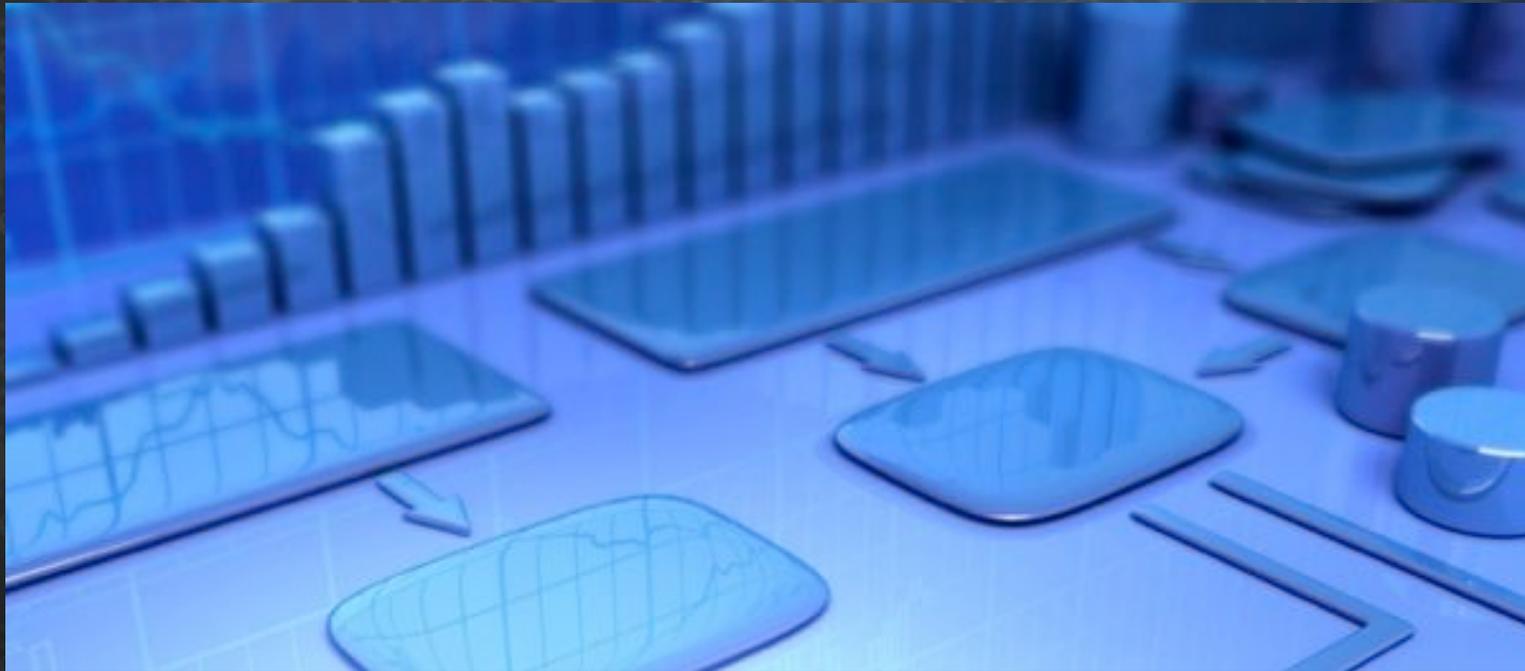


The Risks of Status Quo in Product Development

Running Lean, Responsive and Secure with PDM



Published by:



