

# Enterprise-wide Report Writing

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**ABSTRACT**

In this paper I hope to identify the issues surrounding delivering an enterprise-wide reporting strategy. Upon identification of the issues I hope to provide a framework for a solution to the issues by utilizing the SAS® System for Information Delivery.

**INTRODUCTION**

A report is a tool for communicating information to a reader in a concise manner. Virtually every person, every computer, and every application is involved in the communication of information or more specifically, generating reports. In a typical organization information is generated and communicated within and between divisions. Typically, inter-department communication of information involves the summarization of more detailed information. All divisions in an organization report to finance on budgets and expenditures. And finally, information usually filters its way to the executive branch of an organization where concise, well communicated information is used for strategic decision-making (Figure 1).

**ENTERPRISEWIDE REPORT WRITING**



Defined - The Enterprise

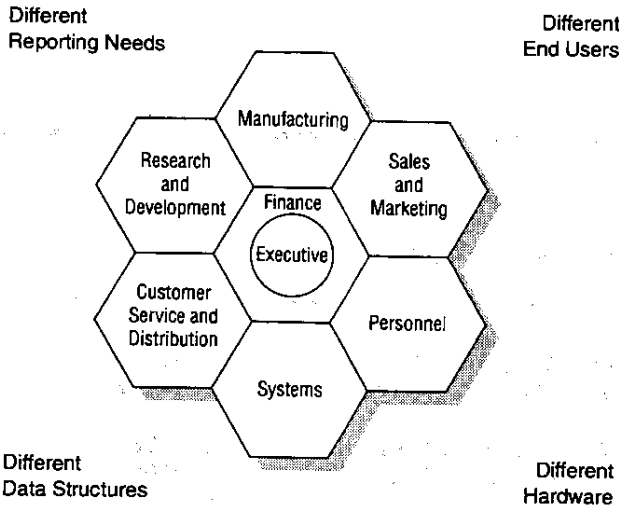


Figure 1

**DEFINITIONS**

**Report Types**

The types of reports that are generated and distributed throughout an organization can be categorized as follows:

- Detail Reports:** showing the individual elements of a data file, usually in a line-oriented or form-oriented style.
- Summary Reports:** analyzing the elements of a data file by grouping or ordering fields and calculating statistics such as sums, means, percentages, or variances, usually in a table-oriented style.

**Graphic Reports:** various types of plots, charts, or maps that represent detail or summary information.

**Report Development and Generation**

Reports are developed and generated in a variety of ways based on the data available, the need for customization, the frequency of distribution of the information, the computer resources available, and the need for up-to-the-minute answers to immediate questions. Every organization uses different terminology to describe report development and generation. For our purposes we will categorize them as follows:

- Production Reports:** reports that are static in that their format does not change and they are run consistently, always generating updated information on updated data.
- Customized Reports:** reports that are dynamic in that their format changes or is very specific, based on updated data or the need to compare different elements of the data as the data are updated.
- Ad-hoc Reports:** reports that are generated quickly in response to an immediate and often critical need.
- Interactive Reports:** reports that are generated and developed utilizing the interactive memory resources of a computer. Information is generated immediately.
- Batch Reports:** reports that are generated and developed utilizing a batch language. Information is generated on a time schedule based on the scheduled availability of computer resources.
- Customized Reporting Systems:** reports that are grouped and delivered in a customized menuing system. Or, a report development and generation system that is developed based on specific end-user needs.

**The Reporting Process**

The reporting process, on the surface, appears to be very organized and efficient. Information is needed so a report is requested to fulfill the requirement. The data that are needed are determined. The requirements for the type and format of the report are determined. The computer hardware necessary to generate and develop the report are determined. The report is developed and the information is delivered as originally requested (Figure 2). This process is repeated for each report generated by an organization.

