



# **Business value of Master Data Management and Product Information Management.**

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## Introduction

Chris, a race car enthusiast, is browsing the Web looking for an air-intake system to give his vehicle a big boost in power. He finds a product called the Typhoon and is disappointed that the manufacturer's Web site has only basic information – the part number, dimensions and description, and no ordering details. After numerous phone calls he finds that both his dealership and local auto parts retailer do not stock the part and is forced to turn to an online distributor. Chris anxiously awaits his new part; it is now more than 10 days since he ordered it, and the distributor blames the manufacturer for shipping the incorrect part. Chris therefore abandons his purchase and turns to a competitor's product. Does this story sound familiar? All across the board in the manufacturing sector – automotive, aerospace, electronics and industrial companies – managing product and customer information is a huge challenge. Poor information and disconnected processes are a hidden crisis in the industry today. The cost of this inconsistency in terms of operational efficiency, customer dissatisfaction or lost opportunity is enormous. Whether it is product numbers, item relationships, service codes, warranty information or customer identifiers, what should be a unique entry might have multiple values and locations. These issues manifest themselves in numerous challenges being faced by organizations today:

- *Real-time access to product and parts information and availability*
- *Sales tools like configurators and product guides lacking the latest information*
- *Access to unstructured information in context – technical manuals, service bulletins, ring tones, images, data sheets, computer-assisted design (CAD) drawings and instructional videos*
- *Reuse of assemblies and components to lower design and procurement costs*
- *Ability to link product data with supplier and customer data for more-meaningful business insights*
- *Streamline processes for new-product introduction, warranty and returns*
- *Lack of a 360 degree customer view for improved and differentiated service*

Today, organizations are looking to grow profit, gain market share, contain costs and differentiate their products. This is achieved by getting the right information to the right people with the right processes at the right time and in the right context. It is about creating business value by integrating, analyzing and optimizing all types and sources of information throughout the life cycle. More than 60 percent of CEOs and line of business (LOB) executives say quality information is their top priority for improving business processes, employee productivity and customer satisfaction.<sup>1</sup>

### **What is Master Data Management?**

Master Data Management (MDM) is a comprehensive strategy to determine and build a single, accurate and authoritative source of truth of your company's information assets and deliver this on demand as a service. Master data is core data needed to uniquely define objects like parties (customers, vendors, suppliers, trading partners or employees), places (locations or geographies) and things (products, services or accounts). It does not change as frequently as transactional data and is referenced by business processes and other applications. Today, this data is located in multiple applications and is often out of synchronization, without a true "golden" source. Why maintain the same data in multiple applications when it is cheaper and more efficient to manage it once and feed the various consuming systems? When organizations use master data at the enterprise level, it eliminates the need for separate, departmentally maintained "versions of truth." Today in most organizations, two different departments have the freedom to give specific products or customers their own names. For example, in one system (original equipment catalog) in a company, a product might be called "Mini Van Alternator – Sports Model" and in another system (service parts catalog) it might be called "105 amp Alternator – Mini Van" and they can't be compared. The systems are not smart enough to find out that it is the same product. Over time, engineers might be designing two different products and purchasing sourcing for two different products from the same supplier. What is required is a system that helps flag these issues, draws the right conclusion, cleans the master data, and gets a complete, consistent and clean view of the master data.

MDM is a combination of tools, processes, technologies and governance. It enables organizations to integrate, manage and publish master information on products, customers and other core business entities with industry-specific accelerators to jump-start projects. MDM is not an out-of-the-box product as many think, but a combination of capabilities to solve your business problems. You should think strategically about MDM, but act locally on important data entities, such as customer or product information where you have the biggest problems. An MDM solution generally has three major components:

*MDM systems* – make up the software infrastructure that manages the repository of reference data using business services. These services can include administrative and user panels, repository management functionality, workflows, and events to define and maintain data hierarchies and relationships and attributes associated with the data elements. One form of an MDM system is commonly referred to as Product Information Management (PIM) to manage part numbers, descriptions, pricing, images and packaging details. Customer data integration (CDI) is another type of MDM system to manage financial profiles, location, demographic data, billing and account information of a party. Because the requirements of product and customer data objects are so different, you should review your needs before making a final decision. For example, product data requires attribute inheritance, whereas customer hierarchies do not. There is also a fair amount of overlap in the capabilities of the different data hubs.

