

Realizing More Value
from Product Lifecycle Management

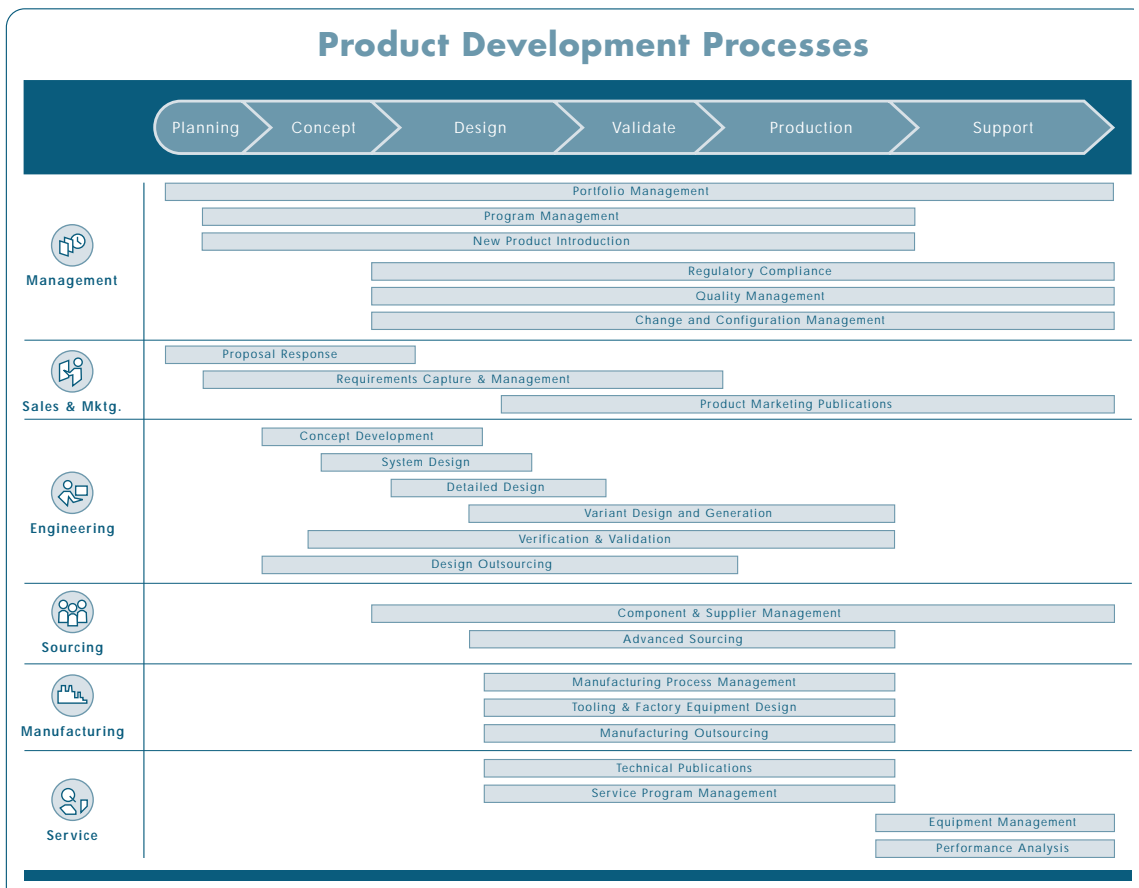
Product Lifecycle Management (PLM) – Not Just Another Enterprise Application



Manufacturers understand today's complexities of product development. 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—such as ERP (Enterprise Resource Planning), CRM (Customer Relationship Management), and SCM (Supply Chain Management)—focus on optimizing the flow of physical products and transactional information. These applications work best for processes that involve doing the same thing, the same way, over and over again. The fact is, they are poorly suited for the kind of rapid iteration and innovation necessary for successful product development.

Instead, product developers need flexible solutions that adeptly support the many interdependent processes required to bring winning products to market. From planning to support, across all applicable departments, and throughout the entire supply chain, PLM offers the solution. By working with complete digital product representations, teams can quickly experiment, make changes, perform what-if scenarios, refine designs, and more. By providing all stakeholders with individualized views of content, digital products can be complete, compelling, and stable—all before the expensive physical process of manufacturing ever begins.



PLM is most effective when it takes a comprehensive view of critical product development processes—end-to-end—and across all organizations.

Making Sense of PLM

So, what exactly is PLM? Is it a collection of capabilities like CAD/CAM/CAE and PDM? Is it an add-on to an Enterprise Resource Planning solution? In reaction to customer needs, 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 the PTC Product Development System—built around a single repository for all product content.



