

## ***IDC MarketScape: Worldwide Product Life-Cycle Management (PLM) Applications 2011 Vendor Assessment: CAx, Discrete, and Process PLM***

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IDC Manufacturing Insights: Product Life-Cycle Strategies

EXCERPT

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### ***IN THIS EXCERPT***

The content for this excerpt was taken directly from the IDC MarketScape: "IDC MarketScape: Worldwide Product Life-Cycle Management (PLM) Applications 2011 Vendor Assessment: CAx, Discrete, and Process PLM" by Sanjeev Pal and Michael Fauscette (Doc # MI226875). All or parts of the following sections are included in this excerpt: IDC Manufacturing Opinion, In This Study, Situation Overview, Future Outlook, Essential Guidance, and Synopsis. Also included are figures 5, 6, and 7.

### ***IDC MANUFACTURING INSIGHTS OPINION***

The product life-cycle management (PLM) vendor evaluation in this study is based on a comprehensive and rigorous framework that assesses — for each segment of the PLM market — PLM vendors on fixed criteria as described in detail in the Appendix section. This evaluation includes a quantitative and qualitative assessment supported by exhaustive, practical feedback from PLM end users to assess various PLM vendors. Key findings include:

- **Visual design authoring and simulation applications (CAx).** This is the single most dynamic market that has been perceived as a mature segment. IDC research shows end users steadily utilizing CAx applications for product idea generation, visual collaboration, and virtual simulation of products or processes during design, planning, and maintenance phases.
- **Discrete PLM segment.** The collaborative product data management (cPDM) applications vendors that address the traditional industries like automotive, aerospace, defense, and so forth dominate this segment. Although industry verticals in this segment have a significant overlap in the CAx segment, the majority of PLM consumers or end users tend to choose different

vendors from each PLM segment to achieve best-of-the-class products, especially in the high-end CAD domain.

- **Process PLM segment.** Most discrete PLM vendors provide solutions that address the process industry. The PLM applications consumers in this segment are rather small and tend to choose multiple niche vendors to complete their PLM portfolio that is both affordable and scalable. This has led to the emergence of smaller specialty vendors that manage the life cycle in the process industry.

## ***IN THIS STUDY***

The IDC MarketScape is a new IDC research study designed to identify factors most conducive to success in a given market, in this case the PLM market, and then assess vendors participating in the market against those factors. This relative assessment will provide a vendor with a market position relative to or compared with other market participants. This IDC study represents a comprehensive vendor assessment of the diverse product life-cycle management software applications market using the IDC MarketScape model. The evaluation is based on a comprehensive and rigorous framework that assesses vendors relative to the criteria and one another and highlights the factors that influence success in the market both long and short term. The characteristics used to evaluate vendors are based on their quantitative and qualitative performance on the defined criteria. PLM end-user feedback about each vendor was also weighed in to determine the position of each vendor in the IDC MarketScape framework.

## ***Methodology***

IDC MarketScape criteria selection, weightings, and vendor scores represent well-researched IDC judgment about the market and specific vendors. IDC analysts tailor the range of standard characteristics by which vendors are measured through structured discussions, surveys, and interviews with market leaders, participants, and end users. Market weightings are based on user interviews, buyer surveys, and the input of a review board of IDC experts in each market. IDC analysts base individual vendor scores and ultimately vendor positions on the IDC MarketScape on detailed interviews, publicly available information, and end-user experiences in an effort to provide an accurate and consistent assessment of each vendor's characteristics, behavior, and capability.

The IDC MarketScape framework was developed in response to changing competitive dynamics in most software markets and a request from IDC customers for an assessment of vendors in a given market that is transparent, consistent, and rigorous.

