COGNOS®

Cognos Enterprise Business Intelligence for e-Business

Technical Discussion Paper

SeeBusinessSeeResultsSeeCognos

Cognos Enterprise Business Intelligence for e-Business
This edition published March 2000

Table of Contents

The Internet Economy

The Internet has profoundly altered today's business environment by redefining business processes and changing the dynamics of relationships with customers, partners, and suppliers. As business accelerates to e-speed, people rely more and more on the fast exchange of information—about products and services, about business transactions or the status of those transactions, about all aspects of business—to keep pace. As a result, vast amounts of data are generated and information has emerged as the currency of the new economy.

This is e-business. Speed and knowledge are the keys to competitive advantage. And realizing competitive advantage depends on establishing a business infrastructure that is fast, that harnesses data, that gives people across the extended enterprise the ability to gain instant knowledge from information. All organizations today are asking themselves how they will achieve e-business success.

The answer lies with technology. In fact, the role of technology in this fast-paced environment is more strategic, more mission-critical than ever before. And it falls to Information Technology (IT) professionals to deliver the solutions that will take organizations where they need to go in the new business landscape. Companies rely on IT to select and implement Web-based solutions that both leverage existing technology and deliver knowledge—internally and externally—fast.

Enterprise Business Intelligence: A Cornerstone of e-Business Success

Enterprise Business Intelligence (EBI) is a cornerstone of e-business success because it provides the means to capture, share, and use information to achieve key business goals.

Specifically, EBI lets enterprises use information to:

- Optimize performance through better decision-making
- Attract and keep customers
- Improve supply chain efficiency

EBI helps organizations achieve these goals by:

- Transforming data into information people can use. Web-based reporting and analysis, and data mining provide the means to immediately see what's important so decision-makers can act on it fast.
- Sharing information with everyone in the e-business value chain via intranets, extranets, and the Internet. Decision-makers, employees, customers, suppliers, and partners all have the information they need at their fingertips to work together more effectively.
- Uniting data from traditional brick-and-mortar and e-business processes so decisions can be made about the enterprise as a whole, not just one aspect or the other.

Better Customer and Supplier Relationships

e-Business relationships with customer and suppliers are driven by the exchange of accurate, timely information. Customers decide to do business with companies based on how quickly they can access their account information from a Web site, or how easily they can choose from a range of service offerings online. Similarly, suppliers are selected based on information they provide about inventory, on time delivery, and so on. Face-to-face interaction is less and less a part of the business equation. To keep business running smoothly, it's imperative that companies learn to manage these new information-driven relationships. EBI helps companies improve customer and supplier relationships in two key ways.

EBI Drives An Organization's e-business Strategy

EBI enables the following e-business activities:

E-Customer Analysis – Learn as much as possible about your customers. Calculate/Predict/Forecast their lifetime revenue potential, develop strategies to retain ideal customers, attract new ones, and maximize their value over time.

E-Customer Relationships – Building a more responsive relationship with customers helps increase customer loyalty. Let them access any account information—even offer personalized information such as purchase recommendations that demonstrate you care about their needs.

E-Supply Chain Analysis – Conduct more business in less time and satisfy customer demands for fast delivery. Exchange and integrate information with suppliers, scorecard their performance so you know which suppliers to use, and when to make changes in your supply chain.

E-Sales Analysis – Unite your sales models—both traditional and e-commerce—to understand their true impact. For example, identify which channel—e-commerce versus retail—offers the greatest revenue potential over the long term to know where market opportunities lie.

E-Marketing Analysis – Work with marketing data to assess campaign results, measure the success of your message against your target audience, and track your competition's efforts. Plan your next step.

Web Site Management – Optimize your Web site to attract and retain customers. Conduct traffic analysis to see what information or service is successful on the site and what is not. Ensure server processes are optimized to meet demand even in peak traffic times.

First, EBI can increase customer loyalty and supplier efficiency by making key information available through self-service extranets or Internet access. This allows organizations to establish powerful, information-driven e-business relationships with customers and suppliers. For example, at a low incremental cost, organizations can give customers Web-based, 24 x 7 x 365 self-service access to their accounts, shipping, support, and other related business data. This value-added service will keep customers coming back. Likewise, organizations can improve supply chain efficiency by allowing suppliers to access inventory, shipping, and vendor scorecard information. This lets suppliers see how they can better meet requirements.

Second, EBI lets companies use data to improve how they manage relationships with customers and suppliers. For example, customer profile and segmentation analysis will offer insight that helps companies better respond to increasing customer demands for speed and service. EBI also lets organizations gain much needed knowledge to streamline the supply chain. For example, they can better manage inventory by mapping specific suppliers to components and products, and then understanding how their performance affects other departments in the company like sales or finance. With this coordinated view, companies can better forecast manufacturing demands, manage logistics, and keep costs low.

The e-Business Environment: Unique Challenges for IT Champions

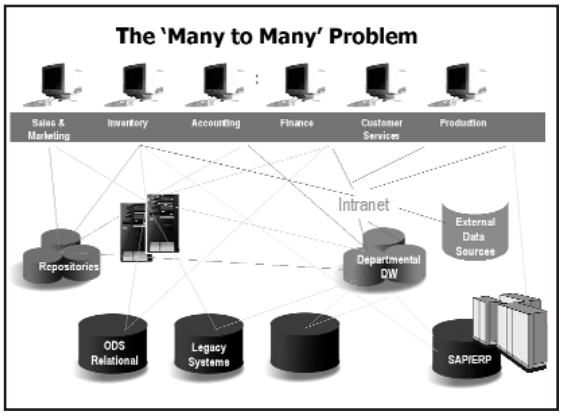
In delivering the infrastructure for e-business success, IT initiatives involve the rapid adoption of Internet technology. This introduces a number of unique challenges that IT must address, specifically:

Many Data Sources: As business processes and applications become increasingly Web-based, vast amounts of data from new sources are generated. These new data sources are generally not integrated with traditional brick-and-mortar corporate data.

