Delivering information you can trust
September 2006

IBM Information Management software

IBM Information Integration Solutions: Unlocking the business value of information for the automotive industry

ON DEMAND BUSINESS™

Contents

Executive summary

As economic and political pressures transform the auto industry, auto companies face stark new challenges. In today's marketplace, survival favors the agile; speed can be a critical differentiator; and the organizational status quo is often a liability. Successful automakers are beginning to adapt to continuous, unpredictable and accelerating change.

Worldwide competition has heated up significantly in recent years as global supply chains have enabled ever-faster, ever-cheaper production. Coupled with higher materials costs for steel and plastics, these compressed production cycles have forced less-agile automakers into a variety of difficult financial situations—often resulting in bankruptcies, mergers or acquisitions, and strategic shifts into more profitable segments of the automotive industry, such as aftermarket parts. Some companies have relocated their assembly facilities overseas to take advantage of lower labor costs. Others have tried to lower labor costs by negotiating with labor unions to dramatically cut worker pay. Some have even exited the automotive industry altogether.

Forces beyond the industry are taking their toll as well. Higher oil prices (caused by political unrest in the Middle East and Hurricane Katrina–induced shortages) have caused consumers to reevaluate their fuel consumption habits. As a result, demand for large trucks and SUVs has dropped. Crossovers and car-based SUVs are the new industry sweet spot. Consumers are also demanding more alternative fuel technologies such as E85-based engines, hybrid electric vehicles, diesel and bio-diesel.

In this changing environment, slow responders cannot alter their supply chains in time to deliver what customers want. Frequently, these automakers are forced to use incentives to move products—a practice that can damage both their image with consumers and the bottom line. But how can automakers ensure that they keep a finger on the pulse of the customer?

How to win market share and influence customers

Competing in today's cutthroat business environment requires that automakers meet three key imperatives. First, they must excel at product innovation so they can attract new buyers and inspire loyalty in existing customers. By managing the product mix effectively and accurately anticipating buyer preferences, auto companies can produce profitable niche models and market high-margin service offerings.

Automakers also must maximize cost-efficiency by establishing operational excellence. By eliminating unsustainable cost structures and optimizing global supply chains for leaner, more flexible manufacturing, companies can begin to address the overcapacity issues that have plagued much of the industry.

Finally, automakers must embrace accelerating technology as a tool to build the bottom line. In business, this directive means companies must use open standards to increase efficiency, enhance security to protect key information and use business intelligence (BI) to make smart decisions in real time. In product development, it means using virtual reality and manufacturing simulation software to identify and correct problems before they delay product delivery. In the vehicles, it means managing communications between the vehicle, the service technician and the customer as well as leveraging complex embedded software technology to control critical vehicle systems.

Business challenges create technology challenges

To meet these three imperatives, companies need reliable access to timely and accurate information about every facet of the enterprise. However, with automakers focused on simultaneously cutting operational costs and increasing investment in new products, many are realizing that their core IT systems are simply not sufficient to meet their information-gathering needs.

Access to information on demand requires a business and technology environment that can provide highly secure, scalable and reliable remote access across different networks and protocols from various devices. Today, information typically resides in silos scattered throughout the enterprise, which can result in inconsistent views of both internal and external customers. Disorganized information scattered across multiple systems can make compliance costly and inefficient. Without a "single version of the truth," automakers cannot enforce an overall strategy related to managing the organization's information. Poor discipline in how information is requested, presented and used can result in custom-coded interfaces, inconsistent channel communication and short-term, "quick fix" solutions that inadvertently become long-term legacy systems. Locally driven information may not reflect strategy, business or organizational objectives, and limited information inhibits process innovation.

However, this situation is neither inevitable nor irreversible. Virtually all of the information auto companies need already exists somewhere within the organization. The trick is simply to find key data and manage it effectively.

