Integrated Information for Freight Logistics: A time for commitment, partnership and action

Although the importance of integrated freight logistics information is well recognized, the sector has been slow in effecting change related to its role in the supply chain. With heightened cargo security and continuing productivity requirements, freight logistics enterprises require an integrated information system to be competitive.Information drives all the fundamental processes in a freight logistics enterprise.Managing this information and its related systems is the key to success.

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Introduction

Many dispute the breadth and depth of the term "logistics;" however, its fundamental components are fairly common — plan, move, store and report. Despite this semantic confusion, one thing is clear: Information drives all the fundamental processes in a freight logistics enterprise. Managing this information, and its related systems, is the key to success.

Freight logistics is embedded in the supply chain — it is the link between procurement, manufacturing and distribution. As a result, freight logistics information becomes the life-blood of the supply chain, driving every global trade decision. Suppliers insist on warehouses with the right material at the right time. Manufacturers demand inventory just in time. Carriers must match loads with empties. And customers want to know where their shipments are and when they will arrive.

The information surrounding materials or inventory in transit is as valuable as the actual physical goods. As a result, within most transport operations, performing economical, efficient and effective freight movement requires timely and reliable information. To be competitive, a freight logistics enterprise must have an integrated information system.

A growing case for change

Until Sept. 11, 2001, the recurring need for comprehensive action in this sector was not particularly compelling. Most freight logistics enterprises were solely focused on cost management, immersed in intensive 24x7 operations and concerned about protecting market share. However, increased security legislation such as the SAFE Port Act in the United States and mandates by government agencies around the world, such as the Transportation Security Administration (TSA), the Department of Justice (DOJ), Department of Defense (DOD) and the Department of Transportation (DOT) in the United States, will push information requirements to a new level.

In addition, the capital-intensive nature of the freight logistics market, coupled with razor-thin profit margins, requires a similarly heightened level of productivity. The need for corrective, proactive action is undeniable, as are the potential costs of compliance and change.

Mandatory regulatory operating and reporting requirements are nothing new within the transport sector. Historically, this sector generally regarded compliance as a burden and has been slow to respond. But given the imminence of cargo terrorism and theft, freight logistics enterprises should take this opportunity to participate, collaborate and share development costs with their supply chain partners, and resolve this crisis.

The ability to embed heightened cargo security, emergency response and productivity requirements into a freight logistics enterprise's daily operations is critical. Developing a fully-integrated freight shipment management system applicable across various transport modes and usable within the supply chain will be the key to success. This comprehensive strategy should be further enhanced by each player's commitment to collaborate with its supply chain partners and to implement leading-edge technology in its freight operations, IT and communications networking.

If the need for change in the freight logistics sector is so compelling, there are key questions to answer:

- What are the sector trends impacting a freight logistics enterprise, and what are the critical needs?
- What is the role of a freight logistics enterprise in the supply chain, and what are the associated needs?
- Why is cargo security such a compelling need?
- What is freight shipment management, and why is it vital to resolve these key sector needs?
- What is the appropriate business architecture to enable and sustain critical change?
- How can you get started, and what is the appropriate direction for action?

The freight logistics enterprise

Enterprises in the freight logistics sector typically are characterized by the following attributes:

- Global, but fragmented operations
- Exposed to industry consolidation
- Capital intensive
- Large number of employees
- Focused on cost control and elusive revenue growth
- Intense 24x7 operations
- Infrequent but large capital projects (such as constructing new ports, terminals and rail lines)
- Data driven with legacy IT environments

As such, their fundamental strategic objectives focus on managing cost and market relationships/activities. These objectives immediately bring three critical business needs to the surface:

- Global transportation entities must be electronically connected to do business with their customers to move goods, data and funds, to expand service offerings, and to manage customer relationships.
- Business performance must become more economical, efficient and effective through the use of technology.
- Effective decision processes must be enabled by enterprise data management, reliable and actionable intelligence, decision support systems and data and event visibility.

Freight logistics enterprises must take several key actions to accomplish these strategic objectives: Barriers caused by fragmented, inefficient and unreliable legacy systems and procedures must be eliminated. Integrated end-to-end solutions must be meticulously planned. And the entity must be committed to continuous change.

