SYMETRI
ADDNODE GROUP

The essential guide to Product Lifecycle Management (PLM)

At Symetri our aim to always challenge people to work smarter and to turn ideas into new realities that shape a better future.

This is certainly no exception when it comes to challenging companies within the manufacturing industry. We have supported many innovative companies of different sizes within the product design and manufacturing industries, to optimise their working methods and increase the quality of their projects by implementing PLM solutions.

Contents

Overview

Section one: Considerations

Section two: Starting the journey

Overview

Any professional involved in a product's development or manufacture, any organisation that sells a product or has customers who use it—or procurement teams who specify and purchase it—needs consistent information to assist and drive their involvement with the product and ultimately ensure the success of a product.

While a PLM solution will bring its own benefits to your business, it also brings a requirement that your people see and embrace its value; that they adopt it as an integral part of how they work.

PLM is as much about people as it is about technology. For it to be instrumental in enabling your business to streamline its processes, make them faster, and notably improve your productivity, PLM should be welcomed into your company culture and allowed to influence previous ways of working.

Our guide examines not just why you need a PLM system but also how to make the decision and what to consider when planning your implementation. Some companies proceed from decision direct to buying a system and then direct to deploying it. It's a mistake.

Careful planning is essential. Wide consultations with users and stakeholders are invaluable. Precise specification and customisation are critical. It's not a journey to undertake without expert help. You can, of course, but such an approach may bring problems further down the line. This guide discusses the optimum route for the journey ahead of you.

Section one: Considerations

The essential guide to Product Lifecycle Management (PLM)

How the smarter business works

Managing a product throughout its lifecycle keeps it relevant to customers' requirements and ensures that it continues to deliver the business value and functionality they seek. It can involve considerable effort and time if the managing process is not centralised, coordinated and controlled.

In today's digital age, efficiency in and diligence of such processes are supported and driven by data. Once you decide to invest in a Product Lifecycle Management (PLM) solution, you will need to understand this critical role of data, knowing where the data comes from and what to do with it. Once you understand it, a software solution will automate most of the hard work, remove the effort, and reduce the time required. The result is a higher level of productivity because everything gets done faster.

Why read this guide?

This guide takes you through the essential stages in achieving the centralised, coordinated and controlled approach to ensuring that at every stage of your products' lifecycles, you're doing everything that needs to be done to sustain and enrich them. It shows how these interrelated tasks can be performed effortlessly, saving time, optimising resources, and satisfying your customers.

WHAT IS PLM?

PLM is the process of managing the entire lifecycle of a product. 'Entire' means exactly what it says—from the moment the concept is born to production and, if required, through to its phasing out and recycling.

The entire product lifecycle
PLM connects business processes and systems
to optimise operational performance around lead times, cost and quality
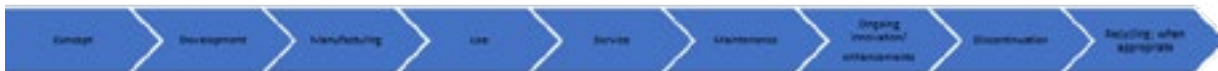
Knowing what to do, and what was done, when

A PLM system is the central repository of knowledge and information about a product. It is the hub where any actions are undertaken—by any department—or as instigated by the intervention of any third party (such as component suppliers, packaging designers or other deliveries) are recorded.

Ensure your product information is always centralised, coordinated and controlled, available at the right place at the right time:

• At the level of quality that the company business requires

• Checked by the necessary role at the Product Delivery process

• Reusable for new and repeating projects

• Available for distributed teams and to your Supply Chain

• Reliable without exceptions and compromises

A PLM system ensures that no critical actions are overlooked through this continuous and transparent availability and resultant audit trail. Anybody involved in any aspect of the product's life and evolution can understand the impacts of others' actions that require a response in terms of their own role. For example, when the purchasing department picks up an order that is retrieved from the PLM system, they can be confident in knowing that all information is up to date.

This is the 'people' aspect of PLM, improving visibility to improve timely intervention and continuous focus. The system can be made available to the entire company, with relevant permissions set.

Keeping track

Examples of the Processes (easily searchable within the system) over which the system provides full visibility and traceability include:

• Products

• Product Change Management

• Quality Management

• New Product Introduction

• Design Reviews

• Compliance

• Aftermarket Processes

The benefits of PLM

The overarching value of PLM is its role in ensuring that whoever needs to be aware of the product's status at any given time is informed. It is also far more than an 'archival' solution. It is a unified means of control, consistently driving and enabling best practice management. When actions are required, its function is to present the latest information at all times.

The more rigorous your control over each phase of a product's lifecycle, the more you will eliminate errors, accelerate design times, and serve customers not only more responsively but also more proactively:

• **Reduced risk of errors with updated and automated data sharing**
The role and value of data are pivotal in ensuring no oversight in a product's lifecycle. By connecting product development with every part of the company's value chain, you can ensure that everyone in the company always has access to the correct and updated design data.

