

Product Lifecycle Management (PLM)



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Product Lifecycle Management (PLM)

Purpose

Product Lifecycle Management is a collection of solutions with which you digitally create, maintain and make available product information in the whole company and for the entire life cycle of a product.

As an ambitious company, you do not want to just keep up with the international competition, you want to increase your competitiveness in the field of new information technology. Only a flexible company that optimizes daily business in all life cycle phases of a product can achieve a competitive advantage. Product and process quality as well as knowledge management are essential factors for competitiveness in all these phases. Through the medium of the Internet, you optimize your business processes and business models for industrial relations.

By means of the integrated applications: *SAP Customer Relationship Management*, *SAP Supply Chain Management* and *Business Information Warehouse*, mySAP.com opens up the Internet as a working area for you.

PLM offers you the functions with which you can achieve the following aims:

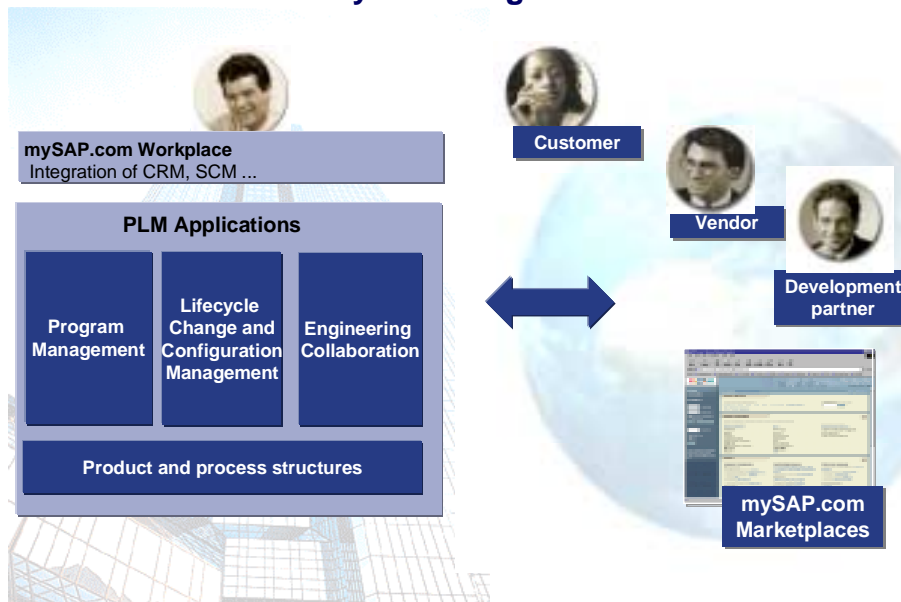
- The Workplace is an open portal in the World Wide Web and offers you access to all information and applications that you require to work effectively with all internal and external business partners.
- PLM links the management of product and process data with other Internet applications such as *Program Management*, *Change and Configuration Management* and *Engineering Collaboration*. By using these applications, you improve coordination and cooperation during the execution of your business processes.
- You do not just make your product knowledge (for example, document, product structure or project information) available to colleagues in your company, using the Internet, your external business partners are also brought directly into the communication chain.

Features

The following graphic shows the applications that PLM enables you to use.

Product Lifecycle Management (PLM)

Product Lifecycle Management from SAP



The numerous functions are available from the following applications:

Application	Task
Product and process structures [Page 7]	With these functions, you maintain product data (such as material BOMs and other basic data like documents and materials for example) as well as process data (such as task lists or production orders)
Program management [Page 10]	With the SAP project system functions, you plan your projects. For example, you maintain the Project Builder, the project structures and the project data, then you carry out cost accounting and budget planning.
Lifecycle Change and Configuration Management [Page 12]	With the functions for Engineering Change Management, Order Change Management, Configuration Management and Claim Management, you organize the development and change processes in all life cycle phases
Engineering Collaboration [Page 14]	This function makes communicating with external business partners over the internet easier.

Product and Process Structures

Purpose

The management of product and process data refines product knowledge for all business processes and, in so doing, increases productivity in all life cycle phases of a product.

Changes are permanently carried out in the development phases. Ever more frequently the production of changes is also affected since customer requirements often have to be considered at the last minute.

PLM offers you a standard, universal data model for all product and process data. Product information from all life cycle phases, from product development, through production right up to service, is available centrally to management, to the users involved and to partners. The development of a product occurs across all areas. Even in the early design phase knowledge about the behavior of individual planning objects or about the schedule of later production and service processes has to be taken into consideration. Consequently, communication between all the partners involved is of particular importance.

