

Technology Management Issues for PBL

We looked at two types of technology management: the technology insertion required to prevent weapon system obsolescence, and the business technology solutions required to improve the supply chain.

The consensus for weapon system technology management is the

1. OEM has an advantage early in the development/fielding cycle of the system
2. Technology insertion/obsolescence is best managed by the OEM.

The Comanche, C-17's, B1-B's, C-5's, JSTARS, and the Soldier Focused Logistics (SFL) initiatives have all recognized the need to use management information systems to collect logistical, historical and operational data in order to study specific aspects of fleet management. SFL begins at the aircraft, where operational, maintenance and fault data records are loaded into the Advanced Maintenance Aid Concept (AMAC) system. The AMAC has established a machine readable, unique ID for each system part and uses an E-Card to provide the soldier mechanic with all maintenance task information in a web accessible format. The data collection is accomplished through application of the Reliability Centered Maintenance II process, an in-depth maintenance analysis of the aircraft system.ⁱ

PBL requires the real-time monitoring and sharing of information across government and contractor information systems. DoD established requirements to implement an integrated product data environment (IPDE). DLA is using the implementation of its Business System Modernization technology as a way to bring commercial best practices into its logistics operation. The Army's Logistics Modernization System (see Appendix I for a description) is also adopting best commercial business practices and associated technologies to form new, modern enterprise resource planning (ERP) business automation tools.

Leading commercial organizations have recognized that the key to success in logistics is the extension of the information system beyond the classical dimensions of planning and control to a virtual 'marketspace'ⁱⁱ of electronic commerce.

UPS and Caterpillar are leveraging information technology and transportation knowledge into new companies — Supply Chain Solutions. They make use of their networks to help clients integrate their fragmented operations, reduce costs and increase effectiveness.

The basis for competition between commercial firms is often technology. Companies sell their products by providing the latest technology enhancements to their customers. When Dell wanted to purchase a new line of microprocessors, they informed the manufacturers (Intel/AMD) to include wireless technology. The manufacturers worked closely with Dell

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to develop the needed technology. For Intel to secure the order they had to produce the product Dell needed. If AMD can produce the chip, then it will win the Dell contract. When Intel or AMD produces the chip with wireless capability, Dell includes it in their products.

In the case above, Intel and AMD invested their funds to integrate the wireless capability into its microprocessors. Dell did not oversee or approve the changes to the chip but worked with both to keep them informed about customer’s needs. The government must determine the level of control it wants to allow the contractor to have. The Army Aviation representatives interviewed all required the contractor to follow a specific procedure when the technology impacts flight safety. The PBL environment must be flexible enough to provide the proper incentives for contractors and to accommodate the administrative process for testing requirements. In essence, complexity and risk must be analyzed for every technical enhancement.

With the government, quite often the approval process is the reason technology enhancements are slow. We found two programs, Army Value Engineering and Navy LECP, with streamlined approval processes. Both programs have also established mechanisms to fund technology insertion, reduce sustainment cost, and increase readiness. Since funds are not available for all technology needs, the LECP uses an Opportunity Index to select the most critical projects. Prior to investing WCF, the NAVICP obtains customer (fleet) commitment to purchase proposed changes for applicable systems.

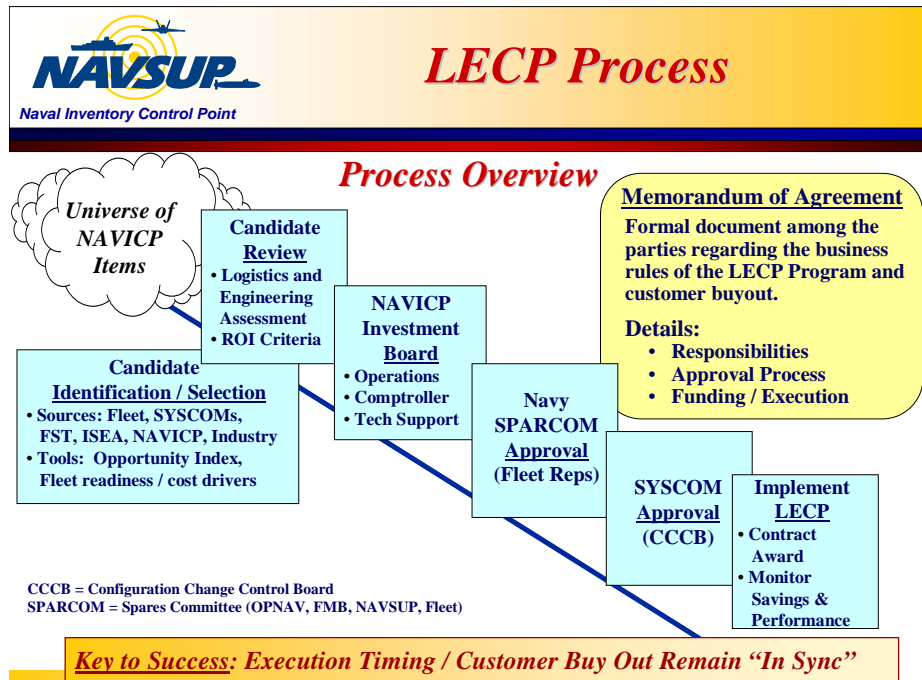


FIGURE 1: LECP PROCESS

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The results for both the Navy and Army programs have been very positive.

