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Research Report: How Design Teams Manage Product Data





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Executive Summary

In May 2017, we surveyed 151 product development professionals about how they manage product data. Our analysis focused on the types of systems used, how they were used, and the correlation between system types and common product design failures.

The results of this analysis should provide design and development teams information to help them benchmark their results relative to the industry.

Here are a few selected insights that we gleaned from the survey data:

- Approximately half (49%) of all respondents do not have a formal PDM/PLM system.
- Design teams spend a surprising number of hours each week looking for files and on other non-productive activities.
- Respondents were generally disappointed with their team's performance on seven measures of design process control, from sharing data, to ECOs, to avoiding redesigning the same part.
- Respondents consider it extremely important to have an easy connection between their CAD systems and their PDM systems.

The data supporting these findings are presented in charts and graphics in the following pages. I would like to thank the survey participants for generously sharing their insights.

We hope you find this research useful.

Thanks,

John Hayes

ENGINEERING.com

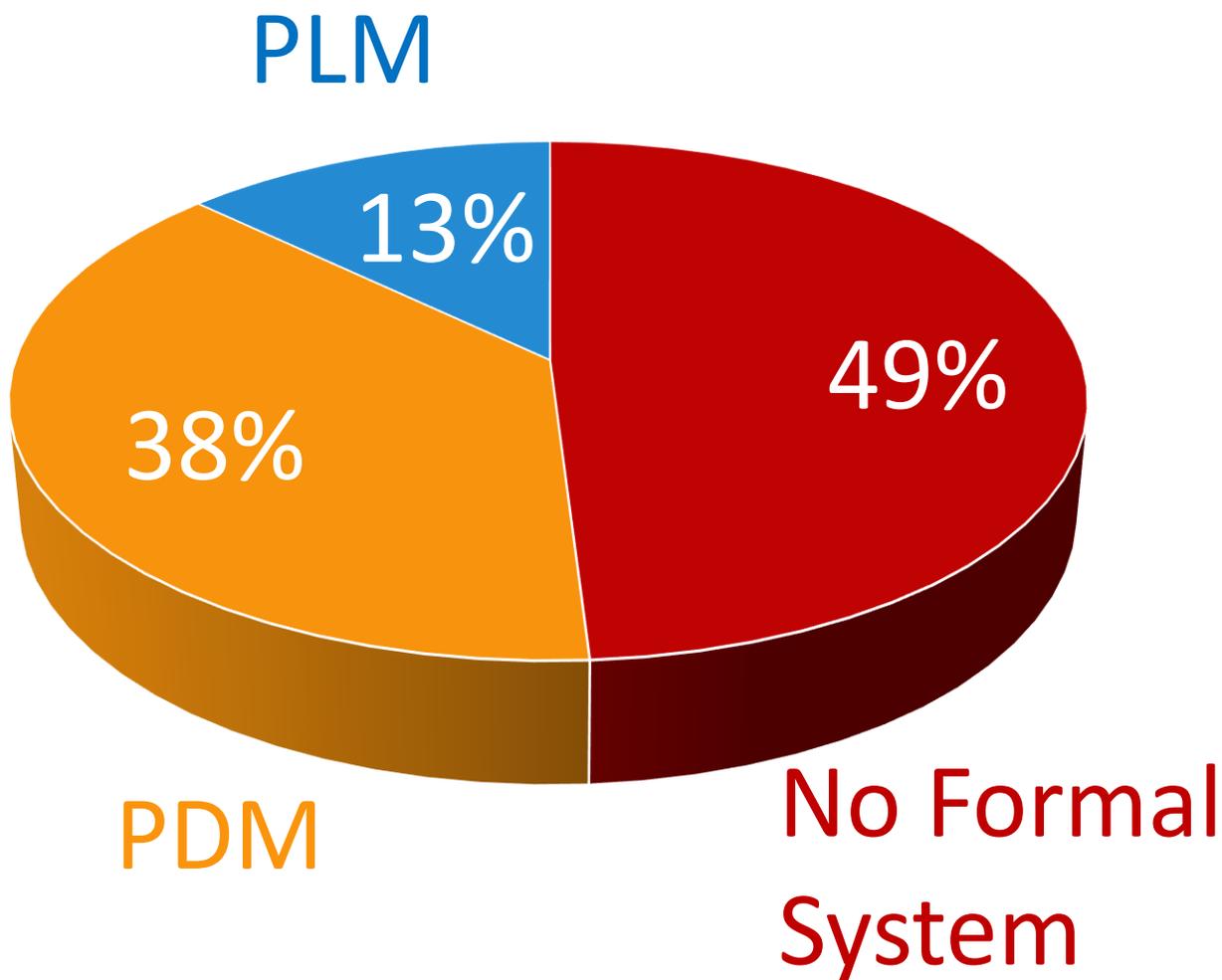


Which design teams use formal data management systems?



Almost half of all product design teams do not have a formal PDM system

There are numerous ways a product design and development team can track product data. We asked respondents to select from a list of several possible ways and then recoded that data into various levels of sophistication.



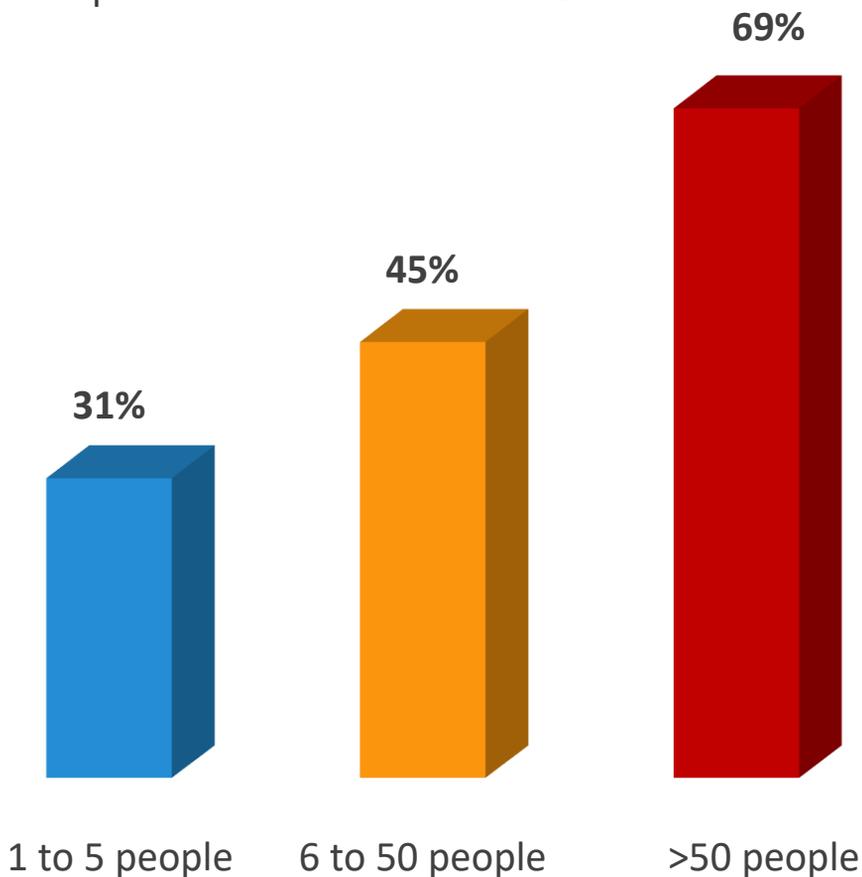
Q: "What type of system does your company primarily use to manage product data?"



