Sea-Land Sets New Course with IT

By Philip J. Gill

A new corporate structure, facilitated by open systems, helps an ocean shipping giant prepare for the global market of the next century.

The common wisdom today is that, to compete in the global marketplace, companies must decentralize management, business operations, even their information technology (IT) infrastructures. Only by unleashing centralized power can a company achieve its potential, empowering local offices to respond quickly to customer needs and market conditions.

Sea-Land Service, Inc., a leading provider of worldwide containerized cargo shipping, is bucking this ground swell by setting sail on a major reorganization that goes against the current of decentralization. Instead, Sea-Land centralized its senior management, its core business operations and its information systems (IS) department at a new worldwide corporate headquarters in Charlotte, NC. "Our customers' needs changed," explains Jim Watkins, staff vice president of IT. "We used to have an ocean-based focus; now we have a global focus."

In 1956, Sea-Land, then known as McLean Industries, virtually invented the containerized shipping industry as we know it today. The company strapped a container full of cargo to the deck of a converted oil tanker, which then sailed successfully from Newark, NJ, to Houston. In 1995, Sea-Land, now one of five operating companies of CSX Corp., a $9 billion international freight transportation conglomerate, began to reinvent itself to face global competition in the coming years. The unit, which earned almost $3.5 billion in revenues in 1994, has undergone management reorganization and corporate consolidation, backed by major changes in its IT operations and infrastructure.

Sea-Land has outsourced and downsized key IT operations, and embarked on a series of new strategic IS initiatives that will be handled by an internal department now free to focus on business operations. The new systems will be built on open technologies, which Sea-Land's IS department defines broadly, beyond just Unix systems, Ethernet local-area networks (LANs) and relational database management systems (RDBMSs). Microsoft's Windows, Windows NT and Visual Basic programming language, and Powersoft's PowerBuilder application development tool amount to de facto standards in the corporate computing environment, and IS works to integrate them with other systems.

Although Watkins believes open systems enables Sea-Land to develop important new applications faster, with higher quality and at lower cost than under the proprietary model, that alone does not justify the concept. "That's not enough for me," he says. "What's important is that open systems supports our business as we see it. Certain pieces of that business need to be centralized, others decentralized. The fact that open systems allows us to develop new systems that fit this business model, and still provide access to our legacy systems, helps a great deal."

A Unified Front

Like most other industries today, freight transportation sees a future whose business dynamics and operating environment are quite different than in the past. "There are external influences surrounding our business reorganization," Watkins says. "For one thing, there's the deregulation of the ocean shipping industry. The Federal Maritime Commission regulates the ocean shipping industry and publishes

tariffs. [Currently] we're a common carrier, just like the railroads, trucking and airline industries used to be."

Secondly, competition is no longer regional or national. The new global nature of business forces companies, when they can't expand themselves, to form alliances overseas or at home. In Sea-Land's case, it has struck up a strategic partnership alliance with Maersk, a Copenhagen-based shipping business and sometime competitor. Through their alliance, Watkins explains, the two companies will determine the best way to deploy resources to their mutual benefit.

Obtaining a single, unified view of operations—a global view, as it were—is essential to charting the changing business environment. Senior managers were convinced that, without such a unified view, says Watkins, the company would not be able to respond to changes in the marketplace and to improve customer service. Sea-Land had been a largely decentralized company. Its three major business units operated independently from one another, even to the extent that they maintained their own information systems for key applications.

As part of the shift in business focus, Sea-Land underwent a massive reorganization. "We consolidated various senior management from around the world to the new headquarters in Charlotte," Watkins recalls.

The reorganization was felt up and down the company structure, and included layoffs and reassignments in all areas of the company. About 100 members of the IS staff lost their jobs, either because they chose to stay in the New York metropolitan area or because their positions were consolidated.

Diversified IS

Although Sea-Land opted to "recentralize" management and operations, the company adopted a flexible IS strategy. One of the most drastic changes was the decision to outsource the care of its legacy mainframe systems to offshore programmers. Programming teams in India and the Philippines now do all maintenance and upgrades to its existing mainframe applications. The ultimate goal is to phase out these applications, largely in favor of client/server systems. But that will take time, and even then Sea-Land envisions a continuing, though diminished, role for its mainframe. "We still have these pro-

grams and the need for centralized access to data," says Watkins. "The mainframe will evolve into a central server, but it will take five years to make that transition."

