Naval Systems: Business Challenges and Key Questions

At PTC, we see industry and government stakeholders in federal aerospace and defense as being in the same boat. The near-term challenges may be different, but longer term, they're identical: mission success within budget. Since 1985, the most powerful firms in global A&D have partnered with PTC to establish and maintain a winning advantage. The US government also works closely with PTC on priorities that range from managing acquisition programs and tracking how fleets are configured, to synchronizing maintenance with technology insertion and strategic planning, all within the supply-chain operations reference, or “SCOR,” framework. PTC has the system-wide insight, proven technology and best practices to help the naval systems sector lower risk while connecting the present to the future.

Government program management

There aren't many new program starts in the naval systems. Instead, the focus is to keep the programs that are already in flight upgraded and running efficiently.

- How can we enable naval commanders to make more battle space decisions on strategy and less on ship and combat system constraints?
- How can we track the cost impact of engineering changes on a per-hull basis, then across the entire fleet as each hull is uniquely configuration managed?
- What is our optimal means to track different capability prototypes such as mission bays that might carry rescue packages in one configuration and underwater vehicles in another configuration?
- How can we accelerate our learning curve by examining product lifecycle management systems already in use by the US Navy?

Win programs

In the rare case of new naval programs, successful bidders will need to not only develop a compelling capability but also communicate that in a meaningful way to the customer. Having an excellent command of product data is necessary for accomplishing this.

- As we examine the supplier ecosystem across the key domains—hull platform, combat management system, training, sensors, undersea warfare—how can we demonstrate a PLM capability for product data that is optimized for supplier collaboration? Could this be a win theme?
- Our ship platform is a new design and not currently in active use. How can we use PLM to quickly put our hand on product data and flip that negative into a positive by emphasizing advanced production techniques with digital shipyard? Could we demonstrate that with AR?
- Many partners on our industry team have worked closely to deliver on the legacy program the new acquisition will be replacing. How can our PLM capability help to translate that shared lineage of partnership such that the government ultimately benefits?
Digital engineering policy

In June of 2018, the Office of the US Secretary of Defense issued a policy regarding Digital Engineering Strategy. It will require the use of digital models to inform program decision making as well as a single authoritative source of truth to sync documents and engineering artifacts to digital models for improved collaboration across government and industry. PLM is the centerpiece of this strategy and will have a profound impact on the way naval systems data is organized and distributed. Many NATO partners will be following suit with similar policies.

• Could an MBE approach to product data quicken the process for RCAs after a ship system failure based on intuitive, model-based views into key component data and processes?

• How are we truly enabling MBE for collaboration across geographically dispersed teams?

Knowledge retention

Governments and the industrial contractor base are still suffering from the effects of a workforce nearing retirement age. This creates a major knowledge retention continuity issue for ground vehicle systems development and operation in the US and globally.

• Do we have an adequate, trackable repository of ship testing data and associated processes such that the knowledge from those tests is transferrable to new employees?

• How can we leverage PLM and CAD systems to accelerate our existing plans for knowledge management (KM)? Could we use AR technology to speed up training time for maintainers?

• As we proceed through tech development, how can we track different prototype data for system performance, reliability, and maintainability?

Innovation in product development

No matter what our legacy CAD tool is, given the constantly changing requirements of ship platforms, PLM offers a means to improve development processes across mechanical, structural, and electrical systems as well as environmental testing. The Internet of Things and augmented reality are already ushering in major changes in the digital shipyard. These areas can be a fundamental platform for innovation.

• Should we utilize AR capabilities for manufacturing process and quantify the lifecycle cost savings to the government?

• In the lead up to SSR, PDR, and CDR, could our digital engineering collaboration processes be optimized to use an MBE approach?

Innovation versus accountability

With greater funding comes more accountability across the board—both inside government itself and in the industrial contractor base.

• While delivering on contractual requirements, how can we break the mold of the traditional financial model and put investment dollars to work in anticipation of new capabilities the government will need?

• With IoT and AR, how can we smartly build out multiple, simultaneous pilot programs securely, fail the non-performing ones quickly, and scale what is working across multiple OODA loops?