Unsurprisingly, larger teams tend to have more formal data management systems

We asked respondents how many people in their company needed access to product development data and compared that to the level of sophistication of their data management systems. What we found isn't surprising – the more people who need access, the more sophisticated the system that is in place to manage the data.

Percent of Respondents with a Formal Data Management System, Grouped by Number of People with Access to Product Data



Q: "How many people in your company need access to product data?" cross tabulated with "What type of system does your company primarily use to manage product data?" – Percent using formal PDM system shown.



Number of locations also correlates to having a formal PDM system

As shown in the table below, companies accessing product data from multiple sites are more likely to use a formal system to manage product data. Only 37% of companies with just one site use a formal system, while 63% of companies with 10 sites or more reported using formal PDM or PLM.

# of Locations	One	2-3	4-10	>10
% of Respondents Using a Formal System	37%	46%	59%	63%

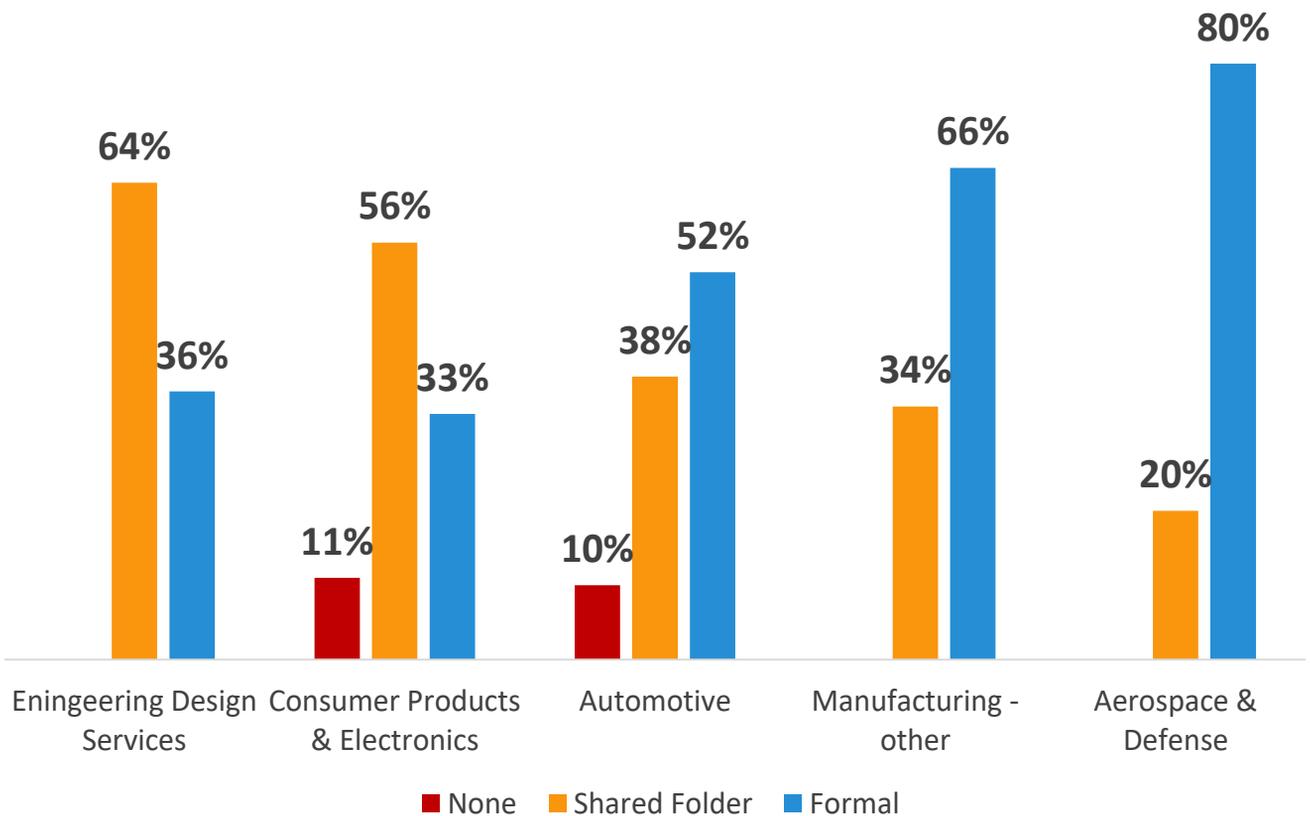


Q: “How many locations in your company need access to product data?” cross tabulated with “What type of system does your company primarily use to manage product data?” – Percent using formal PDM system shown.

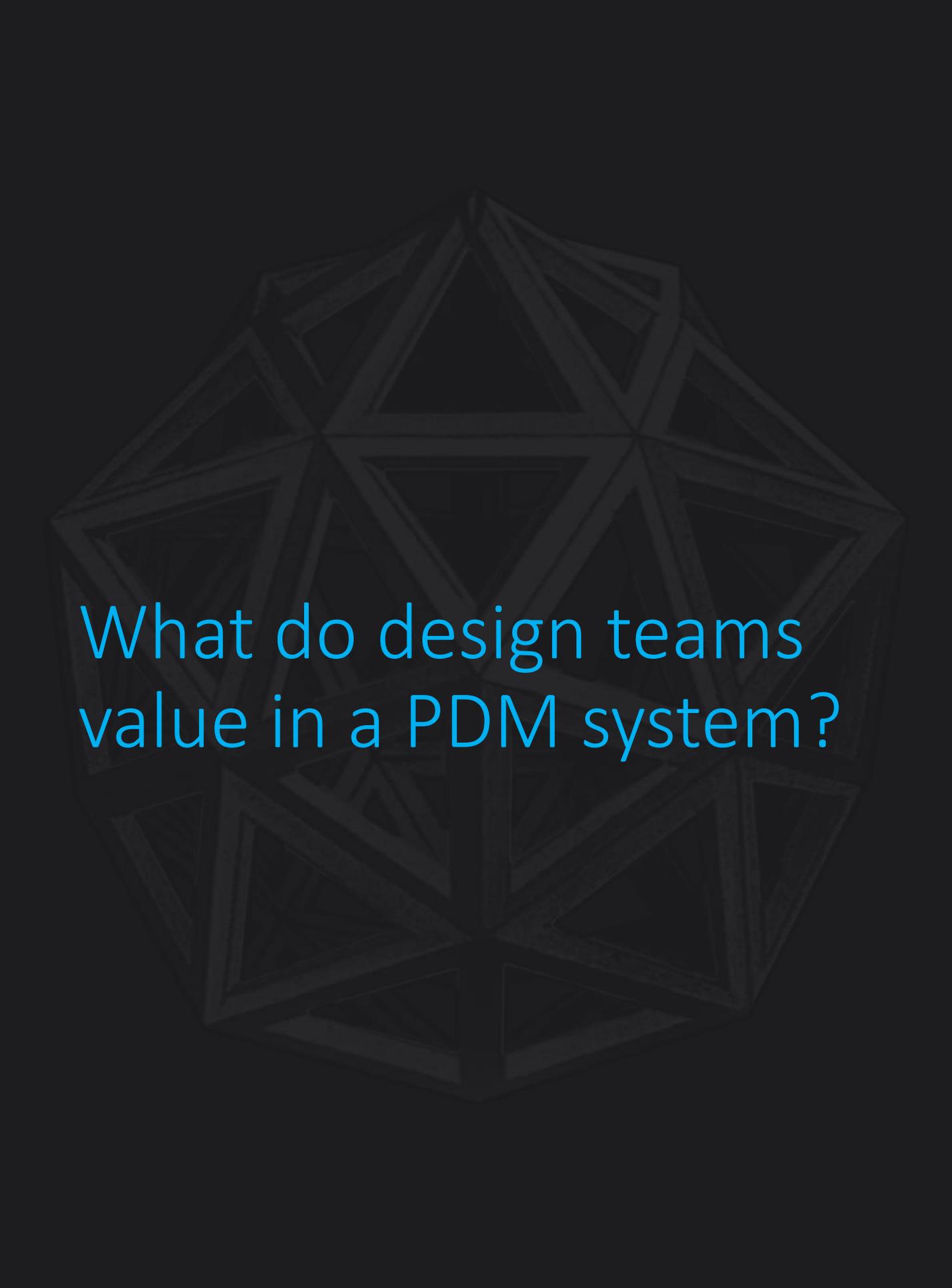
Certain industries, such as aerospace & defense, have a higher level of PDM adoption