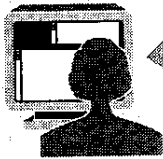
# ENTERPRISEWIDE REPORT WRITING



Defined – The Reporting Process

## Reports Requested:

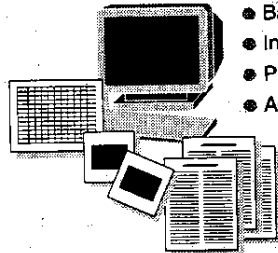
- Shipment Reports
- Earnings Reports
- Inventory Reports
- Routine and Ad Hoc Reports
- And More...



Information Delivery

## Report Development:

- Batch
- Interactive
- Production
- Ad hoc



## Report Generators:

- Host-based
- Desktop-based

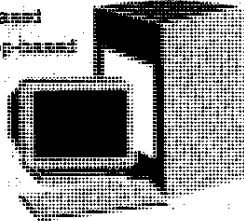


Figure 2

The process described above represents a challenge to the organization. The sheer diversity of reporting requirements within an organization adds to the challenge. The challenge is to use technology effectively to turn data into information. Let's define the challenge a bit more.

## CHALLENGES

To better understand all the challenges that stand between people and the information they need, I will summarize them into four categories: different data sources, different reporting needs, different people, and different machines—all center around the diversity found in today's enterprise. The rest of this paper will be devoted to briefly discussing each of these challenges. In identifying them, and in devising effective methods for overcoming them, I will develop a picture of what an information delivery solution might look like, and more particularly, how the SAS System specifically addresses these challenges.

### Different Data

Enterprise data is a valuable organizational asset. It is the "raw material" of information, it drives the report writing process. In most organizations, these assets are distributed throughout the enterprise—in localized "islands of information" created by different databases and file structures. While these islands (and the reports that use them) often contribute significantly to departmental or operational goals, they can put the organization at a distinct disadvantage when consolidation is needed to support higher-level

decision making. To make these islands of information accessible to others in the organization, they often have to be reorganized and replicated elsewhere. (Some studies estimate that data are replicated as many as eight times throughout the organization.) The cost of such redundancy—both in terms of time and money—can be a significant drain on the organization's resources.

### Different Reporting Needs

As discussed earlier there is a great diversity in the reporting needs of an organization. An organization's diverse reporting needs represent a breeding ground for the proliferation of diverse report generators. There exists today a niche, stand-alone, off-the-shelf, "easy-to-use" solution for virtually every reporting need in every organization. And if one does not exist there are a host of high and low level programming languages that can be used to develop a solution. Most organizations have chosen to proliferate the number of report writing solutions (in the Financial Management Process alone an average of 10 different software products are utilized).

The proliferation of these packages at every level of the enterprise ultimately increases direct software costs and compounds the burden of training and support. In addition, because many of these products are essentially "turn-key", there's very little opportunity to add the value of your own business expertise that would give you a competitive edge over anyone else using the same product. And finally, the integration of these applications for information delivery is virtually impossible because they were never designed to work together. As a result, the organization's report writing strategy often becomes a "patchwork" quilt rather than a seamless whole. And as these packages run out of steam or as requests arise to consolidate information across departments the information systems staff is overburdened with application development requests.

### Different People

Different people have different "comfort levels" when using technology. The comfort level of the executive may be quite different than that of the business analyst, or the programmer, or the applications developer, or the administrative staff, or the engineer, or the researcher. Today's enterprise must be equipped to deliver information to all of these people in a form they can understand and use effectively. By acquiring multiple software packages based solely on "ease-of-use", as stated earlier, the organization's support and training costs are affected and still more islands of information are built.

### Different Machines

That brings me to the final challenge—the challenge to enterprise-wide reporting created by the number and diversity of systems installed in our organizations.

Today's organization has a diverse mix of computing resources—from PCs and workstations to minicomputer networks and large centralized mainframes. But with the emergence of the "multivendor/multiplatform" environment comes greater difficulty in integrating the organization's computing resources for maximum effectiveness.

