ABI RESEARCH COMPETITIVE RANKING

PRODUCT LIFECYCLE MANAGEMENT (PLM) FOR LARGE DISCRETE MANUFACTURERS

ptc

OVERALL: 78.5 | INNOVATION: 77.2 | IMPLEMENTATION: 79.8 | RANK: 2

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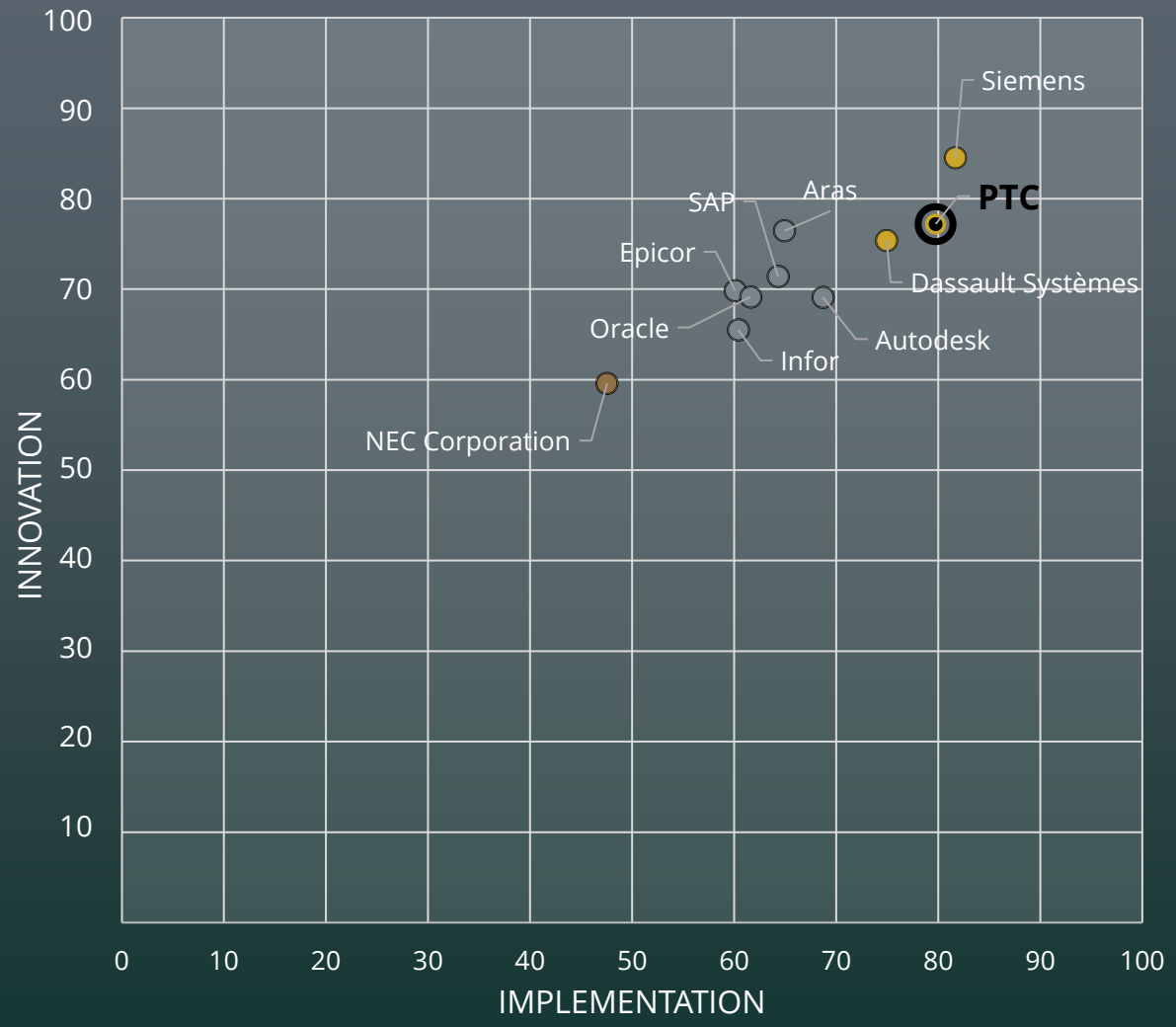
INNOVATION
VERSUS
IMPLEMENTATION
MATRIX



