FROST & SULLIVAN BEST PRACTICES AWARD

PLM FOR DIGITAL TRANSFORMATION IN DISCRETE MANUFACTURING - NORTH AMERICA

Product Leadership Award 2019

ptc
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Background and Company Performance

Industry Challenges

In today’s digital age, a company’s or an organization’s (whether industrial manufacturing, electronics and high-tech, medical devices, or automotive) demands around a product lifecycle management (PLM) solution go beyond merely product data management. Digital transformation is pervasive and rapidly changing companies of all types and sizes, catalyzed by Internet of Things (IoT), virtualization, cloud, mobile devices, social connectivity, and emerging technologies (e.g., augmented reality (AR) and advanced analytics). The pace of change is further accelerated by Industry 4.0 and Industrial Internet of Things (IIoT). Companies are not only product-centric but are becoming customer-centric and therefore seek to increase customer service levels, exceed customer expectations, and deliver the best personalized customer experience possible.

Part of most companies’ digital transformation initiative is to create a consistent product record across the lifecycle and to eliminate organizational silos so that they can continue to innovate, maintain high quality standards, reduce time-to-market, increase efficiency around engineering, and reduce costs by eliminating scrap-work or rework at the factory. However, the challenge is that legacy PLM solutions were not designed for today’s constantly changing discrete manufacturing world. Under such circumstances, vendors that can provide a future-proof PLM solution that overcomes the limitations of legacy PLM solutions and helps customers digitally transform, breakdown organizational silos to increase efficiency, cut costs, improve quality, and drive innovation are expected to secure leadership positions in the North American market.

Product Family Attributes and Business Impact

Match to Needs & Quality

Strongly committed to maximizing the value proposition for its discrete manufacturing customers, PTC offers the Windchill PLM software. One of the distinct features of PTC’s PLM solution is its comprehensiveness. Windchill comes with wide-ranging functionality and PLM applications to manage bill of materials (BOM), track changes and configurations, manage requirements, and check quality, to name a few functions. To this end, Windchill effectively matches its capabilities to industry needs through a unique combination of easy-to-deploy, highly-configurable, out-of-the-box applications: engineering BOM management, quality and reliability management, change and configuration management, requirements management, concept development management, enterprise document management, enterprise change management, and product data management. Frost & Sullivan finds PTC demonstrates its product leadership based on several fronts, as discussed below.

Breaking Down Silos: Organizations are seeking more collaboration between their engineering BOM and manufacturing BOM as well as overall cross-organization collaboration on product development and management. Without this connection, there is a gap between how products are designed and how they are actually built. PTC added a collaboration functionality that breaks down organizational silos. With PTC’s Windchill,
data from various enterprise systems can be consolidated. In other words, PTC provides a real-time single source of truth for product development data.

Frost & Sullivan is impressed as PTC’s industry-leading PLM solution facilitates connection among the various silos (manufacturing, engineering, purchasing, and quality) present in the customer’s business and fosters an environment that encourages collaboration and avoids conflict in the decision-making process. For instance, manufacturing can plan earlier, purchasing can know what materials to buy and order them sooner, and quality can comply with constantly changing industry standards. To this end, PTC helps its customers reduce time-to-market, decrease costs, improve quality, drive innovation, and develop the best products and services.

**Positioning & Design**

Frost & Sullivan finds that PTC stays abreast with the latest trends and incorporates additional functionalities to ensure that its PLM remains on par with the industry requirements and technological advancements. Chief among the innovative capabilities of PTC’s PLM are AR for design share (i.e., viewing product designs in AR), ThingWorx Navigate (apps for interaction with product data), and integration of PLM solution with the ThingWorx platform for smart, connected products and operations.

**ThingWorx Navigate:** Planning, design, and development teams rely on quick and easy access to the most up-to-date data and product information stored within their organization’s enterprise system, lack of which can slow down their time to market. Keeping this in mind, PTC offers ThingWorx Navigate that accelerates product development by enabling an entire enterprise to access real-time product data whenever needed, as information from multiple systems is delivered through a single window in multiple formats. Data can be simplified based on the user’s preferences (domain expert versus non-expert user) as the apps are not only OOTB but also contextual (i.e., provide contextualized information) and role- or task-based.