Features

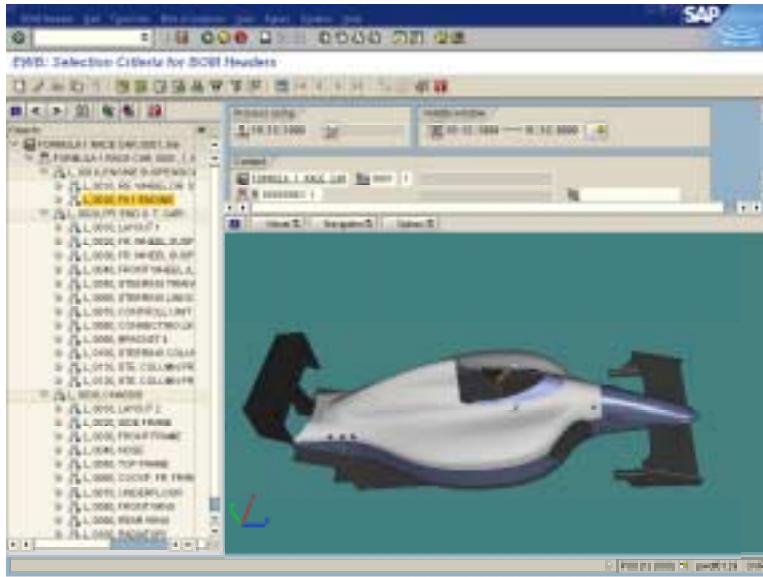
PLM offers you the functions with which you can achieve the following aims:

- In connection with project management, you can create and manage project-orientated documents for all life cycle phases and also efficiently exchange the product information contained therein with all partners of a business process.
Throughout the entire development phase of a product, the product structure is enriched and completed with information. The information that describes products is, for example, stored in documents, in material masters in the Product Variant Structure (PVS) or in the traditional BOM. Task lists and production orders transfer information about production quantities, times, schedules, resources or capacities, to the production process
- The design and change process that takes place in a CAD system is totally integrated in the related business processes by means of the CAD interface. If the engineer, for example, wants to query the delivery time of a complement part for a material exchange, he must not leave his usual engineering environment but rather, check this data from his CAD system. From the design drawings that an engineer creates in the CAD system, the BOMs are created and the documents generated in the SAP system.
- Digital Mock-Up Viewing enables all interested areas throughout the company to visualize the new or changed product already in the development phase as a 3D model, at a point in time when a prototype is still not in existence. Being able to see a product before it is produced allows you to expand on the scope of employees. Redlining functions supports the digital processing and change process of original files. You make the remarks and comments that you create for the original files available to all partners of the business process.
- You can get the desired product data system-wide with the help of the product structure browser. The information is presented in an overview form and then with the data that is important for the current business process, for example, product data for a specific date or for a serial number within a life cycle phase.
- The Engineering Workbench exists for data maintenance. This is an extensive tool for the integrated processing of BOM items, operations, PRTs and additional product and process data. In order to restrict the data for the current task, you define specific working areas, such as for engineering/design or production.

Product and Process Structures

The following graphic shows an assembly that is processed in the Engineering Workbench and is displayed with the integrated viewer.

Engineering Workbench



Documentation

Documentation on these functions can be found in the SAP library in the following documents:

Document	In the SAP library, call up:
Material master	<i>Logistics → Logistics - general (LO) → Logistics basic data (LO-MD) → Material master</i>
Document management	<i>Cross-application components → Document management (CA - DMS)</i>
Classification system	<i>Cross-application components → Classification system (CA - CL)</i>
CAD interface	<i>Cross-application components → Classification system (CA - CL) → CAD interface</i>
Bills of material	<i>Logistics → Production planning and control → Basic data (PP-BD) → BOMs (PP-BD-BOM)</i>
Order BOMs	<i>Logistics → Production planning and control → Basic data (PP-BD) → Order BOMs</i>
Routings	<i>Logistics → Production planning and control → Basic data (PP-BD) → Routings</i>
Engineering Workbench	<i>Logistics → Production planning and control → Basic data (PP-BD) → Engineering Workbench</i>

Product and Process Structures

Production orders	<i>Logistics →Production planning and control →Production planning (PP-MP)</i>
Engineering Change Management	<i>Logistics →Logistics- general (LO) →Production planning (PP-MP) →Engineering Change Management (LO-ECH)</i>
Managing serial numbers	<i>Logistics →Logistics - general (LO) →Logistics basic data (LO-MD) →Managing serial numbers (LO-MD-SN)</i>

Program Management

Purpose

On the one hand, the market demands the development and production of new products in ever shorter times. On the other hand, companies are forced to reduce the costs for the development of new products by the growing pressure of competition. Therefore, a process for research and development projects that is both chronologically and organizationally perfect gains more importance.