Many Users: The user base for Web-based applications potentially includes anyone with a browser, both inside and outside the firewall. And each person has different requirements and computing environments.

Faster Development Cycles: In the past, high-impact IT projects, such as a data warehouse initiative, could take a year or two to complete. The challenge in today's economy is fast implementation and rapid response to changing technology and business requirements—all while running the business at e-speed. Under these new conditions, development cycles are typically six months or less.

Combined, these unique challenges add up to the "many-to-many" problem: Uniting many disparate, heterogeneous data sources from both brick-and-mortar and e-business processes and delivering the right information to many internal *and* external users—all with different information needs and skill levels.



Finding a way to handle many data sources, many users, and faster development cycles places new demands on IT in an e-business environment.

Many Data Sources

E-business processes generate vast amounts of Web information such as click-stream, e-commerce, and e-marketing data—all of which can offer a wealth of insight into the business. But IT must provide end users with easy access to this data and make sure that it is presented in an intuitive business context. However, this e-generated information is just one part of the business picture. IT must also combine e-business with brick-and-mortar data sources to enable decision-making based on a unified view of the *entire* enterprise. After all, brick-and-mortar and e-business processes are interdependent.

An EBI solution must make it easy to merge heterogeneous data and allow users to isolate the precise information they need quickly and easily. Ideally, the solution should enable brick-and-mortar and e-business data to be combined. This is best achieved by creating subject-specific data marts within a short timeframe. Not only do marts present data in a familiar business context, they also organize it in business dimensions or measures that can be shared from one data mart to the next.

Many Users

Successful e-businesses operate as extended enterprises with hundreds of internal and external people sharing information to make decisions. As such, it is important that users can create and publish reports and analyses for wide distribution.

Web solutions are ideal for meeting the varied e-business requirements of users spread across the organization as well as external users, like customers, who operate in unknown and uncontrolled technical environments. Web portals provide an intuitive and effective approach to data access for a wide range of end users because they present data in a familiar manner—similar to popular Web sites like "Yahoo" or e-mail inboxes.

While portals serve as a common point of personalized information access for all users, they are just the beginning of addressing the needs of many users. Customers, suppliers, production workers, sales people, financial analysts, and managers also have unique reporting and analysis requirements, not to mention varying technical skill levels. Although multiple applications could address these varied information needs and skill levels, that approach would be counter productive. Managing, maintaining, and upgrading a collection of unrelated, non-integrated environments places an enormous burden on IT.

Meeting the strategic technology requirements of the e-business environment demands a single, integrated EBI solution that is broad enough to meet every user's skill level and functional requirement—from query and reporting, to analysis, data mining, and scorecarding and visualization—in a secure, flexible, and scalable manner. The e-business essentials associated with each of these requirements is discussed below.

Ad Hoc Query

The accelerated pace of e-business means people must be able to share up-to-the-second information about customer purchases, methods of ordering, supplier inventories, and so on—so they gain the insights they need to assess the business and make changes on the fly. Therefore it's important that an EBI solution deliver ad hoc query capabilities that let people access data in real-time, from multiple sources, all in a single query.

An ideal ad hoc query solution should balance functionality and ease-of-use. It must support complex functions—like calculated columns, calculations within filters, query links, and queries against multiple data sources—while still delivering a friendly hyper-link HTML interface that does not require a user's understanding of complex SQL statements.

As part of a complete EBI solution, ad hoc query should integrate with reporting and analysis functions. It should deliver an HTML-only interface that eliminates the requirement for desktop installations, configurations, upgrades, maintenance, and training. And, the ability to make all query processes and application changes at the server level helps to ensure high performance and ease of administration.

Reporting

e-business requires managed reporting that provides the ease and convenience of Web-based delivery without compromising the high quality, print-ready output favored by many report consumers. An efficient e-business reporting solution must deliver centralized report distribution and control, and minimize the administrative burden on IT. It must make it easy for end users to conduct their own reporting in order to reduce reporting backlogs.

In addition, a reporting system must provide both on-demand or scheduled batch reports to give everyone across the extended e-business enterprise seamless access to reports. Through a powerful prompting environment, IT gains the flexibility to deploy a single report that can be customized to meet the needs of many different individual requirements.

Analysis

Through SQL queries and managed reports, decision-makers can easily answer important questions like "which products were sold to which customers?" and "what is my income statement?" However, they also need to answer more complex questions about the business that involve time, geography, and other key business dimensions. For instance, questions like "which customers increased their purchases over the last four quarters?" or "what is my income statement by line of business by geography for the last three years?" require that multiple business dimensions be examined at the same time.

OLAP (on-line analytical processing) technology enables this kind of multidimensional analysis. It's a critical part of a complete EBI solution because it lets companies measure key performance indicators and perform business performance management. It lets them quickly make connections

about what's driving the business that may otherwise not be made in time to act.

Sharing OLAP-delivered insights is another must-have EBI capability. Users should be able to share information and collaborate with each other by publishing their own reports, without intervention by IT. And security restrictions—who can see what report, or who has access to which information on a given report or analyses—must be centrally managed by an administrator, so that users are unaware and unconcerned with this function. For maximum impact, users should be able to access reports using only their Web browser with no specific understanding or knowledge about OLAP or multidimensional analysis required. As a result, broader use of OLAP—and the insights about key performance indicators and performance management it delivers—is fostered across the organization.