## **SITUATION OVERVIEW**

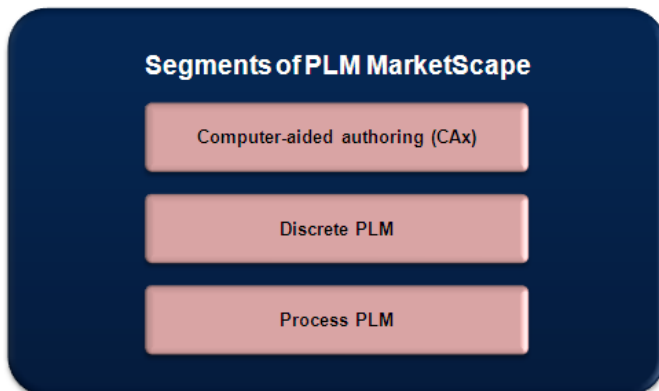
### **Introduction**

Current product life-cycle management software applications are relevant for diverse industry verticals and address the disparate needs of information consumers of an enterprise. This broad relevance of PLM software applications has enabled several established enterprise resource planning (ERP) vendors, many niche entrants, and traditional computer-aided authoring (CAD) vendors to address the needs of manufacturers and non-manufacturers. PLM software applications also manage and provide access to both visual and non-visual data. PLM consumers face a daunting task of selecting PLM software applications, with a prime focus to avoid being forced into an expensive and long customization cycle of generic technology frameworks that may support few life-cycle management functions.

The PLM software applications market is diverse and incorporates many vendors with overlapping as well as unique offerings that address the PLM software market as described in the Product Life-Cycle Management Definition section. To fairly rate vendors, the PLM vendors' offerings are assigned to three distinct segments as shown in Figure 1.

### **FIGURE 1**

Segments of PLM IDC MarketScape



Source: IDC Manufacturing Insights, 2011

## **FUTURE OUTLOOK**

The three segments of IDC PLM MarketScape provide a framework for both PLM vendors and end users to learn about PLM vendors as an entity based on each PLM segment rather than an uber-entity offering a variety of solutions. The vendor selection criteria are based on rigorous exercise for each segment:

- **CAX vendor selection criteria.** IDC vendor assessment for PLM CAX represents IDC's opinion on select CAX vendors that are currently well positioned in the PLM market space with their CAX offering and are also best positioned to gain market share over the next few years. The vendor selection is not limited by a vendor's current revenue or its regional presence. Vendors that offer computer-aided design and collaboration, machining, and visual simulation software including process design and simulation fall in this segment. The following vendors were included in this study:

- ANSYS
- Autodesk
- Dassault Systèmes (DS)
- PTC
- Siemens PLM (SPLM)

- **Discrete PLM vendor selection criteria.** IDC vendor assessment for discrete PLM represents IDC's opinion on select PDM/PLM vendors that are currently well positioned to offer such software in verticals like aerospace, automotive, high tech, medical devices, machinery, shipbuilding, and architecture, engineering, and construction (AEC). These vendors are also best positioned to gain market share over the next few years. The vendor selection is not limited by a vendor's current revenue or its regional presence. The following vendors were included in this study:

- Autodesk
- Aras
- Dassault Systèmes
- Datastay
- Infor
- Oracle
- PTC

- SAP
- Siemens PLM
- **Process PLM vendor selection criteria.** IDC vendor assessment for process PLM represents IDC's opinion on select process life-cycle management vendors that are currently well positioned to offer such software in the verticals of process PLM segment. To be included in the process PLM segment, a vendor is required to provide solutions in one of the verticals that includes apparel, chemical, drugs, oil and gas, food and beverage, and paint. These vendors are also best positioned to gain market share over the next few years. The vendor selection is not limited by a vendor's current revenue or its regional presence. The following vendors were included in the process PLM segment study:
  - Aras
  - Dassault Systèmes
  - Datastay
  - Infor
  - Oracle
  - PTC
  - SAP
  - Siemens PLM
  - TradeStone

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### ***IDC MarketScape CAx PLM Vendor Assessment***

