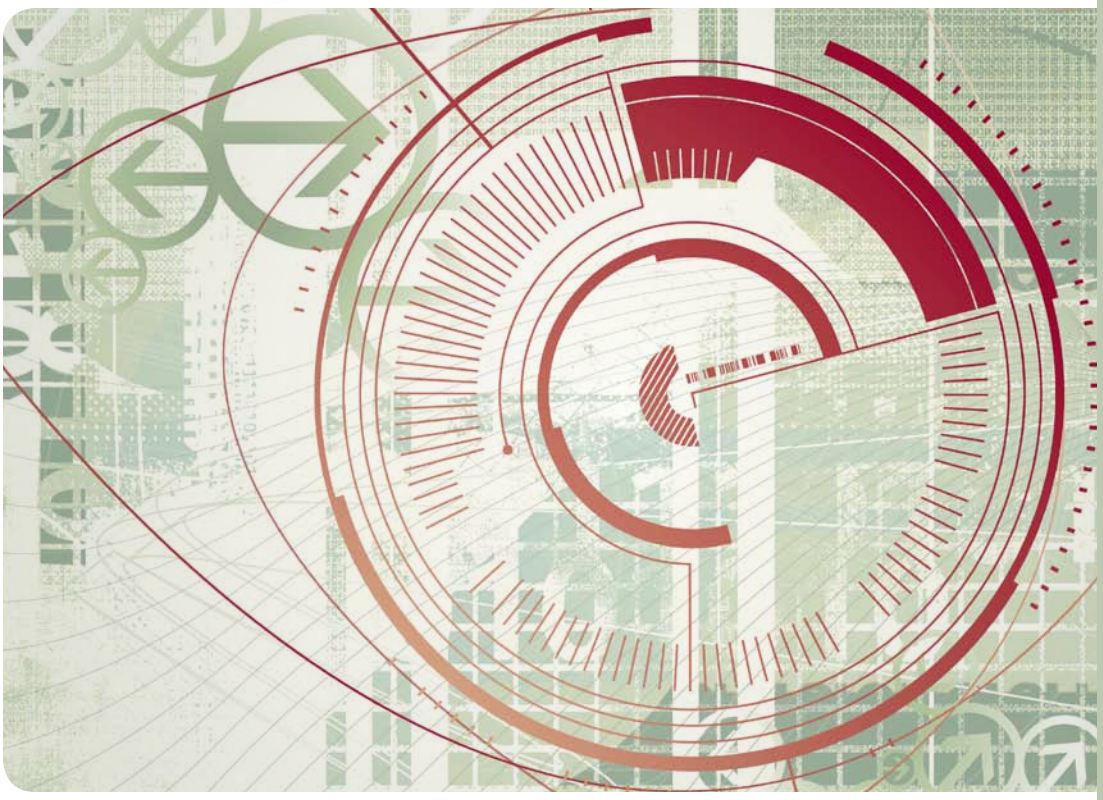
SECOND QUARTER 2008

TDWI TECHNOLOGY MARKET REPORT

BUSINESS INTELLIGENCE TOOLS

Comparison and Market Analysis

By Cindi Howson
and Wayne Eckerson



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About TDWI Research

TDWI Research provides research and advice for BI professionals worldwide. TDWI Research focuses exclusively on BI/DW issues and teams up with industry practitioners to deliver both broad and deep understanding of the business and technical issues surrounding the deployment of business intelligence and data warehousing solutions. TDWI Research offers reports, commentary, and inquiry services via a worldwide Membership program and provides custom research, benchmarking, and strategic planning services to user and vendor organizations.

About BIScorecard

BIScorecard provides the most in-depth BI product evaluations in the industry. Products are evaluated hands-on, across seven major functional areas, based on 100+ criteria. Whether you are a first-time BI buyer or trying to standardize on a BI platform, BIScorecard can help you avoid expensive shelfware and select tools that users will embrace.

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Overview

Technology Market Reports

TDWI Technology Market Reports provide TDWI Members an annual overview of an important technology sector within the business intelligence (BI) market. TDWI Technology Market Reports highlight the major events in the sector for the previous 12 months, prognosticate on the segment's future direction, highlight key issues facing customers, and provide a comparative review of the leading products in the space as well as summary description of niche segments and players.

The purpose of the reports is to help business customers create a shortlist of products that they can evaluate in more depth before making a purchase. It can also help organizations that have already purchased a product validate that the focus and direction of the vendor aligns with their own. Since every organization has different requirements, there is no one best product. Thus, we do not feel it is appropriate to rank or rate products. Our goal is to explain primary differentiators so organizations can quickly identify the subset of products that are best suited to their needs.

Focus on BI Tools

TDWI's BI Framework depicts the BI landscape at a summary level. (See Figure 1.) It embeds a technology categorization within a process framework for delivering BI solutions. This report will focus on BI tools, circled below, which enable business users to monitor, analyze, report, and query information.

