Transforming PLM for the Economic Recovery

Think Big, Start Small, Build Incrementally

Kalypso White Paper by Amy Kenly & Bill Poston

KALYPSO
Delivering on the promise of innovation

In challenging times, what company isn't trying to "do more with less"? Manufacturers striving to deliver growth are faced with a "new normal" operating environment—tighter research and development budgets, limited human and capital resources, value-conscious customers and consumers, growing compliance requirements, and global supply chains.

Delivering on the promise of innovation in today's environment means placing an emphasis on reducing cycle times, increasing throughput, improving product quality, and decreasing time to market. Companies are turning to Product Lifecycle Management (PLM) software to help address these challenges.

PLM can enable manufacturing companies to manage critical product information as a single source of truth with distributed global teams, across the extended supply chain, and throughout the entire product lifecycle.

But too often, companies embark on their PLM journeys without a coordinated, cross-functional plan of action. This can lead to conflict, confusion, redundant investment and ultimately a failure to deliver on the promise.

Defining PLM—What It Really Is and What It Isn't

PLM software has evolved dramatically since early adopters implemented engineering-focused tools meant to manage product data over a decade ago. Today, PLM is an enterprise-level business discipline that represents both the processes and software tools required to create, manage and reuse product information throughout its lifecycle. CIMdata defines PLM as "a strategic business approach that applies a consistent set of business solutions that support the collaborative creation, management, dissemination and use of product definition information."

AMR Research breaks down PLM into five core elements: Product Data Management (PDM), a key foundation technology for engineering data management and control; Collaborative Product Design, to facilitate the sharing of designs across an extended value chain; Direct Materials Sourcing, for the supplier management aspects of product development; Customer Needs Management, to capture customer requirements; and Product Portfolio Management, for monitoring and assessing risk across multiple development projects.

To fully address one or more of these areas, implementing a PLM solution from one of the well known software providers—including Oracle, Dassault, Siemens, PTC and SAP—is only part of the PLM puzzle. The business process change required to be successful with a PLM solution reaches far beyond engineering to other internal departments and external collaboration partners. Regardless of your PLM platform, implementation history or level of maturity, "doing more with less" requires companies to develop a comprehensive strategy to drive the most benefit.

Think Big—Look Before You Leap

PLM strategy is more than just selecting technology. It is a comprehensive understanding of the processes, organizational structures, product development strategies and people that are required to make your innovation engine work.

To ensure that PLM creates the most value and delivers the most significant return on investment, manufacturing companies must take a strategic approach to PLM and move from a systems installation mindset to a transformational program approach. Leading manufacturing companies that have adopted this "vision-driven" approach to PLM are significantly outperforming those that view their programs more tactically, and are gaining significant top- and bottom-line benefits as a result.

Leading companies employing a strategic PLM program reported seeing increased business benefits in the following areas:

- 100 percent of best-in-class companies improved hitting their launch dates

- 84 percent of best-in-class companies experienced an increase in hitting revenue targets

- 89 percent of best-in-class companies achieved better product cost targets

- 95 percent of best-in-class companies improved ability to meet development budgets

- 98 percent of best-in-class companies increased the ability to hit quality targets

The proof is in these numbers: putting a strategy in place before launching a PLM implementation program is clearly beneficial. When PLM is implemented not just as a technology but as a strategy to guide people, processes, and change, it enables companies to work more effectively, better meet their customers' needs, and reduce time to market and time to profit.

Being strategic does not mean attempting to "eat the elephant" in one sitting or driving PLM as the best new IT tool to be mandated for the enterprise. The most successful companies have defined a transformation vision and are taking an incremental approach to implementing PLM.

"PLM applications rank among the most vital for accelerating delivery and supporting new innovative products, and they rank among the most complex to deploy. PLM accelerates delivery and support of new innovative products, because the applications accelerate creation of product concepts and validated designs, while also providing more accurate and relevant communication of product content as well as changes to that content across the value chain throughout the life cycle of a product.

The complexity comes, in part, from the need to coordinate activities across the many job functions necessary to create and change product content for many activities throughout the life cycle."

