

PRODUCT LIFECYCLE MANAGEMENT

PLM AS A STRATEGIC GROWTH ENGINE FOR
MANUFACTURING COMPANIES

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INTRODUCTION

In a time of global competition, increased customer demands, and rapid technological development, it is crucial for industrial companies to manage their products and processes effectively throughout the entire lifecycle. Product Lifecycle Management (PLM) is no longer just a tool for designers and engineers – it is a strategic investment that directly impacts innovation, profitability, and competitiveness by creating clarity across the organization. This white paper describes how PLM is used to drive business value, reduce risks, and create long-term sustainability.



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1. CHALLENGES FOR TODAY'S BUSINESS LEADERS

Today's business leaders face several challenges, including:

- Increased costs for development and production.
- Fragmented information between departments and systems.
- Regulations and sustainability requirements that are constantly tightening.
- Shortened product lifecycles and the need for faster time-to-market.

The result is inefficiency, lost revenue, and higher risk exposure.

When product data is spread across different systems and departments, information silos arise that force reactive decision-making because critical information either does not reach the right people at all or arrives too late to be useful.

The consequences are costly mistakes in late phases, delayed product launches, and difficulties in meeting regulatory requirements. When each department optimizes its own part instead of the whole, suboptimization occurs, creating unforeseen cost increases, often in the form of hidden costs.

This lack of a common "single source of truth" undermines not only internal efficiency but also weakens the company's ability to quickly adapt to market demands, which ultimately risks leading to lost market share and reduced profitability.



WHAT IS PLM...

...AND WHY IS IT STRATEGICALLY IMPORTANT?

Product Lifecycle Management (“PLM”) is a business strategy and platform that gathers all data, processes, and resources related to a product - from idea to retirement.

For company management, PLM means:

- Transparency: A shared information flow throughout the organization.
- Control: Better management of product costs, quality, and risks.
- Innovation: Faster development cycles and support for new business models.
- Compliance: Ensuring regulatory compliance and sustainability goals.

Strategically, PLM functions as the company’s digital backbone for product innovation. By creating a central and reliable source of information - a “single source of truth” - management gains an immediate and accurate overview of the entire product portfolio.

This enables proactive and data-driven decisions instead of decisions based on incomplete information and assumptions. Control over product data means you can steer toward set goals for cost and quality, while traceability ensures compliance with all legal requirements and sustainability commitments.

**PLM TRANSFORMS DATA
FROM AN ADMINISTRATIVE
BURDEN INTO A STRATEGIC
ASSET THAT DRIVES
GROWTH AND
COMPETITIVENESS.**



BUSINESS BENEFITS

3. BUSINESS BENEFITS OF STRUCTURED PRODUCT DATA IN PLM

- ✓ • Cost savings - minimized rework, fewer errors, and more efficient resource utilization.
- ✓ • Faster time-to-market - shorter lead times from idea to product launch.
- ✓ • Increased revenue generation - ability to quickly meet customer needs and adapt products.
- ✓ • Risk minimization - full traceability in data and processes for regulatory compliance.
- ✓ • Sustainability in practice - lifecycle analysis (LCA) and circular business models enabled.

By structuring all product-related information in a PLM system, guesswork and manual errors that often lead to costly production stops and quality issues are eliminated. Teams can reuse proven components and data, reducing development times and freeing resources for innovation. With full traceability from requirements to finished product, you can quickly identify and resolve problems, minimizing the risk of costly recalls and protecting the brand.

Additionally, a structured database provides the foundation needed to analyze products' environmental impact and thus build credible, sustainable, and more profitable business models.

4. OBSTACLES TO A SCALABLE AND COMPETITIVE BUSINESS

- ✗ • Data isolated in silos → decisions made on incomplete and sometimes incorrect information.
- ✗ • Unclear ownership → ownership of unstructured product information creates uncertainty in decisions and constantly increasing costs in production and product development.
- ✗ • IT landscape growing uncontrollably → increased costs and difficult-to-manage complexity.
- ✗ • Lack of traceability → increased risk of compliance fines or recalls.
- ✗ • Slow innovation cycles → risk of losing market share.

Without a centralized PLM strategy, the organization is forced to navigate a fragmented landscape where different departments work with their own versions of the truth. This inevitably leads to misinterpretations, duplication of work, and inefficient processes. The unclear ownership of data creates a diffusion of responsibility where no one feels fully accountable for the quality of information, increasing the risk of errors.

