

This is a sample chapter from a new report for 2005, "Business Intelligence: Best Practices for Achieving a High-Performance Organization." To order or to learn more about the Gartner Strategic Planning Series, go to www.gartnerpress.com/reports.

2.0 The Outlook for Business Intelligence and Data Warehousing

The pressure to deliver business intelligence (BI) capabilities has never been greater. This is in response to many factors, such as government regulations, customer requirements, competitive forces and accelerating market dynamics. Large data stores hold the promise of delivering valuable perspective that, if used properly, can help organizations address problems more quickly and capitalize on opportunities more fully.

Organizations achieve "information democracy" when they have fully absorbed BI into their everyday operations, when all users have access to the insight necessary to carry out their respective roles, and when information is uniform and consistent across the enterprise. Enablers and inhibitors are on the path to information democracy. These fall into the categories of usage and adoption, technology and architecture, and vendors and markets. An organization's ability to achieve information democracy increases dramatically when it understands, manages, and utilizes these enablers and inhibitors properly.

The research in this chapter addresses the following Key Issues:

- What usage and adoption trends will best support strategic BI?
- What technologies will advance the state of the art for BI?
- How will market changes affect BI investments?

2.1 Information Democracy

Key Issue: What usage and adoption trends will best support strategic BI?

Strategic Planning Assumptions:

- *Through 2006, the second wave of BI extranet deployments will be limited in its success because of lacking processes and cultural aspects (0.7 probability).*
- *The third wave of BI extranet deployments will have started by 2008 (0.6 probability).*

The first wave of information democracy deployments began in 1999. Despite some positive case studies and interesting success stories, the results have been disappointing. The Web-

based technology was not mature enough, many organizational processes were not designed to manage this information flow, and organizational cultures were not ready to deal with this kind of transparency. In addition, the economic situation helped to dispel the trend.

However, the technology has become more mature and scalable. To be successful, organizations should focus on culture and processes. Information should not be treated as a political instrument, but as a resource, much like raw materials, capital and labor. Using this approach, information can be shared easily with external stakeholders as well — a practice that continues to be far from realization.

In addition, an organization's processes must be ready for information democracy. An organization must provide recent information — the dominance of quarterly, monthly, and even weekly data will yield to daily information and more near-real-time information. Service-level-driven processes are needed to ensure that externally available information is under tight control. In addition, information should be linked to the customer value proposition. Organizations should take the added value of their information for their customers at the outset, rather than justifying their own performance.

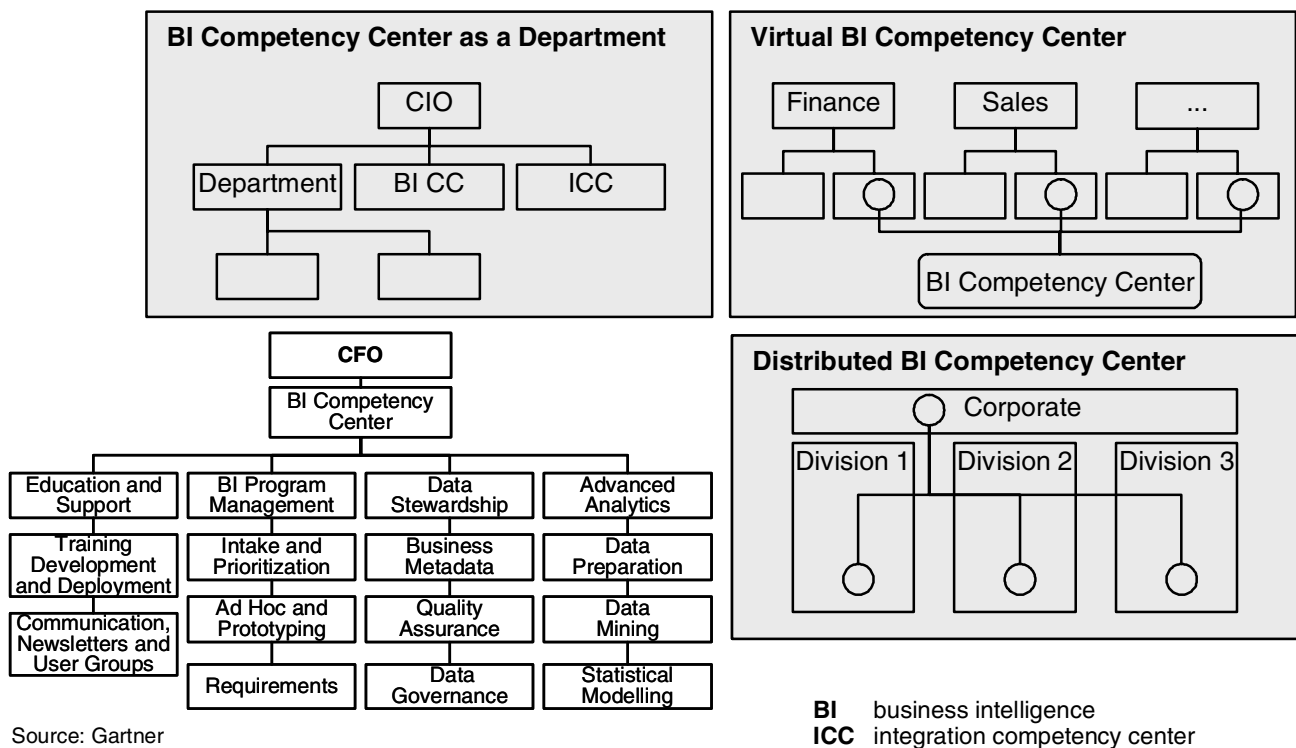
2.1.1 Competency Centers: Multiple Structures Emerge

Strategic Planning Assumption: By 2006, more than 30 percent of Global 2000 enterprises and government agencies with cross-enterprise, strategic BI initiatives will have formed BI competency centers (0.7 probability).