Gartner *"A Guide to Choosing PLM Service Providers,"* 2009

Start Small—Understand the Components of PLM to Know Where to Start

The components of a comprehensive PLM offering include the functionality and technical infrastructure to support strategic, design, data management, and collaboration processes. The components of a comprehensive PLM solution for manufacturing are shown in more detail in Figure 1.
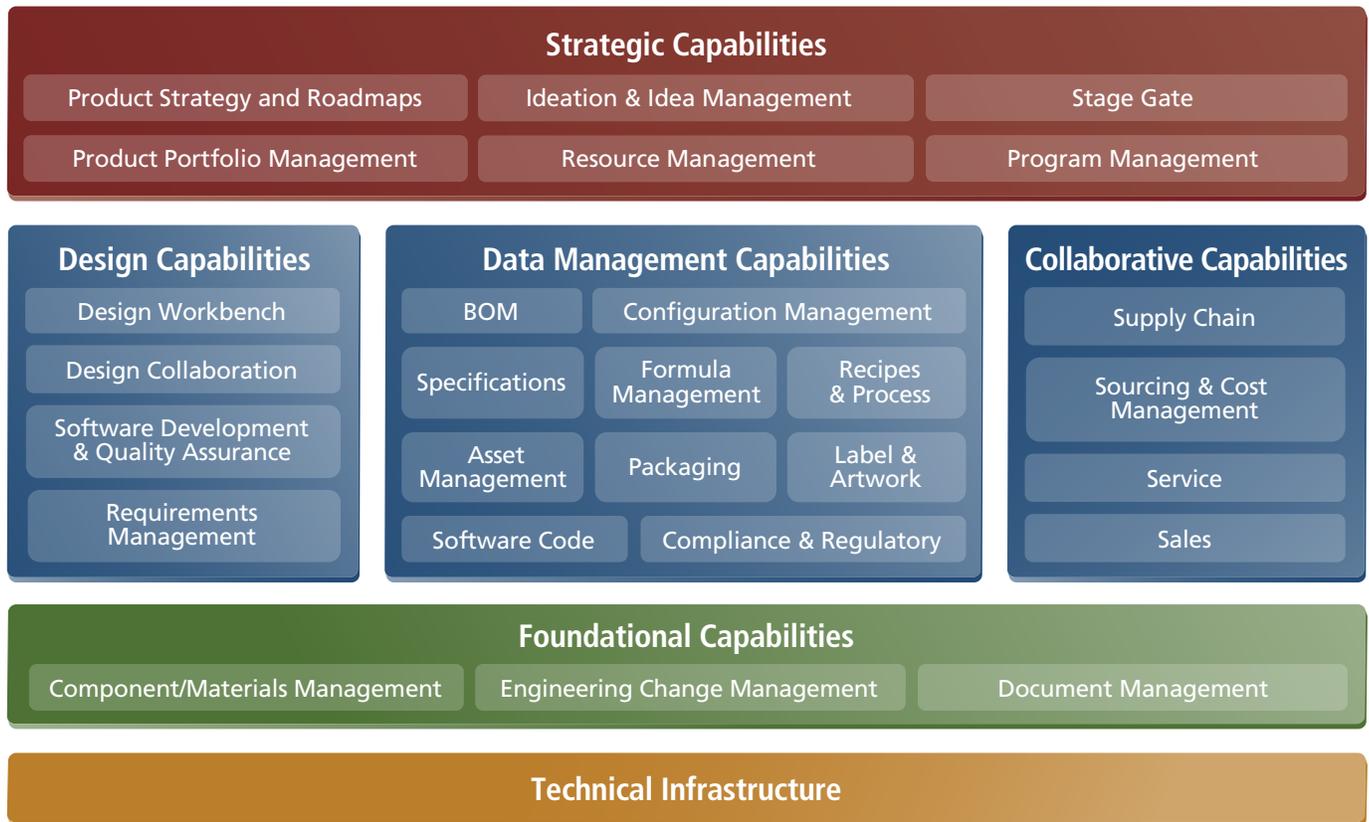
Strategic Capabilities

Product Strategy and Roadmaps	Ideation & Idea Management	Stage Gate
Product Portfolio Management	Resource Management	Program Management

Design Capabilities

- Design Workbench
- Design Collaboration
- Software Development & Quality Assurance
- Requirements Management

Data Management Capabilities

BOM	Configuration Management	
Specifications	Formula Management	Recipes & Process
Asset Management	Packaging	Label & Artwork
Software Code	Compliance & Regulatory	

Collaborative Capabilities

- Supply Chain
- Sourcing & Cost Management
- Service
- Sales

Foundational Capabilities

Component/Materials Management	Engineering Change Management	Document Management

Technical Infrastructure

Figure 1:
Components of
a Comprehensive
PLM Solution

Strategic Capabilities enable product development portfolio and pipeline management. This includes program management, resource management, phase-gate automation, and portfolio reporting. More advanced solutions enable product and technology roadmapping, and provide support for idea management and ideation processes.

Design Capabilities of a PLM solution start with basic customer needs definition and extend to system-level engineering and the decomposition of specific product requirements. Design capabilities will allow a user to link customer requirements in the system to features and design teams, providing a record of the linkages and changes throughout the development process. Design collaboration enables geographically dispersed, cross-functional teams to work together in digital form across EDA/CAD platforms. IP management enables both re-use and protection of purchased and invented technology.

Data Management Capabilities are often seen as the foundation for an effective PLM system. This functionality can be used to logically link all information related to a product and manage change to that information over time. This provides a single version of the truth with a common logical data model across the global value chain of customers, employees, partners, and suppliers. It includes requirements, technical specifications, design definitions, production schedules, test reports, sourcing plans, and quality inspections that are tied to critical processes and tasks.

As shown in Figure 2, this data model is called the Product Data Record (PDR). The PDR is the heart of PLM—the blueprint to guide a company's PLM initiative by providing a comprehensive view of all product data elements, both structured and unstructured.

