



*A forklift operator transports a pallet of ammunition at Crane Army Ammunition Activity (CAAA), Indiana. The CAAA's mission is to receive, store, and ship conventional ammunition and munitions in support of worldwide military operations. (Photo courtesy of CAAA Public Affairs)*

# Transforming Military Support Processes From Logistics to Supply Chain Management

■ By Col. (Ret.) Scott S. Haraburda

For more than two millennia, the philosophical words of legendary Chinese general Sun Tzu have influenced successful strategic military plans. Many prominent leaders have heeded his warning that “the line between disorder and order lies in logistics.”

Ammunition is one of the Department of Defense’s (DOD’s) top three largest logistics burdens along with water and fuel.<sup>1</sup> Crane Army Ammunition Activity (CAAA), located in central Indiana, has for more than a decade produced conventional munitions and provided them to war-

fighters. For as long as combat leaders have fought and won battles in Iraq and Afghanistan, they have appreciated the activity’s support.

As an Army Working Capital Fund organization, the CAAA operates under a revolving fund concept, relying on revenue from sales to finance operations rather than on budget proposals for direct appropriations from Congress. The activity operates as a business-like enterprise, managing cash and expenses in real time.

Recently, CAAA leaders saw that the ongoing fiscal crises were chal-

lenging future organizational readiness and prompting changes in their strategic planning. As a result of the rapidly changing fiscal environment, the CAAA began a dramatic transformation in its business practices by replacing its logistics-based operational processes with the more robust and flexible approaches of supply chain management (SCM).

## SCM Beginnings

Before the 1950s, business leaders thought of logistics as a military function, which involved procurement, maintenance, and transportation of

facilities, materiel, and personnel.<sup>2</sup>

Since then, the Council of Supply Chain Management Professionals (CSCMP) has defined logistics management as the activities that plan and control the flow and “storage of goods, services, and related information between the point of origin and the point of consumption” to satisfy customers’ requirements.<sup>3</sup>

Originally introduced by consultants in the early 1980s, SCM became viewed as extending logistics management outside the company to include suppliers and customers. However, SCM is more than that. According to the CSCMP, SCM encompasses all activities involved with procurement and manufacturing, including collaboration with suppliers, service providers, and customers. It also includes supply and demand management.

Even if companies don’t acknowledge it, they participate in a supply chain. But the level of participation depends on the complexity of the product, the number of available suppliers, and the availability of raw materials.

### Different Supply Chain Goals

According to the DOD’s 2010 Logistics Strategic Plan, the military logistics mission is “to provide globally responsive, operationally precise, and cost effective joint logistics support for the projection and sustainment of America’s warfighters.”

Although there are many similarities, commercial chains are much different from military supply chains. The main difference is a very different ultimate goal. The commercial sector seeks maximum profit, while the military sector seeks maximum supply support to military units.<sup>4</sup>

In essence, the military goal is to meet readiness goals while minimizing overall costs to the taxpayers.<sup>5</sup> Furthermore, the military must have a supply system that effectively responds to battlefield needs under the constraints of force capabilities, the combat environment, enemy capabilities, threats, and doctrine.

Today most military logistics units use predictive, linear supply chains that operate in traditional, hierarchical military structures. For instance, logistics managers tend to ignore parts of the supply chain they cannot see or control.

As a result, they create excess buffer stock locally to adapt to a volatile, uncertain, complex, and ambiguous environment.<sup>6</sup> This lack of coordination creates a “bullwhip effect” in which customers increase demand variability in the supply chain from downstream customers to upstream suppliers.<sup>7</sup>

### DOD Supply System

The DOD’s colossal supply system has over 100,000 suppliers and uses over 2,000 existing systems to manage its inventory, valued at \$92.6 billion in fiscal year 2015.<sup>8</sup> The inventory comprises four stock categories: approved acquisition objective, economic retention, contingency retention, and potential reutilization.<sup>9</sup>

The DOD manages two types of unique items, which are typically not managed in the commercial sector: controlled items and sensitive items. Controlled items include money, narcotics, registered mail, and precious metal alloys. Sensitive items can present a threat to public safety and include weapons, ammunition, and explosives.

