

# PRODUCT LIFECYCLE MANAGEMENT

WHITE PAPER

Atos   
Origin



# Executive summary

Product Lifecycle Management (PLM) has evolved away from its roots as a set of engineering oriented tools into an enterprise-level solution that is at the heart of modern business management. Without effective PLM, developments such as contract manufacturing, contract design and many e-business initiatives would be impossible.

An enterprise-wide PLM solution consists of a number of system elements that combine together to help an enterprise:

- > deal with increasing product complexity and customisation
- > innovate more quickly, improve quality and lower costs
- > provide better service to customers
- > work in virtual teams and provide 24x7 global support
- > exploit intellectual assets more effectively
- > insulate itself against the effects of frequent structural changes ranging from full mergers to temporary partnerships

The business benefits of PLM are clear, but many companies struggle to implement PLM and to achieve the highest possible return on their investment. Projects are often held back by:

- > a failure to create an enterprise-wide product data blueprint which provides a focus to draw the various elements of PLM together
- > too much focus on providing tools to create data rather than access data – which is all the majority of users need to benefit from PLM
- > overemphasis on standardisation and the search for a single solution, which leaves no-one satisfied and is inflexible in the face of mergers or trends such as co-development with suppliers

Atos Origin offers a comprehensive yet pragmatic approach to introducing PLM that addresses these issues and provides business benefits quickly. Our solutions are based around a federated architecture with PLM functionality delivered to users through a web-based product data portal. Our MAPLE methodology - which spans the whole design-build-operate lifecycle - provides a consistent approach, together with common drivers, tools and techniques, to help you deliver complex PLM programmes in well-defined phases. The methodology allows you to develop a PLM solution that addresses your company's needs and with the scope and timing of each phase tailored to suit your business. Atos Origin's proven approach to PLM is already delivering benefits for Philips Semiconductors, Philips Lighting, Philips Consumer Electronics, Philips Medical Systems, Siemens, ITT, Lucent, Nike, Airbus, and Lockheed Martin

## What is PLM?

The role of Product Lifecycle Management (PLM) is changing. From a set of engineering oriented tools, PLM has evolved into an enterprise-level solution that is at the heart of modern business management. The introduction of contract manufacturing, contract design and many e-business initiatives would be impossible without proper PLM.



Our proven approach to PLM is already providing benefits in a wide range of industrial environments, including design-to-order, build-to-order and mass production and across industrial segments as varied as mechanics, electronics and software.

# Brief history of PLM

PLM has its roots in the design and engineering function. The 1970s saw the introduction of systems to help manage the vast amount of CAD data that was being created to define products. The focus was on file management and version control, shown by the interchangeable use of terms such as engineering data management (EDM) and product data management (PDM) for these systems.

Wider acceptance of PDM tools was held back in the 1980s by the reluctance of many engineers to get to grips with unfriendly tools. This decade saw better user interfaces, more direct links into CAD systems – the users' primary tool – and better handling of product structures.

By the early 1990s, PDM had a strong foothold within the engineering function but other parts of the business were now waking up to the benefits of having access to the product data management solutions that were available. This broader community again demanded improvements, such as better user interfaces, support for platforms other than Unix (dominant in engineering applications) and the introduction of visualisation software.

By the late 1990s and into the current decade, the focus was on even closer links with multiple ERP systems, on collaboration with partners and on e-business. Vendors have moved from selling packaged, standalone applications to offering systems integration services to pull together a number of complementary solutions. PDM has become PLM, providing decision support at an enterprise level as well as continuing to handle traditional PDM functions. The issues for PLM vendors are now whether, with many different kinds of users and with greater cross-company collaboration, everyone should have the same PDM system and how they can exploit the power of the Internet and the browser web interface.

An enterprise-wide PLM solution can help companies respond to a range of challenges which are placing increasing strain on their capacity to meet customers' needs.

