

Autodesk PLM: Connecting the Extended Enterprise

Key Takeaways

Autodesk PLM is a SaaS Cloud solution for product design and manufacturing that provides connected product development and supplier collaboration with a closed-loop quality management capability.

Autodesk PLM enables connected product development across the supply chain with automated processes and supplier collaboration.

Autodesk PLM has a New Product Introduction/Development business process workspace that aids companies in reducing their time-to-market.

Autodesk PLM is designed to provide companies with the flexibility to rapidly adapt to changing customer and business needs.

Historically, as products began to be mass produced, organizations found it more efficient to divide labor into focused functions (i.e., engineering, manufacturing, sourcing, quality, service, etc.). Within each of these areas, productivity increased due to efficient processes, technological enhancements, and automation. However, these functions often became silos of data, disconnected from one another with limited collaboration and process sharing across the domain boundaries.

Today, products are becoming increasingly complex, smart, and connected. They span multiple disciplines (e.g., mechanical, electrical, electronics, embedded software) and involve a highly distributed, multi-tier supply chain, resulting in a need for an efficient, connected extended enterprise that is both resilient and agile.

As a result, many businesses now use Product Lifecycle Management (PLM)—a strategic business approach powered by a consistent set of solutions that support the extended enterprise. This approach spans the full lifecycle, from idea through life. It enables using an extended-level “systems of systems” approach that spans the evolving functional domains of product development and production. Many companies are also moving their PLM solutions to be SaaS and cloud delivered to provide maximum connectivity, flexibility, and minimize the cost of IT infrastructure and support.¹

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Quality Management

Quality is a key to successful product adoption and business profitability. It directly influences customer satisfaction and brand reputation. It also impacts costs related to product reliability, rework, scrap, and warranty claims, which can impact both business revenue and profitability. As such, the closer quality is related to product data across the lifecycle, the more efficient and cost-effective a company will be.

The challenge today is that much of the product definition is in the PLM platform software, so there is the possibility of data inconsistency between the QMS and PLM software systems. Changes made in one system need to be reflected in the other. The phrase “quality is everyone’s job” has often been repeated by the pioneers of TQM, including Dr. Armand Feigenbaum who wrote a number of books on the topic. Any lack of universal visibility to product data and quality data hampers an organization’s ability to make more informed decisions. Another common issue is inefficient change management, which could result in changes in one system not being seen by users of another. Companies need to overcome quality issues missed due to data synchronization challenges between systems. Disconnects from one system to another can lead to compliance errors and increase a company’s regulatory risk. The more disconnected quality is from product data throughout the lifecycle, the more difficult it becomes to find the root cause of defects, leading to recurring quality issues.

Quality is not just an issue between the customer and the company, but an external one as well. With the increasing complexity of products, companies must collaborate and rely on their supply chains anytime and anywhere to remain competitive. In recent years, we have seen many disruptions in supply chains caused by geopolitical conflicts, the COVID 19 pandemic, and other factors that negatively impacted transportation, manufacturing, and supply networks. Despite the need for more resilient, collaborative, and agile supply chains, many companies still depend on email and FTP to exchange data, leading to quality issues, delays, and potential security risks.

Beyond quality and supply chain, any process that must deal with disconnected systems results in a lack of collaboration and inefficiencies which result in a lack of competitiveness.

Driving Closed-Loop Quality Management

Quality Management needs to be a closed-loop capability to improve safety, reliability, and compliance of the overall product design and in-service performance. The Autodesk Quality Management model includes process workflows that connect nonconformance incidents, reporting, disposition, return merchandise authorization (RMAs—return request, approval, and repair), corrective and preventive actions (CAPA) compliance requirements, and change requests and change orders. It is designed to enable closed-loop quality that can help companies improve their quality processes throughout the product lifecycle both internally and across the supply chain. It helps enable organizations to gain a holistic view of quality data. It includes capabilities such as RMA, CAPA, failure mode and effect analysis (FMEA), supplier quality action report (SCAR), and work within engineering change management.

The Autodesk Quality Management workspace is fully traceable across processes, which can be used in compliance audits, proving quite valuable in highly regulated industries. It maintains a history of the product item affected and any changes, who created and modified them, and when. It also tracks when changes are signed off at each stage.

By connecting quality and product data, Autodesk PLM enables companies to establish a centralized location with visibility the whole company can utilize. This includes built-in reporting charts and graphs to monitor quality trends. This can enable processes to be improved before failures occur. The Autodesk Quality workspace also automates quality related workflow tasks along with reminders and escalations,

so addressing quality issues does not fall through the cracks. By incorporating quality in a closed-loop with PLM, in-service users are empowered to share quality issues with engineering and manufacturing. This allows engineers to improve designs, identify supplier problems, and take corrective actions more quickly. The value of incorporating quality management within PLM is not only realized by the reduction in defects and nonconformities, resulting in improved quality and reliability, but CIMdata believes it can provide increased visibility and awareness of the importance of quality.

