Gartner

Research

Publication Date: 30 March 2006 **ID Number: G00138812**

Key Issues for Data Management and Integration, 2006

Ted Friedman

The effective management and leverage of data represent the greatest opportunity and the most difficult challenge for large enterprises. Gartner's research agenda for data management and integration highlights key trends and identifies best practices.

ANALYSIS

The data management and integration research agenda is focused on approaches, technologies, software tools and vendors that enable the effective structure, management, leverage, quality improvement and governance of information in support of strategic business initiatives. Specifically, the research in this agenda focuses on the following topic areas:

- **Data Integration:** The evolution of data integration use cases, technology markets, best practices for data integration, and the role of data integration in service-oriented architecture (SOA)
- **Database Management Systems (DBMSs):** The evolution of DBMS technologies to address all types of applications (transactional, analytic, mobile/distributed) and data (structured, unstructured), and the changing nature of the DBMS vendor landscape
- **Data Warehouse Architecture and Design:** Best practices for data warehouse design and implementation, approaches for architecting real-time data warehouses, and the evolving role of the data warehouse in closed-loop information flows supporting more than just business intelligence (BI) activities
- **Data Quality:** The negative impact of poor-quality data, best practices for executing data quality improvement initiatives (including organizational and process issues, such as data stewardship), and the evolution of data quality technology and products
- **Enterprise Information Management (EIM):** The operational commitment to define, secure and improve the accuracy and integrity of information assets and to solve semantic inconsistencies across all boundaries, thereby supporting the technical, operational and business integration objectives within an enterprise architecture strategy
- **Metadata Management and Data Modeling:** The increasing importance of the strategic management of metadata to support reuse and transparency of information assets, and the development, linking and rationalization of logical and physical data models

Organizations are recognizing that how they manage data is critical to their ability to improve agility and productivity, reduce costs, and support compliance. However, they often are challenged by how to start, the best ways to align their skills, making strategic choices of vendors and tools, and understanding best practices. Accordingly, our research across the data management and integration topic areas during 2006 is designed to address the following Key Issues, which are "top of mind" for Gartner clients.

Data Integration

What are the trends and advancements in data integration approaches and technologies?

Data integration is becoming a mission-critical discipline for organizations seeking to obtain greater value from their data through creation of data warehouses and master data stores, and a timely flow of data throughout the enterprise. Without a solid strategy, the proper skills, and the right portfolio of data integration tools, success with data integration will be difficult to attain. Our research will focus on the emerging applications of data integration (such as master data management and creation of data services for SOA) and the evolution of the market for data integration tools. Existing research addressing this Key Issue includes "Gartner Study on Data Integration Identifies Key Usage Trends" and "Data Services: The Intersection of Data Integration and SOA."

What will be the impact of event-driven architecture and real-time requirements on data integration?

Traditionally batch-oriented in nature, data integration is being pushed into the real-time world as requirements for lower-latency data delivery and event-driven infrastructure grow. Organizations will need to adapt their architectural approaches and tool selections for applications requiring real-time data integration, such as business activity monitoring. Our research will address the relative strengths and weaknesses of existing data integration tools across the latency spectrum, and architectural best practices for dealing with streams of events. Previous research addressing this Key Issue includes "Options Proliferate for Real-Time Data Integration Technology."

Database Management Systems

How will DBMS technologies evolve to support traditional online transaction processing applications and business intelligence, as well as emerging styles of applications?

Many organizations assume that DBMS technology is now a commodity, leading them to make DBMS selections by default and ignore the significant amount of innovation occurring relative to this topic. Without clearly understanding the current capabilities and future direction of the technology, matching the right products to today's strategic applications is risky. Our research will analyze the emergence of new DBMS-related products (such as database appliances), adoption of new deployment platforms (such as Linux) and licensing models (open-source software), and the ongoing functional evolution of the DBMS in addressing new and different data types such as XML and unstructured content. Existing research addressing this Key Issue includes "Pre-relational Mainframe DBMS Market Continues to Decline" and "Microsoft SQL Server 2005 Raises Product to Competitive Level."

Data Warehouse Architecture and Design

What are the key trends in data warehouse deployment and usage?

The role of the data warehouse is quickly evolving beyond its historical usage as an offline, downstream data store that is disconnected from core business processes. Organizations must recognize the trend of the data warehouse supporting real-time analytics in-line within core business processes, as well as use of the data in the warehouse for applications outside the domain of BI. Our research will focus on how the data warehouse is being used by forward-thinking organizations, and the evolving best practices for successful data warehouse deployment. Previous research addressing this Key Issue includes "Data Warehouses Need to Be Designed for More Than BI Tools" and "Steer Clear of Common Data Warehousing Pitfalls."

How will real-world implementation demands and emerging technology trends affect my data warehouse architecture and design?

In addition to an evolution in usage, contemporary implementation pressures are causing data warehouse project teams to rethink their architectural approach and schema designs. Increasing data and user volumes, 24x7 usage, pressure for real-time data updates, and the increasingly strategic nature of today's BI applications are making scalability, reliability and flexibility paramount. Our research will assist organizations in handling these challenges by adapting their existing data warehouse architectures and leveraging schema design best practices. Previous research addressing this Key Issue includes "The Real Truth About Real-Time Business Intelligence and Data Warehousing" and "The Data Warehouse Model Framework."

Data Quality

What is the role of data quality in compliance, corporate performance management, business intelligence and other critical business initiatives?

