

Taking the PIM Path on the MDM Journey

by Jim Murphy, Rob Bois, and Eric Newmark

While organizational obstacles and product maturity prevent a sudden approach to Master Data Management (MDM) today, companies must pursue MDM in short-term pieces, with an understanding of needs across departments, between enterprises, and among industries. Product Information Management (PIM) is a worthwhile place to start.

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Companies must address short-term PIM needs with a view toward a broader MDM strategy.

The
Bottom
Line

Executive Summary

Product Information Management (PIM) is nothing new to manufacturers and retailers, but the passage of time only seems to make systems more complicated and processes more error-prone and expensive. The means and methods of creating, aggregating, organizing, storing, publishing, and synchronizing product information have multiplied with new departmental applications, customers and partners, buying and selling channels, technology and media, and, paradoxically, even new standards. Along come new urgencies, mandates from customers, increasing competitive pressure to collaborate more smoothly with partners, and technology advances, and companies face the prospect of adding even more complexity, cost, and risk.

This Report addresses the following points:

- Treat product management mandates as strategic opportunities.
- Think Master Data Management (MDM); deploy PIM.
- Tactical PIM is the cost of doing business; broader MDM is the cost of doing business more profitably and competitively.
- Build a technology foundation geared for long-term goals.
- Vendors offer worthwhile starting points as PIM matures and MDM evolves.
- With product, industry, and process distinctions, most companies need strategic and tactical services assistance.

Treat product management mandates as strategic opportunities

When you hear the acronym PIM today, it's often narrowly associated with a specific industry issue. PIM has taken hold at the intersection between the Consumer Products and Retail industries. Driven by Wal-Mart's and other powerful retailers' mandates, consumer products manufacturers are hurrying to organize the product content in order to meet a certain, well-defined need.

But as a concept, PIM is a far broader issue for manufacturers, distributors, and retailers in every segment, and it's far from new. Ten years ago, the initial emergence of the Internet as a sales channel sent companies scrambling to establish a presence ahead of the competition. And the buy side wasn't far behind—many companies will remember their procurement and sourcing efforts were dependent on gathering suppliers' content. In those efforts, we called PIM Catalog Management or Product Content Management (PCM). Sometimes, especially when it was related to the development of products, it was called Product Data Management (PDM). And companies and departments built or purchased new systems and sources, and a whole lot more, for every seemingly separate effort.

Thus, companies created information silos for product information. Not only are they often narrow, redundant, and conflicting, they rarely offer anyone a reliable, comprehensive view of products.

Global Data Synch is another in an endless parade of compelling events urging companies to get their product information act together. It and similar events serve to expose fundamental problems and risks with product content: Companies might well ask why it's so difficult to compile and transmit just over 150 product data attributes to a data pool. What will they do when customers require 300 attributes? What will they do when the next industry standard emerges, or Radio Frequency Identification (RFID) initiatives exponentially multiply data requirements, or the next mandate comes along? Companies can address PIM now, or they can play catch-up forever.

Think MDM; deploy PIM

Companies must think of PIM in the context of broader data management issues. MDM is not just about PIM.

Master Data Management: MDM is the authoritative, reliable foundation of data used across many applications and constituencies. MDM does not necessarily entail a new, all-inclusive database, but a layer of abstraction (in the form of metadata) that identifies data ownership for a specific domain, product set, or attribute. MDM's goal is a single view of the truth, no matter where it lies.

MDM goes beyond product information into several domains:

- Suppliers
- Products
- Assets
- Customers
- Employees

While the product information strategy should be in accord with efforts in the other domains, it's also important to recognize and account for the significant distinctions between data types. For instance, customer, supplier, and product information usually requires different models—often because of the static or dynamic nature of the entities. In the broader context of MDM, companies define data domains and loosely couple data structures to accommodate such differences.

Product Information Management: PIM is lately associated with a certain issue for a certain market. Consumer products companies and retailers have lately employed it as a means of aggregating and synchronizing products and related attributes to data pools.