TDWI'S BI Framework

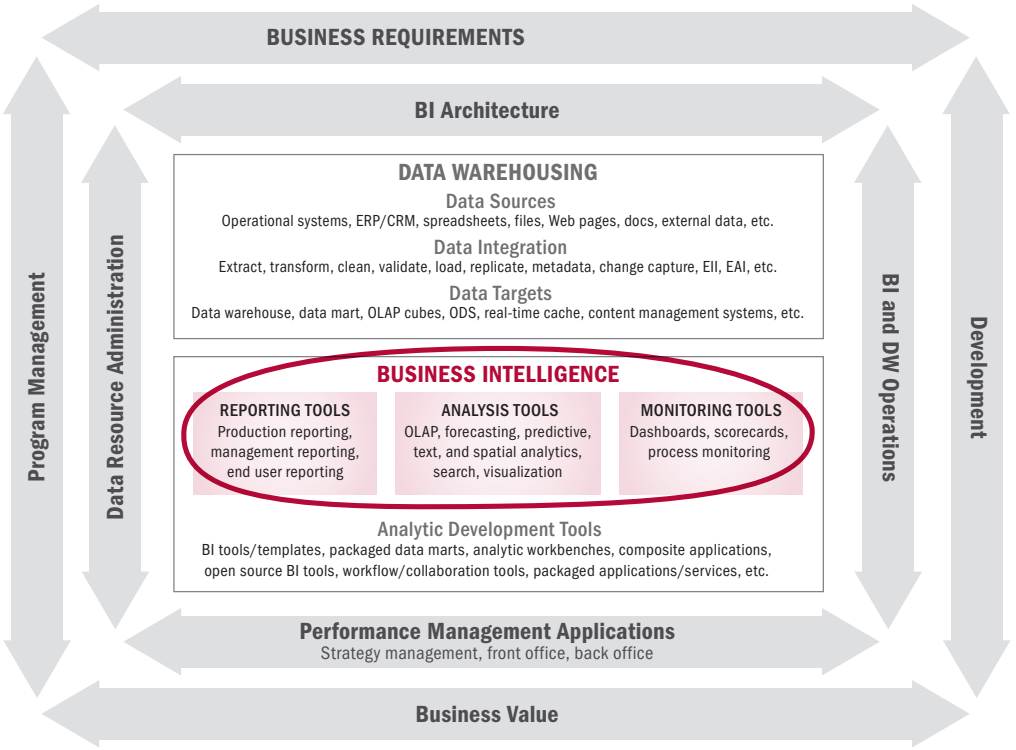
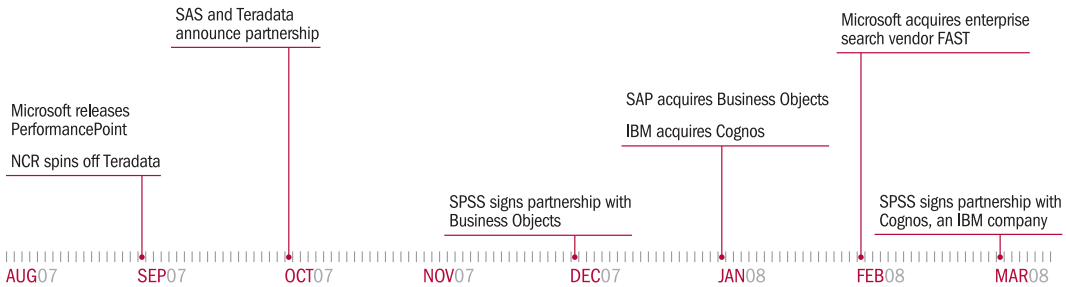


Figure 1. *The circled BI tools enable business users to monitor, analyze, report, and query information.*

BI Market Overview

The business intelligence landscape has changed considerably in the last year. Software heavyweights SAP, Oracle, IBM, and Microsoft all made major acquisitions and innovations reflecting BI's new spot at the top of the CIO's agenda. Leading BI vendors are expanding their strategy from selling BI tools predominantly to information technology (IT) departments to selling BI-enabled business solutions to business executives and unit heads. Despite the industry consolidation, innovation continues as big and small vendors unveil new products and modules that make BI easier and more effective to use.

Key Events in the Past 12 Months



- **September 2007 – Microsoft releases PerformancePoint.** Following the marketing launch in June 2006 and a year of community testing, Microsoft began shipping PerformancePoint. Whereas other vendors have pursued the convergence of business intelligence and performance management largely via acquisitions, Microsoft developed a significant amount of PerformancePoint code in house, although it stitches together capabilities from Excel, SQL Server, SharePoint, and ProClarity. The product delivers integrated budgeting and planning, monitoring (via scorecards), and analysis capabilities.
- **September 2007 – NCR spins off Teradata.** Teradata, formerly a division of NCR, was established as a separate company in September and became listed on the New York Stock Exchange in October. According to IDC, Teradata is considered the fourth largest provider of data warehouse platforms. It most differentiates itself from other RDBMS vendors in its exclusive focus of high-performance data warehousing and analytics as opposed to general-purpose relational database management for transaction systems.
- **January 2008 – SAP acquires Business Objects.** In September 2007, SAP announced its intent to acquire leading BI vendor Business Objects for $6.78 billion. Following Oracle's earlier acquisition of Hyperion Solutions, the move came as little surprise to the BI industry, but was a noted departure from SAP's previous "tuck-in" acquisition strategy. In a pledge to ensure the BI leader remains ERP-agnostic, Business Objects is operating as a separate company owned by SAP. SAP staff who previously worked under the SAP Business User division now report to Business Objects. The first order of business has been rationalization of overlapping product capabilities in BI and performance management. For example, in performance management, SAP had recently acquired Pilot Software and OutlookSoft, and Business Objects had acquired Cartesis and several smaller companies.

- **January 2008 – IBM acquires Cognos.** Following the Oracle and SAP acquisitions, Cognos initially vowed to remain independent but soon agreed to be acquired by IBM for $5 billion. The two companies have been long-standing partners. Cognos is now a division within IBM's Information Management group, which also includes data storage, Web portal and application servers, and ETL solutions. While IBM pledges to remain BI-agnostic and Cognos pledges to remain data source–agnostic, IBM immediately began offering new integrated product bundles so customers purchasing IBM InfoSphere Warehouse receive Cognos reporting and dashboards out of the box.
- **October 2007 – SAS and Teradata announce partnership.** With interest in predictive analytics on the rise among rank-and-file BI practitioners, these two former rivals entered into a partnership that will enable joint customers to combine Teradata's processing power with SAS analytic capabilities. The two companies are collaborating at the engineering level so that SAS analytics customers can perform data-intensive operations, including exploration, manipulation, and scoring in Teradata, without having to download large data sets into the SAS platform. More applications are expected for the end of 2008.
- **SPSS signs partnerships with Business Objects (December 2007) and Cognos (March 2008).** With archrival SAS competing against BI vendors with its own offering, SPSS has decided to partner with the leading BI vendors: Business Objects, an SAP company, and Cognos, an IBM company. The Business Objects partnership includes an OEM arrangement in which Business Objects will sell and brand SPSS products as part of the BusinessObjects XI Predictive Services engine. Business Objects universes will act as data sources to SPSS Clementine. With the Cognos partnership, the two vendors will jointly market integrated solutions that leverage each other's products.
- **February 2008 – Microsoft acquires enterprise search vendor FAST.** While the convergence of BI and search remains in its infancy, Microsoft acquires one of the leading search vendors, FAST. Microsoft has yet to detail how it plans to integrate FAST's search products and solutions into its various product lines. But on the BI front, Microsoft officials have hinted that they plan to use search technologies to continue to make data access and analysis easier to use.

