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MONTEREY, CALIFORNIA

MBA PROFESSIONAL REPORT

Web-Based Naval Fleet Logistics Information System

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December 2007

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WEB-BASED NAVAL FLEET LOGISTICS INFORMATION SYSTEM

Yanfeng Li, Lieutenant Commander, United States Navy

Submitted in partial fulfillment of the requirements for the degree of

MASTER OF BUSINESS ADMINISTRATION

from the

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WEB-BASED NAVAL FLEET LOGISTICS INFORMATION SYSTEM

ABSTRACT

Shipboard Supply Officers' training focuses on maintaining accountability and very little on operational logistics, which is only presented at pre-deployment briefs that last one or two days. Many Supply Officers suffer information overload during these briefs, thus making the effectiveness of the briefs questionable. On the other hand, there is insufficient information on port services and lessons learned for effective planning. This project proposes the implementation of a Web-Based Logistics Information System to act as a single platform for Naval supply chain and shipboard customers for effective logistics planning and execution, and as an information system for corporate knowledge management. The capability of a Web-based system will optimize Naval supply chain operations, significantly reduce man-hours, provide a mechanism for continuous process improvement, and enable the Naval supply system to become a learning organization.

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LIST OF ACRONYMS AND ABBREVIATIONS

AMC	Air Mobility Command
AOE	Fast Combat Support Ship
AOR	Area of Responsibility
ATG	Assistant Training Group
B2B	Business to business
Beach DET	Beach Detachment
CHT	Collection and Holding Tank
CLF	Combat Logistics Force
CMP	Continuous Monitoring Program
CNO	Chief of Naval Operations
COMFISCS	Commander Fleet Industrial Supply Centers
CONREP	Connected Replenishment
CONUS	Continental United States
CRAFT	Cost Reporting and Forecasting Tool
DAPS	Document Automation and Production Service
DDC	Defense Distribution Center
DESC	Defense Energy Support Center
DFAS	Defense Finance and Accounting Service
DLA	Defense Logistics Agency
DNSC	Defense National Stockpile Center
DoD	Department of Defense
DON	Department of the Navy
DRMS	Defense Reutilization and Marketing Service
DSCC	Defense Supply Center, Columbus
DSCP	Defense Supply Center, Philadelphia
DSCR	Defense Supply Center, Richmond
DTO	Direct Turnover
FAT	Fleet Assistant Team

FISC	Fleet Industrial Supply Center
FITREP	Fitness Report
FMC	Fleet Mail Center
FMS	Foreign Military Sales
FMSO	Information Systems Support through Fleet Support Office
FOSSAC	Fitting out and Supply Support Assistance Center
GSA	General Services Administration
HSC	Husbanding Services Contract
HSP	Husbanding Services Provider
IT	Information Technology
ITP	Integrated Process Team
LAN	Local Area Network
LOGREQ	Logistics Request (message)
LSC	Logistics Support Center
LSD	Logistic Support Deck
LSR	Logistics Support Representative
NALC	Naval Ammunition Logistics Center
NAVICP	Navy Inventory Control Point
NAVSEA	Naval Sea Systems Command
NAVSUP	Naval Supply Systems Command
NAVTRANS	Naval Transportation Support Center
NRCC	Naval Regional Contracting Center
NSLC	Naval Sea Logistics Center
OCONUS	Outside Continental United States
OIC	Officer in Charge
OPTAR	Operating Target
OTS	One-Touch Supply
POC	Point of Contact
RAS	Replenishment at Sea
RFID	Radio Frequency Identification

SALTS	Streamlined Automated Logistics Transmission Systems
SODHC	Supply Officer Department Head Course
SURFOR	Commander Surface Forces
SURFPAC	Commander Surface Forces Pacific
TYCOM	Type Commander
UIC	Unit Identification Code
USTRANSCOM	United States Transportation Command
VERTREP	Vertical Replenishment
WWX	World Wide Express (commercial cargo delivery services)

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I. INTRODUCTION

A. PURPOSE

The purpose of this project is to examine the problems and issues facing the Navy's fleet logistics support and recommend a Web-based logistics solution for efficient knowledge sharing and logistics execution.

The Navy does not have a single permanent Web-based database system to effectively manage logistics knowledge and requisition execution. Fleet customers are relying on predeployment conferences, messages, E-mails, telephone calls, personnel knowledge, and extensive Internet searches to obtain information. In the end, customers may or may not get all the information needed for planning and execution. This represents a significant deficiency in Naval supply knowledge management, and has a potential negative impact on the supportability of operational units.

What can the Navy use to provide a single source for information sharing, training, daily administrative assistance, and act as a requisition execution platform to meet a fleet customer's logistical needs? Modern information technology has enabled the commercial sector to effectively manage their corporate knowledge, share information between demand and supply chains, execute requisitions, and obtain asset visibility, which has dramatically improved their operations and improved their bottom lines. A Web-Based Logistics Information System implemented by the Navy can provide a single platform for information sharing and logistics execution and can achieve the same success in knowledge management and operational efficiency.

This project has drawn on the author's personal experience as a Supply Officer, and informal interviews with other Supply Corps officers attending the Naval Postgraduate School, Navy fleet Supply Officers, Commanding Officers, Fleet Industrial Centers, and various officers at Navy Supply Systems Command (NAVSUP), Commander Fleet Industrial Supply Centers (COMFISC), and Commander Surface Forces Pacific (SURFPAC) to form the basis for recommending a Web-based logistics information system.

B. BACKGROUND—THE NEED FOR BETTER KNOWLEDGE MANAGEMENT AND SHARED INFORMATION FOR EXECUTION

1. Department of the Navy (DON) Objective

A prime Navy objective is to accelerate the integration of Lean Six Sigma across the DON to develop a culture of continuous improvement.¹ However, the Navy supply system lacks a mechanism to capture Navy fleet customers' valuable input and feedback.

2. Navy Supply Systems Command's (NAVSUP) Vision for Supply Support

NAVSUP is driven by a strategic vision of "One-Touch Supply" (OTS)—where a single request by the customer activates a global network of sources and solutions. OTS gives customers the convenience and dependability they need and expect in the 21st century.² Customers can order parts and obtain status information via OTS. While OTS has significantly enhanced customer service, it is only limited to parts support and has not addressed knowledge sharing and other shipboard logistics concerns.

3. NAVSUP's Initiatives³

The NAVSUP Commander's guidance for 2007 provided a vision for establishing information technology that aims to reduce current legacy systems, increase information sharing Navy-wide, and focus on meeting customers' needs. The following initiatives are specifically on adopting information technology.

- Develop a Global Logistics Support Strategy that provides scalable and flexible Naval logistics capabilities that can be deployed to meet the full spectrum of shared and coordinated logistics plans and requirements. Develop concepts of desired logistic response.

¹ The Secretary of the Navy. Department of the Navy Objective for FY 2008 and beyond. Oct 9, 2007.

² Navy Supply Systems Command. Official NAVSUP home page. Retrieved Oct 10, 2007 from: <http://www.navsup.navy.mil/>.

³ RDML A.S. Thomson, USN. (2007). NAVSUP Commander's Guidance for 2007.

- Integrate new processes and new technology across new platforms, legacy platforms, shore units, and expeditionary units to streamline supply support, while enhancing readiness.
- Define and develop Distance Support-Enabling information technology requirements and solutions that fully support an operationalize supply domain.

While the initiatives did not specify a Web-based information system concept, business to business (B2B) information technology in the commercial world has been proven to provide successful information sharing, distance support, and shared and coordinated logistics plans and requirements.

C. WHAT THIS PROJECT WILL DO

Clearly there are better ways to do business. NAVSUP aims to provide the best logistics support to the warfighters. The recent establishment of FISC Sigonella and the COMFISC, as well as the realignment of the Naval Regional Contacting Centers to FISCs, are just a few examples of NAVSUP's continuous push to improve the business process.

This project first examines shipboard customers' requirements and the current Naval Global Logistics Support infrastructure, analyzes practices of deployment logistics support, and identifies issues and problems. The project then discusses leveraging information technology using a Web-Based Logistics Information System for the entire supply chain. It also examines the system's feasibility, risks, and potential. Finally, it addresses the implementation challenges and solutions.

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II. SHIPBOARD REQUIREMENTS AND NAVAL GLOBAL LOGISTICS SUPPORT INFRASTRUCTURE

A. SHIPBOARD REQUIREMENTS

The Navy deploys sea- and land-based units for operational commitments around the globe. A myriad of shipboard logistics, repair parts, general consumables, provisions, mail, ammunition, and fuel requisitions at sea and pier-side hotel services in port, are the major requirements to sustain operations. While mail is important for the ship's morale, others, such as repair parts, fuel, provisions, ammunition replenishment, and scheduled or unscheduled maintenance, are crucial to the ship's ability to carry out its missions. The following are shipboard requirements with financial management considerations and the challenges faced by Supply Officers in providing adequate support on a daily basis.

1. Material Management Requirement

Material requirement includes both repair parts for stock or direct turnover (DTO) material and consumable items such as trash bags, toilet paper, etc. for daily use.

- **Repair parts.** Ships carry a certain amount of repair parts according to the Allowance Parts Listing. Other categories of repair parts also include safety items, frequently used items, and preexpended bin items. Allowance-required items are predetermined by Navy Sea Systems Command (NAVSEA) based on the estimated failure rate on installed equipment. Frequently used items are determined by frequency of demand. The general rule is if an item is requested more than twice in the previous six months, it is required to be carried as a regularly stocked item. If the part demand falls short of twice in the preceding six months at a later review date, the part becomes excess material and is removed from the ship when directed by the Type Commander (TYCOM). Safety-related items may not be on the Allowance Parts Listing and do not fall under the frequently used item category. They cannot become excess material.

Preexpended bin items are reordered as the stock decreases to certain numbers. Another category of parts are those not carried in stock, meaning they cannot be issued from stock and require requisition from the supporting Fleet Industrial Supply Center (FISC). TYCOM established stock goals in depth and range to ensure that parts are available in stock when needed. Stock-level goals are frequently affected by funding levels and underway schedules.

During funding constraints, there is no limitation on spending for immediate repair needs, but restocking is frequently restricted. This creates a ripple effect that brings down stock levels. In addition, frequent underway schedules hinder the parts delivery schedule. Small ships frequently deploy to sea early on Monday mornings, for example, and return to port late on Fridays. This type of schedule makes it impossible to receive parts from the FISCs. During deployments, decisions made by the supporting commands to hold onto low-priority parts (namely restocking parts) and misrouting of material, further depletes the stock levels in range and depth. The TYCOM uses the Continuous Monitoring Program (CMP) to monitor a ship's stock levels. This is based on data transmissions received from the ships once a month to gauge the status of the parts inventory management. Lower stock level numbers supposedly indicate mismanagement by the Supply Officer. The prescribed cure for lower stock levels is to reorder on a daily basis. Unsatisfactory CMP numbers are not necessarily indicative of the Supply Officer's performance, as they are faced with frequent budget constraints, delivery problems due to deployment schedules, and routing problems caused by misrouting or decisions made by the supporting organizations.

- **Consumable material.** Consumable material includes sanitation material, administrative office equipment and material, and anything other than installed equipment. Funding for consumable spending also includes vehicles and services not paid for by central lines of accounting. Ships can

purchase material from the General Services Administration (GSA) or from the local commercial market using Government Purchase Cards when the material needed is not available from the stock system. Material is bought in bulk to support extended underway periods. An “Unfunded Material Listing” is updated on a quarterly basis and is sent to the TYCOM comptroller for potential funding windfall. End-of-year funding is usually available due to comptrollers withholding a certain percentage of the original budget authority for emergencies and cancelled purchases. Expensive items, such as photocopier machines costing over \$2,500, must be ordered by the Contracting Department at the supporting FISC. Supply Officers must pay close attention to ensure that only authorized material is purchased and that wasteful spending does not occur.

Consumable money is prescribed for supporting a ship’s operational requirements. Frequently, the goal of the Commanding Officer is to spend it down to zero. There is no incentive to purchase only what is required when excess funds are available. Prior to extended deployments, ships must purchase all required consumable material. If funding is inadequate when using the current quarter’s funding level, a ship’s Supply Officer may request realignment of funding (i.e., bring funding forward from later quarters.)

2. Mail

Letter mail is losing its value to sailors as E-mail is becoming the primary means of communication between the crew and their loved ones while deployed at sea. However, small package mail continues to dominate mail service onboard the ships and remains an important morale booster. For short local operations close to the home port, there is usually no need for service from Combat Logistics Force (CLF) ships for refueling. Mail is held up at the Fleet Mail Center (FMC), which is a part of the supporting FISC, until the ship goes back to port. When the ship is not underway, mail is delivered once a day by the FMC. Once the ship is underway or deployed overseas, mail is picked up and

delivered by a CLF ship during Replenishment at Sea (RAS) events. When the ship is in a foreign port, mail is routed to the local supporting organization or to the United States Embassy.

3. Provision

Ships carry frozen and fresh fruits and vegetables and dry goods in the storeroom. Provision is consumed when it is issued to the galley for consumption by the crew. For financial accounting purposes, credit is taken according to the authorized patrons' head count. All others are charged according to meals consumed. Financial health is judged by comparing the total credit and sales of meals to the total cost of provision issued to the galley. The goal is to reach zero when comparing cost and expenditure. Excessive over-issue represents serious mismanagement and excessive under-issue indicates the crew is not well-fed.

The quantity to order is based on the Leading Culinary Specialist estimate. To estimate dry stores' endurance level, the dollar value of stores on-hand is divided by the average cost of daily consumption to get a rough estimate of how many days of stores is left onboard. For fresh fruits and vegetables, the Leading Culinary Specialist usually uses the eyeball estimation method to report the approximate days left. The Food Service Management software program cannot provide a reliable reorder listing and endurance breakdown.