But broader PIM—which we'll call MDM for Products (MDM-P)—is a foundation of authoritative product information working across systems and business processes. MDM-P has its place not as a distinct business process on its own, but as an information service employed across business processes. It's used in procurement and sourcing systems, in data synch, catalog publishing, merchandising functions, and in the various internal and external aspects of Product Lifecycle Management (PLM).

While neither MDM nor MDM-P can reasonably be addressed at once, PIM can. On the other hand, PIM without a sense of direction toward MDM will lead to inefficiencies, risks, and higher costs.

Tactical PIM is the cost of doing business; broader MDM is the cost of doing business more profitably and competitively

Most companies have been addressing the array of internal and external product information issues on an as-needed basis with various point systems and manual processes. This is not as much a sign of short-sightedness as it is the difficulty of attaining such a pervasive goal as MDM, for a few reasons:

- A new, comprehensive system threatens to disrupt business by changing the way people operate throughout and between organizations.
- A continuing surge in mergers and divestitures creates a recurring nightmare for companies trying to get their arms around growing or shrinking masses of product information.
- Few companies have governance bodies with the power and funds to promote or deploy a common data foundation.
- Few complete customer examples exist.
- No single software product offers all that companies need today.

Still, with new issues emerging—the combination of new customer mandates, new regulatory pressures, and new sales and delivery channels—companies can't afford to regard every product information effort separately. For example:

- Widespread adoption of mobile, Point-of-Sale (POS), and new devices, combined with regulatory issues, will require companies to have a centralized, reliable source of data from which to publish and synchronize through additional channels.
- Green laws, such as Restriction of Hazardous Substances (RoHS) and Waste Electrical and Electronic Equipment (WEEE), will force companies to collect, organize, and convey additional types of data that must be maintained and related to core product information.
- RFID will bring a tidal wave of additional data related to products. Flaws in master data will be magnified, as will costs.

In the long run, no company can afford to undertake such mandates in isolation. Enterprises must reduce the cost and risk of maintaining numerous systems for numerous point issues. They must anticipate the more fundamental problems budding from narrow paths, mitigate the cost of additional initiatives, standards, and mandates over time, and more readily adapt to inevitable, unpredictable changes in the marketplace.

The best MDM strategies will accept the MDM vision as a journey, and will move forward by recognizing and exploiting the best opportunities to transform business. Tackling an enterprise-wide MDM strategy seems risky owing to the fluctuations in technology, standards, and business goals, but handling PIM as a step toward the goal leads to significant benefits.

Address immediate needs while keeping long-term principles in mind

The benefits of tactical PIM are to comply with mandates, continue to support customers and channel partners, and stay in step with the competition.

The benefits of MDM are to surpass the competition—to drive efficiency and reduce redundancy through the business and supply chain and to improve market agility and beat competitors to market, both by getting products to market faster and by establishing and managing the most advantageous, lucrative partnerships.

Finding ROI in PIM

Return on Investment (ROI) in complying with customer mandates is scarce, except for the ability to maintain business with customers or partners. But significant positive benefit comes first through consolidating systems and resources, and then from improving process efficiency inside and outside of the enterprise.

Tangible near-term benefits offer glimpses of further return:

- **Lower delivery costs**—Companies significantly reduced catalog generation and syndication costs when using multichannel publishing techniques. In the course of addressing customer mandates to syndicate product data, one manufacturer also reduced material costs by automatically producing more content through traditional channels, saving 20% on printing and shipping costs.
- **Accelerate time to market**—Companies introduced products to market faster by providing product information through automated means—that is, automatically publishing, syndicating, or allowing customers and partners access to catalogs. Retailers are finding they can reduce the time to set up a new product for sales by 80% or more. One manufacturer moved from a biannual introduction of new products, based on its ability to produce new print catalogs, to introducing and supporting new products continuously through multiple media and partner channels.
- **Increase sales**—By managing products centrally, companies have taken advantage of new selling channels with little additional cost. Retailers of complex products report that providing better information through guided selling terminals has brought an increase of 30% versus comparable aisles.
- **Reduce the cost of error**—Companies avoid revenue loss associated with bad orders and resulting returns, which are often due to errors and inconsistencies in product data. Retailers report that more accurate information at POS has brought a decrease in returns in the 10% to 20% range.

