

# Rapid Business Intelligence

Application Development for the Web

A White Paper

by Larry Eiss

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## Executive Overview

Organizations today face intense pressure to see a quick return on investment in information technology. The key is broad delivery of information to everyone who impacts business processes – at a rapid time-to-market with a low cost-of-ownership.

To meet this challenge, organizations need business intelligence (BI), not for a select few, but for everyone – employees, managers, partners, suppliers, customers, and constituents. Increases in demand and hands-on users are making the traditional model of BI applications, developed within departments and disconnected from the enterprise, inefficient and ineffective.

Now organizations need enterprise-wide solutions that can immediately deliver real-time information in the most usable, familiar formats to very large, even unlimited, numbers of users. The results must be real and measurable.

IT organizations are critical to managing and implementing such enterprise-wide BI solutions. Any solution must meet the needs of both IT and end users, providing the ability to deploy easy-to-use applications to large numbers of diverse users, rapidly develop applications without requiring programming, and manage and administer the whole system.

To meet the needs of IT, the users, and the organization, a BI application development solution requires the following:

- Rapid time-to-market with low total cost-of-ownership
- Support for the full range of skill levels and needs of all users
- Accurate, consistent, and timely information delivered in real time
- Conformity to the standards of all other enterprise applications, meeting enterprise policies and procedures for development and deployment
- Clear measurable goals
- Low training costs
- Maximum productivity for developers

By meeting these criteria, an organization can effectively address business problems, realizing immediate returns on investment in technology.

This paper will show how a fully Web-integrated, Windows-based development environment for building, testing, and deploying Web applications meets these criteria very effectively. The paper will examine the business and technical requirements for a BI application development solution, Information Builders' WebFOCUS Developer Studio solution, and a case study.

## Business Requirements for Rapid Development

By providing a new perspective on the data in an enterprise, BI applications have become unique and powerful tools that enhance the value of knowledge workers.

Despite their value, Giga Information Group estimates that most organizations have provided BI applications to only 5 to 7 percent of the people who could use them.<sup>1</sup> To provide more information to more people, organizations must address the following six challenges.

**Managing training costs.** In the past, many BI applications have presented steep learning curves. It is not the primary job of domain experts to develop and deploy applications even when those applications are specifically for them. Consequently, tools must be easy to use, but at the same time provide significant power and flexibility. This has been a classic problem since the inception of the computer. There has always been a tension between ease and sophistication. Finding such tools is not easy.

Demonstrations, by virtue of their limited time, naturally gloss over many fine points. If the demonstration makes development look easy, it does not necessarily follow that the requisite power for sophisticated application development is available. Similarly, a less appealing demonstration may seem to indicate greater power or flexibility, but it may follow that the tool is easy to use.

**Handling single source issues.** Finding an integrated development solution from one vendor that includes the proper robust developer tools, application server, report writer, middleware, and e-commerce interface is difficult. It is important to minimize the number of vendors, but best-of-breed solutions cannot be sacrificed. Support for heterogeneous solutions is costly. Determining which vendor is actually responsible for what problem is a daunting task at best, and it is common for each vendor to lay the blame on another. On the other hand, settling for second-rate components saps the value of the entire solution.

**Meeting IT requirements.** To realize the significant benefits of BI applications, the rigor and structure of IT policies and procedures will have to be met. However, it is difficult to find BI development tools that meet this challenge because BI applications have generally been managed outside the IT organization.

<sup>1</sup>Gile, K. "Putting Business Intelligence to Work: How the Industry Will Move Past the Five Percent Deployment Rate." Gigatel Seminar. March 6, 2001.

A vendor that appears to be an innovator and on the leading edge of technology may not have the maturity to fit well into the existing IT structure. Yet there may be concerns that more mature vendors have not kept up with the pace of technological change. Moreover, products that seem to fit the requirements in other areas may have been acquired and re-acquired through mergers over time. Mergers and acquisitions raise significant concerns about the level of integration with the product mix of the latest owner, and about the continuity of technical and support staff.