Organizations are discovering that data quality has a significant impact on their most strategic business initiatives, and lack of attention to data quality issues is a clear inhibitor of success. Building the case for data quality improvement requires that the business understand the linkage to contemporary drivers such as compliance and performance management. Our research will explore the costs and risks of data quality issues and strategies for justification of data quality improvement efforts. Existing research addressing this Key Issue includes "CIO Update: Data Quality 'Firewall' Enhances the Value of the Data Warehouse" and "Gartner Study on Data Quality Shows That IT Still Bears the Burden."

What are the best practices for addressing data quality issues?

Success with data quality improvement requires a holistic approach, focusing on people, process and technology. Organizations need to understand where to focus their data quality improvement efforts, as well as how to put in place a repeatable process for data quality projects. Our research will focus on roles and organizational approaches, metrics, methodologies and the strategic deployment of tools for data quality improvement. Previous research addressing this Key Issue includes "Data Quality Methodologies: Blueprints for Data Quality Success" and "MarketScope Update: Data Quality Technology, 2005."

Enterprise Information Management

What is enterprise information management, and how is it used to manage structured and unstructured content?

The strategic management of information as a corporate asset is a growing trend across large enterprises, and EIM is a program consisting of a series of building blocks that helps organizations maximize the value of their information assets. Our research will assist clients in building the business case for EIM in order to achieve unification of structured and unstructured data. Existing research addressing this Key Issue includes "Business Drivers and Issues in Enterprise Information Management."

What are some best practices, lessons learned and success measures for enterprise information management?

As more organizations begin to execute on an EIM strategy, insight into best practices, critical success factors and benchmarks will emerge. Analyzing others' attempts to achieve EIM objectives, both successful and failed, will help organizations to maximize results and minimize risk by avoiding common pitfalls. Our research will deliver a maturity model, frameworks and case studies that can be used to guide organizations in their EIM strategies and assess the ongoing value of their EIM programs. Previous research addressing this Key Issue includes "The Essential Building Blocks for Enterprise Information Management."

How do initiatives such as master data management impact enterprise information management?

Master data management is a major initiative for large organizations as they strive for greater agility and consistency of execution across the business. Organizations must understand the role of master data management in relation to the overall EIM program and must guide their master data management activities in accordance with EIM principles. Our research will focus on the importance of resolving semantic discrepancies to achieve consistency of master data in support of an EIM strategy, as well as the various implementation styles for master data management. Existing research addressing this Key Issue includes "Mastering Master Data Management."

What is the role of enterprise information management in enterprise architecture?

As one of the pillars of enterprise architecture, data issues are addressed through information architecture techniques. Organizations must execute an EIM program to bring to life the

blueprints created in the information architecture segment of an enterprise architecture initiative. Our research will further explore the linkage between EIM and enterprise architecture to ensure best alignment and leverage across these activities. Previous research addressing this Key Issue includes "Use Enterprise Information Architecture Techniques to Move to Information Management."

What impact will enterprise information management have on approaches such as service-oriented architecture?

New approaches to architecture and implementation of applications, such as SOA, are creating pressure to increase the availability, timeliness of delivery, consistency and auditability of data. Without a strong focus on data at the foundation of their initiatives, organizations will fail in capturing the benefits of speed and agility they seek from SOA. Our research will analyze the key dependency points between EIM and SOA to expose the risks of failing to align the application and data points of view. Existing research addressing this Key Issue includes "Data Integration Is Key to Successful Service-Oriented Architecture Implementations."

Metadata and Data Modeling

Why is the strategic management of metadata critical to success with data integration and information management?

With increased business pressures for compliance and agility, IT organizations must find ways to increase reuse of data and leverage of data-related artifacts while also improving transparency to the lineage and quality of data. Metadata is the key to achieving these objectives, but only when managed in a strategic manner. Our research will describe the benefits and best practices associated with effective management of metadata in support of all aspects of information management. Previous research addressing this Key Issue includes "How to Manage Your Metadata, 2H05 to 1H06" and "Issues in Data Modeling, 2005."

Markets and Vendors

What is the state of the market, how will it evolve and which vendors will succeed?

With the critical nature of contemporary data management issues, an understanding of market dynamics and vendor positioning is important. Organizations can make appropriate selections only by recognizing the relative strengths of vendors and gaining insight into the likely scenarios for market evolution. Our research will analyze the key market trends and explore vendor capabilities across each of the data management and integration topic areas. Existing research addressing this Key Issue includes "Forecast: Database Management Systems Software, Worldwide, 2003-2009" and "Cool Vendors in Data Management and Integration, 2006."

Acronym Key

BI	business intelligence
DBMS	database management system
EIM	enterprise information management
SOA	service-oriented architecture

REGIONAL HEADQUARTERS

Corporate Headquarters
56 Top Gallant Road
Stamford, CT 06902-7700
U.S.A.
+1 203 964 0096

European Headquarters
Tamesis
The Glanty
Egham
Surrey, TW20 9AW
UNITED KINGDOM
+44 1784 431611

Asia/Pacific Headquarters
Gartner Australasia Pty. Ltd.
Level 9, 141 Walker Street
North Sydney
New South Wales 2060
AUSTRALIA
+61 2 9459 4600

Japan Headquarters
Gartner Japan Ltd.
Aobadai Hills, 6F
7-7, Aobadai, 4-chome
Meguro-ku, Tokyo 153-0042
JAPAN
+81 3 3481 3670

Latin America Headquarters
Gartner do Brazil
Av. das Nações Unidas, 12551
9° andar—World Trade Center
04578-903—São Paulo SP
BRAZIL
+55 11 3443 1509

Gartner