- **Do more with fewer resources**—First-phase implementations typically reduce manual aggregation, transformation, and the error-prone reentry of data. Most companies cite an ability to handle more data and more channels with far fewer IT or business headcount. One chemical product manufacturer operating in over 100 countries eliminated five Full-Time Equivalents (FTEs) devoted to manually performing product information localizations in spreadsheets.

Over time, PIM rollouts will produce more agile, streamlined enterprises that can quickly syndicate richer product information to a higher volume of customers and channels.

Seeking ROI in MDM

Long-term MDM benefits are harder to predict, often because they're only evident in distinct, separately managed parts of the business. Consider the common themes and the number of issues requiring a better foundation for product data published in Reports from AMR Research over several years:

- “Content Management Strategies,” May 2000: “For buyers, the single largest reason for delays in large e-procurement projects still continues to be catalog content management.”
- “Content Management Is the Fuel of the Exchange,” June 2001, asserts that “Exchange success depends on managing content.” We might remember that public and private exchanges largely failed for a lack of content.
- “Sell-Side Product Content: The Key to Supplier Empowerment,” July 2001, describes an earlier struggle for suppliers to manage and control content in light of “compelling” customer demand.
- “Retail Consumer Goods Operational Costs To Soar Without Brand Asset Management,” May 2002, states that the “Consumer Goods industry will spend between \$20B and \$30B annually to deploy its products on the Web and in other media.”
- “Establishing a True Source of Product Content for Competitive Edge,” May 2003, shows that the processes manufacturers employ to produce and distribute product content are often inefficient, error-prone, and overly expensive.
- “I’ve Got PDM: Now What?” January 2000, states “As much as 70% of integration requirements involve the synchronization of information—structured, semi-structured, and unstructured—across disparate applications.”

Broader MDM need not be a leap of ROI faith. Rather, it must be a progression of tactical destinations, prioritized with considerations for tangible return, customer or regulatory mandates, and opportunities, risks, and rewards along the way, always with the longer term goal of a single foundation for product data in the enterprise.

Build a technology foundation geared for long-term goals

Since MDM-P is a long-term effort, the technology that supports it, including PIM, must be accordingly stable and extensible. MDM is an effort to establish and maintain a single, authoritative, reliable source of information about products throughout their lifecycle, with certain high-level business goals in mind:

- To reduce the cost and speed of product-related processes by coordinating efforts within the enterprise, from product definition, to introduction, to promotion, to support and service
- To collaborate more readily with partners, suppliers, and customers
- To capitalize on market changes and opportunities as they arise

With these goals in mind, MDM-P must provide a reliable foundation of data for many systems and initiatives, and must be accessible to many constituencies throughout the enterprise.

At the core, MDM is data, with broad implications and requirements, entailing a range of structured information as well as documents and rich content. Also, the hackneyed but valid “garbage in, garbage out” maxim applies. Product records accumulate more attributes as they progress through a comprehensive lifecycle, so unclean or inconsistent core data can lead to magnified disaster.

And with data ideally touched by so many systems and end users inside and outside of the enterprise, the potential for massive heaps of garbage is huge. Properly managed, however, MDM must enhance and improve data by providing secure access, workflow, and quality control assurance to the variety of constituencies who work with it.

To integrate or to centralize, that is the question

Companies must strike the appropriate balance between short-term PIM, largely as a non-invasive integration mechanism, and long-term MDM-P, a new system of record upon which many will collaborate.

