

Out-of-the-Box PLM to Get Faster to Market and Value

CIMdata Commentary

Key takeaways:

- *PTC's standard out-of-the-box (OOTB) configuration of Windchill helps manufacturers improve collaboration across their global operations by enabling central management of data from multiple computer-aided design (CAD) systems and tracking changes to engineering bill of materials (EBOMs).*
- *PTC's OOTB Windchill implementation ensures consistent future upgrades by leveraging REST and OSLC standards, as well as industry best practices gleaned from years of collaboration with customers.*
- *PTC's OOTB Windchill implementation future-proofs customers by helping them leverage new capabilities immediately while supporting future process and technology changes.*
- *PTC with its OOTB Windchill implementation offering shoulders the responsibility of keeping its customers at the cutting edge of technology as it evolves in the areas of digital thread, digital twin, and augmented reality (AR).*

Out-of-the-Box, Configure, or Customize to Remain Innovative and Competitive

In the ever-changing world of cloud computing, software-as-a-service (SaaS), internet of things (IoT), artificial intelligence (AI), augmented reality (AR), and Blockchain, manufacturers and their supply chain participants must innovate much faster than ever before while reducing costs. PLM solutions that lack flexibility for adapting to the changing conditions and landscape can negatively impact the competitiveness and survivability of manufacturers. Customized legacy PLM implementations can create significant barriers to upgrading to new functionalities, and in turn hamper the business transformation needed to realize visions such as connected intelligent systems and Industry 4.0. Manufacturers should be focused on creating innovative products and not on developing enterprise solutions such as PLM, which are needed to ensure smooth management of complex changes in the future.

CIMdata, along with most of the leading PLM solution providers and industry users, has traditionally defined configuration as a way to adjust the behavior of enterprise solutions such that code changes are not needed to carry the configured capabilities forward to the updated versions of the solution. Consequently, configurability is a highly desirable attribute. Customization, on the other hand, is considered an undesirable tactic, used mainly to compensate for the inability of the enterprise solution to support the specific needs of an organization's product lifecycle, including integration with other solutions, through configuration. Customization necessitates costly and time-consuming re-implementation of customized functionality with each subsequent upgrade. CIMdata and almost all PLM solution providers recommend that customization be avoided.

Sustainability of a domain application, like a PLM solution, over time and across functions is important for manufacturing businesses as they combat the ever-changing forces of competition. Customization of a PLM solution runs counter to this, fostering the risk of the custom application not keeping pace with an organization's growing transformational needs.

CIMdata recommends that the industry strive for PLM solutions that can largely be implemented OOTB (>80%) with some configuration (<20%), while eliminating customization.

Given the fact that customizations and the services associated with them could account for 40% to 50% of PLM costs, avoiding customization by aligning with industry best practices not only has a significant impact on the agility of future business transformation but also on controlling solution costs. Standardization of PLM configurations, guided by industry standard processes, helps attain a more comprehensive solution landscape and achieve better control for making decisions that optimize the organization's operations.

Benefits of Leveraging PTC's OOTB Windchill Implementation

Disconnected siloes and enterprise systems along the product lifecycle can make it quite difficult for stakeholders to find the information they need. An understanding of what information is already available is often lacking. PTC's OOTB Windchill helps orchestrate the digital assets across multiple systems, enabling product development teams to break down those siloes, reduce time-to-market, decrease costs, and foster innovation.

Specifically, the benefits of PTC's OOTB Windchill implementation could be highlighted under the following headings:

- Features and functions
- Time to implement
- Flexibility
- Costs
- Quality assurance
- Compliance

Under features and functions, PTC's OOTB Windchill comes with the following three main capabilities which are outside the realm of traditional PLM and very relevant to the rapidly changing competitive environment facing manufacturers:

- Augmented reality (AR) design share
- Digital thread backbone
- Industrial Internet of Things (IIoT) connectivity

PTC's AR design share enables teammates to interact with a product design in its physical context, while maintaining intellectual property (IP) protection. This OOTB value is particularly poignant for configuration-specific 3D visualization using AR. The digital thread backbone helps associate information across the value chain by orchestrating data across multiple systems. Finally, the IIoT data from field devices and machines can be leveraged to realize a closed-loop PLM solution for robust product development.

These three capabilities may not be needed by all PTC customers in the short-term, but the unavoidable digital transformation demands on them within the next three to five years, will require appropriate leveraging of AR, digital thread, and IIoT, and, getting those capabilities OOTB with Windchill would avoid considerable complexity, delays, and cost.

For more traditional applications, PTC's OOTB Windchill enables bill of materials (BOM) transformation, which helps companies pull data across domain applications from engineering, manufacturing, and service into a single view. It also supports multi-CAD scenarios that involve complex CAD relationships and advanced functions like top-down design and bottom-up CAD-driven BOM, heterogeneous design in context, and design branching.

Implementing and integrating a PLM solution can be time-consuming, depending upon the other enterprise systems and applications that the solution must integrate. Scope creep, new

business demands, and non-specialist information technology (IT) staff are all issues to consider. However, in comparison with the slowness of deploying complex features and functions based on customization, the deployment of same level of features and functions through PTC's OOTB Windchill is less time consuming because of the use of standards such as OSLC and REST, as well as other practices commonly followed in different industry verticals. RESTful web services and the OSLC standards are significantly less complicated and more performant than SOAP, which only allows XML.