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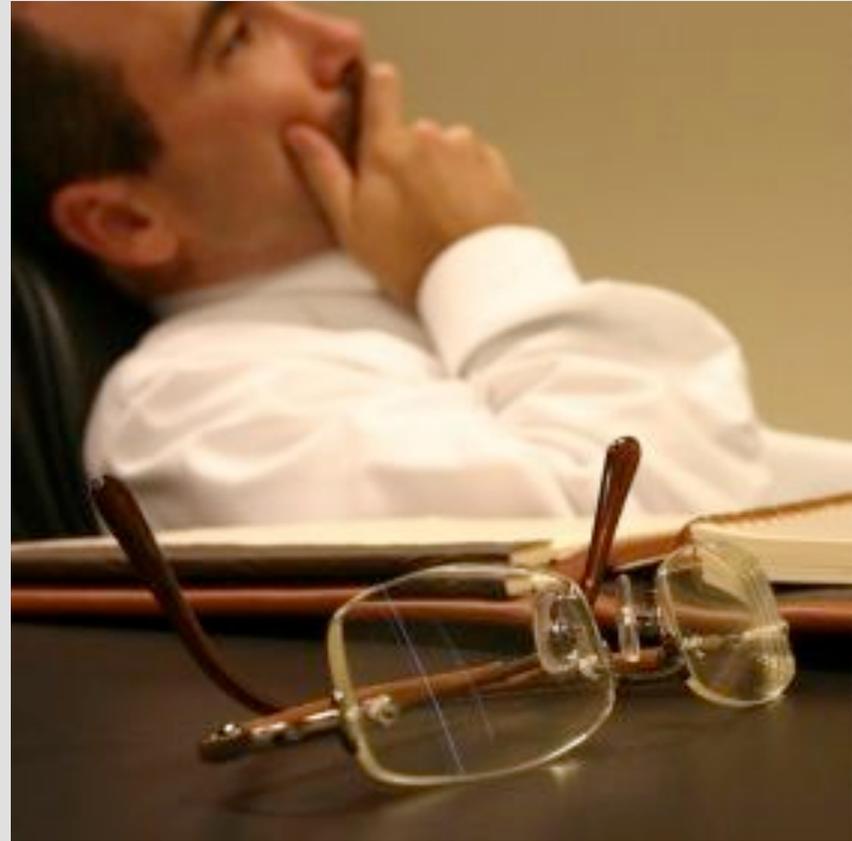
Some believe that product development improvements have little impact

It's a perception that's existed for quite some time. In years past, the worlds of engineering and operations have been somewhat disconnected. Engineering looked like a black box. Requirements went in. Designs came out. Few outside of engineering knew what happened in between. That made it extremely difficult to tune and tweak engineering activities to benefit company operations.

But times have changed. Today, engineering must balance the needs of manufacturing, procurement, customers and more, alongside those of the product's form, fit and function. Executive leadership is calling for more visibility into engineering progress than ever before. Processes that have traditionally been more art than science, such as conceptualization and portfolio management, are becoming more formalized.

Many companies deploy Product Lifecycle Management (PLM) and Product Data Management (PDM) systems to enable such changes. Using these solutions to manage data, automate processes, and streamline operations can have a significant impact on the company's bottom line. But it's not as easy as flipping a switch. Leaders need to target the outcomes they desire and use technology as an enabler.

That's the challenge that this eBook addresses. Here, you'll learn the facts about four major engineering product development challenges and the steps successful organizations take to address them. This eBook also contains insight into the technology capabilities that enable these steps as well as the risks of staying with the status quo.



"Product data management has enabled us to implement lean business processes by standardizing and increasing the quality of product attributes, reducing the number of hand-offs in our business processes, and decreasing response times by providing global access to information."

-- W.L. Gore & Associates, Inc.

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Today's Prominent Product Development Challenges

Here, we'll take a look at four of the most prominent product development challenges as well as the capabilities needed to address them.

Get It Right with Less Than Ever

Building prototypes and running multiple rounds of tests is costly. Successful organizations avoid such costs by adopting a ***get it right the first time*** approach, even when running lean on resources. The idea is to catch design errors before they ever get to prototyping or testing phases and therefore avoid the associated costs and delays. Even with fewer resources than before, this is the most cost effective way to avoid downstream issues. To support this approach, organizations need the ability to:

- ***Access, track and manage product designs, documents and information*** so engineers can perform design due diligence.
- ***Find and reuse existing product designs and information*** that have already been proven instead of creating new components or designs.
- ***Automate and enforce business processes***, eliminating non-value added and error-prone manual activities.

Managing and Mitigating Regulatory and Legal Risk

Managing regulatory compliance and mitigating legal risk is critical today. But unfortunately, it's also very difficult. The complexity of regulations and legal issues are only rising. Furthermore, the sheer volume of data needed to track and manage compliance is exploding. Too many organizations reactively scramble to keep pace. Other companies, however, take a proactive approach by managing compliance issues during the development process. To mitigate risks, organizations need the ability to:

- ***Attain, track, manage and document regulatory compliance*** to standards such as ISO 9000, FDA, Sarbanes Oxley and more.

" Our ability to restrict access to documents based on very granular permissions has helped the company comply with Federal security regulations from the Department of Transportation security measures and 9/11 requirements."

--Sunoco Logistics

Global Development across the Enterprise

Today, almost every organization employs a distributed product development process. Engineering, procurement, manufacturing or other departments might be spread across the globe. But global development is not all just about sharing with others inside your company. As participants in distributed processes, collaborators work at supplier, customer and partner sites. This requires steps to protect intellectual property (IP).

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The fact is IP-secure collaboration with others is critical to fast and error-free product development. It requires organizations be able to.

- ***Access, track and manage product designs, documents and information*** between distributed engineering teams, whether it's across town or across continents.
- ***Provide and control access to product designs, documents and information to others in the company*** ranging from marketing, procurement, manufacturing and more.
- ***Provide and control access to product designs, documents and information*** to those outside the company like suppliers, partners and customers.