*Master data integration* – provides a single integration infrastructure to manage master-data business transactions and ensure the data is synchronized across the enterprise. In addition, federated middleware enables MDM systems to dynamically access external data sources for content such as images and documents related to the entities managed by the MDM system.

*Master data accelerators* – comprise industry-specific data models, workflows and business processes to ensure a quicker customization of MDM systems. This can also include reusable integration templates to help rapidly move and cleanse data from sources such as enterprise resource planning (ERP), customer relationship management (CRM) and supply chain management (SCM) during the initial load of the MDM repository.

Organizations today use MDM solutions in different fashions – system of record, system of reference or a mixed mode, which is more common. System of record is when data is physically stored and managed by the MDM system and all external systems subscribe to that data in real time. System of reference is when the physical data record is stored remotely, but all systems still subscribe to it through the MDM solution that maintains a cross-reference. The MDM solution is only managing the metadata. Based on the organizational requirements and best practices, we see most organizations using a mixed-mode approach for their implementation strategies.

Success in MDM depends on technology, data quality, governance, stewardship and change management. Organizations that adopt MDM will eliminate the endless and time-consuming debates about whose data is right and what is the correct part number of the Typhoon air-intake system. Service oriented architecture (SOA), which is a Web services, standards-driven, modular architecture to deliver pervasive integration with real-time business agility is an emerging area for building next-generation applications. MDM is an integral part of any SOA implementation to address issues such as data quality, multiple versions of the truth and management of reusable metadata assets. Conflicting sources of the same data create barriers to successful SOA migrations.

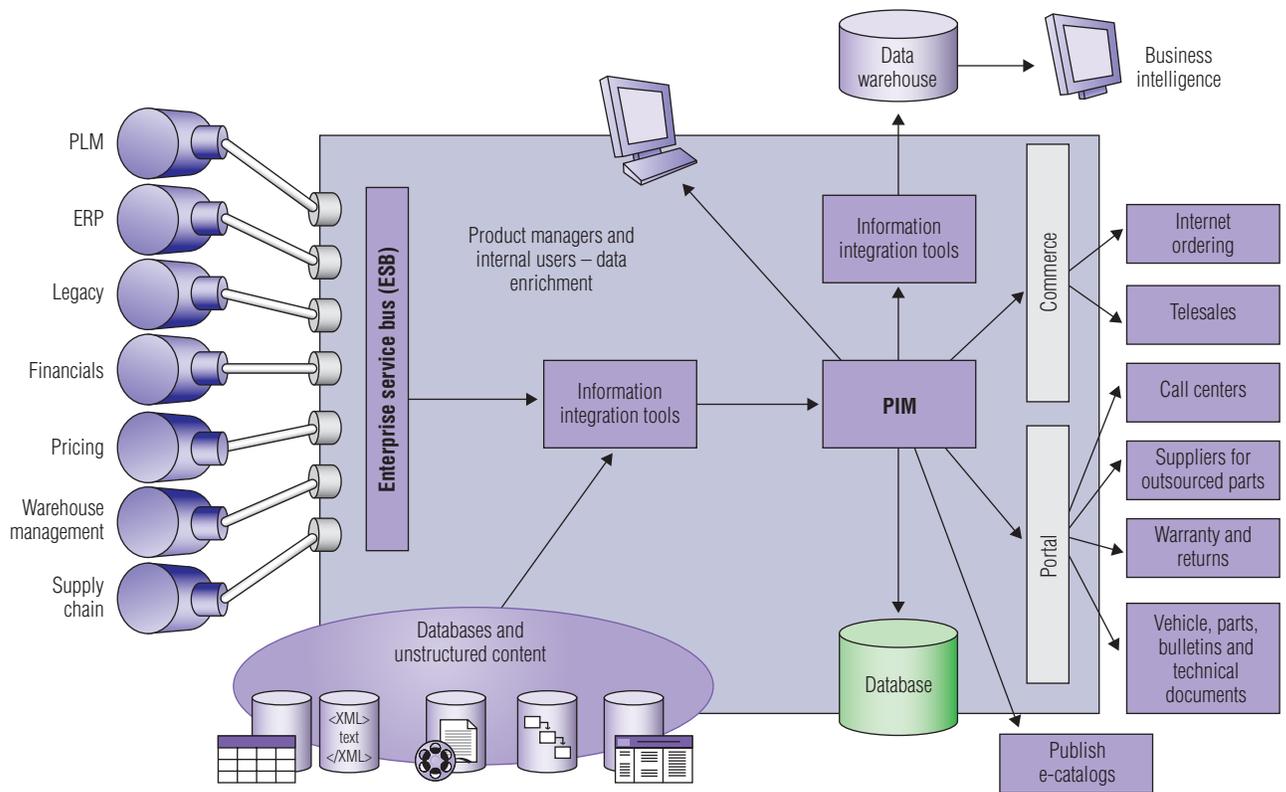
Data warehouses are sometimes confused with MDM systems and can solve a portion of the master data problem. They lack the operational ability to update the source systems and are unable to act as a central control point to manage the data. Data warehouses are collection points for all data, master and transactional, and are unable to decipher good from bad or what the single version of the truth is. Typically, MDM systems are used as a feed into data-warehousing systems to provide them with the correct data and logically correct dimensions for business intelligence needs. Data-warehousing projects will fail with poor-quality data as an input.