Flexibility will be a key demand on PLM solutions going forward, which OOTB solutions must provide despite delivering efficiencies based on industry standards. In general, OOTB solutions win on flexibility since they are designed for many customers and must be flexible to meet many needs. PTC's OOTB Windchill appears to be easy to configure without coding. It is highly configurable for domain experts, as well as for role- and task-based scenarios. Moreover, PTC's OOTB Windchill is also flexible in terms deployment whether on the PTC cloud or on premise. Additionally, it can be broken down and configured due to the modular approach that PTC uses to build its applications.

For the same of number of features and functions, PTC's OOTB Windchill should prove less expensive than custom built solutions. That is because the coding in custom built solutions is unique to the customer's business. Not only is there the cost of the platform, there is also the cost of the system coding, as well as the cost of system maintenance, upgrades, updates, recoding, adjustments, and long-term total cost of ownership.

An oft-forgotten dimension of the custom solution versus OOTB comparison is quality assurance (QA), which is a key part of mission-critical solutions such as PLM. A common issue with custom coding is the lack of QA rigor. Custom coders seldom run test cases to the depth and rigor level of professional QA teams. Moreover, the QA teams of PTC's OOTB Windchill also have the advantage of a large number of customer field tests. When problems are found in the field, PTC fixes them and releases patches or updates, thereby improving the overall robustness of the OOTB Windchill.

Another challenge in comparing the custom code versus OOTB PLM solution is compliance, which is critical in many industries like aerospace and defense, medical device, automotive, and retail. Custom coding puts the onus entirely on the PLM buyer for complying with a specific law, an area in which the custom code developing business may not have or has limited experience. Security risks could be inadvertently introduced with custom code. PTC's OOTB Windchill helps to a large degree in handling a customer's compliance burden based on the rules and workflows built into the solution from prior experience with a large number of other similar customers.

In the long-term, it is about choosing the PLM solution that evolves to keep the customer's business at the competitive edge. Manufacturers must deliver products and product-service combinations under hypercompetitive business pressure when the only way to succeed is to focus on differentiators while outsourcing the non-core parts to specialists, which is where PTC's OOTB Windchill solution can prove effective.

The benefits of PTC's OOTB Windchill have been experienced and leveraged by many manufacturers in different industries globally. One recent account is Mitsubishi Heavy Industries Engine and Turbocharger, Limited (MHIET),¹ which deployed PTC's Windchill across its global operations. The standard OOTB Windchill deployment is enabling MHIET's technical

¹ Mitsubishi Heavy Industries Engine & Turbocharger Selects PTC Windchill to Drive Innovation and Improve Operational Efficiency, April 11, 2019. See <https://www.ptc.com/en/news/2019/mitsubishi-selects-ptc-windchill-plm-solution>

information management systems group, Mitsubishi Unified System for Engineering (MUSE), to manage multi-computer-aided design data, as well as to change and track information associated with its engineering bill of materials. Windchill's open architecture is also enabling MHIET to improve the speed and quality of global operations, in addition to advancing collaboration across individual departments and overseas locations. Windchill has also been reported to makes it easier to leverage a consolidated, up-to-date digital thread of product information, including connected data. Additionally, the Windchill users across the value chain can interact with data dynamically in 3D—both on-screen and through AR.

Summary

In today's day and age, it is imperative that manufacturers remain supple and ready for leveraging cloud computing, SaaS, IoT, AI, AR, Blockchain, and other future technologies that may appear on the horizon, to become more innovative and cost-competitive in the constantly changing business landscape. Satisfying changing customer expectations while taking advantage of fast evolving technologies requires a PLM solution to be at the core of the innovation capability of a manufacturer, to be time- and cost-efficient to implement, as well as maintain and upgrade. CIMdata observes that industrial businesses that have adopted the strategy of primarily OOTB PLM deployments supported by standardized solution configuration have fared much better in global competition.

PTC's OOTB Windchill achieves the following elements that can help manufacturers remain competitive in the face of ever-changing technological and competitive conditions:

1. Capabilities that have been evolved with thousands of customers and best practices come embedded with OOTB Windchill and are consistently updated.
2. New trends in technology for a broad base are already anticipated before they become requirements for a specific company, eliminating the need for companies to maintain a critical mass of expertise in PLM.
3. By not using company resources to build custom applications businesses are able to drive value to the organization right away. A faster deployment means getting a faster start than competitors.
4. Configurations are offered based on what the customers may want to vary based on insights gathered from interactions with a wide range of industry players and build-in of forward-compatible customization options, such as REST APIs.
5. Help manage and embrace product and organizational complexity as product lifecycle management becomes increasingly more complicated, threatening to make silos of static information unsustainable.
6. Enable continued executive sponsorship of digital transformation initiatives through fast time-to-value through easy deployment, configuration, and maintenance.
7. Avoid costly and time-consuming customizations and their upgrades, as well as avoid risks associated with building own solutions utilizing third-party solution providers to fill technology gaps.
8. Sustainable solution over time and across functions by leveraging standards and industry best practices. OOTB business processes further facilitate deployments across the enterprise versus deployment at the departmental level that can make PLM difficult to expand.

About CIMdata

CIMdata, an independent worldwide firm, provides strategic management consulting to maximize an enterprise's ability to design and deliver innovative products and services through

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