NAVY LECP EXAMPLES OF GROSS SAVINGS	
•	<i>E-2C Voltmeter</i> – reliability was 371 hrs...now 8,155 hrs...total investment \$410K... total gross savings \$1.06M
•	<i>HOSS Camera</i> – reliability was 5,884 hrs...now 11,540 hrs...total investment \$510K...total gross savings \$1.17M
•	<i>F/A-18 Inertial Nav</i> – reliability was 400 hrs...now 3,600 hrs...total investment \$50.1M...total gross savings \$110.44M
•	<i>NATO Sea Sparrow Mk 73 Xmtr</i> - reliability was 500 hrs...now 25,000 hrs. total investment \$3.5M...total gross savings \$14.27M
•	<i>S-3 Gyro</i> – reliability was 271 hrs...now 1,293 hrs...total investment \$5.22M...total gross savings \$16.35M
•	<i>SH-60F Transmitter</i> – reliability was 675 hrs...now 3,726 hrs...total investment \$2.74M...total gross savings \$7.47M
•	<i>H-46Gyro</i> – reliability was 155 hrs...now 1,513 hrs...total investment \$11,71M...total gross savings \$23.50M

TABLE 1: LECP SAVINGS

DLA also has a Value Engineering (VE) Program. DLA uses the VE Program to award employees for improvements to the logistical services and processes rather than product technology improvements. Major savings have also been realized as a result of this program. (See Appendix II for other DLA Best Practices.)

DLA ACHIEVEMENT AWARDS FOR 2002			
Outstanding Project Team	Defense Supply Center – Richmond	Partnered with Navy to identify two additional qualified procurement sources for engine non-metallic busing sleeve	Initial savings of \$1,335,235
Outstanding Individual Award	Defense Supply Center - Columbus	Consistently improving the procurement process resulting in better supply availability at a more economical cost.	\$5.7M for FY2001 115-1 return
Organization Award	Defense Supply Center – Richmond	Proactively teamed with military services and private sector to reduce weapon system life cycle cost and provide new sources	\$50M for FY 2001, 20-1 return
Special Individual Award	Defense Supply Center – Philadelphia	Identified discrepancy between Army budget requirements shortage of 1.4M cases of MREs with actual surplus of 2.33M cases in war reserve	FY 2001 cost avoidance of \$14.8 M will exceed \$52 M
Special Individual Award	Defense Supply Center – Richmond	Individual service as VE program manager with DLA from 1987 – 2001 with multiple awards for outstanding field command	Savings and cost avoidance exceeding \$456M with a ROI of 16 to 1

TABLE 2: DLA ACHIEVEMENT AWARDS FOR 2002

APPENDIX:

Study Documentation

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ARMY LOGISTICS MODERNIZATION SYSTEM

When the U.S. Army Materiel Command (AMC) awarded Computer Sciences Corporation (CSC) the original 10-year, \$680 million contract in December, 1999, it was the first time a government agency had outsourced the current operation of a major IT system and the its entire modernization.. The contract also called for unprecedented cooperation with the contractor: Integrated Product Teams (IPTs) of both government and CSC employees were used to “manage the outsourcing and transition, not only of the 205 federal employees to CSC, but the workload, the processes, even the furniture and computers.”

When CSC became the Army’s information technology (IT) partner, they were tasked to reengineer and modernize the Army’s 30-year old wholesale logistics business processes through the adoption of best commercial business practices and associated technologies to form a new, modern enterprise resource planning (ERP) business automation tools. During the first two years, CSC saved the Army about \$8 million in reduced operating costs. According to CSC, the savings were made possible through the institution of standard processes, methodologies and tools, enforcing stringent performance standards, and doing more with a smaller workforce. While the original award to CSC focused on “Wholesale” logistics modernization, work is already under way to completely integrate the retail environment. (See also Single Stock Fund.)

CSC’s compensation is directly tied to measurements around business process improvement and financial and customer satisfaction performance levels, including targeted levels of improvement in areas such as reduced source cycle time, increased inventory turns and improved perfect order fulfillment rates.

The Logistics Modernization Program (LMP) is designed to provide the Army with numerous integrated logistics management capabilities, including:

- Total asset visibility.
- A collaborative planning environment.
- A single source of data
- Improved forecasting accuracy
- and Real-time access to enterprise wide information.

The LMP, according to Gen. Paul Kern, commander of the AMC, is viewed as a “critical enabler to the operational transformation of our Army” and will give “AMC logisticians and senior managers a real-time common operating picture of the billions of dollars of inventory and associated financial actions they are responsible for.”

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INTERGRAPH: A COMMON OPERATING PICTURE FOR THE AIR FORCE SUPPLY CHAIN



Intergraph helps U.S. Air Force improve weapon systems availability with a complete view of asset status.