The Navy is using prime vendors to provide provision support both in the continental United States and overseas. Availability and quality vary depending on the health of the local market and food standard. While there are only slight differences among prime vendors at different ports in the United States, Supply Officers are frequently surprised with the availability and quantity of provision in foreign ports. In some less-developed countries, the quality of provision is significantly lower than what the Supply Officers are used to.

Delivery of provision is accomplished by the CLF ships at sea or pier-side by the local prime vendor. The Supply Officer then provides payment documents to the Disbursing Officer for payment authority. The Disbursing Officer makes payment by a U.S. Treasury Check or makes a cash payment when the local vendor cannot process U.S.

Treasury Checks. The dollar value is converted from local currency to U.S. dollars using the highest published exchange rate. Occasionally, the vendor will only accept local currency for payment. The Disbursing Officer then has to locate a local bank that will exchange American currency in order to make the payment. The exchange rate difference and service fee can be substantial.

4. Maintenance

Ship's maintenance is a continuous challenge. Equipment failure frequently threatens the ship's readiness to carry out its mission. Ships rely on onboard parts and local expertise to perform periodic scheduled maintenance and unscheduled repairs. For major equipment failures that are beyond the organizational capability, commercial expertise is employed to make homeport shipyard repair or voyage repairs overseas.

There are usually many organizations involved for major equipment repairs. They are equipment original manufacturer, their technical experts, NAVSEA representatives, and the contracting officer to obligate the U.S. government for repair action. The Navy has Ship Repair Units in Singapore and Bahrain to coordinate major repair actions.

5. Fuel

Ships take on fuel before they sail out to sea for short, local operations. For extended operations at sea, they are supported by the CLF ships.

A CLF ship tasked to provide refueling support picks up fuel in port and delivers it to the ships in need at sea. When operating overseas, CLF ships fall under the operational command of one of the Task Force logistics commanders and continually go into one of the contracted ports to pick up fuel and make fuel deliveries to ships at sea.

Ships that do not have CLF support overseas can purchase fuel via the husbanding agents. They require at least three day's notice prior to pulling into port in order to make fuel purchase arrangements. Once the fuel quantity is ordered, the ships must pay the full amount regardless of whether the ship can take all the fuel. Chief Engineers frequently miscalculate fuel requirements and overestimate their fuel needs. The author experienced that situation at least three times during a four-month deployment period when the fuel requirement was overestimated and wasteful spending occurred. Each time, the

overestimate of fuel was no less than 20,000 gallons. At about \$2.00 per gallon, the total waste of government funds was estimated at \$120,000. While there is no data to show how much money is wasted every year for over ordering of fuel by the Navy as a whole, it is difficult to imagine that this only happens on one ship. In many other cases, ships are ordering fuel via the Defense Energy Support Center, while the shore supporting activity is also responding to the same fuel request and the government is paying twice. Fuel ordering for a DDG is usually no less than 100,000 gallons each time. Double ordering means \$200,000 is wasted per incident.

On one occasion, the author expressed his unwillingness to pay for the excess fuel that the ship was not receiving and the husbanding agent threatened to stop all services if the bill was not paid.

Since the refueling bill is paid by the ship, under current practice, such incidents will not appear in the financial reports and used as supporting evidence to initiate actions to correct the problems.

6. Ammunition

Ammunition is usually loaded prior to the ship setting sail for deployment. After operations, the inventory runs down and the fighting capability of the ship will be degraded without timely replenishment. CLF ships will provide ammunition replenishment to those ships in need.

B. INFRASTRUCTURE

Navy Fleet Logistics Support Infrastructure consists of a vast network of policy commands, training commands, and field support commands to provide timely support to fleet customers. These commands include Navy Supply Systems Command (NAVSUP), Defense Logistics Agency (DLA), Navy Inventory Control Point (NAVICP), Commander Fleet Industrial Supply Centers (which includes the other seven FISCs around the world), the Combat Logistics Forces (CLF), Transportation command, and commercial worldwide parcel delivery services. Figure 1 illustrates the various commands involved in supporting the sea-deployed customer.

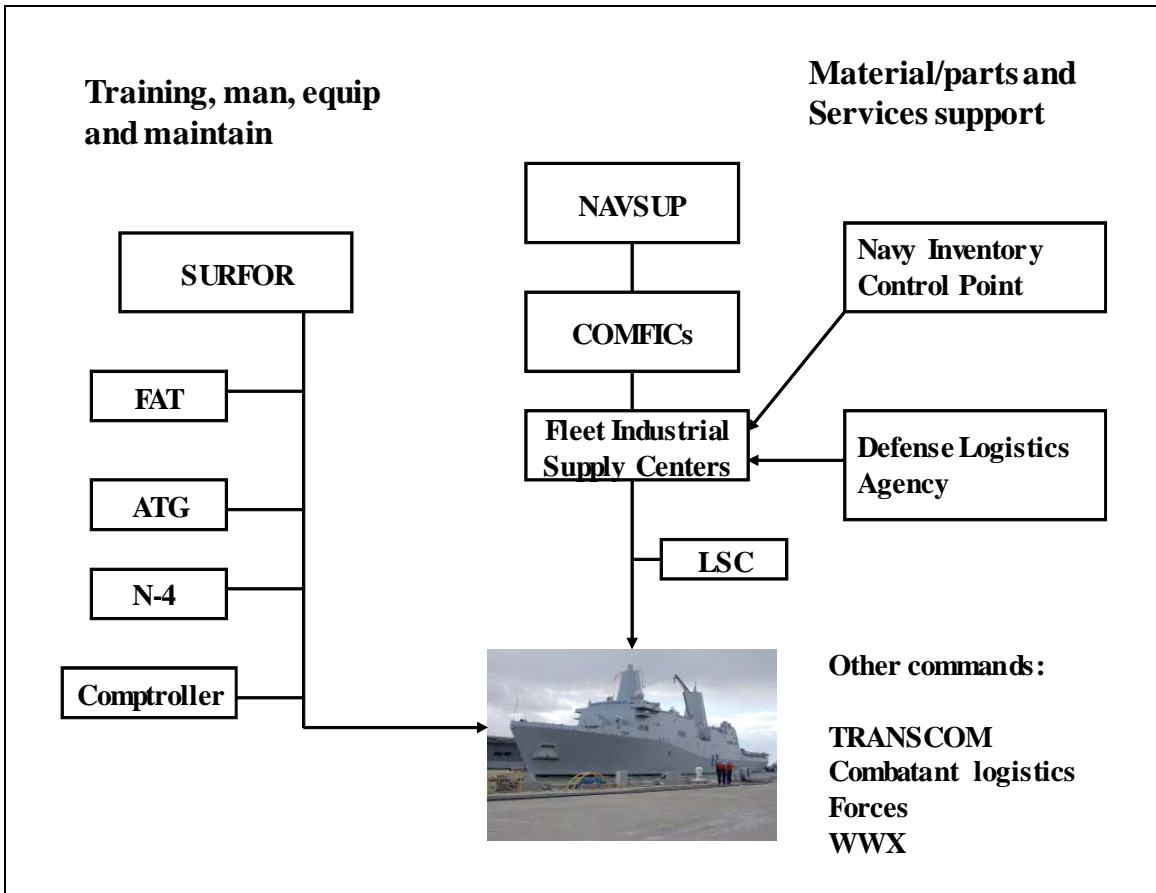


Figure 1. Commands involved in supporting the sea-deployed customer

NAVSUP is responsible for overall management of the Navy Enterprise and is in charge of policies governing the proper operation of the Supply Support System.

The NAVICP manages the stock level of repair parts kept at all the FISCs through coordination with DoD contractors, while the DLA deals with consumable material acquisition and positions their material at defense distribution centers as well as FISCs. NAVICP and DLA both maintain their stock at the FISCs for ready issue to operational units. They are considered wholesale operations, while issuing material to the individual units is considered a retail operation. FISCs warehouse repair parts and consumable materials and act as the customer service activity by providing direct support to units operating in their areas of responsibility, including transportation, contracting, provision,

refueling, hazardous material management, retrograde processing, and regional contracting. Their direct customer service to the ships is provided by Logistics Support Representatives.

Commander Surface Forces (SURFOR) provides training, manning, and funding for the ships. For surface ships, there are two TYCOMs, Commander Surface Force Pacific and Commander Surface Force Atlantic. Ships' Supply Officers follow the guidelines set by SURFOR for management of shipboard supply operations and management of ships' Operating Target (OPTAR). Within each TYCOM, Assistant Training Group (ATG), Fleet Assistant Team, N-4 Supply Department, and Comptroller are the departments involved in providing training and funding. The ATG provides training and inspections to ensure Supply Departments conduct their business according to policies and guidelines, not only keeping accountability intact, but also providing a certain level of service excellence. The N-4 Supply Department provides expert assistance to the ships whenever help is needed. The Fleet Assistant Team (FAT) provides training assistance to Ships' Store Operations.

Worldwide material delivery is accomplished through Transportation Command (TRANSCOM) and World Wide Express (WWX). Under TRANSCOM, Air Mobility Command (AMC) has regular channel flights from the Continental United States (CONUS) through Sigonella to Bahrain in the Middle East and to Singapore via Hawaii and Japan in Southwest Asia Pacific. Bulky items are normally sent to the deployed units via the AMC channel flights. Smaller items, less than 300 lbs, are frequently delivered via WWX, which are commercial freight carriers such as Federal Express, UPS, and DHL. The transportation cost is funded by the TYCOM. AMC flights usually cost more per pound to deliver and frequently cause delays compared to the commercial freight companies. Military personnel traveling overseas are required to take government-chartered flights unless such flights are not available. Figure 2 shows airlifts and frequencies from CONUS to overseas.

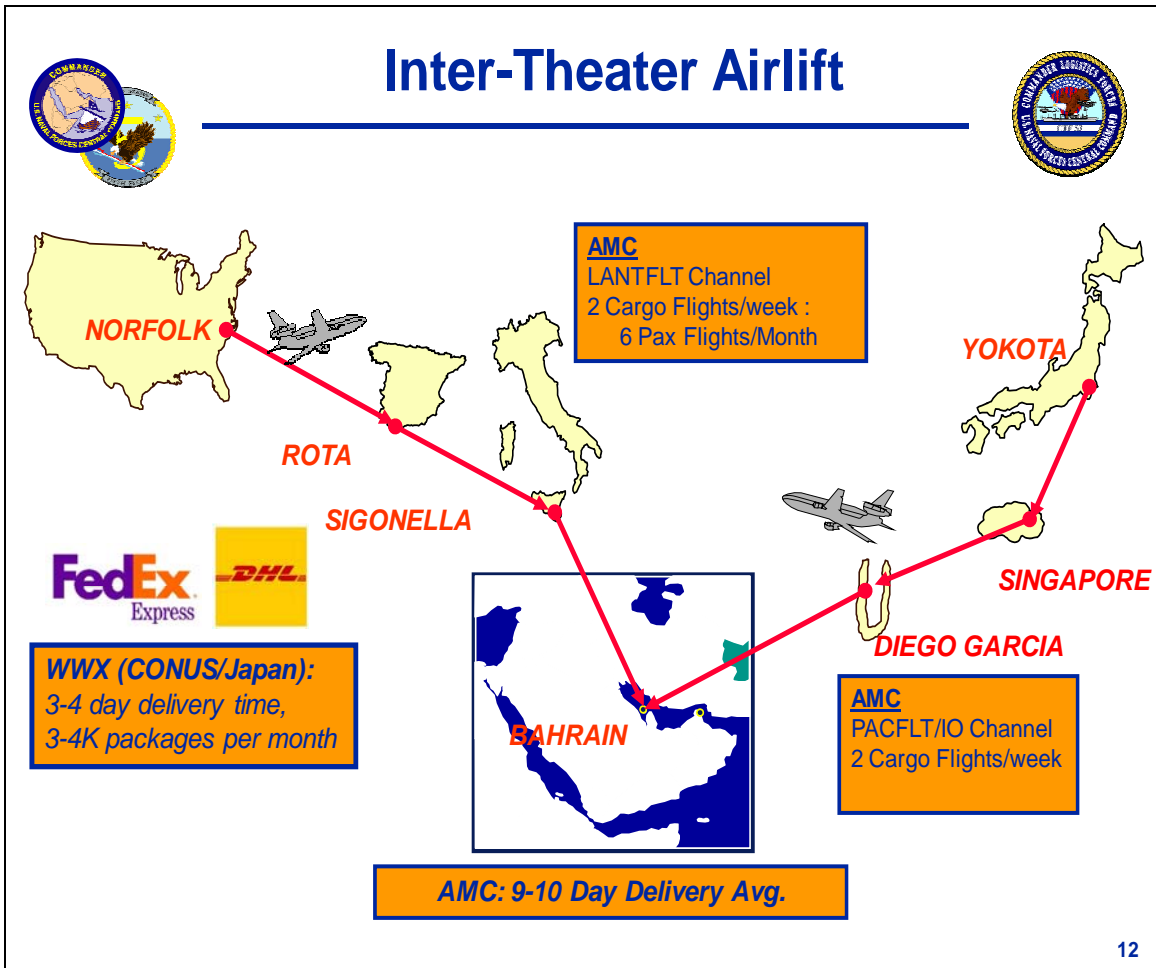


Figure 2. Navy material movement from CONUS to overseas locations (From: CTF53 predeployment brief for Tarawa expeditionary group, slide number 12)⁴

To make payments for material and services, ships prepare funding documents with the ships' line of accounting under TYCOM's funding authority to the vendors or organizations. The Defense Finance and Accounting Service (DFAS) makes payment after reconciliation with documents provided by the ships indicating evidence of receipt of supply or services. Under Fast Pay Procedures, vendors are paid as soon as they

⁴ CTF53. Predeployment Brief for Tarawa Expeditionary Group, Power Point Presentation, September 5, 2007, slide number 12.

provide purchase documents. Moreover, DFAS provides an Unmatched Item Listing every month so that ships can research and reconcile with the vendors should there be any discrepancies.

