Tech-Clarity

making the value of technology clear

Issue in Focus:

Product Data Accessibility

Getting Value from
<u>All</u> of your Product Data

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Introducing the Issue

Can you picture your business in the following scenario? You finally have all of your product data in one central location. Your engineers are trained to store data in the right location and they follow all of the rules for file naming, check-in, check-out, and other data management essentials. Your product data is shared throughout the business and everyone has access to it that needs it. At that moment, the pain of wasted time looking for the right product data has subsided.

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If you are an Engineering manager, you may have had a fleeting moment like this. But for most, it never happens. The reality is that many companies don't have centralized product data, and even those that do typically have a lot of product-related data spread out across the business that isn't centralized (and most likely never will be). But accessing accurate, up-to-date product data is vital to the health and profitability of a manufacturing company. For example, Tech-Clarity's The Business Value of Product Data Management points out three primary themes related to getting value from product information:

- Control and secure product-related data
- Improve the ability to quickly find and reuse information
- Share product knowledge with other departments

Centralizing and controlling product data can provide a lot of value. But managing product data takes an investment of time, resources, and money. What if you don't have a centralized system such as Product Data Management (PDM) to manage your data? And even if you do, how do you find product data from all of the places in the business, including information in office productivity tools and enterprise applications? You still have to find and share product data to make the right decisions that lead to profitable products. Manufacturers should be able to access all of their product data, not just the data they have centralized (if any). They also need to be able to aggregate it across different locations and view it as a whole regardless of what system created it.

Accessing product data and centralizing it are not absolutely linked.

Today's manufacturers operate in fast-paced, competitive, global markets and simply can't afford to waste time searching for data – centralized or not. This paper is dedicated to the pursuit of accessing product data – finding and sharing it – regardless of whether it

is centralized and managed by a PDM system or not. The good news is that accessing product data and centralizing it are not absolutely linked, and there are emerging technologies that help engineers access data without having to consolidate it in a central location. These solutions – aimed at product data accessibility – hold the promise to stop engineers from wasting so much time looking for data, make data more available across the business, and make design reuse feasible (which in turn drives up quality and efficiency while it drives down cost).

Access All of Your Product Data

There are many reasons that companies might not have product data centralized or formally managed in a single system. Perhaps they feel they can't afford PDM. Perhaps they haven't implemented it yet. On the other hand, maybe they have more than one data management solution or vault based on a series of acquisitions or data management initiatives from different organizations. The truth is that data management comes with costs and benefits. The costs include time and effort of engineers, software purchases, infrastructure cost, training, technical support, and software maintenance. That investment provides revision control, prevents conflicting updates, offers workflows for things like approvals and ECO, and keeps control of product data. But many companies don't enjoy this luxury and accomplish these things through manual processes, and they still need to access data.

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Whether or not a formal data management solution is in place should not restrict engineers and others from searching and sharing product data. In fact, even if PDM is in place, it won't include all of the documents, spreadsheets, and other various product-related information that is created by Engineering or other departments. And it is certainly not structured in a way that makes sense to all of the people in different roles that need the data to do their jobs.

Manufacturers need to be able to access product data that is centralized and structured, but also access data that resides elsewhere in the business. They can't wait to centralize data in order to find and share it. Migrating data is a non-trivial effort, requiring a significant investment in time and resources. Instead, manufacturers should be able to search, filter, and view data regardless of where it is stored. Companies need data accessibility that allows them to:

- Virtually consolidate information from different locations
- Aggregate and use all product data, regardless of source
- Liberate product data from disparate applications and user interfaces

- Display and act on the inter-related product data in order to make sense of it all
- Provide relevant views of the information to people in different roles

Virtually Consolidate Data from Disparate Locations

Product data is everywhere. After all, what is a manufacturing company about if not their products? Manufacturers typically have data stored in a combination of:

- Shared folders
- Personal hard drives
- Databases
- PDM systems
- Document management systems
- Enterprise systems including ERP, CRM, SCM, SLM, and a host of others

Engineers shouldn't have to know where data is stored in order to access it. In fact, they shouldn't even have to know whether or not it exists. Consider the web. How hard would it be if you needed to know what site a piece of information was on in order to access it? Today that sounds silly because search engines have indexed the information so we don't have to know where it is, just what we are looking for. Accessing information shouldn't require people to know how it is filed or rely on someone storing it the proper way.

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For example, taxonomies only represent one view and are prone to breaking when things change. Imagine having to search the web for a movie and having to start with "Movies," and then having to provide whether it was made for TV or for the cinema, or whether it is in HD or not? If you don't know (or care), shouldn't you still be able to find the content you want? The same is true for product data.

Why is it so important to see everything related to a part or project? Today's engineers are responsible for more than ever. In addition to designing for form, fit, and function, they are increasingly being asked to help make broader business and supply chain decisions during product development. As Tech-Clarity's Making Product Development Tradeoffs reports, manufacturers are trying to address more product criteria earlier in the product lifecycle when changes can still be made. Companies are trying to get products "right the first time" to prevent late changes that cost valuable time and money. This "Design for X" approach to optimizing products places greater demands on engineers and integrates their decisions into multiple departments.

To succeed in this environment, engineers need to be able to access product data from different locations and different types of formats. This includes CAD files, PDF documents, spreadsheets, text documents, creativity tools, and enterprise applications. The data in these sources should ideally be extracted so they can be shared with others such as Manufacturing, Sales, suppliers, and others that need product data to do their jobs. One common flaw in sharing data is to copy and paste the information. This results in multiple copies of information that quickly becomes outdated. Instead companies should find a way to send access instructions like search criteria so the most recent information is always retrieved. In essence, they are creating a virtually consolidated product data set including information that hasn't been consolidated into a vault (or won't be).