Furthermore, IT costs often skyrocket when each department implements its own niche solutions, creating technical debt that becomes a brake on future digital initiatives. Overall, an environment characterized by inefficiency and high risk is created.

**PRODUCT
LIFECYCLE
MANAGEMENT
IS A
STRATEGIC
DECISION**





5. HOW DOES PLM MAKE A DIFFERENCE IN PRACTICE?

PLM is not just about storing product data – it is about controlling how information is created, changed, and reused throughout the value chain. When everyone works from the same version-controlled product definition, the risk of errors decreases, while innovation, standardization, and collaboration are strengthened.

The table shows concrete situations where PLM makes a noticeable difference between today’s ways of working and a more integrated and digitalized approach.

Scenario	Before PLM	After PLM
Product change	Email, Excel, phone, unclear what the change affects → risk of mistakes.	Standardized digital change process with traceability.
Handover to production	Manual creation of MBOM in ERP.	Automatic transfer of approved data to ERP.
Reuse of components	“We copy and rebuild everything from scratch every time” → hard to find, unclear which version applies, hard to do impact analysis.	Standard components and modules with all related documentation and preparation reused directly from database. Easy to find and analyze impacts.
New variant	Manual copying → risk of errors.	Variant generator / configurable modules that follow regulations.
Digital twin / lifecycle tracking	Information about product in operation spread across service, customer, ERP, Excel → hard to see performance over time.	Digital twin of each product with linked history (changes, configuration, service). Possible to optimize and design based on real usage.
Scalable product platform	Each customer order leads to a new semi-unique solution → grows in complexity and cost.	Clear module structure in PLM → fast configuration, fewer variants, controlled complexity increase, and reuse.
Data as fuel for AI and automation	Product data is unstructured → weak foundation for automation, simulation, and AI support.	Structured and version-controlled data in PLM → automated preparation, rule-based design, and AI support in decision-making.
Purchasing & supplier quality	Article specifications, drawings, and changes are sent via email → unclear versions, incorrect orders, and late clarifications. Difficult to know which suppliers are approved for which article. High manual effort to follow up on lead times, prices, and deviations.	Purchasing has direct access to the latest version-controlled product data in PLM → fewer incorrect orders and shorter lead times. Linked supplier registers, approved articles, and automated status control. Clear traceability of purchasing documents, changes, and quality deviations. Facilitates strategic purchasing, consolidation, and early cost forecasts.
Collaboration with clients and suppliers	Drawings and BOM are sent by email → insecure, slow, and difficult to manage versions.	Secure sharing platforms with controlled access layers → faster collaboration, better quality in quotation, design, and purchasing processes.
Sustainability & material traceability	CO2e data and supplier information are not linked to articles → difficult to analyze impact.	Material and supplier data integrated in PLM → traceability, comparability, and automated sustainability reports.
Aftermarket & service as a revenue engine	Service works “on the side” with its own lists, difficult to know which variant the customer has.	Aftermarket gets exact product configuration + installed base BOM → more efficient spare parts, service, and new business models (e.g., uptime agreements, preventive service).

AN INVESTMENT IN FUTURE GROWTH

6. PLM AS AN INVESTMENT - NOT A COST

A PLM platform is an investment in the company's intangible assets - your accumulated knowledge, patents, and product history. By structuring and securing this information, measurable value is created that strengthens the balance sheet and makes the company more attractive to investors.

