

The PTC[®] Product Development System[™]

REALIZING MORE VALUE
from Product Lifecycle Management

THE PRODUCT DEVELOPMENT COMPANY[™]



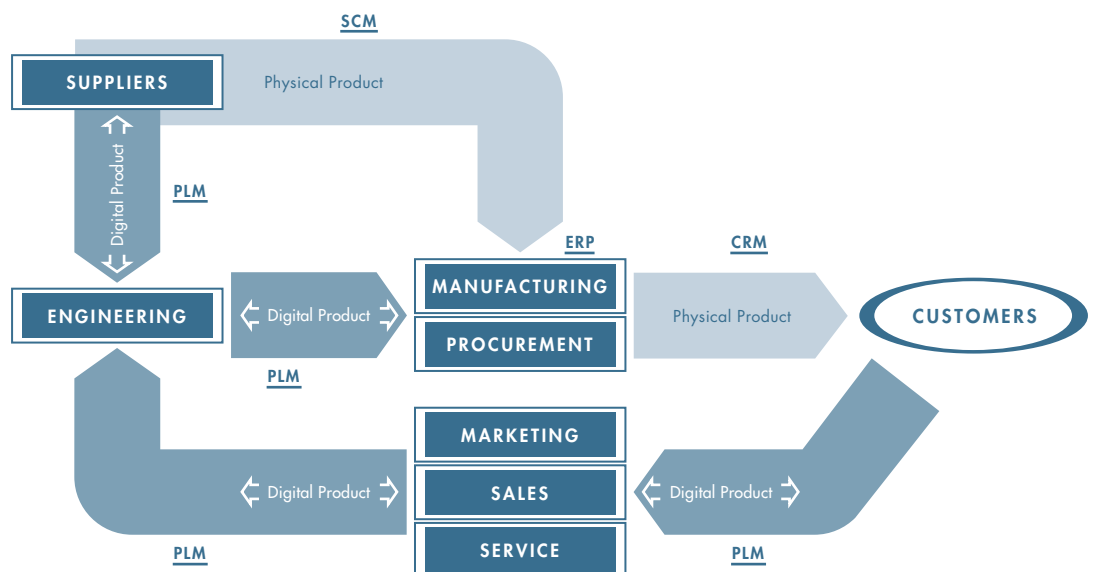
Product Lifecycle Management – Not Just Another Enterprise Application

Discrete manufacturers understand the complexities of product development today. From global supply chains and distributed manufacturing to increasing pressures from customers and partners, product development is more challenging – and riskier – than ever.

Many enterprise solutions developed over the past three decades – such as Enterprise Resource Planning, Customer Relationship Management, and Supply Chain Management – focus on optimizing the flow of physical products and transactional information. Designed primarily to automate repeatable transactions, these applications work best for processes that involve doing the same thing, the same way, over and over again. They are poorly suited for the kind of rapid iteration and innovation that defines Product Lifecycle Management (PLM).

Companies are beginning to recognize the emergence of a Digital Product Value Chain, shown below. It illustrates how development teams collaborate to generate the information that represents a new product or product variation. Working with 3D digital products, teams can experiment, make changes, run what-if scenarios, refine designs, and more. By involving all stakeholders with individualized views of product data, digital products can be complete, compelling, and stable – all before the expensive physical process of manufacturing ever begins.

Digital Product Value Chain



Making Sense of PLM

Most manufacturers are already working with some elements of the Digital Product Value Chain, but many discontinuities and bottlenecks are still prevalent. At a basic level, for example, companies scan static paper documents so they can be stored and shared in digital form. For companies with more advanced applications, nearly all products and product information are digitally represented.



To support more effective use of product development applications, the marketplace has responded with three primary PLM approaches: systems that are combinations of point applications; systems created by extending the functionality of ERP applications; and integral systems – like PTC's Product Development System – built around a single digital product database.

The best way to assess the risks and benefits of these different approaches is to focus on the elements of technology, process, and people. The table below shares our view of how things stack up.

