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THE MAGAZINE FOR DEMAND-DRIVEN LOGISTICS • APRIL 2015



LOGISTICS TECHNOLOGY MOVES FRONT AND CENTER

ALSO IN THIS ISSUE:

Top 100 Logistics IT Providers

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THE MAGAZINE FOR DEMAND-DRIVEN LOGISTICS

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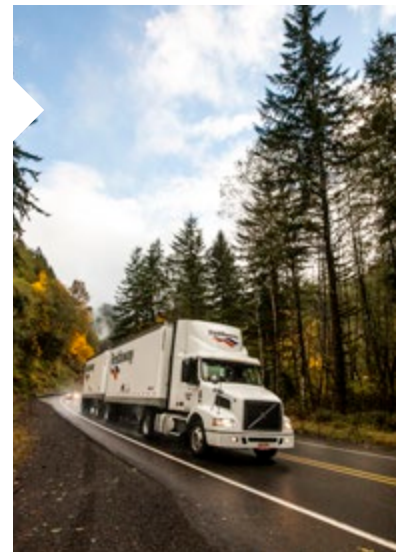
Supply chain leaders offer their perspectives on the logistics challenges and opportunities impacting your business.

79 SPONSORED CONTENT Freight Transport in Alaska: The Haul of the Wild

Because of Alaska's remote location and precarious weather, transport providers carrying freight on land, sea, and air have developed special expertise to buck the challenges.

99 SPECIAL ANNUAL WEB DIRECTORY Web_Cite City

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ONLINE EXCLUSIVES



Best Practices for Preventing Pallet Rack Damage bit.ly/1CrKst3

Michelle Coleman, Director of Marketing, Online Sales
and Business Development, Storage Solutions

When a five-ton forklift confronts a pallet rack, the rack is going to lose. To avoid employee injury and reduce loss, you need these damage prevention measures in place for racking systems.



Accommodating Disabled Colleagues in Your Workforce bit.ly/1D1JXbI

Mike Udermann, Senior Vice President, Kottke Trucking

Disabled people who are treated poorly at work can suffer from depression, withdrawal, even suicide. Managers must take action to stop negative treatment of disabled employees, and comply with the Americans with Disabilities Act.



Five Customs Compliance Tips for Aerospace Companies bit.ly/1H5RFi5

Bill Ansley, Vice President, UPS Trade Management Services

Navigating export and Customs rules can be especially challenging for aerospace manufacturers, and failure to comply can have a huge impact on the bottom line. These tips will keep aerospace shippers compliant.

LOGISTICS IT RESOURCES

Find a Logistics IT Company bit.ly/1BOfwOj

The Logistics IT Decision Support Tool allows you to select the information technology characteristics that match your needs, then generates a list of companies with those capabilities.

Logistics IT RFP bit.ly/1EHmx5V

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CHECKING IN

Keith Biondo

by Keith Biondo | **Publisher**



The World is Your Warehouse, 2.0

Inbound Logistics regularly reports on the benefits of better linking demand to supply lines. Given the new and ever-growing crop of supply chain technology solutions delivering global visibility and ability to execute, we sometimes refer to the world as your warehouse.

That's why Apple's patent #8,989,773 caught my eye. Granted on March 24, 2015, by the U.S. Patent and Trademark Office, the patent is called "sharing location information among devices." It details new functions allowing you to use an iPhone or other mobile device to view—in real time—a visual representation of the path another person takes, as a way of following that person's entire journey. This process is an expansion of the popular Find My Friends feature that allows users to find the specific locations of their friends.

Privacy worries aside, Apple envisions using cellular or web tone to share real-time route progress on a map, text and speak in the same interface, record the route for later use, and mirror what one user is looking at on the other person's iDevice. With real-time maps, users share all available data, such as points of interest, hazards, traffic, and the nearest truck stop. Apple's patent filing suggests applying this inexpensive form of beacon tracking to animals (such as dogs), inanimate objects, and even robots.

It's not a huge leap of logic to see pop-up warehouses equipped with this low-cost technology, giving all stakeholders global visibility. Containers, pallets? Join the World is Your Warehouse Club at low cost, wherever cell tone is available.

Another relatively low-cost but revolutionary technology that will impact logistics is undergoing trials in Newcastle, UK. A device slightly larger than a GPS is being tested to control red lights—turning red lights green for vehicles that have the system. Currently, it is used on ambulances to ensure fast transit to and from hospitals. But it has logistics applications. "One key thing we are going to see over the next few years is platooning, particularly of freight (vehicles)," says Phil Blythe, professor of transport at Newcastle University. "When a platoon hits the traffic lights, it will go straight through, to avoid being split up." The Highways Agency is considering an application to allow driverless trucks to travel between a Nissan plant in Sunderland and the Port of Tyne overnight, using the new technology to create a green light corridor and move quickly over that six-mile distance.

Can you see where I am going with this? Low-cost commercial systems and equipment providing an exciting array of control options to the logistics community are just over the horizon, truly making the world your warehouse. ■

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STAFF

PUBLISHER Keith G. Biondo
publisher@inboundlogistics.com

EDITOR Felecia J. Stratton
editor@inboundlogistics.com

MANAGING EDITOR Lauren Muskett
lmuskett@inboundlogistics.com

SENIOR WRITER Joseph O'Reilly
joseph@inboundlogistics.com

ASSOCIATE EDITOR Jason McDowell
jmcowell@inboundlogistics.com

CONTRIBUTING EDITORS
Merrill Douglas • Beth Goodbaum
John McCurry • Mary Shacklett • Lisa Terry

CREATIVE DIRECTOR Michael Murphy
mmurphy@inboundlogistics.com

DIGITAL DESIGN Amy Palmisano
MANAGER apalmisano@inboundlogistics.com

PUBLICATION MANAGER Sonia Casiano
sonia@inboundlogistics.com

CIRCULATION DIRECTOR Carolyn Smolin

SALES OFFICES

PUBLISHER: Keith Biondo
(212) 629-1560 • FAX: (212) 629-1565
publisher@inboundlogistics.com

WEST/MIDWEST/SOUTHWEST: Harold L. Leddy
(847) 446-8764 • FAX: (847) 305-5890
haroldleddy@inboundlogistics.com

Marshall Leddy
(612) 234-7436 • FAX: (847) 305-5890
marshall@inboundlogistics.com

MIDWEST/ECONOMIC DEVELOPMENT: Jim Armstrong
(314) 984-9007 • FAX: (314) 984-8878
jim@inboundlogistics.com

SOUTHEAST: Gordon H. Harper
(404) 229-9691 • FAX: (404) 355-2036
south@inboundlogistics.com

MOBILE, AL: Peter Muller
(251) 232-1920 • FAX: (251) 343-0541
petermuller@inboundlogistics.com

NORTHEAST: Rachael Sprinz
(212) 629-1560 • FAX: (212) 629-1565
rachael@inboundlogistics.com

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I'm inquiring about your *Education Resource Guide*. At Texas Christian University's Neeley School of Business, we have excellent supply and value chain management programs for undergraduates and graduate students. We are now in our second year of our Master of Science in Supply Chain Management as well. We would like to know how to be included in this important guide.

Renda Williams, Supply Chain and Value Center, Neeley School of Business

Editor's note: To add your school or program to our database of education partners, please fill out our submission form, located here: bit.ly/IL-AddEDU.

Thank you for featuring *Nimble Scooters* on your Last Mile page in the February 2015 edition—bit.ly/1Pd5yAK. We received quite a few orders because of it. This has really shown us how a little exposure in *Inbound Logistics*, even on the last page, can go a long way.

Alix Armour, Co-founder & CEO, Nimble Scooters

Thank you for having the courage to run my article—*Accommodating Disabled Employees in Your*

Workforce—bit.ly/19U2IRn on the *Inbound Logistics* website. More than 500 colleagues and business people have reached out to me about how timely this article was for their businesses and their lives.

Mike Udermann, Senior Vice President, Kottke Trucking

I always look forward to receiving your publication. Without hesitation, I recommend it to all my friends, because I consider *IL* to be a great source of current and updated industrial information. Keep up the great work!

Randy Brar, CEO, Simply Efficient Transport Group



Cory Carpenter @FreightBrokerCC

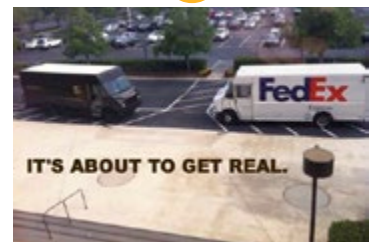
2 April 2015

Great line from @ILMagazine: Shippers know they need to be nimble and responsive to demand, whether it's good or bad. 3PLs provide that cover—*Drafting a Blueprint for Growth*: bit.ly/136gk6S

TOC Logistics Int. @TOCLogisticsInt

1 April 2015

Check out @ILMagazine's Winter Reading Guide. Your guide to a successful supply chain: bit.ly/1uPw6B9



on.fb.me/1CzfSJI
Shipping showdown?

Inbound Logistics @ILMagazine

1 April 2015

Open Letter to the Port Authorities of California - bit.ly/1bOaqxO

LILLY + Associates @shiplilly

Thank you so much for sharing. The more eyes we can get this in front of, the more likely we are to see a policy change.



Inbound Logistics

13 March 2015

Seven Common Shipping Mistakes, and How to Avoid Them: bit.ly/1GUcPJH

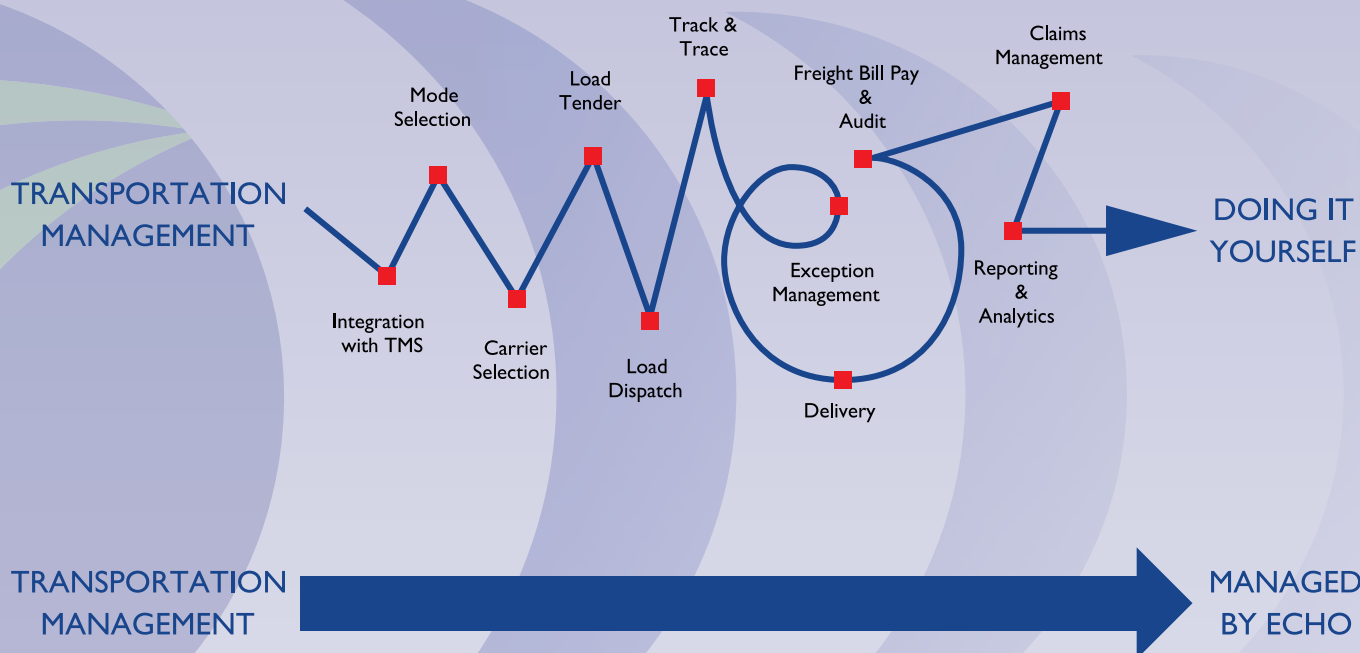
Scott Guilbeault

Great article. Nice job!