Frost & Sullivan believes that such role- or task-based apps focused on the expertise level of the user result in efficient tasking and increased user productivity. Non-expert users especially can start using ThingWorx Navigate with a minimal learning curve and without any deep technical skill; there is little-to-no training required. OOTB functionality and role-based applications reduce the need for hard-code customization and instead make it easy to build apps tailored to meet specific business requirements/organizational needs. The aspect of ThingWorx Navigate that delivers great customer value is that it helps users, stakeholders, and the different teams in an organization save time previously wasted searching for data or pulling reports, freeing them to work faster by enabling rapid access to information. Frost & Sullivan appreciates that ThingWorx Navigate enables a company’s employees to focus on strategic activities that match corporate goals to innovate, develop, manufacture, and sell advanced products and thus stay ahead of the growth curve.

**AR for Design Share:** To drive innovation in today’s digital age, companies seek to create a fully digital thread using the right tools and processes. In an effort to address this desire, PTC’s Windchill helps create a company’s digital backbone using AR, where a user can share the model/design of a product with his/her design partners using the AR Design
Share so teams can provide feedback, all leading to an improved and accelerated product development process. Effective collaboration among stakeholders is also critical to realize the value of a digital thread of information, and Windchill can enable that collaboration using AR as everyone can now explore, visualize, interact, and collaborate with product data through AR for faster decision making and accelerated time to market.

*Integration with ThingWorx Platform:* PTC’s ThingWorx, which delivers IIoT applications, connects an entire plant floor where it optimizes the performance of equipment. By connecting all industrial automation devices, sensors, machines, and software applications, ThingWorx makes all data accessible and actionable. To this end, PTC combined core PLM capabilities with ThingWorx to empower a manufacturer with the ability to connect its product's operational data to this future-ready IIoT technology platform.

*Flexible Deployment Options, High Performance, and Scalability:* Many companies are interested in the value cloud can deliver for their organization, and to this end PTC’s PLM solutions can be run on-premise, in the cloud, or as a fully-hosted software-as-a-service (SaaS) solution. Windchill is flexible, scalable, and robust enough to position customers to get started quickly, scale easily, and grow at their own pace or update their model as their businesses evolve in tandem with emerging market trends. PTC’s cloud deployment and model-based data architectures have allowed it to provide consistent product development data to a range of stakeholders.

In today’s digital age and competitive markets, companies cannot be slow in their response to adapting to emerging trends. Making faster decisions and taking actions to achieve timely results using PLM data is the foundation for digital transformation, and PTC puts its customers on a fast track to achieve this goal. Frost & Sullivan applauds PTC’s Windchill platform for overcoming the limitations of legacy PLM solutions and enabling companies and enterprises to be agile and stay aligned with a rapidly evolving business environment.

**Customer Acquisition & Growth Potential**

PTC’s Windchill customers are spread across aerospace and defense, automotive, consumer goods, medical devices, electronics and high-tech, and industrial manufacturing. Some of its leading customers include Airbus Helicopters, CNB Yacht Builders, Liebherr-Components, Elite Aerospace Group, and MHI Vestas—all of which enjoy accelerated product development. Frost & Sullivan finds that the beauty of PTC is that it pays close attention to its customers’ requirements, determines how it can best partner with each customer on its journey toward digital transformation, and adjusts its offerings appropriately. Therefore, companies find Windchill appealing as it helps them create a consistent product record across the lifecycle, achieve cross-organization collaboration to knock down organizational silos, manage all aspects of the product development lifecycle including complex and cross-functional processes, glean more value from product data using built-in analytics, transform to cloud, establish a digital thread of information, and leverage emerging technologies such as AR that will impact product development.
Moreover, companies find PTC attractive because it addresses the issue of workforce shortage, especially in manufacturing. Legacy PLM implementations do not always appeal to younger workers (e.g., millennials) and therefore attracting and hiring them at the rate manufacturing companies need is not easy. PTC is solving legacy user experience issues for PLM by designing frameworks that make the software not only easier to deploy but also easier to use. The powerful, interactive, and intuitive features (e.g., easy-to-deploy, highly-configurable, out-of-the-box, role- and task-based contextual PLM applications; AR for design share and integration with the ThingWorx platform) render an enriched user experience that attracts new talent to manufacturing.

With regards to expansion into more target accounts, PTC works in concert with its partners. The company has a business development and partnership strategy that hinges on close working relationships, especially with technology providers, solution providers, global systems integrators, and management consultants. It has forged strong partnerships and strategic alliances with some of the most prominent names in the industry such as Microsoft, ANSYS, Accenture, Capgemini, Deloitte, and EY that accelerate a company’s digital transformation.

With such a robust portfolio of customers and partners, which the company continuously expands, PTC is expected to further strengthen its position in the North American market.