Figure 2: The Product Data Record

Program Data
Phase-Gate Deliverables
Resources
Budget & Cost Data
Project Status Reports

Product Portfolio Data
Product Lists
Feature Requirements
Plan of Record
Financial Analysis

Configuration Mgmt. Data
Change Requests/Issues
Release & Change Orders
Deviations & Stop Orders
Change History

Product Structure
Bill of Materials
Product Options
Configuration Rules
Material Composition (RoHS)

The Product Record

All information regarding the definition of a product

Service Data
Corrective Actions
Field Instructions
Customer Communications

Hardware Data
Design Specs
Material Specs
Models
Schematics/Drawings
Release Notes

Supplier & Sourcing Data
Approved Suppliers
Qualification Reports
Pricing Agreements
RFQ Process

Software Data
Software Code
Build Configurations

Manufacturing Data
Mfg Process Instructions
Packaging BOM

Test Data
Test Requirements
Characterization Plans,
Tests & Reports

Last, integral to the development process and an important part of a comprehensive solution are the **Collaborative Capabilities**. PLM, particularly as it relates to the manufacturing industry, should almost always be considered a multi-enterprise system. Outsourcing production operations and test and assembly functions means that design shops need not only a secure way of collaborating on new product launches, but also an efficient way to communicate timely changes to existing product specifications.

Given the varied facets of each component of a comprehensive PLM solution, these capabilities are almost never implemented all at once. Rather, most companies find that the best approach to a PLM implementation is to define a strategy based on a commercially available platform and create a roadmap that integrates additional new capabilities over time.

Build Incrementally

Gone are the days when companies would attempt to overhaul their PLM systems at once in a big bang approach, as change management hurdles can jeopardize production in the short term and leave the program with an exhausted budget and no long-term results.

Kalypso recommends a PLM implementation preparation program that includes the following steps:

- Assess and gather PLM requirements from engineering, sourcing, supply chain operations, and program management

- Define an integrated PLM strategy based on strategic imperatives that includes people, process, and technology

- Educate and align the organization on a simple, integrated, software platform-independent PLM vision

- Develop a clear, multi-faceted PLM business case

- Select a suitable PLM platform solution that supports current and future business requirements

- Scope and plan a PLM program roadmap and a flexible, incremental implementation approach

- Execute phase one of the implementation, consolidate gains, and then move forward

With a well defined framework (Figure 3) in place for implementing and updating PLM, companies will be able to anticipate changing needs and evolve their PLM solutions.

Figure 3: Framework for Evolving PLM

Assess	Upgrade	Expand	Optimize
Create plan to improve PLM benefits	Leverage new PLM capabilities	Implement modules aligned with business needs	Fine-tune the process, technology and decision-making

Companies taking a strategic, evolutionary approach to PLM are the most successful in generating returns on their program investments. Best-in-class companies evolving their PLM solutions are delivering significant top- and bottom-line benefits, and, more importantly, they are outperforming their peers that are taking a more tactical approach.

Conclusion

Prior to the recession, PLM software providers were experiencing double-digit growth. With analyst firms predicting global technology spending to grow in 2010—ranging from 3.2 percent to over 8 percent—PLM investments will likely trend upward as well. Manufacturers striving to drive growth in today's high stakes environment should embrace PLM; not just the technology, but the strategic thinking and business processes that enable a comprehensive solution.

Specifically, there is a strong correlation between best-in-class PLM program performance and the following actions taken by leading companies:

- **Developing a firm vision** and strategy for PLM that identifies a future state to achieve from PLM, and tie that vision back to the overall business strategy

- **Adopting a PLM program approach** to implementing PLM, addressing the implementation of PLM as a series of related projects

- **Approaching the PLM implementation as a business transformation** as opposed to a technology installation, recognizing the need to change behavior and business processes in addition to providing new software

For manufacturers, Kalypso suggests developing a long-term PLM strategy and initial roadmap centered on solving a single, high-impact business problem, and using this as the foundation on which to build a comprehensive solution.

Kalypso's exclusive focus and comprehensive capabilities in innovation, product development and objective PLM technology consulting allows our firm to help organizations deliver on the promise of PLM. For more information about Kalypso and how we can help with your PLM journey, visit **www.kalypso.com**.

Contact the Authors

Amy Kenly
Director of Analyst Programs, Kalypso
amy.kenly@kalypso.com

Bill Poston
Managing Partner, Kalypso
bill.poston@kalypso.com

About Kalypso

Kalypso is a consulting firm serving the world's most innovative companies. The firm helps clients to deliver on the promise of innovation. Service offerings encompass all aspects of innovation including product strategy, development, introduction, commercialization, lifecycle management, and PLM systems selection and implementation. In addition to the firm's deep industry, technology, operational, and training expertise, Kalypso provides a flexible, collaborative approach to deliver unparalleled client satisfaction.

Products ● Ideas ● Innovation   **www.kalypso.com**

KALYPSO
Delivering on the promise of innovation

KALYPSO