



SAS® Design-Time Controls

New Tools for Information Delivery in the Enterprise

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Introduction

Managers and business strategists across the enterprise today face a thorny but mission-critical challenge. On one hand, they must leverage universal access to the Web to enable sharing of vital business information both within and outside the company's walls. On the other hand, surfacing high-level business information on the Web typically has involved the services of a programmer or other technically trained professional.

As just about everyone is aware, businesses all over are in the throes of the worst skills crunch in memory, with no end in sight. The federal government estimates there are some 600,000 programmers and other information technology (IT) positions in the U.S. that have gone chronically unfilled.

Where impediments exist to the smooth sharing of high-level information, entire business processes can bog down, with the end result that time-to-market of vital services and products can be substantially slowed. For example, a dominant drive today in virtually all businesses and organizations is the Web-enabling of as much of the firm's activities as possible. Earlier this year, International Data Corp. gathered input from executives from 600 U.S. companies regarding their e-business plans. Sixty percent of the sample expects their e-business systems to be profitable by the end of next year, which means they expect to have what are largely fledgling systems today fully operational very shortly.

Speedy Information Delivery with SAS Design-Time Controls (DTCs)

An *InformationWeek* study asked 375 business and IT executives how their companies are approaching e-business. In December 1999, 42 percent indicated they were pushing for e-business initiatives in a majority of their companies' business units. By June of 2000, just six months later, that number had soared to more than 60 percent.

Bringing e-commerce systems into full operation demands aggressive, fast and easy information sharing at unprecedented levels among executives and planners virtually across the organization. But how are companies going to balance the demand of Web-enabled sharing of high-level information against the requirements of very scarce human resources to make this information sharing happen?

SAS, the leader in e-intelligence, has developed a unique way to allow programmers and nonprogrammers alike to use nothing more complicated than point-and-click skills to build Web pages containing information-rich SAS content. Utilizing design-time control technology, SAS DTCs present a very user-friendly, intuitive interface that cleverly masks

most if not all complex issues associated with building high-level Web content. And once the pages are built, their creators can share them with anyone else, using nothing more complex than a Web browser.

SAS DTCs are part of a larger development effort within SAS to provide software components that make it easier for customers to create Web pages that interact with SAS data, thereby bringing the power of SAS to a wider range of end users. SAS DTCs are available now as a downloadable component of SAS/IntrNet software and will ship with version 8.2 of the SAS system.

Further, with the use of SAS data accessing software, customers are not limited to just "SAS data." They can also access data from relational databases, ERP systems and, eventually, e-commerce systems on any platform and do exactly the same things with that data that they can do with SAS data.

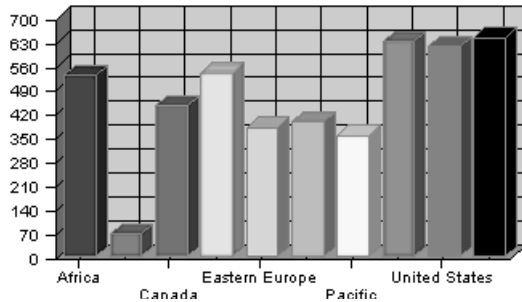
Business Benefits: The ABCs of DTCs

From initial conception, SAS has designed its DTCs to address the pressing need within the enterprise for both technical and nontechnical professionals to build SAS reports and graphs quickly and easily for the Web. Prior to DTCs, this job fell to a SAS programmer, who often had to write both SAS code and HTML code manually.

SAS DTCs automate much of the task of building Web pages containing SAS content, enabling nonprogrammers such as business analysts and strategists to retrieve high-level information faster than ever. They accomplish this work often in minutes (rather than hours or even days without using DTCs) by using the very familiar point-and-click, what-you-see-is-what-you-get (WYSIWYG) environment of popular HTML editors, such as Microsoft FrontPage or Softquad HoTMetaL Pro. And with reports and Web pages containing SAS content available faster, strategists can make quicker and more informed business decisions.

Early users of SAS DTCs are quick to recognize the inherent business value of their deployment. One such person is Greg Barnes-Nelson, director of Cary, N.C.-based Statprobe. "As a technology integration company, we are all about integrating people, process and technology so that people can be better equipped to make decisions. For us, DTCs mean I can reduce the time it takes to deliver an application. For our clients, it means better, faster, cheaper. As an employer, I can better utilize my staff and reduce cycle-time delays between the design process and the development process by putting tools in the hands of non-SAS designers and developers."