Key Trends in the Past 12 Months

The industry highlights just listed give some indication of the key trends in the BI industry as well as guidance on its future direction. Following is a summary of the top trends in the BI tools market from both a technology and organizational perspective.

TECHNOLOGY TRENDS

- **Web 2.0 gives BI a face-lift.** Web 2.0 technologies have begun to permeate the BI space, giving users a much richer, more interactive interface for monitoring, analyzing, and modeling information. However, the industry has not settled on a predominant approach to either AJAX or Flash, and Microsoft Silverlight, a new competitive offering to Adobe Flash, lingers in the background. In addition, BI vendors, such as Information Builders and others to follow, are offering "mash-up"-ready enhancements to allow developers to readily combine BI content with other applications.
- **Microsoft Office BI integration becomes standard.** BI's integration with Microsoft Office is now a standard part of leading BI platforms, allowing organizations to leave behind their spreadmarts. New and enhanced products offer integration not only with Excel, but also with

PowerPoint, Word, and Outlook. Newer integration features automatically convert tabular results into Excel Pivot Tables, embed query filters in spreadsheet cells, and support OLAP drills and Excel-based report authoring. However, not all BI products provide the same degree of integration with Microsoft Office, and some integrate only with Excel.

- **In-memory processing provides speed-of-thought BI.** The rise of 64-bit chips with greater memory space and growing user demand for instant response times have caused many vendors and users to explore new ways to process BI tasks in memory. Next-generation OLAP, visualization, and planning tools now use in-memory processing to deliver speed-of-thought analysis, what-if modeling, and visual exploration.
- **BI goes mobile.** In an effort to bring BI to business users instead of making business users come to BI, leading vendors now offer mobile extensions to their BI reports and dashboards. What once required purpose-built reports is now easier to deploy as a mobile extension of the BI platform. Users can sort, filter, drill, and refresh data in reports and dashboards delivered via their BlackBerrys and Symbian- and Windows-powered mobile devices. Mobile BI could be a boon for traveling executives and field workers alike.
- **BI search germinates.** With several BI vendors supporting various search engines for just over 18 months, search-enabled BI enters its second iteration. Customers and the industry alike are learning the best ways to combine and integrate these two technologies. Some hope that search will provide a simple, natural language query interface. Others leverage search within the BI platform to better navigate existing content. Only a handful of customers have deployed integrated solutions.
- **Open source BI makes headway.** Pentaho, JasperSoft, and the Eclipse Foundation through its Business Intelligence Reporting Tools (BIRT) initiative are leading the charge to make BI available as open source software. While BI open source vendors cite lots of activity on their forums and tens of thousands of downloads, it's unclear yet whether open source BI has gained enough traction to make it a permanent fixture in the BI landscape. One big obstacle is that many organizations are leery of legal entanglements stemming from misuse of open source licenses.
- **BI software-as-a-service picks up steam in surprising places.** The raging success of Salesforce.com has spurred both startups and traditional BI vendors to provide on-demand BI. Business Objects improved its CrystalReports.com on-demand version to also include data quality, dashboards, and syndicated information and boasts the most SaaS monthly subscribers at more than 120,000. SaaS vendors LucidEra, PivotLink, Xactly Analytics, Autometrics, and Oco provide general-purpose and industry-specific solutions that are ideal for SMBs. Whereas SaaS was initially perceived as an easy way for SMBs to adopt BI, some enterprise customers are also supplementing on-premise BI with SaaS for departmental solutions and as a faster-time-to-market than on-premise solutions implemented by stretched IT departments.

ORGANIZATIONAL TRENDS

- **BI platforms improve, but customers adopt slowly.** Most leading BI vendors have made significant headway in creating a unified architecture for supporting core BI capabilities, which generally now include: business query, production reporting, analysis (i.e. OLAP), dashboards, Office integration, and BI portals. All these capabilities, which were once packaged and sold as separate products within "BI suites," now use a common set of services and infrastructure to provide greater levels of product integration. Delivery of BI content is now largely Web-based

and in many cases is also authored in the Web. Yet organizations have been slow to upgrade to the newest releases, with conversion rates for some leading BI vendors as low as 10%. Most organizations don't have the time and money to upgrade to every new release as it comes out. In addition, many organizations are concerned about the complexity involved in migrating to a new platform and the rapid rate of industry consolidation.

- **Pragmatic BI standardization.** Prior to the industry consolidation in 2007, customers were trying to rationalize their BI product portfolios in an effort to reduce BI software and support costs, improve purchasing power, and focus less on the tools and more on increasing the reach of BI. While customers are continuing these efforts in 2008, there is also an increasing recognition that a mix-and-match BI strategy, with a predominant standard supplemented by niche or best-of-breed solutions from multiple vendors, is reasonable. This new thinking is reinforced by 1) ongoing vendor consolidation 2) high switching costs 3) customer mergers and acquisitions and 4) unique capabilities among independent and niche BI vendors.
- **BI governance continues.** IT teams have learned the hard way that they can build the most elegant solutions with the most sophisticated technologies, but if the business doesn't take joint ownership of the solution and become actively engaged in building and maintaining it, then it won't succeed. BI centers of excellence (or BI competency centers) are organizational vehicles by which program managers can ensure consistent application of BI methodologies, standards, and best practices throughout an organization.
- **Self-service BI creates report chaos.** The mantra of BI managers has become "self-service BI." The logic is sensible: let's empower users to create their own reports instead of asking IT to build the reports for them. This eliminates IT as an intermediary and reduces the report backlog. Yet, a funny thing happened on the way to empowerment: most users find the tools too hard, and those who don't, create way too many reports. The result is report chaos. Forward-thinking companies have responded by creating libraries of standard, interactive dashboards and reports and providing mechanisms for promoting personal reports to shared folders. Forcing users to create reports from scratch works for only 20% of employees, those so-called "power users" who are technically savvy and database proficient.