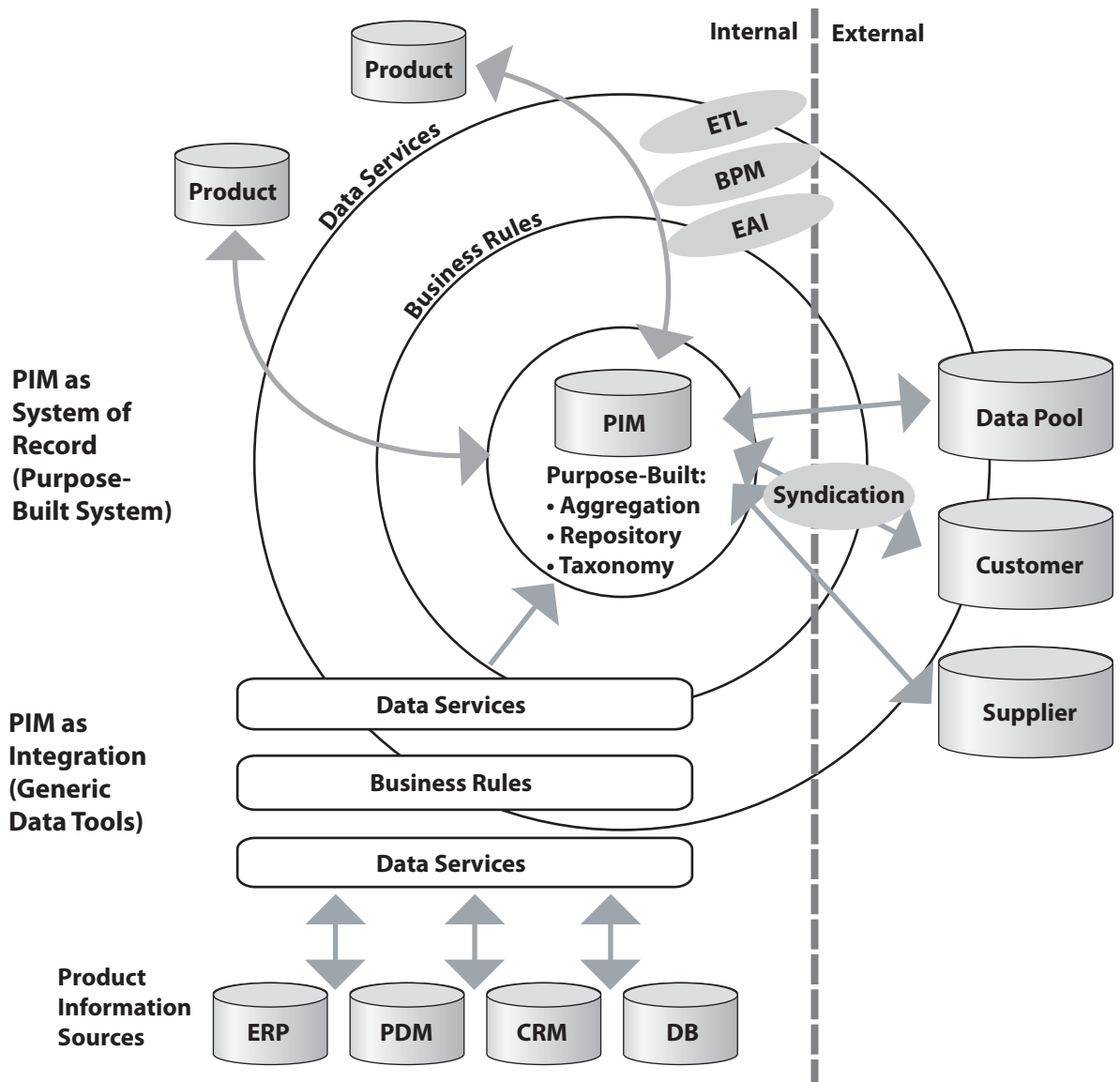
The pure integration approach appeals to organizations daunted by the notion of changing systems and the way people interact with them. Where authoritative information currently exists, often in financial systems like Enterprise Resource Planning (ERP), it's a proven best practice to employ it and allow the people who create or interact with these attributes to continue to use the tools to which they're accustomed. Companies that attempt to deploy entirely new systems of record for every constituency are bound to encounter resistance. Moreover, often failing to retire older systems, they only exacerbate the problem of conflicting information from competing systems.

On the other hand, change in the form of business transformation is good. The notion of having different constituencies acting and collaborating on the same foundation of information is appealing, and the better way to realize the benefits of long-term MDM.