HOT TOPICS | *IL* articles getting the most impressions on LinkedIn: Six Secrets to Controlling Supply Chain Costs Without Sacrificing Service: bit.ly/1uPBRI2 • Preparing Your Company Today to Hire for Tomorrow: bit.ly/1CdXP3s • Learning the ABCs of DCs: bit.ly/1CdvZwi • Where to House Your Warehouse: bit.ly/1CdXKte • 10 Tips for Fine-Tuning Your Warehouse Layout: bit.ly/1EzDzb7

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10TIPS

STEP-BY-STEP SOLUTIONS



Maximizing Intermodal Efficiency

Intermodal transportation was developed to improve efficiency as U.S. consumer demand and shipment volume grew. When a trucking entrepreneur realized it would be more efficient to use the same conveyance for different shipping modes, without having to handle the cargo, intermodalism was created. The resulting interoperability of the assets themselves—containers, chassis, railcars—is evidence of improved intermodal shipping efficiency.

Shippers do not need to worry how well those pieces fit together; rather, intermodal stakeholders need to align their processes to drive efficiencies today. Blair Peterson, senior vice president of International Asset Systems (IAS), a global transportation solutions provider, offers suggestions for maximizing intermodal shipping efficiency.

1 Align goals. Position your intermodal transportation objectives so they are in line with your corporate objectives. The efficiencies gained from intermodal should support, and be recognized in, your company's business goals.

2 Choose providers wisely. Know the delivery criteria your customers are looking for, and select transportation providers accordingly.

3 Contract sensibly. It is not all about the rate when choosing providers. Reliability by schedule adherence (railroads), punctuality (truckers), or timeliness (shipment data) also is critical.

4 Standardize the dispatch process. Your intermodal dispatch team needs to work wisely and consistently. Leverage your investment in technology and associated process refinement to ensure your intermodal network runs efficiently.

5 Make it easy for service providers. Standardize your business requirements for shipment acknowledgement, scheduling, en-route event capture, proof of delivery, and billing. In times of tight capacity, quality transportation providers will gravitate to the transportation buyers that are easiest to work with.

6 Connect your intermodal network. Get closer to quality providers with data integration (or an efficient multi-tenant portal), process standardization, and requirements consistency. Having the transportation buyer and provider on one platform gives a clear view of shipment data and service provider compliance.

7 Gather data. Be sure to collect performance data around critical intermodal nodes. But before you start, get buy-in to big data objectives from internal and external stakeholders so everyone knows what is being measured and why.

8 Take advantage of data. Use data about lanes, modes, customers, and vendors to drive decision-making, tune your intermodal network, and identify efficiency opportunities. The unit of measure can be revenue, cost, margin, hours, minutes, steps, stops, or calls.

9 Integrate in both directions. Good shipment data will drive optimization in your transportation management system, and generate efficient transportation orders for your intermodal providers to execute.

10 Examine your network. Recognize, reward, and rationalize your vendor network based on performance. By being easy to work with, measuring compliance, and rewarding performance with more volume, your intermodal network will become more efficient over time. All the stakeholders in your intermodal transport chain will benefit. ■

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Judi Griffin is director of logistics at Burkhart Dental, a supplier of equipment, technology, and consumables used by dental practices. She has worked for Burkhart Dental since 2009, and has held her current position at the Tacoma, Wash., firm since 2013.

RESPONSIBILITIES: Distribution centers, purchasing and customer service teams, hand piece repair center, and inbound and outbound freight costs.

EXPERIENCE: Distribution manager, Milgard; operations manager, Cardinal Health; realtor, Gateway GMAC Real Estate; customer service manager, Burkhart Dental.

EDUCATION: B.A., business administration, 2001; MBA, University of Washington, Tacoma, 2009.

Judi Griffin: Sinking Her Teeth Into Her Work

BEFORE I STARTED COLLEGE, I WORKED IN OPERATIONS management at a moving company. After I finished my bachelor's degree, I did an internship at an investment firm. My concentration at school was in finance, and I thought I wanted to work in that field. But once the internship started, I realized how much I missed operations. I returned to that work when I took a job as distribution manager at Milgard, a window manufacturer.

At Burkhart Dental, I'm responsible for our three distribution centers (DCs), in Lakewood, Wash., Reno, Nev., and Irving, Texas. I also manage the purchasing team, customer service team, and a repair shop. In addition, I manage inbound and outbound freight costs.

Burkhart sells its products through account managers. They make weekly or biweekly visits to dentists to find out what the practices need, answer questions about equipment, and provide advice. The account managers use their laptops to place orders, right in the dental

offices. Most of our shipments go directly to the dentists via small parcel carrier. We also ship equipment and parts to our repair technicians, who work at our branch locations.

We store about 17,000 stockkeeping units (SKUs) in our DCs, but we actually have a catalog of more than 100,000 SKUs. Deciding which products to keep in stock, and in which DCs, is tricky. Our goal is to same-day ship any order received before 4 p.m. Our fill rate is 99 percent.

Until recently, Burkhart served customers west of the Mississippi. But now we're

The Big Questions

What advice would you give to your 18-year-old self?

Go to college directly after high school, major in industrial engineering, and finish the degree without taking a break.

If you had one extra hour of free time every day, how would you spend it?

Indoors, I love reading; it's how I de-stress. Outdoors, I'd spend that hour on any kind of water-related activity.

Is there an organization you'd like to give a shout-out to?

Goodwill Industries. Our local chapter has a program to help people gain job skills, and one of the options is logistics training. We have hired some of their graduates, and they've been terrific.

What's the most unusual thing on your desk?

A genie lamp, like Aladdin's. I have an odd collection of them.

expanding to all 50 states. I'm sure we'll open a fourth DC to accommodate that growth, but it will take some time to reach enough critical mass for that investment to make sense. In the meantime, we fill orders for the eastern United States from our Irving DC.

That operation moved from its old location to a bigger facility three years ago, while I was customer service manager. It was a huge project. We had to shut down the old DC and pull out all 17,000 items. A company came in to disassemble our materials handling carousels, then put them

back together in the new building. Then we had to refill those carousels.

While the facility was down, the orders we would have filled from Irving came from the other two DCs, moving by second-day air. That was expensive. So we wanted to have as little downtime as possible.

We ended up with just five days of downtime. Everything went smoothly. The team in Irving worked long and hard to support the effort, and the company that moved the carousels did a fantastic job.

I can't overemphasize the importance

of advance planning. One of the beauties of this effort was that I had someone else available to do most of my regular work, so I could focus on the special project for about five weeks before the move.

Now we're planning for a new project: Implementing a warehouse management system in the fourth quarter of 2015. Right now, that means doing a lot of drawing on the whiteboard to map out our processes. I don't want to reautomate the way we do things today. This is an opportunity to streamline further, and gain new efficiencies. It's quite an undertaking.

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NOTED

THE SUPPLY CHAIN IN BRIEF

GREEN SEEDS

Nautilus International Holding Corporation and its transportation subsidiaries **Metro Ports** and **Metropolitan Stevedore Co.** broke ground on an environmentally friendly headquarters in Long Beach, Calif. The new 40,000-square-foot building will be LEED-certified, include 10 electric charging stations for employee vehicles, and covered by solar panels that provide power to the facility.

Global supply chain management provider **SDV** launched its first electric/diesel hybrid shuttle for last-mile delivery in Singapore. The hybrid reduces fuel consumption and CO₂ emissions up to 23 percent, and suspended particles and nitrogen oxides by as much as 30 percent, as compared to a conventional diesel-powered truck.



Logistics provider **Dupré Logistics** received a SmartWay Excellence Award from the Environmental Protection Agency. The company was rated based on six performance metrics, and ranked in the best performance range for freight carbon efficiency.

Air emissions from the **Port of San Francisco's** maritime operations have decreased sharply over the past eight years. The port released a study that shows it has reduced annual particulate matter emissions by 57 percent.

UPS sped up implementation of its **ORION** routing system to cover all planned U.S. routes by the end of 2016. The company expects the implementation to reduce miles driven by 100 million, and lower CO₂ emissions by more than 90,000 tons annually.

UP THE CHAIN

Apparel company Under Armour promoted chief financial officer **Brad Dickerson** to chief operating officer. In his new role, Dickerson assumes responsibility for the company's supply chain operations and corporate strategy.



Julia M. Brown was appointed chief procurement officer for Carnival Corporation. Brown works with the company's nine brands to purchase goods and services, and strengthen supplier relationships.

m&a

Supply chain management provider **Penske Logistics** acquired **Transfreight America**, a 3PL. Through the transaction, Penske expands its network with Transfreight's 27 locations across the Midwest, Canada, and Mexico.

Global management consultant **Accenture** acquired **Gapso**, a Brazil-based supply chain analytics solutions provider. Gapso's solutions expand

Accenture Digital's business intelligence capabilities in Brazil, mainly in the natural resources and agribusiness sectors.

Dicom Transportation Group, a Canadian expedited transportation provider, purchased truckload and LTL carrier **Modern Forwarding**. The acquisition gives Dicom cross-border capabilities into the United States.



GOOD WORKS

Employees at transportation and logistics provider **Averitt Express** raised \$450,000 for St. Jude's Children's Research Hospital. The company's charitable giving program has contributed more than \$7.5 million to children's charities since it began in 1986.

SEALED DEALS

Logistics provider **RR Donnelley & Sons Company** entered into a multi-year service contract with book publisher **Sterling Publishing**. The agreement calls for RR Donnelley to provide warehousing, distribution, and book fulfillment services.

3PL **Kane is Able** began providing logistics services to **Nutrabolt**, a manufacturer of sports nutrition products. Under the new agreement, Kane handles manufacturing logistics, distribution, and fulfillment through two facilities in Atlanta and Salt Lake City.

Rent-A-Center selected supply chain solutions provider **NFI** to provide distribution, transportation, and fleet management. NFI will first set up strategically located distribution centers, then implement transportation solutions to optimize store inventory replenishment processes.

