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The Complementary Roles of PIM and PLM

Extending PLM with Product Information Management

Executive Overview

Product Lifecycle Management (PLM) represents a broad suite of software solutions to improve product-oriented business processes and data. PLM success stories prove that PLM helps companies improve time to market, increase product-related revenue, reduce product costs, reduce internal costs and improve product quality. As a maturing suite of enterprise solutions, PLM is still evolving to realize the promise it can provide across all facets of a business and all phases of the product lifecycle. The vision for PLM includes everything from gathering early requirements for a product through multiple stages of product design, commercialization and eventual product retirement or replacement.

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Product Information Management (PIM) is a product suite that has evolved in parallel to PLM. PIM focuses on management and synchronization of product information from multiple data sources. PIM success stories have shown the ability to provide multiple benefits, with particular emphasis on reducing information complexity and information management costs. The vision for PIM is to manage product information throughout an enterprise and supply chain to improve product-related knowledge management, information sharing and synchronization.

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The goals of both PLM and PIM, put simply, are to help companies make more profit from their products. PLM and PIM solutions share some of the same goals, but take different approaches to delivering value. This paper explores how PIM can be used to extend the value of PLM implementations by providing complementary capabilities that are not available in PLM suites today.

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“Products” and “Items”

One key area that PLM implementations have not fully addressed, ironically, is product information. For the sake of this paper, we will consider these two definitions:

Item: The technical view of a material or part, including specifications, bills of material and manufacturing data

Product: The commercial view of a material or part, including sales and marketing information

Given these definitions, the PLM market demonstrates significantly more focus on “items” than it does on “products.” PLM today primarily adds value related to product design, development, launch and engineering change—the front part of the product lifecycle—or the “Innovation Cycle.” PLM has less focus on the latter parts of the lifecycle—where profits are realized—or the “Execution Cycle.”

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Product commercialization is the process of moving a product from the Innovation Cycle to the Transaction Cycle, or from an “item” to a “product.” The product information that surrounds the “item” to transform it into a product is critical to the ability for a company to meet the needs of their supply chain—particularly the demands of major retailers such as Wal-Mart. Further towards the customer in the supply chain—particularly for consumer goods—the technical characteristics of the item must be expanded to consider commercial information such as pricing, promotional information, and other commercial data. While PLM serves as an important source of “item” data, PLM is not typically used to collect, consolidate, rationalize and synchronize the enterprise-wide “product” view of an “item.” In this case, PIM solutions provide a complementary set of tools to extend the value of PLM into the commercial aspects of the product lifecycle.

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The “Single Source of Truth”

One striking similarity between PLM and PIM is that both can serve as a form of product “system of record.” Both solution sets offer better management of data and offer the ability to serve as “one version of the truth” for product information. The approach that they have taken to this is often very different. PLM suites typically aim to be the sole source of product information by integrating tightly with product “authoring tools” such as Computer Aided Design or Recipe Management.” Through tight integration, PLM solutions help to form the product information from the very beginning of a product. As multiple departments develop their product data—particularly technical, “item” data as discussed previously—it can be captured and stored in PLM.

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PIM takes a different approach to being the central repository for product information. As opposed to having product information developed directly into the PIM solution, PIM actively consolidates information from multiple data sources. Companies today have multiple systems of record, as well as multiple applications that are used in different areas of the business. Many of these applications develop product information. PIM integrates with these solutions to capture and collect this information in one source. Beyond capturing the information, PIM also helps to rationalize the conflicts within the data that result from changes in different systems.

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PIM not only consolidates information. PIM collects information into its repository, but also provides integration tools to push the information back out to the other systems—serving as an active central repository. If data changes in one part of the business or in one system, it can be rapidly distributed—if appropriate—so that the rest of the enterprise is working on the same information. PIM tools also help to synchronize the supply chain by integrating this information out to partners, customers, suppliers and industry data pools. In essence, PIM can be viewed as a consolidator and distributor of information. Companies are effectively using Product Information Management (PIM) solutions in this way, using PIM solutions focus on the management of data throughout the enterprise from all systems and sources, including PLM systems as well as others.

There are several basic software application and business process requirements to support a PIM strategy, as seen in Table 1 below:

Collect / Consolidate	Required product data is typically found in multiple different systems, including ERP (potentially more than one), PLM, manufacturing and other systems. This information must be identified and consolidated into a central repository that includes links to the original data sources
Cleanse / Rationalize	Data from multiple sources must be transformed into a common format, duplicates must be removed, obsolete information removed, and missing information augmented
Publish / Synchronize	Information must be dynamically updated as it changes in the underlying data stores, and the resulting information published in multiple formats to requesting applications or third party registries

Table 1: Product Information Management Capabilities

The Demand for Commercial Product Information

Good communication and good information are critical to managing an efficient supply chain. Without complete, up-to-date and consistent product information, companies frequently suffer from flawed invoices, incorrect shipments, stock-outs and high data management costs due to manual error-prone processes. In addition, companies spend far too much time and expense finding product-related information for product catalogs, web sites and other marketing and sales uses. These challenges have become more pressing as companies are expanding their electronic commerce capabilities and further automating the links between customers and suppliers.