**Deploying across the enterprise.** Even the best designed and most elegantly written application is of no value until it is deployed to users. Getting applications up and running across the enterprise is imperative. Unfortunately, the condition of most IT environments today makes this a complex problem. True thin-client, no plug-in technologies, such as Java Beans™, Servlets, HTML, XML, and DHTML, are necessary to allow cost-effective, scalable, and usable deployments. In many cases, a centrally managed environment for administering users and supporting mobile and wireless devices is also important. Security must be maintained and technologies must be leveraged, but all this must be done in a highly distributed heterogeneous environment. The BI development tool an enterprise selects must address such needs without requiring enigmatic, complicated architectural tweaks and configuration tuning.

**Deploying to multiple platforms.** Enterprise BI development tools cannot be limited to one or two platforms. Instead, they need to provide scalability from local PCs to mainframes. Furthermore, these tools must be flexible enough to access any data source with a high degree of efficiency. The use of proprietary cubes or indirect access mechanisms should raise red flags since they inherently limit the scalability and flexibility of the solution.

**Providing administration and security.** Reporting is a major component of BI applications. Although reports are central to turning data into information and information into knowledge, unlimited access is clearly unacceptable in most situations. If controlled access is to be effectively maintained, however, the development solution must provide simple and effective administrative tools that do not require dedicated staff for even large user constituencies.

Furthermore, existing security mechanisms, protocols, and tools such as RACF, TopSecret, and others, along with directory-based components such as LDAP, must not be left out or superseded. Selecting a tool with a deep enough history to coexist with and leverage the existing security structure is imperative if redundant systems and inflated implementation costs are to be avoided and, more importantly, if real security is to be maintained.

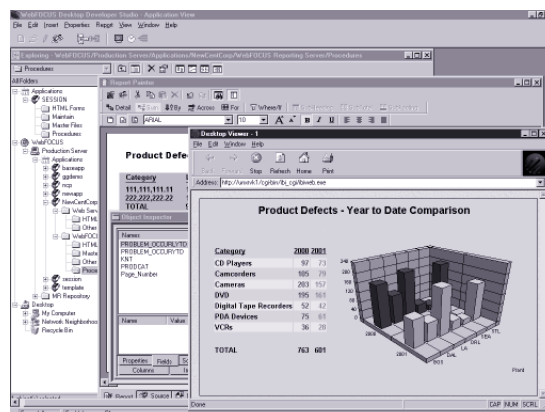
## Information Builders' BI Application Development Solution

Information Builders' WebFOCUS Developer Studio addresses enterprise-wide needs – from IT to business users – to solve the challenges of broad-scale business intelligence deployment. It provides a flexible, familiar environment for generating simple to complex queries that address enterprise-wide demands for real-time information. Developer Studio empowers all levels of users to dynamically interact with data:

- Analysts can create what-if scenarios in local spreadsheets
- Dealers and distributors can graphically see sales results or levels of participation in promotions
- Field personnel can access reports from low-bandwidth dial-up network connections
- Stockholders and other investors can receive sharp and clean-looking financial reports
- Mobile workers can access and receive mission-critical reports anytime, anywhere

**Powerful Graphical User Interface (GUI) development environment.** WebFOCUS Developer Studio eliminates steep learning curves, making it easy to develop and use BI applications that meet the diverse needs of the enterprise. As a result, organizations can reduce time-to-market and labor costs while increasing users' ability to apply information directly to business tasks and address business problems in real time.

Easy to use point-and-click tools quickly build applications while generating easy to understand and fully auditable FOCUS code, with all the power of the underlying language captured in the GUI interface and assist functions.



**Developer Studio provides an integrated development environment for building WebFOCUS business intelligence applications and reports and deploying them immediately to the Web. Features include data visualization, color exception reporting, intelligent drill-downs, and the ability to generate HTML pages without writing code.**

Application development is open to all levels of developers. The casual business user receives the rapid application benefits without having to learn the code, and the power user, developer, or IT professional can have access to the code to perform complex tasks. The familiar GUI environment is leveraged so that all levels of users can generate ad hoc reports and BI applications. This ability is especially important because the knowledge worker in the business unit often is most familiar with the data and best understands the business need the application is designed to address.