The Year Ahead

In the wake of industry consolidation, customers and vendors alike are rethinking their BI strategies and product positioning. While vendors are innovating, customers are struggling to keep pace and are looking for ways to improve the value of their existing BI investments. The trends just outlined will continue to gain momentum in the next 12 months. Here are some additional trends:

NEW OR EMERGING TRENDS

- **BI goes green.** Although much of the early efforts for green BI pertain to hardware vendors reducing energy consumption, expect solutions from software vendors to hit the market that allow companies to analyze their emissions and sustainability efforts. Some BI vendors are providing support to help companies comply with the Global Reporting Initiative (GRI), an Amsterdam-based, nonprofit organization that publishes a framework for reporting on environmental sustainability and social responsibility. As well, BI vendors will try to be better corporate citizens by adopting green policies internally.
- **Analytic applications make a comeback.** Analytic applications offer customers the prospect of functional and industry best practices with prebuilt ETL, data models, reports and dashboards

that offer fast deployment times, and strong ROI compared to traditional BI solutions. Some BI vendors, such as SAS, are building BI-enabled solutions to support specific applications by industry, such as money laundering applications for financial services. ERP vendors, such as SAP and Oracle, now offer packaged analytic applications that blend functionality from their ERP and analytical products.

- **Composite applications and embedded BI empower operational workers.** BI gadgets, mashups, and composite applications allow BI to be embedded inside operational applications in a transparent way. Innovative companies are adopting this approach as a way of automating and improving routine decisions. Composite applications allow BI content to be displayed alongside and linked to operational content. In this way, a user can view an inventory report, note a product is low, and immediately click a reorder form.
- **Advanced visualization becomes part of core BI.** Specialty visualization vendors have existed for decades but have been treated as stand-alone applications, much like predictive analytics. As data volumes grow rapidly, speed to insight is becoming increasingly important. Advanced visualization software presents data in the most effective way, automatically. A few BI platform vendors have begun to include these capabilities, whether as part of new products or via OEM arrangements, but otherwise, niche vendors dominate this segment. The market would benefit from better integration with BI suites, although not necessarily through acquisition.
- **Event-driven analytic platforms.** There are many analytic applications that require real-time monitoring and process execution, such as Wall Street trading systems, e-commerce recommendation engines, fraud detection, online credit analysis, and so on. To date, organizations have custom-built these applications, but an emerging class of tools that we call event-driven analytic platforms capture business events in real time off messaging backbones; filter, calculate, and aggregate events; apply rules; and trigger alerts, queries, updates, or other actions when predefined thresholds have been exceeded. Also called business activity monitoring or complex event processing, these systems generally store and/or access historical data to provide analytical context to rules execution. Syndera and SeeWhy Software are newcomers more aligned with BI systems than with process management systems.
- **System and usage monitoring mature.** As BI has matured from departmental deployments to enterprise applications, monitoring, lifecycle management, and deployment capabilities improved in a number of platform releases in the last year. However, many BI vendors continue to lack robust capabilities, creating opportunities for niche vendors such as Teleran and Appfluent or making them better suited for departmental deployments only.
- **Mission-critical infrastructure.** Likewise, the infrastructure supporting BI solutions will become much more industrial-strength in the next 12 months. A majority of enterprise BI customers will deploy BI solutions on clustered servers with failover and disaster recovery hotsites, and many are exploring the use of data warehousing appliances to turbocharge query performance. Many will also parallelize their ETL processes and load data warehouses in near real time using "micro-batches" or event-driven messaging feeds to overcome the limitations of shrinking batch windows, expanding data volumes, and 24x7 user access. Meanwhile, SMB customers will continue to deploy on single-server environments or will look to hosted solutions for mission-critical infrastructure.

Vendor Comparisons

Overall Market Segmentation

The BI market has matured to the point where many vendors now offer both BI and performance management tools, while some pure-play vendors continue to focus solely on delivering BI. In addition, there are dozens of niche BI vendors whose tools and suites address specific markets.

The growth and popularity of BI have made it an attractive offering for enterprise software vendors, such as Oracle, IBM, Microsoft, and SAP. Through internal development or acquisition, these vendors have augmented their portfolios with BI and performance management assets. The goal is to provide one-stop shopping for all hardware, software, applications, and data management elements needed to deliver BI and performance management capabilities. This enterprise portfolio includes the following:

- **Operational/ERP systems.** These are integrated application packages for managing front- and back-office activities, such as finance, manufacturing, sales, service, and marketing, which create the transactions and data used to populate data warehouses and drive the output of BI reports and analyses.
- **Performance management.** Performance management includes software for monitoring and executing business strategy. The key tools here are: 1) scorecards which contain strategy maps, cause-effect tools, initiative tracking modules, and collaboration capabilities for managing strategic KPIs in monthly review meetings and 2) dashboards which enable workers to monitor and optimize performance of strategic, tactical, and operational KPIs on a more current basis.
- **Performance planning.** Performance planning includes modules for planning, budgeting, consolidation, forecasting, and scenario modeling. Plans provide the objectives, goals, and interim thresholds tracked in scorecards and dashboards, while modeling and forecasting tools help executives and managers adapt plans to new and changing competitive forces. Consolidation tools collect and aggregate performance results for financial reporting purposes.
- **BI tools.** Reporting, analysis, and monitoring tools, often including dashboards and scorecards. See next section for a complete description of components.
- **Data integration and quality tools.** These tools extract, transform, move, clean, and load data from one system to another. They can be used for data warehouse, data migration, master data management, and other data-intensive tasks.
- **Relational database management systems.** The workhorse of any data management application, RDBMSs are often used to store data for reporting and analysis purposes. There are also multidimensional and specialized analytical databases, but we include them in the BI tools category.

As Table 1 shows, most leading BI vendors—according to revenues and market presence—compete in a number of adjacent market segments. Some started as BI pure plays (e.g. Business Objects, Cognos), while others began offering BI to supplement their ERP applications (e.g. SAP) or RDBMSs (e.g. Microsoft and Oracle). Only a few of the leading BI vendors still focus exclusively on BI tools (e.g. MicroStrategy).

Technology Portfolio of Leading BI Vendors

● Yes ◐ Partial ○ No

	Operational/ ERP Systems	Performance Management	Performance Planning	Business Intelligence Tools	Data Integration Tools	Relational Database Management System
Actuate	○	●	●	●	○	○
Business Objects, an SAP company	●	●	●	●	●	○
Cognos, an IBM company	○	●	●	●	●	●
Information Builders	○	●	○	●	●	○
Microsoft	●	●	●	●	●	●
MicroStrategy	○	●	○	●	○	○
Oracle	●	●	●	●	●	●
Panorama	○	●	○	●	○	○
QlikTech	○	◐	○	●	○	○
SAS Institute	○	●	●	●	●	◐

Table 1. *This table shows the market positioning of leading BI vendors as defined by annual revenues and market presence.*

BI Platforms

The functionality offered by most BI tools has shifted considerably over the past 10 years as vendors have acquired or developed new tools and technologies in their never-ending quest to help users of all ranks and profiles to access information, glean insights, make decisions, and take action.

