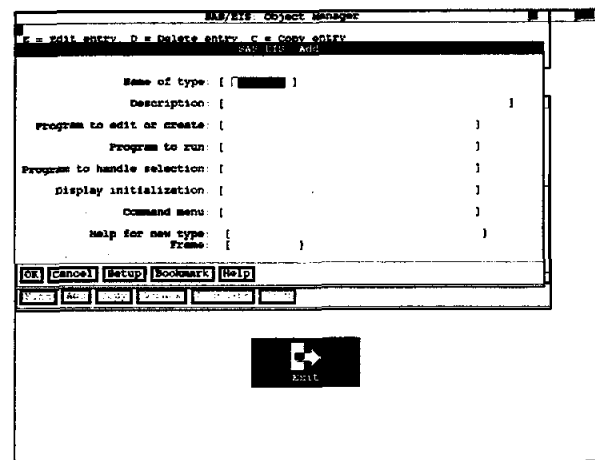
Writing Your Own Objects

When would you want to write your own objects?

If you need a general task completed that would most likely be unique to the user based on a definition, you might want to write an object. SAS/EIS software provides a wide range of objects, but the expandability of writing your own objects is vital since the general objects are just that—general—and cannot cover all applications of every industry.

You should consider the following information when deciding when and how to expand:

- If a SAS/EIS object meets most of your needs, and with a little extra processing could meet all of them, you can write methods to work in conjunction with existing SAS/EIS objects. You can do processing prior to or even instead of the SAS/EIS object at initialization time. You can also handle user interaction. So if you want a variance report similar to the one defined in the SAS/EIS object, but you want to do a little preprocessing before displaying the report, that flexibility is available.
- There are also objects in place to call existing SAS, SAS/AF, or SAS/FSP* applications. You may want to drop in your existing applications as they are and use SAS/EIS software as your presentation tool. It's really a simple task to put a pretty face on old applications.



Display 5 Adding Your Own Objects

CONCLUSION

SAS/EIS software is an applications developer's productivity tool that enables you to build impressive total information delivery systems. These systems are based on solid, proven technology for accessing, managing, analyzing, and presenting data on any platform. SAS/EIS software is an extension of the SAS System that provides prewritten objects. It has the flexibility to expand these objects or to build new ones. Current SAS applications can be integrated with SAS/EIS software to build more EIS-like features and functionality into already developed applications. SAS/EIS software complements the SAS System for information delivery.

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