Accelerating Responsiveness

In today's business world, responsiveness is highly rewarded. The circumstance might be a product inquiry, request for quote, reporting a problem, or field service call. Regardless, responsiveness is key. If you don't have access to information about the product, then the ability to respond quickly and accurately is debilitated.

Some product development leaders, however, have found the means to counter this challenge by developing the ability to.

- ***Access, track and manage product designs, documents and information*** on a 24/7 basis in order to be responsive.
- ***Automate and enforce business processes***, such as design release and change management, to shorten the time required to respond to customers in an accurate manner.

"By using product data management we are able to deliver documents from a controlled environment to customers anywhere in the world within minutes. This gives us a significant competitive advantage."

--Innovative Steam Technologies



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Organizational Capabilities Enabled by PDM

When it comes to enabling the capabilities that solve product development challenges, there are many options for today's business leaders. These options include new roles and responsibilities, new processes or operational metrics. In every situation, deploying a Product Data Management (PDM) system is an important foundational step, because it addresses so many of the challenges already described in this eBook.

Access, Track and Manage Product Information

Make no mistake. The ability to access, track and manage information isn't just about sharing product data between engineers. It's about collaborating between engineers spread over the world and departments like manufacturing, procurement, marketing, service as well as external partners, and customers. It is critical to accelerating responsiveness to customers as well as managing regulatory compliance. Perhaps most importantly, it's about leveraging data for better decision-making.

"Our PDM system has become seamless in our processes. It doesn't add any more time for them to do what they need to do. Now, we have less people who have to manage documents and files and we can focus resources on creating world-class design solutions for our customers. With it, we have fewer errors going out of house and less waste in house. "

--QinetiQ North America

So how does a PDM system enable this capability? Here's a list of relevant PDM functionalities and why they are important.

- **Version Management of Product Data:** Engineering a product is all about experimentation and exploration. But you can't do it blind. PDM systems can track and manage every change and ensure that everyone uses the latest version throughout the development cycle and beyond.
- **Centralized Product Data Access and Sharing:** PDM systems act as a single source of truth for everyone. It gives engineering, other internal departments, and external participants access to product data for their own purposes. Access to the most current, accurate data throughout the development cycle reduces errors, saves rework and increases customers' satisfaction.
- **Multi-CAD Data Management:** Organizations rarely use the exact same CAD software. Yet the CAD models from those applications collectively represent the product. Modern PDM systems should be able to manage, control and track parts, assemblies from different CAD products.
- **Replication of Product Data between Sites:** Product development is a truly a global activity. As such, engineering teams on opposite sides of the globe need to share and collaborate seamlessly. However, product data files can be immense in size, making it difficult to exchange product data in real time. Instead, modern PDM systems provide the ability to replicate product data between global sites to ensure speed *and* control regardless of the location.

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Find and Reuse Existing Product Designs and Information

New product development efforts that start from scratch are rare. In fact, the most practical way to match today's high demand for new product features lies in innovating strategically. That means engineering organizations need to reuse as much as possible while developing new parts and systems for new product capabilities. How does a PDM system help? Several functionalities are critically relevant.

- **Search and Find Product Data:** Before you can reuse something, you need to be able to find it. PDM systems allow users to quickly and easily search and find the product data they need by a variety of different search methods.
- **Visually Verifying the Right Product Data:** Leveraging product information however, isn't just about finding it. PDM Systems lets engineering confirm they have found the right product data by viewing 3D product data.

"We're probably two or three times faster. Without PDM, it would be difficult, if not impossible to work as productively and efficiently as we do now."

--Guntert & Zimmerman

Automate and Enforce Business Processes

In product development, processes are only becoming more structured. Checks must be performed before releasing a design. Due diligence is required in change management process. Organizations must follow specific procedures to obtain product certifications.



Despite the need for more formalization of processes in product development, the need for speed is still critical. How *fast* you can execute processes determines whether a company is first to market and if contractual obligations are met. It's the competing pressures of *formalization* and *speed* that is difficult. PDM systems resolve that conflict through the following capabilities.

- **Workflow Automation and Task Management:** The first PDM functionality that plays a critical role in streamlining processes is workflow automation. It automates process steps that are traditionally routed manually. Once initiated, workflow assigns tasks, request approvals, allows rejections and handles unnecessary delays. When a workflow is defined electronically, it enforces the execution of a formally defined process. Moreover, it makes the traditional email routing of process tasks obsolete.

