



# Maximizing the Impact of PLM with Windchill+

Speed-up and Simplify PLM Adoption for Greater, Faster ROI



DIGITAL TRANSFORMS PHYSICAL

*There's no question that both product data and the tools that create and consume it are **critical components** of the digital thread.*

While some discrete manufacturers continue to rely on simple product data management (PDM), more and more are achieving tremendous value with PLM to extend data and processes across the enterprise. From best-in-class configuration capabilities in advanced engineering, to closed loop quality assurance, to reducing duplicate parts and providing replacements when disruptions strike—PLM can transform an organization's entire value chain.

These manufacturers are looking to maximize the value they get from PLM for a market-winning advantage. That requires identifying, implementing, and maintaining a host of new tools and processes along the product lifecycle. They also have to contend with typical enterprise software adoption challenges: building business cases, allocating and managing resources, coordinating system configuration and integration, and optimizing or simply maintaining system performance. Each of these can significantly impact the total PLM return-on-investment (ROI) and the time it takes to achieve it. And all of these challenges – which are repercussions of traditional on-premises and private cloud deployments – require customers to have extensive domain expertise and resources to get the most from their PLM investment.

**The good news is that **Windchill+**, PTC's SaaS PLM platform, addresses these issues head on, and accelerates PLM time to value by delivering:**

- Instant access to new capabilities
- Seamless and rapid full-scale implementation
- Optimized performance and maintenance

# INSTANT ACCESS TO NEW CAPABILITIES

*Given the multitude of digital transformation investment options, how should anyone navigate the right choice for their enterprise? Especially when facing budget limitations, high expectations, and so many unknowns. And the novelty of most new technology can make predicting quantitative business impact a fool's errand.*

PLM enables a plethora of high-value business opportunities, so identifying the right PLM use cases for your operation and their order of priority is critical. That's why business cases are essential for most enterprise software investments to get off the ground. Unfortunately, they are notoriously hard to create, as most organizations lack the data needed to estimate a use case's impact on the company. Consequentially, it's then difficult to reliably calculate ROI, increasing the risk of low-value projects getting green-lit while potentially game-changing initiatives get shelved.

But with Windchill+, the technology is already available on-demand for the enterprise to experiment with – whether it's launching small pilots to gain confidence or rolling out new capabilities for strategic product development. These experiments are the first step in accelerating time-to-value (TTV) and improving ROI. A SaaS PLM solution makes it far easier to pilot functionality, whether it's new to the market or just new to your department. This is achievable because every module that Windchill offers is available to each user and can be exposed to the environment on-demand through Windchill+. With this power and customizable out-of-the box (OOTB) workflows, easily grant users access to new capabilities so they can define the best methods and tools for the extended enterprise, identify ROI, and make wiser investments quickly. The upfront investment in time and resources needed to evaluate new capabilities is minimized, so there is less risk and faster identification of high-impact technology compared to on-premises or private cloud deployments.

# SEAMLESS AND RAPID FULL-SCALE IMPLEMENTATION

*System configuration can be the most demanding aspect of adopting a PLM solution, from establishing infrastructure and workflows to keeping environments up to date. Moving one or more processes to a new environment can create significant (and expensive) production delays, meaning it may be more than a year before you see real value.*

PLM implementations are often treated like technology deployments, resulting in a cumbersome system stuck in outdated processes that don't align with today's best practices. Re-engineering said processes and affected workflows requires consensus from multiple departments across the enterprise (engineering, quality, procurement, etc.), which becomes a long and daunting operation. Resolving issues in the original deployment further extends the implementation – especially when using a multi-phase method instead of a holistic approach. Plus, there is a greater risk of locking in customizations that subsequently impede system upgrades and scalability. In the end, prolonging the adoption of PLM capabilities only further compounds implementation challenges – sometimes adding years to actualizing ROI.

PTC offers standardized environments with full stack management through a SaaS PLM solution to eliminate the pain of PLM implementation. Windchill+ leverages best-practice functionalities, so time and talent aren't tied up in architecting a core PLM operation. Because modules can be placed in an environment on-demand, new capabilities can be adopted reliably without straining IT resources. And through SaaS, PTC takes on full stack management, so every upgrade is validated against the industry's best practices and users get the latest advancements without any of the stress.

# OPTIMIZED PERFORMANCE AND MAINTENANCE

*Implementing new capabilities and features can add business value, but that ROI is only achieved if the implementation performs as expected and it can scale to meet growing business demands. Managing PLM performance and stability requires the ongoing focus of expert resources, especially for more complex capabilities. It also requires hardware investments and maintenance to meet peaks in demand or accommodate growth.*

Using on-premises or private cloud PLM means you are responsible for performance and all the monitoring, analysis, and continuous improvement (CI) initiatives that come with it. All these activities demand significant resources and expertise in order to get the desired results. Performance optimization may require regularly re-engineering your operation to keep up with evolving cloud technology and architecture. A private cloud solution may enable you to use the latest storage approaches or container management strategies, but that still ultimately relies on your IT team keep up with the ever-evolving designs – be it of your own volition or for your partners' new business model.