An integrated approach to data—bearing in mind that integration relates not just to inter-departmental connections but can also enable you to send and receive product information to ERP systems on-premise or in the cloud—makes it easier to find and reuse design and technical data. It provides suppliers access to product information and design changes during the tender round.

• **Significant savings in design time**
Many of a PLM system's features allow designers to spend more time on the actual design work and innovation without getting caught up in or side-tracked by admin tasks.

Designers can enrich the model data with smart properties, such as dictionaries and calculated field values. The system can automatically create information needed outside the engineering department, such as bill of materials (BOM) and divisible files.

• **Streamlined sales process**
Through simple and rule-based configurations, which do not require an understanding of the technical context, you can streamline the sales process through a greater degree of customisation, shorter delivery time and fewer errors.

• **Better support and service offerings**
By having sufficient knowledge of delivered equipment, you can link a service programme to the system and create an understanding that necessary service and spare parts provide further business opportunities.

The design and manufacturing advantage

If you design and manufacture any type of product, a PLM solution will help you manage the end-to-end process in a more efficient manner, with greater control and earlier and more sustained collaboration.

Its predominant use is among companies in the industrial equipment, transportation and automotive, oil and gas, project engineering, and building component manufacturing sectors.

A company's business model is more relevant than its sector when defining what is required from a PLM solution. The model may be of an Assembly to Order type (ATO), where products are assembled from components after receiving a customer order. It may be of an Engineer to Order type (ETO), where each customer order results in a unique set of part numbers, bills of material, and routings. These process variants will determine the parameters for your PLM system.

PLM is not just for large, complex companies

PLM solutions are 'size-agnostic'. Process is process, after all. Improving it is a universal business goal. There are three fundamental questions to ask when creating the business case for a PLM solution within your own organisation:

- **Where are the pain points/improvement potential?**
What is your current situation regarding challenges, bottlenecks, information sharing, audit trails, customer satisfaction, and speed to market?

- **What are your short-term and long-term goals?**
Are you looking for quick fixes or rapid resolutions to current issues? Do you foresee that an overhaul of your approach to product lifecycle management can have a profound effect on the business? Are you expanding, looking for new markets, seeking to serve customers better, or to enhance your competitive advantage?

- **Do you seek change?**
Are you prepared to change your current processes and workflows? Are you prepared to champion the organisation and culture change that this might entail? Have you consulted with and gained feedback for the principal users and stakeholders within your business or even undertaken conversations with major customers about their expectations?

Are you looking to adhere to Lean principles to eliminate waste from processes and systems, streamline process flow, and improve quality across your whole product value chain?

Choose your solution

Answering these questions will enable you to create a clear and specified vision about your next step, moving the business—at the heart of your products and how you manage their lifecycles—from its current to its anticipated future of working.

The next step is to survey and assess your options regarding PLM solution partners who may not only provide the software but will also assist in advising how your business may customise, implement and integrate it, making it your tool to meet your needs and enhance the capabilities and motivation of your teams.

The PLM Return on Investment

PLM benefits in areas beyond CAD data management and collaboration through the product's lifecycle. For this reason, we have discussed its value across the company culture and every department.

You may not have thought, for example, that HR will feel the benefit, but the more you embrace an advanced, technology-driven, data-centric approach to how you work, the more you attract talent.

People like to work for forward-thinking businesses. They are enthusiastic about working with technology, collaborating with broader teams, and being supported by management in its commitment to staying ahead of the field.

PLM delivers ROI benefits at every phase of the product's lifecycle:

Sales: Ensuring that the correct products and parts are selected and sold

Procurement: Ensuring that the correct item revisions are ordered and documentation is provided to the supplier

Production: Confidence that the correct items are assembled and delivered and that engineering changes are implemented in a controlled way

Service and maintenance: Making sure that the correct spare part documents are created and information related to each individually delivered product is stored, managed and easily accessible at any time.

As Industry 4.0 and Smart Manufacturing develop, with a relentless pace of technological innovation, such as the Internet of Things (IoT), PLM is an asset which will align your business with partners, your supply chain, your customers and the expectations and needs of your stakeholders.

When connecting real-time information from an individual product—or fleet of product configuration data—managed in PLM, you can extensively expand the opportunities related to additional products and service sales to your existing customer base.

Section two: Starting the journey

Building a business case for PLM

Your business case for adopting PLM will dictate the right time to start. It will include an evaluation of the anticipated ROI. It will also identify the current state of your processes and define the desired future state. From the project's birth, Symetri PLM solution experts can accompany you on the journey, looking at your business's challenges and the best approach to dealing with them.

