The Differences Among PDM, CPC and PLM Matter

As IT evolves, enterprises involved in product life cycle activities need to understand the definitions of product data management, collaborative product commerce and product life cycle management and how their functions differ.

I see the terms collaborative product commerce (CPC), product data management (PDM) and product life cycle management (PLM) used interchangeably. What are the differences between them?

These three terms don't mean the same thing and aren't interchangeable. These concepts have evolved with changing business drivers, and each has represented a new generation of the software application market, which has also evolved rapidly. Clear definitions of these terms will help users understand how each contributes to their missions during all phases of a product life cycle — creation of product concepts, design, manufacturing process planning, production, growth and service of a product line, and retirement.

The concepts are interdependent. Enterprises must support each of the concepts these terms represent to get business value from the products in which they invest. Gartner defines the terminology as follows:

- **PDM** is a set of applications and capabilities for capturing and maintaining the definition of a product and related data through all phases of a product's life. The four most commonly used PDM applications are library functions (search and file check-in/check-out), management of bills of materials (BOMs), product configuration management (PCM) and engineering change management (ECM). PDM is a core enabler of CPC and PLM.

- **CPC** is a mode of product and business development in which product value chain partners, motivated by common commercial interests, generate value by sharing product assets, capital and intellectual property. CPC applications emerged in the late 1990s, leveraging Internet technology, to enable collaboration in product design and new business
development. Gartner tracked application vendors during this period, and continues to do so, according to their abilities to successfully enable CPC. The Internet-based software technology that differentiated CPC applications in the late 1990s has now become fundamental to broad classes of applications. Given the ubiquity of CPC architecture across a broad class of applications, CPC’s greatest value is as a business strategy.

- **PLM** is a process for guiding products from idea through retirement to deliver the greatest business value to an enterprise and its trading partners. PLM employs product information and business analysis to support strategy, planning, management and execution through each phase of a product's life cycle. PLM supports an enterprise's ability to monitor activities, analyze challenges and bottlenecks, make decisions and execute decisions. PLM will become the application category Gartner will track in 2003 and beyond, replacing the CPC market coverage.

**Can you describe a scenario that compares and contrasts how the concepts of CPC, PDM and PLM are related?**

PLM has become the dominant practice that encompasses the discipline of PDM, as well as the connectivity and intellectual capital leverage advanced by CPC for business strategy (see "PLM: Increasing the Business Value of Products"). Therefore, aspects of PDM and CPC will form the foundation for the practice of PLM, as users begin to use technology and software for strategy. The following example explains these relationships.

The Alpha Group, a consumer products original equipment manufacturer (OEM), used PLM practices to establish that it could improve business value from a product (increase profits) by outsourcing the design and manufacturing of noncritical parts. Company A applied PLM concepts to help determine the maximum price it could afford to negotiate to enable such an arrangement to be profitable. (Otherwise, it would be more advantageous just to design and manufacture the parts in-house). Company A based these judgments on product information retrieved from PDM applications, as well as its knowledge of required design and manufacturing activities and costs, workflow and so on.

Based on such factors as its knowledge of the product, its ability to reuse parts, product information captured by its PDM applications, its knowledge of required design and manufacturing activities, and its knowledge of workflow, Beta Manufacturing, a supplier that is also engaged in PLM practices, was able to determine the minimum price it must receive to make a profit.
The practice of PLM has helped both enterprises assess how they can benefit from a collaborative relationship. This understanding enables the two companies to engage in CPC — the collaborative dimension of the partnership. After reaching a business agreement, both companies employ PLM practices to help them keep the delivery of their products on time and on budget. CPC, supported by PDM applications and visualization software, enables enterprises to keep their product development efforts coordinated.

**What is the background of the current PLM market? How have these concepts and terms evolved within Gartner's research agenda?**

PDM was the relevant market concept of the mid-1990s, driven by the requirement to manage the voluminous product data captured in files and documents. This material defines products and supports life cycle processes. CPC evolved from PDM because design and manufacturing priorities shifted from enterprise-centric activities to a value chain that includes suppliers, partners, and customers. The Internet enabled connectivity among stakeholders working in different global locations.

PDM applications were designed to serve the enterprise by addressing CPC, which also encompasses suppliers, partners, and customers. In 1999, Gartner advised, "Users need to recognize that the strategic ground underlying PDM has shifted. The fundamental imperative has now evolved from which technology is best suited for managing the design process to which solution is most appropriate for leveraging product intellectual capital across the emerging e-business landscape. Consequently, users should begin to evaluate vendors and technologies across the more strategic scope of CPC capabilities and relegate PDM to a tactical subset of a broader CPC strategy" (see "PDM Market Transforming Itself Into CPC").

PLM is evolving because the growing maturity of software technology and the breadth of applications enable enterprises to explore the possibilities of planning and managing a product life cycle and executing all associated activities from within a common software framework. In challenging economic times, enterprises are motivated to explore PLM because it promises more productivity and efficiency from resources. PLM now encompasses elements of CPC and PDM, because connectivity and support for collaboration across the value chain has become an integral part of product life cycle activities.

PLM is the relevant concept and application market category. We believe an emphasis on business analysis and the justification of
collaboration across either a vertically integrated or distributed value chain will become the overriding concern of most enterprises through 2007.

**How will Gartner research PDM, CPC and PLM in the future? What Magic Quadrant will Gartner use to evaluate and qualify vendors in the market?**

These concepts are aligning into a common framework, and, as a result, users must begin to view them holistically. Gartner will use the term "PLM" to represent the market: We published our last update of the CPC Magic Quadrant during 4Q01. Gartner will research and qualify vendors and publish Magic Quadrants based on the PLM concept going forward, around which we anticipate market consolidation. The first PLM Magic Quadrant will be published during 4Q02. We expect the broadest scope of alignment with users' business problems and requirements in this market.

CPC vendors and their PDM antecedents will be represented in the PLM Magic Quadrant according to how well they embrace the evolving PLM agenda. In addition, specific enterprise resource planning (ERP) vendors, as well as vendors that focus on project management and managing product portfolios, will be included to the extent that their applications and services enable the encompassing PLM vision.