

June, 2008

## Integrating PLM & ERP: It's not just a one way street

As Product Lifecycle Management (PLM) takes on a larger footprint in the enterprise application ecosystem, manufacturers have begun to attempt to better track product information across the full lifecycle. Often, this takes the form of integration between PLM and an Enterprise Resource Planning (ERP) solution. While this is the most common area for integration work cited by participants in Aberdeen Group's April 2008 *Integrating the PLM Ecosystem* report, analysis also found a clear connection to company performance, with leading companies 40% more likely than the Industry Average to have integrated PLM and ERP. But what is more interesting is the fact that as more companies integrate these solutions, the role that PLM plays both in product development and in the enterprise changes.

### Bridging PLM and ERP

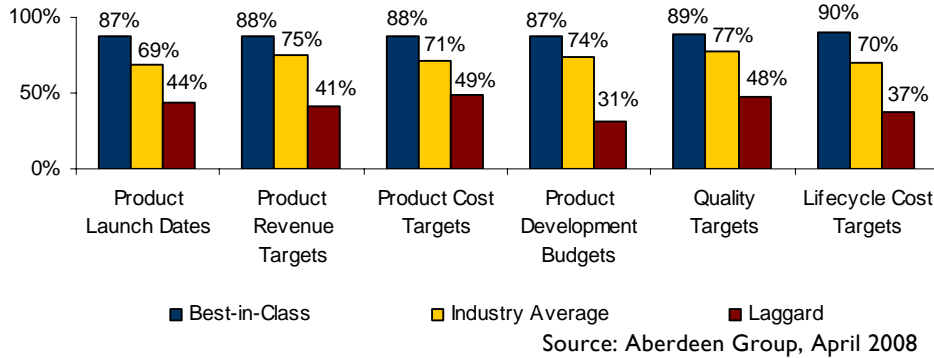
Aberdeen Group's April 2008 *Integrating the PLM Ecosystem* study found that as companies begin to attempt to consolidate product information across the enterprise, they are starting with the fundamentals; integrating PLM with ERP. This was the most common integration with PLM Aberdeen found, reported by 59% of respondents, twice as often as any other enterprise software. This integration often fills a noticeable gap in the information available in most ERP systems. For, although it serves as the system of record for a large amount of corporate information, ERP has not been the primary location to store design and engineering data. However, what is surprising is that not only is the integration of PLM and ERP the most common integration adopted, it is also highly differentiated across categories of company performance.

Aberdeen benchmarked study participants according to key performance criteria which evaluated their ability to meet crucial product development targets. Using these metrics, Aberdeen classified companies into the top 20% (Best-in-Class), the middle 50% (Industry Average) and the bottom 30% (Laggard) of performers. Figure 1 highlights the performance gaps that define each ranking. This gap indicates a large differentiation between the Best-in-Class and their competition in the ability to profit from product innovation.

#### Research Brief

Aberdeen's Research Briefs provide a detailed exploration of a key finding from a primary research study, including key performance indicators, Best-in-Class insight, and vendor insight.

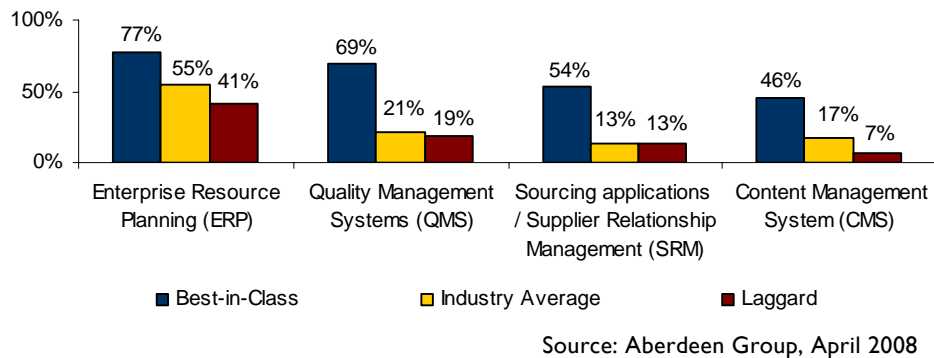
**Figure 1: The Maturity Class Framework**



When researching the number of companies integrating PLM and ERP, Aberdeen found that it is a step that is 40% more likely to be taken by the Best-in-Class (Figure 2). While the integrations between PLM and other enterprise applications are more dramatically differentiated across the competitive framework, it is important to recognize that these companies have expanded these programs from integration between PLM and ERP.