BI applications and tools have often infiltrated into organizations as part of operational applications, such as enterprise resource planning (ERP) or customer relationship management (CRM), and have inadvertently created “islands” of BI (see Figure 2-1). As a result, they have generated silos of data, applications, tools and skills for the IT organization and users, which makes it difficult for organizations to gain a consistent, useful insight into the overall business. In addition, managers' confidence in — and the value of — the resulting insight can be low without a well-established and recognized competency in developing and acting on that insight.

In response, many organizations form BI competency centers to develop and focus the resources needed to be successful with BI. These competency centers have been chartered to develop BI from an IT-driven initiative that provides basic reporting for users to a business-

Figure 2-1: Multiple Structure Competency Centers



driven, cross-organization initiative encompassing a wide range of users, customers and partners. Competency centers develop overall strategic plans and priorities for BI, define the requirements (including data quality and governance), and help organizations understand how insights should be interpreted and applied to business decisions. Regardless of an organization's structure, the BI competency centers should report to the CIO, chief financial officer or main business executive; have a mandate and a stable core; and have a flexible size.

Action Item: Organizations should assess how BI projects and skills are organized and used in their enterprises. Identify key resources and sponsorship toward establishing a BI competency centers.

2.1.2 BI Standardization

Strategic Planning Assumption: *Through 2006, tool consolidation will be a major focus for large organizations that aim to reduce costs, and increase consistency and collaboration in their BI initiatives (0.8 probability).*

Most large organizations have many different tools and technologies that they use to deliver BI to the user community. In many cases, a high degree of overlap and redundancy exists within these organizations' BI tools portfolio because different projects, departments, and lines of business will have chosen their own standards or made shortsighted, tactical purchasing decisions. The large number of tools leads to high costs because of the need for overlapping and redundant skill sets to support the variety of tools and the larger overall investment in software licenses. More significantly, these organizations have multiple "versions of the truth," do not share a common language and cannot collaborate by sharing the results of their analyses.

Thorough consolidation can reduce the cost and increase the effectiveness of their BI initiatives significantly. Organizations should aim to have a combination of tools that complement each other with minimal overlap. An effective BI tools portfolio might include a standard enterprise BI suite (EBIS) for query and reporting, and a standard BI platform for developing customized BI applications. A consolidation effort that aims to increase collaboration and the effectiveness of BI will act as an accelerator for BI success. A consolidation effort that aims only to reduce costs will act as a decelerator because it may result in a mismatch between tool functionality and user requirements.

2.1.3 BI Applications: Build or Buy?

Strategic Planning Assumption: *Through 2007, most organizations will aim to use packaged BI applications, rather than a new development (0.7 probability).*

Several studies of many organizations in the United States and Europe have indicated that they intend to adopt packaged BI applications exclusively, rather than rely on internal development. This trend is slightly troubling because it suggests that organizations are willing to either contract for extensive customizations to meet specific needs, or alter their business practices to match the packaged application. Neither approach is an effective solution.

However, a trend toward developing applications internally or externally is also troubling. There may well be suitable packaged applications that will fit into an established BI strategy, one that would be more cost-effective and timely than new development.

Organizations should develop a strategy for BI and should always conduct a balanced build vs. buy analysis before taking any decisions. All three options — packaged applications, internal development and external development — have unique strengths and weaknesses, and are equally viable given the appropriate circumstances. To achieve high marks for all of the established criteria, the costs would be equivalent, regardless of the option selected. The sole difference would be where investments would be made to compensate for the solution's shortcomings.

2.1.4 Service Providers Close the Resource Gap

Strategic Planning Assumptions:

- *Through 2007, more than 50 percent of BI projects will require a service provider to bridge skills and resource gaps (0.7 probability).*
- *Through 2006, less than 10 percent of enterprises will be ready or able to outsource their BI applications and operations completely (0.7 probability).*

As organizations plan to use BI more broadly and strategically, many are turning to system integrators to fill gaps in resources and capabilities. System integrators' BI capabilities vary widely. Some can provide only

application developers for project-level work. Others have developed specialized competencies and can deliver a full stack of best-of-breed capabilities from selected vendors with which they have established strategic relationships. Others offer industry-specific domain expertise (see Figure 2-2).

The use of system integrators should be part of an overall BI plan. For example, several organizations have decided to outsource selected enterprise applications. Service providers are finding that they can increase their business by offering complementary reporting and BI solutions on top of the outsourced applications. As a result, service providers can create more silos of BI.

Action Item: Organizations should define the core BI competencies and capabilities that they need to develop clearly, and determine which can and cannot be contracted out.