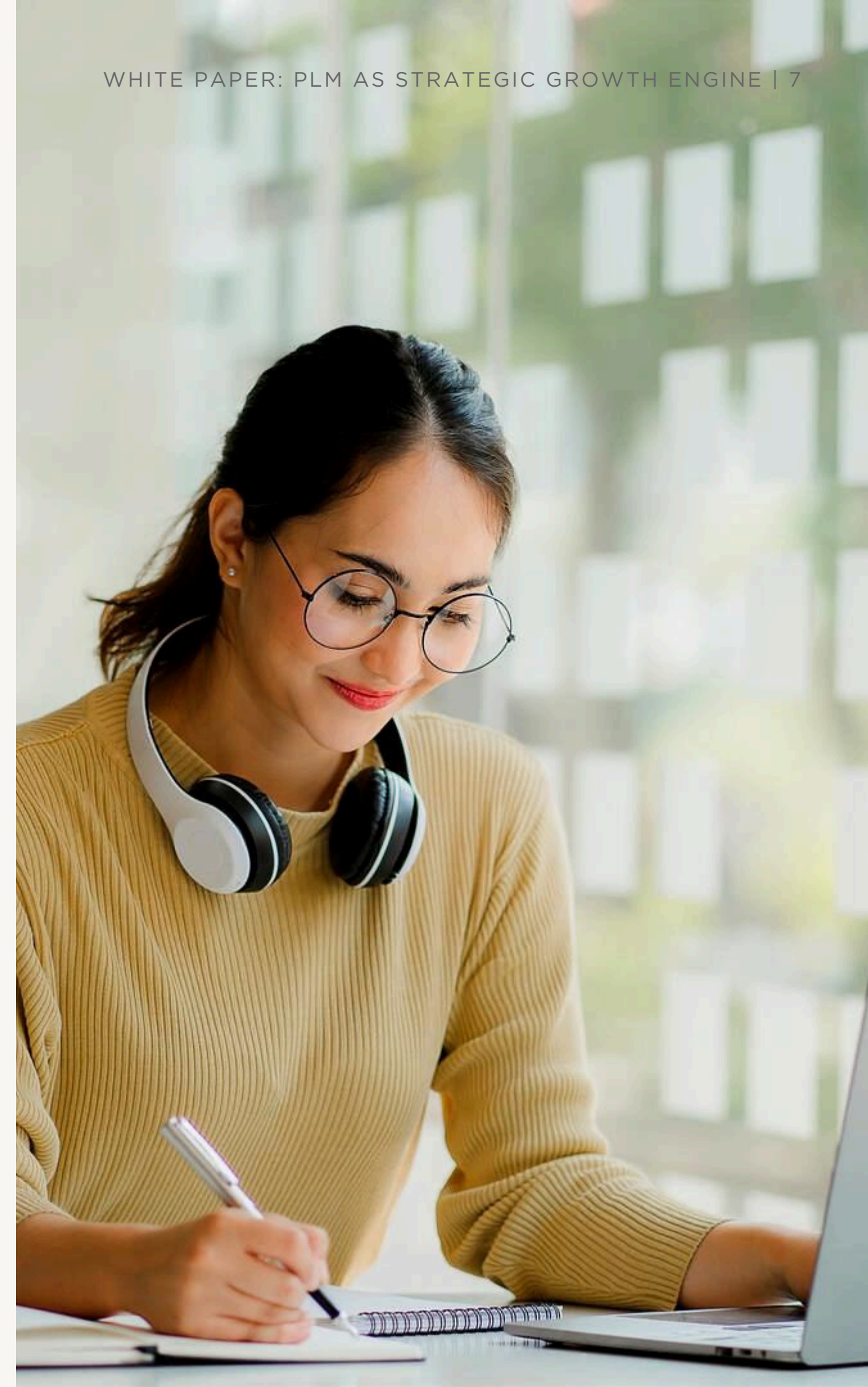
Furthermore, a well-functioning PLM system is a prerequisite for succeeding with future strategic initiatives. Without a solid data foundation, investments in AI, digital twins, and IoT will at best be inefficient and at worst impossible to implement successfully, as they require access to structured and reliable real-time data.

A well-implemented PLM system creates:

- Faster ROI through reduced development costs.
- Increased value and ability to assess intangible assets (IPR, data, know-how).
- Strength in transformation - PLM is a platform for digitalization, AI, and IoT.

That is why it is important to see PLM as a strategic investment rather than an IT project.

TO SEE PLM ONLY AS A COST IS TO MISS ITS REAL VALUE



SUSTAINABILITY

7. PLM AS AN ENABLER FOR SUSTAINABILITY

SUSTAINABILITY IS BUSINESS CRITICAL

Sustainability is no longer “nice to have” – it is a business-critical issue. Manufacturing companies that cannot show transparency in material choices, supply chain, and product environmental impact risk losing investments, market share, and customer trust.

WITH PLM, MANAGEMENT CAN:

- Ensure compliance – easily report according to standards such as CSRD, EU Taxonomy, and other regulations.
- Make data-driven decisions – better overview of environmental impact leads to strategic investments that strengthen both brand and profitability.

For management, PLM is a tool to operationalize the sustainability strategy and make it measurable, traceable, and integrated throughout the value chain.



8. PLM + ERP = TRUE

A common question in management teams is: “We already have ERP, why do we need PLM?”