In the meantime, someone has to service those systems, which are accessed remotely by users worldwide through IBM 3270 applications. With costs as they were, he says, it didn't make sense to continue maintenance with the in-house IS staff, whose talents could be put to better use elsewhere.

Sea-Land's own IS personnel will deal with downsized, client/server versions of some legacy applications and, more importantly, build new systems that can offer the company strategic and competitive advantages. "We have redefined the group to be much closer to the business," says Watkins.

In this regard, the company is in line with current IS trends. Rather than being confined to one data center, personnel have been turned into "consulting analysts, business analysts, and project managers," according to Watkins. "We moved everybody out to sit with the Sea-Land people."

The way in which IT resources are managed and deployed also has changed

dramatically. "We are becoming a project-based organization, not a functional or staff-based organization," says Watkins. This makes for fluid, responsive use of people and technology. "The company looks at the staff and reallocates them once a year to meet the project mix," he explains. "This makes us a nimble organization, though it does require a big planning effort once a year."

Getting a Grip

With the new organization in place, one of the first efforts IS made was to streamline key business operations through increased automation. That has taken the form of two new client/server applications developed by the redeployed internal staff.

The first application, the Terminal Automation System (TAS), automates the operational aspects of cargo shipping. "The system tracks everything that happens, from the time a container arrives at the gate until the ship leaves," says Watkins. "Most of the time, the containers get moved around before they're finally put on the ships. We need to know where [a container] is, and if it's been picked up

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INTEGRATION AT A GLANCE

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In moving to open systems, Sea-Land Service faced these issues and found solutions that may apply to your organization as well.

Need	Solution
Corporate management and operational structure provided only a fragmentary, division-by-division view of operations.	Reorganize the company through a worldwide consolidation of management and operational personnel to a new worldwide headquarters.
IS personnel were devoting too many resources to maintaining legacy mainframe-based applications and not spending enough time on new strategic systems.	Outsource legacy systems maintenance to low-cost suppliers so internal personnel could concentrate on building new applications that would help the company achieve competitive advantage.
Tracking container cargo bookings was difficult and cumbersome because of an antiquated, largely paper-based process.	Develop and deploy new IT systems to track shipments and provide status reports to company and customers.
The company had difficulty knowing whether each booking of container cargo was profitable.	Implement a yield management system to better utilize resources, including ships and containers, and strive for maximum profitability on a booking-by-booking basis.
Sales force lacked access to information to execute business strategy.	Build a new sales force automation system that could go into the field with the 350-member worldwide sales force.

or checked out."

TAS replaces what was largely a manual, paper-based process, although some mainframe pieces were involved. Automating such a system has provided "impressive productivity gains," according to Watkins.

TAS has been installed at two locations, Elizabeth, NJ, and Charleston, SC. In Elizabeth, TAS has helped reduce operating expenses by $3 million, not to mention several other operational efficiencies. At Charleston, among other benefits, it has enabled Sea-Land to increase cargo volume 40 percent without adding personnel. (For more details, see "Terminal Automation System Benefits," below.)

The second new client/server system, the Shipment Management Project, is designed to improve customer service. The project has been under development since December. As its name implies, it will manage customer shipments and provide online information about cargo, the physical location of goods, their current status, expected shipping and arrival dates, and other pertinent details.

"The shipment management system is a competitive response," says Watkins. "We can now look at each shipment as a continuous process, so that at any moment we know the location of the goods and other information that's important to our customers."

Sea-Land staff developed both systems using the PowerBuilder tool. They are currently deployed on Windows NT servers, although TAS was originally developed to run on IBM's OS/2 operating system.

Yielding Profits

Sea-Land's reorganization goes against much of the common wisdom of the containerized cargo shipping business. For instance, it is generally assumed that the way to make money is to increase volume. "The shipping industry for years has been known as revenues and volume. If you push up volume, you push up revenues, and you'll make more money," says Henry Hill, director of Sea-Land's yield management system (YMS). "In general, more was better; full ships meant high operating profits."

The hole in this assumption was that no one could tell if they were making money on every booking or just on some bookings. "We would carry some loads that appeared to be making money for Sea-Land, but in fact they may not have been," Hill recalls. "Volume and revenue appeared to be up, but they were still not making the money that they should."