A BI platform offers a unified architecture to support a variety of BI tool modules. The unified architecture provides each module with a common set of services—ranging from data access to metadata to administration—that ensures greater integration among modules, easier maintenance, and faster extensibility.

BI Platform Modules. The following list is a superset of BI platform functionality. For each module below, there are also niche vendors that specialize in a single module as opposed to a full platform. We describe the players in some of these niches in a subsequent section of this report.

1. **Production reporting.** This module enables developers to create pixel-perfect production reports or complex management reports that may require complex SQL or custom coding.
2. **Business query and reporting.** This module enables power users to create formatted, interactive reports for their workgroups or departments without knowledge of SQL or a programming language.
3. **OLAP.** This module enables users to analyze data by multiple dimensions and hierarchies in a highly interactive way. Users can drill down, across, or up dimensions and hierarchies by pointing and clicking the mouse.

4. **Dashboards.** This module enables users to select and monitor business metrics in graphical form gleaned from multiple data sources.
5. **Advanced visualization.** This module leverages advanced visual techniques to let users analyze large volumes of data in an intuitive way. These tools are generally used by analysts to identify hard-to-spot trends.
6. **Microsoft Office integration.** This module enables business users to view live BI reports within Microsoft Office applications such as Excel, PowerPoint, Word, and Outlook. Some vendors use Excel as a front end to create and view BI reports and analyses.
7. **Predictive analytics.** This module enables users to apply advanced algorithms to reporting data to predict future outcomes or establish correlations among data entities.
8. **BI search.** This module uses a search paradigm to help BI users find or dynamically generate relevant reports.

Not all BI vendors support all eight modules, and the degree of functionality that each vendor offers differs dramatically.

Vendor Profiles

Below are short profiles of the leading BI vendors based on revenues and market presence. Use these to help you create a shortlist of vendors to evaluate when purchasing a BI tool. For more detailed profiles, go to www.biscorecard.com, which offers in-depth reports of the leading BI products. The reports are based on hands-on evaluations of the products, vendor briefings, and customer references.

Actuate

After several years of fairly flat growth, Actuate finished 2007 with a 13% increase in license revenues and record profitability. Actuate continues to lead the high-end enterprise reporting market (along with Information Builders), which is again heating up after some years of dormancy. Actuate's sweet spot is supporting companies that want to deliver interactive and static reports and dashboards to tens of thousands of external customers. The company has had some success executing an analytic strategy to round out its BI portfolio, and its open source reporting BIRT initiative within the Eclipse Foundation is paying dividends, with more than 2 million BIRT downloads to date and $8 million in revenue from the BIRT product line in 2007. Its 2006 acquisition of performance management vendor Performancesoft has enabled Actuate to round out its portfolio with BI-enabled solutions.

Differentiators:

- Provides high-end, enterprise reporting platform that can generate tens of thousands of secure, personalized, and complex interactive reports and dashboards.
- Offers a Java-based spreadsheet engine that delivers high-fidelity spreadsheets from a central server, preserving a single version of truth among spreadsheet users.
- Sponsors the Eclipse Foundation's Business Intelligence and Reporting Technology (BIRT) reporting project, the only BI-related top-level Eclipse project, for which it now sells streamlined deployment servers, commercial value-added software, maintenance contracts, and premium services and uses as the basis of its Collaborative Reporting Architecture.

Primary Challenge:

- Raising its profile as an end-to-end BI and performance management player with a strong financial future.

Business Objects, an SAP Company

SAP completed the acquisition of Business Objects for $6.8 billion in January 2008. With SAP as the leading ERP vendor and Business Objects the leading BI platform vendor, Business Objects has enforced its BI market-leading position by a significant margin. Although SAP has 40,000 customers worldwide, only just over a quarter use the SAP NetWeaver BI platform, suggesting significant untapped potential. However, Business Objects intends to remain open to all data sources and all ERP applications and is organized as a separate company owned by SAP. In this regard, Business Objects gained employees from SAP's business user group who focus on NetWeaver BI. Following the acquisition, the most product rationalization has been in the performance management and planning applications with the majority of modules designated as strategic coming from the SAP side (i.e., the OutlookSoft and Pilot Software products). In terms of product capabilities, Crystal Reports 2008 was released in November 2007 and is one of the first production reporting tools to embed Flash capabilities, making reporting dynamic and more appealing. The BusinessObjects XI 3.0 release (March 2008) includes a number of enhancements such as disconnected access for Web Intelligence users and improved report bursting. Polestar, due out this year, is a new module that combines search with smart visualization capabilities for data discovery.

Differentiators:

- The number one operational applications and BI vendor.
- Broad BI product line, spanning data integration to performance management applications.
- Specific solutions for the SMB and SaaS market.

Primary Challenge:

- Convincing the market it is data source–agnostic, improving the quality of technical support and service, and continuing to innovate as rapidly as it did as a pure-play BI vendor.

Cognos, an IBM Company

IBM completed the acquisition of Cognos for $5 billion in January 2008. Cognos joins IBM's Information Management division, which also includes DataStage (acquired from Ascential) and the InfoSphere Warehouse (DB2). Cognos is a leader in both the business intelligence and performance management segments. Under IBM's ownership, Cognos can cross-sell to customers of InfoSphere, which holds the number two spot for data warehouse platforms, according to IDC. IBM has already begun bundling a Cognos BI starter pack for free with the database. The Cognos BI modules are completely Web-based, including its production reporting module Report Studio. Having rearchitected the product to be Web-based, open, and service-oriented (initially with ReportNet in 2003 and later with Cognos 8 BI in 2005), it boasts a highly integrated BI platform. Cognos 8.3 BI, released in January 2008, includes a number of work-flow improvements, better authoring of financial reports, and enhancements to administrative features.

Differentiators:

- New, integrated BI platform (Cognos 8 BI) architected from the ground up for the Web and services-oriented architecture.
- A leader in performance management with a clear product line.
- Adaptive application framework provides model-driven packaged analytic applications.

Primary Challenge

- Convincing the market it will remain data source–agnostic and open; not getting lost in the larger IBM umbrella; providing adequate field service and support.