INNOVATION

ptc

INNOVATION SCORE: 77.2

Windchill is a comprehensive PLM offering from PTC as it integrates data sources from a wide array of manufacturing software, including CAD, simulation, QMS, SLM, IoT, AR, ERP, MES, SCM, Application Lifecycle Management (ALM), and CPQ. Open APIs allow Open Data Protocol (OData) and RESTful API endpoints to be used for open integrations into both industry standard manufacturing software and self-built applications developed by clients. Windchill includes MBSE based on Systems Modeling Language (SysML) architecture within its solution suite and assists in supporting traceability from CAD data to BOMs, requirements, and change records.

Role-based dashboards and multiple license models are available to large discrete manufacturers to maximize performance and cost-effectiveness when deploying new product introductions, which is only available from PTC and the other PLM vendors in the innovation leaders ranking.

A differentiator for PTC Windchill is the support it provides for BOM transformation and standardization so that you have the same access to product data from engineering to production, manufacturing, and service teams. This is comparatively a strong distinguisher for PTC, as Siemens is the only vendor to provide rivaling capabilities. Digital twins within Windchill can be tagged with multiple sources of data from lead times, price changes, alternative suppliers, contract manufacturers, and predictive demand forecasting.

PTC Windchill can integrate into supply chain intelligence databases such as Makersite and Ansys Granta, supporting industries for compliance with standards such as RoHS, REACH, GxP, ISO 26262, IEC 62304, and DO-178C. PTC's tracking of compliance standards and regulations is wider than the market average and is beyond the level of mainstream vendors. Windchill currently manages complex deployments with large discrete manufacturers managing BOMs with upward of 2.5 million components.

Windchill adds additional collaboration and advanced workspaces through Vuforia AR integration. Windchill technology includes AR Design Share for lightweight AR reviews at no charge, and a paid option for further AR capabilities. PTC primarily supports Microsoft HoloLens and Apple Vision Pro; however, PTC remains agnostic across the main headset providers. By providing lightweight AR reviews for no additional price is a capability that is offered by no other PLM vendor and is uniquely distinct.

Windchill provides robust configuration and product variability capabilities that support complex CTO business models by connecting engineering, purchasing, manufacturing, and service data. It integrates with CPQ systems for pricing and quoting, including connectors to solutions like Configit. For Gen AI within Windchill, PTC has publicly demonstrated features such as part reuse that leverages Vuforia computer vision, and Windchill AI Assistant for Natural Language Processing (NLP); however, these capabilities are not yet currently available for general deployments.

IMPLEMENTATION

IMPLEMENTATION SCORE: 79.8

PTC Windchill has a strong footprint in North America, Europe, and Asia-Pacific, and currently has the second largest user base among large discrete manufacturers. Windchill serves several discrete manufacturing industries such as, A&D, automotive, electronics & high tech, industrials, other transportation, and medical technology. Being used by six discrete manufacturing industries places PTC comfortably in the leader's category, with the addition of users from the heavy equipment industry being the best way for PTC to receive the highest score. Additionally, PTC provides Arena PLM, a cloud-native PLM solution, which rounds out the discrete manufacturing industries served by being a strong contender in the medical devices, electronics & high tech, and life sciences industries.