Though CAx has been perceived as a mature segment with little growth, its relevance and growth have been by far ignored not only by enterprise but also by desktop software vendors. IDC research has observed that relevance of visual life-cycle management is increasing in new verticals like retail and life sciences, especially in the visual authoring and collaboration products for product innovation, planning, and management of the overall process in these industries. IDC ranks it as the single most important segment of the PLM IDC MarketScape for the following reasons:

- Growing applicability of visual collaboration and innovation applications across the emerging PLM industry verticals like recipe management, footwear, apparel, and pharma

- In addition to the overall rising demand for simulation/CAE applications, manufacturers are seeking solutions that combine various scientific models that could influence a product and a process holistically across engineering domains
- Manufacturing and non-manufacturing designers firms' increasing desire for visual authoring applications that could address sustainability, inventory management, budget monitoring, and so forth embedded in the early design phase

IDC divides measures for success into two primary categories: capabilities and strategy. Positioning in the upper right of the grid indicates that the vendor has the right mix of strategic initiatives and investments to maintain and grow its future position in the CAx segment of the PLM market.

Positioning on the y-axis reflects the vendor's current CAx capabilities and how well it is aligned to meet customer needs. The capabilities category focuses on CAx capabilities of the vendor today. In this category, IDC analysts look at how well a vendor is building, pricing, positioning, and differentiating its value proposition and delivering capabilities that enable it to execute its chosen strategy in the market.

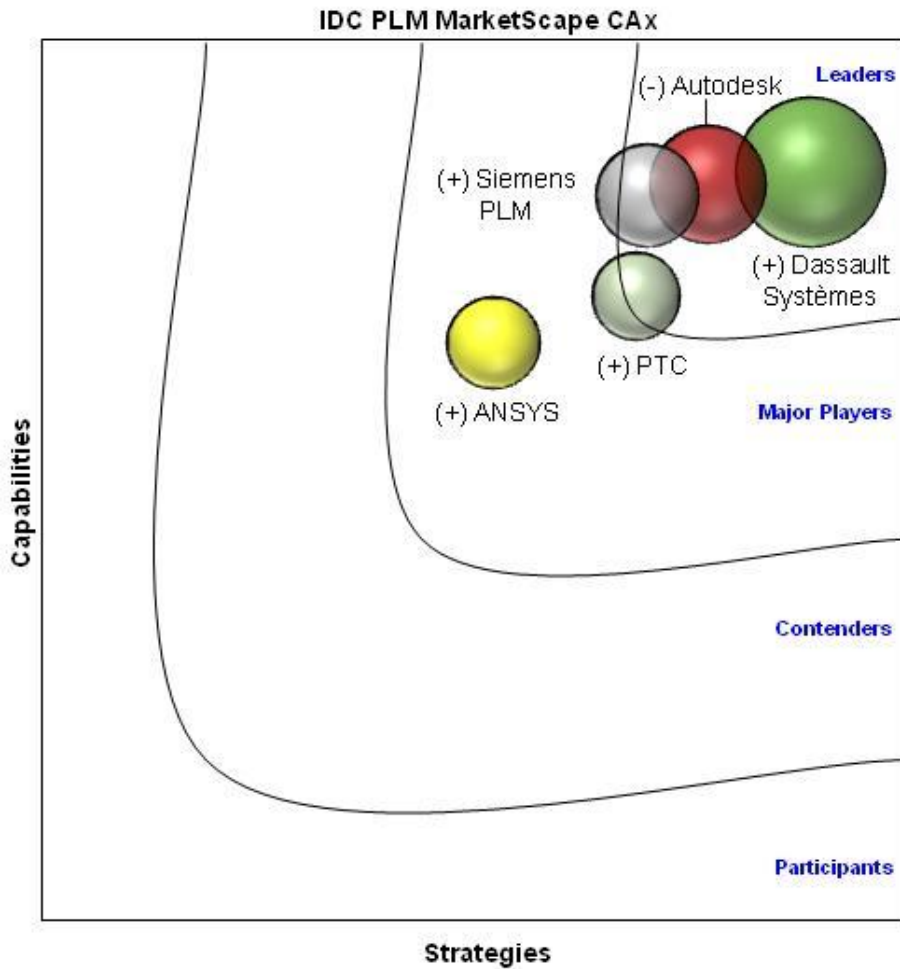
Positioning on the x-axis or strategy axis indicates how well the vendor's future strategy aligns with what customers will require in three to five years. The strategy category focuses on high-level strategic decisions and underlying assumptions about road maps for offerings, customer segmentation, business, and go-to-market plans for the future, which in this case is defined as the next three to five years. In this category, analysts look at whether or not a supplier's strategies in various areas are aligned with expected customer requirements in terms of spending, procurement, and delivery over a defined future time period.