Data Mining

e-Businesses must deal with large amounts of data, and must evaluate buying patterns, customer profiles, and delivery mechanisms in fine detail. With data mining, people can analyze amalgamated data to discover important factors, correlations, patterns, and trends. Companies can discover which customers contribute most to gross profits, find under-serviced segments of the market, personalize the customer experience, and predict future behavior through predictive modeling techniques like what-if analysis, forecasting, and effectiveness measurement.

Data mining is most useful when it emerges out of the domain of statisticians and analysts, and becomes accessible and understandable by every manager in an enterprise. It must have an intuitive interface, be fast and easy to implement, and easily integrated with the full spectrum of EBI capabilities.

Scorecards and Visualizations

For a rapid and complete view of core and e-business processes and measures from multiple sources on one page, EBI provides at-a-glance scorecards that use a "red light/green light" approach to highlight areas of concern or interest. These management-level overviews are effectively presented as "visualizations" that drive understanding and fast decisions using intuitive charts, maps, and a wide range of interactive features.

Users can quickly assimilate and visually unite huge amounts of intuitively related, but not "data joinable," information to get a complete view of the entire enterprise. Visualization delivers e-speed comprehension of the performance measures, relationships, and trends that characterize complex data. Users can filter, drill down, change displays, and drill through from a high-level view to details in any analysis or report. Effective visualizations should be Web deployable and easy to create and maintain from a central point of control.

At-a-glance scorecards or visualizations present a complete view of core and e-business processes and measures on one page.

Faster Development Cycles: Results at e-Speed with Enterprise Business Intelligence

A complete, Web-based EBI solution allows many internal and external users to access the appropriate reporting and analysis applications and unites information from many disparate, heterogeneous data sources. However, this capability by itself is not sufficient. Today, fast time to result is key to corporate survival.

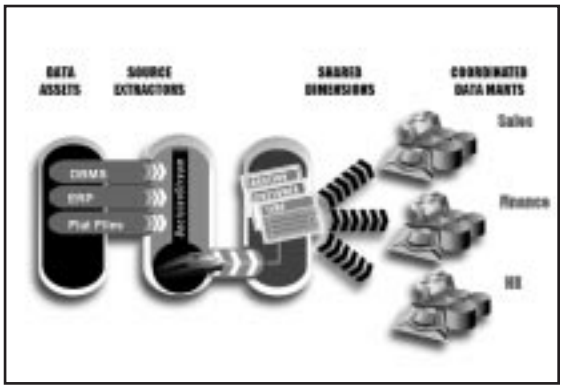
Successful companies focus their efforts on implementing e-business processes quickly; adapting their e-business applications to respond to a rapidly changing technology environment; and leveraging their existing infrastructures and technology to support this change.

Implementation at e-Speed

Start with the Mart: Because of e-business's need for speed, technology projects that stretch to more than one business cycle can jeopardize a company's strategic position. Organizations can begin implementing an EBI solution immediately by isolating a single, critical area or "pain point," and beginning there. For instance, IT could start by implementing a sales analysis solution. They could quickly create a sales data mart using the existing infrastructure, and then leverage this effort to create additional departmental marts. The modular approach offers immediate results and also enables systematic, ongoing development that ultimately results in a complete, integrated e-business solution that spans the entire enterprise.

With an effective EBI solution that includes building data marts, organizations could have e-business up and running in as little as 90 days. The key is easy reuse of data in subsequent marts.

A dimensional framework provides this ability. IT can model, organize, and present data using specific business dimensions: time, geography, cost of manufacturing, and so on. These dimensions, built once, can be leveraged to build any number of marts. This makes implementation easier, faster, and less costly, and ensures data consistency across the enterprise and beyond.



Start with the mart: A data mart solution that includes a dimensional framework allows IT to organize data into specific business dimensions that can be shared from one data mart to the next—for fast implementation.

HTML User Interfaces: To ensure an implementation is not only fast, but also successful, IT needs a solution that will make users productive as quickly as possible. Therefore, an EBI solution must be easy to learn and use. An HTML-based, hyperlink interface is not only the simplest available today, it is also universally accessible and understood. Providing users with EBI access through an HTML-only, zero footprint client means IT has no software to deploy, no Java applets or plug-ins to be concerned with, and no maintenance, administration, or individual licensing. To be productive, all users need is a standard Web browser.

Packaged EBI Applications: Packaged, business-ready EBI applications streamline time to result. Based on function-specific data marts, packaged applications eliminate the work of building data infrastructures, reports, and analyses. Each data mart automates extractions, transformations, and data modeling, so IT simply adds data. Business people can use the packaged reports and analyses as presented or customize them to address their unique requirements. Packaged EBI solutions can be up and running in a quarter of the time it would take to build an application from scratch.

Best Practices: One of the most time-consuming aspects of any EBI implementation is isolating the right data and measures users need in each functional area to get maximum value from their EBI investment. Ideally, EBI solutions should offer best practices—models that are based on proven results—for each functional area of an organization.

Support and Services: For the fastest EBI results, organizations rely on a combination of consulting, account management, support, and training services that delivers EBI value at maximum speed—no matter where in the world a company does business. The ideal solution offers an integrated service delivered by a team of EBI experts with years of business and technical expertise. In today's competitive environment, where adapting to change is part of day-to-day business, companies cannot afford anything less than top-notch, comprehensive support and service.

Easy Adaptation

The demands of the e-business market are continually shifting. As a result, the ways that companies use technology to compete effectively is dynamic as well. Organizations must be nimble. They need solutions that can be quickly adapted and changed to meet new requirements. This places great demands on IT resources. The key to managing these demands effectively is a solution that offers centralized control and infrastructure flexibility.

Common Metadata Management: An integrated EBI solution that supports common metadata and metadata management is essential. It must provide IT with a single, central point at which to manage all EBI metadata and apply business rules for all EBI applications. In this way, a single metadata model is created that covers all data sources. This model ensures data consistency across the enterprise. And it facilitates easy maintenance because IT need only make changes once, in one place, that cascade through all the appropriate applications in the enterprise.