Shared folders are the most popular product data management technology amongst respondents, particularly in the consumer products & electronics and engineering design services industries. Formal product systems are the most popular amongst general manufacturing and aerospace & defense manufacturers.

Types of Systems Used to Manage Product Data by Industry



Q: “Which industry sector does your company primarily serve?” cross tabulated with “What type of system does your company primarily use to manage product data?”

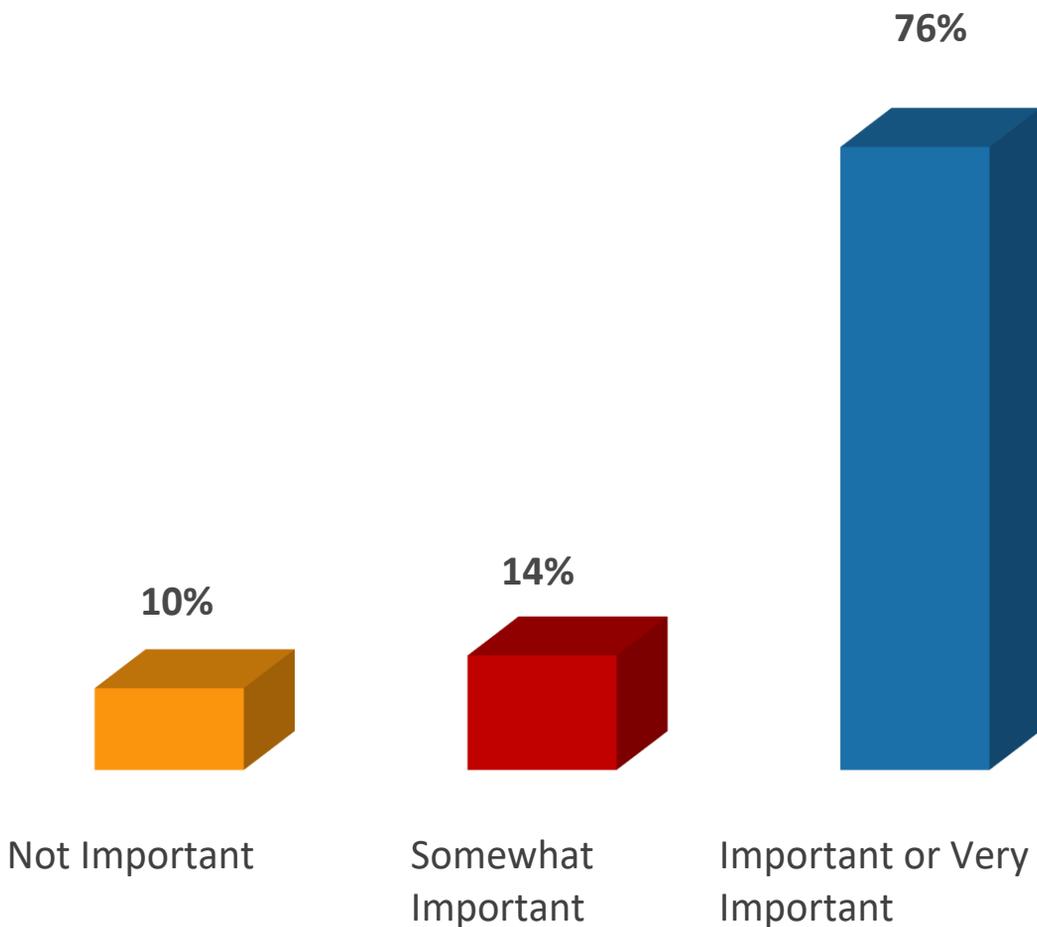


What do design teams
value in a PDM system?

Easy connection to CAD systems is important or very important to 76% of design teams

We asked respondents about certain common features of data management systems. Of all the features mentioned, “easy connectivity to your primary CAD system” received one of the highest rankings, indicating that respondents felt that this was a very important attribute.

How Important is it that your PDM System is Easy to Access from Within your Primary CAD System?