1. Naval Supply Systems Command (NAVSUP)⁵

NAVSUP, headquartered in Mechanicsburg, Pennsylvania, is responsible for providing supply support to U.S. Naval forces. It provides logistic services including supply operations, contracting, resale, information systems, fuel, conventional ordnance, transportation, support services, and security assistance. NAVSUP sets the policies, prescribes the procedures, and evaluates performance in each of the following areas:

- **Head of Contracting Activity for the Navy and the Navy Field Contracting System.**
- **Services programs.** NAVSUP manages the Navy Food Service program, household goods program, ATMs-At-Sea Program, and the Postal Program.
- **NAVSUP's Navy Exchange Service Command.** Includes the Navy Exchanges, Navy Lodges, Ships Stores Afloat, and exchanges aboard Military Sealift Command vessels. The Navy Exchange System also manages the Navy's clothing program, providing both uniforms and specialized protective clothing to the Navy.
- **Information systems support through Fleet Material Support Office (FMSO).** FMSO is the Navy's premier Central Design Agency with responsibility to design, develop, and maintain information systems supporting numerous shore activities in the functional areas of logistics, transportation, finance and accounting, and inventory math modeling.

⁵ Naval Supply Systems Command. Official NAVSUP Home Page. Retrieved 10 Oct 2007 from: <http://www.navsup.navy.mil/>.

- **Naval Ammunition Logistics Center (NALC).** Provides centralized inventory management and business systems development for all of the Navy's nonnuclear missiles, bombs, bullets, mines, and torpedoes.
- **Fleet Fuel Management.** NAVSUP's Navy Petroleum Office operates ten major fuel depots and acts as the technical advisor to Navy shore activities and afloat units on petroleum matters.
- **Naval Transportation Support Center (NAVTRANS).** Responsible for handling the transportation of Navy material—determining the Navy's requirements, funding them, and monitoring the carriers' performance.
- **Fitting Out and Supply Support Assistance Center (FOSSAC).** Provides Naval forces and other federal agencies with quality logistics, engineering, training, and other support services, on a worldwide basis.

2. **Navy Inventory Control Point (NAVICP)⁶**

The NAVICP exercises centralized control over 350,000 different line items of repair parts, components, and assemblies for ships, aircraft, and weapons systems. NAVICP also provides logistic and supply assistance to friendly and allied nations through the Foreign Military Sales (FMS) program.

NAVICP's primary mission is to procure, manage, and supply spare parts for Naval aircraft, submarines, and ships worldwide. It has two locations, one in the Lawndale section of Philadelphia and the other in Mechanicsburg, Pennsylvania.

- **Naval Sea Logistics Center (NAVSEALOGCEN/NSLC) Mechanicsburg.** Serves as the Naval Sea Technical Agent for developing, maintaining, assessing, and executing life-cycle logistics support products, processes, information systems, and policies that enable customers to meet their stated operational objectives and maintain readiness. They combine logistics, engineering, and information technology expertise to produce

⁶ Global Security. Navy Inventory Control Point. Retrieved Oct 10, 2007 from: <http://www.globalsecurity.org/military/facility/mechanicsburg.htm> .

logistics tools that can be utilized by Acquisition Managers and Logistics Element Managers in an Integrated Data Environment.

3. Defense Logistics Agency (DLA)⁷

The DLA Director reports to the Under Secretary of Defense for Acquisition, Technology, and Logistics through the Deputy Under Secretary of Defense (Logistics and Materiel Readiness). The DLA provides worldwide logistics support for the missions of the Military Departments and the Unified Combatant Commands. It also provides logistics support to other DoD components and certain federal agencies, foreign governments, international organizations, and others as authorized. It supplies almost every consumable item America's military services need to operate, from groceries to jet fuel. DLA also helps dispose of materiel and equipment that is no longer needed.

A network of lead centers purchase and manage a variety of supplies and services to include fuel, food, clothing, construction supplies, electronics, medical supplies, and distribution and disposal reutilization services. These lead centers include:

- Defense Energy Support Center (DESC) – Fort Belvoir, Virginia – Fuels, gas, and electrical power.
- Defense Supply Center, Columbus (DSCC) – Columbus, Ohio – Maritime and Land Weapon Systems support.
- Defense Supply Center, Richmond (DSCR) – Richmond, Virginia – Aviation support.
- Defense Supply Center, Philadelphia (DSCP) – Philadelphia, Pennsylvania – Food, clothing, medical, general, and industrial supplies.
- Defense Distribution Center (DDC) – New Cumberland, Pennsylvania — Operates a worldwide network of 24 distribution depots that receive, store, and issue supplies. They are strategically located to enhance rapid distribution of critical military items.

⁷ Global Security. Defense Logistics Agency. Retrieved Oct 15, 2007 from: <http://www.globalsecurity.org/military/agency/dod/dla.htm>.

- Defense Reutilization and Marketing Service (DRMS) – Battle Creek, Michigan – Handles property disposal of items from vehicles and office equipment to scrapping of Naval ships and hazardous materials.
- Defense National Stockpile Center (DNSC) – Fort Belvoir, Virginia – Stockpiles strategic raw materials so the United States will not be dependent on foreign sources in the event of war.

To keep up with the fast pace of the electronic environment, DLA has established an eBusiness unit. The Defense Electronic Business Program Office (DoD eBusiness) falls under DLA's J-6 (Information Operations) directorate and is charged with implementing electronic business practices. DoD eBusiness includes these functions:

- Document Automation and Production Service (DAPS) – Mechanicsburg, Pennsylvania – Provides printing services, digital conversion, and storage of documents.
- Defense Logistics Information Service – Battle Creek, Michigan – Manages and distributes logistics information.
- Defense Automatic Addressing System Center – Wright-Patterson Air Force Base, Ohio – Receives, edits, validates, and routes logistics transactions.

DLA maintains two headquarters—one in Europe and one in the Pacific—to provide customer assistance, liaison services, war-planning interfaces, and logistics support to service component commands.

- DLA Europe – Wiesbaden, Germany – Serves as the focal point for tracking all warfighter issues to and from all DLA activities in Europe and CONUS.
- DLA Pacific – Taegu, South Korea – Provides customer assistance, liaison, services, war-planning interfaces, and logistics support to the Pacific Command and its service component commands.

4. Commander Fleet Industrial Supply Centers (COMFISCs)

By direction of the Chief of Naval Operations (CNO), on August 1, 2006, COMFISCs was formally established to focus on global logistics issues and to drive best practices across the seven FISCs. Headquartered in San Diego, California, it is a component of the NAVSUP. It includes seven other FISCs worldwide to provide local logistics support in their respective areas of responsibility. Task Force Commanders have operational authority to direct CLF ships to provide underway replenish deliveries with material from responsible FISCs. Figure 3 shows FISCs' areas of responsibility.



Figure 3. FISCs and CTF commands geographical areas of responsibilities (After: Fleet Husbanding Contracts Presentation, slide number 2)⁸

⁸ Chris Parker, CDR, USN. Fleet Husbanding Contracts, Power Point Presentation June 19, 2007, slide number 2.

- **2nd Fleet areas of responsibility**
Supported by FISC Norfolk, FISC Jacksonville and CTF 23
 - **3rd Fleet areas of responsibility**
Supported by FISC San Diego and CTF 33.
 - **Mid Pacific**
Supported by FISC Pearl Harbor and either CTF 33 or CTF 73
 - **5th Fleet areas of responsibility**
Supported by FISC Sigonella and CTF 53.
 - **6th Fleet areas of responsibility**
Supported by FISC Sigonella and CTF 63.
 - **7th Fleet areas of responsibility**
Supported by FISC Yokosuka and CTF 73.
 - **Puget sound area**
Supported by FISC Puget Sound.
- 5. United States Transportation Command (USTRANSCOM) and commercial World Wide Express (WWX)**
- **USTRANSCOM:** provides air, land, and sea transportation for the DoD. It is the single entity to direct and supervise execution of the strategic distribution system. The command also manages the supply chain-related Information Technology systems, and has the authority to establish a contracting activity for procurement of commercial transportation services. The command has three component commands—the Air Forces Air Mobility Command, Scott AFB, Illinois; the Navy’s Military Sealift Command, Washington, D.C.; and the Army’s Military Surface

Deployment and Distribution Command, Alexandria, Virginia—that provide intermodal transportation across the spectrum of military operations.⁹

- **WWX:** The Navy also utilizes approved commercial air transportation options to quickly move urgently required material overseas. Air carriers under Air Mobility Command (AMC) contract to include FEDEX, DHL, and UPS. Materials authorized are high-priority cargo, TP1/TP2, less than 300 lbs, nonhazardous, and unclassified.¹⁰

C. HISTORY OF NAVY FLEET LOGISTICS SUPPORT

There are no academic publications on Naval Fleet Logistics Support per se. Although there is some historical information on DLA, NAVICP, FISC San Diego, FISC Puget Sound, and FISC Yokosuka, there is no historical record of exactly how Naval supply logistics support was managed, how business was conducted, what decisions and changes have been made to improve the process, what drove the decisions, and what the outcomes were, along with their issues and problems.

Learning from history is an important part of any organizational culture. Detailed records of each decision point, with the factors that drive the decisions, should be part of the organizational history to provide continuous references for study and forward transformation. Without historical data, organizational transformation is driven by a few senior leaders who have the vision to transform the organization, but, due to the short duty assignments in the posts, the leaders do not have enough time to realize their vision. The follow-on leaders may or may not share the same vision. This dilemma causes interruptions of actions and less efficient organizational transformation and possible repetition of mistakes.

⁹ Global Security. U. S. Transportation Command. Retrieved Oct 16, 2007 from: <http://www.globalsecurity.org/military/agency/dod/transcom.htm>.

¹⁰ Naval Operational Logistics Support Center. Predeployment Brief for ESG Conference. Sept 5, 2007.

The Navy Supply Logistics System needs to capture historical information for senior leadership to build their vision and help derive action plans based on previous historical experiences. Academic thinkers can use the historical information to evaluate and analyze the successes and failures in the decisions instead of general “outstanding job” type of self assessments.

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III. LOGISTICS SUPPLY SUPPORT ISSUES AND PROBLEMS

Navy supply logistics support is accomplished through a vast network of support activities to ensure operational units receive timely support, which encompasses training, material, provision, mail, ammunition, and fuel requisitions. The system has many problems and the Navy can do more to resolve them.

A. ISSUES AND PROBLEMS WITH NAVY SUPPLY LOGISTICS SUPPORT SYSTEM

While NAVSUP has established outstanding infrastructure worldwide and continues to improve logistics support to the warfighters by providing the right material at the right time, the system also suffers the following problems.

1. Predeployment Brief Problems

Predeployment briefs are conferences organized by the TYCOM that normally last one day for the Supply Officers from all ships being deployed. Many supporting commands such as CTF 53, CTF 73, FISCs, and other players are present to provide information on how to have a successful deployment with regard to logistics support. Those commands that cannot send their representatives will send briefing material to be added to the briefing compact disc for distribution. These briefs typically have detailed discussions on each command's organization, function, and points of contact (POCs).

These conferences generally fail to effectively communicate with the attendees. Briefers do not specifically address the deployment logistics problems of the audience. In the end, most will only remember the list of POCs. The conferences may better serve the customers by listing the customer's specific issues and questions, and addressing them one by one on how to conduct their business and who to contact if there is a problem. The following are typical problems:

- **Not addressing “what is in it for me?”** Many briefs discuss the command's vision, mission, organization, and what they do. Only a small portion is dedicated to addressing the users' concerns, which are usually
1) Why are you telling me this? 2) What does that have to do with me?

3) What do you want me to do? 4) In what situations do I deal with you?

- **Too much information on logistics system and processes.** Material covered attempts to address logistics information from transportation, supply chain, requisition of fuel, ammunition, provision, high-priority material, and other issues, and concerns such as messages, lead time, etc. It is doubtful that any new shipboard Supply Officer can absorb so much information.
- **Insufficient information on port visits.** On other hand, there is no information on lessons learned in foreign ports. The shipboard Supply Officer may or may not have previous lessons learned on file to refer to. Even if there are lessons learned information from the previous Supply Officer, the ship's mission can be different and the foreign ports to be visited might be different as well. There is no searchable information that is helpful for effective planning on local environmental laws, port services, and liberty issues.

2. Supply Officers Lack Sufficient Knowledge on Naval Logistics

Most Supply Officers assuming Supply Department Head duty usually just returned from shore duty assignment that may or may not have anything to do with fleet support. Their experience in fleet supply operations is usually limited to their prior experiences working in disbursing, ships' store management, food service, or stateroom management. They have little understanding of how the readiness supply chain works.

To prepare them for shipboard Supply Department Head duty, they are sent to the Navy Supply Corps School to learn how to run the Supply Department.

The Supply Officer Department Head Course (SODHC) is a five-week course preparing Ensigns through Lieutenant Commanders to assume the duties of the Supply Officer on a ship or submarine. It provides training in supply management, food service, retail operations, and disbursing management. In addition, it includes Small Afloat Purchasing, government commercial purchase card program, Small Ship Aviation Logistics, Configuration Management, Hazardous Materials Management Total Asset Visibility, and submarine-specific supply functions. Training in Automated Information

Systems also includes Streamlined Automated Logistics Transmission Systems (SALTS), Logistics Toolbox, Ported SNAP II/III, Micro-SNAP, R-Supply, FSM, ROM, HICS, HMIS, FEDLOG, and Micro-Q. Students are encouraged to gather reports from their future command on the most recent Commanding Officer's Monthly Report and Annual Financial Management Plan.¹¹

Following the one-month training, they are sent to the TYCOM to meet their contact personnel, who are providing training and inspections. Ongoing problem areas in the fleet are highlighted. Common Supply Department deficiencies are discussed. There is very little discussion on how to better support the Commanding Officers and very little on how the supply chain works. Lists of names are provided for further assistance should it be needed.

After they report to the ship, their daily schedule is driven by meetings, briefings to the Executive Officer and the Commanding Officer, and coordination requirements. Customer service, logistics planning, and financial management take priority over those requirements that receive heavy emphasis at the Department Head School.

