

LIFECYCLE

INSIGHTS

MANAGING PRODUCT DEVELOPMENT DATA AND PROCESSES

An examination of the 2022 PDM/PLM Study



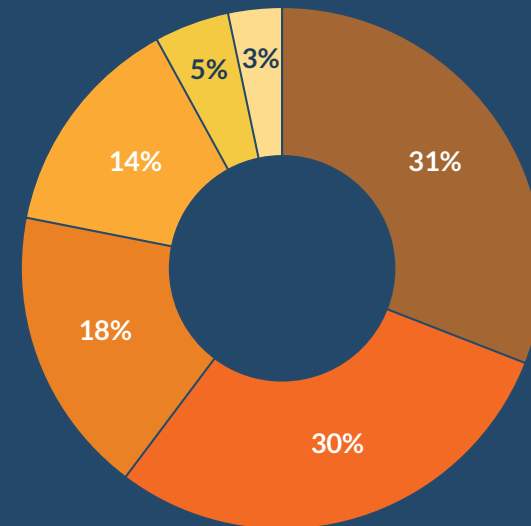
EXECUTIVE OVERVIEW

Today's manufacturers are under incredible pressure to develop innovative products and get them to market quickly. To do that, they must manage their product development data and processes effectively. But this is not so easy, given the difficulties they often face in coordinating work across domains, capturing and preserving communications, and tracing the effects of product changes across the operation.

To navigate these challenges, many manufacturers are exploring changes to their product design and manufacturing processes. Often, they turn to product data management (PDM) or product lifecycle management (PLM) solutions. These solutions are designed to make teams more productive, simplify communication and collaboration, and speed up development.

To better grasp the effects of implementing these kinds of digital solutions, Lifecycle Insights conducted the 2022 PDM/PLM Study. The findings of this survey-based research study provide insights into the internal and external factors driving manufacturing companies to change (or consider changing) their management of product development data and processes. This eBook explores the challenges that manufacturers face when attempting to improve their product design and manufacturing processes, and offers insights into the kinds of tools that companies are using to manage and execute those processes.

DISTRIBUTION BY REVENUE



- Under \$100M
- Between \$100M and \$300M
- Between \$300M and \$750M
- Between \$750m and \$2bn
- Between \$2bn and \$5bn
- Over \$5bn

► Figure 1: The 2022 PDM/PLM Study had a wide distribution of respondents from businesses of all sizes.

INTERNAL DRIVERS OF CHANGE

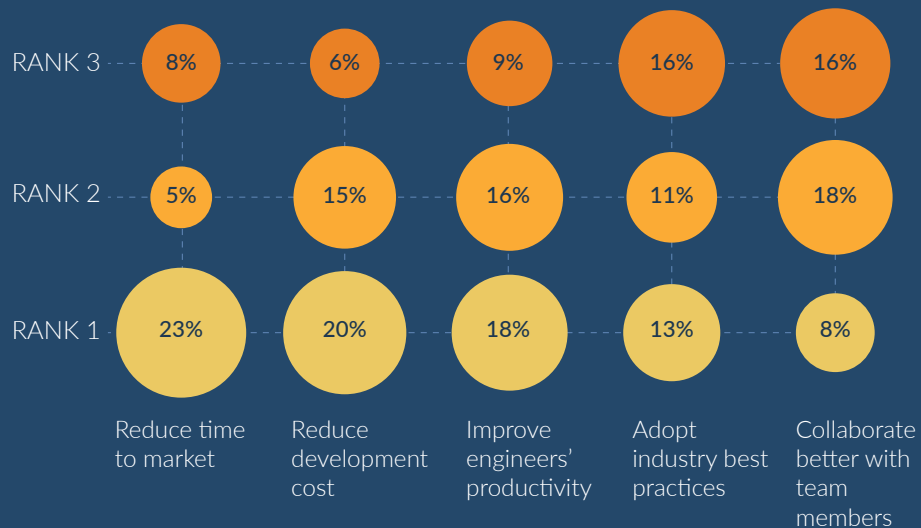
Lifecycle Insights' 2022 PDM/PLM Study findings reveal that several internal factors are driving manufacturers to change how they manage their product development data and processes. Respondents were asked to rank the top three factors contributing to these changes. The top overall factors were reducing product time to market (23%) and lowering product development costs (20%).