Specifically, Best-in-Class performers that had not completed integration between PLM and ERP also did not report having integrated other enterprise applications. Laggards, on the other hand indicate a less focused approach to integration. Of those Laggards that have not integrated PLM with ERP: 38% report integrations with supply chain management applications, 29% have integrations with Customer Relationship Management (CRM), and 38% have integrated PLM with their Manufacturing Execution System (MES).

**Figure 2: Integration of PLM across the Enterprise Ecosystem**



What does it mean? The fact is that the Best-in-Class integrate their product development ecosystems in a progressive manner that always starts with a PLM and ERP connection. After that, they then move on to integrate other systems with PLM including QMS, SRM, and CMS. So in this case, it not only matters what you integrate but also the sequence in what you integrate together.

## Integrating Product Data

What data is being communicated between PLM and ERP? Presently, the majority of information is flowing from PLM to ERP. Ninety percent (90%) of the respondents that have integrated ERP and PLM are sending BOMs from PLM to ERP, and 60% are sending change orders.

What sets the Best-in-Class apart; however, is the integration of supplier and cost information. The Best-in-Class are more likely than other companies to bring actual costs, sourcing data, and supplier data from ERP to PLM. However, what is most interesting is that the Best-in-Class are also four-times as likely to be developing and integrating a "should be" cost in PLM that is sent to ERP. This supports a different use of PLM with regards to costing, where costs are identified and developed in the product innovation and engineering environment as opposed to - or in addition to - the ERP environment. This suggests that companies are adopting a Product Cost Management (PCM) approach to develop costs based on design data, potentially much earlier in the product lifecycle where it can be better impacted.

"Electronic transfer of BOM data to the ERP system from the solid models in 3D CAD has eliminated data entry errors. Additionally, integrating our documentation system with PLM has improved the quality of the data we use to manufacture products. The documentation system is now electronic, making it impossible to get the wrong revision of a drawing on the manufacturing floor."

~ Theodore Langevin  
Sr. VP Technical Services  
Gunther International Ltd.

**Table 1: Data Integrated between PLM and ERP**

	Best-in-Class	Industry Average	Laggard
<b>PLM to ERP</b>	Bills of Materials (BOMs)		
	90%	93%	86%
	Change orders		
	60%	60%	71%
	Should be costs		
	60%	13%	14%
<b>ERP to PLM</b>	Costs / actual costs		
	78%	67%	33%
	Sourcing data		
	67%	42%	50%
	Vendor / supplier data		
	67%	33%	67%

Source: Aberdeen Group April 2008

## Is PLM the Emerging System of Record for the Product?

ERP is the traditional data backbone of the enterprise ecosystem, serving as the central data source for many companies. This role appears to be changing as PLM continues its transition from an engineering tool to a full enterprise application. Aberdeen's *Integrating the PLM Ecosystem* study found that PLM is becoming the System of Record (SOR) - the primary, trusted data source - for a large amount of product data.

This suggests that many manufacturers are taking a "start from the source" perspective on how they manage information across the enterprise. Engineering is the department where a great deal of product data emerges, and thus so is PLM. Table 2 displays the growing divide between PLM and ERP as the system of record across all respondents to Aberdeen's [Integrating the PLM Ecosystem](#) study. PLM is indicated where more than 50% of respondents indicated they use PLM, and ERP is indicated where more than 50% of respondents indicated they use ERP as the master system of record.

**Table 2: PLM versus ERP as the Master System of Record**

	Items Parts	Item Costs	eBOM	mBOM	As Built BOM	Configurations	Product Graphics	Item Specifications
PLM	•		•			•	•	•
ERP		•		•	•			

Source: Aberdeen Group, April 2008

Many other aspects of products do not yet have a clearly defined system of record. For many of these elements, the Best-in-Class are more likely to use PLM as the identified system of record. For example, while ERP is more often reported as the system of record for "as maintained" BOMs (43% of respondents) the Best-in-Class are 2.5-times more likely to use PLM (55% of Best-in-Class compared to 22% of other performers). They are also 3.2-times as likely as their competitors to store quality plans in PLM (58% of Best-in-Class compared to 18% of others).