3. Lack of Sufficient Logistics Information and Available Information is not Customer Focused

Prior to extended periods of deployments, Navy units go through predeployment briefs to understand who is providing what support. Once deployed, numbered Fleet Logistics Commands will send out separate messages on logistics support information when the ships enter their areas of responsibility. Information provided in the messages focuses mainly on POCs and lead-time requirements. There is no repository of lessons learned on the ports or searchable knowledge on supply management and processes for the fleet Supply Officers. For those who know where to search online, it is a research project each time. For others who do not know what to look for and where to start, their performance will be hindered. Additionally, Navy organizational Web pages lack uniformity of design in their layout. Some Web pages are well designed with helpful information; others lack an understanding of the customers' needs—information they

¹¹ Navy Supply Corps School. Supply Officer Department Head Course. Retrieved October 1, 2007 from: <https://www.npdc.navy.mil/css/nscs/default.cfm?fa=training.getTraining&CRSid=7>

provide is limited and therefore, not always useful. In general, information is posted for the general public and none of these Websites are focused on the needs of the fleet users.

4. Personnel and Material Visibility Problem

Material, mail, personnel, and provision transfer is accomplished through Replenishment at Sea (RAS) or during port visits. Visibility of repair parts has been a continued challenge. OTS has provided an excellent tool to allow the ships to find out the status of their high-priority parts, but it is not customer friendly and it requires a dedicated person to spend many hours daily to check on each part individually for the Commanding Officer's daily 8 O'clock Report. Some status listings of the parts are useless to the ship and others are erroneous.

For mail and personnel processing ashore, there is no information on what is waiting in port. Shore commands attempt to provide the information through messages. To compile these messages, intense labor is involved at the shore commands and the information provided is often insufficient and may even be incorrect. Bigger decks rely on a Beach Detachment (Beach DET) of typically 2-4 personnel to expedite the transfer process and provide most recent status information. For smaller ships, that cannot afford the Beach DET, this kind of support is nonexistent.

5. Miscommunication Problems

Miscommunication often causes confusion and frustration. Aircraft carriers have tight windows for RAS events due to the demand for a clear flight deck to launch aircrafts for operations. To accomplish bringing hundreds of pallets onboard, most times both Vertical Replenishment (VERTREP) and Connected Replenishment (CONREP) are utilized. During this time, the flight deck is dedicated for stores and the carrier cannot launch aircraft, which leaves the ship vulnerable to an enemy attack. It is common for the Beach DET to inform the Supply Officer of a different pallet count compared to information obtained from the Logistic Support Deck (LSD). When that happens, frustration usually occurs between the Captain of the ship and the Supply Officer. The

Supply Officer wants to ensure that all material is transferred onboard, while the Commanding Officer wants to ready the flight deck for flight operations as soon as possible.

6. Insufficient Ports Information

When planning for port visits, there is always insufficient information concerning the port to be visited. There is no additional information source available for reference and planning. A message is a poor method for communication. It cannot contain all the information needed for the Supply Officer and the Commanding Officer to establish effective logistics and force protection planning. Many follow-on E-mails have to be generated between the ship and the supporting activity for clarification and service requisition. Bigger decks resort to sending a Supply Officer ashore to make sure port services are properly arranged through face-to-face communication with the supporting command and the husbanding agent. Smaller ships cannot afford such an arrangement due to lack of manning. Miscommunication, anxiety, and improper services are common when first pulling into a port.

Once in port, the Husbanding Agent, who works for the contractor that provides all in-port services, will be the single POC to help the ship resolve all its requirement issues and problems. Most Husbanding Agents are very helpful and are rated highly by the ships. Since they work for the contractor, contract administration becomes the Supply Officer's responsibility.

7. Lack of Port Service Lessons Learned and Experience Sharing

Although some previous port visit cost information is provided to the ships ahead of time, issues such as liberty bus schedule and lessons learned do not exist for the visiting ship. The ship will create its own schedule that may prove to be wasteful in cost or highly inadequate.

While, generally speaking, the well-established ports do not have problems providing services on requested times, in less-developed ports, such as those in South American countries, services are frequently delivered late and bills are often provided only a couple of hours prior to the ship's departure. Without prior knowledge of

a late bill delivery problem, the Supply Officer would not be able to pay the bills on time and that could delay the ship from departing on schedule. In other well-established ports, problems such as sewage connection can be an issue. In Singapore, there are occasionally reports of a sewage truck showing up with wrong fittings or a hole in the bottom of the tank that forces the ship to endure prolonged periods with the crew not being able to use the bathrooms onboard. In Thailand, the sewage barge may show up 12 hours late, while the ship is not able to allow bathroom service during that time.

This type of information is important to share with other ships through lessons learned. It also will serve as historical port service performance information for the Contracting Officer to improve port services through contract means.

8. Port Service Contract Administration Problems

Most Supply Officers are not trained in contract administration. They generally do not understand the dispute resolution process. Additionally, most of them do not pay close attention to services paid for by a central line of accounting. Those who do pay close attention and challenge erroneous billings are sometimes threatened with refusal of service if bills are not paid as stated. Ships are forced to make payments on disputed services prior to leaving ports without Primary Contracting Officer involvement. There is no clear instruction available on how to effectively resolve service and payment disputes prior to a ship's departure. Ships' after action reports are usually avoiding the real issues for fearing of creating animosity and no useful feedback is routed back to the Contracting Officer for future contract actions. Lessons learned are not shared Navy-wide and cannot benefit ships visiting the same port at a later date. Thus, the cycle of overly generous or inadequate services will likely continue.

9. Material Follows After the Ship for the Duration of the Deployment and Never Reaches the Ship

Ships experience material misrouting problems while deployed. One problem is material being routed to the wrong locations. Another is material being delivered to a port after the ship has already left. The third is material sent to a foreign country, which cannot clear customs and the ship never receives the material. In other cases, some shore

commands decide to hold the ship's material because they believe material being routed is a low priority and does not justify the shipping cost. There are a variety of possibilities that might have caused these problems:

- Routing personnel receiving erroneous ship's schedule.
- Routing personnel make destination decisions without consideration of channel flight availability.
- Air Mobility Command (AMC) personnel at the air terminals not processing the material on time, which causes the delivery to miss the ships movement.
- Material placed on Military Sea Lift Command ships and are routed to the wrong locations.
- Routing personnel decide material is a low priority and hold it at the home port.

B. WHAT IS THE NAVY DOING?

The Navy's current training practice is heavily focused on ensuring that the Supply Officers understand their responsibilities in maintaining accountability. There is no effort to teach the Supply Officers to understand Navy operational logistics. To ensure proper logistics support, the Navy has instructed shore support activities to be more aggressive in reaching out to the customers by providing POCs.

1. Training Emphasis on Maintaining Accountability and Following Daily Supply Administrative Functions

SODHC is valuable to refresh Supply Officers' knowledge concerning shipboard Supply Department management. However, it does not address the knowledge gap in logistics coordination and information on logistics operations that is unavailable anywhere else. A shipboard Commanding Officer is more concerned with logistics support coordination than supply management controls. The Commanding Officer usually do not question the Supply Officer about maintaining accountability. What

matters is where the parts are when they are needed and service excellent to the crew. Operational logistics and how to achieve service excellence are not receiving adequate attention in the training courses.

2. More Aggressive Audits and Training by Assistant Training Group (ATG) and Fleet Assistant Team (FAT)

To measure accountability, a great deal of emphasis is placed on the maintenance of manual records. Many Supply Department Heads resort to and are encouraged to send their records to ATG for audits and correct the deficiencies quarterly to ensure that their records are up to standards. The notion is if records are well maintained, there must be no problems in operations.

3. Improve Capability on OTS for Better Asset Visibility

NAVSUP recognized the need for Commanding Officers and Supply Officers to know where their material is and thus introduced OTS. The initial purpose of OTS was to provide asset visibility. Recently, the program's capability was increased to include requisition execution and multiple asset tracking. It also has another feature to show who has checked on the status—a feature with no relevance to the customers' needs.

4. Use Customer Surveys to Gauge the Level of Customer Satisfaction

FISCs utilize Logistics Support Representatives (LSRs) as the single POC for any logistics requirement to include material, provision delivery, parts status, and any other service-related issues, information, and contacts. They provide direct assistance or provide contact information. In CONUS ports, they have been providing outstanding support. Once deployed overseas, LSRs still provide valuable support to forward material and requirements to the ships. Survey questions focus on levels of satisfaction that will be used for an individual LSR's performance evaluation.

5. Reports

Financial reports are done through the end-of-the-month report messages. For the repair parts report, ships use the R-Supply system to provide electronic reports to TYCOM for assets onboard the ships. Information is not real time.

In summary, although the current supply system is providing good support to the fleet, there is a lot of room for improvement in the following areas:

- Management of corporate knowledge that includes providing training to Supply Officers and retaining fleet experience and knowledge.
- Insufficient data and information for operational planning.
- Overburdening of the ship's crew with non-value-added tasking.
- Difficulty in gathering meaningful data for reports and analysis. Any data mining requires a major concerted effort with significant man hours and personnel involvement.

C. CONCLUSION

The Navy's logistics training, infrastructure and business processes focus on control and maintaining accountability, and less on efficient information sharing and knowledge management. As a result, maintaining operation of the Navy's logistics support system is labor intensive and inefficient. There is no permanent repository for knowledge sharing and information exchange. Valuable experiences are lost. Data analysis for process improvement is difficult and daily operations suffer unnecessary challenges.

Modern information technology can solve the lack of permanent data repository problem, and provide a platform for efficient information exchange, while improving the Navy's overall logistics support operations. Chapter IV will recommend the implementation of a Web-based logistics support concept to solve the current problems in the Navy's supply support system.

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IV. THE ANSWER TO THE NAVY'S LOGISTICS SUPPORT PROBLEMS

The answer to solving the Navy's logistics support problems is to learn the best practices from commercial companies. Leverage information technology to achieve drastic improvement in logistics support that will reduce the workload, and provide information sharing for effective planning and execution. While restructuring will achieve some efficiency, adopting information technology will result in even more operational efficiency, which usually leads to further streamlining of functions or organizational restructuring.

A. RESTRUCTURE

Commercial best practices examine the entire process, identify and eliminate non-value added functions to achieve operational efficiency. With every function, there is always a certain measurement. In the evaluation process, when maintaining the measurement is too costly and difficult to achieve, change the requirement and measurement. Do it smarter and easier—not harder, with more rules and requirements. Look at every individual function within a command, get rid of non-value-added requirements and functions, and simplify the work process. The result is a significant shipboard work reduction and ease of data mining. The following are some examples of shipboard functions that can be realigned:

- **Financial management.** Move it to shore. Ships are never denied augments to buy repair parts, so why do they need to worry about the financial management and reports?
- **Consumable items.** Standardize the consumable items listing for different classes of ships so that expenditure information is easily obtained to facilitate analysis and decision making.
- **Parts stock level management.** Provide parts stock level management ashore. Push reorders to the ships.

B. LEVERAGE ON MODERN INFORMATION TECHNOLOGY

While elimination of non value added functions and restructuring can achieve operational efficiency, modern information technology will revolutionize logistics information exchange. Adopt the following will enable further process realignment.

- Take the system approach and simplify the process that will lessen the workload.
- Adopt Radio Frequency Identification (RFID) for material tracking and inventory.
- Share information on parts requisition and shipping status.
- Share information on port services.

C. IMPLEMENT WEB-BASED LOGISTICS INFORMATION SYSTEM

In taking a broader view of the overall Logistics Support structure, leverage modern information technology to integrate all functional commands for information sharing and logistics actions.

1. What is the System?

It is a Web-based information sharing and execution system. It provides a platform for all logistics supply users to provide input that will be stored as permanent data for reference, reporting, or for permanent record. It will trigger actions in the supply chain to ultimately fulfill the customers' needs. It allows knowledge management that enables the whole supply system to become a learning organization. It stores and pushes institutionalized knowledge to all users and captures field operational knowledge and recommendations for continuous process improvement.

2. The Benefit of the System

The Web-Based Fleet Logistics Support Information System will focus on customers' specific functional needs to provide training, operational planning information, and logistics execution.

a. Fleet Problem: Lack of Sufficient Logistics Information and Available Information Is Not Customer Focused

System solution: All supporting commands will provide their portion of the information and all information will be funneled to the interested customer. To address Supply Officers' knowledge deficiency, training modules will provide knowledge on the supply chain and processes. Instead of scattered information, the system will provide a single platform for providing information to satisfy customer needs.

b. Fleet Problem: Personnel and Material Visibility Problem

System solution: NAVICP, FISCs, TRANSCOM, commercial vendors, and shore support organizations provide their pieces of information, and the shipboard users will see exactly where their material and personnel are located. Asset visibility will be a report format that eliminates the need for a dedicated sailor to work on and interpret OTS. There may not even be a need to include it in the Commanding Officer's daily 8 O'clock Report because the status of every high-priority part is only one key stroke away. Integrated with RFID technology, the shore commands no longer need to dedicate a sailor to spend hours everyday compiling the material on-hand message. There will also be no need for a Beach DET. All material shipping status is captured and displayed on the Web.

c. Fleet Problem: Miscommunication Problems

System solution: Miscommunication problems are often caused by different information being provided by the Beach DET and LSD ships. Elimination of the need for the Beach DET not only saves manpower, but it also improves communications.

d. Fleet Problem: Insufficient Ports Information

System solution: Predeployment briefs and messages cannot provide enough information for port visit planning. Supporting commands will provide all port service information in the regions they are responsible for. The shipboard Supply Officer

or the Commanding Officer can search for the port and look up the information that will affect their port visit such as services and force protection as well as liberty issues.

e. Fleet Problem: Lack of Port Service Lessons Learned and Experience Sharing

Systems solution: Lack of port services lessons and experience sharing causes repeated mistakes and problems. Readily accessible lessons learned will help the Supply Officers to eliminate mistakes through early planning and by taking appropriate preventive actions. Previous experiences will help the Supply Officers to order the appropriate amount of services that sufficiently meet liberty requirement without wasting government money or providing insufficient service. Readily accessible force protection information will help the Commanding Officer to understand the appropriate measures to be provided and decide what additional measures need to be taken to safeguard the ship.