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 Product Development System (PDS): A Highly Differentiated Solution

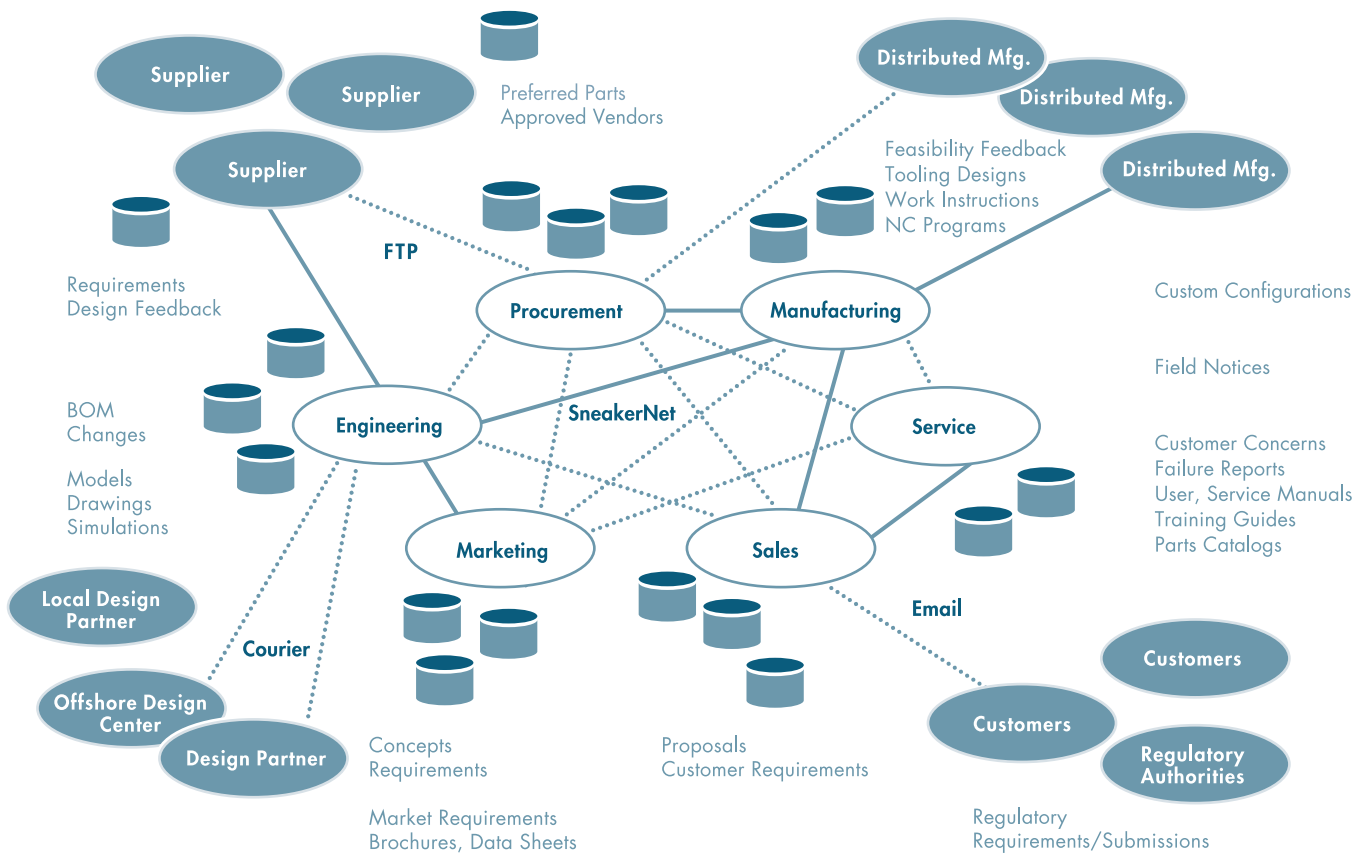
| | PTC | | |
|--------------------------------------|-----------------------|-------------------------------|---------------------------------|
| | 1. Point Applications | 2. Product Development System | 3. ERP Extension |
| Technology | | | |
| Complete PLM Footprint | No | Yes | No |
| Integral Data Model & User Interface | No | Yes | Yes |
| Pure Internet Architecture | Yes | Yes | No |
| Interoperability | Complex and 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 |

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 development, and 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 is nearly impossible for various users to piece together a consistent picture or 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.