Connecting the Extended Enterprise with Supplier Collaboration

Autodesk PLM provides a Supplier Collaboration workspace that connects and helps optimize product development across a global supply chain with automated processes for quoting, procurement, and supplier collaboration. The workspace provides the ability to align internal and external stakeholders to efficiently meet demand and ensure on-time delivery when specifying and procuring components.

The Autodesk PLM Supplier Collaboration workspace manages supplier qualifications, including both an approved manufacturers list (AML) and an approved vendor list (AVL). It provides workflow templates for collaborative processes supporting request for quotation (RFQ) with automated supplier reviews. Suppliers, partners, and customers can be included in workflows for collaboration. The workspace provides real-time status on supplier availability.

CIMdata sees many organizations attempting to collaborate with bi-direction exchanges and many still relying on disconnected manual processes. CIMdata is impressed with the functionality that Autodesk PLM provides to connect and collaborate with an organization's supply chain. This is an area of growing importance and Autodesk is well positioned to meet the needs of many companies in extending their ability to collaborate across their supply chain.

Accelerating New Product Introduction

An important process that every company has is getting new products to market. Autodesk PLM includes a New Product Introduction workspace that aids companies in reducing their time to launch a quality product to the market. New Product Introduction/New Product Development (NPI/NPD) typically involves the initial concept, research, design stages, some form of prototyping and testing, manufacturing setup, logistics, marketing, and launching the new product with the ability to monitor in-service use and performance and enable customers to provide feedback. Doing this effectively requires a solid understanding of market requirements and cross-functional participation from many departments. The more collaborative a company can be, the more likely it will be able to decrease its time-to-market.

The NPI workspace can be used to manage product development projects efficiently by aligning all stakeholders from the many departments involved in the process. It does this by managing the tasks and deliverables needed to define, develop, and launch a new product on time. The NPI workspace includes configurable workflows that enable strong collaboration, incorporating related information such as pricing, top-level bill of materials, marketing assets, and other product definition data. The workspace contains projects, project templates, project phases, project tasks, people, and teams with phase-gate milestone tracking to increase visibility and prevent delays. It also provides real-time project status and reporting. CIMdata was impressed with the configurable project templates with phase-gate milestones by product lines, business unit, product teams, and other designations. Along with the configurable workflow states, the workspace is quite flexible.

CIMdata believes the Autodesk PLM NPI workspace provides a good framework for cross-functional collaboration, which should provide customers with more visibility and agility in managing their projects and help reduce time-to-market.

Connecting with an Open API

The software systems that need to connect across any company do not come from a single vendor and whoever they come from will change over time. Therefore, it is extremely important that the product innovation platform provides an open API to connect to other software systems. Connecting the Enterprise with SaaS Cloud.

Autodesk PLM offers a highly configurable SaaS cloud solution for product design and manufacturing that spans the product lifecycle. Autodesk PLM can be accessed from multiple devices, anytime, anywhere with a user-friendly interface. It provides configurable tenants that control custom behaviors, views, templates, data validation, workflows, workflow escalations, notifications, and much more. Autodesk PLM is built on an open API to connect business systems (i.e., ERP, MES, CRM, etc.). Autodesk cloud-based PLM connects data, people, and processes with the flexibility to adapt to changing business needs. It is written with open restful APIs, enabling integration to a company's existing systems. Autodesk provides multiple CAD integrations using their open API. To make a quality product, companies require an open and flexible PLM solution that can connect to everyone in the extended enterprise, so they have access to the most up-to-date information to make the best decisions possible. Though this can always be improved upon, CIMdata finds Autodesk PLM to be quite configurable with an intuitive user interface, both of which are essential for adoption.

Conclusion

Connecting the enterprise is essential to thrive in today's fast-paced, data-driven world. The more connected an organization is, the more competitive they will be with better collaboration, efficiency, improved quality, and more informed decision-making.

Autodesk PLM provides an intuitive SaaS Cloud solution that enables companies to connect product design and manufacturing. Its Quality Management workspace provides connected product development with a closed-loop quality management. In addition to improving the cost of quality, CIMdata believes this can drive greater visibility across the extended enterprise and more awareness to the importance of quality. The Supplier Collaboration workspace can extend connected product development across the supply chain with automated processes for quoting, procurement, and supplier collaboration. The NPI workspace enables many departments to collaborate on new product development, thus reducing their time-to-market. Autodesk PLM's cloud-based solution built on open APIs connects business systems that can connect data, people, and processes with the flexibility to adapt to changing business needs. CIMdata finds Autodesk PLM to be quite configurable and is impressed with the level of functionality, flexibility, and ease of use. Companies looking to connect their product development processes should consider Autodesk PLM in their evaluation.

About CIMdata

CIMdata, a global strategic management consulting firm, provides services designed to maximize an enterprise's ability to design, deliver, and support innovative products and services. For more than forty years, CIMdata has provided industrial organizations, providers of digital technologies and services, and investment firms with world-class insight, expertise, and best-practice methods on a broad set of product

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