The system will also provide a means to capture port service performance information for the Contracting Officer for future contract bidding, etc.

f. Fleet Problem: Port Service Contract Administration Problems

System solution: Port service contract administration problems reside in insufficient knowledge, bill payment, and less than satisfactory contractor performance. They system will provide information on what the Supply Officer is supposed to do as part of contract administration, dispute resolution procedures, and contractor performance evaluation feedback for further actions.

g. Fleet Problem: Material Follows After the Ship for the Duration of the Deployment and Never Reaches the Ship

System solution: The ship's schedule is captured in the database. It allows the routing personnel to see routing instructions from the shipboard Supply Officer without additional routing instructions by other commands. It reduces the possibility of miscommunication between routing instruction messages and the routing personnel. Since AMC terminal personnel do not understand the nature of ship operations, they may put lower priority for material to be shipped to the deployed ships. When the material reaches a predesignated port, the ship may have left the port already and result

nondeliveries. Using the system, routing instructions can be issued to direct them to load material on the first available flight without delay.

In conclusion, streamlining logistics functions and leveraging on modern information technology within the Navy's supply system will achieve operational efficiency. The Web-Based Fleet Logistics Information System is the answer to provide optimum solutions to deal with current operational difficulties. Chapter V will discuss conceptual system functions and possible Web page designs for shipboard use.

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V. CONCEPT OF WEB-BASED FLEET LOGISTICS SUPPORT SYSTEM

The Web-Based Fleet Logistics Support Information System connects users in the supply chain to the customers in the deployed units. Since functions and information needed for the supporting personnel and the customers are different, the portals for the supporting users and customers must be different to suit specific functional needs of the users. This chapter first discusses the functional concepts, then possible webpage designs of the system for the shipboard customer use.

A. FUNCTIONAL CONCEPTS

The Web-Based Logistics Information Systems will provide a portal for every operational and administrative command to provide their input for relevant information to other commands and extract data for operational planning or data analysis. It can provide a platform for requisition execution and vehicle for accurate bill payment. The system is open-ended and flexible enough to allow continuous upgrades and modifications. It should be capable of integrating with existing operating software systems with limited interruption and may be developed into a full-grown system such that existing isolated individual support systems are no longer needed. Figure 4 illustrates how the information system should function.

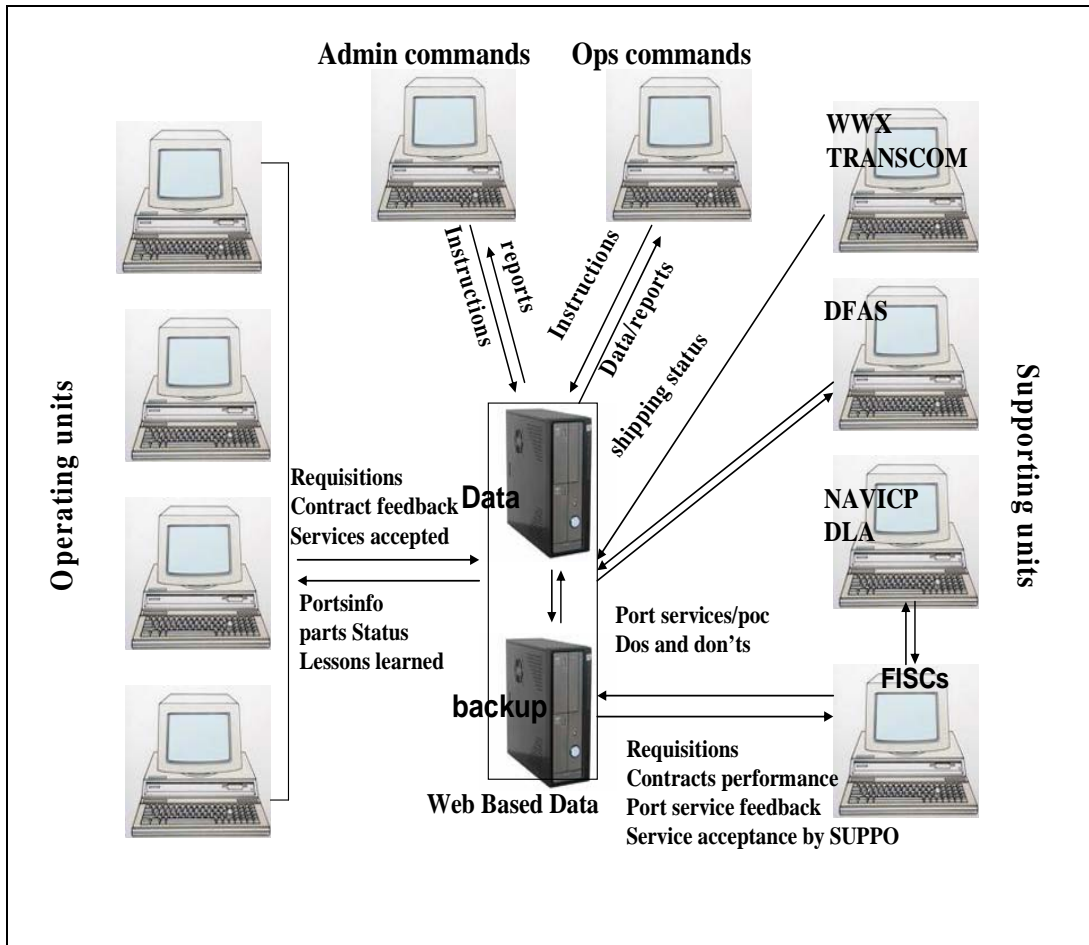


Figure 4. Web-Based Naval Fleet Logistics Information System operation illustration

1. Administrative Commands

Administrative commands such as NAVSUP and SURFOR deal with policies and training issues. Although NAVSUP and SURFOR actively engage in pushing the information out through messages, publications, E-mails, and various Web sites, it is very difficult to determine how effective those mediums are at ensuring that important information reaches everyone who needs them. Lack of a structured, single-source information system results in significant knowledge gaps in various areas.

- **Data Input:** NAVSUP, SURFOR, and COMFISC can use their Web sites to push information to the fleet. Standard operating procedures and

publications are stored in an electronic library for easy access. New and urgent information can be disseminated as flash notices for urgent attention.

- **Data Extraction:** Reports often tend to avoid issues. It is human nature to put one's best foot forward and when situations are gloomy, many are compelled to put a positive spin to the report. While there is nothing wrong with projecting a positive attitude, many facts need to remain facts that are open and reviewable by the decision makers. The system will need to be properly structured to capture relevant and accurate data concerning lessons learned, feedback, and improvement recommendations. The higher tiered chains of command can access the data in its raw form without any modification, which often results in a change of the original meaning. They can take appropriate actions on issues requiring immediate fleet-wide policy changes or future modifications. Additionally, the database is now acting as the single source of permanent data repository for future improvement.

2. **Logistics Support Commands**

Logistics supporting commands include wholesale and retail levels for parts, financial services, and transportation support. Data input and extraction at these commands are explained below:

- **Wholesale Commands** include the Naval Inventory Control Point (NAVICP) and Defense Logistics Agency (DLA). They manage appropriate levels of repair parts and consumables at seven FISCs to provide maximum readiness. They also respond to urgent material requirements that need special contracting to get the parts to the customers in the shortest possible time. The challenge is to optimized stock levels to satisfy repair needs with parts obsolescence and shrinking industrial base due to an aging fleet.

- a. **Data Input:** Information useful to the fleet from these commands is shipping status of urgent material. Commanding Officers and Supply Officers do not have a problem with status showing backordered. When there is no change in the status for several months, they start to question what is going on. They do not care much about exactly how NAVICP and DLA get the parts. They do want to know when they are going to get their parts. Therefore, mere “backordered” status never satisfies a Commanding Officers’ need to know what to expect. Worse yet, material status often bear outdated status that compels the Supply Officer to make phone calls or send out E-mails to anyone he thinks can provide better information. This results in wasted man hours of those involved in the process. The right answer is to understand what matters to the customer and structure the status information with a focus on where the part is and when it will be delivered.
- b. **Data Extraction:** NAVICP and DLA can extract information on high-priority requirements by weapons systems, class of ships, or by geographical locations in order to conduct trend analysis and modify formulas to calculate appropriate stock levels to better meet fleet demand. The system will also provide a portal specifically for supervisors in the contracting departments to monitor the acquisition status of high-priority material.
- **Retail Commands:** Retail commands consist of all seven FISCs and their detachments. They are the contact faces to the fleet customers for all logistical requirements. They are responsible for delivering material to the customers when requested, as well as providing contract services support. It is essential for them to understand what the fleet really needs and structure their information dissemination to address those needs.
 - a. **Data Input to the system:** To understand what information should be made available to the ships, it is very important to understand

what the ships are dealing with and make the appropriate information available to them. Ships' needs are generally focused in the following areas:

- 1) **Material shipping status.** Avoid status that does not provide much information. Backordered, shipped, or awaiting technical review are examples of bad information that does not satisfy a modern day ship's Commanding Officer. Instead, status needs to be, in Hong Kong, waiting for flight to Hong Kong, will be in Hong Kong on 21 Jun 2007, or in contract process, expect delivery on 08 Jan 2008, etc. The important information for the ships to know is where the parts are and when they can get them. Anything else might be nice know, but they are of no significant value to the ships and only beg more questions.
- 2) **Foreign ports information.** Ships get welcome aboard messages discussing various issues ranging from force protection levels, logistics support information, to names of Husbanding Agents, their contact information, etc. Those messages cannot provide all the information ships need to know. Before a ship pulls into a foreign port, it will consider the following areas of concerns:
 - **Host nation rules concerning visiting U.S. ships.** Black water discharge, accidental oily waste discharge, and other rules governing U.S. military personnel.
 - **Force protection requirements.** Commanding Officers are very concerned with berth location, pier facilities, and security arrangements in order to decide what needs to be done to ensure adequate protection for the ship.

- **Pier services.** Pier hotel services include trash removal, means of black water discharge by barge or by truck, fresh water hookup and power supply. Most countries have mature, developed, pier-side service capability, but very often there are variations when early information can help the ships avoid problems. For example, in Australia, foreign trash is not accepted. If a ship does not know the information ahead of time, when the ship pulls into port, the trash is already piled up and cannot be offloaded, which can result in a serious sanitation problem during the port visit. On the other hand, the ship can plan ahead and dump all the trash in the deep waters prior to going into the port.
- **Provision replenishment.** Ships do not have enough storage space to carry sufficient provisions to sustain extended periods of operations at sea. Every port visit is an opportunity to fill up the store rooms with fresh provisions. Due to diet differences and local availability, fill rate is often unsatisfactory. Although food listing is available upon request, there is no food unavailability listing to allow good planning. To conduct a detailed analysis of provision availability of every port and every region by the shipboard Supply Officer is unrealistic.
- **Refueling.** When ships do not have CLF ship support at sea, they must request refueling in port. Lack of prior experience information often leads to coordination difficulties.

- **Liberty bus schedule.** Lack of historical information forces ships to draft their own bus schedules concerning frequency and number of buses to request. Commanding Officers have a tendency to overstate the requirement. In the spirit of taking care of their personnel, they believe that more is better and results in wasteful spending.

b. Data Extraction from the system: FISCs can get customer feedback concerning quality of port services that can be used for future contract improvement. Receive customer material requisitions. Permanently capture what really matters to the fleet and develop customer-focused processes.

3. Customer Unit Level Portal

Individual commands can provide information in their area of responsibility and extract information they need. It is impossible to list every unit for illustration. However, users maybe divided into the following categories: 1) supporting units; 2) operating units; 3) administrative units; and 4) policy and operational commands.

B. CONCEPTUAL WEB CONTENT

The DoD is facing many challenges. Current system development needs to achieve the goals of lessening cost, reducing workload, and improving integration and agility. When designing this system, we must take into account the following principals:

1. Only One Web Page to Navigate from for Essential Functions of a Command

The Navy has created a vast amount of Web pages. It is understandable for every command to have a Web page. The problem, however, is that many Web pages are compiled with massive amount of links that are not tailored for the customer. To find which link to use is a challenge and users may suffer information overload. On the other hand, users may not know which Web page to go to for specific information. Figure 5 is

such an example of massive compilation of links without consideration of its users. It was advertised to the shipboard Supply Officers as the Web page to provide all logistical information. It is, however, very difficult to navigate and find out which link to use. Overall, there are 116 functional links listed, but not even ten links are relevant to the functions to be performed by a shipboard Supply Officer. It is not customer focused and represents what a web page should not be.