Effective information management: a key competitive advantage

Effective information management is no longer a luxury—it has become fundamental to the success and growth of business worldwide. More than 60 percent of CEOs and line of business executives say quality information is their top priority for improving business processes, employee productivity and customer satisfaction.[1]

Automakers typically have vast stores of data housed in multiple systems across the organization. Nearly 80 percent of organizations have two or more data repositories, and one in four firms has more than 15 data repositories. The average $1 billion company operates no fewer than 48 disparate financial systems and 2.7 enterprise resource planning (ERP) systems.[2] However, because these systems often exist as independent silos, automakers can face difficulty in extracting information that is consistent, accurate and timely—for example, according to a February 2006 CDI Institute survey of 50 Global 5000 IT organizations, a full 79 percent of CIOs say there is redundancy in their customer data across the enterprise.[3]

For this reason, automakers that can integrate key systems and manage information effectively have a competitive advantage. By creating a "single view of the truth" across disparate systems, automakers can dramatically streamline sourcing and manufacturing processes. A 360-degree view of the client can transform customer care, and real-time information analysis can speed delivery of appropriate customer incentives. By using technology-driven delivery to enhance efficiency, automakers can help reduce costs—and companies that are skilled at identifying and deploying key technologies have a sustainable competitive edge because they can defend their high market share amidst increasing competition.

Effective information integration forms the foundation for On Demand Business

Unlike fragile, hard-coded point-to-point integrations, which can inhibit growth and adaptability, an effective information integration and management strategy allows automakers to perform several critical tasks.

Product Lifecycle Management (PLM) initiatives

Consolidate the IT infrastructure. By supporting the creation of a common development architecture throughout the enterprise, information management solutions establish a single "master" application for key, frequently repeated processes. This single architecture can help administrators remove duplicated instances of commonly used records and eliminate redundancies in coding. A consolidated information architecture also helps reduce application development time, simplify maintenance and testing processes and speed software upgrades and migrations. With a consistent and reliable source of information for new development initiatives, automakers can meet compliance requirements faster and more easily and potentially reduce IT costs. Effective information integration also enables analysis, enrichment and integration of source information for use as a service to other development organizations.

Synchronize product development information. An integrated product development environment helps facilitate component reuse by providing an enterprise view of product data. It can enable integration or migration of legacy engineering bill-of-materials systems, enterprise resource planning (ERP) applications, sales configurators and product development management systems, as well as coordinate the sharing of engineering information between parts suppliers and OEMs. In addition, the integration of product requirements and engineering information into a common information architecture can help ensure compliance to vehicle and regulatory requirements, provide management with accurate cost and investment information, provide accurate and timely program timing information to program managers and reduce time to market.

Integrate product planning information. An integrated information solution brings together and enriches information related to new product features, market research, customer advisory boards, competitive teardown results, regulatory information and country-specific regulatory requirements—helping to facilitate faster product strategy decisions by ensuring quick access to reliable market research and competitive analysis information. It also provides a single, common view of all requirements related to a specific vehicle and helps improve time to market by delivering quick feedback related to compliance to regulatory requirements.

Manufacturing productivity initiatives

Plant to enterprise integration. The volume of information to be managed increases dramatically as the focus shifts from developing the vehicle to developing the tools, processes and facilities where the vehicle will be built. However, this transition from the product development phase to the process development phase occurs over several months of the overall product development cycle. Also, engineering changes frequently occur long after the manufacturing process has been established. Finally, it is sometimes possible that decisions made on the manufacturing plant floor can impact the functionality of the vehicles being produced. All of these factors mean that there is an ongoing need for a tight integration of information between manufacturing, engineering and other major business units of the extended automotive enterprise, and of course, this integration is only as good as the accuracy of the information being accessed.

Manufacturing supply chain integration. During the critical portion of the product development phase where manufacturing processes are being defined, tooling is being designed and the facility (that is, the plant) is being equipped to produce a new vehicle, the rate at which manufacturing process planners, manufacturing plant floor engineers and tooling suppliers exchange information is extremely high. One exchange of an incorrect version of a tool, process or facility requirement can cost millions of dollars in obsolete tooling or worse—not be detected until production vehicles are delivered to customers. Information integrity is vital during this portion of the product development process.

Marketing, sales and service initiatives

Synchronize warranty information. By bringing together information that already exists in silos scattered across the organization, an information management solution can help automakers ensure correct levels of replacement parts inventory and provide a single, common view of warranty cost information in real time. Automakers can integrate warranty cost information and sort by component, supplier or customer demographic; integrate vehicle recall information and track costs; compare warranty information with quality information collected at plants and suppliers; and integrate warranty parts inventory information from suppliers with forecasting information from sales and marketing. These capabilities can help auto companies improve responsiveness to vehicle issues in the field for new vehicle launches and ensure that knowledge captured from previous designs is available for future vehicle programs.