Figure 5 shows each vendor's position in the vendor assessment chart. Its market share is indicated by the size of the bubble, and a (+), (-), or () icon indicates whether or not the vendor is growing faster, slower, or even with overall market growth.

The most important dynamics for vendors and end users to consider in the CAx segment of the PLM applications market are discussed in the sections that follow.

**FIGURE 5**

IDC MarketScape CAx PLM Vendor Assessment



Note: Vendor bubble sizes are relative to each other in this market view and cannot be compared with other views in terms of absolute bubble size.

Source: IDC Manufacturing Insights, 2011

### **IDC MarketScape Discrete PLM Vendor Assessment**

The discrete PLM segment includes vendors that serve the market with product data management and enterprise product life-cycle or business process management software. Vendors covered include those that address discrete manufacturing processes such as aerospace, automotive, high tech, medical devices, heavy machinery, and shipbuilding. IDC found the following key points of the discrete PLM segment that affect end users as well as PLM vendors:

- **Fierce competition.** Fierce competition between various PLM vendors has had serious end users rethink their buying strategies. Since the barrier to change a vendor offering is far lower than CAX products, IDC expects discrete PLM end users to change their enterprise PLM products in coming years because of price cuts, consolidation, and regional vendor preferences.
- **Low barrier of entry for ERP vendors.** If end users have an ERP implementation, they tend to choose the PLM offering from the same ERP vendor. This provides easy adoption of PLM offerings from ERP vendors that fit in tightly with the overall enterprise software suite, but these ERP PLM providers are not able to capitalize on the available opportunity the core engineering PLM vendors have exploited with their own visual authoring applications.
- **End-user dilemma.** The dynamically changing strategies have confused the medium-sized and small manufacturers about the viability of PLM. Larger original equipment manufacturers (OEMs) do realize the applicability of PLM to their businesses but have to struggle to choose between an ERP-PLM portfolio that locks them for years and best-of-the-breed products from different engineering software providers. The availability and popularity of hybrid open source freemium PLM models with better functionality have end users thinking about the long-term prospects and their choice of offering in the discrete PLM segment.

IDC divides measures for success into two primary categories: capabilities and strategy. Positioning in the upper right of the grid indicates that the vendor has the right mix of strategic initiatives and investments to maintain and grow its future position in the discrete PLM segment of the overall PLM market.

Positioning on the y-axis reflects the vendor's current discrete PLM capabilities and how well it is aligned to meet customer needs. The capabilities category focuses on the discrete capabilities of the vendor today. In this category, IDC analysts look at how well a vendor is building, pricing, positioning, and differentiating its value proposition and delivering capabilities that enable it to execute its chosen strategy in the market.

Positioning on the x-axis or strategy axis indicates how well the vendor's future strategy aligns with what customers will require in three to five years. The strategy category focuses on high-level strategic decisions and underlying assumptions about road maps for offerings, customer segmentation, business, and go-to-market plans for the future, which in this case is defined as the next three to five years. In this category, analysts look at whether or not a supplier's strategies in various areas are aligned with expected customer requirements in



terms of spending, procurement, and delivery over a defined future time period.