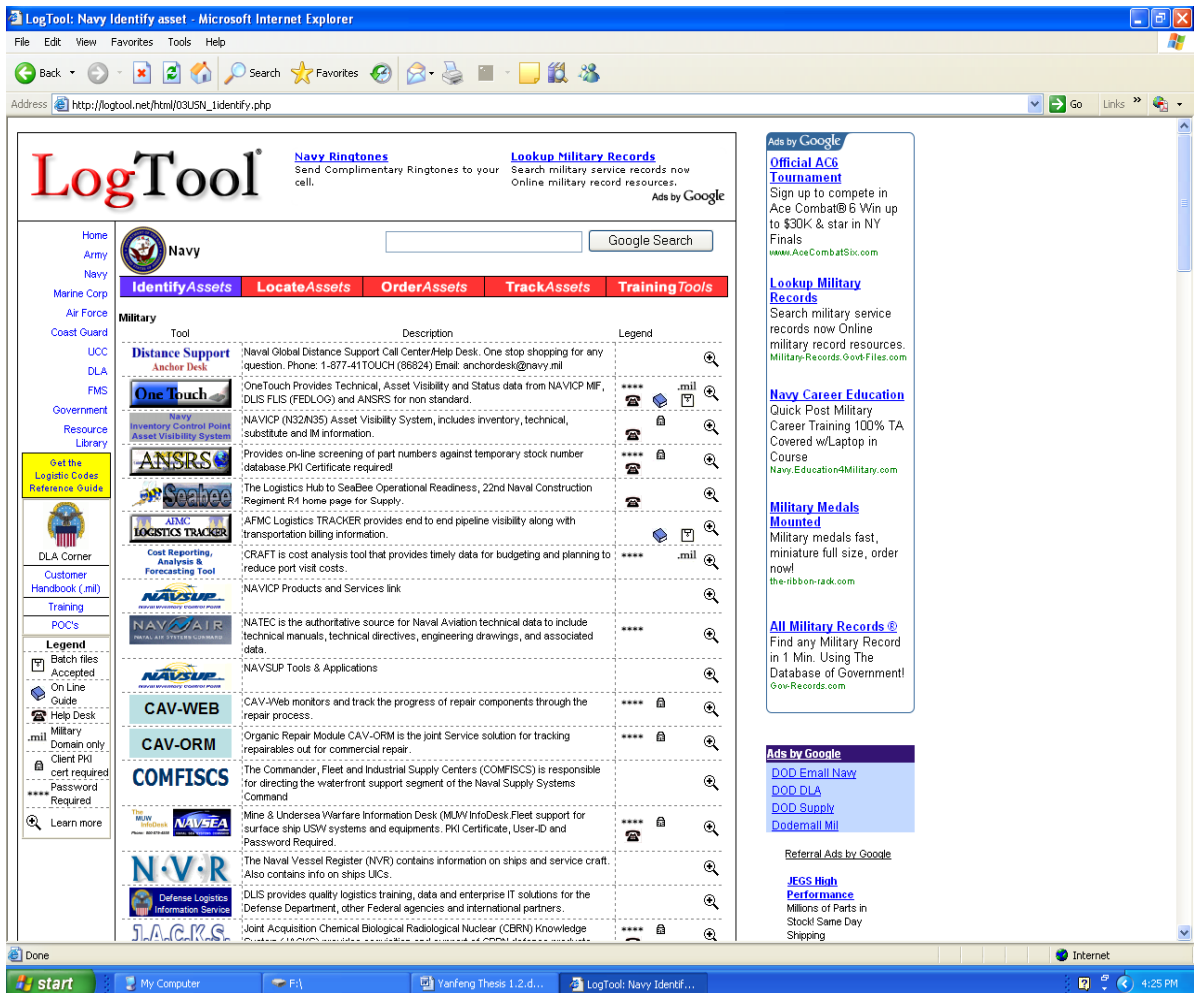


Figure 5. Log Tool second page (From: DLA Log Tool Web page)¹²

¹² Defense Logistics Agency. Log Tool Web Page. Retrieved Nov 27, 2007 from: http://logtool.net/html/03USN_1identify.php.

2. Easy to Use

Navigation and operation of the system needs to be self explanatory and easy to use. The problem of existing software programs is they require extensive training. Sailors have to go through extensive training before they feel comfortable using them. In some cases, they never reach the level of proficiency. This roadblock can be easily removed by listing the links by major functions instead of by software program names or acronyms. For example, to direct the user to order parts, simply make a link and then label it ORDER PARTS.

When directing the user to the areas he is interested in, categorize the functions in a logical order instead of compiling all the links on one page. The user can pick and choose how far he or she wants to go. Figure 6 is an example of a well-designed Web page. It is easy to use. Information is not cluttered and the layout is pleasing to the eye. It focuses on information exchange, not on fancy graphs that takes up more space on the page.



Figure 6. Contingency contracting Web page by Defense Acquisition University (From: DAU Contingency Contracting Web page)¹³

Conversely, a poorly designed Web page is difficult to use. One has to research to find what he needs. Information is cluttered and scattered around the page. Poor layout and color cause information fatigue. Poorly designed Web pages do not attract users and will not be useful, while well-designed Web pages will continue to attract more and more users and achieve the goal of information exchange. Figure 7 is an example of a poorly designed Web page.

¹³ Defense Acquisition University. Contingency Contracting. Retrieved Oct 15, 2007 from: <https://acc.dau.mil/contingency>.

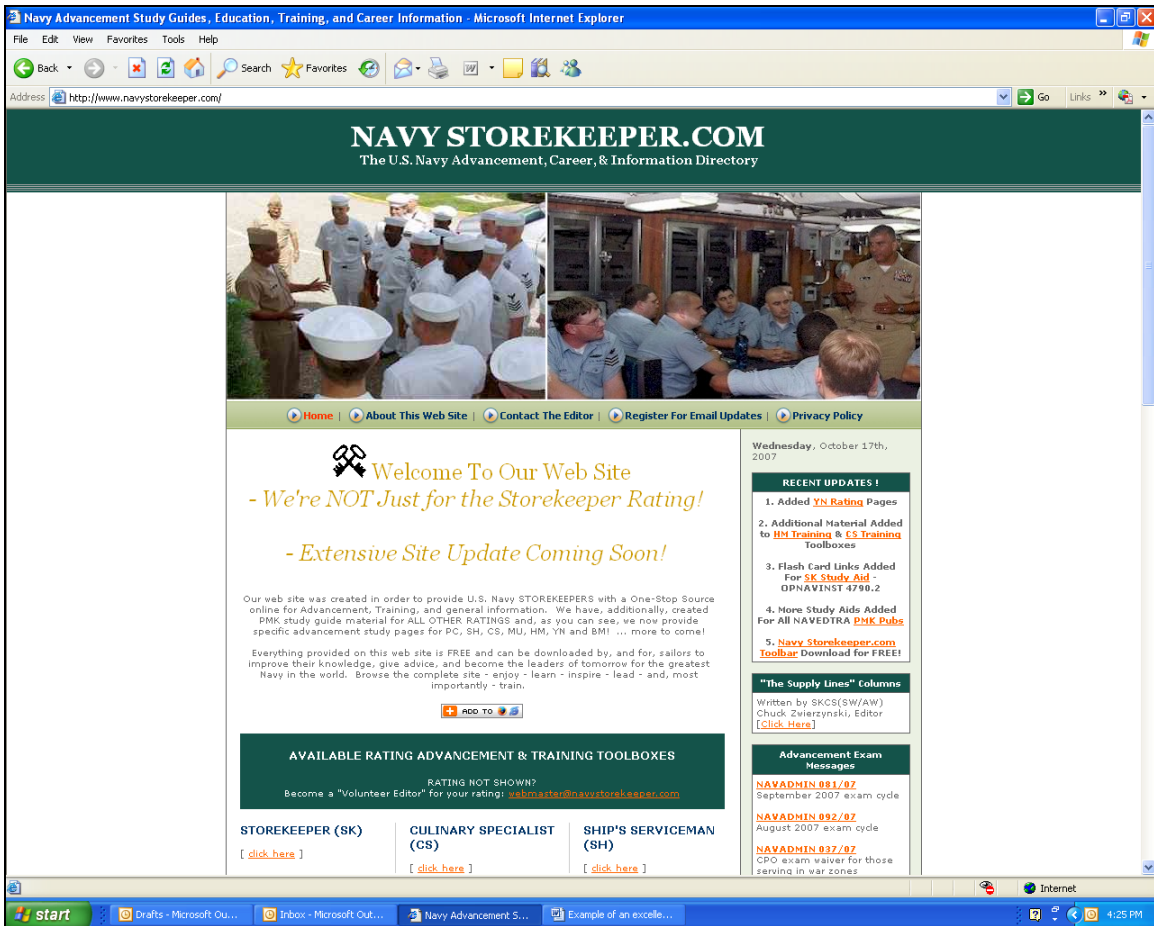


Figure 7. Navy storekeeper.com home page (From: Navy Storekeeper.com Web page)¹⁴

3. Open Architecture

Most legacy software programs employed in the Navy were developed in the 1960s. They are typically stand-alone and cannot be integrated with other systems for information sharing. The Web-based SPECIALIST concept will offer an open architecture that different Web pages, with various links and portals, can be structured to suit different command functions. It is flexible and Web pages and links can be modified with ease.

¹⁴ Zwierzynski Charles, SKCS(SW/AW), USN. Navy Storekeeper.com. Retrieved Oct 18, 2007 from: <http://www.navystorekeeper.com/>.

4. Avoid the Temptation to Build the System to Solve Every Need

The main purpose of the system is to provide an information exchange platform, act as a portal for information input and requisition execution, and finally, provide a single source for reports and data mining. The added benefit is to incorporate information push-down from the higher echelon commands to the logistics work force. Another benefit is personnel development with tools and training modules. The danger of losing sight of the main purpose is activities attempt to require the system to solve their every need that will eventually make the system less usable to the customers. However, the single source information and execution concept will allow customer-tailored functions that are specific to categories that the command belongs to, i.e., shipboard logistics, material routing, etc.

C. CONCEPTUAL WEB DESIGN IDEAS

Discounting eye pleasing graphics and colors, functionally, the design needs to follow a logical process that is not confusing and is easy to use. The function of the system is for information exchange, requisition execution, and information reports flowing upward. It needs to quickly guide the user to its functional portals to either provide information input or extract useful information. The secondary function for the system is for pushing important and relevant information to the users as well as helping the users with their personal development. The most import feature is the feedback function for continuous improvement. Structure the questions carefully to capture useful information for capability enhancement or tailor the functions to suit an individual functional command's particular needs. It is impossible to discuss every functional command's needs in this project. However, as an example, Web design for shipboard use is discussed in Figure 8.

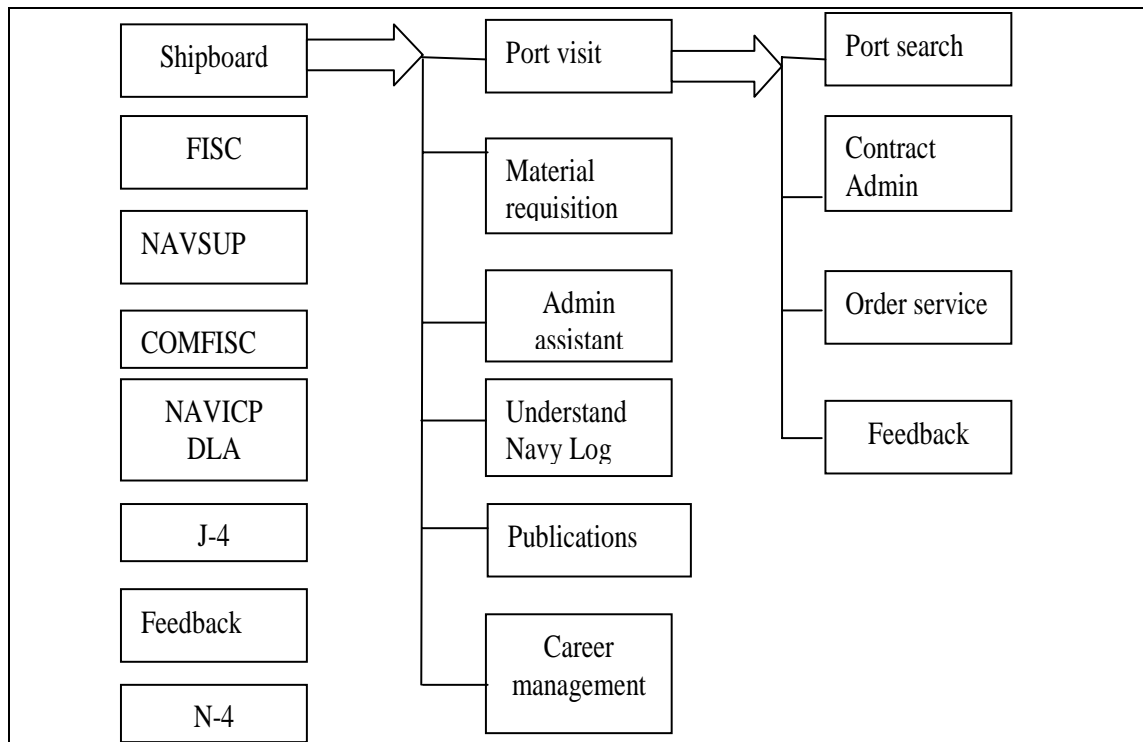


Figure 8. Logical flow concept for shipboard use

Home Page. This page needs to identify which activity the user needs to select to enter into his areas of concern. The main purpose of this page is to guide the user to quickly get to where he needs to be. This page is also perfect to serve as a bulletin board to push DoD information down to all levels. Users can glance at it and make a decision about whether they want to dig into the bulletin board on a particular subject or go straight into their functional areas.

The bulletin board may be comprised of some headlines with one or two sentences of eye-catching information that explains the topical content. Headlines may be recent Navy initiatives, military news, etc., on matters relevant to the military. Avoid catch-all mentality. If the headlines are more than one page, they are too long. Stay away from posting nonmilitary, nice-to-know information that does not serve the purpose of informing military personnel. Most of the times, users are very busy and they should not

be distracted with less than relevant information. The key is to be easy to navigate and not cause information fatigue. Home page content for shipboard Supply Officer may look as in Figure 9:

NAVAL FLEET LOGISTICS	
<p><u>Shipboard</u></p> <p><u>FISC</u></p> <p><u>NAVSUP</u></p> <p><u>COMFISC</u></p> <p><u>NAVICP/DLA</u></p> <p><u>SURFOR</u></p> <p><u>J-4 / N-4</u></p> <p><u>DFAS</u></p> <p><u>Feedback</u></p>	<p style="text-align: center;"><u>BULLETIN BOARD</u></p> <p><u>DOD NEWS AND INITIATIVES</u></p> <p><u>NAVSUP NEWS AND INITIATIVES</u></p> <p><u>NAVICP NEWS AND INITIATIVES</u></p> <p><u>SUFFOR NEWS AND INITIATIVES</u></p> <p><u>FISC NEWS AND INITIATIVES</u></p> <p><u>N-4 / J-4 NEWS AND INITIATIVES</u></p>

Figure 9. Home page for the shipboard Supply Officer use

The left side consists of major functional links. It should provide a feedback link to allow anyone using this system to voice his idea about how to improve the Navy supply logistics process or to improve the Information System. The right-side bulletin board is meant for top echelon commands to disseminate information. Major policy makers may post their important information for Navy-wide distribution. It should have a feedback link for the users to provide their input or questions directly back to the command that is responsible for the information.