Three Approaches to PLM

PTC's PDS: A Highly Differentiated Solution

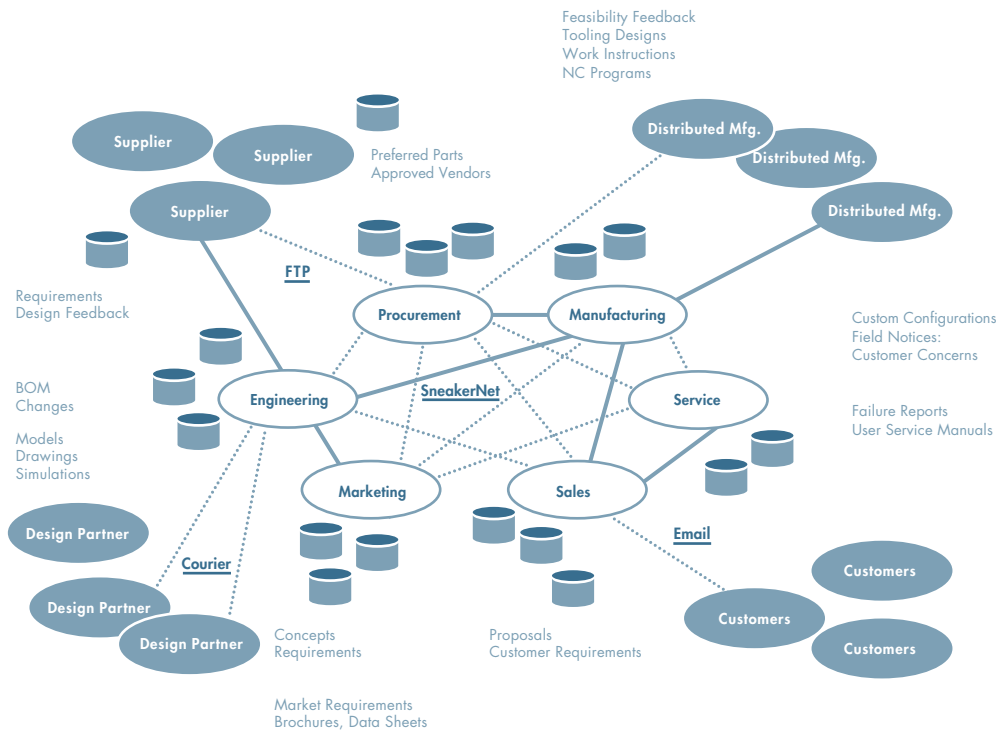
Technology	Point Applications	PTC	
		Product Development System	ERP Extension
Complete PLM Footprint*	No	Yes	No
Integral Data Model & User Interface	No	Yes	Yes
Pure Internet Architecture	Yes	Yes	No
Interoperability	Complex & Uncertain	Yes	Yes
Process			
Complete PLM Process Support	Fragmented	Yes	Incomplete / Transaction-Oriented
Validated	No	Yes	No
PLM Expertise	Yes	Yes	Not Core Business
People			
Predictable Implementation	No	Yes	No
Rapid Adoption	No	Yes	Yes
Summary			
Total-Cost-of-Ownership	High	Low	Moderate
Risk	High	Low	Moderate
Business Value	Moderate	Rapid / Sustainable	Low

*A complete PLM footprint enables companies to create detailed, intuitive, and realistic digital product information; collaborate by incorporating input from the various participants, early on, to identify and resolve critical issues; and control and automate critical processes such as release to manufacturing, change control, and configuration management.

The Challenging Product Development Environment

Product development today is more complex and more difficult than ever. Manufacturers face significant challenges understanding the full impact of changes proposed at various stages of the product development process, and the demand for collaboration is at an all-time high. When product development technologies involve multiple point solutions that manage independent views of the digital product – i.e., the MCAD view, the BOM view, the cost view – it becomes nearly impossible for various users to piece together a consistent picture or to maintain integrity between the views. The result? Higher risk, missed opportunities, slower cycles, and excessive costs.

Typical Product Development Environment



Variability and Complexity

The iterative and collaborative nature of product development places enormous demands on technology – demands that far exceed the capabilities of traditional enterprise technologies.



- Changing ownership of products and processes over time
- Unpredictable frequency and intensity of interactions
- Wide-ranging communication requirements, such as face-to-face, paper, e-mail, and FTP
- Diverse software applications and rich file formats used to develop digital products
- Need for broad distribution of product information, both inside and outside the enterprise
- Product development functions that can unknowingly overlap

The PTC Product Development System

PTC's Product Development System manages interdependencies across all forms of product information, so that everyone in the digital product value chain can easily understand how their inputs impact the overall product. An integral PDS – where all capabilities are linked through a single source of product data – is key to achieving optimized product development performance.

Working with more than 35,000 manufacturers over the past two decades, PTC has identified seven key process fundamentals companies need to master for optimized product development.

Digital Model Definition

Optimize productivity benefits from current CAD, CAM, and CAE investments by moving toward all digital product definitions that provide intuitive, high fidelity master models. From these models, production drawings, manufacturing instructions, and other downstream deliverables can be developed.

Digital Product Data Management

Collect and control all forms of digital product data so product development stakeholders can work concurrently on the same product designs, while promoting higher levels of design reuse and quality.

Change Management

Establish an automated, online engineering change process to minimize cycle time by documenting change drivers and decisions. Institute of Configuration Management certified change management approach ensures that important changes are processed quickly and thoroughly, and that affected parties are informed.

Configuration Management

Plan and control electronic product definitions, including versions, structure, and interrelationships among data that comprise the digital product. This is especially important for complex or rapidly changing products.