**Why manufacturing companies should consider MDM**

So where can MDM be of value to manufacturing companies? Manufacturing companies have numerous product data and content systems and need a single view of their data and processes. Enterprises have their various business processes running on multiple applications, middleware, databases, servers and operating systems, and although they communicate with one another, it is often impossible to get a comprehensive and unified view of information across these systems. Nearly 80 percent of organizations have two or more data repositories, and one in four firms has more than 15 data repositories. The average US\$1 billion company operates no fewer than 48 disparate manufacturing systems and 2.7 ERP systems.<sup>1</sup>

So many different versions of the truth slow decision making, responsiveness and the ability to pursue new business opportunities or react to market forces. In such an environment, trusted information is simply not available, squelching opportunities to optimize processes, improve customer care and increase employee productivity.

PIM is the central control point to synchronize the master data and processes across all business applications (product life cycle management [PLM], ERP, e-commerce and supply chain) with the ability to manipulate the product and part data to provide relevant views to internal and external users (see the figure). Tackling an MDM initiative is a huge undertaking and risky, but handling PIM as the first step towards that goal can lead to significant benefits.



*PIM solutions help ensure data is clean, current and consistent with optimal workflow.*

PIM solutions tend to have a very strong return on investment (ROI). Revenue increase is achieved by shortening time to market, increased customer satisfaction by ensuring high-quality data and enabling collaboration with trading partners (suppliers and retailers). On the cost-reduction side, PIM solutions help improve user productivity and streamline and automate processes for new-item introductions, warranty and returns management. As an example, in the automotive aftermarket alone, 1.75 percent of annual sales are lost because of unsynchronized product and price data. Also, studies have shown that a five percent increase in customer retention results in a 75 percent increase in aggregate lifetime profits from an individual customer.<sup>2</sup> Companies seek PIM solutions that enable creation of a “single version of the truth” for their products, which can be used within the enterprise, as well as with trading partners and customers in the following manner:

- New-product introduction – *everyone in the organization from engineering to sales has visibility into completion at each stage of the process*
- E-commerce for business-to-business (B2B) and business-to-consumer (B2C) – *central catalog and personalized views for the different end users*
- Trading partner collaboration with suppliers and retailers – *data synchronization with suppliers for sourced products and retailers for sales and service information*
- Sales enablers – *updated and latest information for configurators, sales guides and price books to place accurate orders, freeing product managers for other value-add activities*
- Parts reuse for engineering and procurement – *reduced time spent searching for information and cost avoidance in redesigning parts*
- Compliance and regulation – *support for Automotive Aftermarket Industry Association Standards (AAIA); Transportation Recall, Accountability and Documentation (THREAD) Act; Restriction of Hazardous Substances (RoHS); Waste Electrical and Electronic Equipment (WEEE) Recycling and End of Life Vehicle (ELV) directives*
- On demand printing and publishing – *production of brochures, literature and documents on the fly, in different languages and with different regional characteristics for various channels*
- Radio frequency ID (RFID) – *centralized view of product and parts data for work in progress or inventory control*

A long-term PIM strategy requires integration with other systems, workflow, a scalable information repository, and the ability to synchronize and syndicate information to a variety of destinations in multiple formats. Organizations must review the following elements of the solution in depth before selecting a PIM partner:

