Go beyond CAD file management

Your design files are now managed perfectly with PDM. Now what?

Introduction

If you manage your CAD files with Product Data Management (PDM), then you have taken the first critical step in developing your PDM strategy.

Now, the seemingly uncontrollable design files your engineering team creates are under control. With PDM in place, it's likely your engineers waste less time, your product costs are going down, your product quality is improving, and your development cycles are shorter because your engineers are working better as a team.

So, what's next? What else can you get from all of this beautifully managed data?

As it turns out, quite a bit. PDM can be about much more than CAD file management. Consider these process-related challenges you likely deal with regularly:

You must hand deliver printed drawings to non-engineering staff so they can review and approve designs.

It takes significant manual effort and far too much time to get all the necessary sign-offs to push through an engineering change order (ECO).

Other departments, such as manufacturing, are using the wrong version of the design.

You spend countless hours managing your bill of materials (BOM) inside of a spreadsheet.
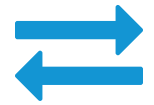
You have to exchange product information manually between disparate systems used by engineering, purchasing, sales, and manufacturing.

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Uncontrolled release and change processes

The tracking of ECO and release processes ranks among the most common challenges cited by engineers involved in product development.

Ensuring everyone knows where the design is in the overall lifecycle, soliciting feedback from others, and knowing the status of projects are all areas generating inefficiency in the development process.

While versioning captures the everyday, incremental changes to the product, it does not communicate the current lifecycle state of the design to others. Knowing whether a version is still a work in progress; in review; undergoing a change; or being released to manufacturing is essential so everyone is working from the right data. Ensuring stakeholders have access only to the right data at the right time is a process that needs to be handled carefully and, often, manually.

Even in environments where the entire design process has gone digital, the review and approval processes for product releases and changes often remain paper-based. Engineers shepherd manila folders with checklists and drawings around the office for days, if not weeks, to obtain the necessary reviews and approvals. And once changes and releases are approved, all those folders likely get stashed away in a file cabinet, locking away hard-earned valuable knowledge.

Another challenge: tracking and control. Because the entire process is happening offline, it is impossible for anyone to see project status easily. There is no transparency into who might be holding things up; major issues in the design that may cause delays; or how close a project is to completion. This all leads to uninformed decision making because data isn't available on demand.
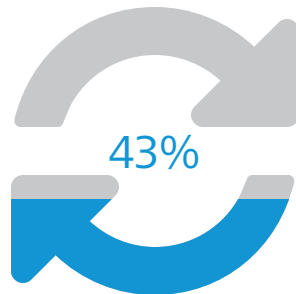
43% 43 percent of those involved in product development cite "managing change" as a top design challenge.*

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# Using PDM to streamline release and change processes

Managing your release and change processes is one of the most high-impact ways to grow your PDM strategy.

It removes uncertainty and inefficiency inherent to the development process. Not only can you proceed through the process faster, but you also are able to include more people, gather more feedback, make better decisions, and ultimately, create a better product. Here are some ways PDM can help your entire team manage engineering release and change more effectively:

Assign lifecycle states to your designs

Lifecycles let everyone know the current state of the design—be it work-in-progress, out for review, or released to manufacturing. Managers can easily check the current status of a single design or an entire project to help in their decision-making process. You can also control access to files based on the assigned state so groups outside engineering see only the version of the data they need. Lifecycles also help control the process by allowing you to define rules for who can change the lifecycle state and what steps they need to take prior to doing so.
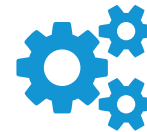
Automate your ECO process

Rather than traversing the "sneaker network" to get everyone's sign-off, you can set up a standard or custom workflow inside your PDM software so people are notified when they have a task due. Everyone can see current status and who might be holding things up, which usually helps move things along a little faster.

Include more people in review and feedback cycles

Collecting feedback from people in all different functions is fundamental to concurrent engineering. With PDM, you can give everyone the right level of access and make participation in design reviews easier. In addition, all feedback is stored and searchable, so knowledge can be built up over time and made available to the entire engineering team.

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Issues with managing BOMs

If you manage your CAD files inside a PDM system, relationships are traced and you can easily see the full product structure.

But your BOMs are likely handled separately—manually managed in a spreadsheet or in another system disconnected from all your design data. This disconnect between your product data and your BOM can hamper productivity and create far-reaching issues due to BOM inaccuracies.

The most important aspect of your BOM is that it reflects the latest release of each component in the product. Maintaining one accurate version is a challenge given how quickly your engineers are making changes to the product throughout its development—and after its release. When you factor in that suppliers, manufacturing, service, purchasing, and your enterprise resource planning (ERP) system all use the BOM as well, making sure everyone is working from the correct version is a nearly impossible task.

As the complexity of your products and varying product lines increases, so does the work required to maintain your BOMs. A single BOM with thousands of items managed in a spreadsheet is inefficient. Managing a massive item master in a spreadsheet when components are reused across different products is incredibly unproductive. Opportunities to reduce costs are missed and a single incorrect item can set back production until it is corrected.