A full analysis of all of these findings, including the decisions the Best-in-Class have made regarding the management of product information across the enterprise and what product information does not yet have a clearly defined system of record can be found in Aberdeen Group's April 2008 [Integrating the PLM Ecosystem](#) Benchmark Report.

"Having product data accurate and controlled is key. Entering it in the PLM system allows us to have a 'single source of truth,' which helps to ensure that the customer gets accurate information. They get upset when it is not."

~ Director  
Computer Equipment &  
Peripherals Manufacturer

## Vendor Landscape

When it comes to integrating product development technologies, there are a plethora of options available.

### Product Lifecycle Management Solutions

Whether it is for discrete or process manufacturers, there are a number of PLM solutions available. While these solutions offer varying fundamental and extended capabilities to manage products and their related information, the majority of them offer both standard out-of-the-box integrations as well as the ability to create customized integrations with ERP systems:

- For discrete manufacturers, this set of PLM solutions includes Arena's hosted PLM solution, Dassault Systemes ENOVIA, Omnify's Empower, PTC's Windchill PDMLink, and Siemen's Teamcenter

- For process manufacturers, this set of PLM solutions includes Dassault Systemes ENOVIA and MatrixOne, Centric Software's PLM solution, Engenuity's solution, PTC's Windchill PDMLink, Selerant's solution, and Siemen's Teamcenter.

### **Combined Product Lifecycle Management and ERP Solutions**

An alternative to integrating together a PLM system with an ERP system is to get a solution that offers an out-of-the-box combined solution. With a number of recent acquisitions over the past few years, more traditional ERP solution providers offer this type of option:

- For discrete manufacturers, this set of includes Oracle's Agile solutions, as well as SAP's PLM offering.
- For process manufacturers, this set of solution includes Oracle's Agile for Process offering (via an acquisition of Prodika), Infor's PLM Optiva solution, as well as SAP's PLM offering.

### **Other Options – MDM, PIM**

Newer technologies such as SOA, MDM, and even Product Information Management (PIM) are promising to make integration between applications simpler. These technologies, separately or in combination, are the keys to enhanced integration efforts in the future. The Best-in-Class, already leading in regards to integration and gaining tangible advantages in profitability today, are planning to lead the way into the next generation of PLM and enterprise application integration:

- Master Data Management (MDM) is an approach and application suite that provides a central repository for master or reference data that can be accessed and utilized across applications, providing a common SOR to be use by multiple applications, providing normalized data in a usable format.
- Product Information Management (PIM) is an application suite that provides data synchronization and cleansing to connect and integrate disparate applications, recognizing that data will be stored in multiple systems of record and must be kept in sync. Frequently used to distribute product data across companies, these applications typically span not just applications, but also supply chains where different companies likely have different, conflicting data definitions that must be accommodated.

**Table 3: Enablers - Integration across the Enterprise Ecosystem**

<b>Technology Enablers</b>	<b>Best-in-Class</b>	<b>Industry Average</b>	<b>Laggard</b>
Product Information Management (PIM)	45%	39%	36%
Master Data Management (MDM)	45%	39%	36%

Source: Aberdeen Group, April 2008

## Key Takeaways

Currently, 59% of manufacturers have integrated their ERP and PLM solutions. This is changing the role of PLM; both as a system of record within the larger enterprise application ecosystem as well as within product development as integrations with ERP and other applications provide greater downstream visibility.

Additionally, as more manufacturers attempt to gain a fuller vision of the performance of the enterprise through integration, it is important that they begin with these two backbone systems. The Best-in-Class have recognized this, and while they are integrating more applications within the ecosystem, they are doing so programmatically waiting to integrate PLM and ERP before adding more specialized applications such as CMS, QMS, or supply chain management.

For more information on this or other research topics, please visit [www.aberdeen.com](http://www.aberdeen.com).

### Related Research

[\*Integrating the PLM Ecosystem\*](#); April 2008

[\*Winning Master Data Management \(MDM\) Strategies for 2008\*](#); January, 2008

[\*Profiting from PLM: Strategy and Delivery of the PLM Program\*](#); July 2007

[\*Enabling Product Innovation: The Roles of ERP and PLM in the Product Lifecycle\*](#); December, 2005

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