Air Force seeks a Supply Chain Common Operating Picture

The U.S. Air Force supply chain for repairable commodities begins with the forecast, purchase, manufacture, and distribution of a part; continues with its delivery to a source of repair; and ends with the distribution of the now serviceable asset to retail accounts and maintenance customers in order to return weapon systems to mission capable status. In this environment, key supply chain information exists in multiple data systems. The different systems often present different results to different users. To obtain a complete picture of the status of end items, Air Force supply chain workers must access multiple data systems. Users must log onto each system individually and then navigate to locate the information desired. Often the resulting information is untimely, inconsistent, or inaccurate. As a result, workers are unable to perform their job effectively, which ultimately impacts weapon system availability.

A process-centric environment of integrated information and business rules

Intergraph Solutions Group developed the Supply Chain Common Operating Picture (SCCOP) on a scalable, enterprise-class Global Combat Support System-Air Force (GCSS-AF)-compliant architecture accessible worldwide through the Air Force Portal. SCCOP captures and encapsulates business process rules for all levels of weapon system and supply chain manager (SCM) activity. Intergraph partnered with the Air Force to focus SCCOP on improving weapon system availability by providing personnel and organizations involved in supply chain support with total visibility of the overall Air Force supply chain. This is accomplished through the retrieval, display, and integration of information captured from multiple data sources.

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SCCOP provides a common operational view of the total supply chain and provides details on all of the factors that affect weapon system availability. It provides high-level visibility of status information on all assets and requirements, in all conditions, at all locations from a weapon system perspective. In addition, users can drill down to view detailed information about the asset. SCCOP obtains each required data element from the identified authoritative source for this information. This visibility provides users across the supply chain with the information necessary to make quality decisions in a timely manner.

Central to the solution is the creation of business rules that take the entire supply chain into account. SCCOP's business rules are built in a process-centric environment considering the total supply chain. Using this viewpoint, business rules for the total supply chain supplant the sub-optimizing business rules of component functions and agencies, which only consider their specific portion of the supply chain. This is a unique feature not found in a typical system solution. In short, SCCOP acts as a process-centric supply chain integration engine.

Improved visibility, decision-making, and weapon system availability

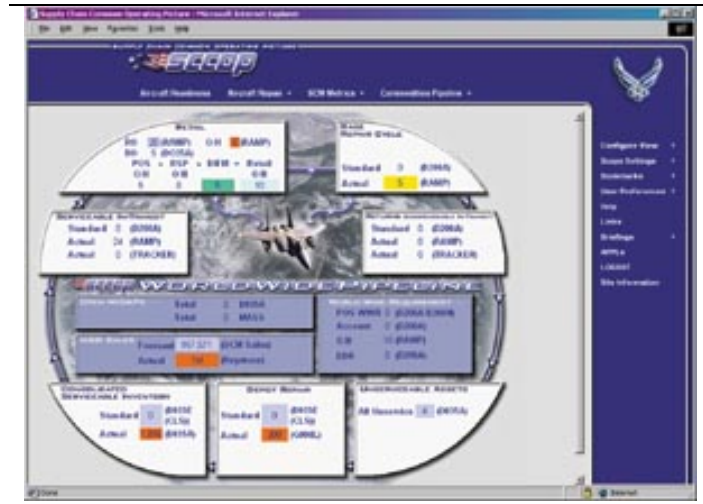
SCCOP provides a common operational view of the total supply chain and provides details on all of the factors that affect weapon system availability. It provides high-level visibility of status information on all assets and requirements, in all conditions, at all locations from a weapon system perspective with drill down capability for additional details. By capturing and encapsulating business process rules, through the rigorous use of the RUP, for all levels of weapon system manager and SCM activity, it provides a process-centric view of the supply chain.

SCCOP fosters collaboration throughout the Air Force through the Air Force Portal. Weapon system managers and SCMs can track all parts throughout the supply chain, as well as support the management of repairables from the operational units through the Defense Logistics Agency and the depots.

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SCCOP automates retrieving and collating data, and then combines this data into useful information. This allows workers to utilize collated information when performing their jobs without the need to cull through thousands of pieces of disparate data. The information is presented in a user-friendly format that allows SCMs to quickly distinguish problem areas and peel back summary information to identify specific causes so that personnel both up and down the supply chain can make rapid, intelligent decisions to enhance weapon system support processes.



SCCOP provides a Web-based interface to view multiple levels of data related to weapon system availability.

FIGURE A-1: SCCOP

SCCOP is built on a proven suite of state-of-the-art, commercial off-the-shelf (COTS) software.. The standards-based open architecture also facilitates rapid integration of other standards-compliant COTS and government off-the-shelf (GOTS) applications.

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ⁱ Soldier Focused Logistics, Transforming Fleet Sustainment, A Performance-Based Approach to Fleet Sustainment. White Paper by PEO Aviation, Cargo Helicopters Project Manager's Office.

ⁱⁱ Christopher, Martin, 1998, "Logistics and Supply Chain Management, 2nd Edition, Prentice Hall.