

PTC's LiveWorx 2019

CIMdata Commentary

Key takeaways:

- *Deployment of advanced capabilities such as IoT, AR, Digital Twin, and Artificial Intelligence is accelerating but implementation and systematic digital transformation needs careful planning and a value-focused roadmap.*
- *Cyber security continues to grow in importance and PTC's investment in cyber security leadership is an important step forward.*
- *PTC has configured their offerings into a set of four "platform" segments: 3D Platform, PLM Platform, IoT Platform, and Experience Platform with four investment areas: 1) Enabling solutions for IoT and AR-enabled engineering, service, and manufacturing; 2) System stability, scalability, and security; 3) Lifecycle management of solutions; and 4) Improved interoperability with strategic partners.*
- *PTC executives emphasize that Windchill and its PLM capabilities continue to be an important foundation for successful digitalization and transformation of an enterprise.*
- *PTC's strategic relationships with Microsoft, ANSYS, and Rockwell Automation continue to mature and are delivering synergies reflected in new and improved product offerings and joint sales opportunities.*

CIMdata attended PTC's LiveWorx 2019, held in Boston June 10 through 13, 2019. LiveWorx continues to grow as more and more individuals and companies—manufacturers, service and maintenance providers, technology solution developers, systems integrators, consultants, and others—want to learn more about PTC's expanding product suite and its partnerships. According to PTC, there were over 9,500 individuals in attendance or logged in to live streaming sessions during LiveWorx 2019. Additionally, LiveWorx 2019 had over 30 sponsors and over 240 breakout sessions that covered PTC's extensive solution suite. The Xtropolis/X-Factory exhibition included more than 80 exhibitors who provided attendees the opportunity to talk with, see, and learn about PTC partners, technologies, and solutions. CIMdata was among almost 200 analysts, press, and media representatives covering the event.¹

Mr. James Heppelmann, PTC's President and CEO, kicked off the event. He highlighted PTC's theme of "Better Ways to Get Work Done" and throughout his keynote walked the audience through a series of demonstrations that showcased PTC's solutions and their integration with one another. As part of each demonstration, he introduced customers who presented practical examples of how they had implemented these solutions within their companies. This keynote effectively illustrated how PTC has continued the integration of their solutions to create the digital thread throughout the product lifecycle. Mr. Heppelmann also voiced a renewed emphasis on the Windchill product suite, what PTC refers to as "PLM," and its importance as a key to digital transformation, stating multiple times that PLM is more important than ever. Throughout the demonstrations, he showed the growing power and expanded use of augmented reality (AR) technology and noted that Vuforia would constitute 7% of PTC's software sales in 2019.

Mr. Blake Moret, Rockwell Automation's President and CEO, joined Mr. Heppelmann to discuss the success of the PTC-Rockwell Automation partnership stating that the partnership has

¹ Travel and other expenses were provided by PTC.

resulted in a significant sales pipeline. He presented the example of Ford Motor Company, which began implementing the new Factory Talk Innovation Suite Powered by PTC in one factory and in a short time, based on benefits achieved in the first implementation, decided to deploy the technology in four additional facilities. CIMdata thought that the keynote and its demonstrations showed how well PTC is blending its various technology and application suites and working with its new partners.

During the Q&A session for analysts and media, Mr. Heppelmann provided additional information regarding PTC's on-going business, as well as its future plans and activities. He stated that PTC continued to see strong growth in Internet of Things (IoT) and AR, projecting that these two areas would represent 40% of new software sales for PTC in 2019. He also said that CAD sales were growing at double digit levels. Mr. Heppelmann provided additional insight into the success of the PTC-Rockwell Automation relationship with over 30 new joint customers signed within the past two quarters. Mr. Heppelmann stated that AR growth will make up 1/3 of the overall 2019 software sales growth for PTC and that PTC's CAD value-added resellers (VARs) who may not be ready to sell PTC's PLM offering are looking to sell PTC's AR tools. He also noted that funding for smart, connected products primarily comes from engineering and Information Technology (IT), but that funding for the convergence of IT and Operational Technology (OT) is more likely to come from manufacturing.