Canadian propane distributor **PNE Corporation** selected **Descartes' Route Planner On-Demand** solution to centralize delivery operations. The solution helps PNE improve visibility

with real-time information on delivery status, new orders, and unexpected interruptions or activity.

Volvo Trucks implemented **Stratasys** additive manufacturing technology at its engine production facility in Lyon, France. Volvo 3-D printed more than 30 different production tools, decreasing turnaround times by more than 94 percent.



recognition

Less-than-truckload carrier **Dayton Freight** received a **Diamond Supplier Award** from commercial and military truck producer Navistar. This is the fourth time Dayton has received the award, which rates carriers on quality, delivery, technology, and cost.

The **Ethisphere Institute** named the **Panama Canal Authority (ACP)** as the 2015 World's Most Ethical Company for the fifth consecutive year. The ACP received the award for its transparency, ethical values, and efforts toward environmental responsibility.



Gary Minardi, president of **San Jose Distribution Services**, was honored with the **Jock Menzies IWLA Distinguished Service & Leadership Award** by the International Warehouse Logistics Association (IWLA). The award recognizes outstanding leadership and service to the warehouse logistics industry and the IWLA.

Southwest Airlines Cargo earned a **Domestic Carrier of the Year** award from the Airforwards Association for the sixth consecutive year. The airline also earned the Domestic Airline of the Year award for the 15th consecutive year from the Express Delivery and Logistics Association.

General Motors named third-party logistics (3PL) provider **CEVA Logistics** a **2014 Supplier of the Year**. CEVA was the only 3PL to receive an award, and was recognized for several different global supply chain solutions that it provides to the automaker.

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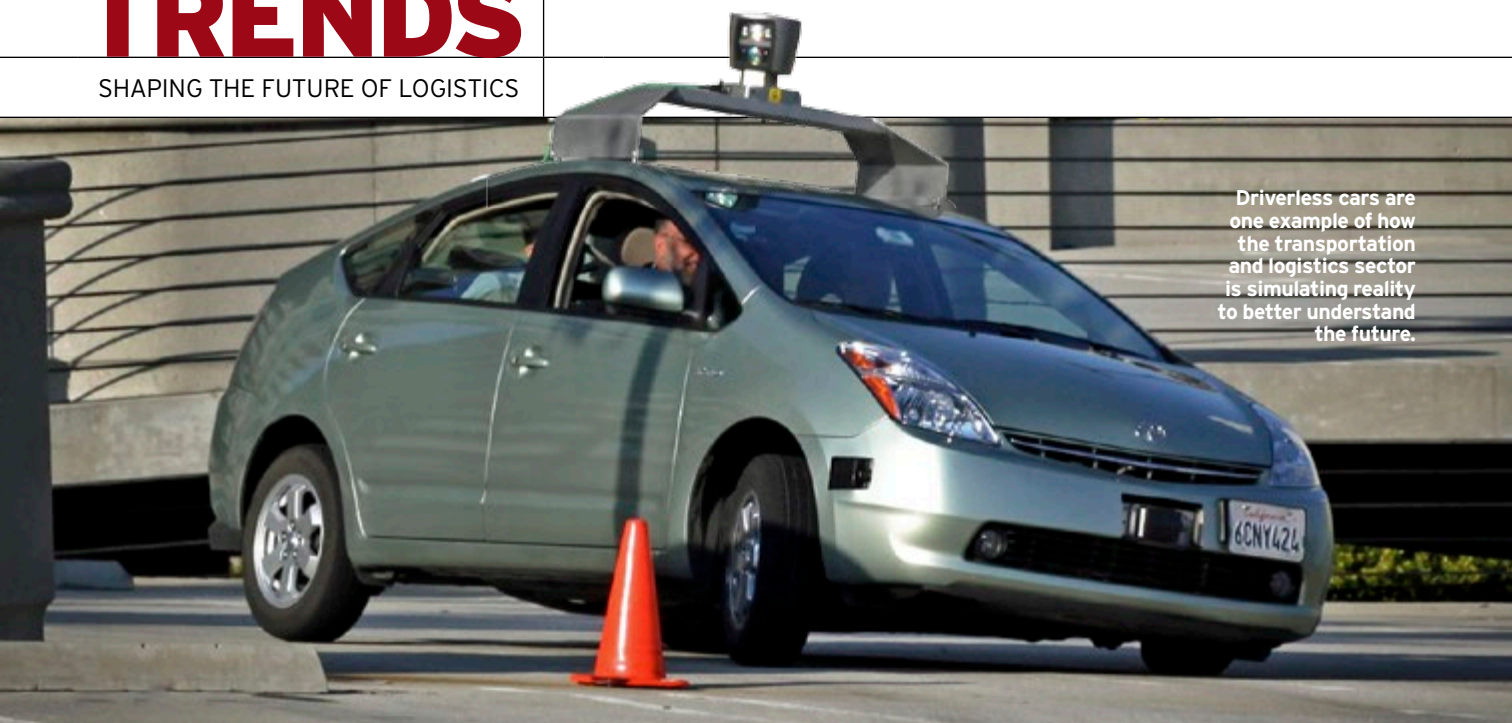
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TRENDS

SHAPING THE FUTURE OF LOGISTICS



Driverless cars are one example of how the transportation and logistics sector is simulating reality to better understand the future.

Supply Chain Modeling: Believe It!

The supply chain sector is increasingly adapting and deploying technology to better understand the unknown. Big data provides a wealth of information and historical precedent to benchmark and optimize current and future events. Modeling and design software similarly affords users the latitude to engineer and plan for potentialities before they happen.

by **Joseph O'Reilly**

But sometimes high-tech simulation doesn't go far enough. Recently, UK automobile technology supplier Delphi Automotive completed the first coast-to-coast U.S. test run of a driverless vehicle between San Francisco and New York. The 3,400-mile journey passed through 15 cities and took nine days to complete.

There was one important caveat, however.

A human being rode shotgun, ready to take the wheel, in order to comply with various U.S. state regulations. That's a pretty good metaphor for where industry is at with autonomous locomotion: ambitious but guarded.

In Ann Arbor, Mich., a new cityscape of sorts is rising from the verdant woodlands along the Huron River.

The 32-acre site, colloquially known as Mcity, is quickly morphing into a *Truman Show*-like Hollywood backdrop, replete with make-believe buildings, fixed and variable lighting, changing traffic lights and patterns, different road surfaces—including a four-lane highway with on and off ramps—and a variety of remote-controlled cars, cyclists, and pedestrians to purposefully get in the way.

The University of Michigan's Transportation

Research Institute (UMTRI), in concert with the state Department of Transportation and automobile manufacturers such as Ford, General Motors, Toyota, and Honda, will use Mcity as a controlled test site to study the feasibility of autonomous vehicles. The facility is expected to open in spring 2015.

The University of Michigan's endeavor invites automakers and other interests to test-drive vehicles in a more public setting, in hopes of accelerating the adoption of common standards across this emerging industry.

Mcity has a midwestern "pedal-to-the-grindstone" sensibility. It's an appropriate foil for the high-tech, high-flying playground of Silicon Valley—where the likes of Google, Apple, and other futurists are toying with prototypes under clandestine cover in near-perfect weather. Michigan's seasonality and UMTRI's openness provide more realistic conditions to test hypersensitive systems in a competitive environment.

While the idea of driverless cars—and drones for that matter—has captured mainstream imaginations, its impact in the freight industry is very real. Driver shortages, safety, and training are top-of-mind concerns around the world. Similar technology has already been widely tested in different scenarios. For instance, the mining industry is using driverless trucks at remote sites where safety is paramount.

Elsewhere, the European Union-sponsored Safe Road Trains for the Environment (SARTRE) project, conducted between 2009 and 2012, used radar, fixed lasers, and cameras to experiment with driver-led platoons of unmanned vehicles. In effect, a human-driven vehicle leads a convoy of autonomous cars or trucks. Jean-Paul Sartre's blushes aside, the implications for freight transport are considerable.

The appeal of "auto-motion" is tangible. Driverless cars, like drones, have a pop-sci audience that extends well beyond the transportation and logistics sector. But supply chain "modeling"—in its truest sense—is much more pervasive than

that. In countless other examples, largely unseen, industry is simulating reality to better understand the future.

A few miles outside of downtown Fayetteville, Ark., the Sam M. Walton College of Business has repurposed a nondescript warehouse as a 10,000-square-foot retail format. The backroom warehouse and loading dock are "just" convenient fixtures. For all intents and purposes, the retail operations lab is a real store stocked with all kinds of brand name consumer goods.

University of Arkansas researchers are using the lab to study different consumer trends from shelf space line of sight and packaging to omnichannel strategies and RFID. It's where marketing and logistics converge.

Nearby Bentonville is another good

example. It's a company town. That company just happens to be the world's largest retailer. Walmart uses Bentonville to pilot new retail formats—its Walmart to Go convenience store—as well as innovative strategies such as tethering distribution and fulfillment to larger supercenters in lieu of DCs.

In other instances, role-playing and simulation emphasize training. Port Revel in Grenoble, France, is the world's most unique port. It's a 13-acre man-made lake that caters to model ships. The port mimics real-world ocean currents and geographic features such as the Suez Canal and Cape of Good Hope.

Popularized by John McPhee's 1998 *Atlantic Monthly* article, the port is the epitome of transportation and logistics 'modeling.' The facility uses a fleet of

RFID: Better Late Than Never

IT TOOK A DECADE but radio frequency identification (RFID) is finally living up to its hype, according to results from the 2014 GS1 US Standards Usage Survey, conducted by the eponymous standards organization.

Apparel and general merchandise manufacturers and retailers are using electronic product code (EPC)-enabled RFID to enhance inventory visibility, and respond to consumer demands for omnichannel flexibility.

The survey measures the usage of EPC-enabled item-level RFID by both manufacturers and retailers (including manufacturers who are also retailers). For manufacturers, RFID offers multiple benefits, including reinforcing authenticity, decreasing inspection costs, reducing shrinkage, and enhancing logistics accuracy. Retailers, by comparison, cite greater inventory accuracy, improved sales, fewer out-of-stocks, increased margins, and expedited returns as positive outcomes.

Among manufacturers:

- Currently implementing.....48%
- Within 12 months.....21%
- Over the next two years.....18%

On average, respondents note that 40 percent of items made by apparel and general merchandise manufacturers have RFID tags.

Among retailers:

- Currently implementing.....57%
- Within 12 months.....19%
- Over the next two years.....11%

On average, respondents note that 47 percent of items received by apparel and general merchandise retailers have RFID tags.

Such parity suggests RFID adoption is nearing a tipping point.

"RFID is no longer just something proven in concept—it is providing tangible results for manufacturers and retailers, and offers the inventory accuracy that omnichannel retailing demands," explains Dr. Bill Hardgrave, dean of the Harbert College of Business and founder of the RFID Lab, Auburn University.

manned models built at a scale of 1:25 to replicate natural conditions including harbors, canals, and open seas. The ships are equipped with bow and stern thrusters, and operational anchors. They behave like real vessels.