Second Page. After selecting where to go, the link directs the user to the second page to execute his functions. This page needs to be custom designed for a category of functions that the command belongs to. It should reflect the needs of a deployed or a shore-based unit—be it a ship, FISC, NAVICP, DLA, or NAVSUP. Doorways are designed to lead the individual users to accomplish his logistics operations. Functional links need to focus on operational information for planning or execution and personnel enhancement information to include training and other information that are structured to the user’s benefit. For shipboard logistics, categories may include port visit, parts requisition, understanding Navy logistics, publications, administration assistance, career management, and feedback recommendations.

On the right-hand side, information appearing should reflect what function is selected on the left-hand side. For example, selecting port visit will lead the user to the third page, which will allow the user to locate the port of interest and find all information concerning that port for planning and executing a port visit. Figure 10 shows information may be in the second page.

SHIPBOARD LOGISTICS	
<p><u>Port visit</u></p> <p><u>Material requisition</u></p> <p><u>Admin assistant</u></p> <p><u>Publications</u></p> <p><u>Naval Logistics</u></p> <p><u>Career management</u></p> <p><u>Feedback to webmaster</u></p>	<p><u>BULLETIN BOARD</u></p> <p><u>Shipboard specific information to</u></p> <p><u>Include but not limited to training,</u></p> <p><u>Inspections and other information</u></p> <p><u>affecting shipboard personnel</u></p>

Figure 10. Second page content for the shipboard Supply Officer use

Port Visit. This link leads to information for planning and input interface. This is where appropriate control needs to be put in place to control access to information and limit the usage of this portal to authorized users only.

Inside this link, information on a port for a ship to plan its visit and service/material requisition during the port visit is important to the Commanding Officer and Supply Officer. Pictures of boats that will be providing services and personnel, i.e., the Husbanding Agents can be posted on the page to help the ship make informed decisions about force protection.

Material Requisition. Within this function, parts visibility and parts order are the most important capabilities. Employing commercial Radio Frequency Identification (RFID) technology by all shipping commands will enable ease of parts transit visibility. Shipping activities can load-up all the high-priority parts in the database. The ship only needs to type in its Unit Identification Code (UIC). All its high-priority parts should show up with the location following each part or the parts grouped by location. This will eliminate the need for one Store Keeper whose job is to track the parts.

For the requisition function, all that is needed is the part number, nomenclature, and quantity, plus whether it is a CASREP part. There should be an option to send or generate a message for radio transmission. Radio transmission is necessary when connectivity is poor or when there is a scheduled connectivity outage.

Any other information, such as cost and national stock number, document number, etc., will not be displayed because they will be irrelevant to the ship. The reason for not listing the National Stock Number is because it is cross-referenced to the National Stock Number in the database and even an engineering technician can process the order. Cost is listed because it is no longer the ship's function to manage repair parts budget and the ships have no need to see the information.

Administration Assistance. This function needs to focus on personnel development and provide assistance on administrative skills building. Training module on leadership skills building, awards writing, and Fitness Report (FITREP) or EVAL writing guidance can be loaded to help junior officers to become better leaders and

administrators. Additionally, readings on leadership and management, conflict resolution, effective communication, etc., are also important in developing leaders.

Understanding Navy Logistics. Many Supply Officers assumed the Supply Department Head duty following a shore duty has nothing to do with Fleet Logistics Support. Their previous shipboard experiences are limited to disbursing, sales, or food service. They lack the understanding of readiness supply operations. SODHC focuses on how to keep accountability intact and administration of the Supply Department. This function can serve as a training tool to help the Supply Officers understand how the process works.

Publications and Instructions. There is where doctrines, technical publications, and directives need to be stored. Those commands responsible for updating them need only to point out what is changed each time there is change and all other commands will receive exactly the same information without missing any updates and have outdated information.

Career Management. This area will provide career development information to help the junior Supply Offices to plan their careers. Personnel Command can use this area to effectively push their information out to shipboard Supply Officers who often can not attend road shows due to operational commitments and provide virtual mentorship.

All about NAVSUP. NAVSUP enterprise is a vast and complex organization. It is impossible for any Supply Officer to have a tour in all its commands to gain a thorough understanding and experiences before they reach top ranks that will impact policies. This can provide the avenue to allow Supply Officers to learn about NAVSUP organizations and understand their functions, responsibilities, and processes. It can be as good as NAVSUP is willing to make it.

Feedback to Webmaster. This is where the Supply Officer can provide feedback to the Webmaster and the system program manager concerning what might be a better design for shipboard use, capability enhancement, and recommendations for improving the logistics support process.

Third Page. This page further breaks down the use’s functions into more detailed categories to provide information for operational planning and provides a portal for logistics execution.

Within the Port Visit Category, it needs to include Port Search, Contract Administration, Ordering Service, Post Port Visit Report, and Feedback to Webmaster. Figure 11 illustrates information may be included in the third page.

PORT VISIT	
<p><u>Port Search</u></p> <div style="border: 1px solid black; width: 100px; height: 20px; margin: 5px 0;"></div> <p><u>Contract ADMIN</u></p> <p><u>Ordering Services</u></p> <p><u>Post visit Report</u></p> <p><u>Feedback</u></p>	<p style="text-align: center;"><u>Port Information</u></p> <p><i><u>High priority parts and personnel waiting at the port</u></i></p> <p><i><u>Provision availability</u></i></p> <p><i><u>Force protection</u></i></p> <p><i><u>Host nation rules on visiting ships and personnel</u></i></p> <p><i><u>Combatant commander instructions</u></i></p> <p><i><u>Local customs and liberty issues</u></i></p> <p><i><u>Sample liberty bus schedule by class of ship</u></i></p> <p><i><u>Previous port visits lessons learned</u></i></p> <p><i><u>Husbanding agent</u></i></p>

Figure 11. Third page content for the shipboard Supply Officer use

Port Search. This function will bring up information on any port around the world where U.S. Navy ships have been and will sail into. Combatant commands or FISCs responsible for the ports should be responsible for most current information.

Contract Administration. This function provides information and directions to the Supply Officer what his roles and responsibility to ensure proper administration of port services. In addition, it needs to provide dispute resolution procedures.

Ordering Food or Fuel. This function provides a portal for requisitions while in port and can replace logistics request (LOGREQ) messages.

Port Visit Feedback. This function provides a avenue for the Supply Officers to provide feedback on port services to future contract awards and lessons learned for other naval ships.

In the Port Information section, all necessary information concerning the ship's successful visit can be posted for ready access. The most import areas of concerns for the Commanding Officers and Supply Officers are port hotel services, security arrangement, host nation rules, host nation VIP visits, liberty issues, and stores on-load. All relevant information should be readily available in this section.

To fully utilize the Logistics Information System, it is important to allow administrative or operational commands to have their own feedback repository for process improvement. Additionally, to ensure continuous improvement of the Logistics Information System, there needs to be a feedback repository for each functional command so that their page can be changed to suit their needs. Capabilities are added or taken off as the system is tested in the field.

D. ADMINISTRATION OF THE SYSTEM

The Logistics Information System encompasses many players. Some are pushing information out for general purpose only. Some are providing operationally relevant information. Others must take actions based on customer's needs. The focus for the Logistics Information System is for logistics execution.

In the NAVSUP organization, COMFISCs are providing direct support to customers; therefore, they should be controlling who has access to the system, to what extent, and for what purpose. Additionally, they should also take charge of responding to customer's needs for improving the logistics support process, as well as improving the Logistics Information System.

Generally speaking, all shipboard users should have access to generic information. Port Information needs to be restricted to Department Head and above. Port service requests should be restricted to the Supply Officer only and parts requisition can be restricted to the Store Keeper only, depending on how the shipboard manning is structured. For those supporting commands that are responsible for providing information in their functional areas, they may be given access to update information that belongs to them, have access to logistics data for analysis, but they should not be authorized to make changes to data that is provided by other commands.

Due to the sensitivity of some information in the database, SURFOR or COMFISC may not want to share some lessons learned or feedback with everyone else. Access to these areas can be restricted and personnel responsible for these areas at SURFOR and COMFISCs can edit or make appropriate changes before they release them to the fleet.

The overall administrative function is controlled at a very high level. Individual city/port information is updated by organizations responsible for providing logistics support in those areas.

E. RISKS AND MITIGATION

The database will hold the ship's schedule, lessons learned, and other sensitive information that are shared with other interested commands. Without proper controls, unauthorized personnel with malicious intentions can gain access to this sensitive information, which may have a negative impact to national security. They may alter the database or sabotage the system that renders it useless. Additionally, system crash or loss of connectivity will result in the loss of asset visibility and severely interrupt the logistics support. The risks of information security and connectivity must be carefully considered and mitigation measures put in place to counter these threats.

1. Information Security Concerns

The system can be guarded against computer virus attacks with up-to-date antivirus programs, but antivirus programs cannot prevent unauthorized users from obtaining sensitive information or from making unauthorized data alterations.

- Safeguarding sensitive information. Supply Logistics is closely linked to the ships schedule in order to make deliveries at the right time at the right locations. It is very important for the material routing activities to know exactly where and when to send required material. Erroneous processing with a delayed schedule will lead to nondelivery of material and negatively impact the ship's readiness. The fully developed system will allow Operational Commands or Ship's Operations Officer to update the ship's schedule so that the rest of the logistics support activities can determine where to send ship's requested parts and other materials. Therefore, access to the ship's schedule must be restricted to commands and individuals that have a need to know.
- Data integrity is equally important. The database is useful and relevant only if the data are accurate. Unauthorized users may intentionally or unintentionally alter the data if access and authority to alter data is not carefully considered, structured, and controlled.

Mitigation of the risks of unauthorized personnel gaining access to sensitive information or make unauthorized alterations lies in the structure of the system. Although the data may be located at a single or multiple locations, it is considered as single source database. Within this frame work, access to certain information is limited by command function and further limited by individual access authority. For example, concerning the ship's schedule, all authorized personnel on the ship and at the operational commands will have full access to the ship's long and short range schedule, but to the material routing activities, the only information they need to know is where to send current material on hand. Therefore, personnel at those commands have no need to know where the ship is at now and where it is going. The routing instruction can be given by the Ship's Supply Officer or Operations Officer. The ship can update the routing instruction whenever the new operational schedule is available and the material routing personnel can simply follow the instructions without the risk of misrouting due to miscommunications caused by delayed or erroneous routing instructions. To mitigate intentional or unintentional data alteration, personnel have access to the system should be

restricted to information they are authorized to have access to. Since all users are customers of the system, everyone can make input for reports or information sharing specifically concerning his area of responsibility, there are only very few commands have information updating responsibility and have authorization to effect changes in their areas of specialty only.

2. The Threat of Loss of Data

Information Technology is not perfect. Systems crash or virus attacks frequently cause loss of data. With the logistics support dependant on information sharing and execution solely based on the Web, a system crash that will cripple the supply chain is not acceptable. The threat of data loss due to system crash can be easily mitigated by employing backup systems. Backup should not be performed a prescribed times a day, but bother primary and backup systems should be running simultaneously. That way, regardless of which system crashes, another system can continue all the functions, while another standby system can be employed and the crashed system can be reconfigured. Therefore, there should be at least two systems operating simultaneously, while a third system is in standby status for immediate backup whenever a system crash occurs.

3. Connectivity at Sea

Ships at sea frequently lose connectivity due to misalignment of the ship's position to the communications satellites. Additionally, band-eighth availability to smaller classes of ships frequently causes sluggish Web service or no connectivity hinder the operation of the system if it is dependent on continuous connectivity alone. Obviously, this risk of connectivity renders the Web-Based Logistics System unreliable.

To mitigate this risk, shipboard specific information exchange and data should be stored on the Local Area Network (LAN) that will automatically communicate with the mother database whenever there is connectivity. Ship's Supply Officers or Store Keepers can continue to gain information on what they need and process their requirements on the shipboard LAN.

In the cases of nonconnectivity for extended periods of time, requisitions can and should be processed via radio messages. The ability to generate a message document

should be a part of the capability of the Web-Based System to deal with the possibility of extended periods of no connectivity.

F. POTENTIAL DOD-WIDE USE OF THE SYSTEM

Future military operations call for Joint Operations. Army, Navy and Air Force will work together to achieve national security goals.

The Web-Based Logistics System will be effective in allowing planners at J-4 and J-5 to post doctrines and instruction on the database in deliberate planning process. Other organizations such as shore establishments and U.S. embassies may continue to update information on countries and cities. Exercises and previous operations logistics lessons learned will be permanently stored in the database. In contingency operations, all logistics support personnel can use the system for doctrines, directives, instructions, operating area local market maturity information.

1. Market Maturity Environment in the Operating Area

In the contingency contracting operations, it is crucial for the contingency contracting officers to know market maturity ahead of time so that he can better assist the combatant commander with responsive logistics support through rapid contingency contracting. Mature environments have sophisticated infrastructures capable of supporting and sustaining operations. They have host nation support agreements; financial systems able to support complex transactions; capable transportation networks; business capacity; and the willingness of vendors. On the other hand, immature environments have little to no supporting infrastructure. When grooming cannot bring the infrastructure to desired standards, logistics support capabilities would have to be brought into the theater.¹⁵

U.S. Embassies and consulates may provide market maturity environment, vendor contact, local officials, and interpreter information, as well as suitable hotel information for initial action team input to the system and update as necessary.

¹⁵ Yoder E. Cory, CDR, USN (retired). Contingency Operations – Achieving Better Results. *Army AL&T*, January – February 2004, p. 96.

