



PLM and ERP Integration: Critical for Overall Success

Contents

• Summary	03
• Introduction	04
• Problem Statement	05
• Solution	07
• Conclusion	09
• About us	10



Summary

The benefits of Product Lifecycle Management (PLM) and Enterprise Resource Management (ERP) are well known. These systems help businesses organize vital information, operate more efficiently, and improve their bottom line. However, they can be made even more useful by having them fully integrated.

While PLM completely concentrates on the product concept, design, and defining quality parameters, ERP facilitates the operations that will ensure the production aspects including planning, procurement, production, sales, service, etc. If PLM and ERP are not in sync, then there is a chance of rework, missed updates, and products that do not meet the quality criteria. Let us explore the topic in depth to determine how PLM and ERP work together.

➤ Introduction

Why do you need to integrate PLM with ERP?

Before we delve deeper into the need for integration between the two systems, let us take a look at the requirements that each system fulfills.

Product Lifecycle Management: PLM is a solution that focuses on product development. Which means that it starts from design (CAD or some other software) to detailing the often complex multi-level bill of materials including specifications, drawings, and routings for production. PLM works on the development and design of a product.

Enterprise Resource Planning: ERP is a business solution that centers around the various aspects of an organization. The software provides links between finance, sales, production, logistics, customer service, etc. In a manufacturing setup, ERP focuses on the execution of many processes during the different lifecycle stages of the product.

When you go through the definitions of PLM and ERP, you will realize how important it is to integrate both the systems.

Given below are some of the main reasons to integrate PLM and ERP:

- The investment required for purchasing and implementing a PLM and ERP is huge and they both are vital to the proper running of a company. It only makes sense to maximize the return on your investment by integrating PLM with ERP to get the best results possible from both of these resources and run your operations successfully.
- The product lifecycle deals with the development of the product, while the ERP centers around the resources required for the production of the product. The logical thing to do would be to use them in the sequence the information about the product lifecycle will be moving through the company.
- When the planning for the product is ready and primed to be produced, the PLM will have all the details about the product. This information can be transferred to ERP to let you manage the resources that would be part of the production. The integration of the PLM with the ERP would ensure that the data in both systems is the same and that any changes made are synchronized in real-time.

As per the report on [Beyond PLM](#), the PLM system originated in the 1980s in the Automotive Industry but is now used across a wide range of industries, but still mostly traditional manufacturing sectors. The usage of PLM is growing, with several reports predicting the market for the software reaching approximately \$65 billion to \$75 billion by 2022. Most PLM installations are specifically customized to suit particular companies, which probably accounts for the significant revenues.

➤ Problem Statement

In most companies, the investment is made on ERP to manage the business aspects. ERP can help manage purchase orders, shop floor processes, inventory, and finances. And when it comes to manufacturing, companies tend to invest in PLM, which can help the product concept and design optimization, managing engineering processes and control master data.

While both systems are highly effective on their own, there can be a disconnect in the process and data that can adversely affect business productivity if they are not integrated. The best way to ensure that your business gets the benefits of the synergy from PLM and ERP.

Here are some operational and strategic aspects that you need to look at to ensure that team, technology, and data is connected.

Here are some of the main pitfalls of not integrating ERP and PLM:

- Information saved in both locations needs to be synced using both manual and batch processes
- User productivity would be negatively affected when they are required to input data in multiple systems. The chances of errors also increase
- Decision-making would be adversely affected as the management would have to extract information from multiple sources to ensure that they are not missing out on anything
- The disconnect between engineers working in their PLM system and the operational teams operating from ERP. It would result in a situation where both teams are working in silos and there is no clear ownership
- One of the consequences of not integrating PLM with ERP is the manufacturing of products as per incorrect specifications.
- Consequently, there can be a domino effect on all aspects of the business
- Incomplete inventory or wrong components is another consequence as the BOM, product details, and specifications that are in BOM would not be available for those handling the materials
- Unclear procurement specifications would result in an incomplete material purchase and even in some instances, compromising the quality of the components
- Potential liability claims can also increase due to the delivery of products that are not as per the requested and accepted specifications



Background Information:

PLM is the solution that focuses on product development and comes under the purview of the technical team. ERP manages the resource planning for the entire organization, which by that definition includes production. The product lifecycle starts with the PLM and continues in ERP.