With their major commitment to IoT and Cloud computing PTC is tackling, what is arguably the most significant barrier to adoption, namely cyber security. They have recruited Mr. Josh Corman to the position of PTC's Chief IoT Security Officer. Mr. Corman has served in several key roles in industry and the public sector including Research Director for Enterprise Security at The 451 Group and Principal Security Strategist for IBM Internet Security Systems. During a session for analysts and media, Mr. Corman spoke on the importance of security in the new connected world, stating "if you can't afford to protect it, you can't afford to connect it." He noted that the threats to security have begun to trigger political responses with new public policies such as requiring software Bill of Materials (BOMs) on all medical devices being put into place. He discussed PTC's commitment to security and their new initiatives to address security issues, both for their solutions and their customers' environments. Mr. Corman said that PTC has created a "Shared Responsibility" policy and a Coordinated Vulnerability Disclosure (CVD) program for identifying, testing, and solving security issues. CIMdata congratulates PTC on taking a leading position in this crucial area—one that will only grow in importance as smart, connected products and systems proliferate.

Ms. Hillary Ashton, PTC EVP and General Manager Augmented Reality, hosted a panel session with representatives from Aggreko, Fujitsu, GlobalFoundries, and Howden who talked about their implementation and use of AR and provided the following Top AR Tips:

- An innovation journey is non-linear—you must take some zigs and zags to reach high ground.
- To drive value from AR, you must have very clear use cases about how it supports the enterprise's digital journey.
- Understand the business problem you are trying to solve and measure as you go.
- Collaborate and build cases for AR across your value chain. No one is alone on this journey.

The first day's closing keynote was presented by Mr. Peter Diamandis, Founder and Executive Chairman, XPrize Foundation, who delivered a very engaging and enlightening discussion on "The Power and Implications of Exponential Change." Mr. Diamandis started by saying "the

future is brighter than you believe, and the future is faster than you think.” He provided many examples of companies that didn’t take advantage of new technologies or changes, and who are now out of business. He stated that the convergence of technologies is creating new opportunities for business and new business models. With the exponential growth of computing power, network bandwidth, and truly global coverage, Mr. Diamandis said that we are headed to a world where anyone can know anything, anytime, anywhere. With more minds able to imagine and do more things, Mr. Diamandis stated that we can and will solve many of the problems that today we think are unsolvable. This was a great session to end the day giving inspiration and challenges for all the attendees.

Over two days, in addition to the executive keynotes and special sessions for analysts and media, CIMdata attended several track sessions on a wide range of topics and technologies. While there were too many sessions to comment on in this commentary, the following paragraphs provide selected highlights.

Mr. JP Provencher, PTC VP Manufacturing Strategy & Solutions described PTC’s Factory Solutions Framework and how they are working with Rockwell Automation in four focus areas:

1. Enterprise Operational Integrity
2. Digital Workforce Productivity
3. Scalable Production Management
4. Intelligent Asset Optimization

One of the major objectives of this initiative is to enable their customers to get more value from the investments they have already made. Mr. Provencher said that a key enabler is Kepware, which is used to make connections between both new and older equipment. He said the process is to **wrap** around the current environment, **extend** it into new areas and new capabilities, and then **transform** the environment for the future. CIMdata believes that this strategy provides companies a practical approach to integrating their R&D and manufacturing environments while leveraging their legacy investments.

Mr. Martin Neumueller from Creo Product Management led a session titled “Creo Parametric 6.0 Product Update: Core Modeling and User Experience.” He discussed PTC’s investments in additive manufacturing and generative design, and reported on a series of user interface improvements released in Creo 6.0. These include user manipulation of column width in the model tree and ability to control the color and transparency of the background of a dimension’s text. He noted that a few subtle enhancements that can deliver productivity improvements such as helical volume sweep to generate a helix curve and that regeneration is avoided for features not affected by an edit. He stated that, over time, PTC’s objective is to embed emerging technologies within Creo, e.g., expand the Frustum AI capabilities. However, the most impactful news Mr. Neumueller delivered was that in the future Creo 7.0 release multi-body solids will be supported. CIMdata welcomes this announcement as Creo is the last remaining, premium solids-modeling solution in the industry to support multi-body.