2.1.5 The Value of High-Quality, Understandable Data

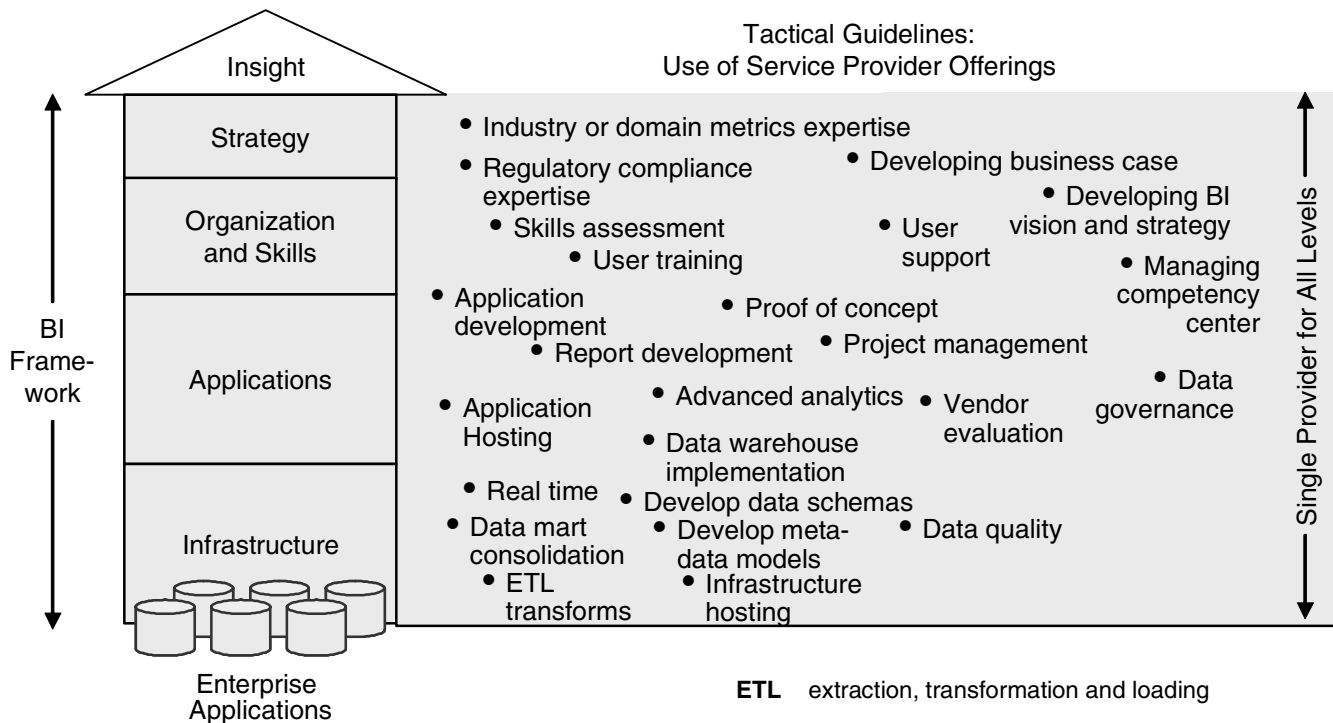
At the infrastructure level, most organizations that are engaged in planning and designing the data underpinnings of their BI initiatives focus on the delivery

of data to users. In addition, many organizations fail to consider the data’s meaning and quality level. Data warehouse implementations continue to fail because of data quality issues, most of which are not identified until very late in the process. In addition, organizations teach users how to operate BI tools, but many users do not understand the meaning and lineage of the data that is returned from their queries.

Metadata and data quality are critical to achieving value from BI, and to ensuring that the output of BI tools and applications is well understood and trusted by the business. As a result, the number of data quality improvement programs is increasing in large organizations. Many of these programs are driven by BI requirements, as well as by external pressures such as the demand for corporate transparency and compliance.

In addition, BI projects teams — and the organization as a whole — have increased their focus on metadata, with the goal of providing a common, consolidated view of metadata across the environment. This ensures that the data used by BI tool and application users is well-understood. Failure to focus on data quality and metadata is a decelerator of BI growth and success — it limits BI’s potential value to and impact on the business.

Figure 2-2: Closing the Resources Gap



Source: Gartner

2.2 The Data Warehouse Takes an Active Role in Business Processes

Key Issue: What technologies will advance the state of the art for BI?

Strategic Planning Assumption: By 2007, more than 50 percent of data warehouse implementations will operate as a “closed loop,” feeding data back to source systems to tune and refine operational processes (0.7 probability).

The data warehouse is quickly moving away from being a passive, offline, “after-the-fact” reporting structure that is disconnected from business processes. It is becoming a structure that is deeply embedded in business processes, is used for real-time decision making and collaboration, and interacts with operational systems directly. As business users access data from the warehouse to fuel key processes — such as planning, budgeting and forecasting — the results of their work in these domains will not only be used to update the warehouse, but also