One Data Infrastructure: The ideal EBI solution includes a single data infrastructure that harnesses heterogeneous data sources—core and e-business data—and provides centralized access to end users. A data mart solution is ideal for these purposes. For maximum value, marts must be optimized for more than data storage. Data modeling and transformations should also be fast and easy, and each mart must provide the scalability needed to accommodate large volumes of data. In addition, they must include embedded knowledge of the EBI applications they service, so organizations get maximum return on investment. For instance, each mart must provide access to multidimensional data for in-depth OLAP analysis.

One Distribution Point for Internal and External Users: A Web-based portal component provides personalized access to EBI and non-EBI content for any users. It also represents a single point of content delivery and management for IT. Customizable portal interfaces allow each of a company's suppliers and customers to personalize their content and portal design to reflect corporate standards. The ideal solution allows IT to create one interface that can be customized for all of an organization's constituents.

Single Point for User Security and Authorization: Ideally, EBI user profiles and classes that determine what information users can see and use should be manageable from a single point for easy administration. Solutions that further decentralize administration by allowing certain people to govern access rights for their set of users also diminish the administrative burden on IT.

Integration with Existing and New Infrastructures: Support for all major information standards and native support of leading platforms and applications: ODBC, Unix, NT, Windows, Linux, IBM, Microsoft, major ERP vendors and so on, should be included in the EBI solution. Open APIs and XML also provide flexibility to support new emerging technologies. This ensures that the EBI solution can easily adapt to future e-business requirements.

Leveraging and Expanding the Existing Infrastructure

To deal with increasing time constraints and to leverage existing technologies in today's organizations, IT cannot afford to start from scratch when implementing EBI. Instead, IT needs a solution that leverages work already done and that can be augmented with value-added components:

Existing Front- and Back-Office Systems: Many companies have already invested in Supply Chain Management (SCM), Customer Relationship Management (CRM), Enterprise Resource Management (ERP) and other operational systems to streamline and consolidate data. An EBI solution gives them the ability to integrate, share, analyze, and report on this data, so users can share and act on key insights.

Existing Legacy and Warehouse Data: Companies can leverage existing legacy and warehouse data in a number of ways by adding EBI capabilities. They can unite data stovepipes by integrating all operational data, such as warehouse, legacy, flat files, and e-business information. The result: easy access and better decisions from a complete, consistent view of the organization. Or, they can apply reporting and analysis capabilities directly against warehouse data for performance optimization. Finally, they can build subject-specific data marts by using warehouse data and other data sources. This is the fastest route to addressing a single e-business pain point for quick results.

External Access to Existing EBI Capabilities: IT can leverage the Internet or an extranet to deploy Web-based EBI capabilities that are already used internally. Any existing data can be incorporated, including warehouse and other corporate data sources to improve relationships with suppliers, customers, and partners at a low cost.

In Summary

As organizations adapt their business processes and models to compete in the e-business environment, EBI is recognized as a mission-critical imperative for success.

Why?

Business processes that used to take days now take seconds—and generate massive amounts of information. Companies have to be able to take this information and act on it. They need faster decision-making. Faster responses to opportunities and challenges. Faster time to market. Faster time to results. Faster return on investment. This demands a comprehensive, integrated, flexible technology infrastructure. e-Business is not about straightforward departmental technology installations. It's an all-or-nothing enterprise proposition.

The right EBI solution is highly adaptable, provides the infrastructure and common metadata management, and addresses the requirements of thousands of users through a single, personalized delivery mechanism. Most importantly, it offers a framework that supports constituents who are internal and external to the enterprise. After all, the e-business enterprise, by definition, is extended to include customers, suppliers, and partners.

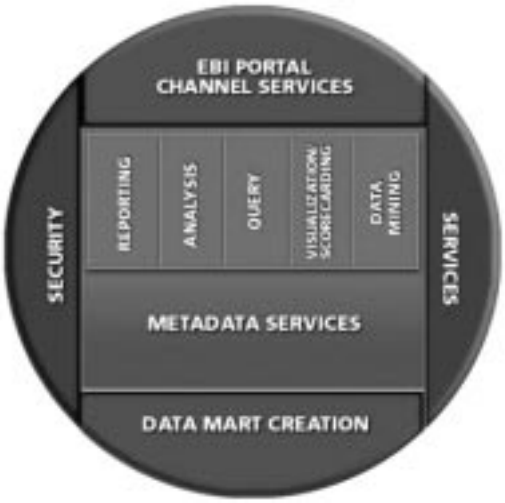
The Cognos EBI platform was designed specifically to address these requirements by incorporating our proven technology into a comprehensive infrastructure—one that helps organizations drive e-business strategies.

The Cognos EBI platform is the first and only solution to provide true end-to-end coverage of all end-user needs, both inside and outside an organization. It is also the first solution to deliver the unified data infrastructure required to run successful businesses today.

The Cognos Enterprise Business Intelligence Platform for e-Business

The Cognos platform for EBI delivers enterprise infrastructure layers for data mart creation, metadata modeling, security, as well as content management and distribution through a rich portal environment.

The Cognos EBI platform is comprised of five service layers:



The Portal Service: A Single Delivery Infrastructure

The portal service is delivered through a single component, Cognos Upfront™, which can be customized to serve as the "BI Channel" and fits seamlessly within an existing portal, intranet or extranet, or as a stand-alone content delivery mechanism.

For IT professionals, Upfront represents a single point of content management and delivery for end users inside and outside the firewall. It is designed to ensure that each user sees only the content they have permission to see, including any content they choose to add to their personal view. In addition, users may only publish information to folders which they are authorized to access.

