THE PLM IMPLEMENTATION METHODOLOGY GUIDE

Step by step do’s and don’ts for implementing PLM solutions

Product lifecycle management is about getting from start to finish in the most direct, effective manner possible. Manufacturers around the world have the same basic elements to manage. These have not changed much over time. However technology and process innovations have changed dramatically.

An effective PLM solution will accelerate speed, eliminate unnecessary costs and can improve innovation. It will provide reliable information to help management make superior decisions. Each and every productivity gain you can achieve will lower the costs or increase the productivity of work related to designing, sourcing and manufacturing products your markets. So the outcomes of success can be measured quite simply, how much does it increase your bottom line profits?

Let me begin with an example of how technology and process innovations have improved an activity we are all very familiar with, writing. Human Beings have been writing since nearly the beginning of time. Our desire to record and share our thoughts with others has remained constant but the technology for doing so has changed radically over the course of human history.

We started from the beginning using walls as paper and rocks and other hard implements as writing instruments, to paper and ink, to the printing press, to the type- writer, to email, instant messaging, blogs and twitters. The technology and process innovations around writing make it possible for human beings in 2009 to record and share our thoughts with others at such low costs and high speeds it would have been unimaginable to our ancestors even 50 years ago, let alone our ancestors who lived in caves.

PLM is ultimately about the search for and implementation of the best technologies and process innovations to do the work of designing, sourcing, and manufacturing products for your markets at the lowest costs and highest productivity per head count available at the time.

There are 2 critical factors that contribute to the successful outcome of any process improvement project: the targets you set and the tools you use. The target defines what you want to achieve, the goal or vision you have for a successful outcome. The tools are used to achieve the desired results defined by the target. In the case of PLM, the tools include resources, processes, applications, and data.

It’s time we remove the mystery about Product Lifecycle Management... PLM is often referred to as a computer application. As I just mentioned, however, the application is only one of the tools. PLM is simply business process optimization.

1. The business processes are the design, sourcing, and manufacturing of your products for your markets... Your company is doing each of these functions today and it has been doing them ever since the company has been in
business... We are not talking about introducing new processes. We’re talking about optimizing the processes you are currently doing...

2. **Optimization** comes from leveraging innovative thinking, best-practices, and state-of-the-art technologies to enable each person in the product lifecycle to work dramatically more effectively...

Where you set your process improvement target, or the x-factor, is the first important step in a successful PLM implementation.

Defining success for any process improvement projects includes describing three strategic objectives; the target or desired results, the timeline, and the budget.

![](image)

1. The target defines what you expect to achieve... An example would be, “we want our PLM processes to improve end-to-end speed by a factor of 2X with a 30% reduction in head count.” Wouldn’t that be a great way to start 2010?
2. The timeline may be to complete the project in 6 months beginning November 1, 2009.
3. The budget would define the upfront investment and the expected ROI including the expected time it will take to return the initial investment and anticipated long term returns of improved profitability.

With the target set and the objectives clearly defines, let’s shift attention to the first of the 4 tools, beginning with Resources.

To pull your team together, begin by deciding the optimal number of resources for your business size and determining what skills you want each to bring to the project. The project manager is the most critical and often comes from IT. Other IT resources such as business analysts and programmers should find a home on your team as well.

Business resources will represent the various functional areas, and key managers will act as stakeholders. Senior management should be identified for the steering committee to govern the project and decide any impasses that arise. Don’t forget about outside resources such as overseas offices, licensees, etc that can add value to your endeavors.

Specialists or consultants should be included to augment internal knowledge and bring a fresh approach to the project.

And as with any business improvement project, backfill might be necessary. Consider whether these resources are long or short term, or perhaps full time. While considering who your key project resources are, you must have a transition plan defined to outline:

- Whether resources will offload job responsibilities during the project or manage both simultaneously
- When and how will they transition back if they assume a full time role on the project
- whether stakeholders or managers be involved more >50% of the time
Also vet your vendor resources properly
• ask to meet the intended PM, solution architects and business analysts
• check their credentials to ensure they have the domain expertise to help you through your project

Once the optimal team is in place roles must be determined with responsibilities assigned to each member of the team.
• A knowledgeable PM is critical to keep the project on time and under budget
• Key business personnel should be assigned to represent each functional area processes and data AND be empowered to make decisions regarding business changes
• Determine who will document the processes and data for configuration, you or the vendor

PLM is a huge undertaking for a company and should not be considered lightly. Participation is critical, and resources should be augmented without resources if users cannot or are not encouraged contribute fully.