Since the late 1960s, Port Revel has helped train steamship captains and pilots from all over the world. Even at scale, the idea of having a déjà vu moment during a real-life crisis is compelling.

That's the notion that drives much of the modeling and simulation activity in today's supply chain. Outside of testing new concepts and innovations, companies want to create that déjà vu sensibility within their day-to-day supply chains.

Ultimately, there's no substitute for practice, especially when perfection is fleeting. In today's capricious world, even the mundane becomes muddled. Logisticians, of all people, know this well. ■

Can You Dig IT?

DATA ANALYTICS HAS BECOME A HUGE GROWTH MARKET in the transportation and logistics sector. As companies and service providers improve how they gather information, there is equal need for analysis.

The supply chain analytics market will grow at a compound annual rate of 14.6 percent and reach \$4.8 billion by 2019, suggests a report from Dallas research firm MarketsandMarkets. Asian Pacific and Middle East regions are expected to be big drivers in this growth.

The supply chain analytics market is broadly segmented in three ways:

- 1. Type of solution**—supply chain planning and procurement, sales and operations planning (S&OP), manufacturing analytics, transportation and logistics analytics, and visualization and reporting tools.
- 2. Type of service**—professional, and support and maintenance service—or by type of deployment model—on premises or on-demand (cloud-based).
- 3. Type of vertical**—retail and consumer packaged goods, healthcare and life sciences, manufacturing, automotive, aerospace and defense, high-tech and electronics, and by global region.

The acceleration of big data across various industries is driving the global market, increasing data generation, forecasting accuracy, and awareness regarding the benefits of supply chain analytics solutions, according to the report.

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GLOBAL

THE WORLD AT A GLANCE

by **Joseph O'Reilly**

The **MSC Oscar** is currently the world's largest containership with a 19-million TEU capacity. But **CMA CGM SA** plans to up the game with its new series of megaships.



Larger Ships, Larger Losses?

When Maersk Line introduced its Triple-E class of containerships in 2013, it raised the bar for the ocean shipping industry. China Shipping Container Lines and Mediterranean Shipping Company have since brought vessels online that top the 19-million TEU threshold. But now France's CMA CGM SA, the third-largest container line in the world by volume, plans to order a new series of megaships surpassing 20 million TEUs.

While larger ships are generally more energy efficient, and provide greater economies of scale, they also pose new challenges. Only a limited number of ports

can accommodate their size, and loss or theft has greater consequences.

Allianz Global Corporate & Specialty SE's (AGCS) third-annual *Safety and*

Shipping Review 2015 documents some of these new concerns. "Larger ships also mean larger losses. The industry should prepare for a loss exceeding \$1 billion in the future, featuring a container vessel or even a specialized floating offshore facility," says Captain Andrew Kinsey, senior marine risk consultant for AGCS. "Maximum exposure would not necessarily be limited to vessel and cargo value, but could also include environmental or business interruption backlash."

The growth in vessel sizes only concentrates risk. For example, protection against cyber hacking is a new threat for a highly connected and automated shipping sector that increasingly relies on electronic navigation systems. And a worldwide shortage of qualified seafarers requires asking smaller crews to do more with less. Larger ships push that threshold even further.

On the positive side, shipping losses continue to decline—by 32 percent year-over-year in 2014, and by more than 50 percent compared to 2005 data.

The most common cause of total losses is foundering (sinking/submerging), accounting for 49 incidents in 2014, followed by grounding (13), and fires/explosions (4).

More than one-third of 2014's total losses were in two maritime regions: South China, Indo China, Indonesia, and the Philippines (17 ships); and Japan, Korea, and North China (12 ships). Cargo and fishing vessels accounted for more than 50 percent of all losses, according to Allianz.

Although the global shipping industry has made great progress thwarting piracy activity off the coast of Africa, the threat is shifting into Southeast Asian waters, where incidents increased year over year in 2014.

European Energy Starts and Stops

In yet another sign that resistance to shale gas exploration in some parts of Europe is easing, UK ports operator Peel Group has launched a new oil and gas business to help develop supply chain connections in the north of England. The venture is purposed to encourage investment in infrastructure necessary to support shale gas development in the region. Peel will leverage its land, infrastructure, utilities, transport, and planning assets to facilitate connections.

"The emerging onshore shale gas sector is a golden opportunity for the United Kingdom and the North in particular," says Myles Kitcher, Peel Gas & Oil managing director. "Momentum in this region is

Save the Cichlids: Nicaragua Canal Raises Environmental Concerns

While China has commenced plans to start building a canal across Nicaragua that would rival its famous neighbor, scientists are alarmed over the potential environmental impacts of such an undertaking.

The Nicaragua Inter-oceanic Grand Canal project intends to build a 180-mile waterway between the Atlantic and Pacific oceans by 2019, cutting through Lake Cocibolca (Lake Nicaragua)—Central America's key freshwater reservoir. If constructed, about 5,100 ships will pass through the canal each year.

Echoing memories of China's ambitious Three Gorges Dam project, the planned canal would displace 30,000 Nicaraguans. Moreover, a group of international scientists across the United States, South America, and Central America recently co-authored an article in the *Environmental Science and Technology* journal that underscores the project's potential negative impact on the local ecosystem during and after construction.

Building a canal route across southern Nicaragua might harm the local ecosystem, scientists claim.



"Invasive species brought by transoceanic ships could threaten the extinction of aquatic plants and fish, such as cichlids, that have been evolving since the lake's formation," says Pedro Alvarez, an environmental engineer at Rice University in Houston, Texas.

To ensure large ships can pass through the canal, frequent dredging will be required, which means dispersing sediments, lowering oxygen levels in the water, and killing native marine life. Water from Lake Nicaragua is also used for irrigation, drinking, and power generation. Once the canal is constructed, water will not be suitable for drinking or irrigation.

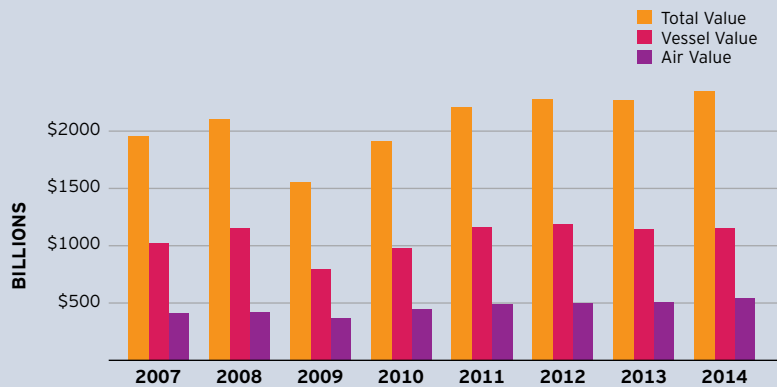
The scientists are calling for the project to be postponed until potential environment impacts are further assessed.

growing, with the government announcing the new National College for Onshore Oil and Gas, based in Blackpool and linked to the University of Chester.”

On the Continent, optimism is less rosy. Russia’s geopolitical posturing over the past year has forced countries to reconsider their single-source oil and gas strategy. North America’s energy independence and reshoring renaissance has similarly kindled interest in replicating that model to help stimulate economic growth.

However, bureaucracy and ambivalence toward hydraulic fracturing have largely tabled development thus far. Recent news that Chevron, Exxon, and Shell are pulling out of Central Europe suggests shale gas development will be sluggish until a sustained recovery in oil prices and/or countries are willing to prioritize energy security and independence over environmental mandates.

Up in the Air: Total Value of U.S. Imports



The total value of U.S. imports and vessel imports remained stagnant from 2013 to 2014. Surprisingly, air imports continue to rise. In 2014, the imported value of air shipments increased seven percent from 2013. In fact, unlike vessel imports, air shipments have continued to climb since 2009. As of January 2015, the value of air shipments is up another nine percent from the same time in 2014.

Source: Zepol Corporation | www.zepol.com

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THE LEAN SUPPLY CHAIN

BY PAUL A. MYERSON

Professor of Practice in Supply Chain Management at Lehigh University and author of books on Lean for McGraw-Hill, and supply chain for Pearson
pmyerson@lehigh.edu | 610-758-1576

How Location Decisions Impact a Lean Strategy

Companies often don't consider the location decision to be a Lean concept, but they should. Moving goods efficiently from raw material sites to processing facilities, manufacturers, distributors, retailers, and customers is critical to remaining competitive in today's global economy.

When manufacturers make location decisions, their priority is to minimize cost. Retailers look to maximize revenue where possible. Locating new facilities is a strategic decision that, once made, cannot be changed easily in the short term. Yet many organizations—especially small and mid-sized businesses—often neglect or delay this decision.

An entire organization can feel the impact of indecision—especially in today's global economy, which is far from static. Risks include demand volatility, omni-channel distribution, shrinking lead times, reduced product development, and shorter product lifecycles.

The decision to open, close, or expand manufacturing or distribution locations can have a long-term impact on a product's total cost. This decision can be heavily influenced not only by forecasted demand, but also by transportation costs, which can average three to five percent of sales, and warehousing costs as much as two percent on average.

The location decision certainly is a

Lean concept in regards to your supply chain. Not understanding the importance of that decision in today's business world can result in cost and service inefficiencies, and possibly a business failure.

One main reason why companies often neglect or delay this decision is the significant cost of performing the necessary analysis to optimize a manufacturing and distribution network—consultants can charge upwards of \$100,000 for a study. The cost-benefit ratio can be significant, however, with savings often in the millions, and usually with improved service levels. Companies should conduct this analysis once every two or three years.

So, how do you go about this? A range of tools are available to help, from “back of the envelope” simplistic tools to complex optimization systems, including:

■ Location cost-volume analysis:

A simple location decision tool that looks at a future volume forecast, along with fixed and variable costs known for each location. This helps justify potential sites through predicted throughput volumes.

■ Weighted factor rating method:

Compares a number of locations using both quantitative and qualitative criteria, and applies ratings to each of the criteria to determine the winning location.

■ Center of gravity method:

Determines the approximate location of a distribution center that minimizes logistics costs, while considering the location of markets, volume of goods shipped, and shipping cost.

■ Transportation problem model:

Deals with distributing goods from several points of supply to multiple points of demand. It looks at the capacity of goods at each source, requirements at each destination, and a host of materials, manufacturing, transportation, and warehousing costs. The model then determines optimal location(s) that minimize total transport and production costs, while maintaining specified inventory and service level targets.

Companies that do not properly execute location decisions have the potential to create a huge amount of waste. ■

Parts of this column are adapted from *Lean Supply Chain & Logistics Management* (McGraw-Hill; 2012), *Lean Retail and Wholesale* (McGraw-Hill; 2014) and *Supply Chain and Logistics Management Made Easy* (Pearson, 2015) by Paul A. Myerson with permission from McGraw-Hill and Pearson, respectively.