PTC Windchill can be deployed as an on-premises or SaaS (Windchill+) solution, providing necessary flexibility for large discrete manufactures. Windchill offers flexible licensing options, including subscription-based and role-based models, as well as lightweight, task-specific applications like Windchill Navigate. With the inclusion of subscription-based purchasing and role-based models, PTC performs stronger than all vendors in the mainstream grouping and falls slightly short of Siemens based on not providing a tokenized purchasing process.

Customers can buy directly from PTC, or through channel partners and VARs in which PTC has a rich ecosystem of over 700 partners. PTC's partner ecosystem is above the market average and is only beaten out by Siemens and Dassault. Time-to-value for Windchill is highly dependent on the use case and scale of the deployment; however, 3 to 5 months for deployment within large manufacturing organizations is better than the market average of 6 months and is tied for the fastest time-to-value overall.

For customer support, PTC has several e-learning modules, 24/7 online resources, active community pages, and virtual help available for user adoption with Windchill. There are also third-party professional services to provide specialized training. For large deployments, PTC will assign a dedicated Customer Success Manager, who is responsible for implementation, optimization of deployment, and customer strategic discussion for continued long-term planning.

CONCLUDING REMARKS

PTC with Windchill and Windchill+ is a strong contender for the overall best PLM vendor for large discrete manufacturers. With an innovation score of 77.2 and an implementation score of 79.8, PTC is solidly within the leadership category on both accounts. PTC strengths lie within the VR connection with Vuforia, top-of-the-line post-sales support, support for all discrete industries through Windchill and Arena, and a strong digital thread connection with numerous connections to manufacturing software, along with best-in-class support for real-time collaboration across disparate teams.

For improvement, PTC needs to continue along the path of Gen AI additions, specifically Windchill AI Assistant as LLMs are currently available within other solutions such as Teamcenter and ENOVIA and is one of the most valuable features for large discrete manufacturers when deciding to choose a PLM solution. Additionally, the use of tokenization for purchasing would move the needle as the PLM market is witnessing an uptake in use rates for fungible tokens given the enhanced flexibility they provide.

CRITERIA AND METHODOLOGY

VENDOR MATRIX

Methodology: After individual scores are established for innovation and implementation, an overall company score is established using the Root Mean Square (RMS) method:

$$Score = \sqrt{\frac{innovation^2 + implementation^2}{2}}$$

The resulting overall scores are then ranked and used for percentile comparisons.

The RMS method, in comparison with a straight summation or average of individual innovation and implementation values, rewards companies for standout performances.

For example, using this method, a company with an innovation score of nine and an implementation score of one would score considerably higher than a company with a score of five in both areas, despite the mean score being the same. ABI Research believes that this is appropriate as the goal of these matrices is to highlight those companies that stand out from the others.

RANKING CRITERIA

Leader: A company that receives a score of **75 or above** for its overall ranking.

Mainstream: A company that receives scores **between 60 and 75** for its overall ranking.

Follower: A company that receives a score of **60 or below** for its overall ranking.

Innovation Leader: A company that receives a score of **75 or above** for its innovation ranking.

Implementation Leader: A company that receives a score of **75 or above** for its implementation ranking.

INNOVATION CRITERIA

Digital Thread Creation: How does the PLM solution connect to other manufacturing software, including in-house and third-party solutions? Does the solution utilize Rest APIs, low/no-code connectors, or pre-built connectors to all major manufacturing software outside of PLM? A good score for digital thread creation entails connections to core manufacturing software such as CAD, MES, SCM, and ERP. Excellent scores include the use of RESTful APIs to connect further manufacturing software such as WMS, Supervisory Control and Data Acquisition (SCADA), Quality Management System (QMS), and simulation.

Digital Twin Usability: What data can be tagged within the digital twin and how are twins scalable to large discrete manufacturers? Does the solution tag digital twins with relevant information from the essential domains of industry: design, engineering, production, and supply chain? A good score for digital twin usability features key data tagging such as product obsolescence, non-compliance notifications, and supply chain updates. For excellent scores, vendors must build upon the data tagging, while also proving the ease of scalability for multiple digital twins in the form of pre-built digital twin templates, real-time sharing of digital twins between design, engineering, and manufacturing teams, and the ability to compare multiple digital twins simultaneously.