2. Lessons Not Learned and Poorly Written Contingency Contracting Support Plans

According to accounts of contingency contracting officers returned from Iraq, contingency contracting operation in Iraq was for a long time chaotic. There was a severe shortage of contracting personnel that was never identified previously. The Contingency Contracting Support Plan was poorly written and lessons learned from other contingency operations did not translate into better understanding of the contracting environment. All these are ills of poor knowledge management that lacks effective information sharing, insufficient deliberate planning as well as insufficient urgent planning. It is not a matter of lack of information. As a matter of fact, information is abundant, but scattered in many places. Information simply did not reach where it was supposed to go—the result of a lack of structured, user-focused information push.

The Web-Based Logistics Systems will hold policies, instructions and information on particular areas of concern. It will hold previous lessons learned and allow higher echelon commands to consolidate and leave relevant information for future reference. It will allow administrative commands to post their policies, directives, and processing procedures instructions.

3. Planning Input

Planning commands can post deliberate and emergency planning information. All interested units and commands will use the system as the single source for all logistics information that pertains to their areas of concern and find out what they need. All parties will have the same information, so that there is little chance of miscommunication, other than the possible ambiguities in the information itself.

VI. IMPLEMENTATION

A. FEASIBILITY OF SUCH AN INFORMATION SYSTEM

1. Maturity of Technology

The commercial world is using the Information Exchange and Execution System to integrate supply, demand, and transportation for cost-effective operations that provide better coordination and superior logistics service. Dell, Wal-Mart, and many other prominent companies are using modern IT to link all their supply chain activities to provide relevant logistical information for efficient information exchange and execution. Web-based IT is mature and has been utilized in the commercial world for E-business.

2. Evidence of Commercial Employment of a Web-Based Information Exchange that can be used for a Web-Based Navy Fleet Logistics Information System

- Online publications and instructions. Example: Federal Acquisition Regulations.
- Training and administrative assistance. Example: Defense Acquisition University online training.
- User input interface. Example: E-business online transactions with searchable shipping status.
- Reports. Example: Company database captures financial information as well customer information.

3. Functional Requirements for the Naval Logistics Information System

- Regulations and instructions. All supply manuals and logistics manual can be made available online for users ready access. Searchable feature will allow the user to type in a key word to go directly to where the section that pertains the subject.

- Training and administrative assistance. Training modules for supply system and logistics supply chain information, books on leaders, effective communication, bottom writing, public speaking, etc., are available to develop the Supply Officer. Forms, FITREP/EVAL writing instructions, examples and other administrative instructions are selectively pushed to assist in the Supply Officer's daily operations.
- User input. The users can provide feedback or requisitions input:
 - a) Requisitions for material and provision.
 - b) Operations lessons learned.
 - c) Problem and recommendation reporting.
- Status visibility. The customer sees the material status as soon as the supporting commands provide status information.
- Financial reports and other reports. Financial and other reports can be structured to meet reporting requirements.

DoD has many software programs. Many are Web-based for information dissemination and others provide a platform for requisition execution and provide transportation status for asset visibility. They suffer the following problems:

- Individual programs, no integration.
- Not customer focused. Weed out relevant and useful information is a research by itself. Users suffer information fatigue.
- Inadequate information for customers.
- No data mining for high echelon report features.
- Not structured for Six Sigma principles, which call for continuous improvement.

B. IMPLEMENTATION

The Web-Based Logistics System provides the capability to all the users for collaboration. Structured training and shared operational information will solve NAVSUP's knowledge management deficiency and will lead to dramatic improvement in supply chain management. It focuses on customers' specific needs in their daily

operations, assists in their personnel development, as well as provides tools for their daily administrative functions. It is open architecture and flexible and can be easily improved and modified. Technology is readily available. To implement the system, the most important factor is top leadership commitment. Then apply the evolution acquisition strategy to quickly enable the knowledge management function so that its benefit is realized immediately. Then implement and enable requisition acquisition, which allows automatic financial reporting for the comptrollers. After field testing, the last phase is to implement it in other services. Additionally, employ a spiral development concept after the knowledge management, requisition execution, and reporting functions are enabled for continuous improvement of capability enhancement.

1. Phase I: Development

- **NAVSUP commitment with the right vision:** The most crucial factor in successful implementation of the system is the commitment of the NAVSUP with the right vision. Many projects failed due to insufficient support from the very top of the organizations. Top leadership commitment from NAVSUP will ensure sufficient resources and clear guidance that is the result of the right vision. With the right vision and guiding principles, it is then possible to delivery the right product to the users.

The ultimate function for the Web-Based Logistics System is to manage knowledge and lessen the workload. Therefore, success of the system depends on systematic value evaluation and realignment of commands and functions. Without top-down streamlining, the system will become another stovepipe project with little potential.

- **Streamlining the functions and responsibilities:** Examine and evaluate each required function levied on the operational level users. Identify NAVSUP system-induced functions that create burdensome requirements to the shipboard Supply Officers. NAVSUP has been advocating working smarter, not harder. In reality, the NAVSUP system is pushing for more oversight at all levels. Shipboard Supply Officers cannot work smarter when requirements are pressed on them regardless of whether they think

there are better ways to do business. There is no structured process to receive the customers or users input. It requires top-down actions to effect real changes. Our leaders must focus on lessening the workload instead of pushing for more check-in-the-box functions. Use a three-part test to decide if the requirement is still valid.

a) **Who is the requirement for and for what purpose does it serve?**

If the function is merely a check in the box that does not serve any real purpose, get rid of it. Examples are abundant on the ship. For example, there is a requirement to have the Commanding Officer sign the hard copy financial report transmittals. There are a total of four transmittals in every month and a single signature on the last transmittal of the month is not acceptable by the instructions. Who are these hard transmittals for? They are kept on file for inspections and no one else. The original intent might have been for accountability, but what purpose does the requirement really serve? If they to are required for reference in case of loss of accountability, one must ask the question whether any of the files helped bringing disciplinary actions against any Supply Officer or Commanding Officer in the history? If not, it is time to get rid of the requirement to save time and energy. The alternate solution is to not even let the ship worry about their repair parts OPTAR using information technology.

b) **Can someone else perform the same function that makes more sense?**

Shipboard financial management is a major function for the Supply Officer. Along with it, many financial analysts are employed at the TYCOM level to make sure transmittals are received on time and processed. According to the TYCOM comptroller, the Navy has never denied funding requests for purchasing high-priority parts. It

is assumed that the Commanding Officers are spending their OPTAR money based on their budget. If a piece of equipment is broken, the Commanding Officer wants to have it fixed, meaning spending money to purchase the part, regardless how much it costs. Unless the TYCOM comptroller desires to issue guidance to prohibit repair parts purchases under or over some certain threshold, it does not matter how much OPTAR is given to the ships. When some equipment is broken and needs a repair part, the Commanding Officer will ask for augmentation if the ship is out of repair money. Therefore, there is no reason for the ships to even manage their repair OPTAR. By eliminating this requirement, a significant burden is lifted off many personnel. There is no need to designate a financial Store Keeper, no one needs to worry about transmittals (consumable budget is so small that a once a month or even a once a quarter transmittal should suffice). The Senior Store Keeper does not have to be a seasoned technician to deal with all kinds of financial related issues. Shipboard repair parts management is reduced to order, receive, stow, issue and inventory management. Then there is the requirement of providing funding documents for pier hotel services and any other interdepartmental services. Hotel services are centrally funded, meaning funding comes from the TYCOM. Shore Support activities are not profit driven. Those activities operate on revolving fund may over charge one year but will attempt to charge less the following year to give back the customers the excess. In the long term, it is a wash within the TYCOM or even the Navy Department. Therefore, it is only a paper drill to require ships to provide funding documents for hotel services. Overseas pier side hotel services payment is discussed in a separate section.

c) **Can the Web-Based Logistics Support System capture the information?**

If information is already readily captured, get rid of the requirement. Must focus on workload reduction, simplicity, effective information sharing. Use combination of Evolution development and spiral development for quick fielding and continuous capability enhancement.

Prior to development of the system, the Single Champion for Logistics Excellence must be established. The function of the department is to understand needs of the customers and act as the program manager to look across the functional areas in the supply chain for process improvement. Without this program manager, it is likely the system will be less capable and likely not realize its full potential. It will have deficiencies to act as customer focused tool for knowledge management, information sharing, training, logistics planning, requisition execution platform and one-stop shopping database for reports and data mining. Customer focus is the central theme during the development phase and the follow on system enhancement. It is critical to employ an Integrated Process Team (IPT) that consists of the program manager, customer (user or function specific), Web developer technician, communication professional so that the final product will integrate across all functional areas, yet customer need focused that is user friendly and logically structured to rid of information fatigue. For acquisition method, use evolution acquisition since many functions and end result objectives are already known. Since the final state can not be fully realized in the beginning, the spiral development must also be employed for potential capabilities.

- **Customer focus.** Fleet customers and supporting commands have different functional needs. While the fleet customer's input requirement is material requisition and port visit after -action report, the supporting command's input may be material shipping status. Web portal design needs to focus on their functional needs and not others. No one size fits all. Get customer involvement when designing Web page functions for their use.

- **Follow principles of good communication.** Stay away from fancy flashing pictures and videos. They distract the user and cause information fatigue. Put command functions and links in logical order. The user should not have to search around the page to find what he wants. Consult with communications experts.

2. Phase II: Fielding Navy Knowledge Management and Requisition execution

- Logistics information sharing.
- Execution capability enhancement.

3. Phase III: DoD-Wide Implementation

Lack of knowledge sharing and lack of permanent data repository for important information are problems common within all branches of services. All services may use the Web-based information sharing concept to push institutionalized knowledge and pull lessons learned and recommendations from the users. The benefit is immediately realized. Users do not have to conduct extensive research to gather information for planning and training. Commands responsible for training and providing planning information can systematically provide information to the users.

C. OBSTACLES FOR IMPLEMENTATION AND HOW TO OVERCOME THEM

Obstacles for implementation first occur in resistance from current personnel, then from insufficient force to drive it through and finally, losing sight of customer focus.

1. Personnel Resistance

This is often referred to as “Rice bowl protection.” Every time there is a new initiative, transformation, there will a lot of resistance. Some will fear losing their jobs because they have been doing the same familiar jobs for many years. A new way of doing business may make them feel incompetent. Additionally, functions used to be important making sure units submit their reports on time and then reorganize the reports in certain formats are no longer needed. Personnel assigned to these jobs will have to be retrained

and reassigned. Plain language and simplified procedures will render many specially trained personnel feel insecure. To deal with these problems, top leadership must have an unwavering commitment to implement the vision. Communicate early to all personnel for their buy in. Offer retirement to those whose services that are no longer needed and are hard headed to learn another job. Train and reassign others for organizational realignment.

2. Lack of Attention to Drive the Process

There is a tendency to leave the design and information update to IT personnel. There are abundant examples of commands that do not pay enough attention to work on their home pages. There is a tendency to assign their information technicians to everything relating to Web page design and information update. This practice will never achieve the result of information exchange.

3. Stovepipe Implementation that Ignores Customer Needs

Traditional practices focus on control and enforcing standard. Customers' needs and input have not been receiving enough attention. These practices focus on reports and oversight instead of resolving customers' needs and improvement of the supply system. To counter this problem, understanding what the customers' needs are and designing the system to respond to those needs is essential. Additionally, evaluating and implementing input and recommendations from the customers are important for continuous process improvement.

VII. CONCLUSION

The Navy logistics system lacks a single modern information technology system to connect the supporting commands and the customer commands for information sharing. Cooperate knowledge management is deficient. Information on logistics requirements is insufficient that leads to operational difficulties. The supply system lacks a mechanism to allow it to become a learning organization. Valuable customer feedback is not permanently captured for process improvement.

The Web-Based Naval Global Supply Logistics Information System will meet the vision of the NAVSUP Commander's guidance for 2007 to reduce current legacy systems, increase information sharing Navy-wide, and focus on meeting customers' needs. It provides a platform that allows all the supporting commands to submit their information and push it to the customers while collect logistical information and feedback for reports and analysis. It functions as a collaborative tool between all users within the Naval supply system. In it, every user is a contributor that will benefit someone else. It serves as the single information source for the shipboard users to plan for operations, to enhance their logistical knowledge, to use as a tool for administrative functions and requisition execution. Additionally, it enables the Navy to simplify shipboard supply operations, lessen the workload, reduce manpower requirements and ultimately allows the realization of moving supply support ashore. It is a platform that will enable the Navy Supply System to become a learning organization, which will continuously evolve by capturing every user's lessons learned and recommendations.

The web-based support concept can also easily expand into joint operational environments, especially in contingency contracting operations. Planning commands and other supporting commands may continuously provide and update relevant information on market maturity, vendor base, and local political environment. Once a contingency operation is to be executed, contracting officers only need to go to this single information source for planning and execution. The platform may even serve as a permanent repository for contractor performance evaluation by the Contracting Officer Representatives for contract payment or contract improvement actions.

To successfully develop and implement the system, the following are recommended:

- NAVSUP's commitment with necessary resources.
- Establish a single permanent program manager to examine all stakeholders for their roles, needs, and concerns so that everyone's input is properly integrated and every user's needs are addressed.
- Use three part test to streamline functional requirements and eliminate unnecessary functions.
- Take preventive actions to mitigate shipboard operations concerns in Information Security, shipboard connectivity, system interruptions and data integrity.
- Open architecture to allow continuous system improvement.
- Follow principles of good communication for easy navigation and avoid user information fatigue.
- Use a combination of evolution and spiral development acquisition strategy to quickly field knowledge management and requisition execution, while unknown capabilities can be added at a later date.

Clearly, current processes of the Naval supply logistics support lacks efficiency and lacks the mechanism for continuous improvement. The ultimate solution to the Naval fleet logistics requirements is not OTS. Only the Web-Based Naval Fleet Logistics Information System can provide solutions to address problems the Navy supply support system is experiencing and should be adopted immediately.

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