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Liberate Product Data from Disparate Applications

Providing links to data across multiple CAD systems, databases, and other sources is valuable. This is also true for data in enterprise systems including ERP, SCM, CRM, SRM, and others. For an engineer that wants a consolidated picture of a product, there are simply too many applications to learn to find the critical information they need. After all, they typically don't need to be able to author data in these systems, just access it. They shouldn't have to fumble through multiple UI's and require additional logins.

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To improve the usability of accessing data, information should be assembled for engineers and presented in a consolidated format. If not, they will typically resort to making a phone call or sending an e-mail to interrupt someone else to get the data instead of fight through disparate systems, logins, and user interfaces. Then, we repeat the poor practice of sending the current data in an e-mail without any connection to the "real version" of the data, creating duplicate copies of information that become outdated and offer no notice when information changes.

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Alternatively, engineers and others should be able search for information regardless of source and make in centrally available. Companies should expose information that is hidden in disparate files and applications, data people wouldn't even know to look for,

and provide it in a common interface. It's important, of course, to do this intelligently. People can't just blindly access and use information without understanding what it means or the context it came from. And, needless to say, it is important to respect data access rules so people don't see information they don't have access to.

Aggregate and Use All Product Data

Providing a consolidated view of product information holds the potential to improve speed and efficiency in finding information, but it can also offer more. Product data is about relationships. Beyond simply providing a virtual vault, manufacturers should look at pulling together fragmented data in a meaningful way. In essence, they can create a virtual product record that consolidates information from both structured and unstructured formats, from disconnected data stores, and managed by different applications. Pulling together this fragmented information in a meaningful way – some might call it a "mashup" – goes beyond improved efficiency to enable improved product development decision-making. Combining data in a holistic way can help companies find business trends that can be difficult to see when data is spread out in multiple locations.

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To create a meaningful aggregation of product data, the enabling solution must understand data relationships in the way manufacturers view products. Semantic technologies, based on the knowledge of how data is related based on the data itself, can be used to assemble data into a sensible structure. Those that know the manufacturing domain understand how parts are related to bills of materials (BOMs), projects are related to products, and other "common sense" relationships. The challenge is to incorporate this into the data accessibility solution to develop logical data structures that provide meaningfully consolidated views.

Pulling product data together in a holistic way provides the ability for companies to extract value from all of their product data.

Aggregating product data from disparate sources helps people make sense of product data – and products – in a more holistic way. Assembling data from different sources in an intelligent way offers manufacturers the opportunity provide another layer of organization regardless of how data is stored. This not only makes it more accessible and easily shared, but also allows people to organize the data in the way they need it to play their part in developing profitable products. Pulling product data together in a holistic way provides the ability for companies to extract value from all of their product data, regardless of whether it is centralized and how it is managed.

Conclusion

The key to expanding product data accessibility is to recognize that centrally managing data and accessing it efficiently are not absolutely linked. Manufacturers need to get to data regardless of whether they have made the investment to migrate it to a centralized location and whether or not people forgot to follow the data management rules. This logical, virtual approach to retrieving product data also allows people in different roles to see the data organized in a way that makes sense to them and supports the work they need to do.

Manufactures today have an opportunity to improve product data accessibility, and extend accessibility to all of their product data.

Manufactures today have an opportunity to improve product data accessibility, and extend accessibility to all of their product data. PDM and centralizing data can help for those that are able to achieve it, but should not be a requirement for engineers and others to find the data they need. New technologies are providing another layer of product data accessibility. I am not suggesting another three-letter acronym (there are too many already out there and I don't think they really serve manufacturers), but it is a new approach that deserves investigation. Instead of a new term, I support a practical strategy to get value out of product data regardless of location and regardless of how it is structured and managed.

The ability to aggregate data in a meaningful way to make better decisions promises to improve product development performance and product profitability.

A product data accessibility strategy matches the reality of the environment most companies operate in today. Today's manufacturers have dynamic and fast-paced engineering cycles, with no extra time and resources to waste. They need to make decisions based on information that needs to be accessed – quickly and efficiently – regardless of location, authoring application, or how well someone followed the naming and filing rules. The ability to aggregate data in a meaningful way to make better decisions promises to improve product development performance and product profitability.

Recommendations

Based on industry experience and research for this report, Tech-Clarity offers the following recommendations:

- Don't wait for product data to be centrally managed before making it easy to find and share
- Relate disparate product information together to see the whole picture and discover trends and issues that are difficult to identify in segregated data stores
- Provide a way to view and act on product data in a meaningful, holistic way – to make better decisions and develop more profitable products
- Share data from it's current location to avoid creating duplicate, outdated copies
- Provide tailored, logical views of the data to support different roles and processes
- Respect data access rules, only displaying authorized information to users
- Explore the potential of emerging technologies that promise to provide a new level of product data accessibility regardless of how data is currently managed and stored

About the Author

Jim Brown is the President of Tech-Clarity, an independent research and consulting firm that specializes in analyzing the true business value of software technology and services. Jim has over 20 years of experience in software for the manufacturing industries, with a broad background including roles in industry, management consulting, the software industry, and research. His experience spans enterprise applications including PLM, ERP, quality management, service, manufacturing, and others. Jim is passionate about improving product innovation, product development, and engineering performance through the use of software technology and social computing techniques.

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