So, the best MDM strategies will have the following characteristics:

- They will employ existing, relied upon data in current systems.
- They will offer versatile user interfaces (often portals) as environments for people to contribute or enhance information.
- They will offer role-based workflow to automate and solidify processes across functions and to ensure data quality.
- They will offer mechanisms and accommodations for integrating and synchronizing sources and destinations together, internally and externally to the enterprise.
- They will urge and enable meaningful business transformation through analysis and measurement.

Figure 1: Transformational PIM: From integration to system of record



Source: AMR Research, 2005

Vendors offer worthwhile starting points as PIM matures and MDM evolves

Software and service providers have sought to serve the PIM market, under various names and initiatives, since the emergence of the Internet as a channel for product sales. The vendors have fought the battle on various fronts. The catalog vendors, for instance, have followed the winds of market opportunity from the sell side—with the emergence of the Internet, to the buy side—with the fervor over procurement and sourcing in the late 1990s, back to the sell side again—with the late rush toward data synch.

PIM is essentially a three-step process: aggregate, organize, and publish. Nomenclature changes and nuances are added according to the vertical industry and the business process. The technology emphasis also depends upon the position on the buy side, the sell side, or the in side. For example, products that focus on the buy side tend to emphasize the aggregation and cleansing of product information. Products that focus on the sell side are often better at syndicating content, and often go far down the path of multichannel publishing, marketing, and merchandising.

The strategic, long-term view of MDM is that the buy side, the sell side, and the in side must eventually come together. This is likely to occur first in companies in high-volume, direct markets, which must constantly collect product information from suppliers to sell to customers: For retailers, distributors, and high-tech equipment manufacturers, the buy side, the sell side, and the in side ideally operate on one unified, reliable foundation of data. Other markets, where buy-side and sell-side functions remain distinct, are likely to move to MDM-P only in line with the maturity of their strategic vendor offerings. That is, they'll likely move toward MDM as an effort to standardize on a single vendor, not on a platform.

Figure 2: Vendors approach the buy side, the sell side, and the in side

	Buy Side	In Side	Sell Side
Business Processes Supported	Procurement, sourcing, collaborative design	Internal product design, development, and introduction	Commerce, customer support, customer marketing and merchandising
Technology Emphasis	Aggregation, rationalization, cleansing search	Integration, workflow, role-based access	Syndication, publishing, transformation, translation
Representative Vendors			

Traditional PIM Providers
 Emerging MDM-P Providers

Source: AMR Research, 2005

Vendors offer PIM today, MDM tomorrow

The most influential considerations for PIM and broader, longer term MDM initiatives are three: **IBM**, **Oracle**, and **SAP**. Each has significant reasons and motivations to capture the PIM market, and each has made substantial investments to do so. What they have in common is a desire to protect their installed base—largely against one another—by establishing themselves as irreplaceable systems of record. They'll use this position to further expand, providing more applications and/or services, within customers, between departments, and across industries. Yet, each has a different approach and appeal to market needs.

SAP

SAP is solidly entrenched in the business process, its *R/3* system acting as the most authoritative system of record for core product attributes like item masters. SAP acquired **A2i** and its *xCat* catalog management product in July 2004 (see the AMR Research *Alert* article "SAP Acquires A2i, Gets Into Product Content Management," July 12, 2004), while its own *MDM*—with an ambitious intended use for customer, supplier, product, and employee data—was under development.

The former *xCat*—the former *MDM-E*—is now the basis of *MDM 5.5*. The old SAP-developed *MDM* is now incorporated with the new *MDM* and offers additional, out-of-the-box support for the other data domains as well as interfaces to other SAP applications like *Business Intelligence* and *Analytics*.

SAP's new *MDM* gives many customers a chance to solve immediate needs on the road to a more comprehensive data management strategy. The shift is toward a completed product, ready to help consumer products companies and retailers comply with mandates and take advantage of data pools. At the same time, the move relieves customers from having to confront and solve all of the governance issues and organizational complexity that the ambitious broad MDM strategy entails.

A2i had roughly two dozen customers at the time of the acquisition, and SAP had about the same amount on its previous version of the *MDM* product.