With the internal team selected and the responsibilities assigned, it’s time for a sober assessment and gap analysis of the skill sets, experience and time availability of the team members needed to ensure a successful project. If gaps exist, fill them at the start of the project so the necessary skills and expertise can positively influence and impact the project.

Look at your options for advisors because there are many types:
• Specialists in areas like CAD/images
• Systems integrators
• Management consultants
• Industry or technology analysts

Do listen to the advisors you engaged because you hired them for their expertise. And remember dependable knowledge comes from hindsight, and proper advisors bring a wealth of knowledge to the table.

Content providers are also actionable resources that contribute immense value.
1. Look at the type of data and breadth of data you will be housing in your application
2. Look for information that changes often that could be handled via content providers vs. employing someone in-house
3. Consider how the specific data affects the bottom line. For instance, trade compliance missteps could cost companies millions of dollars in penalties if not executed properly.
4. Look at the specialist areas such as patternmaking, import rulings, and color management

Case Study #1: Our first case study is of a European retailer that put together a most competent team to drive the implementation of an ERP and PLM simultaneously. Since the company was very traditional and insular, they required a lot of advice and guidance. Being a multi billion euro company, they had the financial resources to put together a larger team than most, but it was the dynamic of the team that made it special. Strict governance also made it easier to track milestones and keep responsibilities succinct. In the end, the team made the project successful.
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The team consisted of:

- 35 business resources from the business focused completely on the project. These folks represented each functional segment of the business for apparel and footwear in all product classifications. Six of these were BA’s from the business side empowered to drive vertical decision making.
- IT representatives including BA’s, a full time PM, a full time PMO and programming resources worked closely with the vendor for complete knowledge transfer
- Consultants, such as OPTIMYZE who could bridge the gap between processes and technology to clarify and drive best practices
- A project lead accessible at any time to discuss the various project elements and escalate issues

The second tool we’ll be discussing is Processes...Include the following in the process mapping exercises.

- Document all the current processes, not just the problematic ones. You need to understand how they all fit together and affect each other.
- Know who participates in the process and when.
- Be sure to analyze responsibilities as well to optimize skills sets because PLM is the golden opportunity to upgrade skills through training.
- Look at whether the processes are value-add to the end product, the basic tenet of lean product development. For instance, will the consumer pay for your designers to search for info 3 hrs a day?
- Understand communication and how it will change
- And finally, be prepared to study your data objectively to understand where your information is accurate and where it is not.

Once the “as-is” state has been documented, it’s time to invest some time and energy into researching the latest and greatest technology and process innovations that can help you do the work defined in your process map more effectively.

Take the time to open your mind and research best-practices, state-of-the-art technologies, outsourcing trends, training techniques and any other new innovations or ideas for working better, faster, and smarter. Tap into your network of colleagues, business partners, suppliers, service providers as they often provide a different perspective.

Finding one new idea that can produce systemic productivity gains can have dramatic results, so don’t skip or short change this critical step.

Parts of the research should include the following:
Write a good RFP!

- Make it concise and informative
- Make it work to your advantage by using the right language
- Create a realistic timeline
- Communicate!!!
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Evaluate efficiently
- Don’t waste your time or the vendors... Understand your needs before you get the vendor involved
- Be flexible and open to vendor suggestions
- Make the demonstrations meaningful
- Evaluate fairly and objectively
- Make decisions in a timely manner

Deployment options:
- Determine the deployment methodology early on in the project- this can effectively eliminate scope creep
- Conference Room Pilot vs. Pilot vs. Limited Production
- Rollout manageable functionality with a cadence of achievable milestone- it looks better to management and builds confidence in the user community
- Manage Change

With the process map and research phase complete, it’s time for another sober assessment and gap analysis... this time between the “as is” state of your current business processes and the “to be” state necessary to ensure the successful outcome.
- Identify redundancies, inefficiencies, manual processes, friction, holes or gaps, weaknesses in skill sets, etc.
- Build in the SOP’s that you intend to implement
- Define independent vs. dependent processes
- Understand how the flow of information through the lifecycle will change within your application
- Use the implementation as a driver for re-engineering calendars- long lead times, long development cycles, and extra sample iterations are costly and don’t necessarily add value to the product

Case Study #2

A second case study that comes to mind regarding PLM applications is a customer OPTIMYZE worked with recently to put together a multi-year strategic roadmap for the proliferation of PLM throughout their organization. The PLM initiative had to find a home amongst many other strategic initiatives in the organization.