Decision factors

Companies who resist implementing PLM often do so due to the investment required. However, the questions are not whether you can afford to invest in PLM, how long you can defer the decision, or whether or not there are any cheaper software approaches on the market that can be somehow joined together but rather about:

- **Competitive advantage:** Are you content to leave such initiatives to your competitors?
- **Strategic direction:** Does it continue to make sense to deal piecemeal with the problems you encounter as they crop ip (not always when expected)
- **Customer expectations:** Do you feel comfortable explaining to customers why you continue to run your product lifecycle activities in a way that will increasingly appear to be—at best—traditional and—at worst—out of touch with the modern age?

Exploit your data

A key element of your business case is to recognise the value of the data you have within the business—and it will continue to accrue in greater volume.

The five Vs of Big Data

- **Volume:** Put simply, the more active you are as an organisation, the more data you will create and receive

- **Velocity:** Again, as your activities expand so the data comes in faster

- **Variety:** Every phase in a product's lifecycle creates data across a matrix of components, changes, specifications, suppliers, timelines and so on and so on.

- **Veracity:** Relates to the quality of the data; its use or potential reuse on projects yet to come. Data for data's sake is meaningless.

- **Value:** The use you will make of the data in enhancing business/design practices and/or the bottom line.

Product data is crucial to a company. It is essential to ensure that information is used effectively throughout business processes and that you have robust processes to save it centrally. Without such procedures, data can be lost, inadvertently deleted, or saved to an individual's laptop.

Failure to manage product data leads to time being wasted on redesigning drawings in the engineering department, and other inefficiencies such as lost time searching for product data when you need to know which spare part your customer requires.

PLM ensures that your work is always based on accurate data and avoids any extra costs that may be incurred due to the stakeholders' lack of access to the right revision at the right time.

PLM takes care of the data, and the complexities of saving and safeguarding it, for you. It minimises the steps you need to take while optimising the time you spend on each progressive—value-adding— step of the process, from product design and the supply chain, through to delivery and after-sales service

Planning your PLM implementation

The key to success in a PLM implementation project is planning. A multitude of important factors influences the success of the implementation. They all need to be acknowledged and addressed from the start.

Instances abound of organisations not taking heed of the many variables and requirements across the business, not listening closely enough to the intended users, and making no allowance for critical integrations with other systems. Yet they have implemented the solution, little appreciating that they have embedded potential problems within it.

This is when a PLM project really does become expensive—when a company has to retrace its steps to find out where and how it went wrong.

Without the specific skills in-house, companies frequently become overwhelmed by the immensity and complexity of the task and lose sight of their overall goal of simplicity and clarity. Implementation projects fail with alarming frequency.

To guarantee successful delivery, an experienced partner can bring value to the process that will save time and work out far more effectively as the need for rethinking is eliminated. Even better, the likelihood of running for some time with a poorly implemented PLM system (which may well manifest its shortfalls later, coming both as a shock and an untenable cost) will simply not arise. The correct implementation methodology is critical. This is the value of an external supplier.

While each project and customer environment are unique, there are also many similarities in the core requirements that a PLM solution should address. Instead of starting from scratch, you can get started quickly today with predefined PLM processes based on the industry's best practices. These can be tested, verified, and fine-tuned to fit your company's specific needs. This agile approach ensures smooth and more risk-free implementation.

Although the technology implementation may be easy today, do not forget the most important factor, the people factor. Technology implementation is high-risk if not undertaken with proper change management and training to ensure everyone understands the benefits.

How Symetri can help

We provide three PLM solutions, outlined below, but offer far more than software. Our advisors, consultants and technical specialists are here to help way before implementation is undertaken. They will accompany you on the journey—helping you to identify challenges, create a rational business case, engage with relevant stakeholders and specify the customisations appropriate to ensure that the PLM solution you end up with is precisely the solution best designed to streamline your product lifecycle management processes.

The prime function of the PLM solutions we provide is the efficient control of design data—ensuring it is easy to transfer to items and BOMs. Efficient creation and use of product information are ensured through collaboration between teams and systems. Our solutions will help you reduce unnecessary costs and delays by avoiding errors caused by incorrect product information.

Our PLM offerings focus on business process efficiency within Engineering, Production, Supply Chain, Sales, After-Sales and Service Operations. Our goal is to ensure that the most up-to-date product information is available to all the interest groups that need it throughout the lifecycle of the products.

View our PLM solutions:

- **Autodesk Fusion 360 Manage** - A cloud-based PLM platform that connects your people, processes and data across departments and locations.

Low TCO	Flexible and Configurable	Use anywhere
No hardware to install, epensive upgrades to implement, or complicated licensing. All the apps are included with an easy and affordable subscription model.	Simple drag-and-drop functionality enables you to customise apps, workflows, and dashboards to build a product lifecycle managementolution that fits your business.	Autodesk Fusion Manage makes working with product lifecycle management easy, from a desktop to a mobile device. Navigation is as simple as browsing a website with drag-and-drop.

