IBM

Information Management software

From conflicting, unintegrated historical data to actionable insight.

An introduction to dynamic warehousing from IBM

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*More than 60 percent of CEOs feel they need to do
a better job of leveraging information.**

Companies need the right information, right now

Across every industry, companies are in a constant race to find new ways to offset common business challenges that can impact competitiveness. Challenges that include: Increasing employee productivity. Improving customer service. Optimizing business processes. Reducing risk. Addressing regulatory compliance. And standing out from the competition. To overcome these challenges, organizations invest in various technology projects. For example, to improve customer service, a company may try to integrate its call center application with its order management system, or aggregate customer data from different systems to create a single view of the customer. But regardless of the project—information availability is the enabler.

Yet just having access to information is no longer enough. To deliver business value, information must also be accurate, timely and easily accessed by those who need it within the context of the business activities they are performing. And information must be translated into business insight. Unfortunately, traditional data warehouses cannot easily support these changing requirements because they only offer businesses access to limited types of data and have been primarily focused on historical reporting and analysis. In addition, information about the same topic across different datamarts and business intelligence systems may conflict. And the data that is available is typically only presented in a context that is useful to a limited number of applications and users. There is little if any real-time business insight to be found, which could directly address the common business challenges in today's evolving world.

As companies vie for customers or try to gain efficiencies over competitors, access to near-real-time, accurate insights—delivered in context and integrated into everyday business activities—will be key to driving competitive advantage. Everyone from decision makers to frontline employees needs access to this information to improve decision making and respond more quickly to marketplace events and customer demands. And to optimize efficiency and service, businesses need to leverage this insight across company processes.

Traditional data warehousing approaches play a critical role in enabling companies to look back at historical data to evaluate business performance for strategic and tactical planning purposes. However, moving forward, warehousing approaches that enable access to mulitple types of data and provide real-time views of business operations—to a broader audience—will be required just to keep up with the competition. To support increasingly mixed workload environments and the constantly changing demands of business constituents, companies need a more dynamic warehousing infrastructure.

Dynamic warehousing is IBM's new strategy to help organizations squeeze the greatest possible business value out of their information. As a leader in data warehousing, IBM has worked with hundreds of customers to solve their information management challenges. Based on work with leading retailers, financial institutions, manufacturers and healthcare providers, IBM has built a path to achieving dynamic business insight. This white paper defines dynamic warehousing and highlights its business benefits along with how the data warehouse must evolve and be expanded to support new capabilities. First, we'll examine the general technical and environmental factors that limit current data warehousing approaches; then we'll explore dynamic warehousing and its benefits; and we'll end with a look at the evolving role of data warehouses.

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Complexity limits insight

With the mandate coming from the corner office, chief information officers (CIOs) and IT leaders must find ways to help business leaders make better use of information to drive innovation and differentiation. Overcoming complex environments is a key challenge to making better use of information. Technological constraints and changing business factors, such as mergers and acquisitions, have fueled complexity. In most IT environments, the effective use of information is limited by several factors.

More often than not, information is distributed across the enterprise in a complex web of repositories and silos, making it difficult to access. For example, data from transactional databases, data warehouses, document libraries and e-mail folders is stored in unique repositories and formats, and tied to specific applications or processes. And even when sources are hardwired to talk to one another, the flexibility of the infrastructure is limited.

Another factor is an increasing volume and variety of information, which drives ever more complexity. Today, in addition to structured data from applications, companies must manage different types of unstructured data, such as electronic documents used in business processes, audio files and call logs.

The final factor is an inability to access data in a timely manner. Typically, there is a delay of hours or even days before operational data is made available for broader access. And even when users can access structured data, it's often impossible for them to know whether they have a complete picture and whether they can trust the accuracy of the data they're viewing. Another downside is that business processes cannot leverage the insight gained from business intelligence tools.

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Overcoming these issues requires a new approach to information management. One that enables real-time analysis of all information types in support of process optimization and risk reduction. One that helps generate more knowledge about customers to identify problems and improve service. And one that helps address governmental regulations, such as the Health Insurance Portability and Accountability Act (HIPAA) and Sarbanes-Oxley in the United States, and Basel II in Europe. The ultimate goal is to free information from the silos in which it resides, so it can be delivered as a service, in the right context and format to any business process or user on demand.