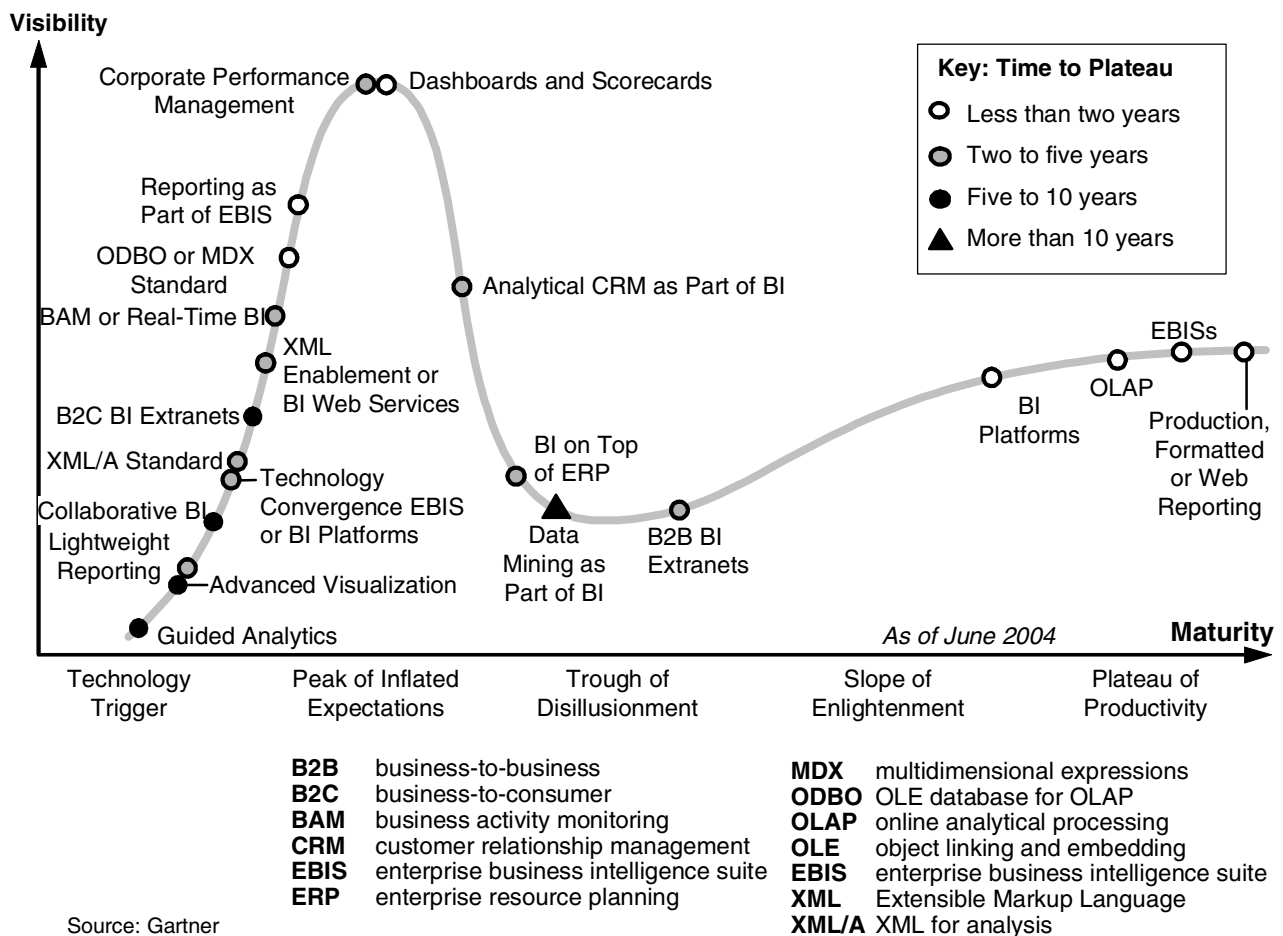
fed back into the data warehouse source systems. This creates a closed-loop environment in which operational and analytical components are brought closely together, which enables the business to react to important events more quickly.

2.2.1 The BI Hype Cycle

BI has enjoyed steady attention since the early 1990s, and will continue to grow and flourish through 2009. Gartner’s BI Hype Cycle demonstrates a healthy balance between mature and innovative technologies (see Figure 2-3). Unlike other business application trends, the peaks have not been spectacularly high, and the troughs have not been precipitously low. This is because many BI technologies are proven and represent low-risk investments.

However, significant innovation exists in BI. Many BI innovations will involve infrastructural approaches, as it becomes more networked — that is, as it communicates

Figure 2-3: The BI Hype Cycle: 2004-2005



with other BI technologies inside and outside the organization, as well as with other technologies, such as business process management (BPM) and application integration. In addition, convergence is an important trend, with querying, reporting, analysis and BI application development merging.

2.2.2 BI and Collaboration

Strategic Planning Assumption: By 2006, Gartner expects that BI users will be able to work on the same models simultaneously or have real-time communication between various BI applications (0.6 probability).

Collaborative applications allow participants in the value chain to collaborate in the business process interactively and remove the need for intervention by expert staff.

The idea of collaborative functionality in BI is not new. Adding annotations to reports and sharing analyses with other users has been possible since the days of the executive information system. However, collaborative functionality has become popular, and many vendors are adding workflow capabilities to their BI applications (see Figure 2-4).

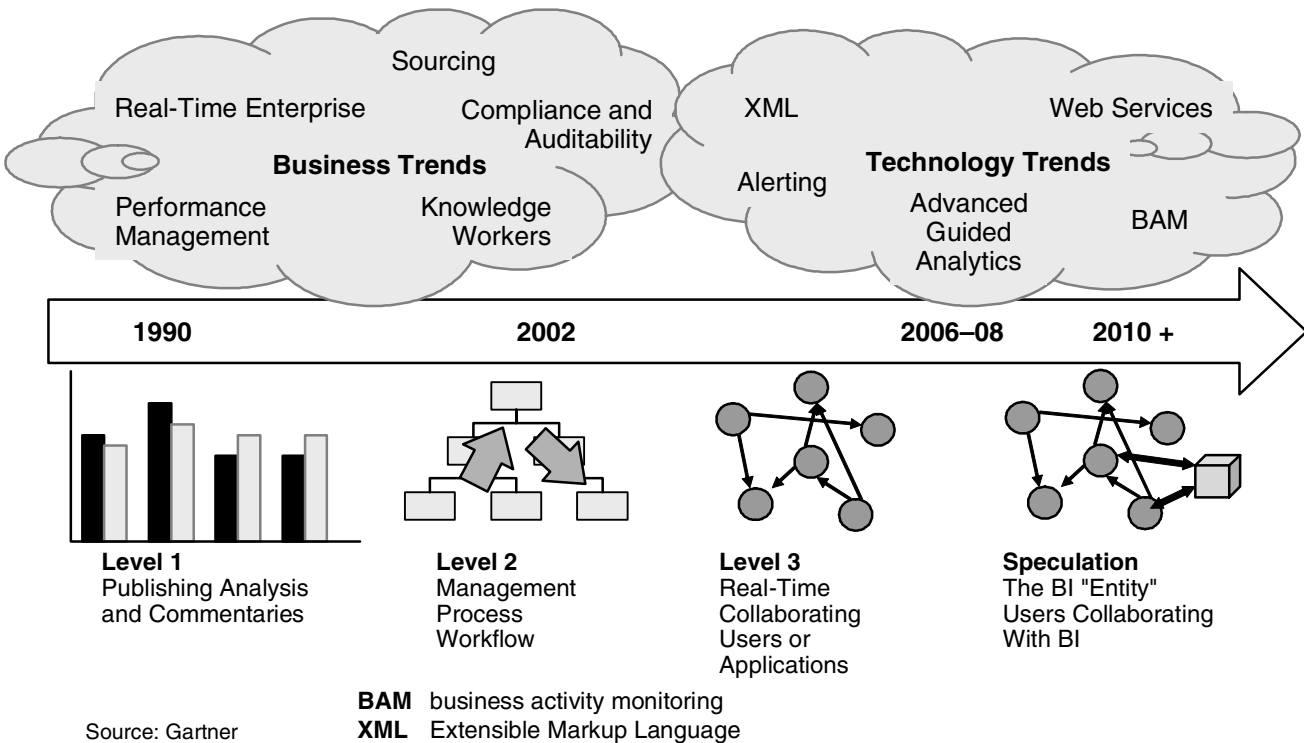
When this trend is extrapolated even further, it is possible that linking a networked collaborative view with advanced analytics will lead to a “BI entity.” In this case, collaboration is not limited to people working together and BI applications calling each other. A collaboration of people could establish a BI process instantly that reacts to the group’s discussion and guides it to the right insights.