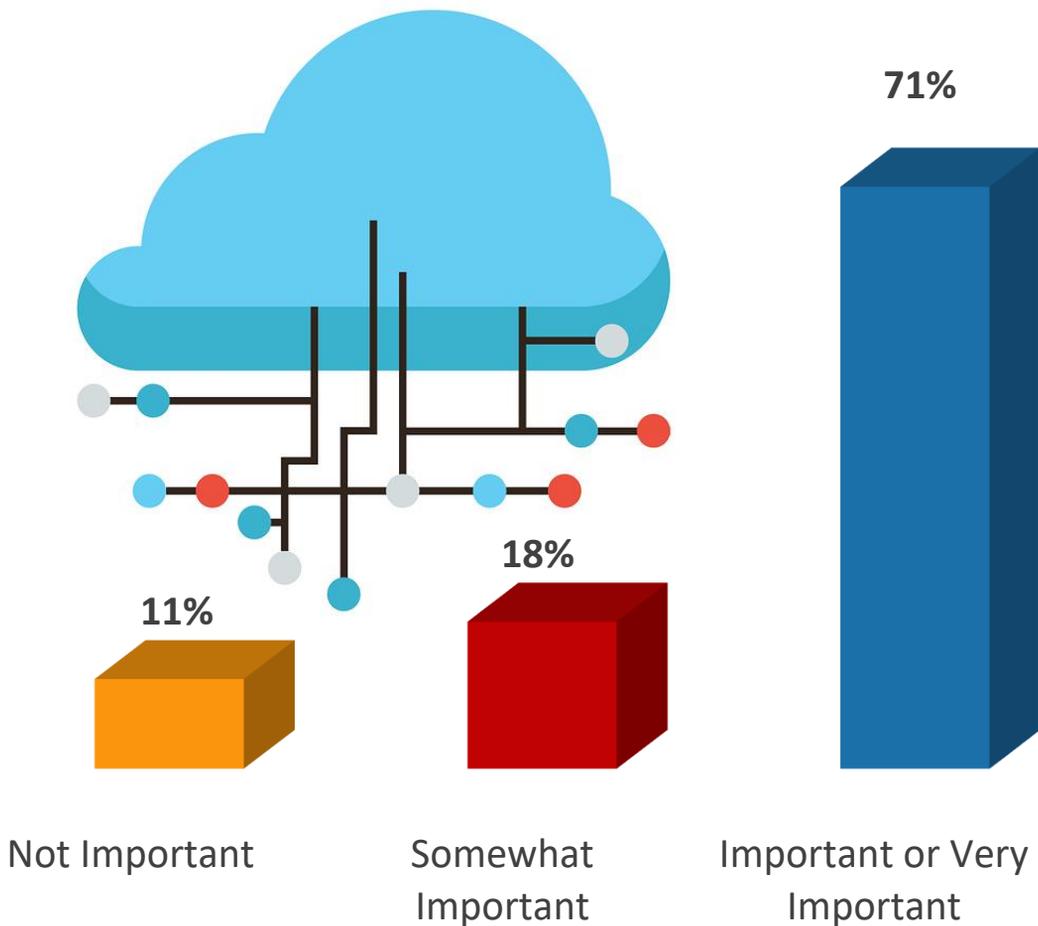


Q: “How important is the attribute ‘easy to access from within your primary CAD system’ of a data management system to your team?”

71% also say that easy, secure external data sharing is important

Respondents were aware of the risks of using email and FTP to share product data outside the company. Modern PDM systems allow users to share links to view-only models rather than sending the model file.

How Important is it that your PDM System allows Easy, Secure External Data Sharing?

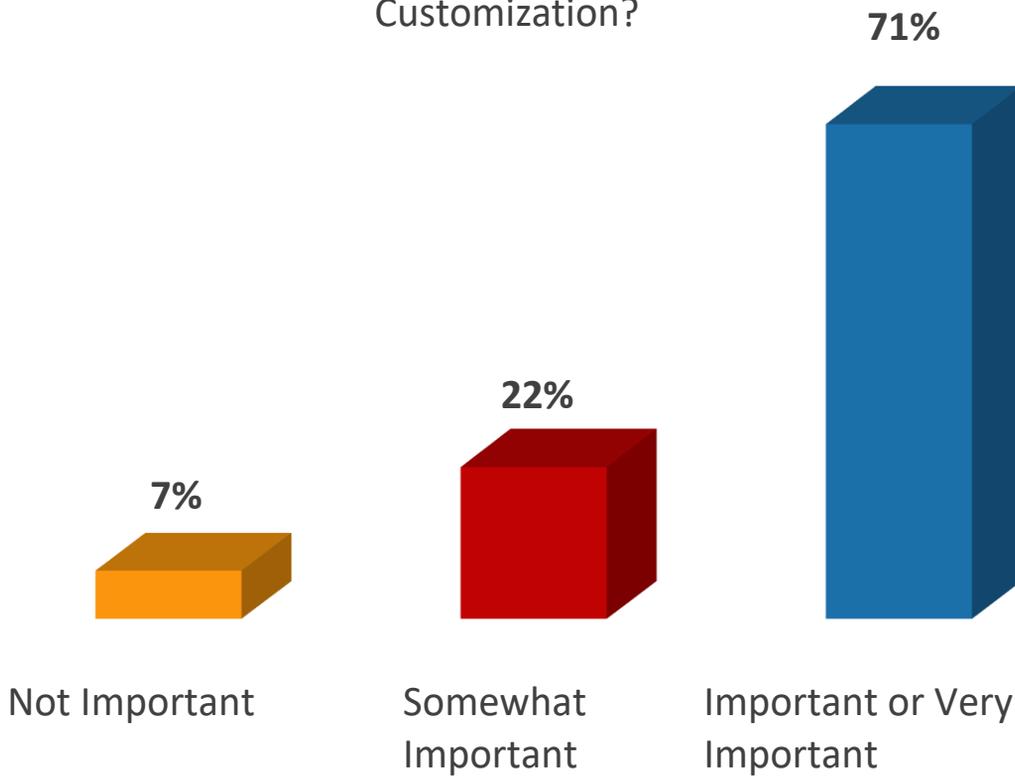


Q: “How important is the attribute ‘allows easy, secure external data sharing’ of a data management system to your team?”

Respondents rated having a data management system that is easily adaptable to their workflows as important or very important

Although there are general best practices for managing product data, every company tends to evolve its own workflows to support its unique processes. Accordingly, 71% of respondents said that it is important or very important that their data management system be customizable to fit their workflows without having to bring in an external consultant.

How Important is it that your PDM System is Adaptable to Your Workflows Without External Customization?



Q: “How important is the attribute ‘adaptable to our workflows without external customization’ of a data management system to your team?”



Despite the importance of these three features, not everyone reports having them...

There is a gap between what survey respondents want from their data management system and what they say they currently have. The table below shows, for example, that while 71% of respondents rank “easy, secure external data sharing” as important or very important, only 55% reported that their current system meets that requirement.

Feature	Degree of Importance	% of Respondents whose current PDM satisfactorily has the feature
Easy connection to CAD systems	76%	69%
Easy, secure external data sharing	71%	55%
Adaptable to workflows without external customization	71%	56%

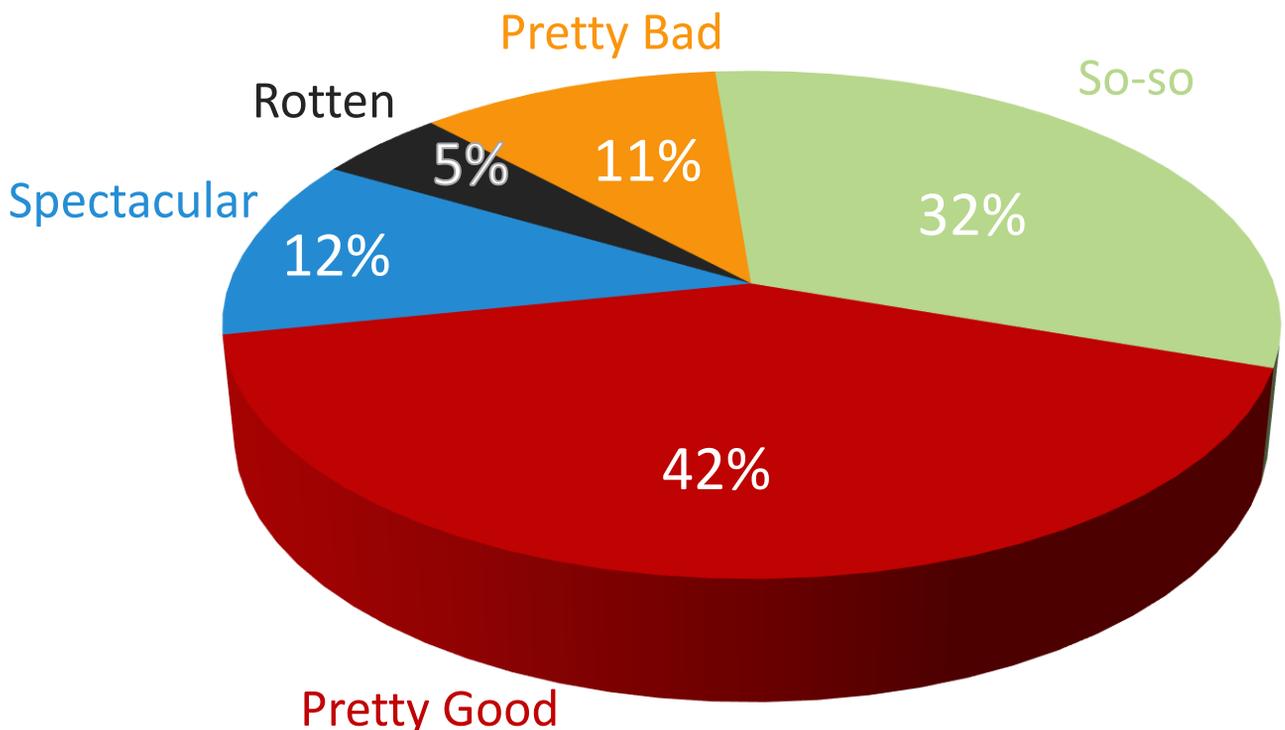
Q: “How important are the following attributes of a data management system to your team?” & “Please indicate your agreement with the following statements in reference to your PDM system on a scale of strongly agree to strongly disagree”



Almost half of product development teams reported struggling to deliver new products to market on time.