Making information available as a service is becoming easier to acheive with the help of standards like XML and flexible architectures, like a service-oriented architecture (SOA). Leveraging a platform to make information available as a service can enable you to share data across applications without compromising security. Companies can use such approaches to extend the value of information, including business intelligence and warehousing data, to a broader community of users. Of course, tight integration between system components is critical to enabling optimized information as a service. Proactive growth planning is also important as organizations must be ready to accommodate growing data volumes without impacting system performance and availability.

The availability of information only goes so far toward helping solve business challenges. Along with improved access to information, organizations need more business insight from their information. For example, to drive the greatest possible value, operational applications need access to inline and near-real-time analytics. IT teams also need the ability to support ad hoc analysis and fast-running tactical queries. The ability to support deep mining and analysis to identify problems, opportunities and trends is also critical. And, of course, all of these additional computing requirements necessitate powerful, scalable, efficient and highly available infrastructures.

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Clearly, traditional data warehousing approaches can only go so far in supporting evolving needs to deliver business insights from information. That's why more dynamic and balanced warehousing capabilities are essential.

The vision: dynamic warehousing

IBM believes that dynamic warehousing is the next logical step in the evolution of data warehousing. A dynamic warehousing approach makes it easier for IT organizations to support business requirements for actionable information—not just data, but all types of information with intelligence behind it to help people take action and make decisions. Unlike historical data warehouses and business intelligence approaches, dynamic warehousing delivers immediate, integrated information; empowers users by unlocking the value of information and analytic capabilities; and can service multiple applications and business lines for both strategic planning and operational purposes with a flexible architecture.

Dynamic warehousing is not a product, tool or simple one-off solution. It is an approach that enables you to deliver more dynamic business insights by integrating, transforming, harvesting and analyzing insights from structured and unstructured information. The result is a framework for delivering right-time, contextual information for both strategic planning and operational purposes. Enabling dynamic warehousing requires a set of services that extends beyond traditional data warehousing and reporting to support the increasing number of business processes and applications requiring analytic capabilities, and to address the demands for more dynamic business insight. It requires:

- *Search and text analytics capabilities to enable usable knowledge to be extracted from unstructured information.*
- *Information integration capabilities to aggregate, cleanse and transform information from disparate sources across the enterprise and make that information available as a service.*

- *Process management capabilities that can leverage analytics for improved decision making and process optimization by delivering business insights within the context of the activities being performed.*
- *Enterprise data modeling to provide common metadata for working with all relevant information.*
- *Master data management to ensure a common view of customers, partners and products across different applications, provide clean and authoritative dimensional data to the warehouse, and enable a single version of the truth.*
- *Industry perspective to more effectively apply analytics to a particular domain.*

The path to more actionable information

Traditional warehousing	Dynamic warehousing
- Provides a window into past operational data for historical analysis and reporting - Consists of multiple unintegrated systems - Accesses only a limited number of business processes and systems - Supports only structured data - Requires specialized skills or knowledge to access and use	- Provides a window into near-real-time operational and transactional data for both strategic planning and operational purposes - Provides tight integration among enterprise-wide business systems - Accesses structured, unstructured and metadata - Delivers information to all enterprise constituents within the context of the activities they are performing

Increase business value from information

Dynamic warehousing enables businesses to provide a more complete and accurate picture to users at any given point in time. Inline analytics extend the benefits of business intelligence beyond highly trained analysts to all users across the enterprise and beyond, enabling faster decisions based on more current and accurate information. Below are examples that highlight how dynamic warehousing can transform the way businesses use information for business gain.

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Insurance fraud identification

Traditional data warehousing solutions have provided insurance companies with a valuable tool for analyzing paid claims for possible fraud. Unfortunately, companies often have difficulty recovering funds that have already been dispersed. Dynamic warehousing provides a way to transform this process by aggregating relevant information from across the organization. For example, it can include details that are potentially relevant to claims flight, and embed scoring and analytics directly into the claims review process to identify potential fraud prior to approval and payment.