After weeks of work and research, it was determined that 75% of the processes would remain status quo and that 10% of the processes would be eliminated; but 15% would need to change over a 3 phased project in order to align the data flow and communication efforts. Those 15% would be the most difficult because they involved changing from last minute data entry and emailing to evolving data over time for partner visibility. The ROI vs. the effort for this project was easily measured and justified.

The third tool necessary for successful PLM is Workflow Applications.

As we stated earlier, PLM is automated workflow. One common misconception is that a company must totally modify its business processes to fit the application it chooses. This would be the wrong approach. When we talk about process optimization, we strive for optimal results by preserving core processes and modifying ancillary or non-value add ones. Applications you select should conform to AND further optimize the business processes you have defined in your “to-be” state.
Over time applications change and the optimal solution for your business today may not be the best solution for your business in 4 or 5 years. Winning strategies are based on improving defined business processes to achieve company targets for improvement, using the best workflow and data management applications available at the time.

When looking for workflow applications, there are a few things you should consider. Tap into the collective intelligence of the industry to glean insight into the best applications. Best-in-class technologies today deploy secure, web-based solutions, with intuitive interfaces and straightforward integration capabilities. Many are now offered as a SaaS model- in essence, they become an on-going R&D team to create powerful best-practice functionality that can help you increase the productivity of your team.

Automated best practices

Examples of best practices are the following:

1. Implement strategically, not tactically - adding fields for each piece of information is not advantageous
2. Look for commonalities in data across departments and build capabilities to cross validate information
3. Line planning and financial planning seamlessly integrated to style records to reduce redundant data entry
4. The creation of orphan records for quick data entry of only necessary information
5. The use of sourcing and trade data to identify true costs early in the concepting process
6. A dynamic calendar because it changes all the time and therefore should not be a fixed entity

Leveraging state-of-the-art technology and industry-wide best practices, PLM applications empower your staff to apply their experience and professional judgment more effectively, and enables each person to work dramatically more efficiently. These productivity gains not only improve the bottom line, but create the time needed to analyze and work more strategically, in turn creating even more productivity gains.

The PLM application you select should become an enterprise-wide solution you depend on. You should require it to meet four basic standards:

1. rock solid reliability
2. client driven functionality
3. maximum scalability
4. state-of-the-art security

Processes are so difficult to modify because they are often so engrained in company culture. At the very minimum, a modern software will change your communication methods. If done properly, it will also reduce redundancies like multiple spreadsheets with the same information in different departments.

Case Study #3 OPTIMYZE worked with a leading sportswear brand here in the US that reduced workload from 37 excel spreadsheets to 5 reports by consolidating 90% of the information in a state-of-the-art web-based application. This same company required Designers to participate in the PLM environment to reduce human error, communication lags and excessive emails. Because of universal access, they ultimately cut 5 days out of concepting and 10 days out of product development.

Now that’s intelligent design!
Business processes today rely on more and more digital content and PLM processes are no exception... In PLM, data has often been considered only after an application is chosen – this is definitely a DON’T. Most companies are using only a fraction of the digital content available to improve their PLM processes. Integrating best-in-class digital content as soon as product development begins and using it throughout the life cycle of the product can be a key differentiator that gives your company a significant strategic advantage. Here’s a list of typical and not-so-typical PLM content that can give you a best-in-class content repository and raise your company above the competition...

**Typical**
- Images with version control
- Specifications
- Construction techniques
- Quality control audits
- Raw materials details and usage

**Atypical**
- Country HTS databases, including duty rate and Free Trade Agreements
- Last year’s transactional import data from CBP.
- Benchmarking trade data about your competitors US imports
- International supplier availability and supplier rating data
- Sanctioned party and counterfeiter screening data
- Freight lane shipping costs

I want to bring your attention to one set of data that is rarely considered within the PLM scope - trade and compliance information. When used properly, this data can provide visibility and control of international transactions, mitigate risk and costly penalties, elevate competitive advantage, increase supply chain speed, improve planning and reduce inventory requirements.