Just over half of survey respondents ranked their team as “Pretty Good” or “Spectacular” at meeting product launch dates. The balance of nearly half of respondents report that they struggle to meet these dates.

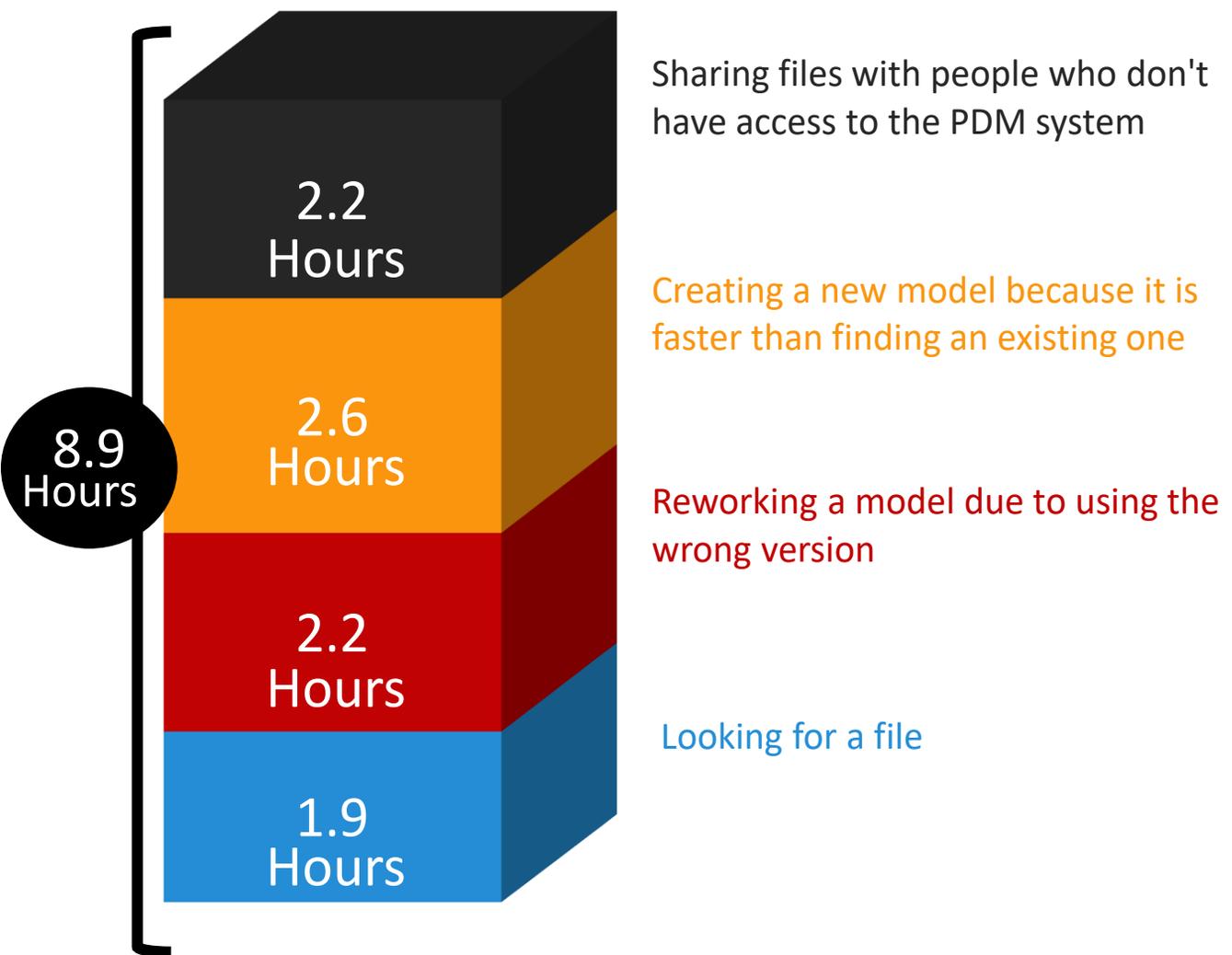
Success in Meeting Product Launch Dates



Q: “Rate your organization’s success at launching products on time on a scale of Rotten to Spectacular”

Product team members report spending significant time on non-productive activities