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[VIEWPOINT]

FANY FLORES-PASTOR

Fany Flores-Pastor is Director, R&D Compliance Systems, Descartes Systems Group, 800-419-8495

Taking Steps to Embrace ACE

With other countries transitioning to a single-window-to-government paradigm, all eyes are on the United States as the Automated Commercial Environment (ACE) brings a modernized, integrated approach to government. The initiative, which allows shippers to electronically transport import and export data to the government through a single window, can be considered a mature program with well-defined, realistic goals.

Three fundamental concepts have come into play as key lessons for ensuring ACE's effectiveness: better collaboration with stakeholders, a change in rollout methodology, and a revised approach that mixes benefits with program goals.

The call for a more unified system began some time ago, but it took national security concerns to formalize a number of regulations to safeguard trade, including ACE. Because ACE is intrinsically an effort to unify government agencies, participants realized that additional collaboration might foster better results.

Industry participants were drawn into the conversation and truly engaged. After consulting organizations such as the National Customs Brokers & Forwarders Association of America, Customs Executive Surety Committee, Customs Electronic Systems Action Committee, and the Trade Support Network, they developed a practical plan. Participants addressed skills gaps, and strengthened

the overall governance model to place the program on the right course.

Another take-away from the 15-year, multi-billion-dollar initiative is a shift in program deployment strategy. Key players adopted the Agile Development paradigm, an approach that varies significantly from those historically used to launch ACE components. Instead of one single deployment, smaller and more manageable pieces of functionality are deployed in stages, allowing for predictable, incremental releases following intensive testing. So instead of looking at its overall success, the program gauges the success of individual components.

To effectively maximize adoption, it became apparent that the program's larger objectives would need to be coupled with practical operational advantages. As a result, Customs and Border Protection (CBP) and partner agencies mixed benefits into the initiative to reduce manual processes, simplify duty and fee payment and collection, minimize courier fees, improve data

quality, and increase cargo release speed. Stakeholders who initially joined early pilot programs have re-engaged, and are realizing process improvements that are crucial to modernizing industry.

Where Are We Now?

ACE is one of the largest regulatory endeavors in recent U.S. trade history. Regulatory changes aren't new to the logistics sector, but ACE is unique due to its scope and number of participants. The program impacts not just CBP, but the way many government agencies work and interact with one another. And procedural changes on this scale impact multiple departments within logistics-oriented businesses.

When faced with a long-term regulatory rollout that includes far-reaching process changes, companies may be tempted to delay deployment. Although some may hesitate to embrace ACE, failing to do so risks high last-minute cost outlay, business disruption, customer service failure, and inability to bill for services rendered.

Market leaders are taking a systematic approach to adopting ACE. They are working to ensure that compliance does not disrupt their business, capitalizing on the potential benefits of the regulation, and taking steps to ensure a smooth transition to this new system ahead of anticipated deadlines.



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[IT MATTERS]

BY CHRISTIAN ALLRED

Senior Vice President & General Manager, ORBCOMM Enterprise Solutions
customerservice@orbcomm.com | 330-285-4141

Tracking Isn't Just Tracking Anymore

In the 1990s, carriers, shippers, and third-party logistics providers were always asking: “Where’s my truck?” In response, automatic tracking systems grew rapidly as the Global Positioning System (GPS) became available for commercial use, and expanding satellite and cellular networks increased connectivity even in remote areas.

The first generation of tracking systems charted the location, speed, and direction of assets. Shippers could update cargo status within their management systems through standard electronic data interchange with carriers.

Automated asset tracking was revolutionary 20 years ago. Today, it’s imperative—at least in terms of meeting the evolving needs of shippers and transportation providers, who both must provide visibility for customers.

Chain of Custody

In general, tracking systems evolved into fleet management platforms with the ability to monitor key status changes and events that may impact a load’s integrity and/or security.

Modern tracking and monitoring platforms can pick up contextual information about the status of cargo and its immediate and non-immediate surroundings. For example, temperature variations are important. Temperatures that vary by only a few degrees can result in many cargo types being rejected for delivery.

Door opening and closing events are another example. What is important is not that the door opened, but where it opened, how long it was left open, what happened to the temperature in the trailer, and what that means to the cargo’s integrity. This data ensures regulatory compliance with the U.S. Food Safety and Modernization Act, which established mandates for preserving the chain of custody for temperature-sensitive cargo.

Unheard of only a few years ago, functions such as changing temperature settings, or remote trailer unlocking are now expected. Shippers and providers need continuous visibility and control to ensure the cargo’s security, integrity, and on-time delivery. More importantly, this data is melded with other key elements in order to drive a more efficient supply chain.

Fleet Data Management

Shipment visibility has evolved to be part of the Internet of Things (IoT), which integrates data far beyond what is captured by a sensor or tracking device.

This term describes an integrated network of devices and sensors. Trucks, trailers, containers, and other assets can utilize an IoT network to capture critical, real-time, and multi-dimensional information about shipment status.

A variety of temperature, vibration, fault codes, and other vital information pertaining to equipment and cargo status is sent to an integrated cluster of Web-based servers. In turn, these servers power the back-office applications that shippers and providers use to manage cargo en route, coordinate supply chains, and maximize asset utilization.

The real trick is getting the correct information to the right people in time to enable smart business decisions. Passing along a fault code or temperature excursion is a binary piece of information. But mashing up this information with other data sources through the use of predictive analytics produces better insights into business processes and drives positive change.

The future of the global supply chain demands more. Fleet management platforms must continue to evolve and deliver even more robust, real-time visibility tools to ensure the integrity of shipments while driving operational efficiencies. Otherwise, shippers will miss the opportunity to gain a competitive edge, deliver real value to their customers, and achieve bottom-line benefits. ■

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Three Supply Chain Risks and How to Address Them

Companies face three main sourcing supply chain risks: regulatory, brand erosion, and social compliance. Any one of these issues could lead to lost profits, product recalls, and customer erosion. At the same time, the longer the supply chain – with more levels of suppliers, disparate geographies, and other middle men, the more complex and challenging compliance becomes.

Here are some ways these issues can affect a company's supply chain and how some best practices can mitigate them.

Corporate Social Responsibility

Adhering to ethical business practices is something any company should take seriously. Not only is failure to comply with regulations and ethical standards questionable from a moral point of view, it's bad for the bottom line. Workplace conditions, child labor practices, production processes, and chemical/conflict mineral usage and sustainability, for example, are increasingly scrutinized by both consumers and governments – and failure to address these issues can result in fines, brand erosion, and lost customers.

Yet while audits (often extensive) are a cornerstone to most companies' operations today, too often they are done manually or in Excel spreadsheets. This strategy requires many people, is error prone, and doesn't connect the audit to the purchase order, so the sourcing department may not even know if there is a problem with a particular supplier or factory.

Instead, companies should have a centralized approach to compliance operations, with a collaboration portal where all parties have access to the information they need, from the sourcing department, which needs to know which purchase orders are in jeopardy of being noncompliant, to suppliers providing information on corrective actions they have taken to address an issue.

Regulatory Risk

Are your products safe? Are you doing business with a safe supplier or terrorists? Government regulations are ever increasing, placing additional burdens on monitoring, documenting, and remediating any violations. New laws regarding social responsibility and environmental impacts from production, such as chemicals in the production process, and doing business only with known, trusted partners and suppliers make the costs of noncompliance high.

To side-step potential problems companies must be com-

pletely transparent about how they do business along every stage of their supply chain process. They must evaluate facilities before doing business with a company and continue due diligence efforts throughout the production and supply chain process.

By centrally managing its compliance operations a company enables all relevant parties, both internal and external, to have access to a single version of the truth, increasing visibility, lowering errors and costs, and reduce noncompliance. For example, a company can send a test request and receive the results electronically. The results are reportable to all parties, which can then take corrective action if necessary. Audit results can be used to generate compliance certificates that will become part of the import/export filings.

In addition to supplier compliance, companies must also screen potential customers against restricted party lists, determine license requirements, perform import/export compliance checks, and generate international trade documents.

Brand Erosion

While a reputation can take years to build, it can be battered or ruined in a very short time. In fact, brand reputations are among the most prized assets major corporations have. And once brand images are tarnished it can take quite a while and a lot of effort to win back a positive image.

Today's increasingly globalized market requires a strong brand to remain competitive. The best way to manage brand image is to avoid having issues occur in the first place. Adhering to product standards ensures products are produced ethically, safely, and profitably.

Standards compliance tests are usually done by third party labs and can be complex, thorough, and vary by country. Using a single information platform with automation technology allows all data necessary for standards compliance, such as audits, questions and linkage relationships, to be easily accessible, with fewer errors and at a lower cost than manual efforts.

Conclusion

In short, by enabling a holistic, integrated approach to managing global supplier risks, companies are able to minimize these risks; enforce codes of conduct and ethical sourcing to protect brand integrity; improve customer service levels; and reduce global supply chain costs.



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The Next Frontier of Supply Chain Innovation: Analytics, LEAN and the Power of Big Data

Ongoing breakthroughs in big data and advanced analytics are nothing short of revolutionary. Executives at Gartner have said, "Information is the oil of the 21st century, and analytics is the combustion engine." The excitement is not simply about the scale and speed of information generation. It is also about big data's potential impact. An example noted in a recent McKinsey Insight: McKinsey's Global Institute estimated that retailers exploiting data analytics at scale could increase operating margins by more than 60 percent. That gets your attention.

Achieving such gains has proven difficult for many organizations as they attempt to leverage big data, particularly those new to using analytics. Tools and techniques are now emerging to help companies realize the potential at the core of big data excitement. I see this potential in our work for supply chain optimization.

The increased pervasiveness and predictability of big data solutions give new strategic heft to the traditional what/if analysis, answering key questions such as:

- How do we get orders to customers most efficiently?
- Where should we make particular products?
- How many products should we make?
- Where should inventory be?
- From whom do we purchase raw materials? How many?
- What's the most efficient transportation mode to use?
- Which DC should ship products to particular customers?
- What if demand increases x percent?

A key development impacting project execution is the need for speed and global data access. Data collection and data integrity challenges have driven software tools to provide real-time data access, so that organizations like ours can conduct analytics and do more advanced modeling on data being captured at speeds and volumes unheard of a decade ago. Nobody wants to wait for a three-month supply chain project to receive strategy recommendations. They want to know now, and in an increasingly collaborative supply chain, they need to know now to respond effectively to change—a constant in business today.

North American manufacturers are increasingly finding that

visualization of the current state of their supply chain from a data perspective adds intelligence to their strategic thinking. LEAN principles eliminate waste within processes and facilities, but LEAN thinking often is restricted to company facilities as discrete elements rather than being extended across the supply chain. This is failing to use a very powerful tool.

Our Extended LEAN® methodology of continuous improvement goes beyond your facility to combine advanced analytics with a key component of the LEAN toolkit—the Value Stream Map (VSM). Overlaying supply chain analytics onto a VSM of the entire supply chain helps companies understand the location of pain points, identify bottlenecks and prioritize the addressing of these challenges to improve supply chain efficiency. The result is maximum customer value through the removal of non-value-added activity from your end-to-end supply chain. Consequently, continuous improvement becomes a critical driver of supply chain and enterprise performance.