Upfront provides a Web-based point of personalized user access to BI and non-BI content. It incorporates an intuitive newspaper theme, so users can customize content according to their unique information needs. Unlike traditional approaches, in which only a small group of trained users can create and distribute BI, anyone with the right privileges can share information through Upfront. As a result, a seamless e-business information exchange environment is created. Users can publish reports, OLAP cubes, queries, URLs, scorecards, or anything else that can be accessed through a URL.

Upfront's single login security means users are prompted for their user name and password only once. The server generates a ticket that maintains the state for the user session. All of the underlying BI servers validate the ticket whenever it is invoked to ensure seamless access to all BI services. Upfront uses HTML-only, so IT does not have to maintain clients or be concerned with whether or not their users' browsers are JAVA enabled.

Portal Service Features and Benefits:

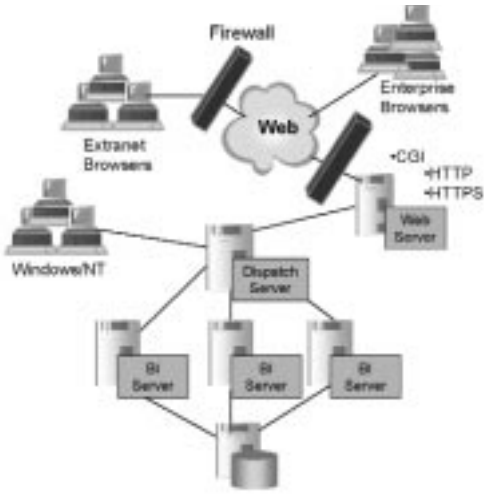
- Upfront security allows users to see only the documents they have permission to see. Upfront also allows IT to control which users have permission to create documents, where they are permitted to publish them, as well as whether or not users have a personal area to organize and store personal items.
- An open, programmable API expressed through XML, so that standard templates can be used.
- A fully customizable, replaceable user interface allows organizations to match the portal to their corporate standards. Customizations are made through XML.

Full customization capabilities are provided through Upfront's intuitive, flexible interface. This mock-up demonstrates how a portal designed for NASA would match the organization's corporate standards.

The EBI Services: Scaling to Address All BI Needs

The EBI services facilitate end-user BI activities—reporting, analysis, ad-hoc query, data mining, and scorecarding—addressing the needs of users inside and outside the firewall.

This scalable architecture includes servers, which incorporate load-balancing for optimum performance and effective use of available resources. In addition, fail-over protection ensures that if a server becomes unavailable, other servers will pick up the outstanding requests, ensuring continuity of delivery.



All BI servers are built on a multi-tier scalable server architecture that supports load balancing and fail-over protection, and is designed to scale to thousands of users.

Reporting Service

The platform's reporting service provides the right report for the right user on the client platform of choice—Windows, Excel or Web browser. Users require a wide range of reports from status to scorecarding, and the ability to author or consume those reports whether on the corporate network or dialing in from the road. With the platform's reporting service, reports are authored in the client environment and then delivered to end users over the Web.

Reporting Service Features and Benefits

- Report notification and distribution API, which allows IT to notify users when reports have been run, and will soon allow reports to be distributed via e-mail.
- Exception reporting enabled through conditional filters, highlighting, and displays.
- Improved stored procedure support includes the ability to use the results of a stored procedure in a report.
- PDF output capabilities enable high-quality printed reports.
- End-user report scheduling delivers personal reports.
- IT calendar and event-based report scheduling for simplified administration.
- Advanced prompting capabilities, which allow IT to create one report that services the needs of many users.

Presentation-quality reports can be rendered and viewed by browser users in Adobe PDF, CSV, and Excel formats. End users can view pre-scheduled reports; they can see "burst" reports, which are scheduled and customized according to user-class filters; or they can immediately schedule their own reports for up-to-the-minute information.

An advanced prompting capability, called PowerPrompts, enables report authors to create a master report and apply a PowerPrompts front-end, which allows users to customize the report to their individual requirements; they can choose layouts, add and remove columns, and use logic-based prompts. This way, IT can create one report that meets many user needs.

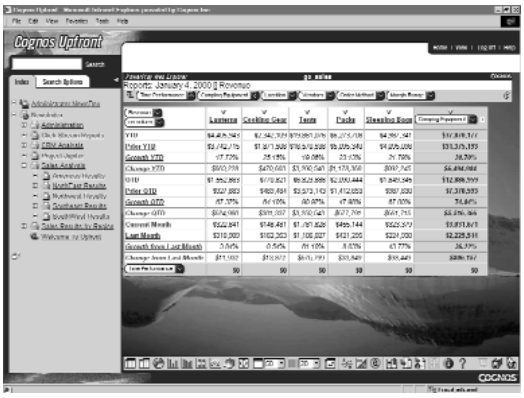
A managed reporting environment enables PDF output for high quality printed reports, and end-user and IT-based report scheduling.

The Cognos reporting service allows users to drill through to more details in a series of reports.

Analysis Service

The analysis service allows users to understand not only what is happening but where, when and why. It provides users with the ability to examine information at the highest level and then drill down to the level of detail required.

The platform's analysis service delivers a robust Business Performance Measurement (BPM) environment based on OLAP data. In addition to offering the widest enterprise reach of any OLAP solution at a low cost of ownership, the analysis service delivers a unique, single-application-server architecture that lets organizations deploy and manage OLAP from a central point of control. Users work with Web, Windows, or Excel clients—LAN-connected or remote—to effortlessly access multidimensional OLAP data and use superior analysis and reporting capabilities that deliver business performance, KPI, and scorecard-style reports.



The analysis service delivers BPM reports that give users a significant head start when performing critical business performance measurement tasks.