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As the level of automation has increased, the demand for real-time communication has increased as well. The number of systems that store product information, for example, has increased dramatically. Consider a packaged, frozen meal sold in grocery stores. The product descriptions for that product are stored in the manufacturer's ERP system, as well as many other systems including the ERP system of each of the distributors and retailers. The retailers themselves may have multiple systems that track the product. In this scenario, something as simple as changing a product description has become a complex coordination challenge. Given the current speed of product changes, the only realistic approach to this problem is automating the aggregation and synchronization of product data.

***PIM is quickly becoming mandatory because of its value
in optimizing selling processes and relationships with customers***

Some industries are taking proactive steps to address the product information challenge. The consumer packaged goods (CPG), retail, MRO, healthcare and life sciences industries have taken particular notice to the problem because of the challenges they face in their supply chain. Retailers, for example, have begun increasing pressure on CPG companies to comply with initiatives such as Sunrise 2005, Global Data Synchronization (GDS), and synchronization with EAN/UCCnet requirements. While some other industries—for example those with few product changes—might consider this a “nice to have,” these industries are beginning to make PIM a basic requirement to compete.

***Mismatched and obsolete item data costs companies millions of dollars every
year***
- Andrew White, research director Gartner Inc.

PIM is quickly becoming mandatory because of its value in optimizing selling processes and relationships with customers, such as retailers. Andrew White, Gartner Inc.'s research director for enterprise and supply chain management, provides some insight into PIM value: “Mismatched and obsolete item data costs companies millions of dollars every year in problems like inaccurate invoices and shipments, and the growing adoption of standards like Global Data Synchronization is making it imperative for companies to reconcile these disparities in order to do business with the Wal-Marts and Krogers of the world.” The Yankee Group, in their March 2005 report titled “*The Cost of Waiting: Building the ROI Case to Implement Product Information Management Now*,” indicated that PIM implementations have an ROI of less than one year.

PIM implementations have an ROI of less than one year
- Kosin Huang, The Yankee Group

PIM and PLM Working Together

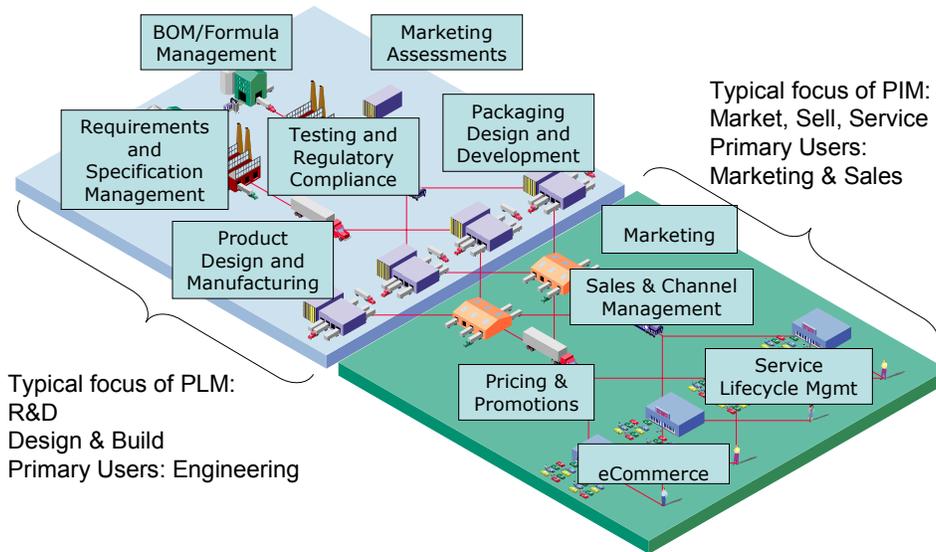
PLM has historically focused on designing and developing—not commercializing—products. For the most part, PLM implementations still focus on item-related information such as bills of material (BOM), recipes, specifications and technical product changes. Managing technical specifications is a very important and complex challenge for manufacturers, and one that PLM has been addressing very well.

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PLM has provided the mechanism to develop and store information about items, and then communicate this information to manufacturing. This includes the communication of item changes and information sharing with outsourced manufacturing, which were two of the key drivers that led to the current PLM solutions. PLM has also stretched into strategic sourcing, where the need for detailed specifications and communication with suppliers is increasing as product lead-times continue to decrease and more companies are adopting concurrent design approaches.

PLM has proven value in addressing key requirements in the early product lifecycle and when engineering changes are introduced, or the “innovation cycle.” IBM / Dassault, UGS, MatrixOne, Agile, Arena Solutions, Aras and others have proven value in discrete manufacturing, while others such as Formation Systems, IMS, Selerant, GNX and OSIsoft have proven value in process manufacturing.