The SaaS PLM deployment architecture streamlines performance and maintenance with integrated teams (including support, operations, and R&D) as well as dozens of monitoring points that detect and respond to demand surges. As a SaaS solution, PTC is responsible for the full stack and IT infrastructure. Windchill+ also provides consistent business administration, allowing configurations to be stored directly. This makes the solution easy to scale from pilot to enterprise-wide deployment, keeping in step with the business during migrations or large data imports. Essentially, all these features alleviate users from the burdens of upkeep and optimization by enabling best-in-class performance through SaaS.

# ADVANTAGES OF PLM THROUGHOUT THE VALUE CHAIN

*There are two ways manufacturers leverage Windchill+ for strategic advantage. First, those trailing traditional PLM adoption for engineering are using Windchill+ to accelerate their competitiveness – sometimes leapfrogging decades worth of technology adoption in mere months.*

The other cohort use Windchill+ to keep pace with the cutting edge of digital thread technology by connecting their manufacturing, quality, and service with product lifecycle data and workflows. Both the stragglers looking to adopt industry best practices and the leaders looking to forge new best practices rely on the same SaaS characteristics to bring value quickly and reliably to their product stakeholders.

**Note:** These timelines represent the estimated time it takes to achieve additional enterprise value once core PLM capabilities are implemented.

*See how quickly Windchill+ delivers results compared to on-premise or private-cloud solutions.*

## ▶ ADVANCED ENGINEERING

	YEAR 1				YEAR 2				YEAR 3				YEAR 4				YEAR 5			
Windchill+	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Traditional PLM	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4

## ▶ MANUFACTURING

	YEAR 1				YEAR 2				YEAR 3				YEAR 4				YEAR 5			
Windchill+	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Traditional PLM	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4

## ▶ QUALITY

	YEAR 1				YEAR 2				YEAR 3				YEAR 4				YEAR 5			
Windchill+	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Traditional PLM	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4

## ▶ SERVICE

	YEAR 1				YEAR 2				YEAR 3				YEAR 4				YEAR 5			
Windchill+	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Traditional PLM	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4

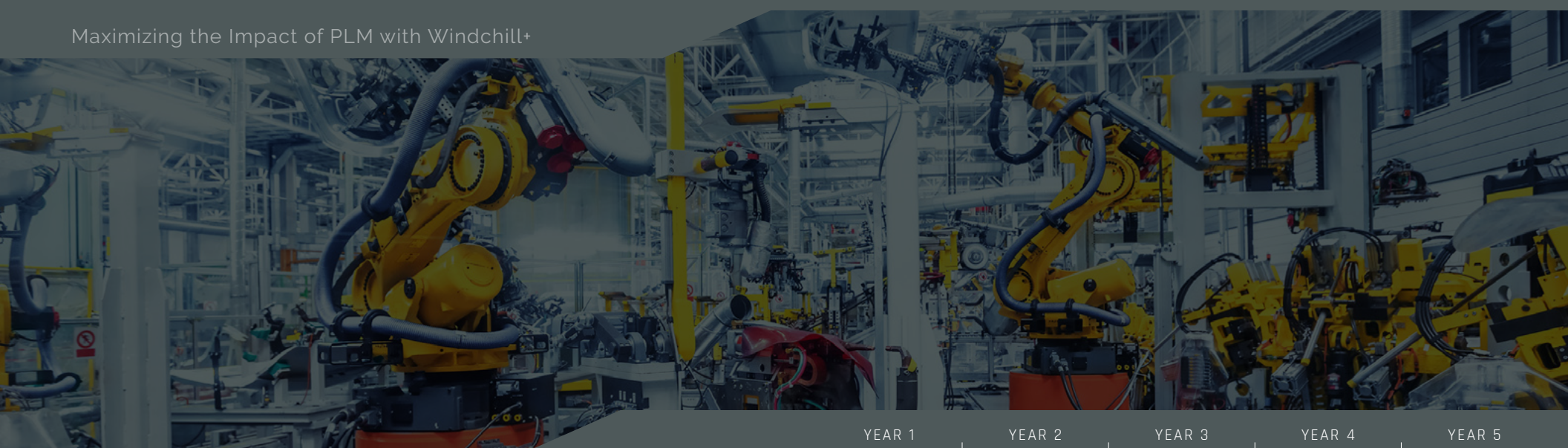
# ADVANCED ENGINEERING

	YEAR 1				YEAR 2				YEAR 3				YEAR 4				YEAR 5			
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Traditional PLM	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4

By the end of year two, Windchill+ customers can achieve ROI in advanced engineering, compared to year four for traditional PLM implementations.

*Windchill+ establishes a foundation of PLM best practices that support more advanced capabilities for multi-discipline collaboration in product development.*

- **Change and configuration management:** Communicate changes, requirements, test procedures, and manufacturing controls.
- **Visualization:** Leverage 3D product configurations (e.g., interference checks, visual compare) in downstream process plans, work instructions, catalogs, AR, etc.
- **Part classification:** Define attributes to streamline part searching and ensure part standardization through classification-based naming conventions.
- **Options and variants:** Build configurable product platforms and create configuration variants as well as 3D deliverables.
- **Approved manufacture and vendor lists (AML/AVL):** Tie supplier part information to product design and allow definition of preferred suppliers for commodity parts. Enable part request processes for supply chain and engineering collaboration.
- **Integration for embedded software:** Link software deliverables between SCM tools and the BOM to provide a complete product definition.