Although current technology can enable the implementation of critical strategic initiatives, there are glaring risks. These include exposure to shortcomings from legacy systems and procedures, fragmented or unplanned solutions, organizational barriers to change and lack of sufficient business architecture to be competitive and grow. These risks are amplified as each freight logistics enterprise joins other enterprises with similar risk exposures to participate in the supply chain. Therefore, developing integrated information systems at the individual freight logistics enterprise is fundamental to improving the effectiveness of overall supply chain operations.

The freight logistics role in the supply chain

A global supply chain transaction can become extremely complex, as illustrated by this typical example of the many steps in the process:

Delivering an empty container to a depot; loading the container at a factory or warehouse; transporting the container to a port by truck, rail or inland waterway; delivering the container to a container yard; processing the container at the port and loading the container on a ship at a container freight station; moving the container over the ocean leg; unloading the container at a freight station and processing the container at the port of disembarkation; loading the container at a container yard; transporting the container to a consignee by truck, rail or inland waterway; delivering the container to a factory or distribution center; and returning the empty container to a depot.

Indeed, the supply chain has many interfacing entities, and the freight logistics enterprises are the critical cogs in the cycle. The quality, timeliness and accuracy of data becomes a serious matter: If any of the supply chain participants' systems are not providing quality information, the effectiveness and efficiency of the entire supply chain are compromised. This highlights the need to not only become more effective as an enterprise but also as part of the entire supply chain.

The economy, efficiency and effectiveness of the supply chain are enabled by collaboration, communication and integration. If an entity is collaborating, it is cooperating and communicating with its supply chain peers. What it's communicating is critical data on equipment and shipment transactions, pick-up, location, status, transportation and service events, notification, and delivery. It makes sense to consider reconfiguring your enterprise with a strategy that embraces freight shipment management.

The real value is not in merely acquiring and possessing the data, but in using the data. The need to share data is paramount in effectively handing off trade goods from one supply chain component to another. The willingness to integrate information systems with supply chain peers and to standardize data adds the degrees of quality necessary to satisfy just-in-time, time-specific and ease-of-use requirements. Developing and providing integrated freight logistics information for the supply chain does not weaken your competitive position. Instead, it adds value to the end-users — the shippers and customers for whom the supply chain exists.

Generally, there has been a gradual migration to greater sharing, collaboration and standardization, as illustrated by B2B e-businesses, portals and trade networks. The players in the freight logistics market include railroads, trucking and inland water companies, marine ports, ocean carriers, warehouses, shippers, consignees, brokers, depots, forwarders, logistics companies, and manufacturers. The foundation of this migration is the freight shipment management, computing and communications network capabilities of each freight logistics enterprise.

In turn, there are industry-level portals through which industry segments are connected as communities — rail and land transport, ports and port authorities, and ocean shipping. Ultimately, there can be total logistics portals that connect and match transport and logistics services, service charges, schedules, logistics plans and status with shipper logistics profiles and product data, logistics contracts and logistics accounting.

Going forward, the enabling factors of col-

laboration, communication and integration will be augmented by accountability within self-regulating organizations dedicated to an end-to-end supply chain, including the movement of raw materials through manufacturing, component assembly, warehousing, distribution to a customer and final disposal. Membership and effective participation in a self-regulating supply chain entity will compel compliance with mandates and policies and meeting operating commitments. Here again, freight logistics information is critical for achieving visibility, security and effectiveness.

There is a need for progressive action in developing integrated freight logistics information systems and providing sufficient intelligence to support decisions at the individual enterprise level and at the consorted-segment and total-logistics levels. The common goal is to enable the supply chain partners to interact seamlessly with timely and reliable information through transparent systems and solutions.

Cargo security and theft

After the horrifying events of Sept. 11, cargo security in the freight logistics sector became critical to combat significant increases in cargo crime and the threat of cargo terrorism. Focusing on the supply chain and global trade, containerized shipping is the most prominent sector component, with 90 percent of all world cargo moving by container. To further illustrate the magnitude of the situation, recent annual container throughput in U.S. ports exceeded 35 million. The terrorist attack on Sept. 11 caused the closing of the port and border systems, resulting in a global chain reaction of disruption. Commercial paralysis set in as just-in-time production systems broke down, material flow was frozen and worldwide trade systems halted. But although cargo security has captured the world's attention, cargo theft is directly related and equally serious. The direct cost of cargo theft worldwide is estimated at about $40 billion annually.