### Summary

Enterprise-wide reporting today represents a collection of diverse report writers generating information that is being communicated within and between departments. The ultimate challenge is to improve the communication of information. But how can this be accomplished if each department does things differently and if each report request is done differently and treated independently?

## SOLUTIONS

The solution to the challenge lies in integrating the reporting process.

### Integrated Data

The integration of the reporting process begins with the data. As a solution, the SAS System treats data as a generalized and available resource by providing transparent access to those assets wherever they reside—including popular database management systems, flat files, system-specific host files, and other historical or "legacy" data types. This approach ensures that enterprise data are accessible even though they may be stored in different places and be organized in a variety of different structures. By utilizing the SAS System's data management capabilities, data assets can be combined to form an "information database" that reduces redundancy and eliminates costly conversion and migration issues.

### Integrated Report Writing

The SAS System views any report as a collection of data-driven tasks that can generally be classified as follows:

- **Data Access:** the process of obtaining the data required by the report.
- **Data Management:** the process of shaping the data into a form required by the report.
- **Data Analysis:** the process of detailing, summarizing, or otherwise transforming the data into meaningful information as required by the report.
- **Data Presentation:** the process of communicating the information in the format required by the report.

The SAS System surrounds each of these tasks with an integrated set of tools. With this set of tools the same software can be used for the reporting needs of the enterprise. The SAS System also provides a rich applications development environment that allows for the creation of customized menuing systems or customized reporting systems.

### Integrated People

To accomplish their reporting tasks end users of the SAS System can take advantage of 3 distinctly different types of interfaces that surround its capability.

- **Menu-Driven Interfaces:** The SAS System provides a generalized point and click interface that surrounds most of the capabilities of the entire system. Specialized menu-driven systems also exist for the development of specific types of reports, reporting systems, or customized menuing systems.
- **4th Generation Language:** The menuing systems described above surround the power SAS language. The language includes a fully functional, high level programming language and fully integrated, prepackaged procedures that perform specific tasks. The language can be used in batch mode or through an interactive programming environment that includes multiple windows, pull down menus, and pop up windows.
- **Object-Oriented Interface:** Provided for applications developers the interface allows for the quick prototyping of customized reporting systems appropriate to the computing experience of the individual.

### Integrated Machines

The SAS System, with its exclusive MultiVendor Architecture™ (MVA™), gives the organization greater flexibility to decide how and where to deploy report generators for the most effective use of its computing resources. Through MVA, the SAS System has achieved

true hardware independence without sacrificing its ability to exploit the particular advantages of specific environments—the "friendliness" of a PC, the raw, number-crunching power of today's workstations, the "distributability" of a minicomputer, and the unmatched throughput of the mainframe. With the SAS System, information delivery applications can be developed in one environment and deployed to others without modification. And because the software itself is consistent across environments, cross-training issues are eliminated.

Having complete applications portability is only part of the story, however. There's another dimension to the SAS System's strategy for hardware independence. And that's connectivity—the ability to have applications communicate across different operating systems and computing platforms and different locations. Support for industry standard communications protocols means that data and applications can share computing resources in the most cost-effective manner. By combining hardware independence and connectivity, the SAS System provides an advanced platform for client/server applications.

## SUMMARY AND CONCLUSION

In conclusion, the overall goal of SAS Institute is to provide organizations with a single, integrated solution to their enterprise-wide reporting needs. That means making the software accessible to a wide range of users; making the data accessible to the end-user; providing users with more capability so they have more flexibility; and making the SAS System available and easily accessible on multiple computing platforms. The major benefits to the enterprise are more productive individuals who have the comprehensive tools to get their jobs done quickly and effectively; a more productive enterprise that is not only able to generate information but communicate it effectively; and a more profitable enterprise that is able to consolidate reporting solutions, save on service and support costs, and make the most out of the investments they have made in hardware and software.

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