Previously, many companies engaged supply chain consultants for project work on a periodic basis: they would come in for three months, complete the project and go away until they were called in several years later to again make supply chain optimization recommendations. This practice is counterintuitive to the nature of big data, which is all about the continual generation and flow of information. Supply chain optimization is not something that can be effectively addressed in a stop/start fashion.

The confluence of faster data access, better analytical tools such as Insight Fusion®, our interactive business intelligence portal and big data solution that promotes timely and data-driven business decisions, and new methods such as Extended LEAN make it more likely that future supply chain optimization will be continuous. Rather than doing periodic network optimizations, companies are better served by continuous optimization—refreshing their models quarterly, for example, to provide more granular monitoring of supply chain performance and better visibility to make accurate strategic decisions.

That's the kind of approach that will really provide horsepower to the analytics engine.

Enterprise Logistics Provider Transportation Insight delivers multi-modal strategic carrier sourcing, freight bill audit and payment services, state-of-the-art Transportation Management System (TMS) technology and business intelligence solutions. John Richardson is Transportation Insight's Vice President of Supply Chain Analytics. Richardson has led the development of innovative supply chain solutions for over 15 years.



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3PLS PUT TECHNOLOGY FRONT AND



3PLs tap into data-based solutions to help shippers meet their goals.

By Merrill Douglas

What's the difference between a third-party logistics (3PL) provider and a logistics technology vendor? That's not the setup for a punch line; it's a straight question that doesn't have an easy answer. Certainly, many respected 3PLs use software developed by other firms to help run their businesses, and run them well. But some 3PLs have brought the technology expertise in-house, creating their own systems for transportation management, business analytics, and other key functions.

3PLs with proprietary systems mainly use them within their own four walls, to support services to customers. But some 3PLs also market their solutions, either as standalone products or as part of their service offerings.

For smaller shippers, licensing technology (or, more likely, subscribing to a cloud-based service) from a 3PL can be an attractive proposition. A company that can't otherwise afford to buy and maintain cutting-edge technology gains a solution originally developed to serve a large, sophisticated operation. Even a big shipper might choose this option, so it can focus resources on functions more central to its mission.

Whether a shipper buys services, software, or some combination of the two, technology usually lies at the center of a 3PL's value proposition. Here's a look at how some 3PLs use technology to support shippers' goals.

HOT DATA MOVES HOT SAUCE

When the Cholula Food Company went looking for a 3PL to manage its out-bound freight in 2014, Echo Global Logistics made a big impression, thanks in part to its technology. Today, officials at Cholula remain impressed.

"Echo allows us to provide customers with more real-time information than before," says Marlon Bolasingh, director of finance and operations at Cholula, based

in Jersey City, N.J. A subsidiary of Jose Cuervo, Cholula distributes a variety of hot sauces from warehouses in California and Texas.

Bolasingh also likes that Echo can use an electronic data interchange (EDI) connection to load its invoices directly into Cholula's accounting system.

The information Cholula uses to update its customers on orders in transit comes from a file that Echo transmits to Cholula every 24 hours. "Sometimes, in the LTL environment, it will show the exact location of our product," Bolasingh says.

In addition, Echo provides a data dashboard to help Cholula analyze its shipments. "We can see how much weight is shipping on a particular lane, and how much product is shipping to a particular customer," Bolasingh says. The data also reveals how much Cholula spends to distribute product to each customer. Cholula uses that information to factor in delivery costs as it sets prices for retail and food service accounts.

Along with the fully managed, multi-modal transportation service it provides to Cholula, Echo also offers a second service model, in which it acts as a traditional transportation broker. In this "transactional" model, Echo helps a shipper locate carriers for individual loads, but the shipper may turn to other sources for capacity as well.

In both business models, technology is crucial. On the managed transportation side, Echo integrates its proprietary TMS with the shipper's enterprise resource planning (ERP) system. "They build orders in their system, and we create orders in ours for the transportation sourcing event," says Doug Waggoner, CEO at Echo in Chicago. "Then we select the mode and carrier, and manage shipment execution all the way to their client."

Echo also uses the TMS in its transactional business. It's possible to manage a brokerage with help from an inexpensive, off-the-shelf solution, "but that would force us to do brokerage the way the vendor designed it into the software," Waggoner says.

An off-the-shelf product would also make it hard to manage the unique needs of more than 270 clients across multiple transportation modes. "We require a lot of flexibility and the ability to configure the technology

to match the requirements of a specific client," Waggoner adds. The proprietary system fits that bill.

Besides customers that rely on Echo for managed or transaction-based services, some shippers use its TMS to manage their own shipments. That's a good strategy when shippers want to automate their relationships with carriers but don't have a lot of cash to spare.

TECHNOLOGY + ENGINEERING = BETTER STRATEGY

For 3PL Transplace, service and technology are inextricably connected. "Our technology is central to the delivery of any of our solutions," says Matthew Menner, senior vice president of strategy at Transplace in Frisco, Texas.

The main engine behind Transplace's solutions is a Web-native transportation management system that optimizes and executes every aspect of a shipment. About 30 subscribers employ the TMS on a Software as a Service (SaaS) basis, using it to manage their own freight.

But in most cases, Transplace employees use the TMS on behalf of clients. One example is Intertape Polymer Group (IPG), a producer of packaging products based in Saint-Laurent, Quebec and Sarasota, Fla. IPG has outsourced its transportation management to Transplace since 2006.

The day-to-day services the TMS

supports are extremely valuable, says Joe Tocci, IPG's senior vice president, global sourcing and supply chain. But IPG may gain even more benefit from the way Transplace combines technology and engineering expertise to make strategic adjustments to the transportation network.

"Transplace provides a robust reporting package," says Tocci. Based on information drawn from the TMS, the reports help IPG analyze freight activity and costs. "We can look at how much we're spending on inter-modal, truckload, and less-than-truckload (LTL)," he says. "We can break that down to cost per pound."

That insight into lane density and cost helps Transplace and IPG identify where they can save money by refining the network. For example, if they discover that IPG makes many LTL shipments from the same manufacturing plant, they might combine those into full truckloads for transportation to a pool point.

If the value Transplace delivered lay only in its TMS, IPG might have saved money by using the TMS on a subscription basis to manage its own transportation. "But it becomes a tougher financial decision when I look at the strategic interaction that happens between us, and the recommendations from their engineering group," Tocci says. "At this point, the annual savings more than offset the management fee."

Transplace's business intelligence practice continues to develop the company's analytic capabilities. "Companies want to understand their freight spend and the value they receive from their providers," says Vince Biddlecombe, the 3PL's executive vice president and chief technology officer.

ANY WAY YOU WANT IT

3PL Transportation Insight (TI) has built its business on the notion that shippers should maintain as much or as little control over day-to-day operations as they like. If they want to outsource entirely, they can do that. "If they're more comfortable leveraging our technology and maintaining their relationships with carriers—we'll

Technology services offered by its 3PL are the secret ingredient in hot sauce maker Cholula's success.



do that,” says John Richardson, director of supply chain analytics at TI in Hickory, N.C. Shippers can also choose a bit of each.

Three main pieces of technology underlie TI’s transportation execution services. The first is a proprietary, Web-based TMS, which the 3PL uses on behalf of its shippers or provides for them to use on their own. The second piece is software for auditing and paying freight bills. The third is technology for integrating bills of lading (BOs) into the audit process to make sure invoices reflect not only contracted freight rates, but also the volumes actually shipped.

Data from those three functions supports two business analytics services. TI provides static reporting—periodic snapshots of freight costs and carrier performance. It also provides an interactive analytics portal called Insight Fusion.

Using Insight Fusion, a customer can view reports for its entire transportation network or slice that data in any number of ways. “You could drill down to a region, to a specific location with a specific date range, or to a lane within that location,” says Jim Taylor, TI’s vice president of information technology.

DSI Systems, a distributor of satellite equipment, consumer electronics, furniture, and appliances, has worked with TI for about nine years. The 3PL helped DSI redesign its distribution network, ultimately cutting its facilities from 31 to just seven. TI also took over DSI’s freight bill auditing and payment.

But for a long time, DSI let each distribution center tender its own loads. About three years ago, to gain better control, the company centralized transportation operations and started using TI’s TMS. “Now, when a sales order prints, or a pick ticket prints in the warehouse, workers there see a list of carriers we have contracts with and the cost for that lane,” says Dave Siebert, DSI’s senior vice president of operations.

Data from the TMS and TI’s freight billing system generates periodic reports. DSI also uses Insight Fusion to perform analytics on the fly.

“If you can dream of it, we can get a report on it,” says Siebert. “If my boss calls to ask how many times we’ve shipped 1,500-pound loads into Montana in the past six months, I can get that information while we’re still on the phone.”

Analytic capabilities translate into real savings. For example, a few years ago, officials from DSI and TI sat down to examine accessorial charges on carriers’ bills. Until they studied that data, no one had realized how often customers asked for special equipment or services, or what it cost to honor those requests. “We put some controls in place, and we cut our accessorial charges the following year by 50 percent or more,” Siebert says.

“If my boss calls to ask how many times we’ve shipped 1,500-pound loads into Montana in the past six months, I can get that information while we’re still on the phone.”

—Dave Siebert, Senior Vice President of Operations, DSI Systems

GIVING IT AWAY

Odyssey Global Logistics and Technology also has developed an IT platform to use on behalf of its customers, plus transportation management technology that shippers can use on their own. But Odyssey gives its strategy a different twist.

“We give the Web Integrated Network (WIN) platform to shippers at no cost,” says Russell Marky, chief information officer at Odyssey in Danbury, Conn. There’s no implementation fee, and the service carries no direct subscription charge.

Odyssey developed its technology platform over the past 12 years. It started by acquiring the source code for an existing TMS, then enhancing the software as the company’s services expanded, encompassing more geographies and transport modes.

A few years ago, Odyssey started looking for a new, innovative service to bring to market. “We came up with a model where we expose parts of our platform to customers, but only those parts that manage functions they want to still control,” Marky says. Generally, that means retaining control of relationships with carriers, he adds.

Shippers who choose that option get a Web-based TMS for use in-house, with no need to spend time or money implementing the technology. They’re under no obligation to use Odyssey’s services or its carriers.

So what’s in it for the 3PL?

Once a shipper starts using WIN, Odyssey can also present its own carriers for consideration. “We can point out, for instance, opportunities in a lane where we have backhaul capacity,” Marky says. When shippers seek transportation on the spot market, WIN shows them a wider range of carriers and brokers than shippers could identify on their own.

The shipper doesn’t have to use Odyssey’s network. But if it does, it will

likely enjoy lower rates than it would under its own contracts. Like many 3PLs, Odyssey makes its money on the spread between the rate it pays the carrier and the rate it charges the shipper.

Wanho Manufacturing, which produces components employed on cellphone towers, has used WIN since early 2014. Dan Michaud, operations manager at Wanho’s facility in Waterbury, Conn., first signed up in order to automate and streamline the shipping process. The company had never before used a TMS.