2.2.3 BI and Knowledge Management

Strategic Planning Assumption: Through 2010, BI and knowledge management (KM) will continue on their own development paths, without significant convergence and consolidation (0.9 probability).

The convergence of BI and KM has been predicted for at least the past 10 years. So far, it has not happened. Despite the complementary value of both areas, where quantitative and qualitative information is managed, the link is not there in practice. Both markets develop the same features, such as collaborative functionality and text mining. However, they develop them in parallel and do not use each other’s technologies. ERP vendors have considered offering KM and BI functionality, but this only affects each vendor’s installed base and does not change the market.

Figure 2-4: BI Becomes More Collaborative



KM vendors understand that no great demand exists for additional BI tools, and that they would not be able to create a significant place for them in the BI market. As a result, KM vendors are not entering the BI market. BI vendors are able to enter the KM market, but that is not a priority, because they are too busy with the full range of BI innovation. Significant acquisitions or skills investment would be required to integrate the two markets.

The portal is the combining factor between BI and KM, and the integration of the two can only be done at this level. However, this would be enough for most organizations.

2.2.4 Supporting Massive BI Use

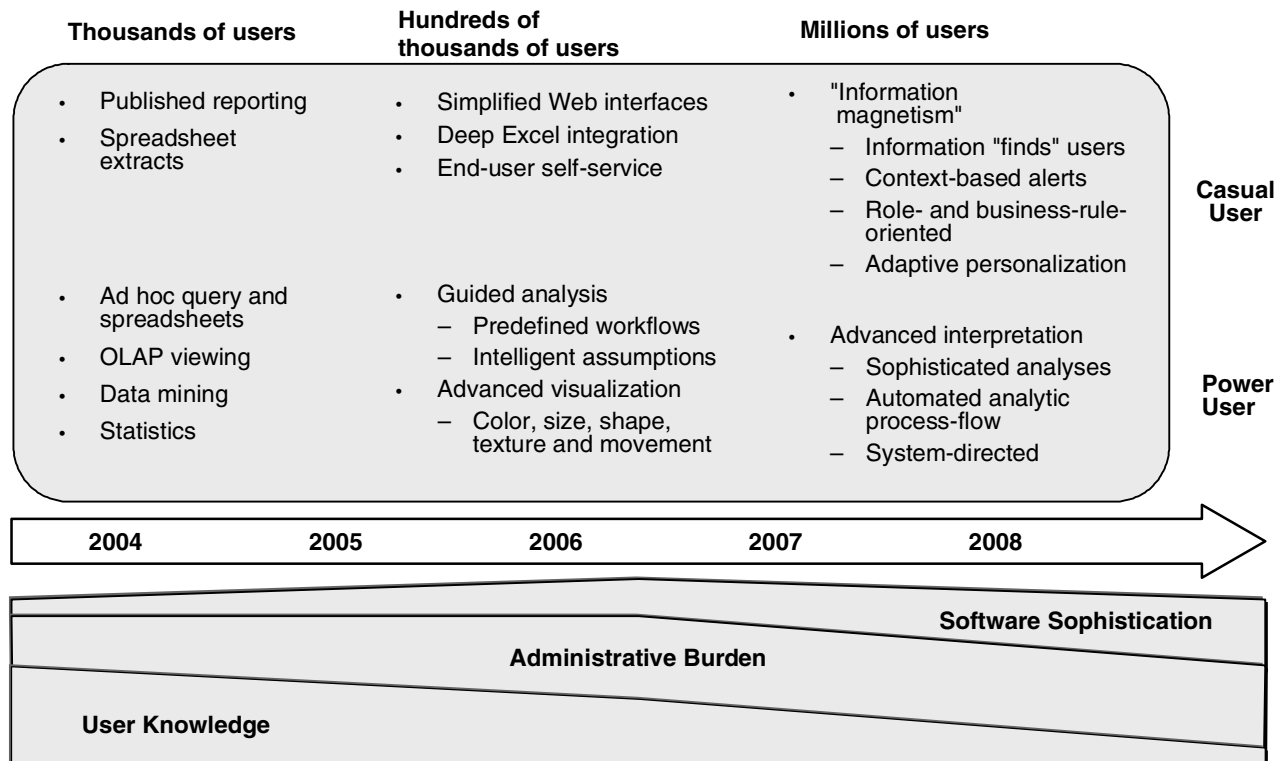
Strategic Planning Assumption: *Advanced visualization will become a mainstream element of BI in 2005, but advanced interpretation will lag behind until 2007 (0.6 probability).*