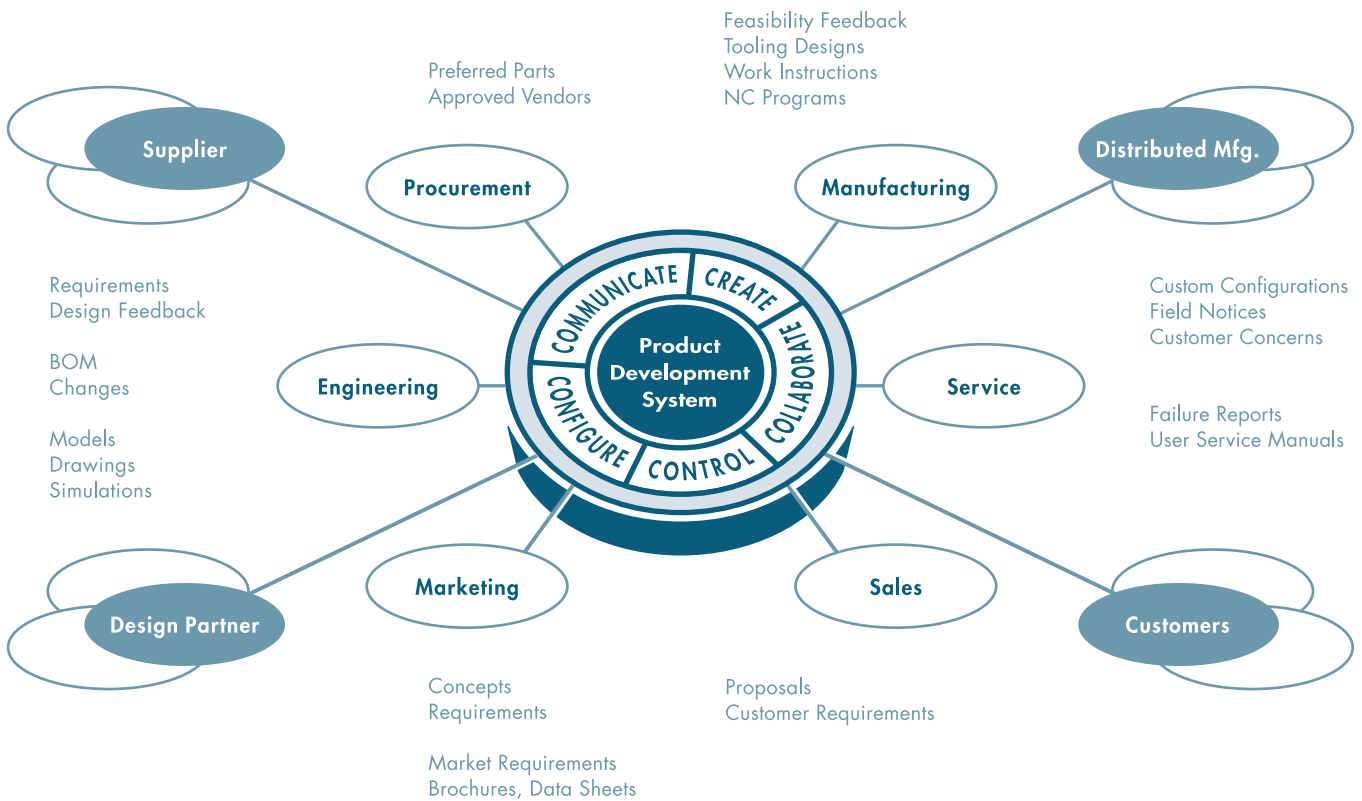
- Changing ownership of products and processes over time
- Unpredictable frequency and intensity of interactions
- Wide-ranging communication requirements, such as face-to-face, paper, email, and FTP
- Diverse software applications and rich file formats being used to develop digital products
- Need for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

The PTC Product Development System (PDS)

PTC's Product Development System (PDS) manages interdependencies across all forms of product information, so that everyone on the team can easily understand how their input impacts the overall product. An integral PDS—where all capabilities are linked through a single source of product data—is key to achieving business process excellence.

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

PTC's Integral Product Development System



A Complete Capability Footprint

Working with more than 50,000 manufacturers over 20 years, PTC has determined that an ideal PLM solution includes five critical capabilities in order to optimize product development.

| Create | Collaborate | Control | Configure | Communicate |
|----------------------------------|---------------------------|---|--------------------------|-----------------------------|
| MCAD/CAE/CAM | Project Collaboration | Enterprise Content and Process Management | Configuration Management | Dynamic Publishing |
| XML Authoring | Planning | Requirements Management | Design Automation | Enterprise Interoperability |
| Technical Illustrations | Visualization and Mock-up | MCAD Data Management | | |
| Manufacturing Process Management | | ECAD Data Management | | |
| Engineering Calculations | | Software Data Management | | |
| | | Supplier and Component Management | | |

Create

Enables the capture and development of ideas and intellectual capital into high-fidelity, structured product representations that provide realistic, interactive, and intuitive definitions of a product's look and feel, behavior, and means of production.