**Easy access to virtually any data source.** WebFOCUS Developer Studio enables rapid report generation directly from any enterprise data – more than 85 data sources across 35 platforms – including cubes, although cubes are not required. Developers can also easily build complex, multilevel reports from data in multidimensional cubes such as Hyperion Essbase or Microsoft Analysis Services – even large volumes of data or data with volatile relationships or custom hierarchies – and significantly reduce maintenance on those reports, even as hierarchies change.

**Formatted reporting and charting.** An integrated, drag-and-drop graphical development environment allows for rapid creation of a variety of applications and reports – including custom, complex, and ad hoc reports – that support data visualization, colorized exception reporting, and intelligent drill-downs.

- Report Painter speeds development with powerful features for creating and styling complex reports with ease.
  - Full control over borders, including the ability to specify border types, colors, and widths for a specific column or subject area, or an entire report.
  - Flexible background color selection for entire reports, as well as individual columns and data components.
  - Multiple date format and time display options.
  - The ability to group numeric data into any number of buckets (percentiles, quartiles, deciles, etc.).
- Report Assistant provides ad hoc reporting and styling capabilities in a pure Java™, zero-client environment.

- Resource Layout Painter enables the graphical construction of HTML pages.
  - Reports, graphs, text, images, and controls can be combined to create a powerful and flexible GUI for Web-based business intelligence applications.
  - Internal cascading style sheets improve styling features and performance.
  - Dynamic, data-aware controls make the development of sophisticated reports easy and efficient with automatic generation of drop-down menus.
- Automatic generation of dynamic HTML table of contents enhances navigation and report viewing.

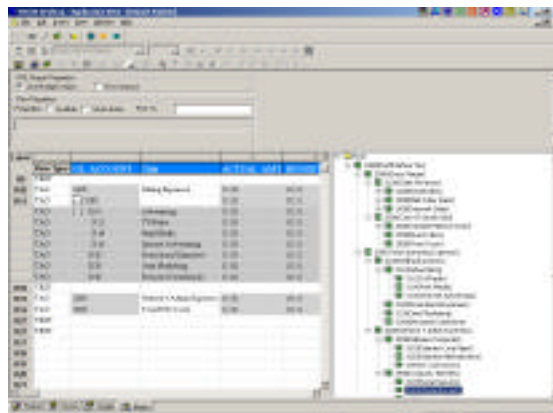
**Publishing.** Automatically build everything you need – including forms and pull-down boxes – to deploy the application to thousands of users on the Web.

**Graphing.** Sophisticated graphics are incorporated with a point-and-click, zero-client graphics development tool that supports over 90 graphic styles.

- Combine graphs with reports, and combine compatible graphs into a combination graph.
- Provide immediate graphical representation of the data in any row or column in a report.
- Transform any type of data into an effective customizable graph or report, including tabular, cross-tabular, and free-form reports.

#### **Financial reporting and analysis.**

Unique financial reporting capabilities, designed specifically for creating, calculating, and presenting financially oriented data, make it easy for developers to build complex financial reports – such as balance sheets, profit and loss statements, and budget reports – that are difficult or impossible in a single pass of the data using SQL. Robust features enable developers to deploy powerful and flexible financial reporting systems in about half the time it would take with



**Automatically OLAP-enable any report to slice-and-dice information and detect patterns in the data.**

traditional methods, while ensuring information consistency and accuracy.

- The ability to perform columnar or inter-row calculations.
- Custom sorting and grouping.
- Dynamic read of varying and “ragged” hierarchies such as the Chart of Accounts, without referring specifically to account information. Therefore, reports require significantly less modification or revision when that hierarchy changes.
- The ability to drill down from one hierarchy to another.