- *Data model – should support item, location, organization, trading partner, trade terms, price and complex relationships; must also be customizable, configurable, extensible and upgradable, and offer the ability to edit product information*
- *Information quality – has to offer robust tools for data profiling, quality and cleansing*
- *Integration and synchronization – must leverage middleware tools to understand, transform, synchronize and federate both structured and unstructured information*
- *Business processes and services – has to come with strong workflow tools with security, audit trails, access control and versioning, and expose Web services for SOA implementations*
- *Performance and scalability – must scale to data volumes and processes with subsecond response times*

Finally, pick a vendor who has industry and PIM expertise as your trusted partner. The vendor should be financially stable with a number of solid references. By making the right choice, you should be able to make PIM a reality and a competitive advantage, helping you:

- *Ensure that product and parts information is always clean, current and consistent*
- *Improve time to market for new products*
- *Lower costs by streamlining and automating processes for creating, collecting, enriching and searching for parts and product information*
- *Improve customer service and loyalty*
- *Improve sourcing capabilities for make-or-buy decisions*
- *Strengthen collaboration among manufacturers, suppliers, dealers, distributors and retailers*
- *Integrate data and processes following a merger or acquisition (M&A)*
- *Consolidate the various IT systems*
- *Eliminate lost sales (see the air-intake system example)*

### **Product Information Management solutions**

The IBM WebSphere® Product Center PIM solution is currently deployed in over 80 installations in the retail, consumer products, electronics, telecommunications and the automotive industries. WebSphere Product Center has strong features for search, hierarchy, structured taxonomy maintenance and business process management. Other IBM middleware products provide support for integration, e-commerce, portal and unstructured content. WebSphere Product Center is an extremely scalable offering for managing complex PIM requirements.

As an example, in the automotive aftermarket industry, IBM has been working with numerous companies who are facing challenges in the following areas:

- *No single view of enterprise product data*
- *Long delays in getting product to the market (two to six months)*
- *No standard processes for managing product information across the life cycle*
- *Product managers waste productivity on low-value data entry and manual processes*
- *Poor integration from PLM cycle through the marketing, sales, and services cycles*
- *Information wrong or incomplete at point of sale (POS), leading to lost sales*
- *Trading partners demanding rich product content – documents and image*
- *Cannot support new industry standards for synchronization with partners (AIA standards in the automotive aftermarket)*
- *Unable to scale e-commerce and portal initiatives*

WebSphere Product Center with its rich set of functionality has enabled automotive aftermarket and industrial companies to solve these business problems. The solutions enabled by WebSphere Product Center span across multiple areas like new-product introduction, e-commerce, central data repository, data synchronization, publishing, parts reuse, RFID and unstructured content. Every company has unique needs and requirements, and IBM begins every engagement with a discovery study to understand your current situation and your required end state. A road map is then developed clearly showing you how to get to your final destination. In many cases, IBM can assist with the Proof of Value (POV) study to help justify the project and build the ROI model. IBM services teams are also available to help you implement the project using proven methodologies and best practices.

### **Conclusion**

All successful companies must pursue MDM, not with a sudden all-encompassing effort, but to address pressing business issues. PIM, with its narrower focus, is one of these areas to transform your business ahead of the competition, addressing opportunities around centralized item management, new product introduction, electronic commerce and data synchronization. A best practice is to select a business problem with a strong ROI to focus on and then tackle the data ownership, governance and business processes to manage and maintain the master data. Such a strategy of starting small and showing rapid business value will help build your foundation for continued success.

### **For more information**

To find out more about IBM Master Data Management (MDM) solutions, contact your IBM representative or IBM Business Partner, or visit:

MDM Solution Page

[ibm.com/software/data/masterdata/launch.html](http://ibm.com/software/data/masterdata/launch.html)

PIM Solution Page

[ibm.com/software/info1/websphere/index.jsp?tab=prodinforngmt](http://ibm.com/software/info1/websphere/index.jsp?tab=prodinforngmt)

WPC Product Page

[ibm.com/software/integration/wpc](http://ibm.com/software/integration/wpc)

WPC Library

[ibm.com/software/integration/wpc/library](http://ibm.com/software/integration/wpc/library)



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<sup>1</sup> IBM Attributes & Capabilities Study 2006, client interviews and industry analysts

<sup>2</sup> Industry Analysis Results July 2003 By AAIA — Automotive Aftermarket Industry Association, client interviews and industry analysts