Thin-Client Graphics



MDDB Report

Down Top/Bottom "N" View Report

domain	Total Hits		Total Pages	
	Sum	Average	Sum	Average
aol.com	3,503	1	2,394	1
sanmiguel.com.ph	1,881	1	1,402	1
ibm.com	1,631	1	1,094	1
mindspring.com	1,514	2	939	1
uu.net	1,378	1	921	1
dec.com	1,254	1	886	1
unlandes.edu.co	1,044	1	908	1
desjardins.com	1,005	1	832	1
candseek.com	985	1	860	1
idt.net	985	1	857	1

Table

World Wide Sales Product Summary

Product	Number of Stores	Total Sales	Total Inventory	Total Returns
Boot	864	\$2,350,543	\$9,724,671	\$98,622
Men's Casual	399	\$7,933,707	\$17,085,253	\$311,035
Men's Dress	480	\$5,507,243	\$14,507,340	\$164,099
Sandal	564	\$868,436	\$3,232,275	\$38,170
Slipper	794	\$6,175,834	\$22,231,380	\$209,940
Sport Shoe	616	\$651,467	\$3,322,702	\$25,179
Women's Casual	270	\$4,137,861	\$9,696,651	\$131,394
Women's Dress	614	\$6,226,475	\$19,304,779	\$193,653

Critical Success Factor (CSF)

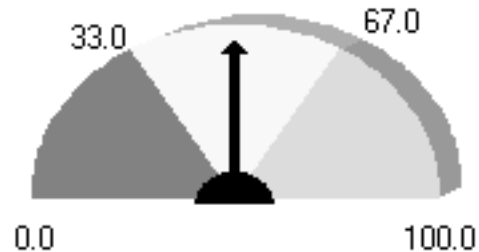


Figure 1 SAS DTCs allow you to statically or dynamically generate reports and graphs. You have the flexibility of creating Web pages that stay the same or change as the underlying data changes.

DTCs Mask the Complexity

SAS DTCs are add-in components for your HTML editor that insulate you from the complexity that comes along with sophisticated Web content. DTCs from the user's perspective act like page-component wizards that help you to build parts of your Web page. These wizards quickly and easily guide you in a highly interactive fashion. You utilize the user interface of your HTML editor to insert a DTC into your Web page. The control assists you by presenting a dialog of choices and settings. After you make selections and close the dialog, the DTC writes the appropriate SAS content into your Web page. After you publish the Web page, anyone can browse the content created. To view the page through a Web browser, you do not have to have DTCs or SAS software installed on your machine in order to see the pages created.

The initial release of SAS DTCs include the following:

- **SAS Critical Success Factor (CSF):** A graphic that visually represents the position of some value in a range of data.
- **SAS MDDB Report:** A drillable HTML table from a SAS multidimensional database.
- **SAS Stored Program:** Content generated as a result of the execution of a user-written program.
- **SAS Table:** HTML table displaying your raw data.
- **SAS Tabular Report:** HTML table containing descriptive statistics of your data.

- **SAS Thin-Client Graphics:** 2- and 3-dimensional plots and charts.
- **SAS TreeView:** An interactive viewer for hierarchical data.

SAS DTCs allow you to statically or dynamically generate reports and graphs. (See Figure 1.) You have the flexibility of creating Web pages that stay the same or change as the underlying data changes. With the addition of the SAS/Warehouse Administrator, you can even schedule how often your dynamic pages are refreshed.

Requirements for Using SAS DTCs

The machine on which the Web pages are created (apart from the machine on which the pages are viewed) must be running the Microsoft Windows operating system with Microsoft Internet Explorer Version 4.0 or higher installed. To use the controls, users also must have an HTML editor that supports them, as well as SAS/IntrNet software installed on at least one machine in the network. Some popular editors that support DTCs are:

- Microsoft FrontPage 2000.
- Microsoft FrontPage 98.
- Microsoft Visual InterDev.
- Softquad HoTMetaL Pro 5.
- Macromedia Drumbeat 2000.

The bottom line is that nonprogrammers and other users can drag and drop one of these DTCs onto the page of their favorite Web editor and then access live SAS data in various forms, such as a SAS table, report or graphs. All this is done without requiring complex programming skills.

Thus, when used in combination with other SAS solutions, SAS DTCs become a vital link in the information supply chain, helping to convert raw data into a variety of user-friendly formats and then deliver it quickly and easily across the enterprise or to external customers.

DTCs and Business Solutions

SAS DTCs represent a business solution first and foremost, and an innovative technology second. In fact, SAS DTCs have been designed from the ground-up to address specific business challenges facing almost all organizations today as they fight for firmer competitive footing with rapid deployment of applications and strategies. And as such, DTCs will be appearing in the future as part of various packaged solutions from SAS.

Beating the Skills Crunch

SAS DTCs offer a solution to the crushing shortage of skilled technical staff by removing the requirement of programming know-how from surfacing high-level content on the Web. For example, SAS DTCs can be used by graphics designers who, while they possess significant Web design skills, generally have little or no SAS programming experience. This means there is no disconnect between the design process and the content publishing process because designers can be empowered to build sites that deliver dynamic or static data from SAS applications. DTCs allow the people who analyze business data to surface it largely on their own, freeing up your valuable and scarce programming resources to do other business-critical tasks.

As an alternative, you can have a graphic artist or Web page designer lay out the entire Web page except the SAS content. That page can then be sent to someone else whose job is to insert the DTCs. The componentized nature of DTCs makes this division of labor very natural and effective.