A PLM solution encompasses five different applications:

- > **Customer needs management** is concerned with capturing, analysing and dynamically feeding back information from the market, customers and competitors into the product design and development process.
- > **Product Portfolio Management** provides decision support tools for the management of existing products as well as new product launches and basic research. As well as providing project management to co-ordinate day-to-day tasks, it encompasses program management for rolling multiple projects up into high-level work streams and portfolio management to allow the risk and return tradeoffs for the entire product family to be understood.
- > **Collaborative Product Design** tools allow engineers, designers and others to work together on creating products. It includes collaborative workspaces and visualisation tools, redline and mark-up and the ability to share data from CAD applications.

- > **Product Data Management** provides the central data repository to support product definition, whether at the design, manufacturing or as-sold stage.
- > **Strategic Material Sourcing** allows engineers to select standard components from preferred suppliers and to create, distribute and manage requests for quotation for long-lead custom items.

These five applications are delivered by a number of system elements:

- > **Document vaulting**, providing storage of data, indexing and query facilities, as well as security controls to ensure appropriate access to data
- > **Viewing and mark-up tools** for reviewing and annotating documents, 2D drawings and 3D models
- > **Configuration management tools** which allow a product to be guided through its complete lifecycle by providing technical and administrative control
- > **Collaboration tools** to support online teamwork

## PLM System Elements



- > **Classification and re-use tools** to allow existing designs or elements of designs to be reused in new products
- > **Workflow management** to control the design process and manage releases and changes to designs
- > **Integration tools** to “glue” together the various tools, processes and data

### What can PLM do for your business?

An enterprise-wide PLM solution can help companies respond to a range of challenges which are placing increasing strain on their capacity to meet customers needs.

PLM can help you deal with **increasing product complexity and customisation**, by managing core product architectures and giving easy access to standard designs, and by providing strong support for configuration management. PLM can help you handle pressure within the supply chain to **innovate more quickly, improve quality and lower costs**, by:

- > allowing re-use of existing designs and encouraging excellence in design procedures to ensure products are designed “first time right”;
- > supporting more effective collaboration between different parts of the business,

- allowing better planning in supply chain or permitting design, manufacturing or support functions to be relocated or outsourced without affecting performance;
- > enabling strategic sourcing and opportunities to gain economies of scale through consolidation; and
- > removing dead time in processes such as costing products or conducting engineering reviews.

PLM can help you respond to demands from customers for **better service**, by making all product data and supporting documentation available electronically for manufacturing and order fulfilment as well as to customers. PLM also allows you to react more quickly to sales enquiries and work in a more collaborative fashion with customers to develop custom products. PLM can address the challenges of globalisation such as the move to **virtual teams** and increasing demand for **24x7 support** through the use of online collaboration tools and workflow to control processes and by providing simple web-based access for local support teams – or even customers themselves - into global knowledge bases.

PLM can help you **exploit intellectual assets** more effectively, by making it easy to re-use previous designs, helping you to

avoid “re-inventing the wheel” and making it easier to provide product line extensions.

PLM can help insulate you against the effects of frequent **structural changes** - ranging from mergers, acquisitions and divestments through to temporary partnerships and collaboration with contract manufacturers and suppliers – by allowing you to share critical information in a controlled and secure fashion and by giving you the tools to work effectively in virtual teams.

Industry-wide figures suggest that companies employing PLM can expect to see revenues grow by five to ten per cent, while net profits can increase anywhere between ten and 100 per cent.

### Issues in implementing PLM

Enterprise-wide PLM projects are also often held back by an emphasis on providing a small number of people with tools to create data, when most potential users within the business – typically at least 80 per cent – only need read access to product data. This means that the business will not be able to reap the benefits of having product data available across the enterprise as quickly as it should. Yet this issue can be addressed in a relatively simple fashion through a portal: a web-browser interface to middleware, which delivers data from various back end systems. This is the core of Atos Origin's approach, which will be described in more detail in the next section.

Many enterprise-wide PLM projects also get bogged down in the issue of standardisation and trying to create a single PLM solution to meet the whole company's needs. This often results in a long battle over the selection process and low user acceptance during rollout, because some people are not getting their preferred solution – and the single solution is easily torpedoed by a merger or acquisition or some form of partnering or joint venture. Modern PLM solutions are designed to provide good support for federated architectures of best-of-breed products while ensuring enterprise-level

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needs are met. By focusing on the interfaces, each part of the business can get its preferred solution yet link into the whole, allowing solutions to be implemented more quickly and more successfully. The portal approach mentioned earlier sits extremely well with this federated architecture.