Synchronize the aftermarket parts and service environment. By integrating inventory information from suppliers with forecasting information from resellers, automakers can lower inventory costs through improved accuracy of product demand forecasts. Effective information management can help eliminate manual reconciliation of product and pricing records, as well as synchronize product and pricing information between parts manufacturers, resellers and OEMs. Integrated information also can help enable compliance with aftermarket parts industry standards, improve customer satisfaction, improve profit margins and improve the timeliness and accuracy of bringing new aftermarket parts to market.

Facilitate dealer collaboration. When the exchange of customer, inventory and financial information among dealers, distribution warehouses and the sales and marketing organizations of automotive OEMs is based on accurate information collected from all relevant sources, dramatic improvements in the effectiveness of sales promotions is ensured by improving flexibility and scalability of these promotions. In addition, automotive manufacturers can quickly adjust to changes in the demand for specific vehicles or specific options on vehicles.

Integrate financial information. By integrating cost information across the enterprise, automakers can efficiently collect and analyze vehicle build information to track financial trends and facilitate financial forecasts. Integrated financial data also improves accuracy of predicted costs for new vehicle builds, helps ensure integrity of information being presented to the financial community and facilitates rapid adjustments in pricing strategies to maximize profits.

Integrate customer information. The ability to associate reliable customer information, vehicle configuration information, service records, on-board vehicle diagnostic data and call center reports can have a dramatic, positive impact on customer satisfaction by helping to ensure that customer problems are addressed promptly and accurately. Furthermore, automaker's captive finance organizations can process loans faster and have better visibility into credit risks by having timely access to accurate customer information.

IBM helps automakers use information effectively through information on demand

IBM offers a unique solution to help overcome the challenges of data integration and enable the delivery of information on demand. With this solution, auto companies can get the right information to the right people, processes or tools at the right time to address the most critical business issues. The IBM Information On Demand approach can help automakers create business value and reduce risk by integrating, analyzing and optimizing all types of information throughout its lifecycle. Companies can also gain access to one consistent source of customer information to enable better customer service and customer relationship management (CRM) initiatives and create a single view of the truth. By consolidating legacy historical and transactional environments, automakers can also enhance operational efficiency and reduce costs.

Figure 1: The IBM Information On Demand approach

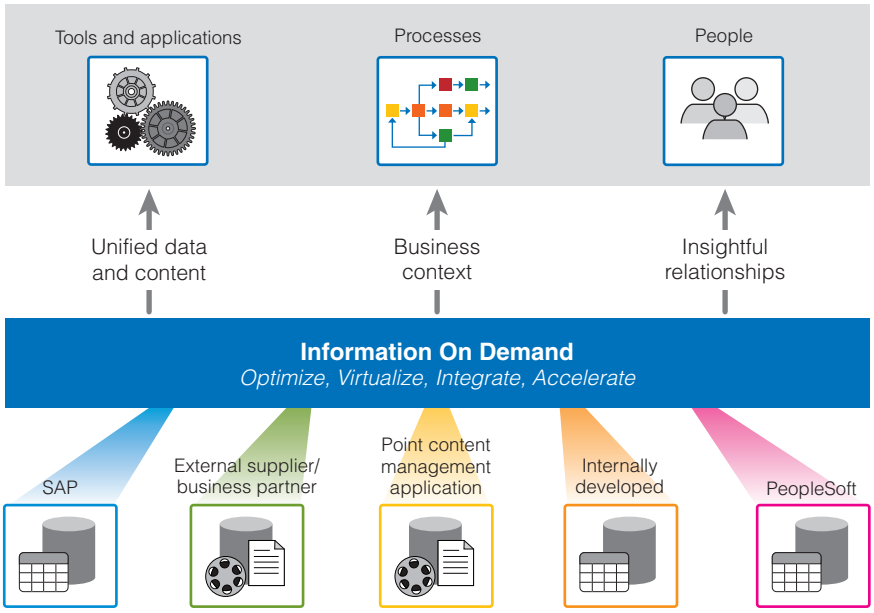
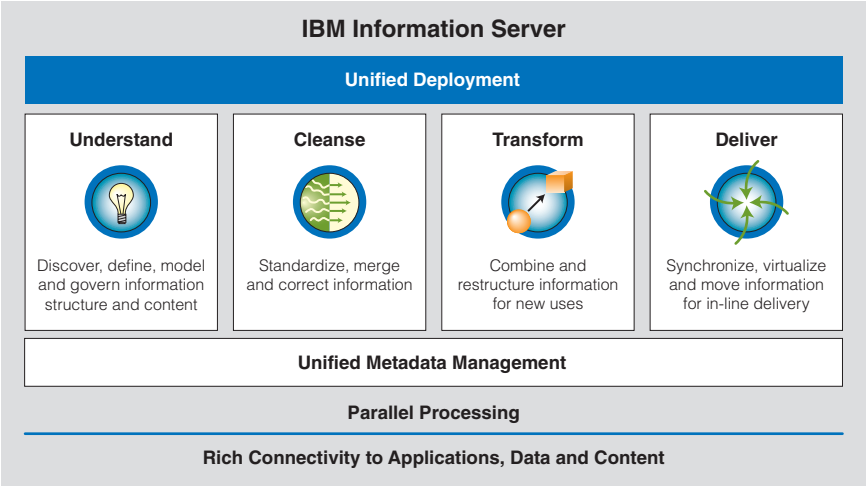