Information Builders

Information Builders Incorporated is best known for its Web-based parameterized reports that can replace thousands of reports and be dynamically distributed to tens of thousands of users, including customers and suppliers. The company's WebFocus BI platform runs on all major operating platforms and includes robust development and visualization tools. Information Builders also integrates with spatial analysis tools and search appliances and uses AJAX to deliver "Active Reports" that allow information consumers to access and interact with reports without being connected to the WebFOCUS server. The company recently introduced its Enterprise Performance Management Framework to provide KPI monitoring and strategy maps. iWay Software is the company's wholly owned subsidiary that provides data integration capabilities and hundreds of adaptors to both databases and operational applications.

Differentiators:

- Large-scale deployments of parameterized reports and dashboards to users inside and outside the firewall.
- Robust reporting architecture and programming language to develop or extend custom applications with reporting and analysis capabilities.
- Data integration subsidiary enables Information Builders' BI platform (WebFocus) to access and analyze any source in a flexible manner.

Primary Challenge:

- Competing as a privately held, smaller pure-play vendor against larger vendors with broader, more robust BI offerings.

Microsoft

Microsoft has historically focused on the BI infrastructure market segments, initially providing data warehouse platform and integration services. With the release of SQL Server 2005, the vendor released best-of-breed capabilities in ETL, OLAP, and reporting. With the release of PerformancePoint in September 2007, the vendor moves into the performance management and planning markets. The product includes planning, budgeting, forecasting, scorecarding, dashboarding, and analytics, all of which are delivered through Web-based SharePoint portal capabilities. The analytics came into the product from the acquisition of ProClarity in 2007. Microsoft's BI strategy differs most from its competitors in that it runs predominantly on a Windows platform, is predominantly bundled in the price of SQL Server, and relies more on Excel as the client interface. With the industry consolidation

in 2007, Microsoft does not have duplicate products as some other BI vendors do, and yet, various components within its BI platform are not as well integrated as they could be. The release of SQL Server 2008 slated for later this year will hopefully bring improvements in the business query and reporting module to put it on par with competitive offerings.

Differentiators:

- BI and data integration tools bundled into Microsoft SQL Server.
- Greater reliance and leveraging of Excel as part of the BI platform.
- Strong mid-market and ISV channel.

Primary Challenge:

- Convincing the market that it can deliver and support enterprise BI solutions.

MicroStrategy

While a number of vendors have had strategic issues rearchitecting and integrating disparate products, MicroStrategy has enjoyed an integrated BI platform for years. Its industrial-strength relational OLAP architecture is a key differentiator. The company continues to focus on core BI and does not provide data integration or performance management capabilities. MicroStrategy has been steadily broadening its data access with the release of free-form SQL (Q1 2005), a graphical query builder, and with support for third-party OLAP (Q1 2006). The release of "Dynamic Enterprise Dashboards" in Q1 2007 as an extension of its Report Services module put the vendor ahead of competitors with its use of Flash or AJAX for interactive dashboards. The product's ability to leverage advanced visualizations such as spark lines, bullet graphs, and heat maps, as well as allowing users to create their own, is a differentiator. The vendor has also been ahead of much of the market in its approach to combining predictive analytics with the BI platform. It also appears to have moved beyond its aggressive pricing policies of years past, especially for the SMB market.

Differentiators:

- Interactive analysis and reporting against data warehouses with very large volumes of data.
- Offers a highly integrated, extensible, and scalable ROLAP architecture that it has taken great care to grow organically rather than through acquisition.
- Highly visual, interactive dashboards that leverage the underlying platform.

Primary Challenge:

- Competing as a pure-play BI vendor against larger competitors with broader product lines; delivering high performance compared to lighter-weight OLAP and reporting vendors.

Oracle

Oracle is in the enviable position of being the leading data warehouse platform vendor, and now with the acquisition of Hyperion, the leading performance management vendor. While Oracle has said it will continue to support Oracle Reports and Discoverer as well as the acquired Hyperion System 9 product line that includes former Brio and SQR products, the vendor's new flagship BI platform is Oracle BI Enterprise Edition (OBI EE), based largely on Siebel Analytics. Oracle BI EE primarily

uses a ROLAP architecture, and the latest EE release adds support for Hyperion Essbase as a data source. With Oracle now owning both a number of operational applications (E-Business Suite, JD Edwards, PeopleSoft, and Siebel) and an open, enterprise-class BI platform, the vendor has been aggressively and successfully pushing its analytic applications (Oracle BI Applications), which include ETL, data mart models, and prebuilt dashboards and reports based on OBI EE.

Differentiators:

- Broadest product line, spanning operational systems, data storage, data integration, core BI, and performance management applications.
- Pre-built analytic applications for the operational systems Oracle owns (Oracle E-Business Suite, JDEdwards, PeopleSoft, Siebel CRM).
- Strong ROLAP BI tool in Oracle BI Enterprise Edition (formerly Siebel Analytics).

Primary Challenge:

- Maintaining a consistent focus on BI to deliver a unified, integrated BI platform that also keeps pace with competitors' innovations.

Panorama Software

Founded in 1993, Panorama sold its OLAP technology to Microsoft, which turned it into Microsoft Analysis Services, one of the top two OLAP databases today. In turn, Panorama decided to follow its own technology and Microsoft's trajectory by providing a multi-faceted, cross-platform suite of integrated BI applications. Panorama NovaView, the company's flagship solution, delivers analytics, reporting, dashboarding, scorecarding, advanced visualization, and modeling against MDX-based data sources such as Microsoft Analysis Services, SAP BW, and Essbase. Despite the rock-bottom pricing of Microsoft Analysis Services and SAP BW (i.e., both come bundled as part of the SQL Server or NetWeaver platform, respectively), Panorama's 1,000+ customers are willing to pay a premium price to transform Microsoft's core BI platform into a scalable and reliable enterprise solution. However, Microsoft's acquisition of ProClarity and its continuous enhancement of its BI platform are putting pressure on Panorama to continue to innovate. In early 2008, Panorama announced a strategic partnership with Google to deliver BI functionality in Google's online productivity suite—Google Apps. To enable that, Panorama developed what they call PowerApps, a new concept of "analytics as a service" that runs on the cloud. PowerApps was designed to enable ISVs to build analytical applications on the Web.