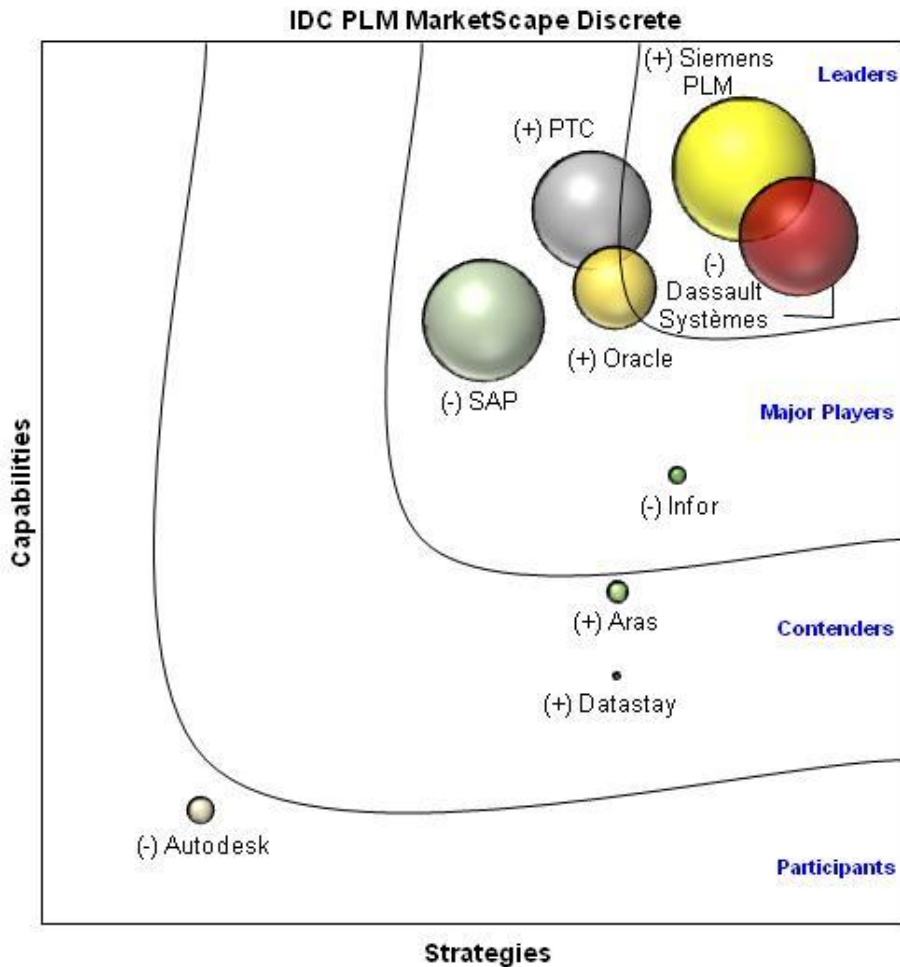
Fierce competition due to lower barrier to entry by existing enterprise software vendors and room to innovate in this market, a large number of homegrown PDM/PLM software used by some of the manufacturers, and slow adoption to new software technologies or platforms by manufacturers have made the vendors slow to change their strategy. Most big PDM/PLM vendors continue to play in this market with their successful original software with either little modifications or consolidation on a single platform. These characteristics of the market have resulted in vendors being either high on current offerings with very long-term planning or high on strategy in the short term to address the market with new solutions. IDC expects this to change in the next two to three years as the market matures and manufacturers begin to demand new technologies or platforms of delivery.

Figure 6 shows each vendor's position in the vendor assessment chart. Its market share is indicated by the size of the bubble, and a (+), (-), or () icon indicates whether or not the vendor is growing faster, slower, or even with overall market growth.