The answer is that PLM and ERP serve different roles but complement each other:

- ERP manages the company’s business processes - financial flows and purchasing to inventory management, production planning, and deliveries. The focus is on optimizing resources and flows to ensure efficient operations and profitability.
- PLM manages the product lifecycle and all related information - from idea and design to development, maintenance, and retirement. PLM ensures that product data is correct, traceable, and available to all relevant parties throughout the product lifecycle.

When both systems work together, an unbroken information flow is created between product development and business operations:

- Product data in PLM is structured and quality-assured → used in ERP for accurate calculations, planning, and production.
- ERP data becomes more reliable → management can make better decisions based on accurate product and cost information.
- The right information reaches the right person at the right time, eliminating manual duplication and reducing the risk of costly errors.

CREATE A SINGLE SOURCE OF TRUTH

PLM (Product Lifecycle Management)

Manages product data and its processes:

- Idea
- Design
- Development
- Maintenance
- Recycling
- Decommissioning



ERP (Enterprise Resource Planning)

Manages business processes:

- Finance
- Purchasing
- Production
- Inventory
- Deliveries



WHY INTEGRATE PLM AND ERP?



IMPROVED COLLABORATION

One of the biggest challenges in product development and manufacturing is communication between departments. With PLM, engineering and design teams always work with the latest product data, while ERP provides real-time insights into operations. The result is fewer errors, faster approvals, and clear alignment on project goals.

BETTER DECISION-MAKING

When real-time data about both product and operations is available in a central source, the company can act more proactively. Management can anticipate supply chain disruptions, adjust production plans, and allocate resources optimally. This creates an organization that is more agile and adaptable.

INCREASED EFFICIENCY

By integrating the systems, data flows can be automated. This reduces the need for manual entry, minimizes errors, and accelerates processes. Design and engineering can transition smoothly from planning to production and distribution.

COST SAVINGS

Reduced inefficiencies and fewer errors have a direct impact on results. With accurate product data and streamlined processes, material waste, unnecessary work, and production costs decrease.

**INTEGRATION
BETWEEN PLM
AND ERP CREATES
A DIGITAL
BACKBONE FOR
THE ENTIRE
COMPANY**

It ensures that product innovation (PLM) and business operations (ERP) are perfectly synchronized for maximum efficiency, profitability, and competitiveness.

10. LESSONS FROM OTHER INNOVATIVE MANUFACTURERS

Autodesk's global surveys, "*State of Design and Make*", include over 5,000 executives and industry leaders in manufacturing, engineering, product development, and digital creation. The results show a clear trend: digital maturity and a data-driven approach are critical for competitiveness, innovation, and resilience in uncertain times.

1. DIGITALIZATION STRENGTHENS RESILIENCE AND COMPETITIVENESS

The majority of companies report that their digitalization initiatives have led to increased productivity, faster decision-making, and better collaboration.

Digitally mature companies consistently perform better and report a higher ability to manage change, develop new products, and expand into new markets.

2. COST CONTROL DOMINATES AS A PRIORITY - BUT DIGITAL INVESTMENT CONTINUES

Cost control has emerged as the top global business challenge. However, instead of slowing down digitalization, most companies choose to invest more strategically in technology that delivers impact.

3. AI HAS MOVED FROM FUTURE VISION TO PRACTICAL VALUE

Companies are actively testing and implementing AI in concrete workflows, such as design, simulation, analysis, and documentation.

The perceived benefits are mainly linked to:

- Increased productivity
- Fewer errors and shorter lead times
- Better design decisions

At the same time, leaders see that AI requires governance, clear use cases, and high-quality data.

4. SUSTAINABILITY HAS SHIFTED FROM A REQUIREMENT TO COMPETITIVE ADVANTAGE

Sustainability is no longer seen only as regulatory compliance or brand-building, but as a direct business strategy:

- Reduced energy and material consumption saves costs
- Sustainable products and processes create market advantages
- Sustainability attracts and retains talent

AI is highlighted as the strongest enabler for sustainability improvements in design, production, and lifecycle management.

5. THE TALENT CHALLENGE REMAINS - BUT IS CHANGING IN NATURE

Access to the right skills is still a challenge, but the focus has shifted from recruitment to:

- Reskilling
- Internal development
- Ability to work in digital ecosystems

Companies with high digital maturity find it easier to both attract and retain employees.

DIGITAL MATURITY HAS BECOME A STRATEGIC PREREQUISITE FOR COMPETITIVENESS - NOT JUST A TECHNOLOGY ISSUE.

