PLM Eclipses CPC as a Software Market

Gartner is retiring the Collaborative Product Commerce Magic Quadrant and introducing the Product Life Cycle Management Magic Quadrant. PLM elevates product definition applications to a top enterprise priority.

Gartner is replacing the Collaborative Product Commerce (CPC) Magic Quadrant with the Product Life Cycle Management (PLM) Magic Quadrant (see "PLM Market Requires Best-of-Breed and ERP Capabilities" and "Defining the PLM Magic Quadrant by Criteria and Use") because market demands and software capabilities are beyond the collaboration value emphasized by CPC. When Gartner first defined the CPC software market in 1999, the Web-based CPC software architecture addressed manufacturers’ need to engage partners, suppliers and customers in collaborative product development. Today, this Web-centric approach to software is widespread.

All significant vendors that own the majority of the design and engineering software market Web address CPC, including Agile Software, Autodesk, CoCreate Software, Dassault Systemes, EDS, IBM, MatrixOne and PTC. Most new commercial applications that support product definition incorporate Web-based collaborative capabilities. Given the breadth and scope of Web support, CPC is no longer a differentiated software market. Now, CPC is primarily a business practice that all commercial software vendors must consider when they develop design and engineering applications.

Top Priority: Define Successful Products and Manage Their Evolution

The major IT business challenge in product life cycle support has moved beyond collaboration. Although manufacturers must collaborate to innovate timely new products, they seek IT applications to help them provide greater reliability so that the innovative products will succeed. This means that they must manage:
Product portfolios to ensure that investments in new products yield the greatest business benefit

The life cycle of each product in the portfolio to reach budgets, schedules and revenue targets

CPC architecture is necessary, but not sufficient, to achieve these goals. Manufacturers must do a better job at aligning product definition activities with marketing, manufacturing, sales, customer service and product portfolio management to support their shared interests in design, production, service, replacement and retirement of products. Unless enterprises pay greater attention to the fundamental importance of managing product definitions, they will not achieve the value that they expect from IT investments in enterprise resource planning (ERP), sourcing, integrated plant systems and customer relationship management (CRM).

Product definition has a major impact on:

- **Marketplace acceptance of products.** Marketing may define product requirements. However, customers buy the products that engineering defines to meet those requirements. PLM software helps track conformance of product definition with documented requirements.

- **The nature of parts and services negotiated with suppliers.** Strategic sourcing must coordinate with engineering on product definition efforts to save costs by streamlining negotiations and the procurement processes. PLM software provides visibility of preferred suppliers to engineers. Sourcing specialists have visibility to part descriptions employed in product definitions.

- **The nature and cost of required technical skills.** Engineering decisions determine the engineering and manufacturing skill sets required to deliver a product. PLM software supports resource management and allocation.

- **Manufacturing processes and costs.** Engineering selection of formulas, materials, parts and shapes influences the manufacturing processes selected to produce products in discrete and process manufacturing. PLM software offers visibility of product definitions to manufacturing process planning activities.

- **Ability to configure product features and options to achieve scalable mass customization.** Product structure that is defined by engineering determines the extent to which products can be economically customized in a mass-production environment. This capability resides in core PLM design and product configuration capabilities.
• **Product quality.** Engineering and manufacturing operations determine the variability of product performance to uncontrollable factors in a product’s operating environment. They also control the sensitivity of product quality to uncontrollable variability in manufacturing processes. Product quality directly relates to minimizing the impact of uncontrollable variability. This capability resides in core PLM design and manufacturing simulation capabilities.

• **Cost, timeliness and success of servicing products.** Part definitions, product structure and spatial arrangements of parts determine ease of disassembly, availability of parts, part replacement and re-assembly. Core PLM capabilities of digital mock-up, simulation and visualization partially fulfill these requirements.

• **Commercial trade.** The process by which companies interact and trade with external partners is driven by product data, which derives from core-engineering-driven product information (see “Product Content and Data Management Promises Savings”).

Enterprises must pay greater attention to product definitions to achieve value in other areas of the business. They also must give higher priority to the applications that manage product definitions throughout the life of products.

Although product definition plays a pivotal role in product success, engineering does not dictate selection of suppliers and manufacturing processes. Rather, product definition is a nonlinear feedback loop between engineering and the rest of an extended enterprise. Investments in well-established supplier relationships, procurement cost management and the high capital expense of modifying manufacturing infrastructure and processes that extend to suppliers must be considered in product definition decisions. Engineering must collaborate with the rest of the enterprise to address these broader issues in product definition.

The IT environment that supports these nonlinear business processes must be built on an infrastructure that can share heterogeneous data between engineering applications and diverse applications spanning ERP, supply chain management, CRM and financial analysis. At the executive level, this environment helps senior managers strategize and manage product portfolios with clear visibility to budgets, schedules and financial resource allocation. At the operational level, engineering, manufacturing and supply chain specialists across the extended value chain perform their tasks with visibility to corporate priorities.

**The Emergence of a PLM Software Market**
Because product definition has such a pervasive impact on manufacturing, customer acceptance and product serviceability, leading manufacturers are renewing attention to the applications that create and maintain product definitions. However, this is not the same as traditional, isolated computer-aided design and product data management (PDM) applications. Instead, these capabilities exist within a framework that incorporates design, engineering, PDM functions, project management, resource management, financial analysis capabilities and Web-based collaboration into a single environment. The foundation provides the infrastructure necessary to integrate ERP, strategic sourcing, CRM and manufacturing process management (MPM) applications. MPM refers to the feedback loop between product definition and manufacturing planning that extends to manufacturing execution. Figure 1 depicts the PLM IT framework.

Because product life cycles are also knowledge-intensive, best-in-class PLM environments incorporate ways to capture knowledge about best practices for design, manufacturing and service, to apply lessons learned during all phases of a product life cycle.

Most of the CPC vendors have shifted their focus to such PLM frameworks. Also, some ERP vendors — notably Invensys Baan, Oracle and SAP — are making significant investments to compete in the PLM software market. New vendors that are addressing the emerging product portfolio management area of PLM include Integrated Development Enterprise, MS2 and Sopheon. MSC.Software, a $300 million vendor with roots in computer-aided engineering, also is evolving to broader PLM.
support. In addition, Tecnomatix Technologies, which focuses on MPM, will factor in the evolution of PLM.

**Bottom Line:** Product life cycle management (PLM) has replaced collaborative product commerce (CPC) as the most-vital software market for applications that are used to define products and manage their life cycles. The PLM market extends CPC by connecting engineering-centric product definition to broader business needs. Users should study the PLM Magic Quadrant when making investments in software to help them manage the product definition process.