The project system optimizes the business processes from project planning through to carrying out the project and enables a project progress analysis. You can plan, carry out and control projects in a target-orientated and a business fashion.

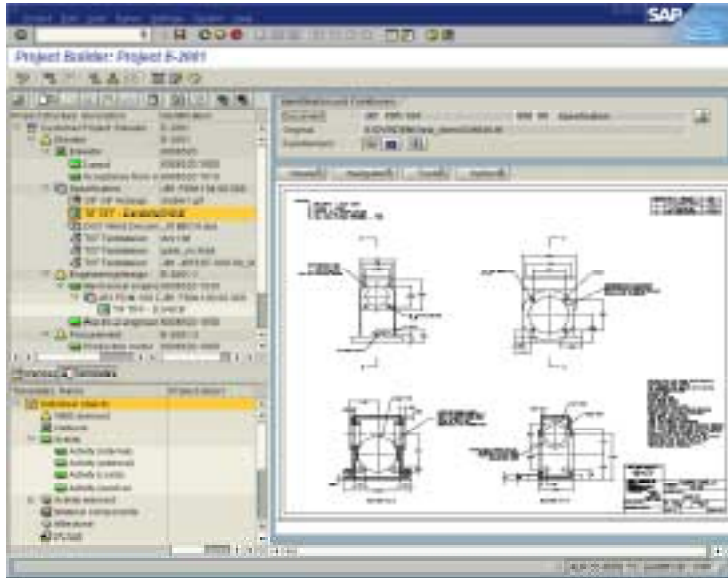
Features

PLM offers you the functions with which you can achieve the following aims:

- The project system is coordinated with the accounting, sales and distribution, materials management, production planning and control as well as the plant maintenance applications.
- With the project system, you can precisely define the aims of the project and structure the project activities to be carried out exactly.
For example, you define the following operative structures:
- Project definition, which describes the plans that are to be carried out in the project
- Work breakdown structure (WBS), with which you hierarchically maintain the project activities to be fulfilled. You enter the work effort, time required and the scope of the cost for the project and assign the budget.
- The Project Builder is the central tool for the project manager. It is used to create and control the project. Graphical viewers give a quick overview of the project status. For example, you can graphically display the project plans or you can also display the original files from the documents and if necessary create comments and notes (Redlining functions).
- The project system also has special functions with which you react to deviations from the project plan that, for example, occurred due to delivery problems, price fluctuations or unforeseeable capacity constraints. You organize these processes with Claim Management.

The following graphic shows a project that is processed in the Project Builder.

Project Builder



Documentation

Complete documentation on the project system can be found in the SAP library in the following document:

Document	In the SAP library, call up:
Project system	<i>Logistics</i> →Project System

Lifecycle Change and Configuration Management

Purpose

Lifecycle Change and Configuration Management are the foundation for a high level of product and process development and mirror themselves against the quality of the product and the economicalness of the production process.

Lifecycle Change Management supports all central logistics processes, from the development process through production right up to the maintenance of the delivered product. At the same time reduced development processes place high demands on the change processes that are implemented in the early development and design process as well as in the production process. The SAP system makes the smooth transfer of design changes into the operative areas of the logistics chain possible.

Features

PLM offers you the functions with which you can achieve the following aims:

- You can specially define these phases for your product or project as *engineered*, *as planned*, *as built*, for example.
All configurations of a product or project are cumulated from all life cycle phases into a configuration definition. Assigned configuration folders contain the objects that consistently describe the status of the product or project in a specific life cycle phase, for example, materials with reference to a serial number, documents or project information.
In this way, the wealth of information that describes the product or project is restricted to the necessary quantity for each life cycle phase.
- You can keep essential changes to product data in Baselines for a clearly defined length of time. Consequently, this product configuration can be reproduced at any time.
- Configurations from produced assemblies (As-Built configurations) can be generated and documented from existing production data. For example, you can assign a serialized component to a serialized assembly by confirming a production order. At the click of a button, the system generates an As-Built configuration from this data, which you can then transfer to the object list of a configuration folder.

Various areas of the company that are more deeply involved in individual phases of the product lifecycle, work with selected product data instead of with the all the data.