Interfaces must become simpler to satisfy the demands of casual users, but should be sophisticated enough to deliver value and insight. In the medium term,

organizations should expect improved usability and integration with Microsoft Excel to reduce the amount of training required. The increase in user numbers suggests emergence of more advanced BI, which Gartner calls "information magnetism," where useful insights "find" users, based on their roles and preferences (see Figure 2-5). Insight objects, which carry substantial metadata and context will act as a foundation for a more traditional BI experience. This paradigm shift for casual users should be positive because many more constituents will benefit from BI, with improved administrator-to-user ratios and improved Excel integration.

However, guided analysis will enable knowledgeable users to explore the nuances of data fully through predefined analytical scripts, which will use more powerful analytics without the need for advanced knowledge. Advanced visualization will become more mainstream and integrated with guided analysis. Directed by guided analysis applications, advanced visualization will make trends, affinities and outliers obvious through the use of color, shape, size, texture, position and movement. Gartner expects this to evolve into "advanced interpretation," which, like guided analysis, enables everyday users to

Figure 2-5: Business Intelligence Technology Evolution



Source: Gartner

OLAP online analytical processing

comprehend sophisticated analyses. However, unlike guided analysis, advanced interpretation will generate needed analytical scripts automatically, which will make it more broadly applicable and reduce the programmer- and administrator-to-user ratio. This trend is positive because more users will gain a deeper understanding of the facts surrounding the business, without requiring experts in operations research to assist them.

2.2.5 Database Management Systems and BI

Strategic Planning Assumption: *By 2008, 80 percent of BI implementations will use BI-specific functionality embedded in the database management system (DBMS) platform (0.7 probability).*

The major DBMS vendors continue to add more BI infrastructure and functionality to their DBMS products. Components such as extraction, transformation and loading (ETL), online analytical processing (OLAP), and data mining have quickly become features of the database, used by the vendors to better position their technology to support BI and data warehouse implementations. Including value-added BI functionality with their DBMS products enables these vendors to approach the market with a “one-stop shop” message.

However, DBMS-centric BI functionality has met with mixed results. Adoption of ETL functionality in the DBMS is growing quickly, with the number of implementations exceeding that of the leading independent ETL tool vendors. DBMS vendors will continue to increase their ETL capabilities and, as a result, their share of the ETL market. However, DBMS vendors’ investments in other areas of BI functionality have been less successful. DBMS-embedded OLAP technology, query-and-reporting functionality and data mining continues to occupy a niche market and does not compete well with independent, best-of-breed vendors of these technologies. However, organizations that do not have an established investment in best-of-breed tools, and have achieved a high degree of standardization on a particular DBMS, are increasingly attracted to the DBMS-embedded BI functionality because of relatively lower costs and the ease of dealing with a single vendor.

2.2.6 Aligning BI Technologies With BI Applications

Strategic Planning Assumption: *Through 2007, application functionality (such as scorecards and strategy maps), planning functionality, audit trails and workflow will become part of the overall BI metadata (0.7 probability).*

An emerging trend in corporate performance management (CPM), which could have a significant impact, is the CPM metadata hub. This central repository would contain the definitions of the metrics and data structures to be used by all CPM processes, methodologies, metrics and systems. In addition, it would contain the cause-and-effect relationships between the metrics to be used by strategy maps on the various levels in the organization. On a more technical level, it would contain all the necessary links to BI reports, queries and OLAP cubes. The CPM metadata hub should be accompanied by a foundation of common functionality, which would be used by all applications (see Figure 2-6).

In many CPM suites, the metadata is scattered throughout a range of applications. Metadata bridges are being built to connect the various applications, but this introduces alignment risks. In most cases, valuable instruments (such as strategy maps) are confined to a single scorecard application and are not available for what-if or activity-based management exercises. In addition, most allocation and input mechanisms are restricted to budgeting applications and need to be rebuilt for other types of planning application. The CPM metadata hub would improve the accuracy of performance data significantly and enable organizations to create more agile CPM processes that reuse standard components.