Given the dispersed, exposed, global nature of freight transport and the magnitude of cargo transactions, every point of interaction with trade goods is vulnerable to terrorism and theft. The objectives of cargo security are to detect and deter terrorists and thieves from exploiting the vulnerabilities of cargo, and to push the points of control to the ends of the supply chain. Management information and control is required over all aspects of the operating components of the supply chain, including these types of security: procedural, physical, personnel security, information, access control, and manifest and conveyance. As with supply chain operations, providing actionable intelligence is key to success.

Best-in-class technologies should be engaged to provide electronic screening, prevention, monitoring, reporting and alert visibility on cargo movement. Ongoing operational improvement in cargo security should focus on total asset visibility and authentication. Interestingly, this goal coincides commercially with shipper and customer demands for shipment visibility from initial pick-up to ultimate delivery. And it further underscores the need to embed and integrate cargo security requirements into daily freight logistics operations and information systems.

In the short term, government initiatives have been focused on "quick-hit" stop-gap actions, regulations and stand-alone solutions that may minimize the immediate threats of cargo theft and terrorism. However, terrorism and theft are long-term threats, and there is a critical need to improve the overall performance of supply chain operations. Planning and progressive action are required to develop integrated cargo security information systems and to provide sufficient intelligence to support decisions at the individual enterprise level and the consorted government and industry segment level. The common goal is to enable the world's governments and supply chain partners to interact seamlessly with timely and reliable information through transparent systems and solutions.

Freight shipment management

When many freight logistics systems were developed 25 or 30 years ago, they were stand-alone systems designed to perform a single function in one company. Unfortunately, most organizations have not spent enough on system upgrades since then. Various systems are not linked electronically, resulting in delayed information transfer from one system to another and unreliable data streams. Freight logistics enterprises simply cannot afford to operate like this today. They must consider how a variety of departments and functions interface within the company and among its supply chain partners.

Freight shipment is a core process, and a freight shipment management system defines the essence of a freight logistics enterprise: It is the common systems thread among the freight logistics players in the supply chain. Freight shipment management describes how a customer's shipment is managed from the time of service plan, booking or contract release to pick-up at origin and movements en route through delivery, unloading and revenue recognition. A freight shipment management system embraces the combined end-to-end management of freight operations and revenue. Functional components include dispatching, load planning, fleet and equipment management, terminal management, intermodal management, customer service, order entry, costing,

pricing and revenue recognition.

Freight shipment management empowered by IT enables a freight logistics enterprise to add value in the supply chain and to manage its freight operations in two key areas:

- Fulfilling the shipper's order by capturing complete, accurate and timely information (equipment orders, bills of lading and transportation events); keeping the customer informed (changes in schedule and delivery notification)
- Managing the equipment cycle through trip planning (loaded and empty delivery commitments, proactive monitoring and alerts) and work order generation (advanced work scheduling and exception reporting); providing actionable intelligence about the supply chain

Freight shipment management focuses on helping freight transport providers plan and execute efficient, customer-centered daily operations, and grow competitively. The leading-edge go-to-market freight logistics strategy today is to attract new freight business by offering reliable shipment visibility and delivery, and better utilizing assets. This strategy includes:

- Committing to a set delivery time under contract prior to initial shipment movement
- Developing a shipment movement plan to meet the delivery commitment
- Controlling equipment utilization
- Executing work orders according to shipment movement plans
- Fulfilling the customer commitment on delivery
- Taking corrective action based on transportation events or re-planning a shipment with a new commitment should the original plan fail
- Collecting revenue quickly and accurately for all services performed
- Accommodating rapidly changing business requirements and opportunities
- Providing built-in business measurements to monitor and improve performance

This comprehensive strategy is further enhanced by a player's commitment to collaborate with its supply chain partners and to implement leading-edge technology in its freight operations, IT and communications networking.