Collaborate

Ensures that all stakeholders who participate in the processes of planning, developing, sourcing, manufacturing, documenting, and servicing the product communicate effectively to iteratively capture creative input and identify and resolve issues early when changes are easy to make.

Control

Captures all product content in a single, trusted repository, automates and monitors key product development processes, and facilitates tight alignment of all stakeholders throughout a product's lifecycle.

Configure

Enables content components to be combined into simple or elaborate structures, producing higher-level deliverables, such as manufactured products, services, and publications, and managing those evolving structures over time.

Communicate

Drives timely and effective decision-making among internal and external parties, and ultimately delivers dynamic product content to the right audiences, in the right format, on demand.

How to Optimize Your Product Development Processes

To be effective, technology solutions must be more than a disconnected bundle of features and functions; they must be designed and tested to work together to optimize real business processes, from start to finish. PTC's PDS supports the typical landscape of processes relevant for manufacturers, enabling the application of technology to realize true business benefit. This process-based framework also helps guide a phased deployment strategy, so companies can extract value sooner by addressing the highest priority processes first.

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

Forrester Research, Inc.
My View: Naked Technology

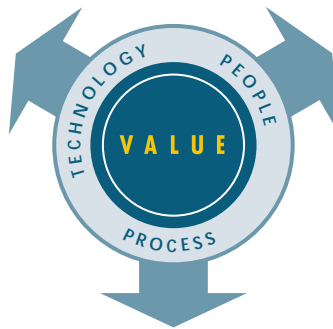


Leading Technology Assures Success

PTC's Product Development System has the complete footprint of capabilities discrete manufacturers need. But what's important is not just what it does, but how it does it. The pure Internet architecture of our PDS enables high-performance access for worldwide teams. Its integral design delivers a seamless, consistent user experience and a single, trusted repository for all product content. Plus, PTC's PDS is interoperable, allowing you to exchange valuable product information with other enterprise technologies.

A Proven Methodology for Driving Adoption

As your partner, PTC Global Services works with you to quickly institutionalize the PDS and associated process improvements across your organization. Our solutions deliver the right blend of process consulting, system implementation, and education services you need to meet your objectives. Each solution leverages best practices and our proven methodology to ensure typical adoption issues are proactively addressed and quickly overcome.



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.

The Power of PTC

PTC provides leading Product Lifecycle Management (PLM), content management and dynamic publishing solutions to more than 50,000 customers worldwide.

Software Products

- Broadest integral suite of solutions that enable companies to:
 - Create product information
 - Collaborate in a globally distributed environment
 - Control product development processes
 - Configure product content
 - Communicate product information to multiple systems and audiences
- Rigorous testing to ensure that products work together – and work for you
- Designed for incremental deployment to ensure successful adoption

Product Development Processes and Initiatives

- Unique process-oriented approach to product development to deliver maximum value
- Technology-enabled process optimization to advance defined customer business initiatives
- Product Development System supports end-to-end processes to accelerate deployment time and reduce cost

Industry Solutions

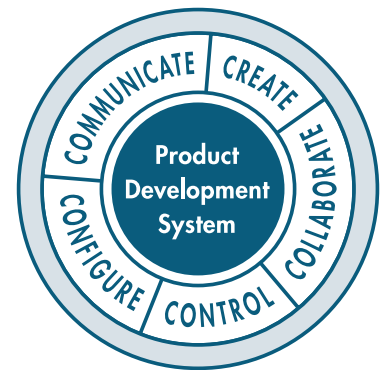
- Extensive expertise across a broad range of industries
- Demonstrated customer success in providing tailored solutions for specific industry needs
- Solutions support industry-specific business processes both within the enterprise and across the supply chain

Services & Support

- Product development consulting to define and develop best-in-class processes
- Assessments and implementation services to deploy technology with minimum disruption
- Education curricula to accelerate adoption and boost productivity
- Global maintenance support that delivers the right team, tools and technology – available anytime, anywhere you need them for product development success

Complete Product Development System

PTC's integral Product Development System delivers the key capabilities manufacturers need 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®

Integrated 3D CAD/CAM/CAE Software

Windchill®

Content and Process Management Software

Arbortext®

Dynamic Publishing Software

Mathcad®

Engineering Calculation Software

ProductView™

Visual Collaboration Software



To learn more about how PTC's Product Development System creates value for some of the world's most innovative companies, please visit our website at:
<http://www.single-sourcing.com/>