Figure 2: IBM Information Server capabilities



Based on an Information On Demand approach, IBM® Information Server (see Figure 2) offers five fundamental capabilities:

1. *The ability to connect to all relevant sources of information, whether structured or unstructured, mainframe or distributed, internal or external—wherever they reside*
2. *The ability to understand the content, quality and structure of the data sources (including their meanings, relationships and lineage) prior to integration*
3. *The ability to standardize and cleanse the data to provide a consistent view of any element of product or pricing information, as well as help assure data quality and consistency*
4. *The ability to effectively and efficiently collect, transform and enrich high volumes of data from source to target in a timely manner*
5. *The ability to federate information and make it accessible to people, processes and applications as if it were a single source—without actually moving or copying the source data*

IBM Information Server is designed to integrate information across the extended enterprise to support a single, consistent view of the customer, common semantics across the supply chain and an indisputable definition of master data. Delivered when the business user needs it, this information can enrich business processes, enable key contextual insights and inspire confident business decision making.

The IBM Information Server advantage

- A comprehensive, unified foundation for enterprise information architectures, scalable to any volume and processing requirement
- Auditable data quality as a foundation for trusted information across the enterprise
- Metadata-driven integration, providing breakthrough productivity and flexibility for integrating and enriching information
- Consistent, reusable information services—along with application services and process services
- Accelerated time to value with proven, industry-aligned solutions and expertise
- Broadest and deepest connectivity to information across diverse sources: structured, unstructured, mainframe and applications

Find and understand key data

IBM Information Server is designed to provide access to a broad range of information sources, a wide range of integration functionality and outstanding flexibility for Service Oriented Architecture (SOA), event-driven processing, scheduled batch processing and standard APIs such as SQL and Java™.

Underlying these functions is a common metadata and parallel processing infrastructure that provides leverage and automation across the platform. Each product in the portfolio also provides connections to many data and content sources, and the ability to deliver information through a variety of mechanisms. By using SOA to publish consistent, reusable services for information, automakers can make it easier for processes to get the information they need from across a heterogeneous IT environment.

Traditional siloed environments can make it very difficult for automakers to answer even very simple questions, such as where customer information resides and whether that information is correct. To help auto companies understand the information already stored within their systems, IBM Information Server takes a three-pronged approach to metadata:

1. *Through data-centric profiling and analysis of source systems, IBM WebSphere Information Analyzer (a product module within IBM Information Server) helps automate detailed profiling of the data in each column. By providing insight into the quality and usage characteristics of the information, WebSphere Information Analyzer can help uncover data relationships across systems through foreign key affinity mapping. This type of profiling is designed to become an ongoing process, allowing the company to understand how data quality changes over time.*

   As part of this profiling process, a metadata map of source systems is created to reflect the actual data contents and relationships. This metadata map is kept in the metadata repository within IBM Information Server, providing a baseline for current and future products. It can also help reduce development time dramatically by enabling developers to find relevant data stores quickly.