For the most part, Wanho uses WIN to manage transactions with its own core carriers, at its own negotiated rates. But the shipping supervisor sometimes tenders loads to other carriers on the WIN network. “On some moves, we save hundreds of dollars if we utilize a WIN carrier versus one of our current carriers,” Michaud says.

WIN presents a range of carriers—both Wanho’s own and Odyssey’s—on the same screen, allowing quick comparisons. “We used to have to go to each carrier’s website to get a quote,” Michaud says. “This gives you everything in one shot, within seconds.”

HOW DID WE DO?

Like many 3PLs, XPO Last Mile uses technology to route deliveries, show customers shipment progress, and provide performance and cost reports. But XPO serves a specialized market—retailers that

need to deliver appliances, furniture, electronics, and other heavy items across the “last mile” to consumers. To support that niche, XPO has developed another set of technology tools that measures and monitors consumer satisfaction.

A division of XPO Logistics in Greenwich, Conn., XPO Last Mile uses a network of independent contractor-carriers to offer three kinds of delivery solutions:

- **Dedicated Solutions**, which handles all of a retailer’s heavy-item deliveries within a geographic region.

- **Direct Solutions**, providing nationwide, on-demand service. XPO arranges to pick up product at a retailer’s DC or fulfillment center, cross-docks the freight in one of its 48 facilities across the country, then has contractors deliver items to consumers.

- **Installation and assembly**, which provides certified, licensed plumbers, electricians, and other professionals to assemble and install a range of products, including appliances, fitness equipment, and ready-to-assemble furniture.

In each case, when delivery is complete, the consignee provides an electronic signature on a smartphone carried by the independent carrier. “Then 10 to 15 minutes later, we contact the customer and ask five questions about how we did,” says Scott Malat, chief strategy officer at XPO Logistics.

That survey generates a customer satisfaction score. “The contractors are compensated based on quality,” Malat says. “Our entire organization is totally focused on providing world-class customer service.”

XPO also uses the satisfaction scores to refine its carrier base. “If a carrier scores more than 4.8 out of 5, we give them more freight,” he says. Contractors with lower scores go into an “improve or remove” program. If they don’t improve, they lose XPO’s business.

A low score or customer complaint also triggers a “quality loop,” which starts within one hour of delivery with a phone call to the consumer. “Our team has one hour to come up with a remediation plan,” Malat says. The contractor might return to the home to resolve the error; the retailer might arrange to replace a defective product; or the customer might receive a gift card as compensation.

In addition, XPO offers a set of desktop solutions—essentially, access to its routing,

customer satisfaction, and visibility systems. Retailers gain the benefits of those solutions even when not using XPO’s contract carriers. Most customers that employ the solutions are large retail chains that use XPO’s last-mile delivery services in many markets but want to retain their own control of deliveries in certain locations.

THE POWER OF PEOPLE

As central as it may be to the value a 3PL provides, technology never stands on its own. You need experts to put it to work, whether those experts get their paychecks from the 3PL or from the shipper.

Leaders at C.H. Robinson find that the value they deliver to shippers heavily depends on the expertise of the 3PL’s own technology super-users. That’s why C.H. Robinson, through its TMC division, offers a service called Managed TMS.

Positioned as a blend between a technology solution and a traditional 3PL service, Managed TMS gives a shipper the use of a TMS platform. If the company wishes, it may continue to choose its own carriers and maintain its own relationships. The shipper also gains business intelligence functions to support strategic decisions.

But, as part of this service, TMC assigns employees of its own to use the TMS for the shipper.

“Our people become an extension of their supply chain department,” says Chris O’Brien, chief commercial officer at C.H. Robinson in Eden Prairie, Minn. When shippers choose Managed TMS, both they and C.H. Robinson’s employees operate the technology.

Some shippers that rely on Managed TMS implemented TMS solutions in the past but didn’t receive the expected return on investment. “Or they didn’t have the manpower to put behind the technology to get what they wanted,” says O’Brien. C.H. Robinson supplies the manpower instead.

Other customers form a more traditional outsourcing relationship with C.H.

Robinson. In those cases, the 3PL uses its proprietary Navisphere technology platform to route shipments, choose carriers, and make other decisions for the shipper.

Whether they use Managed TMS or outsource operations entirely, customers seek similar outcomes. “They’re looking for savings, and for better routing or optimization,” says O’Brien.

Often, they want to gain control of functions they haven’t controlled in the past. For instance, a company might decide to manage its inbound freight, rather than let thousands of suppliers ship freight to them



XPO Last Mile taps into technology to ensure it always provides world-class customer service.

independently. To enable that change, C.H. Robinson would set up a Web portal and teach vendors to use it. “Our customers put in business rules to make sure they get the outcomes they desire,” says O’Brien.

A shipper trying to implement that change on its own would need to make a tremendous investment in technology and people, says O’Brien.

C.H. Robinson doesn’t currently offer a stand-alone TMS. For customers that want to retain a fair degree of independence, the 3PL has built many self-service functions into its Managed TMS product. But most shippers that work with C.H. Robinson don’t want to go it alone. “When they come to us, they’ve already decided that the gap out there is talent, not technology,” O’Brien says.

Of course, talent and technology are both important. Shippers that work with 3PLs are fortunate to face such a broad range of options, allowing them to strike the technology-service balance that best suits their needs. ■

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TOP 100

INBOUND LOGISTICS

LOGISTICS IT PROVIDERS & MARKET RESEARCH SURVEY

Inbound Logistics surveys the market to determine the latest logistics technology trends—and chooses 100 IT providers that are leading the way.

by Joseph O'Reilly

THE PACE OF CHANGE IN THE LOGISTICS TECHNOLOGY SECTOR OVER THE PAST SEVERAL YEARS has truly been revolutionary. Cloud computing has changed the way IT vendors engineer solutions, and how buyers approach capital investment in new technology. SAP and Oracle implementations aside, the uptime and risk once associated with costly IT expenditures are markedly less prohibitive. Importantly, more hedges are built into the way that IT buyers and sellers operate.

Shippers are no longer at the mercy of acquiring a fixed legacy ERP system that they have to live with, regardless of performance. A silver-bullet solution does not exist anymore. Plug-and-play modules have replaced plug-and-pray installations—with an emphasis on play. Shippers have options. They can use crowdsourcing platforms to tap into critical mass and gain economies of scale. This affords users the capacity to negotiate better rates, drive visibility, and benchmark performance. Gainsharing has become another popular sales hook, especially with managed technology offerings.

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Beyond that, buyers can source solutions and software direct from vendors, or through integrators and third-party intermediaries. The secondary market has become a viable option. It's why logistics technology is such a hyper-competitive space.

Inbound Logistics' annual Logistics Technology Perspectives offers market research to help IT buyers and users make better sense of what's going on in the industry. We solicited more than 200 IT solutions companies — of all different shapes and sizes — to document some of the trends that make this space so dynamic.

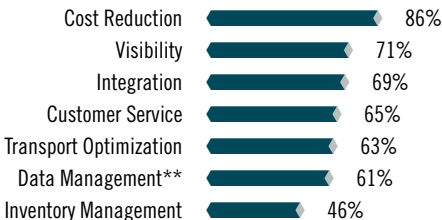
FIG. 1 Industries IT Providers Serve



FIG. 2 Solutions IT Providers Offer



FIG. 3 LIT Buyers' Top Challenges:



*including 3PLs, warehousing, carriers, international trade
** big data, quality, synchronization

As always, *IL's* Top 100 Logistics IT Providers list (page 46) bookends this market research. Our annual compendium of best-in-class IT companies celebrates innovators that are helping shippers revolutionize their supply chains.

Changing Deployment Dynamics

"Traditional logistics technology was applied top down, a most evident example being the ERP system," shares one logistics

technology company. "The new trend in Software-as-a-Service (SaaS) offers dynamic systems that are clearly intended as mid-level enterprise solutions, providing visibility and communication tools that empower operations."

Making the Investment

As the logistics technology market continues to expand and diversify, companies have fewer excuses for not investing in and adopting new systems. In the past, cost and risk were cardinal considerations. Companies often didn't want to mortgage their IT budget—or business—on technology that might just as quickly become obsolete.

Times have changed. Flexibility is the buzzword when it comes to logistics IT. From a deployment perspective, 47 percent of vendors surveyed by *Inbound Logistics* provide Web-based solutions. That compares to 40 percent in 2014. Only three percent provide local systems exclusively. The far majority (50 percent) offer both.

What's interesting is that the number of IT companies delivering solutions on-premise is declining—47 percent compared to 61 percent last year. It's a clear indication of where demand is trending. IT buyers want technology that flexes with business growth or decline. They don't want fixed costs.

"We already see close to 50 percent of new implementations opting for a SaaS deployment model," another Top 100 respondent explains. "We expect this to grow to 80 percent of our deployments in the next few years. In anticipation of this shift in the marketplace, we reconstructed our solution to be deployable as a cloud application and as an on-premise application."

Pay Scales

A similar comparison can be made for how IT buyers pay for technology. Pricing has changed considerably over the past decade, largely because of Web-based systems. This year, 75 percent of IT vendor respondents provide transactional, pay-as-you-go subscriptions (72 percent in 2014), compared to 58 percent that sell technology per seat/user, and 57 percent that offer system-based pricing.

These numbers support a continuing trend in the technology space that is unlikely to reverse course. Shippers want to pay for play. That's the only return on investment that makes sense. And with so much competition in the industry, it's difficult for vendors to argue.

The facility with which IT vendors can develop and adapt technology holds few bounds. The maturation of SaaS and cloud-deployed solutions has welcomed a whole host of new companies into the marketplace. And it's not just on the software side. 3PLs increasingly are making a play to be their customers' go-to source for technology.

Again in 2015, the majority of IT companies surveyed (90 percent) serve 3PLs, warehouses, and carriers, followed by e-business (84 percent), manufacturing (82 percent), retail (75 percent), and wholesale (73 percent) (see Figure 1).

That e-business demand trumps manufacturing and retail for the first time is notable. Omnichannel continues to reshape the future of supply chain management—and technology is following accordingly.

The growth of the 3PL marketplace presents an interesting dichotomy for technology vendors. Service providers, as well as carriers, are prime sales targets. Some intermediaries offer private-label solutions; others pick and choose functional technologies to create solution suites that better serve customer needs.

But IT vendors also now compete against 3PLs, some of which are developing their own homegrown systems. Among non-asset-based logistics service providers, technology is a competitive differentiator—especially when they can bundle solutions and services together within a gainshare-type model.

Solution Evolution

Cloud technology is not without risk. Security and redundancy have long been concerns, especially when companies are dealing with sensitive customer data. That's one of the reasons why warehouse management solutions are less popular considerations as Web deployments—especially compared to more transactional TMS-type applications. But these long-held biases are starting to ease as well.

Order management (67 percent), optimization (65 percent), transportation/TMS solutions (62 percent), and routing and scheduling (55 percent) round out top technologies that IT vendors provide, according to this year's data (see *Figure 2*).

The focus on optimization reveals an interesting trend as IT buyers look to fine-tune existing capabilities. The software industry presents a panoply of options that drill down specific functions from transportation to warehouse slotting. Companies are looking to squeeze out costs anywhere they can.