As part of the reorganization, senior management decided that the IS department should take a more proactive stance, specifically by delivering systems that

would utilize available resources to maximize both revenues and profits. A YMS takes in information on demand and supply. For Sea-Land, *demand* translates into forecasts for cargo opportunities, while *supply* is the pool of available equipment, including not just the number of containers available, but their size and whether they can provide refrigeration. The YMS combines this information with route networks and vessel schedules to maximize both utilization and revenue.

"The cargo planning helps show us the best way to deploy our assets," says Hill. "It shows us the opportunities we should go after and ones that we should pass on." After that optimized information has been massaged and analyzed, it is sent to the sales force, which is expected to use the reports and forecasts to help set sales targets and goals.

The YMS originally started as a pilot in one of Sea-Land's divisions. Before the reorganization, each business unit had its own YMS. Then Sea-Land consolidated the three independent YMS operations into a single unit, which was centralized and expanded company-wide.

The YMS is Sea-Land's main Unix system. It runs on a Sun Microsystems Sparcstation-20 workstation configured as a server. About 10 Sparcstation-10 and -20 workstations, plus a handful of X terminals, access the YMS across the Ethernet LAN that runs through the new corporate headquarters building in Charlotte.

The YMS consists of two software components. Sea-Land's IS staff periodically downloads information from a variety of sources, including its mainframe, into an Oracle 7 RDBMS, which feeds that information into a customized linear optimization software package from C-Plex, Inc., of Lake Tahoe, CA. C-Plex tailored the software, called the Dynamic Yield Management System, to fit Sea-Land's needs.

According to Hill, thus far the company has realized two key benefits from the new system. First, it has provided the desired worldwide view. "[Users] used to run specific optimizations for their division," says Hill. "Now we run global optimization. Our assumptions are set at the global level." Secondly, it has paid off financially. "For 1995, our goal was $30 million in benefits from having it," he says. "We expect to meet that goal."

Terminal Automation System Benefits

Elizabeth site

Reduced operation expenses by $3 million annually.
  Starting time moved from 6 a.m. to 7 a.m.

Reduced trucker turn time by 45 percent.
  From 75 minutes to 40 minutes.

Increased volume with less manpower and hours.
  From 1,800 to 2,600 moves per day.

Cut queue time at gate by 60 percent.
  From two hours to 45 minutes.

Reduced trucker's receipt (TIR) preparation cost.
  From 12 cents to 5.5 cents per TIR. Paper cost reduced from $441 to $252 per day.

Charleston site

Increased gate volume by 40 percent with no additional headcount.

Eliminated gate overtime.

Eliminated paper at gate.

Improved customer container availability.

Eliminated filing of 4,500 documents weekly.

Freed management time to focus on efforts to improve operations.

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SLAMS Dunk

With the YMS system in place, Sea-Land realized that, to act on the plans the YMS might produce, its sales force would need better IT support. As a result of a quality inspection team (QIT) report, the company embarked on a dramatic upgrading effort whose result is the Sea-Land Account Management System (SLAMS).
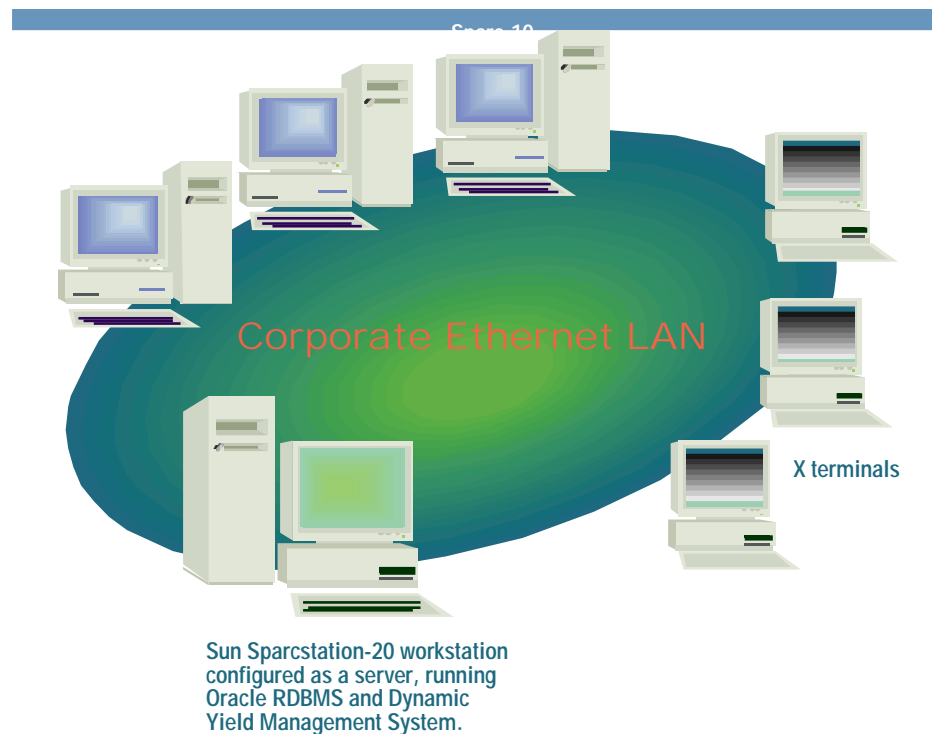
"The QIT found that the sales force lacked easy access to information that is truly accurate and comprehensive," says Cindy Hill, who, as manager of information resources for the IS department, oversees SLAMS and related laptop-based applications. "With SLAMS, we give them tools to do that." SLAMS includes modules for call planning, call results and forecasting, and a territory snapshot on volumes, ports and commodities, as well as ad hoc reporting capabilities.