Differentiators:

- Scalable, reliable, high-performance platform on which to run Microsoft BI solutions for enterprise deployments.
- Complete BI platform—analytics, dashboarding, reporting, visualization, and scorecarding—for MDX data sources.
- Powers the analytics within Google's new PowerApps.

Primary Challenge:

- Avoid getting crushed by Microsoft's increasingly aggressive BI juggernaut and make inroads into OLAP markets, especially SAP.

QlikTech

QlikTech is a privately held software company that originated in Sweden and recently moved its headquarters to the U.S. It most differentiates itself with its in-memory "associative" technology. While other vendors (such as Applix TM1, now part of IBM) have an in-memory approach to OLAP, QlikTech provides a unique and intuitive way of navigating through data that resonates with users. Although the vendor is small ($80 million in revenues for 2007), it's been growing 75% to 80% in recent years for two main reasons. First, the vendor got venture capital funding in 2004. Second, the adoption of 64-bit platforms has allowed the product to move from more of a personal analysis tool to one that can analyze significant amounts of data in memory.

Differentiators:

- In-memory associative analytics that provides an intuitive way to navigate and explore data sets.
- Speed-of-thought dashboards that are fast to implement and highly interactive.

Primary Challenge:

- Articulating its differentiators to complement and coexist with broader BI solutions.

SAS Institute

SAS Institute is the largest privately held software company in the world, with more than $2 billion in revenues in 2007. Although SAS Institute was late to enter the core BI market in 2004, its ascent has been rapid, with an estimated 30% growth rate in the last year, far outpacing competitors' growth in the 11–13% range. SAS Institute has one of the broadest BI solutions, including data integration, core BI, predictive analysis, and performance management, as well as a number of other analytic applications and industry-specific solutions. SAS Institute differentiates its BI platform based on its analytic capabilities and integrated architecture. Given SAS Institute's historical success with technical business analysts and its early command-driven interfaces, SAS suffers a stigma of being perceived as difficult to use and lacking end-user appeal. A point of differentiation is the vendor's subscription-based licensing model.

Differentiators:

- Broad range of analytical and data integration tools and growing portfolio of analytically driven BI solutions for business.
- Owns the market for predictive analytics and statistical software, which it can use as a beachhead for selling its new integrated BI platform.
- Global presence with strong growth in Europe and Asia Pacific.

Primary Challenge

- Selling BI tools and solutions to IT, which it has historically circumvented, rather than solely line of business users and statisticians; convincing the broader market that its subscription-based pricing model for its BI platform is competitively priced.

Niche Vendors

There are many niche players in the BI tools market. Niche vendors can be divided into two groups: 1) vendors that focus on a specific segment within BI, such as visualization or dashboards, and 2) smaller BI vendors that provide a broad portfolio of BI capabilities but do not have the visibility or market share of the leaders cited earlier.

Niche Segments within BI

There are many niche segments within the BI market. Here are short descriptions of a few of these segments, along with the major players in each.

Predictive analytics. Leading vendors of predictive analytics (i.e., data mining) software now offer robust analytic workbenches that preintegrate a number of functions and tasks that analytic modelers previously completed by hand or with different tools. Today, modelers can purchase a single analytic development environment that supports all six steps in the analytic development process.

Market leader SAS Institute and SPSS, Inc., offer the leading analytic workbenches today, followed by a host of second-tier vendors such as Fair Isaac, Angoss, Matlab, Insightful, Tiberius, Unica, Oracle, KXEN, Salford Systems, StatSoft, Quadstone, Visual Numerics, and ThinkAnalytics. Open source or free data mining tools are also making inroads, including Yale, Weka, R, C4, and Orange. Most of the leading workbenches contain integrated tools that enable developers to create and manage project plans; explore and profile data sets; create, test, and validate models; and deploy and manage the models.

Dashboard vendors. Pure-play dashboard products are largely built from the ground up using the newest technologies, such as Flash, asynchronous Java and XML (AJAX), enterprise information integration (EII), service-oriented architecture, advanced visualization, and in-memory-based processing. As a result, this is a fun segment to watch and evaluate. Even if you do not purchase a product from these vendors, it is worth evaluating these tools to see what is possible today with the newest technologies.

Most leading BI vendors now offer dashboards as part of their core platforms, although they tend to lag in features behind some of the pure plays (unless, of course, they acquired a pure-play dashboard vendor, which both Business Objects and Cognos did). However, they are catching up quickly. Some of the more notable pure-play dashboard vendors are iDashboards, AppFusion, Visual Mining, Theoris Vision Software, and MarvelIT (see TDWI's "Deploying Dashboards and Scorecards," TDWI Research, 2006 for a detailed roundup) as well as www.dashboardinsight.com, which is a portal covering dashboard news and products.

Scorecard vendors. Scorecards help organizations improve their ability to create and monitor strategic objectives and optimize performance. Only a handful of scorecard vendors—ActiveStrategy, Insightformation, QPR Software, Corporater, and CorVu, which is now a subsidiary of Rocket Software—might classify themselves as pure-play scorecard vendors. The rest are predominantly BI or ERP vendors. Even the scorecard vendors would prefer to be called performance management vendors, since they are trying to help organizations monitor the execution of strategic objectives.

Visualization vendors. Advanced visualization products are generally geared to power users who need to explore data to find hidden trends and patterns. Visualization vendors typically deliver a series of synchronized charts or advanced visualizations on multiple panels on a screen. When a user applies a filter to one visualization, the others automatically update with relevant data. Some even embed statistical algorithms to perform more complex calculations.

Advizor Solutions, Spotfire (acquired by TIBCO), and Tableau process data in memory, often with 64-bit CPUs, making performance nearly instantaneous, even when displaying complex visualizations across large data sets. Many BI vendors have OEM'd visualization tools or exploited Flash and AJAX technologies to enhance the visual displays of their output.

Event-driven analytic platforms. Since BI tools query or "poll" databases to access and deliver the latest information to users, they are often not fast enough to meet real-time information requirements in operational environments. Event-driven analytic platforms capture business events in real time and apply business rules that trigger alerts or workflows built into core business processes. Some experts call these business activity monitoring (BAM) or complex event processing (CEP) engines, since they are closely associated with the execution of business processes or value chains. However, some applications require significant historical context to fire complex rules and may store this data in a pseudo–data mart or access it dynamically from a data warehouse. Syndera, Celequest (now Cognos Now!), and SeeWhy software provide event-driven analytic platforms. Pure-play vendors commonly associated with BAM include Systar, Actimize, Blue Agave, Categoric, First Rain, TIBCO, and WebMethods. However, many database and hardware vendors also support some form of event-driven processing engine.