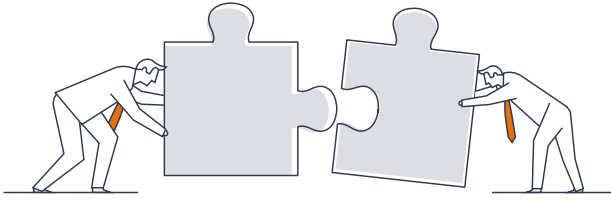
As you can see, ERP and PLM have specific roles to play but offer the best results when integrated and can provide a company with better control over their manufacturing.

The common mistake some companies may make is to assume that these solutions are interchangeable; they are not. The enterprise narrative from the ERP and the product story from PLM need to complement each other. One cannot do what the other can, and the best way forward is to integrate PLM with ERP.

In many companies, the PLM is used to organize and manage product data. The disconnect happens when the product design is developed, and operational teams work with information that is not up-to-date.

The resource planning for the production has to be done within the ERP to ensure that the entire process is smooth. However, a disconnect between PLM and ERP often does not account for the frequent changes and revisions that are made to products, and there is a dependence on other means to update the information.

➤ Solution



In the earlier section, we looked at what distinct roles PLM and ERP have to play in an organization and pitfalls of not integrating PLM with ERP.

In this section, we will look at the various departments and stakeholders that benefit from PLM integration:

Data ownership or the product information that is in PLM is the purview of the engineers who have been part of the product development. PLM integration will ensure that the product information will then move on to the right stakeholders in ERP so that they can take the next steps to bring the process to completion.

When new products are released, or there are revisions in the specifications of an existing product (which frequently happens due to research, competition, changing customer requirements, etc.) the changes made by the engineers will be updated to the operations team in real-time. There would be no dependence on the memories of the team or painstaking manual entry.

Product owners would always be updated on the specifications of their products and can make informed decisions on how product introduction or product changes will be affected in operations. Stakeholders—both internal and external can be updated on changes in product availability date.

Planning—can be notified about changes in real-time so they can adapt the changes in plan and guide the manufacturing teams when there are changes that affect existing manufacturing orders.

Procurement would be able to prudently purchase as they will be notified about changes in real-time, which means they can adapt their existing purchase orders (POs) or raise new ones at once.

Finance would be able to use the information to control the costs of the product based on the right product structure and specifications.

Manufacturing would have the right specifications, drawings, etc. to enable them to plan for the production based on the latest changes in the product plans. The latest updates in the product specifications would be available in real-time.

Customers will benefit from the right spare parts being made available to them as the after-sales service department has had updated information and time to stock the same based on the product versions and releases in ERP.

Quality and safety control would know about changes on time and prepare for the resources to be able to do quality testing on time. The safety controls would also be enabled accordingly.

➤ Conclusion

The right solution for [PLM integration](#) will help in the overall creation of a collaborative and productive working environment for the engineers and other teams in your manufacturing organization. You can leverage:

- **Controlled concurrent engineering**
- **Revision Management**
- **Consolidated view of operational information**
- **Control of Ownership**

Here are some steps to take to ensure that PLM integration is on track:

- **Be clear on your objective for [PLM integration](#):** While this step may almost seem redundant since you have already decided to go with the integration, you will still benefit from being clear of the objectives. Some of the main objectives would include centralized data accessibility, standardize BOM, real-time updates, and manage stakeholder requirements.
- **Review current processes:** An important step to ensure that the integration is on track and does not adversely affect the functioning of major departments.
- **Evaluate data:** There is bound to be a lot of data in your system, and you need to evaluate the usability of this data when you are integrating two major solutions to prioritize the data migration as well.
- **Get buy-in:** The teams that will be affected by this move, as well as the management, need to be convinced about the benefits of PLM integration. A good solution provider can help you in this aspect with their deep industry expertise, domain knowledge, and best practices.
- **Prepare and execute as per project plan:** Doing this will ensure that the integration project is on track as per the defined objectives and goal posts.

One of the ongoing processes is the training and educating of the key people involved in the process to ensure a smooth transition.

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