**Conclusion**

Today’s discrete manufacturing companies operating in the digital age desire a PLM solution that can break down organizational silos, align product and manufacturing teams, drive innovation, streamline and accelerate product development, and digitally transform their organization. PTC’s Windchill PLM solution successfully addresses these needs. PTC renders unmatched customer value through easy-to-deploy, configurable, out-of-the-box, contextual, role- and task-based PLM applications. The uniqueness in PTC’s product leadership is delivery of innovative capabilities, such as AR for design share; ThingWorx Navigate for getting up-to-date data; integration with the ThingWorx platform; cloud-deployed PLM; and provision of a real-time single source of truth for product development data that enables customers to digitally transform, create a fully digital thread, and keep pace with product innovation. Frost & Sullivan finds that PTC empowers its customers with the agility to stay aligned with a rapidly evolving business environment. For its strong overall performance, PTC has earned Frost & Sullivan’s 2019 Product Leadership Award.
Significance of Product Leadership

Ultimately, growth in any organization depends on customers purchasing from a company and then making the decision to return time and again. A comprehensive product line filled with high-quality, value-driven options is the key to building an engaged customer base. To achieve and maintain product excellence, an organization must strive to be best in class in three key areas: understanding demand, nurturing the brand, and differentiating from the competition.

Understanding Product Leadership

Demand forecasting, branding, and differentiating all play critical roles in finding growth opportunities for your product line. This three-fold focus, however, must be complemented by an equally rigorous focus on pursuing those opportunities to a best-in-class standard. Customer communication, customer feedback, pricing, and competitor actions must all be managed and monitored for ongoing success. If an organization can successfully parlay product excellence into positive business impact, market share will inevitably increase.
Key Benchmarking Criteria

For the Product Leadership Award, Frost & Sullivan analysts independently evaluated 2 key factors—Product Family Attributes and Business Impact—according to the criteria identified below.

**Product Family Attributes**
- Criterion 1: Match to Needs
- Criterion 2: Reliability and Quality
- Criterion 3: Product/Service Value
- Criterion 4: Positioning
- Criterion 5: Design

**Business Impact**
- Criterion 1: Financial Performance
- Criterion 2: Customer Acquisition
- Criterion 3: Operational Efficiency
- Criterion 4: Growth Potential
- Criterion 5: Human Capital

**Best Practices Award Analysis for PTC**

*Decision Support Scorecard*

To support its evaluation of best practices across multiple business performance categories, Frost & Sullivan employs a customized Decision Support Scorecard. This tool allows research and consulting teams to objectively analyze performance according to the key benchmarking criteria listed in the previous section, and to assign ratings on that basis. The tool follows a 10-point scale that allows for nuances in performance evaluation. Ratings guidelines are illustrated below.

**RATINGS GUIDELINES**

The Decision Support Scorecard considers Product Family Attributes and Business Impact (i.e., the overarching categories for all 10 benchmarking criteria; the definitions for each criterion are provided beneath the scorecard). The research team confirms the veracity of this weighted scorecard through sensitivity analysis, which confirms that small changes to the ratings for a specific criterion do not lead to a significant change in the overall relative rankings of the companies.
The results of this analysis are shown below. To remain unbiased and to protect the interests of all organizations reviewed, Frost & Sullivan has chosen to refer to the other key participants as Competitor 1 and Competitor 2.

<table>
<thead>
<tr>
<th>Product Leadership</th>
<th>Product Attributes</th>
<th>Business Impact</th>
<th>Average Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTC</td>
<td>9.0</td>
<td>9.0</td>
<td>9.0</td>
</tr>
<tr>
<td>Competitor 1</td>
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<td>8.0</td>
<td>8.0</td>
</tr>
<tr>
<td>Competitor 2</td>
<td>7.0</td>
<td>7.0</td>
<td>7.0</td>
</tr>
</tbody>
</table>

**Product Family Attributes**

**Criterion 1: Match to Needs**
Requirement: Customer needs directly influence and inspire the design and positioning of the product family.

**Criterion 2: Reliability and Quality**
Requirement: Products consistently meet or exceed customer expectations for performance and length of service.

**Criterion 3: Product/Service Value**
Requirement: Products or services offer the best value for the price, compared to similar offerings in the market.

**Criterion 4: Positioning**
Requirement: Products or services address unique, unmet needs that competitors cannot easily replicate or replace.

**Criterion 5: Design**
Requirement: The product features an innovative design, enhancing both visual appeal and ease of use.

**Business Impact**

**Criterion 1: Financial Performance**
Requirement: Overall financial performance is strong in terms of revenue, revenue growth, operating margin, and other key financial metrics.

**Criterion 2: Customer Acquisition**
Requirement: Product strength enables acquisition of new customers, even as it enhances retention of current customers.