As already noted, PLM projects can also be particularly sensitive to the effect of structural changes in the organisation from mergers and acquisitions, divestments and joint ventures. If PLM solutions are designed with viewing tools that can show integrated data from many different applications, the immediate pain of sharing information with new associates is reduced significantly.

The ability to view data from partners easily will also help companies cope with the trend towards creating virtual enterprises involving multiple partners for contract manufacturing and co-development with suppliers. However, companies will also find such ventures clash with carefully developed internal part numbering systems which communicate a great deal of specific information internally but which clash with partners' needs for more generic ways of identifying components when working with many partners. PLM solutions need to be flexible enough

about how they deal with part identification that manufacturers don't have waste time trying to harmonise data when embarking on joint ventures.

Of course, as with any major project, PLM initiatives require commitment from senior management and a carefully devised change management programme to ensure staff are receptive to new systems.

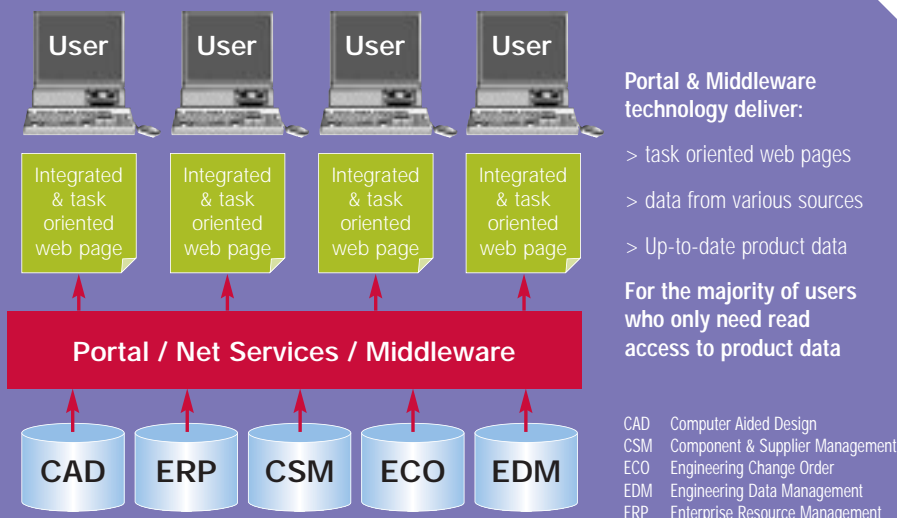
There are, of course, a number of technical issues that pose difficult questions during PLM projects. These include:

- > integration with other systems
- > migration from legacy systems
- > cleansing data before it is loaded and
- > ensuring data quality is maintained providing strong version control and a benefits-focused release schedule for PLM implementations
- > ensuring appropriate security measures and access controls are in place to protect confidential and proprietary data.

### Atos Origin's approach to introducing PLM

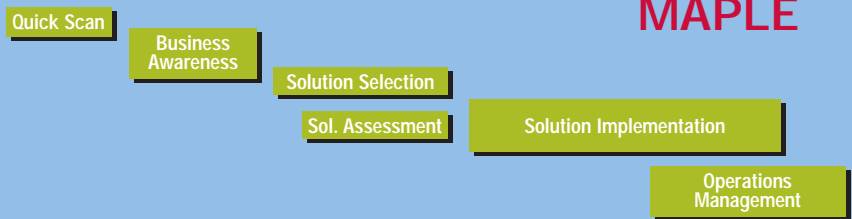
Atos Origin takes a pragmatic approach to introducing PLM. Our MAPLE methodology provides a consistent approach together with common drivers, tools and techniques and an underlying reference point for your complete solution - but focuses on setting well-defined ambition levels and providing clearly identified deliverables and achievements through effective release management. The methodology is not prescriptive, allowing you to develop a PLM solution that addresses your company's needs and with the scope and timing of each phase tailored to suit your business. At the same time, our MAPLE methodology gives you a powerful and easy interface to global best practices and experience. Our solutions are based around a federated architecture with PLM functionality delivered to users through a web-based product data portal. Data and functions from multiple systems are channelled through middleware to give users a web-based interface into the up-to-date product data and tasks they need to do their