Oracle

Oracle's foothold in the PIM market rests on the database, and it's a great place to be. One reason is because so many of the problems companies face involve data quality, as well as scalability and extensibility of the platform that provides it. Another is the fact that, with a dearth of thoroughgoing systems from viable vendors in the past, many companies either built PIM systems using Oracle databases or bought point applications that employ Oracle database platforms.

Oracle has branded its MDM products as *Oracle Data Hubs*, the most recent addition to which is the *Oracle PIM Data Hub*. Obviously meant to call attention to its readiness to help Consumer Products and Retail, which relate to the PIM term, the new data hub adds to the portfolio, including the *Oracle Customer Data Hub*. With specific applications, data, and middleware, Oracle's approach also considers product information in the context of PLM.

Oracle is only just introducing a specific PIM platform. The majority of its customers in this space are in early stages of deployment. However, the *PIM Data Hub* has its origins in *Advanced Product Catalog*, and customers building PIM capability based on this and the *E-Business Suite* could number in the thousands.

IBM

Among the large vendors, IBM retains the lead in PIM territory. Its foothold is in middleware and related services. With expertise in industry problems, a versatile core platform in the *WebSphere Product Center* derived from the **Trigo** acquisition (see the AMR Research *Alert* articles "IBM Acquires Trigo," March 10, 2004, and "IBM's Trigo Acquisition; Product Content Becomes Middleware," March 10, 2004), an array of related integration products, including the recently acquired **Ascential** and **Venetica** assets, and momentum in hot Consumer Product and Retail markets, IBM has the early lead. Unlike the others, IBM doesn't aspire to be an application provider, a factor which architectural purists will find appealing. However, IBM, Oracle, and SAP are all blurring the application-middleware line in this space.

Of course, IBM also has broader MDM in its sights, especially seeing the affinity between PLM and PIM efforts, and also applying its array of middleware and expertise to customer data, supplier data, employee data, and asset data. IBM also has a thorough understanding of the services required to make PIM and broader MDM efforts work, with over 1,000 customers using IBM services related to MDM or master data integration.

Big-vendor MDM is still a vision

While proven PIM products are available today, the timeframe for packaged and proven MDM-P and other MDM domains will be at least three years. Therefore, customers must proceed with product selection and deployment cautiously, always with a view toward MDM as a strategy to improve processes and beat the competition, but never as a shrinkwrapped product.

Best-of-breed PIM can be strategic too

PIM problems are as numerous as distinct business processes, manufacturers, distributors, and retailers, and industries. Despite growing consensus at the intersection of Consumer Products and Retail (see the AMR Research *Alert* article “Transora Merges With UCCnet: The Continuing Saga of GDSN Consolidation,” May 17, 2005), there exists scarce commonality across industries, delivery mechanisms and media needs, standards efforts, and departmental motivations and interests. This leaves plenty of territory for software specialists and service providers. Refer to the *AMR Research Report* “A Sell-Side Product Information Management Landscape,” March 2005, for details on the vendors focusing on PIM.

Velosel, **FullTilt**, and **HAHT Commerce** (now owned by **GXS**) caught the same wave as Trigo before it was acquired by IBM, and remain competitive in the PIM market. **Riversand** has emerged more recently and to gain significant customers as well.

In the meantime, companies like **SAQQARA** and **Cardonet** have pursued the whims of market demand from sell side, to buy side, and back again. As a result, they’ve developed strong abilities to capture, aggregate, and cleanse product information on the buy side to publish, syndicate, and synchronize on the sell side, and to integrate and organize product information on the inside.

i2 Technologies’ Aspect Development acquisition brought it a significant business in the related Component Supplier Management space. While the sell-side PIM market constitutes only a small part of its business, a stronger services organization could exert a significant influence in the broader MDM-P market.

Some smaller vendors are positioning themselves to be complementary to Oracle, IBM, and SAP by focusing on specific industries and unaddressed parts of the process. For example, many companies cannot think of refining product information strategies without addressing the need to publish for multiple media. Yes, Oracle, SAP, and IBM can all provide the central source of information from which print and Web catalogs are published, but they rarely handle the intricacies of automating the actual publishing process. Thus, **Stibo** and **Flow Systems** tend to offer products and expertise for refining multichannel publishing processes, as well as adding capabilities for marketers and merchandisers.

