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Manage Supply Chain To Maintain Readiness



By Kevin Deal

The effectiveness of the military support chain truly defines the ability of the services to function efficiently in almost any operational scenario. The defense market faces unique challenges, and a service-oriented architecture can enable military market suppliers to pick and mix their own solution to meet demanding requirements without risk to operations.

The raw definition of the term *supply chain* is the business process that covers the acquisition of raw materials through production, storage, transport and eventual delivery to the end customer. This model assumes that every company in the supply chain is either a customer or supplier—and, in all probability, both—to one or more commercial entities. This model, however, does not necessarily apply to the management of the defense industry supply chain.

The main objective in commercial enterprise is to minimize the cost of the supply chain. This is not the primary driver for the military; much more important is ensuring the highest state of operational readiness at any given time.

Information Management Is Fundamental

"The fundamental principle of modern supply chain management is information management," said Shane Targett, in-

ventory optimization specialist at the U.K.'s Cranfield University. "The universally accepted maxim of substituting inventory with information is mature, proven and well understood." The defense industry supply chain, however, is unique in that it has to focus on support as well as supply, managing maintenance, repair and overhaul operations as an integrated process.

Maintenance and repair are major parts of the defense supply chain. Military aircraft spend more time on the ground than do commercial airlines, and military assets can sit dormant for huge amounts of time in comparison. Importantly, however, military assets have to be ready to be deployed at anything from a week's notice to a half-hour. Maintaining this state of readiness requires a vast number of boxes to remain continuously checked. The asset has to remain fueled, prepped, in perfect working order and, crucially, in the right place at the right time.

The military's ability to implement robust supply chain management is also complicated by the uniqueness of defense hardware. The gearbox from a military heavy lift helicopter has a globally complex supply chain, is almost entirely made up of specialist parts and is often built to order from specific suppliers located in multiple different geographies. Obtaining a replacement when one breaks can often take weeks, if not

months, while the part is made to order. Adding to the challenge, the very nature of military deployment makes it more likely that things will get broken.

Reach and Visibility Needed for Readiness

The broad reach of the defense supply chain and the need for visibility across the entire process mean specialized systems are needed to keep the military in control at all times. As information technology business systems have matured, two distinct families of supply chain solutions have evolved: supply chain management and supply chain execution.

Supply chain management typically encompasses all the front-end business processes centered around manufacturing and maintenance, repair and overhaul, and it will usually include subsystems such as demand forecasting, whereas supply chain execution covers the physical storage and transportation of raw materials and finished goods.

Closely linked to this is the need to be able to respond when something unexpected happens. This is key for the military, which cannot predict wars or military intervention requirements.

Therefore, any military supply chain solution needs to provide clear visibility across the whole process, from maintenance to part delivery. In addition, visibility is crucial to almost all business planning processes. The ability to see goods and materials as they are planned through a supplier's production facility with an expected dispatch date means downstream customers can, in turn, plan their business activities, removing wasted time and reducing inventory. Also, in military terms, increased visibility means that the optimal state of readiness can be achieved.

No-Risk Approach Best

Full support systems for the defense industry have requirements unparalleled in any other industry. Therefore, the enterprise planning aspects need to allow the military to pick and mix solutions as and when they are required to develop—application by application—their own customized enterprise resource planning solution.

Being able to add and remove elements built around new service-oriented architecture rather than the traditional monolithic design can enable defense organizations to add, change or modify solutions quickly as business requirements change and as needs evolve without making huge changes to the underlying enterprise infrastructure. Being able to evolve the management of its supply chain to deal with existing and new assets without risk to its day-to-day operations, the military can maintain the constant state of readiness that is demanded in modern warfare.

Keeping Military Agile

Alongside cost control, spares utilization is a huge issue for the military. The ability to predict failure of components in advance is an important point of the maintenance, repair and

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overhaul process. Health and usage monitoring systems are increasingly providing valuable data to increase safety and reliability as well as to reduce operating costs by providing critical component diagnosis and, importantly, prognosis.

Health and usage monitoring systems provide an early warning system that can alert a maintenance team to when it is going to need to replace a component. Therefore, it forms an important addition to managing the supply chain for the military, enabling it to stay agile in unpredictable times of conflict and sudden deployment requirements.

Performance-based Logistics on Increase

The military landscape contains a further complexity, especially in the more developed regions of the world, where there is a growing trend to move the responsibility for managing aspects of the supply chain into industry. Originally pioneered in the U.S., these performance-based logistics (PBL) are seeing rapid adoption as budget-strapped governments seek a greater return than they could achieve internally. Because PBL are implemented as a contract, there are comprehensive service-level agreements applied and punitive penalties for failure.

For example, the F414 PBL project in North America supports more than 1,200 engines in the U.S. Navy inventory. As such, it has delivered over \$110 million in direct savings to the Navy Fleet Flying Hour Program and provided availability levels of over 95 percent.

Keeping Military in Driver's Seat

With this level of visibility across the enterprise, service-level agreements become a key part of supply chain management. In the aerospace and defense market, this has driven the need to measure the performance of the supply chain in real time to be able to apply corrective actions on a sooner-rather-than-later basis. Such strict service-level agreements are applied to industrial suppliers in the PBL space, particularly with regard to suppliers contracting for availability or contracting for capability to the military.

The modern military supply chain contains both military and industrial elements. Therefore, solutions need to be customizable so key performance indicators can be viewed and measured using easy-to-read dials and graphs, providing end-to-end visibility across the entire supply chain.

Avoiding Strategy Leakage

Because of the nature of these requirements, avoiding "strategy leakage" across the organization through linking corporate strategy to supply chain business execution across all management roles is vital. Newly deployed solutions need to be usable as stand-alone applications quickly and also be capable of being easily plugged into existing enterprise resource planning systems, causing as little disruption as possible.

The military and its suppliers have a huge responsibility to provide a supply chain management solution that can integrate all this information from specialist part to prognosis of life span of part, while being able to identify and make sure the parts are available as soon as they are required. It's a complex problem, but one that today's new generation of solutions designed by service-oriented architecture can fix. ★