The most important dynamics for vendors and end users to consider in the discrete PLM segment of the PLM applications market are discussed in the sections that follow.

**FIGURE 6**

IDC MarketScape Discrete PLM Vendor Assessment



Source: IDC Manufacturing Insights, 2011

**IDC MarketScape Process PLM Vendor Assessment**

The process PLM market is made up of vendors that offer process life-cycle management software for process industries. Vendors covered in the process market assessment provide solutions in one or more of the following verticals like chemical, drugs, oil and gas, food and beverage, and paint development. IDC found the following key points of the process PLM segment that affect end users as well as PLM vendors:

- **Limited innovation.** Almost all PLM vendors tend to play in this market in addition to ERP and smaller vendors. IDC research

found that the applications provided in this market serve the generic needs of end users like compliance, quality control, ingredient management, and supplier management but lack in innovative solutions such as visual simulation, risk management, and mobile applications. This offers opportunity for ERP as well as engineering PLM vendors to offer proven innovative solutions that will directly increase collaboration between important supplier networks in the process industry while reducing costs.

- **Multiple small niche vendors.** The process PLM vendor landscape has many small niche vendors that address a single vertical like apparel or recipe and retail process management. This is due to the larger number of small end users as compared with larger end users that require affordable direct long-term partnership. This has helped certain vendors to offer niche products with unmatched process applicability than the larger traditional PLM vendors.
- **Opportunity for ERP vendors.** The end users in the process industries rank compliance solutions as their number one requirement followed by logistics at a higher level. Though these two issues are well covered by current ERP PLM vendors, the low cost of total ownership along with very direct personal hand holding required by the end users may be overkill for smaller accounts.

IDC divides measures for success into two primary categories: capabilities and strategy. Positioning in the upper right of the grid indicates that the vendor has the right mix of strategic initiatives and investments to maintain and grow its future position in the process PLM segment of the overall PLM market.

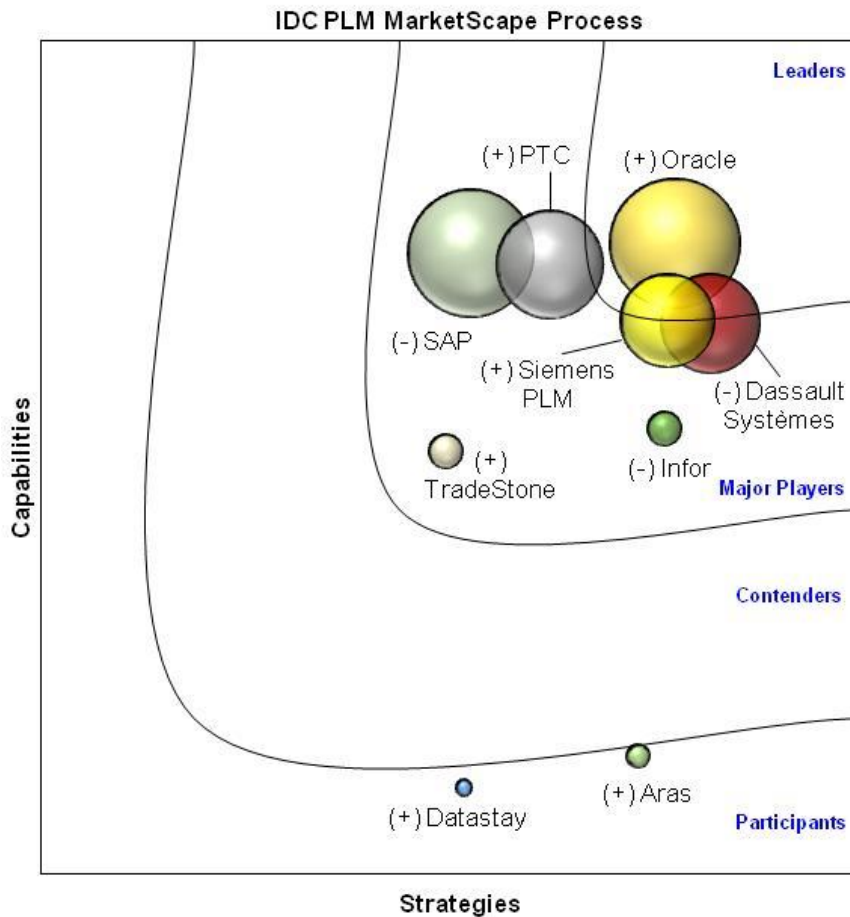
Positioning on the y-axis reflects the vendor's current process PLM capabilities and how well it is aligned to meet customer needs. The capabilities category focuses on process capabilities of the vendor today. In this category, IDC analysts look at how well a vendor is building, pricing, positioning, and differentiating its value proposition and delivering capabilities that enable it to execute its chosen strategy in the market.