A truly universal OLAP solution, the analysis service offers its own highly compressed, scalable OLAP data cubes, as well as support for third-party cubes—so organizations can reap maximum benefit from their existing infrastructure.

A managed OLAP reporting environment delivers reports to users over the Web in PDF format, allows for high quality PDF output of printed reports, and enables user publishing of reports to the portal.

Analysis Services Features and Benefits:

- Converts currency on the fly.
- Ranks and compares results.
- Highlights exceptions with ease.
- Creates balanced and unbalanced nested crosstabs.
- Offers full OLAP functionality with an easy-to-use DHTML interface.
- Generates business performance, KPI, and scorecard-style reports.
- Creates sophisticated reports like income statements.
- Pre-filters reports through end-user prompts.
- Delivers Web reports to users in PDF format.
- Enables high quality printing through PDF.
- Allows for further exploration and analysis by converting PowerPlay PDF reports.
- Offers user report publishing to Upfront.
- Delivers easy access to Cognos OLAP cubes, and third-party cubes including Hyperion Essbase, IBM DB2 OLAP, SAP BW, Microsoft OLAP Services, and other OBDO-compliant cube servers.

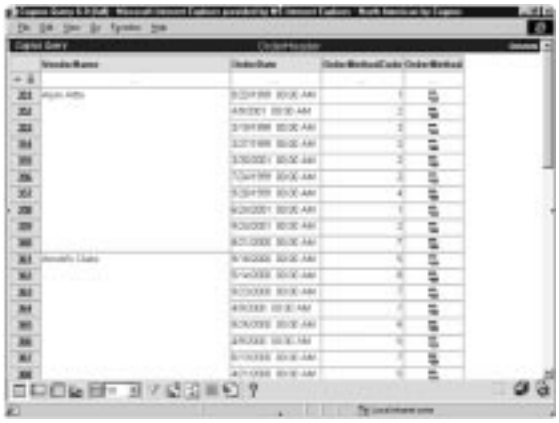
Query Service

The platform's query service provides a completely interactive and dynamic ad hoc environment that allows users to access any corporate data assets. This service presents users with a integrated business view of their data and empowers them to make on-the-spot business decisions through real-time data exploration.

Using navigation concepts that are standard to any Web environment, the query service ensures that users access the data they require quickly and easily with little to no training. All they need is a Web browser to create and modify queries. Users can explore data directly from the Cognos EBI Portal to get the information they need—in real-time—to make informed business decisions. Queries can span multiple heterogenous data sources and are complementary to Cognos' reporting, analysis, and scorecarding environments.

Query Service features and benefits:

- Complete ad hoc functionality in HTML-only environment.
- Wizard-driven query creation.
- Easy hyperlink navigation and exploration.
- Expression Editor for Complex calculations and filters.
- WYSIWYG grouping, sorting, and filtering.
- Queries that span multiple heterogeneous data sources.
- Complete integration with analysis, business scorecards, and managed-reporting environments.



With the query service, users can group queries rendered in HTML. This query links to an order method query though HTML hyperlinks for easy navigation and exploration of corporate data assets.

Visualization Service

In keeping with the latest, most effective business performance measurement and management methods, the platform delivers a visualization service. Its advanced visual reports, called visualizations, quickly and clearly expose critical information contained in massive amounts of complex business data. Users can interactively explore high-impact, multi-metric visualizations, intuitively gain the insight necessary to scorecard their business activities, and make effective decisions.

The visualization service lets users interact with multiple measures simultaneously, so they gain an immediate grasp of what is driving their business.

2D and 3D charts and maps are utilized to clearly show performance results. These can present multiple metrics, simultaneously. A user can view multiple KPIs drawn from numerous data sources that reflect different perspectives of the business on the same screen. Users view not just KPI results, but the interrelationships that exist between them. They can also observe how the new e-business KPIs compare to traditional metrics for better planning and forecasting.

In addition, users can drill through to Cognos' integrated reporting and analysis services to expose the details behind the results.

Visualization Service Features and Benefits:

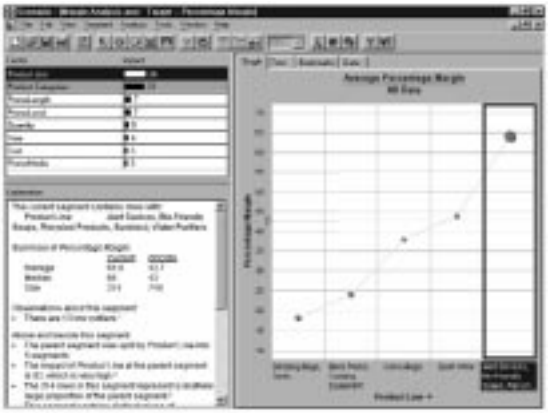
- High-impact displays such as 2D and 3D maps and charts let users rapidly and intuitively gain business understanding; for example, a map of the United States could be colour coded to represent the range of product revenues.
- Multi-metric presentations show multiple KPIs from numerous data sources, so managers can evaluate business performance in an appropriate business context.
- Specialized graphics include new abstract presentation formats that support current performance management methods such as scorecarding.
- Dynamic filtering isolates segments of the business, and animates them to focus on performance trends and patterns.
- Robust authoring through wizards assists users in the design and creation of effective visualizations.
- Diverse data sources handling allows IT to leverage existing infrastructures, exposing data from standard flat and comma delimited files, Excel spreadsheets, multidimensional files from Cognos OLAP, Hyperion Essbase, SAP/BW, IBM DB2 for OLAP, Microsoft OLAP Services for SQL Server, as well as a wide array of relational databases through Impromptu.
- Intranet enabled visualizations can be deployed throughout the organization and beyond, either on a PC or via the Web, creating an informed, coordinated organization.