2. *Business metadata is recorded in a product module called IBM WebSphere® Business Glossary, which provides a Web-based tool for authoring, managing and sharing business metadata. This tool is designed for business users and subject-matter experts to define data stewards and record business terminology definitions and taxonomies.*

   For example, multiple systems may maintain tables of customer information. However, the business may uncover a requirement for the concept of "high-value" customers. The business needs a way to define what a high-value customer is and how to recognize them. WebSphere Business Glossary provides a tool for recording these definitions and relating business concepts together into taxonomies. In this manner, the tool records the business requirements in the same metadata foundation that the profiling and analysis process uses.

3. *When database administrators and data architects perform physical data modeling, they are actually defining the future state of the data. IBM Rational® Data Architect feeds this metadata into a shared repository. This tool not only provides strong logical and physical data modeling capabilities, but also provides facilities to map across models and automatically discover relationships.*

Because employees in multiple roles are typically involved in development projects, an IBM Information Server module called IBM WebSphere Metadata Server automates management of metadata across these roles and functions. As each role creates new metadata, that metadata is immediately available to others working on the project—helping to dramatically reduce the time between specification and build and shorten overall project cycle times. The metadata also can be used to shorten the time it takes to design integration logic, and sometimes even to automate the creation of code. It also creates an ongoing record of shared understanding that carries forward to future projects. The metadata itself becomes an asset that improves the overall understanding of the business and allows projects to be executed more efficiently in the future.

Standardize and cleanse data for consistent information

Once automakers identify and map sources of critical data throughout the enterprise, they must evaluate the quality of that data. Analysts estimate that data degrades at two percent per month. This slow, continuous degradation can cause data to become outdated or inconsistent and therefore no longer trustworthy.

Data cleansing is the process of repairing this inevitable degradation. Within IBM Information Server, the IBM WebSphere QualityStage™ product module helps to identify and resolve data quality issues through an easy-to-use graphical flow diagram. This module allows data quality processes to be embedded in any information integration process. With WebSphere QualityStage, automakers can:

- *Perform free-form text investigation, allowing administrators to recognize and parse out individual fields of data from free-form text*
- *Standardize and correct individual data fields according to company-wide standards*
- *Use postal information to standardize, validate and enrich address data*
- *Remove duplicate data from individual sources through matching processes to create a single view*
- *Identify and link common records across sources*
- *Merge the best data from across different systems into a consolidated record*
- *Define complex matching and survivorship logic using visual tools*
- *Enable a single version of the truth*

The true power of WebSphere QualityStage is its ability to match data from different records, even when it appears very different. These match rules are designed using a user-friendly visual interface, providing instant feedback on match rule changes to allow the rules to be fine-tuned quickly and easily. Because of this ability to match records, WebSphere QualityStage is a key enabler of creating a single view of customers or products.

Quickly transform and enrich high volumes of data

By allowing automakers to transform and aggregate any volume of information in batch or real time through visually designed logic, IBM WebSphere DataStage® facilitates codeless visual design of data flows with hundreds of built-in transformation functions. It helps optimize the reuse of data integration objects, allowing administrators to leverage parallel processing without requiring design changes. It is also capable of supporting batch and real-time operations.

Federate information for seamless business intelligence

Once data has been identified and cleansed, IBM WebSphere Federation Server enables companies to access and integrate heterogeneous information across multiple sources as if they were a single source. Visual tools for federated data discovery and data modeling make it easy for automakers to extend the value of existing analytical applications by providing real-time access to integrated information.

IBM offers a complete range of Information On Demand solutions for the automotive industry

As the challenges of a global business environment push automakers to adapt more quickly and assume more risk than ever before, it is critical that auto companies use all the resources at their disposal to gain a competitive edge. One of these resources—vast stores of information about customers, suppliers, products and services—already exists within every automaker's IT systems. The key is simply to unlock the power of this strategic asset, transforming it into Information on Demand.

IBM also offers a broad range of expertise and industry insight to help guide businesses through the process. Through the IBM Information On Demand Center of Excellence, companies can work with experts from across IBM to develop the critical competencies that are necessary to move along the road to Information on Demand.

For more information

To learn more about IBM Information Integration Solutions, visit our Web site at **ibm.com**/software/data/integration

IBM Software Group
Route 100
Somers, NY 10589

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[1] IBM Attributes & Capabilities Study, 2006; Client interviews and industry analysts, 2005.

[2] Ibid.

[3] CDI Institute Survey, 2006.

TAKE BACK CONTROL WITH **Information Management**

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