However, when considering the factors most frequently ranked among respondents' top three, a broad, balanced set of change drivers emerge. Around four in 10 respondents ranked the following in their top three:

- improving engineers' and other team members' productivity (43%);
- improving ease of collaboration (42%);
- reducing development costs (41%);
- adopting industry best practices and learning from successful peers (40%); and
- reducing time to market (36%).

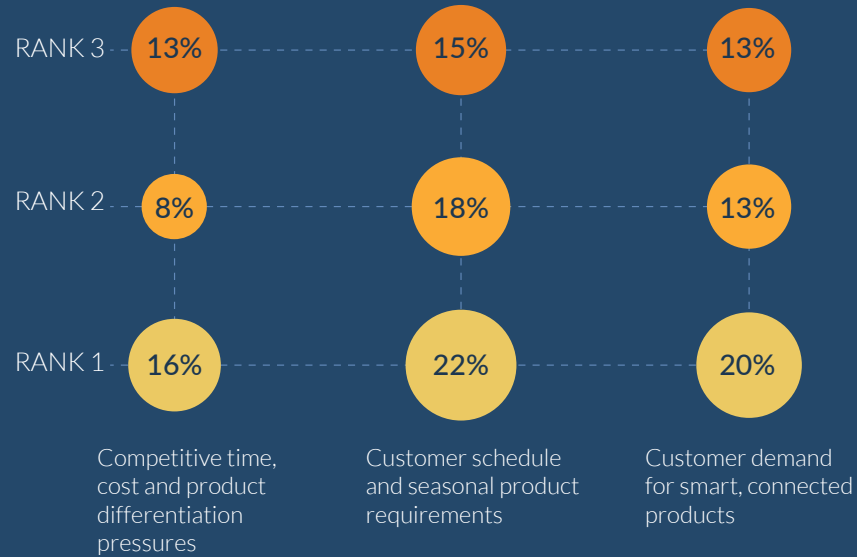
In short, this data makes clear that manufacturers want to change their approach to product development to improve the efficiency of the process and make their products more competitive.

INTERNAL DRIVERS OF CHANGE



▶ Figure 2: Respondents indicated that reducing time to market and lowering product development costs were the top overall factors driving changes to their processes.

EXTERNAL DRIVERS OF CHANGE



► Figure 3: Production requirements; customer demand for smart, connected products; and competitive pressures were the top external factors driving companies to change their product development processes.

EXTERNAL DRIVERS OF CHANGE

Companies aren't just internally motivated to change their product development and data processes. Some external factors are also at play.

When asked to identify the top overall external driver of changes to their processes, 22% of study respondents cited the need to follow certain production requirements, including seasonal or customer schedules, cost constraints, contractual obligations and product specifications. More than half (55%) indicated that these requirements were a top-three change driver. Respondents' other top-ranked factors include customer demand for smart, connected products (20%) and competitive time, cost and product differentiation pressures (16%).

All of these factors are related to the rising complexity of today's products and the product development process. Today's manufacturers must satisfy numerous customer demands and expectations, all while maintaining competitiveness in an increasingly challenging global marketplace. For many manufacturing companies, pursuing a new approach to product development is likely to play a key role in accomplishing those goals.