Positioning on the x-axis or strategy axis indicates how well the vendor's future strategy aligns with what customers will require in three to five years. The strategy category focuses on high-level strategic decisions and underlying assumptions about road maps for offerings, customer segmentation, business, and go-to-market plans for the future, which in this case is defined as the next three to five years. In this category, analysts look at whether or not a supplier's strategies in various areas are aligned with expected customer requirements in terms of spending, procurement, and delivery over a defined future time period.

Figure 7 shows each vendor's position in the vendor assessment chart. Its market share is indicated by the size of the bubble, and a (+), (-), or () icon indicates whether or not the vendor is growing faster, slower, or even with overall market growth.

**FIGURE 7**

IDC MarketScape Process PLM Vendor Assessment



Source: IDC Manufacturing Insights, 2011

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## **Vendor Summary Analysis: CAx, Discrete, and Process PLM Segments**

### **Siemens PLM**

#### **CAx PLM Segment Analysis**

Siemens PLM is an IDC PLM MarketScape market leader in the CAx PLM segment. Siemens PLM participates in the CAx segment with its NX and Solid Edge products. Best-in-class functionalities for industrial design and styling, electromechanical design, mechanical simulation machining, and so forth make the NX platform stand apart from the rest of SPLM's competitors' offerings. IDC research believes that the CAx products offered by SPLM are most open in the industry and very well adopted by end users. Its JT 3D format is widely used across the PLM industry and has become an industry standard. JT is accepted as an industry-standard requirement by all CAx vendors as well as by the end users for lightweight collaboration. Parasolid, the geometric modeling kernel owned by SPLM, is widely used by its competitors as their CAD kernel.

SPLM's end users have higher satisfaction about the seamless functionality and reliability of Siemens' software. Despite developing a universal industry-standard 3D format including lightweight viewer and other architectural components for CAx products, SPLM has not been able to market its CAx product line as well as its competitors. SPLM's CAE/simulation offerings are strong but need a more focused approach to answer overall domains like fluid dynamics and plastics, but it does offer a strong solution for domains like sheet metal.

IDC expects a well-defined cloud strategy could help it lead its way to further enhance its position. It could also gain over its competition with a well-defined strategy of product adoption in emerging nations and by expanding its marketing reach in the CAE/simulation market

#### **Discrete PLM Segment Analysis**

Siemens PLM is an IDC PLM MarketScape market leader in the discrete PLM segment. SPLM participates in the discrete PLM market primarily with its Teamcenter and Teamcenter Express applications. SPLM's main focus is on increasing the depth and breadth of its existing offering, with a strong emphasis on the openness and stability of its product lines. A strong backing from Siemens' core industry practices enables SPLM to both be a lab for innovation and have a potential internal customer.