**Formats.** People can access information in the formats they use all the time.

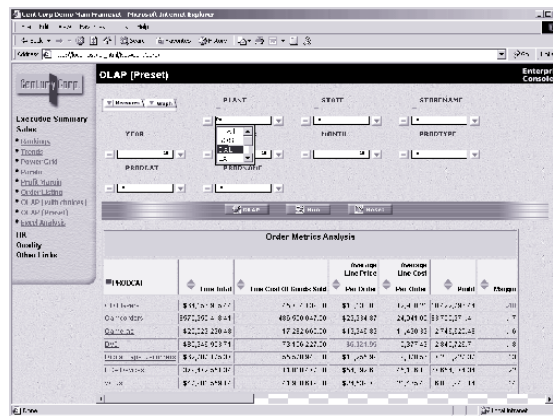
- E-mail – Information Builders uniquely enables organizations to both push and pull information for mobile access.
- HTML, Java, XML, and DHTML.
- Excel 2000 spreadsheets with drill-downs, fully formatted dates and numeric values, and native Excel formulas – exceptional capabilities unique to Information Builders. Reports with full styling and drill-downs can also be saved and viewed in Excel 97.
- PivotTables.
- PDF – Generate PDF reports that support data visualization graphs, and combine multiple reports into a single PDF file.
- PostScript printer files – Combine multiple reports into single PostScript files, and send them directly to printers.
- Word processing documents.

**Cross-context analytics.** A groundbreaking new means of analysis, WebFOCUS Knowledge Mapping uniquely enables intuitive analysis across data marts, cubes, or any environment. Reports enabled by Knowledge Mapping let users dynamically relate data in unanticipated ways. Users determine which path will be explored, often discovering relationships and trends not obvious using more basic traditional analytics.

**OLAPfunctionality.** Developers can OLAP-enable any report, allowing users to view data in an almost unlimited number of ways.

- Build basic OLAPcontrols directly into report fields, so users can drag and drop to perform simple functions such as column repositioning and pivoting.
- Advanced OLAPcontrols, which can be disabled, can be integrated directly into the report presentation.

- The most sophisticated OLAP capabilities can be provided through a zero-client, servlet-based OLAP control panel.
- A Dimension Tool enables users to define dimension structures and create logical views without modifying the metadata. Developers can also limit the dimension lists available to end users.



**Forecasting.** This feature makes it easy to generate forecasts in real time by identifying trends in numeric data and predicting values beyond the range of values stored in the data source. Users can easily select measures from a drop-down list to calculate moving averages, linear regression, or exponential moving averages.

**Automatically OLAP-enable any report to slice-and-dice information and detect patterns in the data.**

**Closed-loop applications (update capabilities).** WebFOCUS Developer Studio expands the usefulness of BI applications by meeting the need for closed-loop capabilities. When Web applications require database updates, transaction processing, or highly complex, context-specific parameter management – what analysts such as the Gartner Group refer to as closed-loop business intelligence – the capabilities of read-only BI systems can easily be overwhelmed. To prevent this limitation, WebFOCUS Developer Studio provides facilities to build full transactional and operational BI systems, controlling transaction scope, commit/rollback, persistence, and context management. For example, WebFOCUS Developer Studio can be used to build closed-loop BI applications that let users update a customer’s cell phone number in a Customer Relationship Management (CRM) system or change the markup on an item in a specific region without leaving the BI sales report.

**HTML development and deployment.** Build and deploy full-featured HTML pages for Web reporting applications with little or no Java and HTML knowledge.

- Create HTML launch pages for applications using fully integrated industry-standard Microsoft FrontPage.
- Build complex Web forms for data management and closed-loop transactions.
- Fully leverage external cascading style sheets, which provide improved performance, reduced effort, and an easy to manage standard look and feel across the enterprise.

**Metadata management.** Dynamically generate easy to read, fully auditable metadata from existing data sources, including Essbase cubes.

**Auditability.** Developer Studio enables the building of HTML forms, reports, and graphs via its GUI. In addition, developers always have the option to view native HTML or WebFOCUS scripting language automatically generated by Developer Studio.