Discover more>>>

- **Aptean Lascom PLM solutions** - PLM for development and portfolio management of consumer-packaged goods (CPG), enabling the description of the complex data structures involved in projects/products and giving the flexibility to adapt to change as the descriptions evolve.

Automated Processes	Flexibility	Tailored Solution
Shorten product time-to-market while achieving regulatory compliance.	Improve project monitoring reliability and access to all elements needed for regulatory files.	Build a tailored and user-friendly PLM solution thanks to PLM Lascom Edition's flexible platform from Aptean.

Aptean Lascom PLM is provided by D2M3, a Symetri's PLM business unit. D2M3 develops and provides software solutions that enable you to control all your product data assets from inception through design and development, production, delivery, maintenance, and repair.

Discover more>>>

- **Sovelia PLM** - Enables you to attain sustainable and lean business processes throughout the product lifecycle, from concept phase to disposal and recycling of the product.

Integration	Template-rich	Built-in administration interface
Sovelia's Integrator template enables you to send and receive product information to ERP systems on-premise or in the cloud. You can also publish documents into another document repository and content management applications (e.g. SharePoint), receive data from other business systems and deploy a real-time integration performance dashboard on selected cloud platforms.	Sovelia PLM is based on templates that result from close to 30 years of experience in PLM implementations in different companies and industries. Templates support industry best practices and have the flexibility to adapt to the specific needs of your company.	Capabilities to adjust configurations as required and set system parameters without any programming skills. The industry-standard look and feel of the user interface make it easy to use, allowing fast adaptation and operation performance.

Discover more>>>

Take the next step

Symetri has extensive knowledge and experience within PLM and numerous reference cases where product development companies have made or are making the PLM journey. Contact us to learn more about how to get started and take the next step towards making the greatest use of your data and benefitting from the centralisation, coordination and control of a PLM solution.

About Symetri

We challenge people to work smarter for a better future.

Symetri helps manufacturing companies to optimise working methods and increase the quality of their projects. Our mission is to help you remove waste from engineering and business processes to create more value and increase productivity by incorporating Lean solutions. Our passion is to help you resolve everyday challenges, so your team can focus on innovation and business-critical tasks.

The cornerstones of our customer service are Knowledge and Leading-edge Technology, with over 30 years of experience partnering with companies of all sizes across Northern Europe. Our Product Design & Life-cycle team consists of advisors, consultants and technical professionals who are here to help you maintain a competitive edge.

The solutions and services we offer cover the whole lifecycle of your products from Design to Production, Sales, and After Sales & Services. We focus on helping you improve your company's business performance based on high-quality design output, automated routines and efficient use of product information throughout your business operations.

Symetri is part of Addnode Group.

www.symetri.co.uk

Meet the Team

Kevin Doherty

Sales Manager Manufacturing

Matthew Watt

Sales Consultant

Neil Adcock

Business Area Director

Contact Us

info@symetri.co.uk

0345 370 1444

GLOSSARY
Just in case…

BOM
Bill Of Materials (BOM) is the listing of items that make up a product. A BOM includes item numbers, quantities, part descriptions, lifecycle state, and other properties. BOM management helps you document, track, and review every component in your product, prepare a product for manufacturing, and more. PLM provides a centralised system to ensure BOM data is structured and accurate.

ERP
Enterprise Resource Planning (ERP), or business systems, are software that manages a company's needs for management and administration. Includes applications for accounting, orders, inventory, invoicing, personnel administration, customer management and production planning.

LEAN
LEAN is a production philosophy that aims to remove everything in a production process that does not create value for the customer.

PDM
Product Data Management (PDM) is a system for managing product descriptive information (mainly 3D models and drawings). It helps the company to ensure that the information is complete, correct and up to date, eliminating the need to do the same job twice by reusing existing information where possible. It keeps track of changes and revisions and ensures that changes take effect in all places where the information is repeated.

PLM
Product Lifecycle Management (PLM) is the process of managing the entire lifecycle of a product from its inception through product development, manufacturing, use, service, maintenance, product innovation/enhancements and on to discontinuation of the product, including recycling when needed.

Internet of Things (IoT)
Products connected to the Internet via sensors collect and transmit data that is used for measurements, diagnosis and automatic control. Products and machines have become more intelligent and can be controlled remotely by humans or other machines.

ATO

An Assembly-to-Order (ATO) approach responds to customer requests; products are assembled from components when a customer order is received. The key components in the assembly or finishing process are planned and stocked in anticipation of a customer order. The order initiates the assembly of the customised product.

ETO

An Engineer-to-Order (ETO) approach is when customer specifications require unique engineering design, significant customisations, or newly-purchased materials. Each customer order results in a unique set of part numbers, bills of material, and routings.