35%
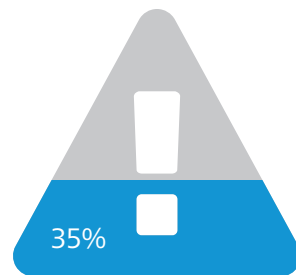
35 percent of those involved in product development cite "working on wrong or outdated data" as a top challenge.*

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Using PDM to manage your BOMs

Improving how you create, maintain, and share your BOMs can have several benefits—less inefficiency, fewer inaccuracies, and more time spent on value-added work to the project.

PDM also helps downstream and outside groups to perform their roles more effectively. In addition, all your enterprise systems, such as ERP or manufacturing resource planning (MRP), are always current—preventing costly errors from making their way into procurement and production. Here are some specific ways that PDM can help you improve BOM management:

Manage BOMs where you manage your product data

By creating a direct link between your BOMs and the design files they apply to, the manual effort required to keep them up to date is virtually eliminated. BOMs can be created automatically based on the product structure of the top-level assembly, bringing along all the components, quantities, and revision information with them. And you still have the option to add line items manually to your BOM for consumables or spare parts that may not be included in the design itself.

Control BOM revisions

When managed inside a PDM system, you can use the same lifecycle and revision controls for your BOMs that you use for design files. This helps you track and compare changes between revisions and control access to downstream stakeholders so they only have access to the latest released version of the data.

Connect to enterprise business systems

As fun as manually entering your BOM data into an ERP system can be, automatic data transfer allows you to make much better use of your time. Your PDM system becomes the master location for the BOM, and connections can be built to any other business system you use, so they're always accurate and up to date.

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Giving team members access to the right data

The degree of collaboration required to bring a product to market involves people in many different functions and often, different locations.

But there are many data-sharing challenges, such as:

Engineers working off-site do not have the same access to data as on-site engineers.

Groups within the organization but outside engineering cannot directly access data relevant to their role.

Outside suppliers, customers, and other stakeholders do not have access to files that are relevant to the work being done by them or for them.

Email, shared network folders, File Transfer Protocol (FTP), or services like Dropbox are often cited as vehicles for data exchange. There are challenges with these technologies—such as intellectual property security risk and files not synchronizing with your PDM system. But the bigger issue is that the burden of responding to stakeholder requests for product data typically falls on the engineering team. Filling requests for product data takes time out of your engineers' workdays—time that they could be spending on higher-value tasks.
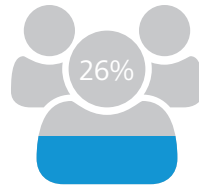
26% of people involved in product development say "collaborating with engineers in different locations" is a top design challenge, while 25% cite "sharing information externally."*

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Collaborating with PDM

While PDM systems have their roots in making collaboration among engineers easier, they have evolved to make it simple to include everyone involved in product development.

When all contributors and stakeholders have the right level of access to data and engineering processes, you can save time by eliminating the need to deliver data manually and keep everyone in sync on the project. Here are three ways that PDM can make collaboration easier:

Replicate your data at multiple sites

Even at small and midsize manufacturers, product development is often handled by teams distributed all over the world. In these cases, PDM software becomes essential because it can replicate your data across work sites, ensuring all contributors—no matter where they are located—are working on the latest information. This includes not only design files, but also important metadata about the files; for example, is the file checked out, who is editing it, and what is its current lifecycle state?

Provide controlled access to data outside engineering

PDM can provide groups outside of engineering with access to data, and helps ensure those groups don't see or change things they shouldn't. Many PDM systems also provide a web client that makes it easier for non-engineering users to access, search, and view designs compared to using a full PDM desktop application that must be installed on their computer.

Allow customers and suppliers direct access to design data

Similar to your internal teams, chances are you need to provide your suppliers and customers access to engineering data. Depending on the amount of work they are doing, you can use PDM to provide access to individual files or entire projects. The degree of access is entirely customizable, so these users can view or edit only the files that are relevant to their work with you.

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Conclusion

Is it worth expanding your PDM strategy beyond CAD file management?

Among companies that use PDM, more than 50 percent already take advantage of the BOM, change, and design release management capabilities to improve their development processes. Chances are they can help you and your engineering team, too.

50%
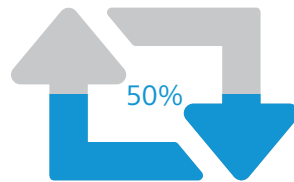
Of companies that use PDM, more than 50 percent use it to manage their BOM, change, and design release processes.[*]

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Get a better handle on PDM

Learn how Autodesk can help you better manage your design data

The Autodesk® Vault family of products is a comprehensive PDM solution that allows you to better manage your design data and track your development processes throughout the Digital Prototyping pipeline.

In addition, Autodesk and our value added resellers are experts in helping customers better manage their design data. We work with thousands of companies across the world, sharing sound advice on potential opportunities for improvement and crafting solutions to real customer problems.

* *Tech-Clarity Perspective: The Facts About Managing Product Data*, Tech-Clarity, Inc., 2015.

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