COMMENTARY

PLM, SaaS, and Digital Transformation

Today's Business Imperative

Key Takeaways

Digital transformation is a continuous journey that requires a range of product lifecycle applications that are flexible and scalable from strategic providers that companies can trust to support and evolve as their needs adapt to a rapidly changing business environment.

The adoption of PLM in cloud-based environments will continue to grow and garner significant attention across diverse industries.

The combination of dependable support, flexibility, risk mitigation, security, and scalability provided by SaaS PLM platforms in concert with cloud partners is becoming a business imperative.

Siemens Digital Industries Software and Amazon Web Services partnership delivers the technologies and expertise to enable effective business transformation.

Introduction

Most companies today are under constant pressure to adapt to new market realities. Successful companies continuously evolve to enhance business opportunities, improve profit margins, leverage human and physical resources to sustain their competitive edge and drive innovation.[1]

Digital transformation takes everything to the next level. A successful digital transformation enables organizations to connect the entire product or process development lifecycle with multiple teams across domains or design disciplines sharing data and implementing actionable insights. This empowers enterprises to rapidly revamp their processes and business models, encouraging an agile, resilient, and more competitive outcomes.

Early attempts at digital transformation failed due to poorly maintained on-premises applications, outdated operational technology (OT) infrastructure, a lack of open solutions, and overburdened IT staffs. Companies often failed to create an atmosphere that embraced change, further decreasing an organization's ability to transform. Achieving a successful digital transformation requires the presence of trust, support, flexibility, and a broad range of scalable technologies. Product Lifecycle Management (PLM) is a key component of any manufacturing company's digital transformation journey. Delivering

1 Research for this paper was partially provided by Siemens Digital Industries Software and Amazon Web Services

PLM in a more widely distributed, easy-to-manage, and scalable manner is core to achieving both digital transformation and business success.

Obstacles to Moving to the Cloud

Historically, cloud-based PLM software solutions suffered from a slower rate of adoption when compared to other enterprise applications such as customer relationship management (CRM), manufacturing execution system (MES), and enterprise resource planning (ERP). CIMdata has conducted multiple, multi-sponsored research projects on the use of cloud-based solutions to enable PLM strategies and processes in industrial companies. In that research, companies responded that security was a major concern and an obstacle to cloud adoption. Research revealed a perception that data maintained behind a company's firewall was more secure than data resident in the cloud. This was especially true for the intellectual property created within heavily regulated industries.

Another obstacle hindering the transition of PLM to the cloud was the complex environment potential customers faced regarding on-premises applications, customizations, and integrations. Many legacy applications and integrations grew out of mergers and acquisitions and the idea of moving these applications to the cloud was a daunting task. Migrating complex applications to the cloud was a non-starter for many customers due to the considerable time, cost, and disruption to business operations. In addition, most IT departments (especially in smaller organizations) lack the expertise to implement and manage cloud operations.

During this period technical debt associated with maintaining complex, on-premises infrastructures was consuming larger portions of the company's IT budget. On-premises solution suites became costly to procure and update. The demand for significant on-going, on-premises maintenance, which impacted security, up-time, and workforce productivity weighed heavily on the bottom line.

How the Global Pandemic Changed Everything

Before the COVID-19 pandemic, the momentum behind transitioning to cloud services did not predominantly stem from "cloud-first" corporate strategies. Rather, practical considerations such as addressing specific business obstacles often served as the driving force for cloud adoption. While the potential for updating and streamlining technology stacks, as well as reducing IT and infrastructure expenses existed, these were not the foremost incentives. Over time, the key drivers for migrating to the cloud have shifted towards digital transformation endeavors, rapid innovation, bolstered cybersecurity, global cooperative efforts, and agile scalability with reduced risk.

The emergence of the COVID-19 pandemic and the corresponding shift to remote work exposed various vulnerabilities in how companies managed their PLM applications and supported remote teams were key challenges revealed during this period. One notable advantage of cloud-based PLM is the ability to access data and processes from anywhere at any time, enabling seamless remote collaboration—an essential aspect for widely dispersed work environments.

The pandemic also highlighted multiple concerns, including risks associated with outdated skillsets; effective management of remote teams; ensuring a robust network infrastructure; flexible, scalable computing capabilities; disaster recovery; cost-efficient data backups; and the imperative to enhance organizational resilience concerning business processes, continuity, and agility.

The global health crisis also spurred companies to accelerate their digital transformation initiatives. While change can be challenging, CIMdata has witnessed that uncertain times can create a more receptive

environment for implementing long desired, yet potentially disruptive, changes. Supporting this are the results of a recent survey which found that 97 percent of the 2,833 respondents cited cloud migration and adoption as a top, or emerging, priority for their organization.[2]

Embracing a Cloud-Based Digital Transformation

Transitioning to a cloud infrastructure can seamlessly link the entire enterprise and support a diverse range of applications. CIMdata believes this is a key component to any successful digital transformation initiative. and offer a significantly improved chance to establish an environment capable of swiftly adjusting to meet company requirements. A major cloud provider, such as Amazon Web Services (AWS), can deliver exceptional scalability and an agile, low-cost global cloud platform. Cloud service providers can exceed 99.99 percent of service-level agreements (SLAs) in several categories and provide the huge bandwidth necessary for companies to scale at their own pace with essentially no limitations and/or disruptions.

