PLM and Model-Based Product Support: PTC Wins Prestigious $100 Million U.S. Navy Order
Verdi Ogewell posted August 19, 2020 on www.engineering.com/PLMERP/

U.S. Navy deal involves 15,000 users and could be worth $100 million over five years.

Is it possible to produce really big business given the coronavirus pandemic's crippling effects on many of the world's large enterprises and organizations? Absolutely. Just ask PTC's CEO, Jim Heppelman, and his coworkers—they just closed a PLM deal with the U.S. Navy that could be worth as much as $100 million over five years, and involving 15,000 users.

There is no doubt that this deal is one of the year's biggest—but it isn't only a great business deal. It's also significant evidence of how far PTC has advanced in terms of technology. PTC's PLM-suite Windchill, which includes digital twin solutions, digital thread capability and augmented reality (AR) solutions, will be used to support the U.S. Navy in modernizing its mission-critical technology infrastructure.

The aim is to use Windchill as the basis for the Naval Sea Systems Command's (NAVSEA) Model Based Product Support (MBPS). More generally, the Navy will use a cloud-based Software-as-a-Service (SaaS) model from PTC to support the digitization of NAVSEA, which is a branch of the U.S. Navy.

According to NAVSEA's terminology, MBPS covers things such as the comprehensive configurations of components and other measures needed to streamline administration, cooperation with suppliers and the preparedness and use of weapon systems, ships and submarines over their life cycles.

"The choice of Windchill represents an exciting shift for the Navy, where they move from building custom software to using the best commercial solutions in the class. With Windchill, the Navy will be able to reduce costs, accelerate innovation and improve cooperation," PTC's Jim Heppelmann said in a comment.

Mission-critical infrastructure. PTC technology through its Windchill PLM suite will play an important role to support the U.S. Navy as it modernizes its mission-critical technology infrastructure. The project will enable the U.S. Navy to unite legacy systems, a myriad of repositories in various locations and ultimately support more than fifteen thousand users, an expansive supply network and a large

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fleet of ships and submarines. The deal could be worth as much as $100 million over five years, according to the web site FedScoop. PTC did not give any numbers in their press material. (Image courtesy of U.S. Navy/Lockheed Martin.)

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This is a prestigious order that confirms what I wrote in an earlier article on PTC: that with its technology advancements and partnerships, such as the Rockwell collaboration, PTC has the potential to rattle the PLM business. Presently, in terms of revenues PTC is a bit behind the leaders, Siemens Digital Industries and Dassault Systèmes.

From my perspective, the order from NAVSEA and the U.S. Navy is an example of a new level of technological competitiveness built on the Windchill platform and related software such as ThingWorx, including Navigate (IoT/IIoT), Vuforia (AR), Kepware (OT), Servigistics (SLM) and others.

What is Model-Based Work?

One of the most important signs of the time in both companies and organizations is a transition to model-based work. There are lots of variations in this area, with a few common ones including:

- Model-Based Definition (MBD)
- Model-Based Design (MD)
- Model-Based Engineering (MBE)
- Model-Based Systems Engineering (MBSE)

Taken together, the analyst CIMdata sorts all of these acronyms under the term MBx, (Model-Based x) in a similar vein to summarizing everything that happens within the framework of CAD, CAE, CAM etc. under CAx, or Computer-Aided x.

"Model-Based" Does Not Necessarily Have to be 3D Models

"The picture is compex," says analyst CIMdata's chief, Peter Bilello. (Image courtesy of PLM TV News.)

However, a "model" does not necessarily have to be a 3D geometrical image of a product or component. The "model concept" can include a number of variants in everything from a 3D model to defined, written work or logistics models. However, often in this age of digitalization in product development, manufacturing, distribution and in use by end customers, physical models are largely being replaced by digital 3D models.

This affects the entire product realization, distribution and use chain—in short, the entire product life cycle. The digital models—for example, digital twins—are included throughout the cycle, first mainly as prototypes, then as information carriers to support the handling of the physical product during its life cycle.

"But the picture is complex," explains CIMdata's chief, Peter Bilello.

"Life cycle management strategies reshape how many organizations and companies manage their data. We have begun to apply a holistic view of the products, from the original concepts to the end of their 'lives' and often even beyond that. In this, nothing of relevance is omitted. As digitalization continues its rapid penetration of companies, government organizations, the overall economy and even how we are governed at government level, change is something that tends to completely embrace us all in almost every respect," Bilello says.