To help the DOD administer most of its logistics, the Defense Logistics Agency (DLA) manages nearly 5 million items through eight unique supply chains, while processing nearly 30 million receipts and issues annually.<sup>10</sup>

In 2011, the DOD had 19 maintenance depots, 25 distribution depots, and over 30,000 customer sites.<sup>11</sup> The depots provide internal wholesale activities operating with stock inventory, distribution processes, and warehouse infrastructures. Their processes include workload projection, receipt processing, wholesale returns, stock location, materiel denials, space utilization, and transportation.<sup>12</sup>

Furthermore, the sites must com-

ply with statutory requirements. For example, the DOD must maintain the technical competence and resources necessary to ensure effective and timely response to mobilizations, national defense contingency situations, and other emergency requirements.<sup>13</sup> No more than half of appropriated funds for depot-level maintenance and repair can be contracted to commercial firms.<sup>14</sup>

### Inventory Management

The DOD’s inventory systems depend on four factors: policies regulating how much and when to order, holding costs, supply and demand, and procurement lead times. Excess inventory levels, inadequate controls, and cost overruns are problems affecting DOD inventory management.<sup>15</sup> By resolving these problems, the DOD has the potential to save millions of dollars.

Deciding when and how much to order directly affects the operating costs of the other logistics functions. One of the major problems with volatile schedule changes is the previously mentioned bullwhip effect.

The effect usually originates at the point of external customer demand and increases upstream toward the suppliers of raw materials, resulting in insufficient or excessive inventories, capacities, and costs at various stages throughout the supply chain. Reducing lead times, reducing variability, and developing alliances with vendors are a few ways to cope with this problem.

Not having the goods needed by one’s customer, known as a stockout, affects the long-term workload and has short-term impacts on the customer. Customers who experience frequent stockouts become less likely to place subsequent orders with the company.<sup>16</sup>

To prevent this, companies maintain safety stocks, basing them on demand variability, lead-time variability, and service level.<sup>17</sup> Some managers use “gut feelings” or hunches to establish safety stock levels, while others base them on a

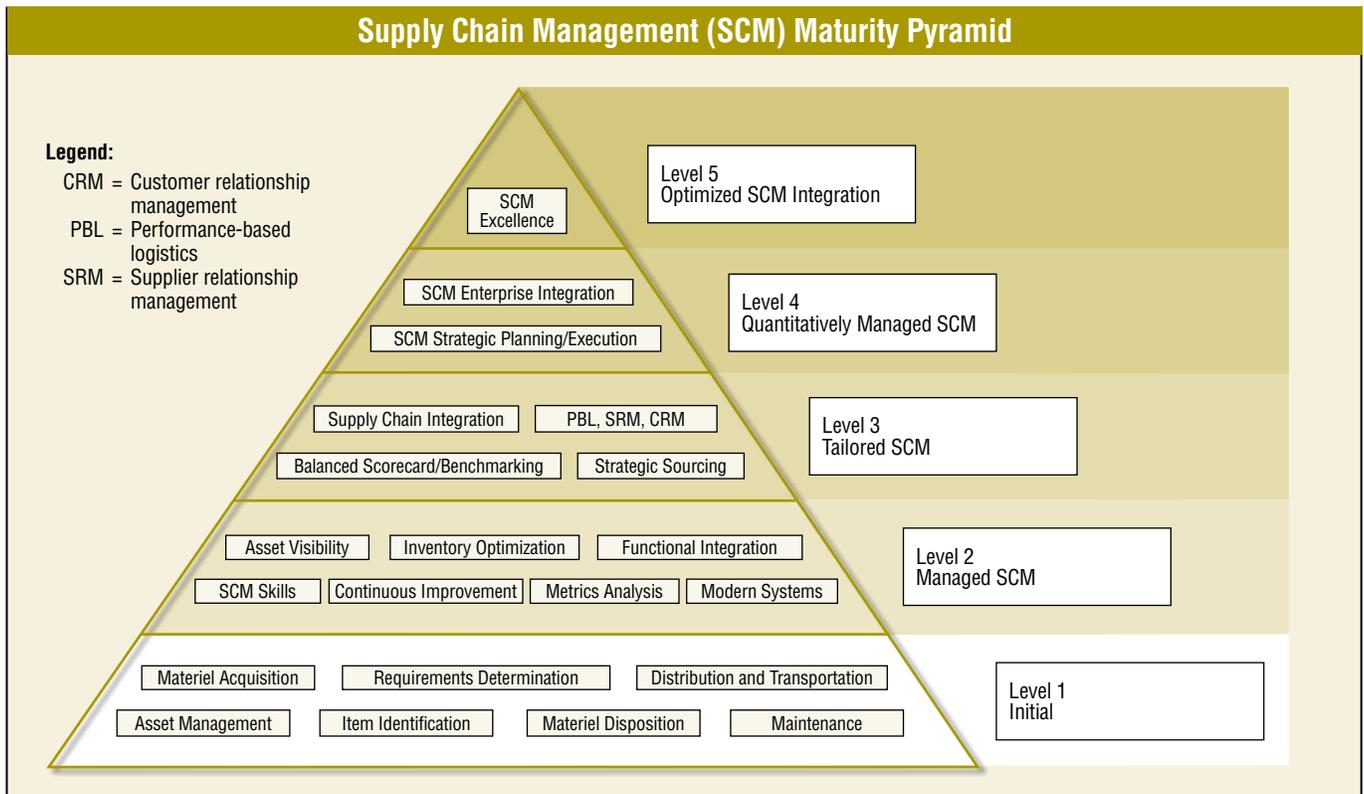


Figure 1. Supply Chain Management Maturity Pyramid.<sup>21</sup>

portion of cycle stock level.