In its current iteration, SLAMS is a custom-built application running on laptop PCs from AST Research with Intel 486 66MHz processors, 8MB of RAM and 250MB or 540MB hard drives. The PCs run Microsoft Windows, and a SLAMS relational database stores a variety of account and territory information. Also loaded on each laptop is a copy of Microsoft Office and Delrina WinFax Pro, which the sales reps use to create reports, write letters, produce mass mailings and execute more daily business activities.

"Our first goal was mainframe independence," says Hill. "All the mainframe-based applications were written in CICS and VSAM, and were cumbersome to operate." The mainframe hasn't been dispensed with altogether. SLAMS relies on a territory snapshot it receives from the mainframe, and it includes information on the past and current accounts in that territory, account history, current bookings and the like. About 250 of the 350-person worldwide sales force are up and running on SLAMS, says Hill.

In phase two, anticipated for later this year, Sea-Land plans to upgrade SLAMS for two-way information exchange with the mainframe. Currently, SLAMS cannot download mainframe-based information directly from Charlotte headquarters, leaving sales reps and headquarters to exchange information by telephone and paper-based postal mail.

That is about to change. A beta group

Corporate Ethernet LAN

X terminals

Sun Sparcstation-20 workstation configured as a server, running Oracle RDBMS and Dynamic Yield Management System.

Sea-Land's expanded yield management system extends throughout the new enterprise headquarters. Links to other key systems are being planned.

of about 20 Sea-Land sales reps is testing a new version that provides automated two-way information exchange. The SLAMS database will be able to automatically download and refresh its data from the mainframe, and upload to the mainframe changes made to the laptop database. The new version also will upgrade the operating environment to Windows 95 and add new host communications capabilities. Sales reps will have access to a Windows 95-based Remote Access Server in Charlotte. It runs Microsoft's SQL Server RDBMS on an NT platform.

Such access is only the first step toward easier two-way information exchanges. Also on the agenda is a link to the YMS, possibly through direct links to the Unix servers or through remote logons to the corporate Ethernet LAN.

Right now, Sea-Land distributes the YMS reports via paper mailings, but Hill thinks direct links to the YMS and other resources are essential. "We will definitely interface to the yield management system and other databases on product knowledge, for instance," she says.

Sea-Land has just begun to study how to accomplish that goal. The two-way RAS server connection for the sales reps' mobile laptops will replace the current

DOS-based dial-up software. Before connecting the laptops to its other systems, however, Sea-Land wants to establish a more sophisticated communications infrastructure. In that regard, it might not be necessary for the laptop users to enter the corporate computing network through the RAS server for all applications.

"We'd like to make those connections realtime, so the databases are updated instantly," Hill says. Open systems will play a key role in achieving that end. Sea-Land is currently evaluating various middleware offerings, including several Sybase products, with the intention of coordinating the updates of data residing on legacy and open systems.

These four new systems are but the first changes. Sea-Land's new management structure and IT infrastructure will provide a global view of operations to senior management in Charlotte, who will be able to communicate that global view to all personnel around the world. In that way, management intends to make sure the entire organization is charting a common course. **IT**

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