Time to Market

Companies are under tremendous pressure to go live with e-commerce, and e-business sites are just scratching the surface of the job when the sites do go live. What happens next is that the activity within the site generates prolific amounts of data that must be analyzed by marketing, sales, development and senior executive staff. Detailed analysis of that data leads to the deployment of new features and applications for customers, suppliers and for internal staff as well. Getting these new features to market quicker than the

competition can spell the difference between a truly successful site and an also-ran. SAS DTCs not only enable nonprogrammers to produce reports and graphs using high-level data, but they also allow legions of other nonprogrammers to view and ultimately act upon the analysis in a cross-enterprise, collaborative style. The result is faster time-to-market which, as all managers know, is mission critical in business today.

Return on Investment

In business today, most of a company's assets go home each night in the form of the knowledge workers employed. Thus, return on investment is tied closely to productivity gains realized when knowledge workers are given better tools with which to work. SAS DTCs enable nontechnical knowledge workers to produce and then to deliver to colleagues high-level SAS content — dynamic or static — faster than ever. So instead of spending valuable work time trying to find a SAS programmer to surface SAS content on the Web and generate reports, knowledge workers can conduct the task themselves, running out just the reports and charts they need, often in a matter of minutes. This keeps these most-prized assets closely and continuously focused on the analysis and decision-making at hand, rather than playing the nonproductive “hurry up and wait” game of the past.

Flexibility to Meet Changing Business Needs

It is a basic fact of business life that different analysts and strategists require different reports or require the same data to be formatted and presented differently. It is very time-consuming and often cost-prohibitive for IT professionals to build a report-generating environment that gives users all the options they need. And even if such an environment could be created, making changes to it based upon changing business requirements or new data is often discouraged, given the complexity of building a flexible environment in the first place. SAS DTCs, on the other hand, empower individual analysts and strategists to “have it their way” when it comes to surfacing data from SAS software on the Web. Because many standard HTML editors support SAS DTC application programming interfaces (APIs), changing or reordering reports on the fly or adding new reports is a simple matter of point and click.

SAS DTCs in Action

SAS DTCs can play a pivotal role in enterprise e-intelligence efforts and the drive to harvest knowledge from the mountains of e-commerce and e-business data that companies collect.

As an example, consider the tidal volume of clickstream data that quickly builds when an e-commerce site goes live.

These data track patterns and preferences of customers and prospects that visit the site. Web administrators and business analysts attempt to analyze these data and then develop more effective and personalized Web marketing programs and tools. The goal is to turn visitors into customers, and customers into repeat buyers.

The raw clickstream data is typically stored in a warehouse. Analysts and technical experts have used a variety of tools to exploit that data, including online analytical processing (OLAP) and data mining, among others. Thus, developing a project to harvest knowledge and information from clickstream data requires assembling a staff with skills and knowledge in data warehousing, OLAP, Web development, and so on.

Using SAS DTCs, business analysts with little or no high-level technical background can read the data in the warehouse and then surface reports and charts which can then be quickly and easily incorporated into Web pages. The Web pages with the high-level SAS information of the clickstream data can then be shared among business strategists and executives at all levels of the company, accessing these reports and charts with nothing more complex than a browser. The reports produced and Web pages generated may not be as complex and full-featured as those that would be produced if a large team of specialists worked on the project. However, DTCs will prove very adequate for a broad range of projects that formerly required many technical experts. DTCs also allow users to do prototypes and proof-of-concept demonstrations for many projects, again without the need for expert technical help. This translates into more prototyping, simply because it can be more easily done now.

So from the intelligence harvested from raw clickstream data, for example, strategists can quickly deploy new Web marketing programs. These programs themselves will then generate a fresh set of clickstream data, thus closing the loop in this SAS DTC-aided business process. Statprobe's Barnes-Nelson notes, "Enabling technologies that bring the design and content creation process closer together just make sense. Putting technologies in the hands of people who can affect change makes every player in the content creation process more effective. If we can bridge the gap — both in terms of resource scheduling and technical competence — we can be more effective as an organization."

The Road Ahead for DTCs

The development of SAS DTCs is still in the early stages, yet it is important that SAS outline future directions that development may take. These directions are based upon extensive input gathered from DTC early adopters and by the greater needs of the SAS user base in general.

SAS has released to SAS/IntrNet customers DTCs based upon the SAS/IntrNet Application Dispatcher server-based product. This release incorporates extensive customer input gathered from the preliminary release period.

Meanwhile, work continues on the development of DTCs that utilize the SAS Integration Technologies server-based product. Building applications based on the object model of the IT server enables companies to reuse core application functionality. This new server base is more flexible and contains an integrated security model that will extend the power and application of the DTCs as the software evolves.

Conclusion

SAS Design-Time Controls offer both programmers and non-programmers a simple, point-and-click way to create Web pages containing SAS content, a task that previously required skilled programmers. As a result, the enterprise reaps two significant returns. First, vital and scarce programming talent is freed up for other, business-critical tasks. Second, business analysts and strategists can surface SAS content on the Web in a fraction of the time it used to take. This means they can perform their data analysis and knowledge work more completely and more quickly, making faster and more informed business decisions for the good of the organization.

To learn more about SAS solutions and SAS Design-Time Controls, go to www.sas.com/rnd/web/dtc/.



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