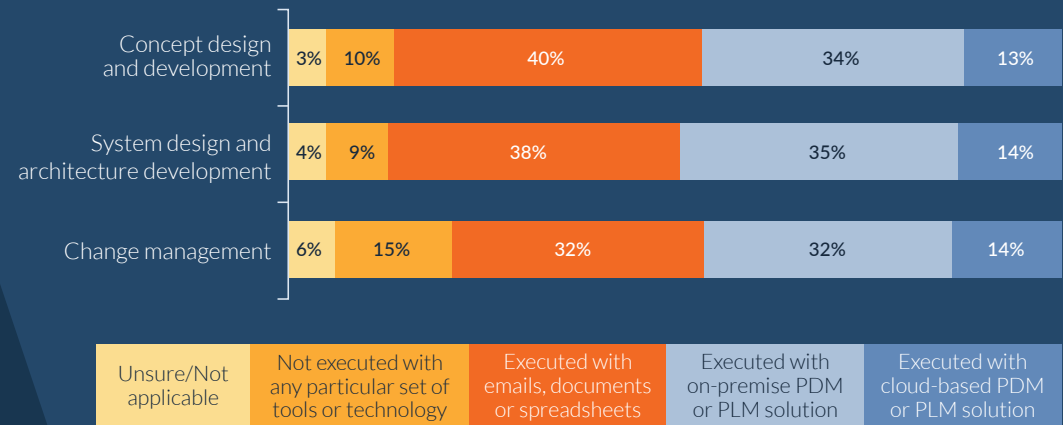
IMPROVING PRODUCT DESIGN

Managing and executing product design is an enormous challenge for manufacturers. Traditionally, companies have used email and other communication tools, along with shared documents and spreadsheets, to manage the design process. But emails get lost easily. Shared files may fall out of date or be replaced, making the data they contain difficult to track. As a result, productivity slows and stakeholders miss changes to requirements or the product's design.

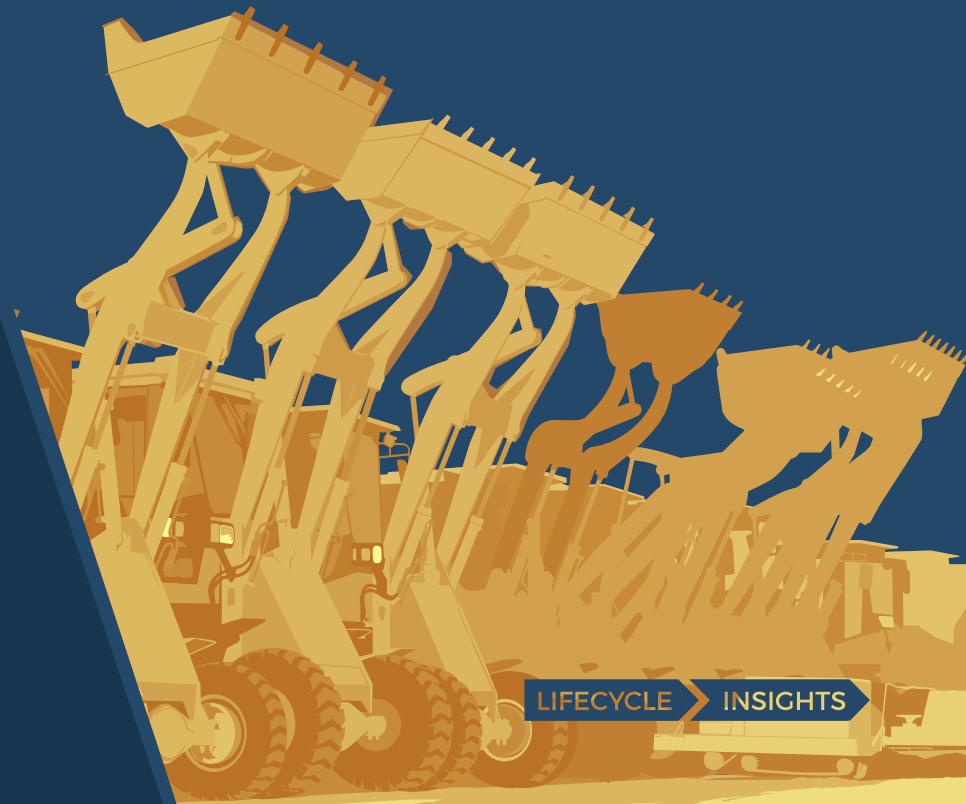
Digital PDM/PLM solutions, in contrast, allow stakeholders to trace communications and coordinate design work efficiently. Because the solutions provide a single source of truth for engineers working in different domains, they can track product data as it evolves throughout the design process. As a result, engineers can more easily merge work done in different domains, increasing their teams' productivity, reducing costly delays and improving product quality.