While easy to execute, these techniques generally result in poor performance. Instead, managers should consider inventory costs and customer service. Still, without an understanding of stockout costs, one cannot assess the costs and risks of holding inventory.

### Optimizing Supply Chains

In 2001, the DOD began applying SCM to increase reliability and reduce its logistics footprint. This included synchronizing each element of the supply chain with enterprise-wide management of inventories, effective demand planning, and essential asset visibility. To link these improvements together and standardize SCM, the DOD selected the Supply Chain Operations Reference (SCOR) model as its framework.

Now, DOD regulations require its supply systems to provide responsive, consistent, and reliable support to the warfighter during peacetime and war by using the SCOR processes of

plan, source, make and repair, deliver, return, and enable as its supply framework.<sup>18</sup>

The Government Accountability Office has recommended that the DOD reduce duplicative inventory requirements, establish electronic ordering capabilities, and use prime vendors to deliver supplies.<sup>19</sup> In response, DLA has implemented new methods for setting inventory levels and reducing procurement time.

Yet, the data indicates that DLA's collaborative forecasting effort with its customers has not improved forecast accuracy because it lacks key performance metrics and fails to monitor performance.<sup>20</sup>

### CAAA Organizational Changes

Motivated by a declining ammunition workload from the conclusion of two major combat operations, the CAAA assessed all aspects of its ammunition supply chain and identified steps to sustain effective support provided to military units.

The CAAA then assessed its lo-

gistics processes, prioritized resource application, and identified its future direction using a five-level SCM maturity model modified from the one developed by LMI Research Institute. (See figure 1.)<sup>21</sup>

The initial self-assessment indicated the logistics processes were at Level 1, with some elements making it into Level 2. The assessment helped to identify areas for improvement, such as SCM skills and functional integration.

The CAAA updated its practices to include monitoring for emerging business practices, applying modern technologies, and integrating its materiel management systems. It also improved demand and supply planning, customer relationship management (CRM), and strategic materiel sourcing.

Key elements of SCM were embedded into the CAAA fiscal year 2015 strategic plan and were linked to the national strategy requirements for efficient and secure movement of goods along a resilient supply chain.

The strategic plan included capital improvements for its facilities, equipment, transportation, communications, and information systems.

Fortunately, as part of its recent reorganization effort, the CAAA determined that it had sufficient supply management employees when compared to the defense industry norm.<sup>22</sup> Yet, these employees lacked key SCM skills, which have since been added to employee training plans.

Using the 2014 DOD Supply Chain Materiel Management Procedures, the CAAA developed policies around the SCOR model with standard process definitions, terminology, and metrics for its supply chain processes in relation to the best-in-class performances of similar companies. Further, steps were taken to collaborate with suppliers and customers to provide asset visibility for in-transit and in-process stocks.

To enable asset visibility throughout its logistics enterprise, the CAAA searched for ways to leverage the Logistics Modernization Program, its new enterprise resource planning system. The CAAA also developed plans to assess potential CRM and

SRM software to improve its customer and supplier relationships.

Next, the CAAA improved its purchasing system. In 2014, about 7 percent of its purchases were made with purchase cards, which was clearly more than the defense industry average of 0.5 percent.<sup>23</sup> To reduce its dependence on these cards, the CAAA consolidated its cards into a small purchasing group and worked with contracting officials to develop better contracting strategies.

Purchase decisions, including when to order, were changed to consider total cost of ownership, which includes all costs for storing and shipping items. Finally, new metrics were developed to assess not only SCM performance, such as inventory turns and supplier delivery performance, but also SCM transformation progress.

The CAAA is in the early stages of its SCM transformation, and much remains to be done, such as developing effective contracting strategies to address risks, implementing CRM and SRM processes, and developing performance metrics generated

through Logistics Modernization Program systems.

SCM concepts are evolving that can help the DOD improve its processes, such as the new ontology of mathematics calculus to manage the supply chain domain.<sup>24</sup> Also, similar to the use of the hypertext markup language on the Internet, supply chain markup language is being developed to support SCM systems that are independent of software selection, such as Systems, Applications, and Products software and Oracle's SCM software packages.<sup>25</sup> To remain relevant with supplying its military units, perhaps the DOD should explore using these evolutionary concepts.

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