### Data Distribution needs middleware



# Service Suite: Product Lifecycle Management (PLM)

Service Products (what):



Service Elements & Methodologies (how):



Our proven approach to PLM is already providing benefits in a wide range of industrial environments, including design-to-order, build-to-order and mass production and across industrial segments as varied as mechanics, electronics and software. We work with brand name manufacturers and contract manufacturers and with OEMs and OESs and our clients include Philips Semiconductors, Philips Lighting, Philips Consumer Electronics, Philips Medical Systems, Siemens, ITT, Lucent, Nike, Airbus, and Lockheed Martin.

For more information, visit the company's web site at [www.atosorigin.com](http://www.atosorigin.com), or contact:

jobs. This is the only approach to PLM which tackles the issues that can bog down PLM initiatives, delivers business benefits quickly and provides a technical solution which is flexible enough to incorporate new needs and new applications, yet can be maintained easily. In addition, the Product Data Portal provides a way to draw together your PLM infrastructure and the standard business applications that both feed data into the PLM process and receive data back, bridging the gap that often develops between them in less structured PLM projects.

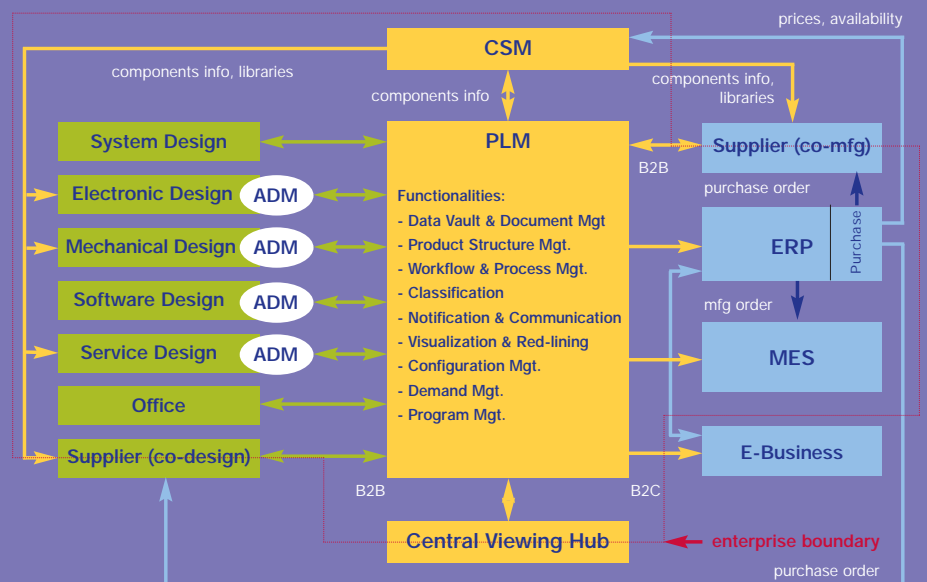
with Windchill, SAP with PLM and EDS with TeamCenter. This is in addition to our strong links with ERP vendors such as SAP, Oracle, Microsoft Business Solutions (Axapta) and QAD, supply chain specialists i2 and SAP, and our expertise with enterprise application integration tools such as Tibco, Microsoft's .NET, SAP's Netweaver, and Web Methods. By bringing these tools together with our proven knowledge of PLM and of the design-build-operate project lifecycle, Atos Origin can provide a one-stop shop for companies looking for a PLM solution.

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The MAPLE methodology spans the whole development lifecycle, from initial scoping and awareness of the solution potential, through solution assessment and implementation onto to ongoing operation and support. Each stage of the design-build-operate process consists of a number of separate services, which can be packaged together to support your needs. However, we pay particular attention to making sure foundation elements – such as an enterprise-wide data blueprint - are in place, as well as providing a complete solution covering software, hardware, consulting and organisational issues. Naturally, we have strategic alliances with major PLM package vendors such as MatrixOne with its eMatrix product, PTC

## PLM Blueprint (Business Architecture)



ADM = Application Data Management CSM = Component & Supplier Management MES = Manufacturing Execution System