About half of all study respondents said they use on-premise or cloud-based PDM or PLM solutions to execute numerous design-related processes, such as concept design and development (47%), system design and architecture development (49%) and change management (46%). However, similar percentages of respondents still execute those processes using traditional tools (or no particular set of tools at all), indicating that many manufacturers are not experiencing the benefits of these digital solutions.

TOOLS USED TO EXECUTE DESIGN-RELATED PROCESSES



► Figure 4: About half of respondents use a PDM or PLM solution to execute various important product design-related processes.



IMPROVING MANUFACTURING PROCESSES

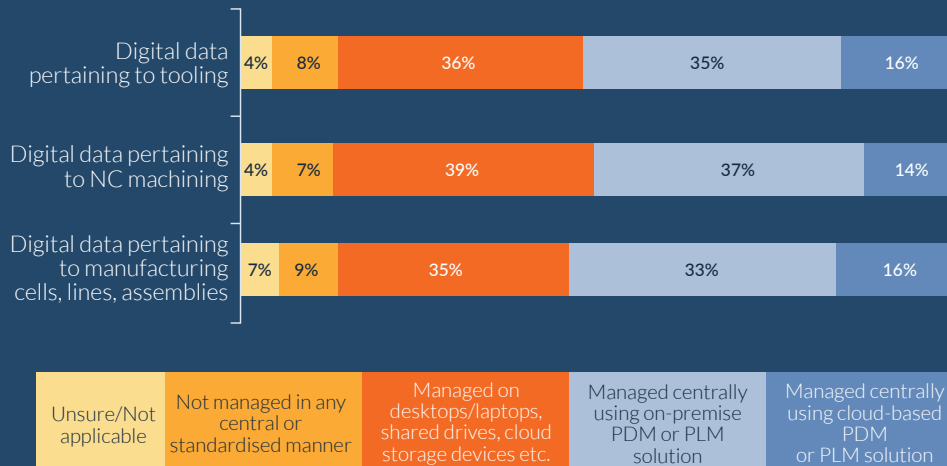
As with product design, managing manufacturing processes and data using email and other traditional office tools puts project timelines and budgets at risk. These tools make it far too easy for changes to a product's requirements or design to be lost, missed or miscommunicated, causing delays in development and increasing time to market.

Digital PDM or PLM solutions address these issues by allowing internal and external stakeholders to maintain clear visibility into their products' manufacturing needs at all times. These solutions unify product data in real time using a single digital thread. This means that when a product requirement or design changes at any point in the manufacturing process, engineers, suppliers and other

stakeholders can act based on the most up-to-date information possible. They can then coordinate their work more efficiently, better navigate shifting customer requirements, and get products to market faster.

As with design-related processes, about half of respondents said they use PDM or PLM solutions to execute manufacturing processes such as communicating data with suppliers and machine shops (45%), prototyping and testing (55%), and manufacturing tooling and equipment design (50%). However, many manufacturers still rely on traditional tools to execute these processes: 51% reported using such tools (or no particular tools) to communicate data with suppliers and machine shops, 42% use them for prototyping and testing, and 46% use them for manufacturing tooling and equipment design.