WebFOCUS Developer Studio also fully integrates with all WebFOCUS products to meet today's business requirements. For information on security and administration, see the white paper "Deploying and Managing Enterprise-Wide End User Reporting Environments." For information on support for portals, personalization, and customization, see "Personalizing the WebFOCUS Experience." For information on automated scheduling and distribution via e-mail, the Web, and mobile devices, see "Extending Business Intelligence With Mobile Technology." And for information on support for Java™ environments, see "Enabling Rapid ROI with Java-Based Business Intelligence Applications." These and other white papers are available at [www.informationbuilders.com/products/whitepapers/index.html](http://www.informationbuilders.com/products/whitepapers/index.html).

## Conclusion

Today's competitive organizations need to develop a wide range of BI applications that tap as much data as possible and quickly deploy those applications via the Web to managers, employees, partners, suppliers, customers, and constituents – everyone they depend on to make decisions. Developing usable, deployable, and scalable BI applications is taking on greater urgency every day.

A true Web architecture is essential to rapidly provide these business intelligence applications to unlimited numbers of people, and see a quick return on investment. IT can use the same Web-based, integrated Windows development solution to deploy information with speed, quality, and effectiveness that users of all levels can use to access information in any format. In addition, IT can securely manage and administer the system while still allowing power users to develop their own applications.

WebFOCUS Developer Studio – with its powerful, intuitive tools based on the proven Windows environment – enables developers and knowledge workers with varying levels of skills and needs to build and deploy applications that transform data into intelligence, with ease and speed – all from one development solution source.

Information Builders understands IT policies and procedures, bridging the requirements of IT and the needs of users. Over the last 26 years, Information Builders has been proving its products in the marketplace, evolving and maturing them to seamlessly interface with the ever-growing range of applications, third-party vendors, IT demands, and user needs. Organizations like Sony, FedEx, and NASA – most of the Fortune 100 plus thousands of leading business, government, and educational organizations worldwide – have used Information Builders' solutions to grow their businesses through the power of information.

To see WebFOCUS Developer Studio in action, go to [www.informationbuilders.com/demo/test-drive/index/html](http://www.informationbuilders.com/demo/test-drive/index/html).

## Appendix: Case Study

### ADMINISTAFF

This case study is an example of how Administaff used Information Builders' WebFOCUS to create and operate an online reporting environment that gives internal and external clients secure access to personnel-related reports.

**Application:** Real-time, Web-based reporting.

**Products Used:** WebFOCUS Developer Studio, WebFOCUS Managed Reporting.

**Company:** Administaff is the nation's leading Professional Employer Organization (PEO), serving as a full-service human resources department for small and medium-sized businesses throughout the United States.

**Business Challenge:** As the Internet gained momentum, Administaff needed a way to deploy information to thousands of client companies and tens of thousands of worksite employees via the Web. They also wanted to add business intelligence technology to their existing systems and develop an extensive Web-based reporting environment. The driving motivation was to put more power in the hands of clients so they could get the information they need.

**Technical Challenge:** Administaff needed a flexible reporting environment that met the needs of both power and casual users inside and outside the company. The system had to have broad data-access capabilities and strong security. They also needed integration capabilities with third-party systems such as their existing security tables and batch scheduler.

**Solution:** Today, WebFOCUS manages Administaff's reporting environment through a single facility. Predefined menus and routines give client-users everything they need to produce consistent, accurate, and secure reports – on the Web or on the desktop. WebFOCUS is also being used as an in-house reporting tool by three categories of users: casual users select reports from Web-based menus and forms, more sophisticated users create their own reports, and analysts or power users drill down into the data to do online analytical processing (OLAP).

Administaff plans to introduce more internal users to the power and convenience of self-service reporting. Developers are learning to use WebFOCUS Developer Studio, an integrated development environment for building wide-scale business intelligence applications. Administaff is also experimenting with the mobile computing capabilities of WebFOCUS, both to push critical information to wireless devices and to pull information from production information

## ADMINISTAFF

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systems via e-mail.

**Business Results:** Administaff improved customer service making it easier for tens of thousands of employees and clients to access more information faster and easier – while saving IT enormous amounts of time and money.

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