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Graphic 1: Product Information Management Capabilities

PLM solutions are beginning to expand beyond pure item information as well. Many PLM solutions have begun to address requirements management and portfolio management needs. Vendors like IDE and Sopheon, in particular, have begun to address the challenges of the product development process by automating Stage-Gate and other business processes related to developing products. The PLM suite will most likely continue to expand to address business processes related to developing better products as opposed to addressing PIM capabilities on a broad scale.

Current State of PLM

Most PLM suites do not include specific tools to collect and rationalize commercially oriented product data from disparate enterprise systems. Although they are well designed to store item data, they are not designed to synchronize product information between internal systems and with external trading partners. To realize a complete PLM strategy that includes full PIM-related capabilities today, standalone PIM products are required.

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It is not a question of whether PLM providers are capable of addressing these needs, but simply a matter of focus for PLM. Historically most PLM vendors—and their products—have come from strong R&D backgrounds. PLM has addressed a large number of challenges for manufacturers, including management of technical data, development of product structures, engineering change control, design collaboration and visualization of disparate CAD models. The focus has been placed on these areas because their customers have been asking for enhancements to what they view as the role of PLM—namely the development, management and communication of “item” data. This is also an area that most PLM vendors are comfortable. The PLM vendors have followed a natural evolutionary path to build their suites.

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There is still work to do in improving and expanding “core” PLM capabilities, not to mention the need to better manage the overall new product development process, which includes portfolio management, project control and automation of stage-gate and other lifecycle processes. Most acquisitions are validating this thinking. Examples of this are Agile’s acquisition of Cimmetry for their collaboration and visualization suite and UGS’ acquisition of Tecnomatix for their Manufacturing Process Management (MPM) suite.

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Current PLM suite strategies focus more on “items” than on “products.” PIM, on the other hand, focuses on the management of data through the enterprise from all systems and sources. The comparison in Table 2 provides a brief review of a PIM and a PLM.

Viewpoint	PLM Current State	PIM	Key Benefits PIM adds to PLM
Product Lifecycle	Primarily R&D Front end Innovation Cycle	Primarily commercial / transactional state of lifecycle	Provides a seamless information flow from design and manufacturing through the ultimate selling and servicing of products
Data	Primarily focused on “item” vs. “product” data Product structures Specifications Technical information	Repository for all product information. Reaches out to entire enterprise and its various silos of product information and descriptions	Provides a “trusted source” of accurate product information to the internal organization and trading partners
Data Lifecycle	Repository for all design iterations Historical information	Released, current information, with version management and time stamping	Provides a single location to track and audit historical product information
Communication	PLM releases finished product to ERP	Captures information from disparate sources, including in-house data stores Recognizes the reality of today’s data “mess” across information silos	Provides the ability to package product information to its audience in the desired, relevant format to meet their exacting business requirements
Departmental	Primarily R&D Manufacturing Procurement Limited Marketing	Focus on Marketing and Sales Gathering information from other Departments	A singular enterprise solution that leverages existing information silos and data stores
Supply Chain	Primarily internal Supplier collaboration Some customer collaboration	Works with customers, exchanges / data pools, and trading partners to provide relevant product information packaged the way the customer desires	Provides ability to provide trading partners and internal customers with information in a manner they desire, continuously
Industry	Discrete, some CPG, some Process, some distribution, some retail	CPG, retail, service, healthcare / life sciences, MRO, distribution	A flexible PIM meets the needs of virtually any industry
Tools	Data Management Collaboration	Cleansing Synchronization Data Management Collaboration	Consistent, clean and complete commercial product information

Table 2: Key Benefits PIM adds to PLM

Recommendations

- Prioritize demands for product information from internal sources and customers
- Understand current capabilities of PIM vendors and how complementary capabilities can extend existing PLM capabilities
- Look for ways to leverage and improve the utilization of your PLM to gain tangible value from both PIM and PLM
- Consider appointing a key individual to own the corporate product information opportunity

Summary

The current state of the enterprise software market suggests that companies that require accurate, complete and accessible product information management capabilities should consider implementing a PIM to manage commercially oriented product data. PIM solutions can provide needed tools to aggregate, cleanse, augment and synchronize product information to improve supply chain efficiency and meet customer demands. PIM tools can provide valuable, complementary capabilities to existing PLM implementations by aggregating the information within PLM and other data sources and actively extending that information throughout the enterprise and supply chain to improve efficiencies and communication—ultimately resulting in reduced costs and higher product profitability.

About the Author

Jim Brown has over 15 years of experience in management consulting and application software focused on the manufacturing industries. Jim is a recognized expert in software solutions for manufacturers and has broad experience in applying enterprise applications such as Product Lifecycle Management, Supply Chain Management, ERP, and Customer Relationship Management to improve business performance. Jim began his professional experience at General Electric before joining Andersen Consulting (Accenture), and subsequently served as an executive for software companies specializing in PLM and Process Manufacturing solutions.

Jim is the president of Tech-Clarity, a research and consulting firm dedicated to making the value of technology clear to business, where he is a frequent author and speaker on applying software technology to achieve tangible business benefits. Jim also serves as the PLM Analyst for Technology Evaluation Centers and The PLM Evaluation Center.

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