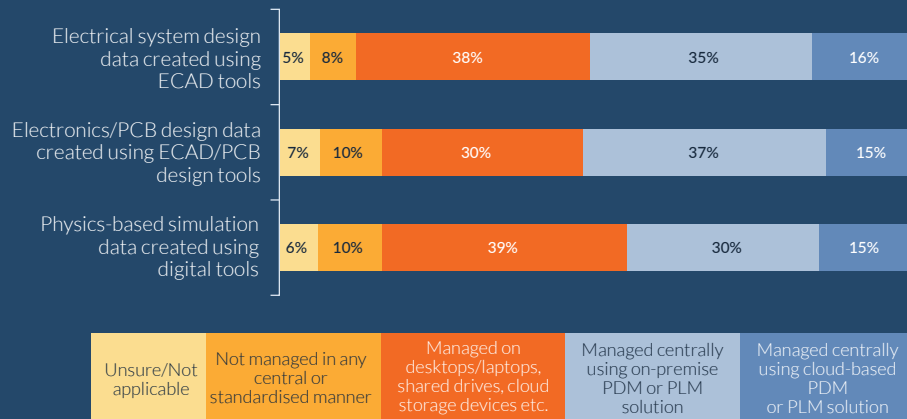
MANAGING PRODUCTION AND MANUFACTURING PROCESSES



► Figure 5: Many companies use PDM or PLM solutions to execute manufacturing-related processes, but use of traditional tools persists among respondents.



MANAGING PRODUCT DESIGN USING CLOUD-BASED SOLUTIONS



► Figure 6: Nearly three quarters of respondents (73%) have implemented, are currently implementing or have plans to implement cloud-native digital solutions to manage product design data and processes

CLOUD-NATIVE PDM/PLM SOLUTIONS

As the data explored elsewhere in this eBook makes clear, a significant percentage of manufacturers use PDM and PLM solutions to manage data and execute important design and manufacturing tasks. At one time, on-premise versions of these solutions were the only option these manufacturers had. But in recent years, many cloud-native PDM and PLM solutions have emerged, and more companies are exploring the advantages they provide.

One advantage is that cloud-native solutions reduce IT costs by transferring the burden of scaling, managing security and updating software to the solution provider. Cloud-native solutions also make it simpler to include external stakeholders; in most cases, users can be added through a simple invitation sent to their inbox. This additional traceability makes every stage of the product development process easier to navigate, even as that process – and the products it yields – becomes more complex. In addition, cloud-native solutions provide instant accessibility to stakeholders, eliminating the gap between purchase and use that users may experience with an on-premise solution.

Just 12% of study respondents indicated that they had fully implemented a cloud-native digital solution for managing product design data and processes, but a further 61% are either currently implementing or planning to implement such a solution. Similarly, only 10% of respondents have fully implemented a cloud-native solution to manage manufacturing planning data and processes, while an additional 60% are currently implementing or plan to implement one. Though adoption of these solutions remains limited, it is clear that a shift towards cloud-native options is well underway.



SUMMARY AND RECOMMENDATIONS

Numerous internal and external factors are driving manufacturers to explore new approaches to managing and executing product development data and processes. The tools that companies have traditionally relied on to do so, such as email and shared files, are beset by shortcomings that can too easily lower productivity and delay project completion. However, digital PDM or PLM solutions offer an alternative to traditional methods that a significant percentage of 2022 PDM/PLM Study respondents have embraced. More manufacturers are also implementing cloud-native solutions, which offer additional advantages over their on-premise counterparts.

Companies seeking to more effectively manage their product development data and processes should do the following.

- Assess their future design and manufacturing needs, examining current practices and quantifying gaps between present performance and the company's goals.
- Assign a “champion” to lead this effort and ensure that progress is made on the assessment.
- Adopt best practices for creating, managing and sharing engineering data with internal and external stakeholders.
- Develop a coherent approach to connecting people, processes and technologies from the design, manufacturing, procurement and services teams, using a single digital thread.
- Consider implementing a cloud-native PDM/PLM solution to reduce IT spending and improve user productivity. These solutions also provide out-of-the-box best practices and easy cross-systems integrations.