The Naval Surface Warfare Center, Carderock Division, is perhaps the most important naval resource in terms of national contact points. It describes itself as "an international leader in surface and underwater vehicle science, ship systems and related maritime technology." The division is an important technical component of the Naval Sea Systems Command and a source of innovative technology for other national priorities such as the environment, energy and transport. (Image courtesy of NAVSEA.)

The Current NAVSEA System is Outdated
PTC's system is a replacement for the previous MBPS system at NAVSEA, Logistics SEA 06L, as part of the Navy's digital transformation campaign initiative to focus on model-based product support.

According to Mark Sashegyi's DVIDS report, at the "Product Support Forum Evaluation" event earlier this year, Captain Stuart Day, logistics manager for SEA 06L, stated that the SEA 06L—the U.S. Navy's IT system for logistics that provides configuration management, emergency modeling and technical data management support for ships and weapons systems—is obsolete and cannot keep pace with rapidly changing and new technologies.

"This current infrastructure," Day said, according to the website FedScoop, "greatly impedes efficient management and consistently cohesive structures in the fleet's product data and service data flora."

The solution to this dilemma was to switch from the analog, 2D-based and reactive system—which required manual data entry and delivered limited feedback—to a digital, 3D-based predictive system equipped with automated processes capabilities, integrated data and dynamic updates based on data from real handling situations, both regarding things that happen in the field as well as other situations related to weapon system and ship handling.

A Myriad of Different Repositories

So, what will the U.S. Navy gain? PTC claims that the project will enable the organization to unite legacy systems, a myriad of repositories in various locations, and ultimately support the more than 15,000 users mentioned above, an expansive supply network and a large fleet of ships and submarines.

PTC's material around this deal further notes that the choice of system is based on "a comprehensive evaluation process" in competition with "a wide range of other solutions." A not too far-fetched assumption is that the usual suspects were among these competitors, such as Siemens Digital Industries, Dassault Systèmes and Aras PLM.

Oprimizes life cycle costs and sharpens preparedness. PTC's Windchill SaaS solution will include features such as FEDRAMP and Department of Defense Impact Level 5 security compliance, as stated in PTC's press material, "to enable the Navy to optimize life cycle costs and maximize operational availability by providing corporate product data and analytics services." (Image courtesy of U.S. Navy.)

Why did the U.S. Navy choose PTC's Windchill? Important factors behind NAVSEA's choices, states PTC, included the technical capabilities, the certified cloud infrastructure, powerful collaboration features and the extensive support for efficient workflows in Windchill's SaaS version.

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The latter includes three primary functions:
- *"Navy Product Data Management" (NPDM),* to manage multiple configurations and maintain and give companies access to all components of older and future standards-based *"Navy Weapon System Technical Data Packages"* (TDP).
- *"Navy Common Readiness Model" (NCRM),* a tool for analyzing, reporting, predicting and optimizing weapon system readiness and O&S costs throughout the life cycle.
- *"Navy Data Acquisition Requirements Tool" (NDART),* for the standardization of common data, requirements and acquisition methods to facilitate the availability of technology and product data.

PTC technology in a key role. "I am honored that our technology will support the Navy as it modernizes its mission-critical technology infrastructure," said PTC's CEO, Jim Heppelmann. (Image courtesy of PLM TV News.)

Digital Thread with Product Information

In terms of Windchill capabilities, PTC points out that this PLM application suite provides a consolidated, up-to-date digital thread with product information, including linked data.

It is also clear that PTC's PLM platform has well-configurable out-of-the-box applications, which enable users to become more flexible and gain faster access to current product information required at any given time.

"With Windchill, users across the entire value chain can interact with data dynamically in 3D, both on a screen and through augmented reality," Jim Heppelmann points out. "Through distribution options, including cloud and local, Windchill offers the flexibility, performance and scale that companies need to be industry leaders. As a result of its award-winning capabilities, Windchill has been continuously recognized by independent analysts."

He concludes by noting that the company is honored that their technology will support the U.S. Navy as it modernizes its mission-critical technology infrastructure.

It is, as Captain Stuart Day asserted during the "Product Support Forum Evaluation," not just a monetary issue to place or handle more parts on ships, but to put the right parts on the right ship at the right time.

Can PTC do it? As they've already successfully piloted the project, I bet they can.