Average Hours Per Week

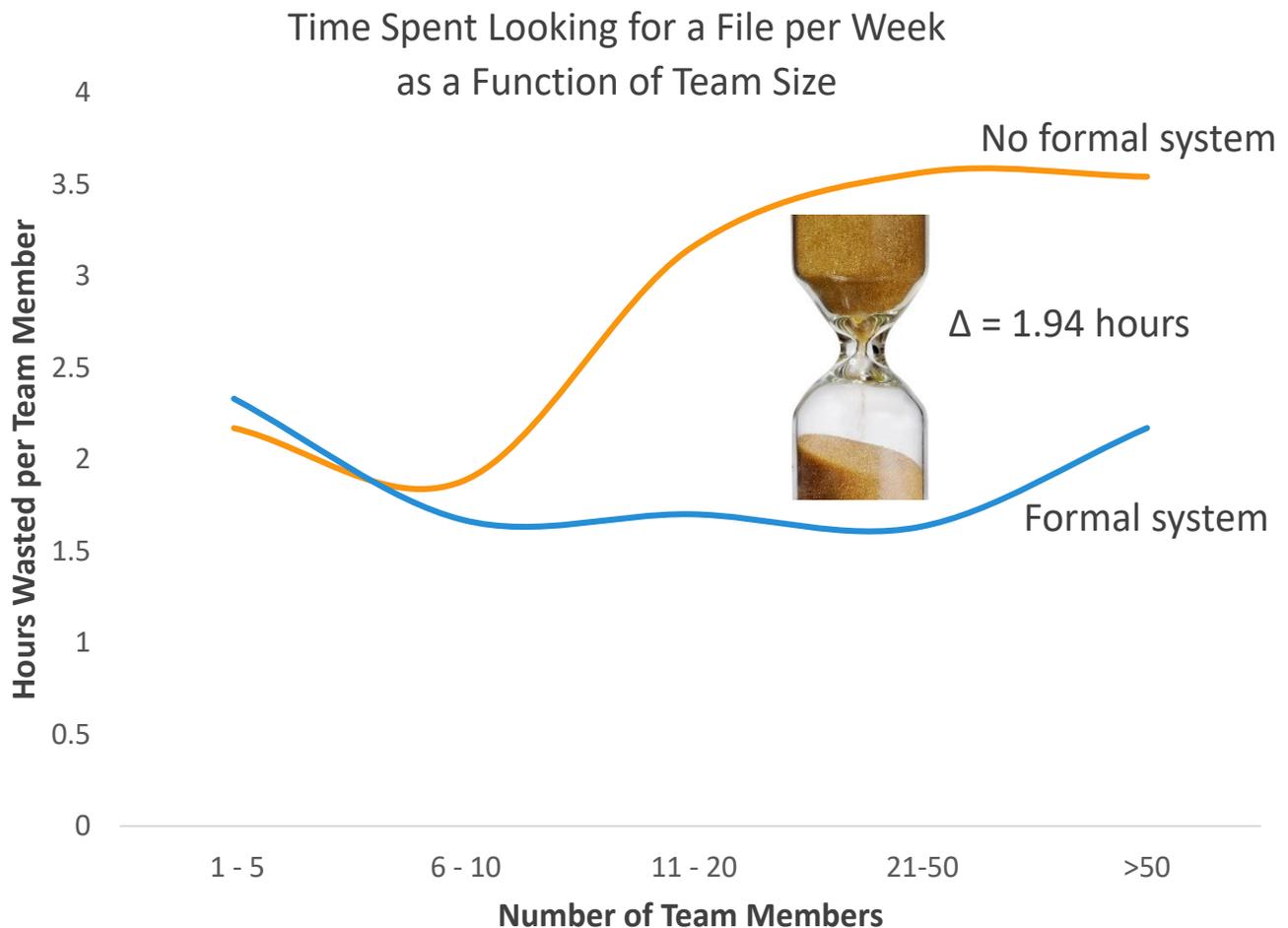


Q: "How many hours per week does a typical design engineer in your company spend ...?"



As product teams grow in size, an “efficiency gap” emerges between those teams with a formal data management system and those without.

Formal product data management systems tend to be more valuable to larger teams. The example below shows that the average time spent looking for a file increases with the number of team members, unless technology and processes are implemented to save that time.



Q: “How many hours per week does a typical design engineer in your company spend looking for a file?” cross tabulated with “How many people need access to product data?” and aggregated by, “What type of system does your company primarily use to manage product data?”



Data management for seven design processes

Survey respondents gave their companies failing grades when asked about sharing product design data

We asked respondents about their success with several design processes and issues. Almost half of design teams reported that their teams were either “Rotten, Pretty Bad or So-so” at sharing product data for the purposes set out below.

Success in Sharing Product Design Data



48%

47%

48%

Of product design teams are **rotten, pretty bad, or only so-so** at...

giving purchasing personnel access to design data to obtain quotes

accessing models from another location in their company

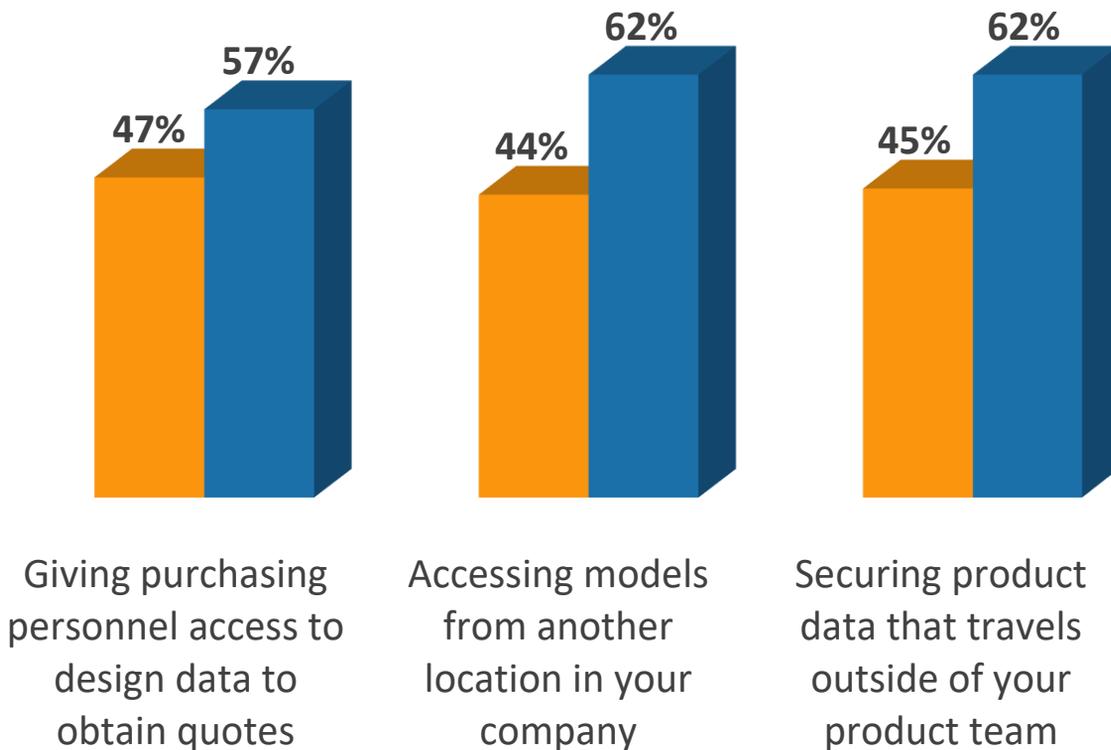
securing product data that travels outside of their product team

Q: “How successful is your company at the following things on a scale of Rotten, Pretty Bad, So-so, Pretty Good, and Spectacular?”

Companies with formal PDM or PLM systems fared better at sharing product design data

When it comes to sharing product data, having some type of formal system correlates with reported success. In each of the processes queried, those with formal data management systems reported superior results to those teams using informal systems such as shared drives.

Success Sharing Product Data
Shared Drives vs **Formal PDM/PLM** Systems



Q: "How successful is your company at the following things on a scale of rotten, pretty bad, so-so, pretty good, and spectacular?" Percent responding Pretty Good or Spectacular is shown.



Companies fared even worse on four other common product development processes

Design teams reported having difficulty with four common processes. These types of issues may stem from or be exacerbated by having poor processes or systems for managing product data.

Percent of design teams reporting being **rotten, pretty bad, or only so-so** at...