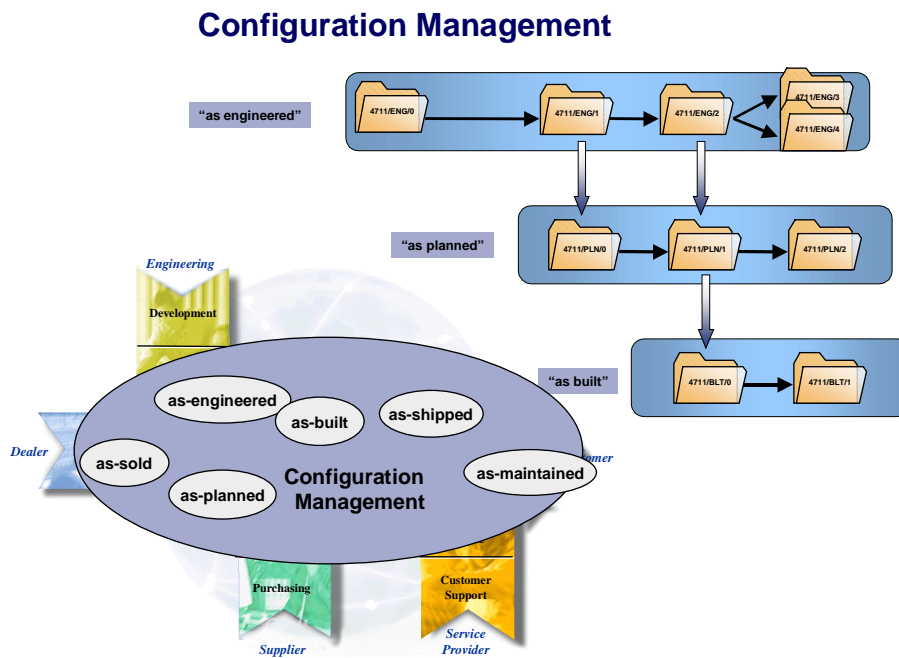
- The product structure browser gives you an overview of all configuration folders and Baselines through all life cycle phases of a product or project. Using a filter, you can restrict the quantity of data to be evaluated for the current business process.
- The overview structure of the display of predecessor/successor relationships between the configuration folders and the generated Baselines guarantees a complete documentation of the development phases.
- Additional functions make the reporting of product data easier. You can compare product structures according to different principal points, for example, determine extra or changed objects.
- You can forward the related product information to colleagues or external partners via the internet.

Lifecycle Change and Configuration Management

- Should errors occur by a project deviation, for example, with regard to dates or to planned costs, you can keep the problem under control with Claim Management. The naming of a person responsible and the initiation of follow-up activities are some of the activities that can help you to solve problems

The use of Lifecycle Change and Configuration Management minimizes the extent of development costs and supports the inter-disciplinary collaboration in the development process as well as the correction of errors and omissions.

The following graphic shows the processing process of product and project data in various phases of a life cycle.



Documentation

Documentation on these functions can be found in the SAP library in the following documents:

Document	In the SAP library, call up:
Engineering Change Management	Logistics →Logistics- general (LO) →Production planning (PP-MP) →Engineering Change Management (LO-ECH)
Configuration Management	Logistics →Project System →Collaborative Engineering & Project Management (CEP) →Folder creation in Configuration Management

Engineering Collaboration

Engineering Collaboration

Purpose

Engineering Collaboration makes direct integration of external and internal partners into a development process possible.

For product development numerous inter-disciplinary tasks have to be managed. For example, these include the determination of product requirements, selection of suitable development technologies or the coordination of development activities based on the division of labor. Very important, is that the employees of a requested organizational unit or external partners have the relevant knowledge and ability in order to fulfill the necessary tasks.

Since the procurement of information is very time consuming, it is absolutely essential to communicate directly and informally with all those involved, whether they be employees, customers, suppliers or development partners. All partners require access to project information, documents and product data of all types and must be in the position to make comments and changes.

Features

mySAP.com enables project work to be carried out efficiently. With the workplace, you have a business orientated company portal, which, via an individual working environment on a web browser basis, provides the users with convenient access to everything that they require to complete their tasks.