Numerous other vendors—too numerous to mention here—will play significant roles in an MDM-P strategy—often because they’re already managing some aspect of product information. These include vendors in the procurement and sourcing spaces, in PDM and PLM, and in customer management, channel management, and e-commerce.

With product, industry, and process distinctions, most companies will need strategic and tactical service assistance

While meeting point requirements for PIM, like data synchronization, may be easy and require little outside guidance, longer term MDM issues require expertise on several levels:

- **Consulting and data governance**—Data warehousing projects have taught us that a massive data integration effort can be a burden that outweighs any hoped-for benefit. This tends to occur when companies get too preoccupied with putting data into a comprehensive repository, with little understanding of what they're going to get out, in terms of business value or tangible output.
- **Prioritization**—While short-term PIM efforts may entail clear, quickly attainable goals and milestones, such as reaching a state of compliance with retailer mandates, MDM is so broad that it's hard to know where to go next. Initiatives must be prioritized according to mandatory requirements, expected benefits, ease of deployment, and alignment with business goals.
- **Integration and metadata management**—Companies must identify, leverage, and integrate with authoritative existing attributes pertaining to content—which can often be buried deeply in obscure, disparate, or outdated systems. Metadata management constitutes an essential enabling technology for mapping between data sources and creating a layer of abstraction from the various data sources companies seek to leverage. While it's a fairly long-held practice by service providers, it's only just beginning to work its way into products in a usable way.
- **Data migration, cleansing, and rationalization**—While tools from IBM, **Requisite**, **Silver Creek Systems**, **Softface** (since acquired by **Ariba**), and **UDEX** exist for aggregating, categorizing, and cleansing product information, PIM and MDM efforts invariably require significant manual effort.

As for service providers, many companies in the PIM space offer their own services, and many have offshore arms (sometimes known as “content factories”) to perform data cleansing and rationalization. GXS, Velosel, and Flow Systems work through various third-party service providers on a regular basis. Of the large service providers, **BearingPoint** looks to have forged the most formal partnerships in the PIM space, while **IBM Global Services** will certainly support *WebSphere Product Center* as well as products in areas not directly competitive with it.

Closing Comments

While MDM, the notion of a common foundation for data, has a significant appeal for virtually everyone in an enterprise, it's hard to find consensus on how to accomplish it.

The problem is not inadequate technology; it is a combination of internal conflict and a long legacy of dedicated systems and resources that has made product data enormously complex for many longstanding companies—no matter what the technology. Comprehensive MDM sounds like nirvana, and the journey is so long for many, likely 10 years or more, that they cannot envision an end state.

But the most successful companies will pursue MDM anyway, not with a sudden, all-encompassing effort, but in the course of addressing pressing business problems. The need for PIM, with its narrow definition, is just one of these problems, but it's one worth solving with a view toward transforming the business ahead of the competition.

Company List

Ariba	www.ariba.com
BearingPoint	www.bearingpoint.com
Cardonet	www.cardonet.com
Comergent	www.comergent.com
Flow Systems	www.flowsystems.com
FullTilt	www.fulltilt.com
GXS	www.gxs.com
i2 Technologies	www.i2.com
IBM	www.ibm.com
Oracle	www.oracle.com
Requisite	www.requisite.com
Riversand	www.riversand.com
SAP	www.sap.com
SAQQARA	www.saqqara.com
Stibo	www.stibo.com
Silver Creek Systems	www.silvercreeksystems.com
UDEX	www.udex.com
Velosel	www.velosel.com

Acronyms and Abbreviations

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ERP	Enterprise Resource Planning
FTE	Full-Time Equivalent
MDM	Master Data Management
MDM-P	Master Data Management-Product
PCM	Product Content Management
PDM	Product Data Management
PIM	Product Information Management
PLM	Product Lifecycle Management
POS	Point of Sale
RFID	Radio Frequency Identification
RoHS	Restriction of Hazardous Substances
ROI	Return on Investment
WEEE	Waste Electrical and Electronic Equipment