OVERALL CONCLUSION FROM THE REPORT:

Companies that integrate product data, digital workflows, and AI-driven approaches:

- Shorten development and innovation cycles
- Reduce risk and improve decision quality
- Build resilient organizations with high scalability

Sources:

2025: <https://www.autodesk.com/design-make/research/state-of-design-and-make-2025>

2024: <https://www.autodesk.com/design-make/research/state-of-design-and-make>





11. RECOMMENDATIONS FOR COMPANY LEADERSHIP

- Define business goals first – link PLM to strategic initiatives (such as innovation, sustainability, and digitalization).
- Secure executive buy-in – PLM must be driven as a strategic initiative, not an IT project.
- Start gradually but think long-term – small pilot projects can quickly demonstrate value.
- Measure and communicate results – show ROI and connect to business goals for continued support.
- See PLM and ERP as a comprehensive solution – not separate investments.
- Measure ROI broadly – include metrics for reduced risk, ensured compliance, faster innovation, and strengthened brand, not just direct cost savings.



12. CONCLUSION

A successful PLM implementation is fundamentally a transformation journey, not a technology purchase. That's why leadership commitment and a clear vision are absolutely critical. By first defining which business problems need solving - whether it's shortening lead times, improving margins, or achieving sustainability goals - you ensure the investment delivers real impact.

A phased rollout, where each stage provides measurable benefits, builds momentum and makes adoption easier across the organization. By continuously communicating progress and linking it to overall business objectives, PLM becomes a recognized driver of the company's ongoing success.

“WE HAVE MORE CAPACITY TODAY EVEN THOUGH WE DELIVER MORE THAN BEFORE.”

Ezzart Chipana, Digital Manager, Hycast

PLM is not just a tool for designers, engineers, or product developers — it is a strategic investment that, when implemented correctly, becomes a growth engine and a key to long-term competitiveness. It creates structure in complex processes and products, strengthens innovation capabilities, and reduces risks, while at the same time laying the foundation for sustainable growth.

THE QUESTION IS NOT IF, BUT WHEN YOU WILL TAKE THE FIRST STEP WITH PLM.

TAKE THE FIRST STEP TODAY!

Want to know more about how PLM can create direct business value for your organization? Contact Symetri for an executive workshop or advisory services.



WHAT DO ALL THESE ABBREVIATIONS MEAN?

The manufacturing industry is full of abbreviations, and it's easy to get lost among all the three-letter combinations. Here are explanations of these concepts.

PLM

Product Lifecycle Management (PLM) is the management of a product's entire lifecycle from idea to decommissioning. It includes processes such as ideation, product development, manufacturing, marketing, usage, service and maintenance, product improvement, and finally decommissioning with recycling where needed.

ERP

Enterprise Resource Planning (ERP), or business systems, is software that manages a company's needs for control and administration. It includes applications for accounting, orders, inventory, invoicing, HR, customer management, and production planning.

ROI

Return On Investment (ROI) is a concept that shows the profit from an investment relative to its costs.

IoT

Internet Of Things (IoT) refers to connected devices. Products become more connected and intelligent, allowing remote control by humans or other machines and sending data for measurement, diagnostics, and automated control.

IPR

Intellectual Property Rights (IPR) are rights that provide legal and economic protection for assets such as patents, trademarks, copyrights, data, and know-how. These rights enable companies to value, protect, and commercialize ideas and knowledge.

BOM

Bill Of Materials (BOM) is a list of all components belonging to a product, such as materials, associated parts, and quantities needed to manufacture the product. Managing BOM helps document, track, and review each component, prepare a product for manufacturing, and more.

MBOM

Manufacturing Bill of Materials is a detailed list of all components, materials, and subassemblies needed to actually manufacture a finished product. It also includes production information such as assembly instructions and process execution, unlike an EBOM (Engineering BOM) which focuses on the original design.

ATO

In Assembly-to-Order (ATO), products are assembled from components after receiving a customer order. The key components used in the assembly or finishing process are planned and stocked in anticipation of customer demand. Receiving an order triggers the assembly of the customized product.

ETO

In Engineer-to-Order (ETO), a customer-specific, unique engineering design is required, involving extensive customization or the purchase of new materials. Each customer order results in a unique set of part numbers and bills of materials.

LCA

LCA stands for Life Cycle Assessment, a method used to analyze a product's environmental impact throughout its entire lifecycle—from raw material extraction to waste management. The goal is to gain a comprehensive view of how a product or service affects the environment (for example through emissions, energy consumption, and resource use) in order to support more sustainable decision-making.



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