Product Development Collaboration

Collaborate on digital product definitions across internal cross-functional teams including sales, marketing, engineering, manufacturing, and customer service – as well as with external suppliers, manufacturing partners, and customers.

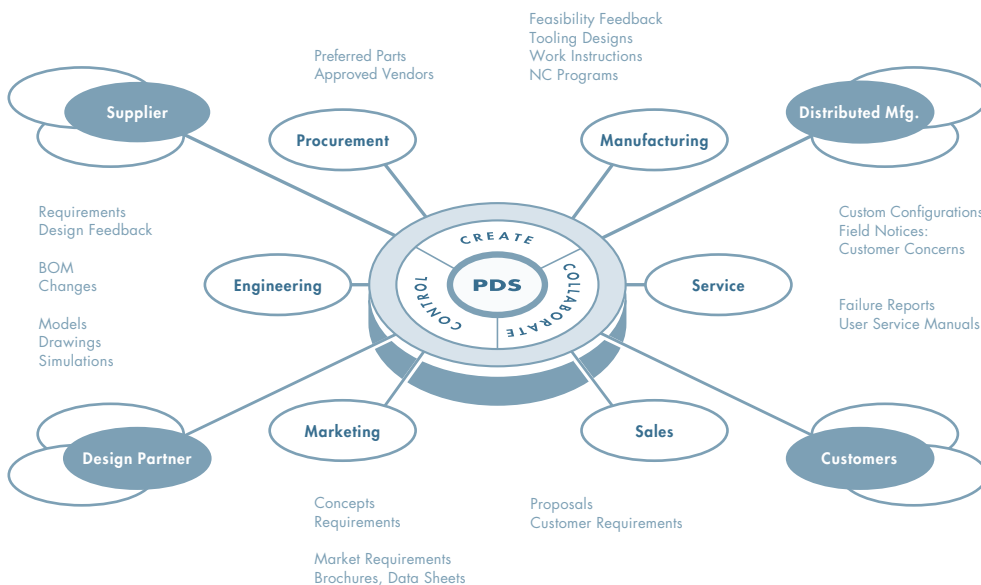
Project Management & Execution

Manage and execute product development projects involving large, dispersed teams. Share common information, implement common schedules and budgets, and collectively track key milestones and deliverables.

Release to Manufacturing

Establish an automated link to feed product definition data to downstream manufacturing systems. Eliminate manual entry of product information to reduce errors, decrease costs, and speed time-to-market.

PTC's Integral Product Development System



PTC's Product Development System has an open framework for connectivity and product information sharing with other enterprise applications such as ERP, CRM, and SCM, as well as pre-built interfaces and menus within other MCAD and ECAD applications.

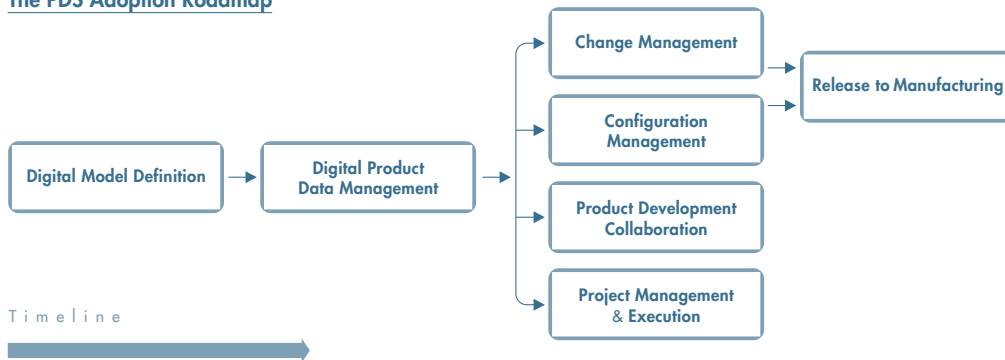


How to Optimize Your Own Product Development Capabilities

Manufacturing companies recognize that incremental deployment of new technology is often the most effective implementation strategy. Our PDS Adoption Roadmap facilitates that strategy, while delivering value every step of the way. No matter where a company currently operates in terms of Product Lifecycle Management, PTC can guide the process of system implementation.



The PDS Adoption Roadmap



Realize the Full Potential of the Product Development System Through Services Delivered by PTC and Our Partners

Assess, Deploy, Optimize

At every stage of the PDS Adoption Roadmap, PTC applies an incremental implementation approach that includes a comprehensive portfolio of Assess, Deploy, and Optimize offerings. Whether you're refining a process to eliminate bottlenecks or implementing new software to improve productivity, this approach provides real benefits that can help fuel growth and drive profitability.