**Criterion 3: Operational Efficiency**
Requirement: Staff is able to perform assigned tasks productively, quickly, and to a high quality standard.
Criterion 4: Growth Potential
Requirements: Product quality strengthens brand, reinforces customer loyalty, and enhances growth potential.

Criterion 5: Human Capital
Requirement: Company culture is characterized by a strong commitment to product quality and customer impact, which in turn enhances employee morale and retention.

Decision Support Matrix
Once all companies have been evaluated according to the Decision Support Scorecard, analysts then position the candidates on the matrix shown below, enabling them to visualize which companies are truly breakthrough and which ones are not yet operating at best-in-class levels.
# Best Practices Recognition: 10 Steps to Researching, Identifying, and Recognizing Best Practices

Frost & Sullivan analysts follow a 10-step process to evaluate award candidates and assess their fit with select best practices criteria. The reputation and integrity of the awards are based on close adherence to this process.

<table>
<thead>
<tr>
<th>STEP</th>
<th>OBJECTIVE</th>
<th>KEY ACTIVITIES</th>
<th>OUTPUT</th>
</tr>
</thead>
</table>
| 1 Monitor, target, and screen | Identify award recipient candidates from around the world | • Conduct in-depth industry research  
• Identify emerging industries  
• Scan multiple regions | Pipeline of candidates that potentially meet all best-practice criteria |
| 2 Perform 360-degree research | Perform comprehensive, 360-degree research on all candidates in the pipeline | • Interview thought leaders and industry practitioners  
• Assess candidates’ fit with best practices criteria  
• Rank all candidates | Matrix positioning of all candidates’ performance relative to one another |
| 3 Invite thought leadership in best practices | Perform in-depth examination of all candidates | • Confirm best practices criteria  
• Examine eligibility of all candidates  
• Identify any information gaps | Detailed profiles of all ranked candidates |
| 4 Initiate research director review | Conduct an unbiased evaluation of all candidate profiles | • Brainstorm ranking options  
• Invite multiple perspectives on candidates’ performance  
• Update candidate profiles | Final prioritization of all eligible candidates and companion best practices positioning paper |
| 5 Assemble panel of industry experts | Present findings to an expert panel of industry thought leaders | • Share findings  
• Strengthen cases for candidate eligibility  
• Prioritize candidates | Refined list of prioritized award candidates |
| 6 Conduct global industry review | Build consensus on award candidates’ eligibility | • Hold global team meeting to review all candidates  
• Pressure-test fit with criteria  
• Confirm inclusion of all eligible candidates | Final list of eligible award candidates, representing success stories worldwide |
| 7 Perform quality check | Develop official award consideration materials | • Perform final performance benchmarking activities  
• Write nominations  
• Perform quality review | High-quality, accurate, and creative presentation of nominees’ successes |
| 8 Reconnect with panel of industry experts | Finalize the selection of the best practices award recipient | • Review analysis with panel  
• Build consensus  
• Select recipient | Decision on which company performs best against all best practices criteria |
| 9 Communicate recognition | Inform award recipient of recognition | • Present award to the CEO  
• Inspire the organization for continued success  
• Celebrate the recipient’s performance | Announcement of award and plan for how recipient can use the award to enhance the brand |
| 10 Take strategic action | Upon licensing, company is able to share award news with stakeholders and customers | • Coordinate media outreach  
• Design a marketing plan  
• Assess award’s role in strategic planning | Widespread awareness of recipient’s award status among investors, media personnel, and employees |
The Intersection between 360-Degree Research and Best Practices Awards

Research Methodology

Frost & Sullivan’s 360-degree research methodology represents the analytical rigor of our research process. It offers a 360-degree view of industry challenges, trends, and issues by integrating all 7 of Frost & Sullivan’s research methodologies. Too often companies make important growth decisions based on a narrow understanding of their environment, resulting in errors of both omission and commission. Successful growth strategies are founded on a thorough understanding of market, technical, economic, financial, customer, best practices, and demographic analyses. The integration of these research disciplines into the 360-degree research methodology provides an evaluation platform for benchmarking industry participants and for identifying those performing at best-in-class levels.

About Frost & Sullivan

Frost & Sullivan, the Growth Partnership Company, helps clients accelerate growth and achieve best-in-class positions in growth, innovation and leadership. The company’s Growth Partnership Service provides the CEO and the CEO’s growth team with disciplined research and best practices models to drive the generation, evaluation, and implementation of powerful growth strategies. Frost & Sullivan leverages nearly 60 years of experience in partnering with Global 1000 companies, emerging businesses, and the investment community from 45 offices on 6 continents. To join Frost & Sullivan’s Growth Partnership, visit http://www.frost.com.