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- **View, Review and Markup of Product Data:** Processes in product development aren't just executed in engineering. Many others inside and outside the company need to participate. However, few can access if they don't use CAD. This makes participation difficult because 3D data often needs to be reviewed as part of a process task. PDM systems address this issue by providing visualization tools that allow anyone to view, markup and compare 3D data.

Gain and Maintain Regulatory Compliance

Managing regulatory compliance and legal risk is no joke. Skip a step and your company could be faced with fines or even blocked shipments. How do PDM systems fit help? Here are the most important functionalities related to managing such risks:

- **Automated Audit Trail:** In this context, managing and tracking versions of product data, documents and information is about creating a digital audit trail of design activities. That trail becomes proof that the organization is following design practices that complying with internal procedures or external standards.
- **Workflow Automation and Task Management:** Manually enforcing compliance in every policy, procedure and process in a company can be difficult. That's where workflow and task management come into play. By digitally defining a process that doles out tasks to individuals, employees are relieved of knowing the ins and outs of every single process. All they have to do is complete the task at hand. The PDM system ensures that the process is tracked in its entirety.



“PDM has delivered measurable increases in productivity. All of our processes are faster and less complex. We’re providing better service to our internal and external customers because we don’t have to chase down information. Our productivity is up and so is business.”

--Quanex Building Products

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The Risk of Staying with the Status Quo

For some organizations, the use of a PDM system seems optional. However, there are risks in not making a change. Many leading manufacturers are adopting PDM systems and reaping the benefits.. In this section, we'll look at the competitive risks in staying with the status quo.

The Competitive Threat of Increased Productivity

The use of PDM systems translates into productivity gains for the whole value chain. Version management, process automation, search and reuse all save engineers from spending time on menial and manual tasks. This is true for every company, even for your competitors.

How would your competitors use this extra time? It could be applied to their business in a variety of ways. Their engineers could explore more design iterations, resulting in better products. They could design more products instead, flooding the market with competitive alternatives. For contract manufacturers, the extra time equates to bandwidth for more jobs, allowing those competitors to bid more competitively on more contracts.

At the highest level, it all translates into more competition for your company, whether that means better products, more products or increased competitive bidding.

The Competitive Threat from Better Decisions

Of course, the advantages of PDM systems reach beyond time-savings. Broader access to product data enables contributors at each step of the value chain to make better product development decisions. But what does it

mean if your competitors leverage this advantage and not your organization? There are a number of things to consider:

Competitors that make better decisions regarding their product's performance can demand a price premium. If their engineers make better cost-related decisions, they can offer lower-priced products or reap higher profits.

Overall, the better decisions related to PDM systems positively impact the financial equation of competitor's products.

Feeling the Impact of PDM, One Way or the Other

Regardless of whether your company is using a PDM system or not, competition will only become more intense. PDM systems are relatively widespread and will continue to be adopted at a steady pace. Competitors will only get faster and make better decisions. So you will feel the impact-- but it may not be felt positively.

"We must often modify our basic product line to do the special things the customer wants; get it in their fabrication facility; and get their process developed very quickly so we can make them happy before our competition does."

--Plasma-Therm

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Summary and Conclusion

Today's engineering organizations barely resemble those of the past. Engineering must consider enterprise requirements during design. It must provide measured visibility into its operations. Processes, traditionally more art than science, are becoming formalized. In all, this has led to significant challenges for today's product development leaders.

Organizational Capabilities Enabled by PDM Systems

To meet these challenges, progressive companies are cultivating a number of capabilities that enable them to be more responsive, organized and faster. This includes the ability to:

- *Access, track and manage product designs, documents and information*
- *Find and reuse existing product designs and information*
- *Automate and enforce business processes*
- *Track, manage and document regulatory compliance*

Many are turning towards specific functionality in PDM systems to enable those capabilities, which include:

- *Search and Reuse of Product Data*
- *Version Management of Product Data*
- *Centralized Product Data Access and Sharing*
- *Multi-CAD Data Management*

- *Replication of Product Data between Sites*
- *Visualization, Review and Markup of Product Data*
- *Workflow Automation and Task Management*

Keeping Pace with Competitive Threats Enabled by PDM

Adopting a PDM system, however, isn't merely about enabling capabilities in your value chain. It's also about keeping pace with competitors that are turning to PDM to save time and make better decisions in their own organization.

When competitors reap productivity gains, they design better products, offer more products or bid at lower price points. Also, better decision-making enabled by PDM positively impacts the financial equation of competitor's products. One way or another, the adoption of PDM technology will positively affect your competitive position.

For more information on Product Data Management, visit the [Synergis Software site](#). Underwritten in part by Synergis Software, all concepts and ideas developed independently, © 2012 LC-Insights LLC.



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