Data Mining Service

The platform provides a data mining service, which delivers the depth of analysis capabilities imperative to successful decision-making in the e-business environment. Cognos' easy-to-use data mining functions allow organizations to understand their data at the deepest level of detail. With this information, companies can create unique customer experiences and most important, the competitive differentiation that drives e-business success.

The granular, in-depth analysis that Cognos' data mining provides allows companies to discover important correlations, patterns, and trends. People can see instantly what is driving factors that are influencing any measures such as profit margin, customer loyalty, and sales. Very quickly, they can gain a complete profile of what is working and what is not.

The data mining service is fully integrated with Cognos' reporting and analysis services.



With data mining capabilities, users can identify and rank the factors that impact a target such as Percentage Margin.

Data Mining Service Features and Benefits:

- Ranked factor analysis.
- Robust data mining techniques such as classification, segmentation, and outlier detection.
- Choice of analysis strategies.
- Both continuous and categorical targets.
- Intuitive graphical views including classification tree, segmentation, data, explain, benchmark, statistical fly-outs, and factor summary reports.
- Automated assistants including import wizards, drill-all, bookmarks, and templates.
- Full integration with Cognos' reporting and analysis services.
- Fast implementation through tutorials, online help, award-winning documentation, and Scenario's intuitive interface.
- Familiar Microsoft Windows-based processing environment.

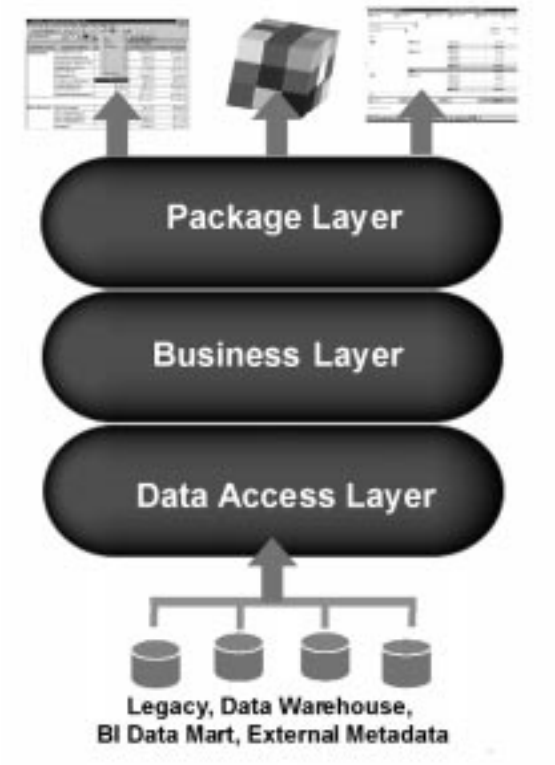
The Metadata Service: Common Management and Speed of Adaptability

The metadata service, delivered through a single component, Cognos Architect, addresses the need for common enterprise-wide BI metadata management by providing a central place to create and manage all BI metadata and business rules. Within an Architect model, a BI developer can define:

- Access to all required data sources
- A logical business view of all the information available
- The scope of each BI application

With the metadata service, a single metadata model can be created that spans all enterprise data sources and all enterprise BI applications. The result is an accurate and consistent data view across the enterprise, and a common foundation for information sharing on an enterprise scale. This is accomplished through a breakthrough three-tiered architecture that isolates the business rules from data sources and end applications:

- *Data Access Layer* – The bottom layer represents physical data assets where multiple heterogeneous data sources can be accessed.
- *Business Model Layer* – The middle layer represents the business model. This layer is similar to an entity relationship model, and is where normalized and star schema models can be defined.
- *Package Layer* – The top layer represents the BI content, where metadata is packaged for specific functional enterprise applications and user communities.



Architect's three-tiered architecture isolates business rules from data sources and end applications, creating a single metadata model that spans the enterprise.

This three-tiered architecture dramatically reduces the amount of time organizations spend adapting their applications for change because all changes made in the business layer are automatically inherited by any BI applications that are impacted.

For example, if an organization wanted to change one of their data marts from one major type of RDBMS to another, they could easily do so in the data model layer without impacting anything in the business model layer. In fact, the business model layer would simply inherit the change as would the application model layer.

The same is true with changes in the other two layers. For example, if a BI developer changed a style in the business model layer, all entities within that layer would inherit the change as would all of the application packages that use those entities.

In addition, all existing Cognos metadata sources, like Impromptu catalogs or query service models, can be imported into the Architect model along with any other enterprise metadata sources such as:

- Microsoft Repository
- Erwin
- Informatica
- RDBMS

Metadata Service Features and Benefits:

- A single model that can span multiple heterogeneous databases.
- Reuse of packages for BI applications across the enterprise.
- Consistency/conformity of formatting, rules, and content for all users.
- Ability to repackage entities to accommodate business changes.
- Leveraging of current IT infrastructure investment by importing repositories, database definitions, third-party metadata, and so on.

The BI Data Mart Creation Service: Creating the Data Infrastructure

The BI data mart creation service, delivered by a single component called Cognos DecisionStream™, supports the requirement for a data infrastructure that is BI-specific and spans the enterprise. This key service allows IT to build high-speed star schema data marts—using shared, conformed dimensions—optimized for BI end-user activities.

BI marts are typically built from a warehouse with maximum data storage in mind. However, a BI mart built for storage alone knows nothing about the application it will serve, nor is it optimized for reporting and analysis functions.

DecisionStream is optimized for modeling, transforming, and creating high-speed scalable BI marts that have embedded knowledge of the BI applications they will serve. DecisionStream is designed to build multidimensional databases in the form of star/snowflake schemas, ROLAP, or MOLAP databases.