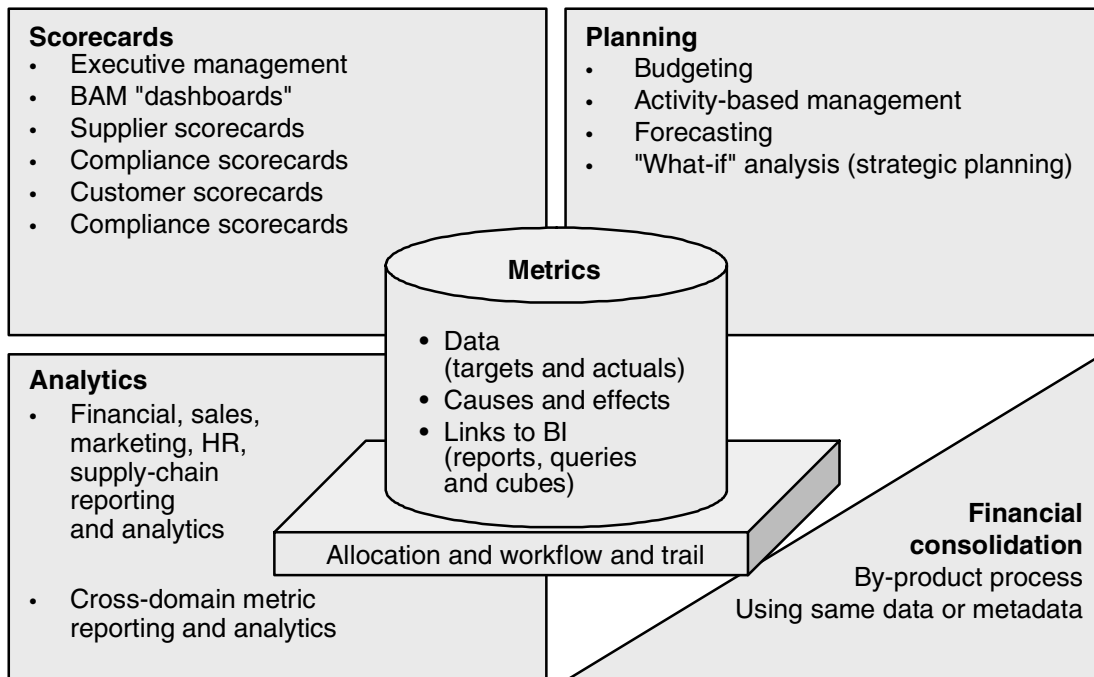
2.3 BI Market Forecast

Key Issue: How will market changes affect BI investments?

Strategic Planning Assumption: *Through 2008, pure-play BI vendors will continue to dominate the market (0.6 probability).*

Various types of vendors offer BI functionality, including DBMS vendors, pure-play BI vendors, enterprise

Figure 2-6: Aligning Technology With Applications



Source: Gartner

BI business intelligence
BAM business activity monitoring
HR human resources

application vendors and smart enterprise suite (SES) vendors — although this is a nascent market. DBMS vendors offer BI functionality that serves the BI platform market primarily. These vendors continue to enhance and expand their BI offerings with products that serve the BI suites market (for example, Microsoft Reporting Services and Oracle Discoverer). Enterprise application vendors have been pursuing the BI market aggressively, such as SAP with Business Information Warehouse and PeopleSoft with Enterprise Performance Management. These products are focused primarily on the vendor's installed base to complement their applications.

Gartner expects BI pure-play vendors to dominate the market through 2008 (see Figure 2-7). However, the presence of DBMS, enterprise application and SES vendors will increase slowly. These emerging market dynamics will provide more product and service choices and accelerate BI adoption. However, the number of vendors, types of vendors and offerings will make selection more complex. Without a BI vision and set of standards, this market complexity will encourage technology fragmentation and silo implementations.

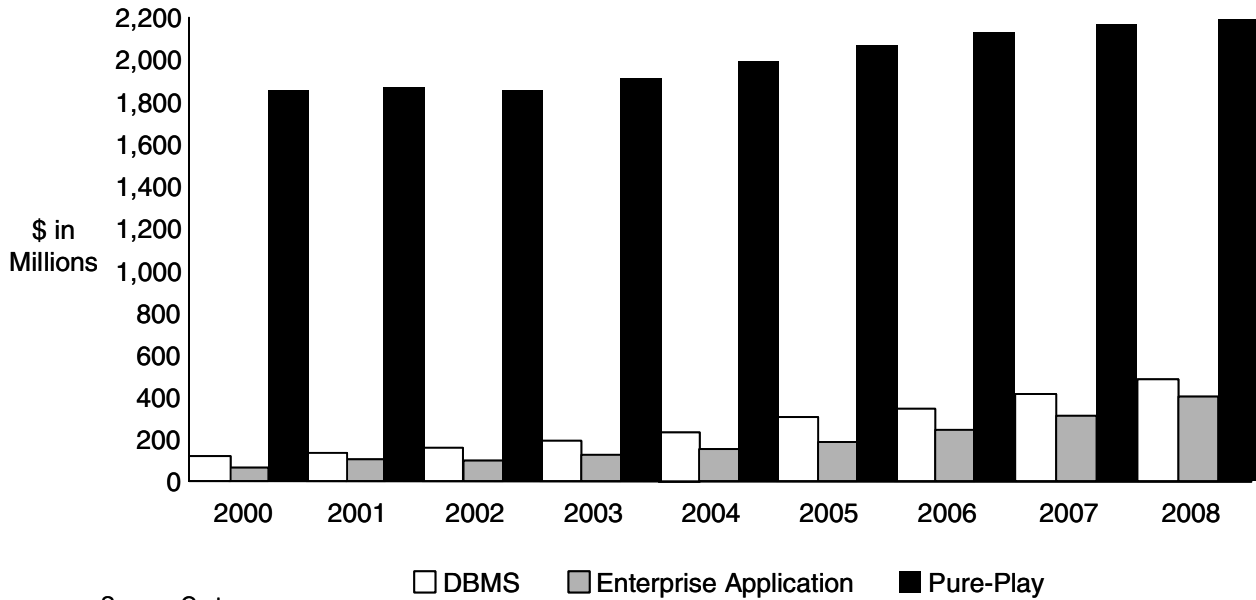
Action Item: Organizations should avoid the opportunistic or tactical approach to BI decisions and vendor selection. Define a BI vision, architecture and set of standards, and then select appropriate BI technology vendors based on associated criteria.

2.3.1 Enterprise Application Vendors

Strategic Planning Assumption: By 2006, data warehouse and BI applications will be more strategic to enterprise application vendors than their core application functionality (0.6 probability).

Organizations are being presented with more opportunities and decisions regarding the data warehouse and BI capabilities offered by their preferred vendors of enterprise applications (such as ERP, CRM and supply chain management). The strength and maturity of these capabilities is increasing, and they can provide a good starting point for a BI initiative. However, organizations should be aware that most of them will not address the complete breadth of BI requirements and are unlikely to

Figure 2-7: Worldwide BI Revenue



be suitable for the wholesale replacement of established BI and data warehousing infrastructure and applications.