Product Traceability: What product regulation standards are tracked within the solution? How does the solution enable transparency across multiple teams and serve the needs of large discrete manufacturers as it pertains to BOM complexity and configurations? Does the solution demonstrate a high level of compliance with multiple national and industry standards, along with enabling actions such as real-time data sharing for enhanced collaboration? An excellent product traceability score entails a centralized component search base that includes search by part name, material, lead times, supplier rating, or equivalent parts. For BOM complexity, vendors must show that the PLM solution can handle BOMs within the range of 30,000 to 50,000 for the automotive industry, with excellent being 1 million-plus for use in the A&D market.

New Technology: To what degree does the solution deploy Gen AI or Agentic AI? Does the solution have native Augmented Reality (AR)/Virtual Reality (VR) capabilities and to what degree do the vendors lean on partnerships? Does the solution have an integrated Copilot or Large Language Model (LLM) that provides natural language query and assists new users in locating PLM functionality, and experienced users to optimize workflows? For an excellent score in new technology, solutions must have a dedicated Copilot naturally integrated within the solution that comes from in-house development or through partnerships with LLM creators and offer AR/VR capabilities agnostically with key headset providers such as Meta, Sony, and HTC.

IMPLEMENTATION CRITERIA

Commercial Success: Does the vendor provide a leading PLM solution in discrete manufacturing industries or are they losing out to competition? To what degree does the solution actively serve large discrete manufacturers, and to what extent do they hold market share in comparison to competition? Good scores for commercial success are awarded to vendors that are in the top half of market share leaders, along with having a customer base above 1,000 users. Excellent scores are awarded to vendors that place within the top three for market share and have a user base in the tens of thousands.

Global Reach: Is the solution available globally and has strong growth rates in emerging manufacturing regions? To what degree does the solution serve all the discrete manufacturing industries? Is the solution expanding in high-growth regions such as the European Union (EU), the Americas, and Southeast Asia, while offering services to all or many of the six discrete manufacturing industries? Good scores are given to vendors with solutions that are available globally and serve at least four out of the six discrete industries tracked. Excellent scores are awarded to vendors that offer the PLM solution globally, have high growth rates in promising manufacturing regions such as the Americas, the EU, and Southeast Asia, along with servicing six or more discrete manufacturing industries.

Pricing, Purchasing, and Deployment: Is the solution offered as both on-Premises and SaaS? Does the solution have multiple avenues of purchase, e.g., direct from vendor, tokenization, Value-Added Resellers (VARs), Independent Software Vendors (ISVs), and hyperscalers? Flexibility in pricing, purchasing, and deployment means that PLM vendors offer both on-premises and SaaS-based solutions, along with purchasing through all mainstream organizations and marketplaces. A good score in pricing, purchasing, and deployment are PLM solutions that offer both on-premises and SaaS options, along with selling the solution directly Business-to-Business (B2B), and through ISV and VARs. Excellent solutions extend further and offer PLM via subscription, utilize role-based purchasing, have modular functionality, and provide the option to purchase with flexible or fungible tokens.

Time to Impact and Scalability: How long does it take a typical customer to realize value for the solution? To what degree does the vendor support the end-using client post-sale? Can the solution be implemented with a high degree of configuration in under 6 months? Are configurations and customizations possible in-house or primarily undertaken by third-party SIs? Good solutions will have deployment times from 6 months and above for complex configurations, along with online resources and B2B training for scaling the solution to new users. Excellent PLM solutions for time to impact and scalability have deployment times below 6 months, do not require extensive work with outside consultants or third-party integrators, and have functionality in place to rapidly deploy the solution at new sites without heavy customization.

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OVERALL RANKING MATRIX

INNOVATION
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