	YEAR 1				YEAR 2				YEAR 3				YEAR 4				YEAR 5			
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Traditional PLM	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4

# MANUFACTURING

In the first half of year two, Windchill+ customers can see ROI in manufacturing, compared to year three for traditional PLM implementations.

*Windchill+ enables concurrent manufacturing to accelerate time-to-production, minimize disruptions, reduce line failures, and improve manufacturing output.*

- **Bi-directional associative eBOM to mBOM:** Leverage 3D data and structured meta-data for BOM transformation with systematic traceability (equivalent links) and reconciliation between related BOMs.
- **Plant master data management:** Create plant specific mBOM structures including different views, part numbers, branches, and plant-specific information.
- **Validation:** Validate the time, cost, and feasibility of defined processes prior to sharing with the shop floor.
- **Integrated change management:** Streamline the reconciliation of product design changes into process planning.
- **Process plans and resource management:** Define plant-specific process plans with multiple sequences of operations and resource libraries (e.g., plants, work centers, tooling, skills, process materials).
- **Visual work instructions:** Dynamically generate work instructions with in-context visuals (documents, digital, and AR).
- **Exchange with other systems:** Integrate manufacturing processes and deliverables to downstream ERP/MRP teams.
- **Factory digital twin:** Apply smart factory input when defining your process plan.





	YEAR 1				YEAR 2				YEAR 3				YEAR 4				YEAR 5			
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Traditional PLM	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4

# QUALITY

At the end of year one, Windchill+ customers discover ROI in quality use cases, compared to year five for traditional PLM implementations.

*Windchill+ closes the loop by connecting quality data and workflows from across the product lifecycle back to engineering and speeds up issue resolution with automated processes and end-to-end traceability.*

- **Document control:** Oversee all documentation with integral training tracking.
- **Closed-loop feedback:** Collect product failure and performance data from testing, manufacturing, and the field for root cause analysis and provide feedback to design.
- **Internal and supplier audits:** Ensure key corporate processes, requirements, and directives are being followed through comprehensive audits.
- **MBD & MBE:** Gain visibility into detailed, model-based design data to identify critical to quality characteristics for development of validation and manufacturing control plans.
- **CAPAs, SCARS, and change requests:** Initiate, evaluate, assign, monitor, review, and approve CAPAs arising from internal or external non-conformances.
- **Customer experience management:** Capture all customer feedback, including customer complaints.
- **Digital product traceability:** Operate with standard OSLC, support certification and qualification ISO26262, DO-178, etc.
- **Non-conformances, deviations, waivers:** Intake, evaluate, resolve, and track product and process nonconformance with integrated change management.
- **Risk and reliability:** Employ FMEA with direct connection of DFMEA to BOM, Weibull life data analysis, fault tree analysis, risk-based design, prediction, and critical to quality.



	YEAR 1				YEAR 2				YEAR 3				YEAR 4				YEAR 5			
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Traditional PLM	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4

# SERVICE

By the end of year two, Windchill+ customers realize ROI in service tools and processes, compared to year five for traditional PLM implementations.

*Windchill+ extends PLM into the service lifecycle to improve performance and technician efficiency with end-to-end management and delivery of configuration-specific service and parts information.*

- **Transform product structures:** Transform and maintain product structures in relation to product development and engineering data.
- **Support product variants:** Provide product-centric service BOMs to create serial numbers and end item-specific parts lists that service all product options and variants.
- **Contextual visual content:** Assemble and deliver dynamic parts catalogs, 3D interactive parts lists, and augmented reality models to the point of service.
- **Parts definition and change management accuracy:** Manage service parts definition and changes related to product applicability.
- **Electronic content delivery:** Deliver original service content alongside supplier content using Arbortext.
- **Service instructions:** Utilize non-intrusive 3D and augmented reality service instructions and guidance for field service technicians using Creo Illustrate and Vuforia.
- **Translations for a global audience:** Support global distribution of content in multiple languages for parts descriptions and service document content.
- **Connected service:** Leverage IoT data for predictive and preventative maintenance using ThingWorx.



The value that PLM has to offer is undeniable, but it can take a lot of time to actualize that value. First you have to justify the investment and configure the solution, then maintain and scale the solution in order to see the promised ROI.

*The best PLM solutions are intricately woven throughout your enterprise, but that can come at the cost of complex implementation and upkeep.*

But with SaaS PLM, you can sidestep these speed bumps and actualize value faster than ever before through streamlined installations and simplified maintenance.

PLM adoption and maturation is accelerated by leveraging pre-configured best practices, eliminating legacy customizations, utilizing frictionless expansion capabilities, and improving collaboration. With Windchill+ and the support of PTC, each step takes less time – and less work!



**Cut through ROI delays, speed up your PLM time-to-value, and achieve greater business impact with Windchill+.**

**Check out our product strategy and roadmap >**

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