In a session on the ThingWorx platform and solutions, Mr. Joe Biron, PTC CTO IoT was joined by Mr. Howard Heppelmann, PTC GM Smart Connected Operations, Mr. Iain Michel, PTC General Manager ThingWorx IoT, and Mr. Kevin Wrenn, PTC Divisional GM, PLM Segment. Mr. Biron stated that PTC has four platforms—3D Platform, PLM Platform, IoT Platform, and Experience Platform and across these are four investment areas:

- Enabling solutions for IoT and AR-enabled engineering, service, and manufacturing
- System stability, scalability, and security

- Lifecycle management of solutions
- Improved interoperability with strategic partners (i.e., Microsoft, Rockwell Automation, ANSYS)

During a one-on-one session CIMdata had a chance to probe further regarding the PTC-Rockwell Automation relationship. Announced one year ago, this relationship has the hallmarks of a well-planned and, to date, well executed strategic partnership. During the first six months both companies realigned several of their business departments, e.g., sales, to work together to create a combined product solution. This co-branded “Factory Innovation Suite Powered by PTC” consists of Kepware, ThingWorx, and Vuforia from PTC and Factory Talk Analytics and Factory Talk MES from Rockwell Automation. PTC stated that, over the past six months, the joint team has closed almost 40 deals—50% non-Rockwell customers and 70% non-PTC customers, and has generated a significant pipeline of business opportunities. Going forward, both companies plan to expand their joint offerings by embedding PTC IoT and AR technology and solutions into Rockwell Automation products, and potentially into Rockwell Automation partners’ products. CIMdata believes that this relationship can provide significant business opportunities for both Rockwell Automation and PTC. At this time the relationship does not include CAD or PLM—two areas that CIMdata thinks could provide additional opportunity for both companies.

Mr. David Breugh, Microsoft Manufacturing Lead—Americas, presented an insightful talk on “Digital Transformation for the Industrial Enterprise.” He stated that AI is transforming the workforce in areas from talent management, skills enhancement, productivity enablement to the work environment itself. Mr. Breugh stated that AI is also transforming manufacturing execution and powering intelligent supply chain operations. He then described three waves of digital transformation:

- Wave 1—**Connected** in which companies and process are more integrated and aligned, using the cloud to connect and automate
- Wave 2—**Predictive** in which companies will work smarter and faster as they move from reactive to predictive using big data, machine learning, and IoT
- Wave 3—**Intelligent and Empowered** in which companies will use algorithmic decision making and automated execution

Additionally, he shared transformation lessons from industry leaders. These include:

- What to Do—Take a “digital first” mindset and align top leaders on a shared vision
- Where to Focus—Prioritize opportunities based on potential value and develop a balanced roadmap
- How to Do It—Establish proactive governance and change leadership and use transformation experts to lead until you are ready

CIMdata thinks that Mr. Breugh’s examples and insights are very practical and useful, and can help guide companies through their digitalization journey.

Concluding Remarks

LiveWorx continues to be an exciting event showcasing PTC’s commitment to helping their customers create, deliver, and operate smart connected products and systems. No longer focused on just IoT, LiveWorx showcases the full range of PTC solutions and partnerships. Sessions covered all of PTC’s products and technologies, and demonstrated PTC’s broad suite

of solutions to better address the full product lifecycle. CIMdata thinks that PTC's strategic relationships, e.g., ANSYS, Rockwell Automation, and Microsoft, are delivering new and valuable capabilities for their customers. PTC continues to maintain its position on the forefront of IoT and AR development and adoption, while enhancing and evolving its traditional CAD and PLM solutions. Finally, CIMdata heartily agrees with Mr. James Heppelmann's statement that PLM is more important than ever as companies proceed down their digitalization transformation journey.

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 the application of Product Lifecycle Management (PLM). CIMdata provides world-class knowledge, expertise, and best-practice methods on PLM. CIMdata also offers research, subscription services, publications, and education through international conferences. To learn more about CIMdata's services, visit our website at <http://www.CIMdata.com> or contact CIMdata at: 3909 Research Park Drive, Ann Arbor, MI 48108, USA. Tel: +1 734.668.9922. Fax: +1 734.668.1957; or at Oogststraat 20, 6004 CV Weert, The Netherlands. Tel: +31 (0) 495.533.666.