A state-of-the-art data solution provides universal access thru a unique and secure website accessible worldwide by any authorized user through the Internet. Your director or manager can have complete control of the functions any given user may perform, the data any given user may see, and the responsibilities any given user may have based on the unique role each person provides your company.

The solution should include a unique and secure database that becomes the system of record or the “single version of the truth” for comprehensive information about every item enterprise-wide. It should include powerful tools for document storage. Your database should be customizable to meet your company-specific data requirements.

- Universal access provides the foundation to assure data is entered into the system once and only once... and then it is used everywhere it’s needed throughout the lifecycle of the product.
Universal access provides the foundation to assign and control workflow to leverage division of labor in the most cost effective manner possible.

Universal access provides the foundation to create and enforce best practices in data management to maintain data integrity throughout the entire enterprise, all around the world.

Universal access provides the foundation to assure management has dependable data to enhance decision making... For example, wouldn’t you like to know if you were paying twice the duty as your competition for the same classification of imported product? This information is available today!

Best-in-class data management solutions can help you efficiently create and manage data for use by various business applications that require accurate and up-to-date product data. Few companies have one single computer system to manage their entire enterprise. Your data management solution should be designed as the enterprise-wide database providing accurate product data to every system that needs it.

It should be an independent system, disconnected from but integrated with every computer system throughout your enterprise that requires product data.

State-of-the-art data solutions have applications or apps that make it easy to upload data from any system, from any business unit around the world.

State-of-the-art data solutions provide mapping apps to integrate and normalize data from various sources into one company-wide standard.

State-of-the-art data solutions have apps for viewing, sorting, filtering and working with data that is easier to use than Excel.

State-of-the-art data solutions include apps to validate and update third party data such as country tariffs that change for different countries at different times around the world.

State-of-the-art data solutions include data integration apps to make it easy to tie into your PLM and other computer systems.

Case Study #4  

Our final case study is about using your own import trade data to measure risk and opportunity... so you can make better, more informed decisions.

A few years ago, I conducted a research project with five Fortune 500 companies, varied in size and industry. These companies provided their US import data to analyze for effectiveness regarding trade agreement management, sourcing opportunities, FTZ opportunities, and supply chain finance strategies.

The project revealed more than a half BILLION dollars in potential savings. I reviewed the results of each analysis with the teams from each company. One commented, “It’s been a struggle to get this kind of information to our executives.” Another said, “This is going to get a lot of people’s attention... from the CFO down.”

Two other companies agreed to participate in the project but failed to get their data to us on time. If their opportunities were the same as the average of the 5 participants, they would have more than $1 billion in potential savings. Until their executives demand analytics and performance metrics, they’ll continue forward completely unaware of the hidden costs and risks concealed in their import processes.

Potential Savings

| Import value * .92% |

Optimize

Global Data Mining
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How large is the opportunity for your company. One fast way to estimate is to multiply your total US import value times .92% and calculate the potential savings you would have if your opportunities were the same as the average of our 5 participants. The opportunity for fashion companies is ten times higher.

If you are not already doing so, you should demand the analytics and performance metrics you need to make the superior decisions required in today’s economic climate.

McKinsey & Co recently discovered a trend that I think you will find very interesting. They analyzed goods manufactured for the US market and mapped them to the optimal region to manufacture in 2003 and 2008. They compared China (as an off-shore example), Mexico (as a near-shore example) and the USA. They compare five types of good and you may be as surprised as I was at what they discovered.

- In ‘03 the preferred location to manufacture high end servers was China, five years later it was still China,
- In ‘03 the preferred location to manufacture Ethernet switches was China, five years later it was Mexico,
- In ‘03 the preferred location to manufacture mid-range servers was China, five years later it was Mexico,
- In ‘03 the preferred location to manufacture assembled TV’s was Mexico, five years later it was the USA,
- In ‘03 the preferred location to manufacture mid-range copiers was Mexico, five years later it was the USA.

Isn’t that amazing? In the midst of all this gloom and doom spewed by our media, there is a growing trend supporting manufacturing right here in America. When was the last time you did serious research on the optimal region in the world to manufacture your products?

This example highlights the fact that PLM is a continuous process improvement activity. The need to design, source and manufacture your product may remain constant, but technology and innovation will change how you leverage your PLM tools: resources, processes, applications and data.

Articles and References

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