42%

avoiding designing the same part multiple times

51%

managing change orders

57%

bringing new users up to full fluency on accessing product data

55%

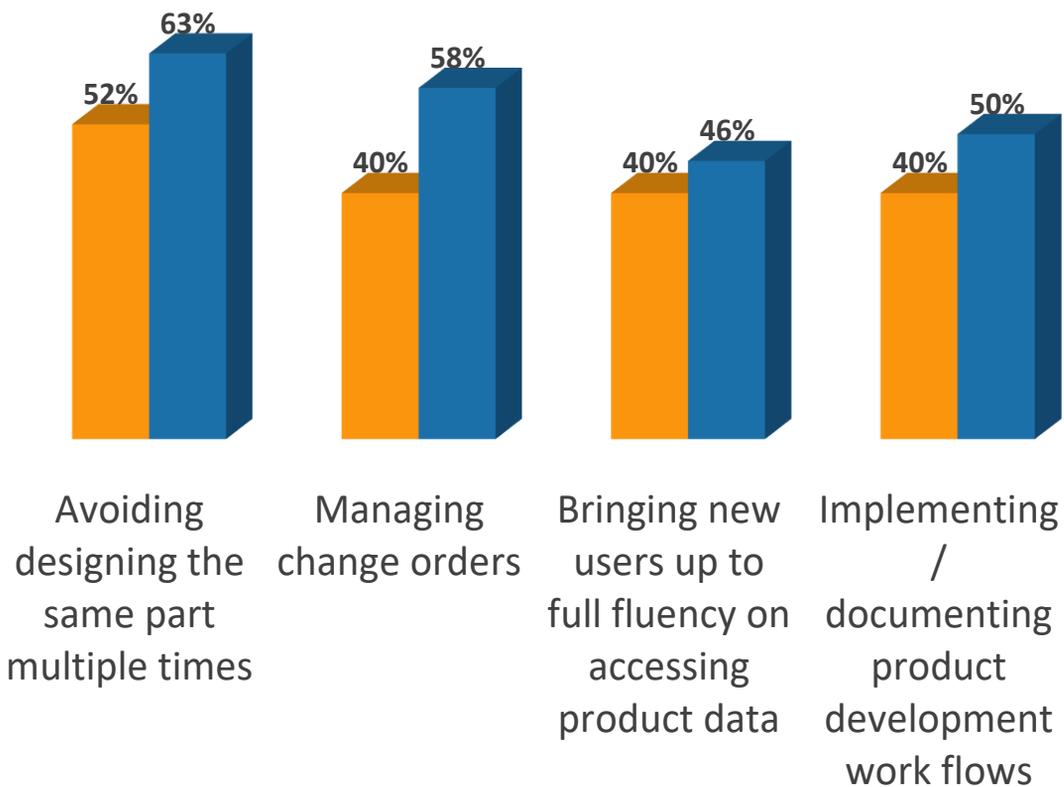
implementing / documenting product development workflows

Q: "How successful is your company at the following things?" Respondents saying Rotten, Pretty Bad, or only So-so is shown

Companies with formal PDM/PLM systems performed better than companies who use shared folders

Data management systems are designed to help product teams with several processes, such as avoiding designing the same part multiple times, and implementing more formal workflows. As expected, those companies that have implemented formal data management systems report better performance for these processes.

Success with Product Processes
Shared Drives vs **Formal PDM/PLM** Systems



Q: “How successful is your company at the following things on a scale of rotten, pretty bad, so-so, pretty good, and spectacular?” Percent responding Pretty Good or Spectacular is shown.

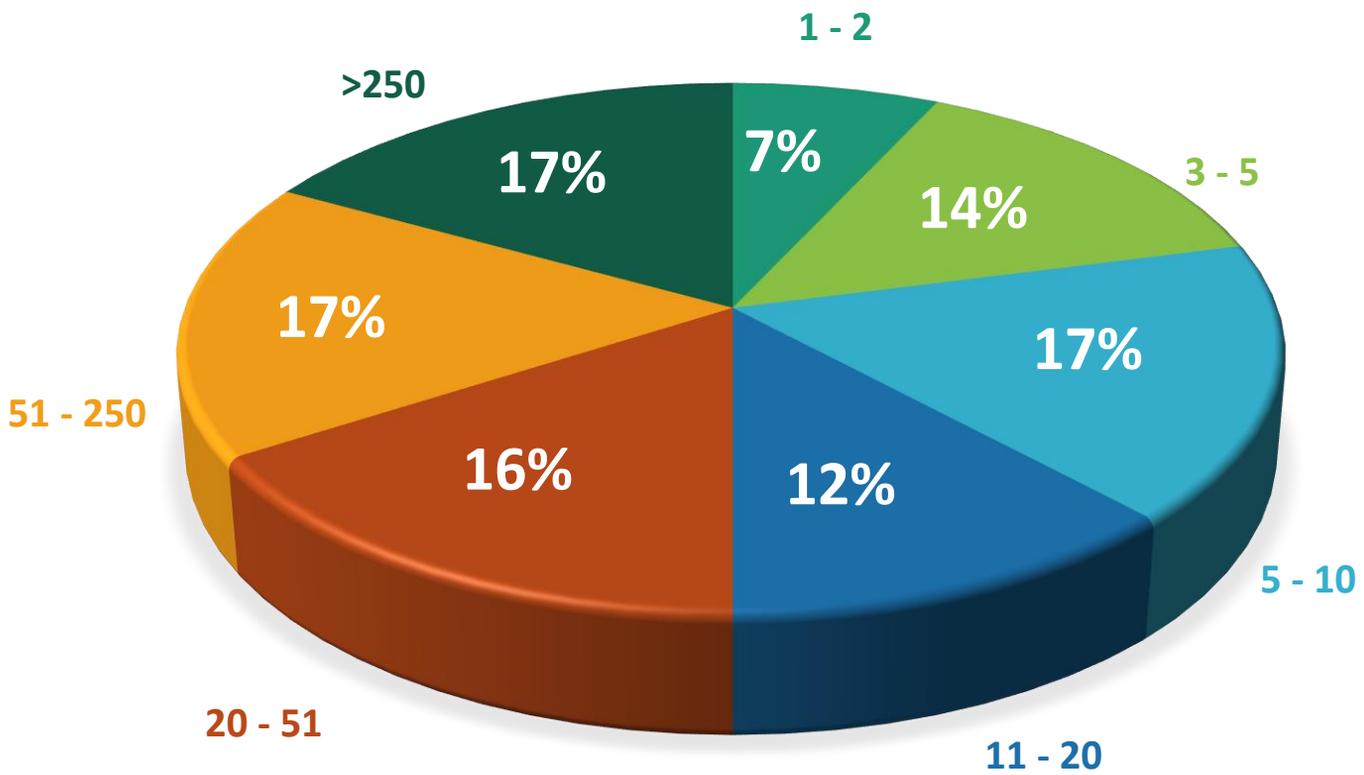


Demographics



Size of design teams

Survey respondents represented a wide range of size of product design teams, from only 1-2 person teams up to 250 or more.