An enterprise approach backed by openness as the central theme has helped SPLM's Teamcenter achieve a de facto enterprise solution standard in the discrete industries. Teamcenter answers the needs of end users looking for a stable, end-to-end solution with core enterprise

engineering functionality depth in the discrete PLM segment. A low market awareness of its long-term strategy for solutions such as HD-PLM and mechatronics does require the attention of SPLM. SMB end users can expect a similar depth of functions in the SPLM Velocity product line as it offers to larger enterprises, but with an advantage of lower price.

### **Process PLM Segment Analysis**

Siemens PLM is an IDC PLM MarketScape major player in the process PLM segment. Siemens PLM has been better known for its discrete industry offerings. The stability, breadth, and depth of its functionality to manage and collaborate around the entire product development process have positioned it to easily transition as a strong solution for process PLM segment. IDC research shows that SPLM's depth of offering for sourcing, supplier management, requirements, regulatory, PPM, artwork management, and especially formula/recipe management with SIMATIC IT R&D Suite/Interspec enables SPLM to support end users across the process industries. SPLM offers products in apparel, footwear, food and beverage management, recipe, consumer products, retail, and so forth. Minimal focus on providing an affordable solution for a large SMB end-user base in the process PLM segment, and low marketing efforts have kept SPLM away from realizing its full potential in the process PLM segment.

## **ESSENTIAL GUIDANCE**

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### ***PLM End Users/Consumers***

The complexity of products and the amount of information we must manage are increasing. To manage the complexity of products that span various industries and domains of engineering, end users need to align with vendors that address their current and future challenges.

Technology is changing at a rapid pace, and end users need to align with vendors that have flexible platforms to address the growing needs of their business. Some vendors include latest technologies to quickly follow the changing trends of information management, while others may redefine the overall product development process. End users need to align with vendors that can utilize the changing trends and offer a seamlessly working portfolio.

The changing needs of end users across verticals and global coverage require vendors that are capable of flexibly addressing needs of end user and remain closer to the customer. In certain cases, a niche vendor maybe positioned to address such needs and provide high value as it embraces latest technologies. In comparison, an established PLM vendor may not be able to provide such flexible, affordable, and latest technologies quickly. It is recommended that end users remain in

touch with firms like IDC to help them make a thorough analysis of vendors that can address their current as well as future needs.

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### **Software Vendors**

IDC believes that the recovery that started in 2010 will continue in 2011 and will open up opportunities for software vendors fueled by pent-up demand for legacy updates as well as significant needs for new technical underpinnings to support new business models. The new information economy is creating business change and many associated growing pains.

IDC believes that the social enterprise is moving to new business models that will leverage the people-centric network and the human cloud. The vendors that react quickly to design new enterprise user experiences will gain significant competitive advantage. The convergence of mobility and social computing will drive customers' buying habits; this is especially true for the changing process industry.

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### **Synopsis**

This IDC Manufacturing Insights report provides a detailed vendor assessment of the product life-cycle applications (PLM) market based on the essential needs of the end users. PLM vendors are evaluated on three different segments based on their product offering:

- CAx PLM (CAD/CAM/CAE)
- Discrete PLM (PDM/PLM offering in aerospace, automotive, high tech, medical devices, machinery, shipbuilding, AEC, etc.)
- Process PLM (PLM offering in apparel, food/beverage, cosmetics, chemical/paints, drugs, packaging/label, etc.)

This assessment covers both quantitative and qualitative characteristics of the PLM applications market and the vendors. The vendors profiled in this study have been chosen after rigorous analysis of the market and play a key role in shaping the future of the PLM applications market. The evaluation is based on a comprehensive and rigorous framework that assesses vendors relative to the criteria and one another and highlights the factors expected to be the most influential for success in the market in both the short and the long term.

"The increasing relevance of PLM across industry verticals, growing complexity of products requiring cross-industry expertise, and growing need of the end user for expansion have raised the bar for PLM vendors to both be affordable and provide a seamlessly working portfolio of PLM apps," says Sanjeev Pal, research manager, Product, Project and Portfolio Management.

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