Despite these shortcomings, vendors continue to push these solutions and, in some cases, have started to make them required components of their application implementations. As a result, established BI infrastructure is under increasing pressure as these packaged data warehouse offerings begin to overlap with the custom data warehouses established in large organizations. In most cases, this causes an internal struggle between the enterprise application implementation teams, which promote the idea that the packaged solutions can meet all BI needs, and the owners of the custom data warehouse, which resist abandoning the tools and technology that they have used and highly tuned for many years. In addition, independent vendors of BI infrastructure (such as BI tools and ETL tools) find it more difficult to justify their existence as the number of packaged warehouse implementations increases rapidly.

2.3.2 Competing for BI Functionality

Strategic Planning Assumptions:

- *By 2006, it will be possible to select a single environment for EBIS and BI platform functionality, without having to make significant compromises on functionality or integration (0.7 probability).*

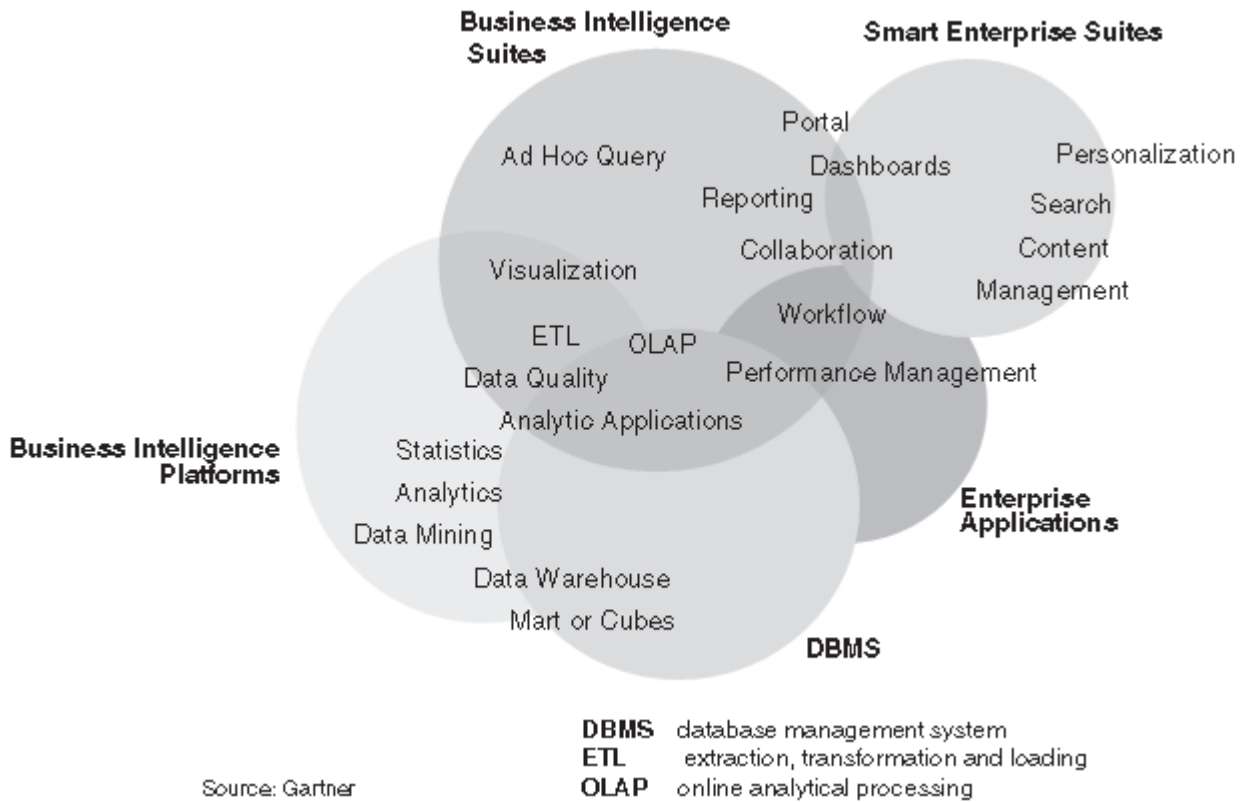
- *BI and SESs will continue to be separate products and markets through 2010 (0.7 probability).*

Functional convergence will be driven by multiple types of vendors competing to deliver BI functionality or integrate it with their product stacks (see Figure 2-8). In addition, some ERP vendors offer BI functionality as part of their BI platforms, and their platforms are required for new application modules from the vendors. Each of these vendors will deliver BI functionality that will bring a separate infrastructure, which includes metadata, security, content repositories, administration, developer tools, application programming interfaces or Web services.

For opportunistic deployments, organizations may be able to use the BI functionality that is integrated as part of several different types of product that they have already purchased. However, without a comprehensive BI architecture and plan that is driven by overall business requirements, BI will become more isolated in an organization that is driven by each of the vendors' independent and poorly integrated sets of infrastructure.

Action Item: Organizations should define a long-term BI vision, architecture, and set of business-driven requirements at the functionality and infrastructure levels. Select a standard set of vendors that can provide critical mass across most requirements.

Figure 2-8: Business Intelligence Functional Convergence



2.4 Recommendations

- The business pressures driving BI will accelerate.
- A competency center and a strategic plan are needed to succeed with BI and to move toward information democracy.
- Technology advancements will be impressive, but a shared vision and culture for BI will be required before they can be leveraged fully.
- Emerging market dynamics will provide more product and service choices, but will make selection more complex.
- Organizations that apply best practices to BI will find information democracy attainable.