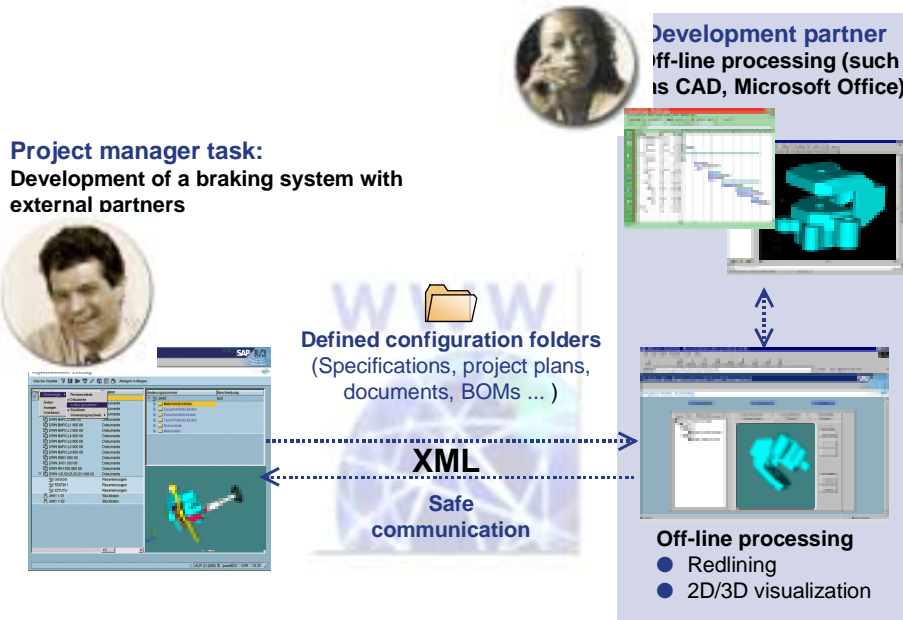
Partners that want to work with the business scenario *Collaborative Engineering* only need a web browser. This gives you access to product and project data such as project plans, documents and product structures. The processing of project and product data can take place as a competition scenario or as a cooperation scenario.

- Typical of a competition scenario is that the participants have no insight into the knowledge or processing status of other participants throughout the entire process. Within the bounds of the description, for example, each participant adapts the same processing objects and competes with the other participants for a contract.
- In a cooperation scenario, all participants transfer their knowledge with each other and are automatically informed of the changes carried out.

Schedule of a Business Process

The following graphic illustrates a business process in which external partners are integrated into a development process. The following description of this business process illustrates how effectively the information and knowledge transfer takes place.

Engineering Collaboration



Cumulation of Data in the SAP System

The project manager (initiator) cumulates the project and product structures, relevant to the current business process, in a configuration folder.

- Materials, documents, BOMs and WBS elements are some of the objects, from the SAP System, that are important for a business process. For this activity, the initiator uses Configuration Management.
- As soon as the objects have been cumulated and the processing status of other projects involved are made available, the project leader generates a copy from the processing status of the objects concerned. This reproducible processing basis for project and product data is known as a Baseline.
- The planned project and product data is published on the Internet by the initiator of a project. From this point on, the project and product data from the SAP System can be found on the Internet server ready for further processing. The project partner (participant) is informed via e-mail. At the same time, they get the link for synchronous access to the Internet server.

Processing Data with the Web Browser

From the available information, each participant selects the data for which they responsible and saves it to their local hard drive.

- With the frontend applications (such as CAD-System, MS Office) you can now start the processing offline. In this process, documents as well as assigned original files are often processed. For example, an engineer visualizes a CAD drawing and creates markups for his comments and notes.
- Using a document search on the web, all participants in a project can expand the project or product information. You use known data that you either take directly from the document info

Engineering Collaboration

record or that comes from the environment of the document. The full text search over the content of the original files reduces the search time considerably.

Transfer of Data to the SAP System

If the processing is completed, the project participants report back to the SAP System Internet server and move their changed data into the SAP System.

- The original configuration folder is not changed. For the changed data, the system automatically generates a successor folder and then at any time, the initiator of the project can get an overview of the changes.
- Before changed project and product data can actually be transferred into the SAP System, the project leader has to check the data again. For example, a comparison of the changed data in a successor folder with the data in the original configuration folder produces a list of the new or changed objects. From the overview, the objects that are to be transferred into the SAP System, are selected, checked and then transferred into the original configuration folder.
A log provides you with information about the data transfer and if necessary you can respond to errors.

Monitoring functions guarantee permanent project control for the entire duration of the project. At any time, the initiator can get an overview of the current processing status of their project and product data. Without wasting any time, the initiator can send the successor folders with the changed data already received to a review.

Documentation

Documentation on these functions can be found in the SAP library in the following documents:

Document	In the SAP library, call up:
Collaborative Engineering	<i>Logistics →Project System →Collaborative Engineering & Project Management (CEP)</i>
Configuration Management	<i>Logistics →Project System →Collaborative Engineering & Project Management (CEP) →Folder creation in Configuration Management</i>