Developing a unified, comprehensive freight shipment management system is a complex and massive undertaking with a significant lead time. Historically, solutions in freight logistics operations were developed on a functional or stand-alone needs basis, resulting in fragmented, inefficient, unreliable systems and procedures. This has been exacerbated in the supply chain among participating supply chain partners and, in turn, has achieved less than value-adding results for customers. However, the need for comprehensive action cannot be denied, given these factors:

- The compelling and continuing long-term needs for cargo security
- The increased demand for improved performance of supply chain operations
- The fundamental and persistent needs to transform each freight logistics enterprise's core processes and to add value to shippers and customers

Within each enterprise, the goal is to perform daily freight logistics operations in an economical, efficient and effective manner; to interact seamlessly with supply chain partners; to provide timely and reliable information; and to participate in the development and use of transparent supply chain systems and solutions.

The solution vision

Given the existing intensity and cost of operations at each freight logistics enterprise, the solutions for cargo security and freight shipment management must be embedded in the way business is conducted on a day-to-day basis. Freight shipment management is the essence of daily operations and is the common thread among freight logistics enterprises as individual businesses and as partners in the supply chain. Therefore, next-generation freight shipment management, coupled with edge technology, next-generation communications, business intelligence, and data and event visibility tools, is the ultimate seamless, cost-effective solution for:

- Cargo security and emergency response
- Revenue enhancement
- Improved customer communications
- Freight operations

The requisite business architecture

The sector-wide need for sharing actionable intelligence pertinent to cargo security and freight shipment management calls for a comprehensive response. This response should not be only stand-alone or IT solutions, but rather enterprise-level solutions with a complete business architecture. Here are some of the components of a business architecture sufficient to develop and sustain these highly important freight logistics solutions: strategy, organization and staffing, policies, practices and procedures, data management, application management, IT infrastructure, data center management, location and facilities, fleet and equipment, freight logistics sector-specific technology and security-specific technology. This business architecture represents the target for a complete business solution; it requires commitment and planning from freight logistics enterprises and their supply chain partners.

Direction going forward

Certainly, interacting seamlessly and providing reliable and actionable intelligence to enable effective decisions in cargo security and freight shipment management are worthy end goals. This call for action applies to the freight logistics enterprises as partners in their common supply chain, as well as the associated government regulators.

To begin, there must be commitment to plan and develop the complete business architecture, including integrated freight logistics and cargo security information, and connectivity. The focus will be on:

• Transforming core processes

- Aligning business direction within the individual freight logistics enterprise and among the supply chain partners or communities; identifying and defining critical business process improvement opportunities
- Developing unified, efficient and reliable systems, procedures and controls
- Planning and implementing end-to-end solutions
- Establishing an environment for continuous change

• Building a comprehensive yet flexible business architecture that includes:

- A strategy for improving the operational and cost performance of the individual freight logistics enterprise, and for collaborating and interacting effectively in the supply chain
- Sufficient organizational structure, staffing, policies and procedures to execute economic, efficient and effective internal freight logistics operations and secure, customer-centered operations in the supply chain
- Responsive and flexible IT architecture to enable progressive internal and marketplace operations and visibility and to support business growth
- Adequate capital programs in facilities, physical plant, fleet and equipment to perform dispersed global operations
- Sufficient communications network to provide the connectivity within the individual enterprise and with the supply chain partners and regulators
- Applying the best security technology in a unified and integrated manner

Conclusion

Given the urgency for greater cargo security and the need for continued productivity improvement, the time for action is upon the freight logistics marketplace — right now. Each freight logistics enterprise should respond to this need for immediate action as an individual player and as a supply chain partner. There should be executive commitment to plan and develop complete business solutions centered on integrated freight logistics and security information, coupled with communications connectivity, business intelligence and data and event visibility.

The most proactive steps a freight logistics enterprise can take are to integrate its critical information systems, apply leading-edge technology and collaborate with supply chain partners. These progressive actions will provide the timely and reliable information that enables freight shipment visibility and yields the intelligence necessary to support effective decisions for customer satisfaction, emergency response and cargo security.

Obviously, there are different routes an enterprise can take to develop these vital systems, depending on its financial and staffing resources. Large, complex projects of this nature can be organized as sector or regional development initiatives with non-competing enterprises in the same country or industry. What is critical is developing a strategy and approach for implementation based on what you will use in your day-to-day operations, and addressing problems not as stand-alone issues, but as an integrated enterprise.

The correct approach is to accept that more effective enterprise-wide communication, integration and collaboration are critical. But the results you can achieve — more cost effective enterprise operations, seamless and value-adding supply chain performance, and secure cargo handling — will make it well worth the effort.

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