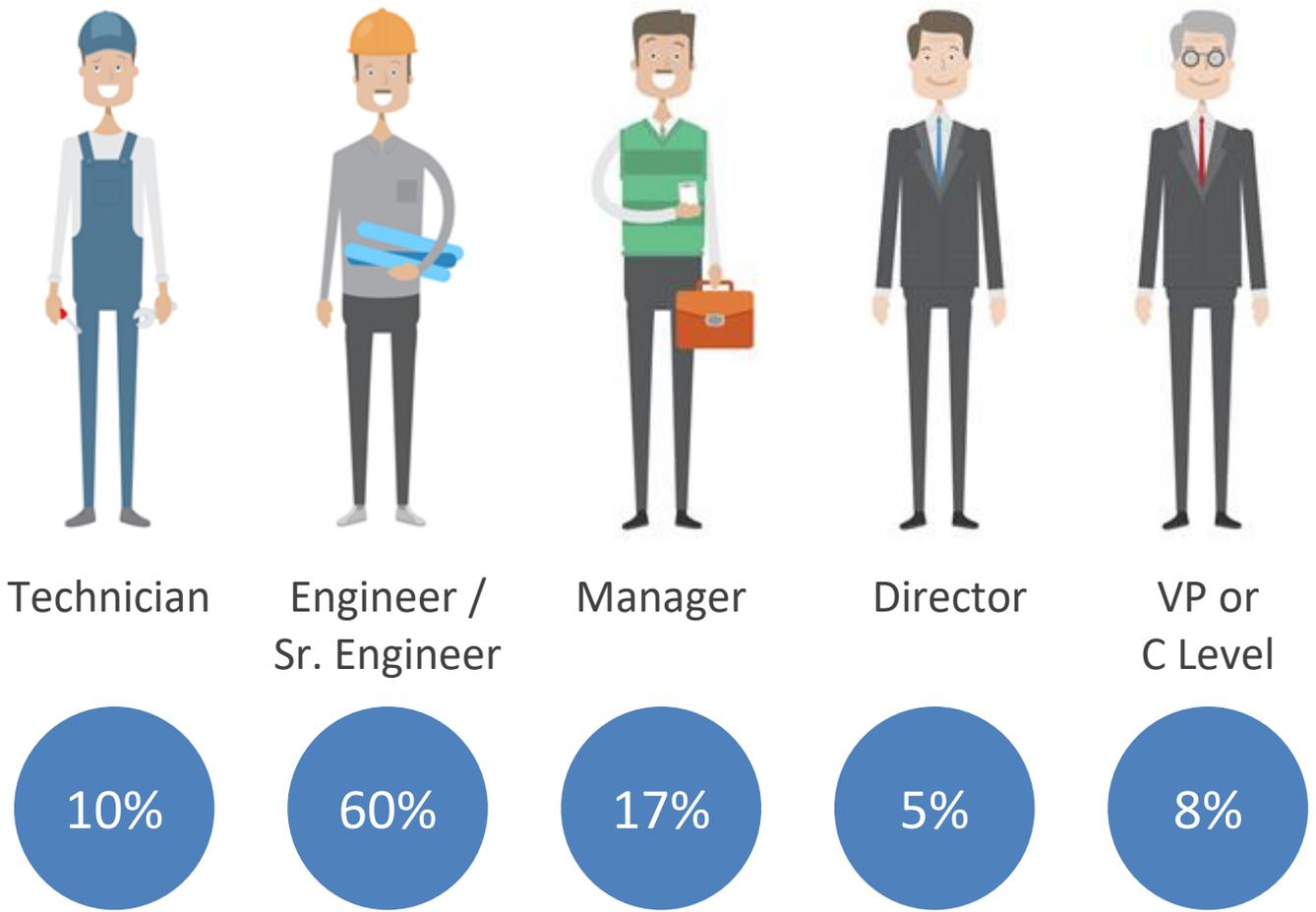


N = 151

Job roles of respondents

Survey respondents spanned all job roles you would expect on a design team, from technician to C Level executives, with the largest pool representing engineers and senior engineers.

Number of Respondents by Job Role

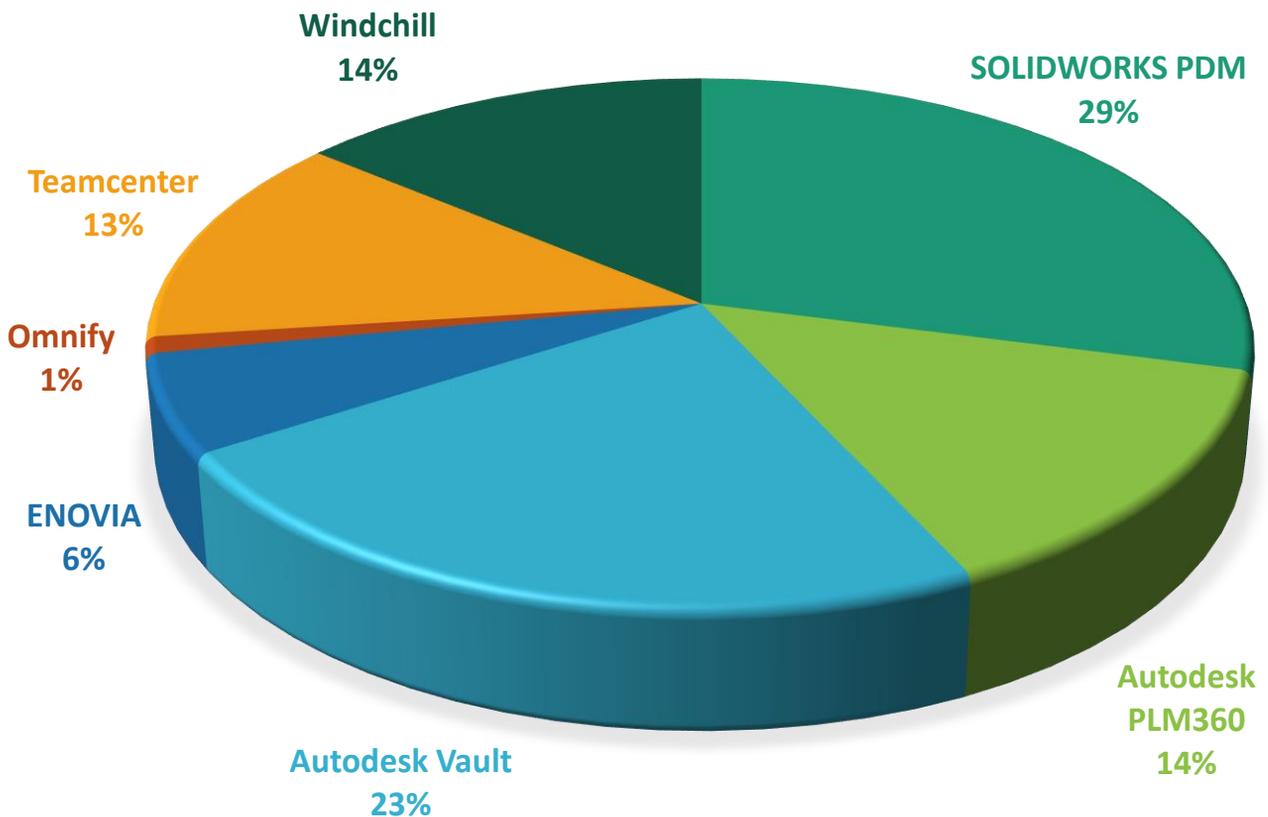


N = 151

Formal systems used

For those respondents who reported using a formal data management system, SOLIDWORKS PDM was the most common, followed by Autodesk Vault, Autodesk PLM360, PTC Windchill and Siemens Teamcenter.

Formal Data Management Systems in Use





Conclusions

Many product teams appear to be dissatisfied with their ability to manage their design processes.

They report that the average design team member spends almost 9 hours per week on non-productive activities. Almost half of participants said that their teams were no better than “so-so” at achieving product launch dates. As often as not, they gave their teams failing grades on core design processes.

Teams who had implemented formal data management systems experienced a higher rate of success with process control. However, not all data management systems will be suitable for all teams.

The most commonly reported important features to look for in a data management system were:

- Easy to access from within your primary CAD system
- Allows easy, secure external data sharing
- Adaptable to our workflows without external customization

Thank you for reading. If you found this report useful, please share it with your colleagues.

Thanks,
John Hayes
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This research has been sponsored by SOLIDWORKS.

To learn more about SOLIDWORKS PDM, visit

<http://www.solidworks.com/sw/products/product-data-management/packages.htm>