Add to this the proliferation of Software as a Service (SaaS) offerings now available. Cloud-based SaaS offerings—another component of digital transformation—provide companies with their latest software solutions along with rapid, strong, technical support. One of the primary benefits of cloud-based PLM software is rapidly deploying the solution in hours or days. SaaS PLM solutions offer flexible and scalable functional options coupled with continuous enhancements to future-proof a business.

Teamcenter from the Siemens Xcelerator portfolio of industry software. Teamcenter has long served as a proven platform for business and industry. Siemens recently introduced a SaaS offering called Teamcenter X. Instead of IT staff being overburdened trying to keep the lights on in an outdated, on-premises legacy infrastructure, they can turn to an industry-proven PLM solution that adds instant business value. This empowers organizations to quickly realize the benefits of PLM without upfront costs.

Another significant benefit of moving to a SaaS PLM solution is scalability. Organizations of all sizes can quickly scale up or down based on demand. AWS offers near infinite technology resources available on demand as an operating expense, eliminating the need for capital planning and lengthy hardware acquisition timelines.

How Secure is SaaS PLM?

Companies that leverage cloud technology for their operations and as part of their digital transformation significantly enhance their data security. Siemens' partner AWS, for instance, provides a suite of robust encryption and security features, including access control, identity management, encryption of data at rest and during transmission, as well as network security, ensuring an elevated level of protection. The leading cloud providers devote more resources and invest more on security technology and operations than any single manufacturing enterprise could ever support.

AWS has obtained third-party verifications confirming their alignment with security and compliance standards across thousands of regulatory requirements. Some will adhere to the Federal Risk Management Program (FedRAMP) prerequisites, ensuring stringent security measures for U.S. government entities and affiliated contractors managing International Traffic in Arms Regulations (ITAR) data. Some will also uphold adherence to the Code of Conduct for the EU (CISPE), affirming compliance

2 Source: Siemens and AWS Benchmark Collaboration Study, June 2023, conducted by Channel Media & Market Research.

with General Data Protection Regulation (GDPR) and underscoring their dedication to data protection and privacy for their EU customers.

Today's Scalable SaaS PLM Offerings

A cloud-delivered PLM solution offers companies the unparalleled flexibility required to evolve their business models and operations and, over time, significantly reduces technical and operational debt. With a SaaS approach, companies can add (or remove) applications and functionality as needed so they can better serve customer demand and react to unplanned market conditions.

CIMdata believes a well-rounded PLM SaaS platform must have the ability to grow with the business, enabling the enterprise to collaborate in an end-to-end closed loop environment. This goes well beyond the disciplines of engineering, manufacturing, and services, to include related disciplines such as technical publications, quality control, and sourcing across the entire value chain. In many cases, this will include the ability to manage virtual representations (i.e., digital surrogate) of the company's assets or collection of physical assets that can exploit data flow to and from the associated physical assets. The PLM platform should incorporate a digital thread that connects all aspects of the product with bi-directional traceability. This is not just accomplished in a linear fashion, but in a multi-dimensional web of connections that span the extended enterprise. To accomplish this, CIMdata believes the PLM provider must connect product data across not just their own applications, but across other vendor's applications. In addition to providing an open platform, they must provide an open, low-code application development platform that enables business users to quickly create flexible, intuitive web and mobile applications. This enables organizations to quickly adapt to changing business requirements without necessitating major changes to the underlying infrastructure.

Concluding Remarks

CIMdata believes that to maintain market competitiveness, organizations must adopt a continuous approach to digital transformation. This demands deployment of a range of product lifecycle applications that are flexible and scalable from providers they can trust to support and evolve as their needs adapt to a rapidly changing business environment. The collaboration between Siemens and AWS highlights a highly productive cloud-based environment offering state-of-the-art computing services, software, and support. SaaS offerings, such as Teamcenter X, are available from the Siemens Xcelerator portfolio of industry software and enable companies of all sizes to achieve their digital transformation with increased flexibility, scalability, and accessibility.

CIMdata projects the transition and adoption of PLM to cloud-based environments will continue to grow and garner significant attention across diverse industries. As organizations embark on their digital transformation journeys, the amalgamation of dependable support, flexibility, risk mitigation, security, and scalability provided by SaaS PLM platforms in concert with cloud partners is becoming a business imperative.

This combination drives faster and more predictable digital transformation with new manufacturing insights, automated processes, increased collaboration, and operational excellence helping organizations of all sizes to realize their digital journey.

CIMdata recommends that companies needing to accelerate their digital transformation journey, include in their evaluations of technology, Siemens Teamcenter X SaaS offering and other Siemens Xcelerator portfolio of SaaS offerings available on AWS.

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 lifecycle management (PLM) topics and the digital transformation they enable. CIMdata also offers research, subscription services, publications, and education through certificate programs and international conferences. To learn more, visit www.CIMdata.com or email info@CIMdata.com.