Through our **Assess** offerings, PTC consultants and partners can identify opportunities for customers to improve their product development performance – and demonstrate exactly how to realize full value with the PDS. With **Deploy**, we help you implement the solution quickly and accelerate the return on your PDS investment. And with **Optimize**, we work together to extend the value of the PDS by streamlining your product development processes in ways that maximize personal and organizational productivity.

With nearly 20 years of product development experience – and thousands of successful deployments – PTC enables rapid implementations through packaged and managed services that deliver immediate and lasting business value for companies of all sizes.

PTC offers a comprehensive Maintenance Support Plan that delivers additional productivity benefits:

- Ongoing investment protection and enhancement of PTC solutions.
- New software releases that may include feature, architecture, performance, and infrastructure enhancements.
- Direct access to PTC's ISO 9001-accredited technical support organization.
- Award-winning, online, self-service support tools with access to more than 18,000 online documents, updated weekly, with the most current technical information.

Realize More Value from the World's Only Integral Product Development System

The effectiveness of any product development system lies in the breadth of capabilities it delivers, its underlying technology architecture, the processes it supports, and its ease of adoption.

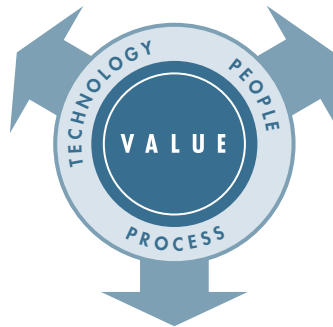


Leading Technology that Assures Success

PTC's Product Development System has the footprint of capabilities discrete manufacturers need to **Create** digital master models, **Collaborate** across the entire Digital Product Value Chain, and **Control** product information and product development processes efficiently over the entire product lifecycle. The pure **Internet** architecture of our PDS enables world-wide access. Its **Integral** design delivers a seamless user experience. Plus, PTC's PDS is **Interoperable** with other enterprise technologies.

Proven Deployment Approaches that Accelerate Adoption

PTC offers a wide range of standardized solutions for installation, configuration, migration, and optimization, including pre-packaged Quick Starts. PTC's proven methods encourage adoption of new processes to accelerate productivity gains. Our extensive role-based curriculum includes Web-based training, instructor-led programs, and interactive distance learning – all offered worldwide.



Industry Expertise that Optimizes Product Development Processes

Our Product Development System helps companies manage, enhance, and optimize their end-to-end product development processes with confidence. With unprecedented five-level testing, every element of the PDS has been validated and proven to support the critical product development improvements customers want. What's more, PTC has the broad process expertise necessary to ensure the PDS supports your company's own unique product development needs.



“Deploying technology without changing process and organization will create little impact and it often brings negative consequences.”

My View: Naked Technology

Forrester Research, Inc., August 2002

The Power of PTC

PTC provides superior Product Lifecycle Management solutions and support to help discrete manufacturers bring winning products to market faster.

Solutions

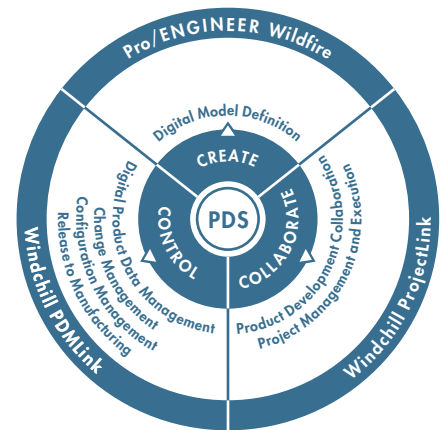
- › Broadest integral suite of PLM solutions
- › Easy-to-use Web-based technology
- › Proven fast return on investment
- › Unsurpassed scalability
- › Lowest total-cost-of-ownership
- › Rigorous testing to ensure solutions work together – and work for you
- › Incremental approach to implementation ensures successful adoption

Support

- › The world's largest software company with a total commitment to product development, supporting more than 35,000 customers and 500,000 users
- › 3,000 employees in 30 countries
- › ISO 9001-accredited organization delivers worldwide 24x7 phone support and award-winning technical support Web tools
- › 850 distribution and field support personnel
- › 800 consultants and education specialists in PTC Global Services
- › Deep partnerships with leading systems integrators, software partners, and hardware providers
- › 180 resellers worldwide, including the largest CAD resellers in Japan and Europe

Complete Product Development System

PTC's integral Product Development System delivers the key capabilities manufacturers need – Create. Collaborate. Control.™ – to realize more value from product development. And our proven, incremental implementation approach can help companies of any size accelerate adoption, minimize risk, and speed time-to-value.



Pro/ENGINEER® Wildfire™
Unparalleled technology to create winning products.

Windchill ProjectLink™
Improving product development through collaboration.

Windchill PDMLink™
Controlling the data that drives product success.

To find out more about how PTC's Product Development System creates value for some of the world's most innovative manufacturers, please visit our website at:
www.PTC.com/go/pds



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