Open source BI. In 2005, there were a handful of open source BI tools. Now there are two dozen or more, covering ETL, reporting, OLAP, portals, geographic information systems, and visualization. To date, open source BI tools have been popular among independent software vendors (ISVs) but have yet to catch on among business users, although adoption is inevitable because the price is right.

The two best-known and financed open source BI vendors are JasperSoft and Pentaho, while the Eclipse Foundation is sponsoring BIRT (see Actuate above). The JasperSoft suite contains modules for ETL, analysis, end-user reporting, and production reporting. Users can download the open source code or purchase an annual subscription that provides support, indemnification, managed release cycles, and broader platform support. Pentaho has unified a number of open source BI initiatives to create its suite, which consists of reporting, analysis, dashboards, data mining, workflow, and the underlying BI platform. Like JasperSoft, Pentaho also offers a subscription service along with free open source software.

Niche BI Vendors

Following is a table of niche BI vendors that offer a traditional slate of reporting and analysis tools or more specialized functions not covered in the previous section. These vendors have briefed TDWI Research in the past two or three years. (For a comprehensive list of 100+ BI vendors, please see the "Business Analytics" section of the TDWI Buyer's Guide in the Marketplace tab of our Web site: www.tdwi.org/marketplace.)

Niche BI Vendor	Comments
Arcplan	OLAP client software that comes with a rich, drag-and-drop development environment for embedding reporting and analysis into business process and applications.
Autometrics	On-demand provider of dashboards for complex, multinational corporations with pricing starting at $50,000.
Endeca	Search vendor that started out by providing e-commerce catalog capabilities and now offers BI capabilities using search-assisted query and navigation of indexed databases.
Decision Support Panel	DSP provides low-cost BI tools for Microsoft SQL Server and Analysis Server, including dashboards, search, mobile BI, collaboration, and integration with SharePoint portals.
FAST	FAST, now owned by Microsoft, uses search as the platform upon which you run BI tools, including Corporate Radar, a ROLAP solution purchased by FAST. It creates a search repository comprising both structured and unstructured data and gives users an intuitive navigation interface to identify and analyze the nuances of the data.
InetSoft	Provides Java-based reporting, analysis, and dashboarding using innovative data block technology that lets power users quickly assemble robust BI solutions from various components.
InforSense	InforSense provides a suite of predictive and visual enterprise business intelligence and reporting software that can integrate, automate, and visualize data sources, information, and analysis processes.
JasperSoft	Open source BI vendor providing a full suite of BI tools.
LogiXML	Offers an affordable, Web-based, robust reporting environment as well as the industry's first free reporting tool, Logi Report.
LucidEra	Software-as-a-service vendor that provides on-demand reporting and analysis applications for finance, sales, and marketing. It has specific applications for Oracle Order Management and Salesforce.com.
Panoratio	Lets users perform fast, multidimensional analyses by compressing large, complex data sets into Portable Database Image (.pdi) files that run in memory on a standard computer, yet maintain the rich detail from the source data.
Pentaho	An open source BI vendor providing a full suite of BI tools.
PivotLink	Provides small and midsize businesses with analytical tools without the need for transforming or modeling data.
Strategy Companion	Provides query, reporting, visualization, dashboards, and scorecards against Microsoft Analysis Services and Microsoft Dynamics CRM and uses SOA to integrate with SharePoint and other applications.
Telemetree	Resells CubeWare's low-cost ETL and reporting tools, which are geared to the SMB market. Windows-based clients that access OLAP servers.
Visual Mining	A hosted dashboard and analysis service for Salesforce.com customers that lets users design and modify KPIs and pages and leverage sophisticated visualizations.
XLCubed	Links SQL Server Analysis Services and Excel to deliver OLAP in a familiar environment.
Xactly Analytics	A software-as-a-service vendor that started in 2005 offering sales compensation application and has branched into adjacent areas such as quota, price, and territory management.

Recommendations

Purchasing a BI tool to support your entire enterprise is a major investment. If your organization is among the *Fortune* 2000, the cost may run into the millions. Even if your organization makes less than $1 billion in revenue or you want to implement BI in a single department, price and cost to implement can sometimes be a barrier. A number of market forces have brought prices down slightly, and now there are SaaS models, packaging options, and subscription pricing to suit every deployment size. Although BI platforms have gotten broader and better, significant differences in product capabilities and usability remain.

With this in mind, here are a few recommendations to guide your purchase in the context of the current landscape for BI tools:

1. **Recognize the importance of BI tools.** A data warehouse in itself is simply a repository of data. The BI tools allow users and decision makers to access, exploit, and take action on this information.
2. **Follow a selection and standardization process.** Users are passionate about how they access information and the usability of BI tools. Given the importance and size of the investment, follow an objective selection process that balances features with strategic considerations.
3. **Understand vendor and product differences.** Vendors have significant strategic and product differences, yet these differences are increasingly less apparent and may surface only during deployment. In this regard, customers must spend more time evaluating and understanding differences (but not to the point of analysis paralysis). Ultimately, certain specific product differences may tip the scale toward one vendor, or when there is a "tie" in best fit, strategic differences will be the deciding criteria. Given how late in the process differences appear, customers must be more vigilant about staying focused on the ultimate goal of delivering business value with BI.
4. **Get ready for near real time.** BI adds significant value when it delivers just-in-time data for supporting operational processes. Ensure that your current and future BI tools are capable of displaying updates to just-in-time data.
5. **Keep abreast of innovations.** Watch out for search, in-memory analytics, advanced visualization, and composite applications as ways of extending the reach of BI to all employees.

Once you've deployed BI tools, then the fun really begins. You can download past TDWI Best Practices Reports free of charge from the research section of TDWI's Web site (www.tdwi.org). In particular, review:

- *Smart Companies in the 21st Century: The Secrets of Creating Successful Business Intelligence Solutions*, Wayne Eckerson (2003)
- *Enterprise Business Intelligence: Strategies and Technologies for Deploying BI on an Enterprise Scale*, Cindi Howson and Wayne Eckerson (2005)

TDWI RESEARCH

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