Customer service

Most companies have a wealth of information about their customers stored in various systems across the organization but have focused their warehousing efforts on more traditional reporting of customer problems. However, if call center agents can combine the information they have collected about a customer with historical information in the data warehouse—and leverage dynamic analysis capabilities—they can identify other potential issues the customer may be facing. Armed with this knowledge, agents can better recognize the likelihood of a customer leaving while they are talking to the client, improving the chances that they can take steps to maintain the customer's loyalty. They can even more easily identify appropriate cross-sell opportunities to turn customer support efforts into revenue-generating opportunities.

Sales processes

Historical analysis and reporting of customer information often provides useful insight for improving sales processes. However, if employees can better understand relevant information about a specific customer at the point of sale, they can more easily identify relevant cross- and up-sell opportunities and improve their negotiating position. This can help organizations dramatically improve profit margins.

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Law enforcement

Dynamic warehousing can even lead to more effective crime-fighting measures as evidenced by the New York City Police Department (NYPD). In the past, the NYPD used data warehousing to report and analyze crime statistics. Now, with the help of dynamic warehousing, it can aggregate and analyze relevant information as soon as it receives an emergency call reporting a crime. Then, a dossier, or report, is generated and sent to the dispatched detectives, helping them to identify related incidents and potential suspects before they even arrive at the scene.

The evolving role of the data warehouse

The hub of dynamic warehousing is still the data warehouse. Moving forward, however, data warehouses will need to support increasingly mixed application requirements, including mission-critical operational activities in addition to traditional back-office reporting. Warehouses will also need to provide expanded functionality and work seamlessly with the other services required to enable dynamic warehousing. A data warehouse solution should be able to consolidate datamarts and siloed solutions across the enterprise into a unified warehouse where needed, while still enabling distributed datamarts to address business-specific requirements. And as the demand for resources increases, companies will require more balanced and optimized performance from warehouses (balanced storage, hardware and software performance) to keep costs in check and meet varying service level requirements.

Proven hardware and software based on industry standards is best, so you're not locked in to a single platform and can more easily accommodate new tools and capabilities. IBM Balanced Warehouse solutions, which feature IBM DB2® Warehouse software and deliver reliable, preconfigured allocations of standards-based software, hardware and storage for optimized performance, can provide a company-wide view of data with the advanced capabilities and clear growth path that are essential to supporting dynamic warehousing—all with a more simplified deployment approach.

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Beyond the data warehouse, a dynamic warehousing approach needs to facilitate information integration, master data management and process management, and it needs to have the ability to facilitate enterprise data models, enable text analytics and apply industry-specific models. IBM offers solutions in all of these areas.

- *IBM Information Server software is designed to help companies leverage their information from across all of their data sources. It integrates disparate data and makes trusted information available as a service, wherever and whenever needed, in line and in context, to specific people, applications and processes.*
- *IBM Master Data Management software decouples master information from disparate applications and unifies it, helping to ensure consistent, up-to-date information across business processes and transactional and analytical systems, delivering a single view of the truth.*
- *IBM FileNet and IBM WebSphere® business process management software enables organizations to streamline business processes and leverage related content to drive efficiencies and make better decisions, faster.*
- *IBM Rational® Data Architect software provides enterprise data modeling capabilities to establish common metadata for analysis and insight across business areas.*
- *IBM OmniFind™ Analytics Edition software delivers a rich interface for extracting business insights from interrelated structured and unstructured information by combining a set of search, text analytics and visualization capabilities.*
- *IBM Industry Data Models are designed to help organizations improve efficiencies and reduce costs based on common industry challenges.*

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Why IBM?

When you're ready to move to dynamic warehousing, remember that tight integration between capabilities and a flexible approach are key to success. IBM is the only company with end-to-end capabilities — that are proven to work seamlessly together — to implement dynamic warehousing. Not only do we offer the IBM Balanced Warehouse solution to help you quickly realize an enterprise-wide view of data, we also offer all of the tools you need to generate and deliver more dynamic business insights to the people and processes that need them. And we can help you get a jump on your competition and get started with dynamic warehousing today.

For more information

To learn more about dynamic warehousing and IBM data warehouse solutions, contact your IBM sales representative, or visit:

ibm.com/software/bi

* *IBM Attributes & Capabilities Study,* 2005