The BI data mart creation service is built to scale the enterprise by encouraging the reuse and extension of common dimensions throughout the organization. The notion of shared or conformed dimensions is critical to achieving a unified view of traditional brick-and-mortar and e-business processes. In this way, corporate information is common and comparable across the enterprise. For example, in a supply chain, there would be separate data marts for Sales and Manufacturing. But the definition of the product dimension needs to be common to both of these so that, for instance, product profitability can be determined. Shared dimensions are also critical to keeping data marts up-to-date quickly and easily.

BI Data Mart Creation Service Features and Benefits:

- Support for relational and OLAP data structures.
- Multiple inputs.
- Multi-threaded (parallel processing\streams).
- Multiple outputs (integrates bulk loaders).
- Time dimension wizards.
- Shared, conformed dimensions.

Packaged Data Mart Applications

Cognos e-Applications are packaged, function-specific data marts, reports, and analyses. With e-Applications, IT can refocus resources on revenue-generating activities not on lengthy IT development projects. In fact, by using ready-made e-applications, IT can save a complete business cycle on their implementation. And, through an operational framework, support requirements are minimized throughout the entire life cycle.

Packaged Data Mart Applications Features and Benefits:

- Business rules incorporated into the business-driven extractions and source-to-target mappings are based on major ERP systems, such as SAP, Oracle Applications, and JD Edwards and open to alternate sources.
- Pre-defined star schema data models, optimized for reporting performance, reflect the typical reporting and analysis requirements for key areas such as Sales, Finance, Procurement, and Inventory.
- A Production Assistant provides intelligent ETL job control for manual and changed data loads, sets extraction job sequencing, defines extract date ranges, handles exceptions during the data mart update process, and confirms parameters around which each extraction is run.
- Shared dimensions ensure that IT builds a dimension or business measure only once that can be used across numerous data marts. This reduces the IT work load and allows consistent data and measures to be used across the enterprise.
- Packaged and fully customizable Impromptu reports and catalogs and PowerPlay OLAP reports reflect typical information and KPIs needed to manage, measure, and improve business performance in each functional area.

Each mart can be easily adapted to reflect the organization's unique information needs, incorporate changes as the business changes, and simplify administration. e-Applications are shipped ready to read or pull data from e-commerce and traditional data sources such as ERP systems, and distribute reports and analysis to employees, customers, suppliers, and partners in client-server format or over the Internet, intranet, or extranet.

The Security Service: Central Management

The security service, delivered by a single component called Access Manager, allows IT to manage and maintain user profiles and classes for all EBI Services from a single console. This service addresses both authentication—or logon—security and authorization security, which determines what information users have rights to view.

Access Manager uses LDAP to manage user access. Widely accepted as the industry standard for storing and managing user security privileges. The Cognos security service ships with Netscape's SuiteSpot LDAP server that runs on many platforms including NT and UNIX.

Database security and and OS security can be used for user authentication as well. In fact, any combination of LPAD, OS, or database/RDBMS security can be used for authentication. RDBMS users/passwords can be defined within Access Manager so that users would not be prompted to log in multiple times. OS logins use NT Challenge Response so users can log in, and gain access not only to their network resources, but also to Cognos EBI services.

Security Service Features and Benefits:

- Central management of user classes for all BI applications.
- Distributed security administration, which enables certain users in the organization to be assigned security administration rights allowing them to administer other users, user classes, and sign-on, as well as to create, modify, delete, or view user profiles. This distributes the responsibility of managing security throughout the organization and into the business units.
- Published API (C-language) for integrating the security service with external security mechanisms.
- Database security integration with both relational and multidimensional sources.

In Summary

The Cognos platform for EBI addresses e-business information demands in an easy-to-manage environment for IT: one data infrastructure, common metadata management, easy adaptability, and a single delivery mechanism. This framework enables organizations to deploy BI quickly and cost-effectively to all e-business users—employees, customers, suppliers, and partners.

Cognos Global Enterprise Services: Making You Successful in Web Time

To thrive in the e-business environment, companies need to respond faster to changing customer needs and business opportunities. As the global leader in EBI, Cognos offers an unmatched range of customer services, all aligned to a single goal—making organizations successful with EBI as quickly as possible.

Global EnterpriseServices – Our integrated set of services let organizations choose exactly the consulting, training, support, and enterprise account management services they need to achieve maximum business impact in the shortest time possible. We have translated our in-depth expertise and experience into a set of implementation models—ground-breaking best practices—that have helped leading companies around the world drive their organizations to new levels of competitive advantage.

Consulting and Training – Our team of BI consultants partner with organizations throughout their implementation. They gain an understanding of each organization and their requirements, use our proven methodology to develop and execute a deployment strategy, and make organizations self sufficient by transferring critical knowledge and skills.

Superior Support – Our global support organization works as a coordinated team, drawing on state-of-the-art technology and a global infrastructure—including integrated call centers that share information to quickly resolve customer problems—to transfer knowledge, resources, and expertise.

About Cognos

With over one million seats in thousands of companies worldwide, Cognos is the leading vendor of enterprise Business Intelligence (BI) solutions for e-business. By delivering corporate data to everyone in the organization and giving them powerful ways to analyze it, BI from Cognos enables companies to coordinate decision-making across the enterprise, which in turn helps improve the performance of the business. Cognos BI products support over 100 relational and OLAP data sources, and seamlessly integrate with many enterprise applications, including BaaN, JD Edwards, Intentia, Oracle Applications, PeopleSoft, SAP, and SSA. Cognos products are available directly from Cognos and through an extensive network of channel partners.

www.cognos.com

Visit our Web site at
www.cognos.com/about/worldwide.html
to locate the office nearest you.

Stock No: 28080 March 2000

Printed in Canada using recyclable materials.