To that end, cost reduction remains the top challenge for IT buyers, according to 86 percent of vendors surveyed this year (see *Figure 3*). Visibility (71 percent), integration (69 percent), customer service (65 percent), and transport optimization (63 percent) round out greatest priorities.

Integration will always be a concern, especially as more companies on-board multiple different

function-specific solutions. Cloud computing facilitates this task to a great degree.

Visibility and cost also go hand in hand. “The severe port congestion on the U.S. West Coast from mid-2014 through early 2015 has been extremely challenging for shippers and their logistics service providers,” notes one Top 100 respondent. “Shippers not only seek solutions to know the status of their current shipments and earlier notification of potential delays, they are also analyzing transportation options by trade lane, port, and carrier to determine the risk and associated costs. By having greater visibility to the performance of their routes, shippers can make more informed decisions.”

Data Matters

Data analytics and management, in terms of quality and integration, is another pressing issue. Sixty-one percent of IT companies point to that as a challenge, up from 58 percent one year ago.

Big data has become a cottage industry with explosive growth potential. It's bringing more business intelligence solutions to the transportation and logistics market, while similarly stoking 3PL value propositions. Service providers that can analyze and interpret data, then prescribe solutions, are ahead of the game. Even some IT vendors are expanding into 3PL-type consultative services by virtue of their data analytics capabilities.

Elsewhere, shippers are leaning on technology to help steer and support fledgling omnichannel strategies.

“As retailers add more sales channels to their businesses, the more complex their IT landscapes become,” shares another IT company. “For many multi-channel retailers, inventory, order, and warehouse management systems and processes remain siloed between channels—i.e., warehouses, DCs, stores, and drop-ship partners. Retailers are now looking for solutions to help unite their disconnected systems and give them a single record of inventory. This is crucial to optimizing order fulfillment and managing returns.”

Moving forward, logistics technology is following a clear trajectory. Shippers no longer see it from a pricing perspective. Cloud deployments and market maturation have increased competition and reduced costs. Rather, IT buyers are differentiating solutions by the value they bring to the enterprise. Increasingly, there's more than enough to go around. ■

2015 TOP 100 LOGISTICS TECHNOLOGY PROVIDERS

IL editors received more than 200 questionnaires this year from leading technology companies. After conducting comprehensive research, the selection team chose this year's crop of Top 100 awardees, representing the best of “best-in-class.”

We value IT vendors that provide core transportation and logistics solutions, and document and celebrate retailer/manufacturer successes. This year's group emulates these shared considerations.

Turn the page and browse the Top 100 Logistics IT Providers. If you have any questions, email: editor@inboundlogistics.com

TOP 100

INBOUND LOGISTICS
LOGISTICS IT
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2015

COMPANY NAME & URL	PHONE	WEB/CLOUD/SAAS/HOSTED		COST			INDUSTRY SERVED						VERTICAL SPECIALIZATION												
		LOCAL		TRANSACTIONAL (SUBSCRIPTION)	SYSTEM	SEAT/USER	MANUFACTURING (ALL KINDS)	RETAIL	WHOLESALE	E-BUSINESS	SERVICES/GOVERNMENT	TRANSPORTATION	AEROSPACE	AGRICULTURE	APPAREL & TEXTILES	AUTOMOTIVE	CHEMICALS	CONSTRUCTION & BUILDING MATERIALS	CONSUMER PACKAGED GOODS	ELECTRONICS	RENEWABLE ENERGY	FOOD & BEVERAGE	FURNITURE	GROCERY	HEALTHCARE
3Gtms 3gtms.com	203-513-9336	■	■	■	■		■	■	■	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■
3PL Central 3plcentral.com	888-743-0058	■		■			■	■	■	■	■	■													
Acuitive Solutions acuitivesolutions.com	267-744-4939	■		■			■	■	■				■		■			■	■				■		
Agistix agistix.com	888-244-7849	■		■	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■
ALC Logistics alclogistics.com	800-282-3246	■		■			■	■	■			■		■		■	■	■				■		■	
Aljex Software aljex.com	732-357-8700	■		■								■	■	■	■	■	■	■	■	■	■	■	■	■	■
Amber Road amberroad.com	201-935-8588	■		■			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Apprise Software apprise.com	610-991-3900	■	■	■		■	■	■	■	■					■				■	■		■	■		
Argos Software argossoftware.com	559-227-1000	■	■		■	■			■	■		■													
Arkieva arkieva.com	302-738-9215	■	■	■			■	■	■		■		■	■	■	■	■	■	■	■		■			■
ASC Software ascsoftware.com	937-429-1428	■	■		■	■	■		■	■		■		■	■	■	■	■	■	■		■	■		■
Avercast avercast.com	208-538-5380	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■
BestTransport besttransport.com	614-888-2378	■		■			■					■	■			■	■	■	■						
Blue Ridge blueridgeinventory.com	404-214-0856	■		■			■	■	■	■		■				■		■				■		■	
C3 Solutions c3solutions.com	514-315-3139	■		■			■	■	■	■		■				■	■		■	■		■		■	■
CargoSmart Limited cargosmart.com	408-325-7650	■		■	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Cass Information Systems cassinfo.com	314-506-5500	■		■			■	■	■	■	■	■				■	■		■	■		■		■	■
Catapult International gocatapult.com	913-232-2389	■		■	■	■				■		■													
Cheetah Software Systems cheetah.com	805-373-7111	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
ClearTrack Information Network cleartrack.com	877-377-4400	■		■	■	■		■	■	■					■	■							■		

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TOP 100

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COMPANY NAME & URL	PHONE	WEB/CLOUD/SAAS/HOSTED	LOCAL	COST			INDUSTRY SERVED						VERTICAL SPECIALIZATION												
				TRANSACTIONAL (SUBSCRIPTION)	SYSTEM	SEAT/USER	MANUFACTURING (ALL KINDS)	RETAIL	WHOLESALE	E-BUSINESS	SERVICES/GOVERNMENT	TRANSPORTATION	AEROSPACE	AGRICULTURE	APPAREL & TEXTILES	AUTOMOTIVE	CHEMICALS	CONSTRUCTION & BUILDING MATERIALS	CONSUMER PACKAGED GOODS	ELECTRONICS	RENEWABLE ENERGY	FOOD & BEVERAGE	FURNITURE	GROCERY	HEALTHCARE
Cloud Logistics gocloudlogistics.com	561-284-2085	■		■			■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■
CT Logistics ctlogistics.com	216-267-2000	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■		■	■	■	■
CTSI-Global ctsi-global.com	888-836-5135	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Cypress Inland (YardView) yardview.com	303-781-3430	■		■	■		■	■	■			■	■	■	■	■	■	■	■	■		■		■	
Data2Logistics data2logistics.com	609-577-3756	■		■			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Datex datexcorp.com	800-933-2839	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Demand Management demandsolutions.com	314-991-7177	■	■	■		■	■	■	■		■														
Deposco deposco.com	877-770-1110	■		■	■	■	■	■	■	■	■	■			■	■		■	■	■	■	■			■
E2open e2open.com	650-645-6500	■		■			■	■				■	■		■	■			■	■	■	■			
Elemica elemica.com	610-786-1200	■		■	■	■	■			■		■		■			■		■	■	■	■			■
Epicor Software epicor.com	800-999-1809	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■		■	■		
Fortigo fortigo.com	866-376-8884	■		■	■		■	■	■			■	■						■	■		■			
Foxtire Technologies foxtiresoftware.com	864-868-5243	■	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Freightgate freightgate.com	714-799-2833	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
GE Transportation getransportation.com/railconnect360	404-355-6734	■	■	■	■	■	■					■		■		■	■	■	■			■			
GT Nexus gtnexus.com	510-808-2222	■		■			■	■	■			■	■	■	■	■	■	■	■	■		■	■	■	■
HighJump highjump.com	800-328-3271	■	■	■	■	■	■	■	■	■	■	■			■	■			■	■		■	■	■	■
Infor infor.com	800-260-2640	■	■	■	■	■	■	■	■			■	■		■	■	■		■	■		■		■	■
INSIGHT insightoutsmart.com	703-366-3061	■	■		■	■	■	■	■	■	■	■	■		■	■	■		■	■	■	■			■
Integration Point integrationpoint.com	704-576-3678	■		■			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■

	OIL & GAS	PHARMACEUTICALS	TRADE SHOW	SUPPLY CHAIN SOLUTIONS										LOGISTICS SOLUTIONS										ADDITIONAL SOLUTIONS										
				CUSTOMER RELATIONSHIP MANAGEMENT	DEMAND MANAGEMENT	DISTRIBUTION RESOURCE PLANNING (DRP)	ENTERPRISE RESOURCE PLANNING (ERP)	GLOBAL TRADE MANAGEMENT	MFG. RESOURCE PLANNING (MRP)	MODELING/FORECASTING/PREDICTIVE ANALYTICS	PRODUCT LIFECYCLE MANAGEMENT	SALES & OPERATIONS PLANNING	SECURITY (RISK MGMT., COMPLIANCE, ETC.)	SUPPLIER/VENDOR MANAGEMENT	SUPPLY CHAIN CONTROL TOWER	AUDITING/CLAIMS/FREIGHT PAYMENT	INVENTORY MANAGEMENT	LABOR MANAGEMENT	LOAD PLANNING	OPTIMIZATION	PROCUREMENT	RATE BID MANAGEMENT	REVERSE LOGISTICS	RFID	ROUTING & SCHEDULING	TRANSPORTATION/TMS	WAREHOUSING/WMS	WIRELESS/MOBILE TECHNOLOGY	YARD MANAGEMENT	CATEGORY MANAGEMENT	CONTAINER/CHASSIS MANAGEMENT	EDI	MOBILE ORDER MANAGEMENT	ORDER MANAGEMENT
	■	■	■									■	■	■			■	■			■		■	■		■			■		■			
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COMPANY NAME & URL	PHONE	WEB/CLOUD/SAAS/HOSTED		COST			INDUSTRY SERVED						VERTICAL SPECIALIZATION												
		LOCAL		TRANSACTIONAL (SUBSCRIPTION)	SYSTEM	SEAT/USER	MANUFACTURING (ALL KINDS)	RETAIL	WHOLESALE	E-BUSINESS	SERVICES/GOVERNMENT	TRANSPORTATION	AEROSPACE	AGRICULTURE	APPAREL & TEXTILES	AUTOMOTIVE	CHEMICALS	CONSTRUCTION & BUILDING MATERIALS	CONSUMER PACKAGED GOODS	ELECTRONICS	RENEWABLE ENERGY	FOOD & BEVERAGE	FURNITURE	GROCERY	HEALTHCARE
Intellect Technologies intellecttech.com	609-454-3170	■	■	■		■						■													
Interlink Technologies thinkinterlink.com	800-655-5465	■	■	■	■	■	■	■	■	■		■		■	■	■	■		■	■		■	■	■	
International Asset Systems interasset.com	510-844-3000	■		■	■	■	■					■	■	■	■	■	■		■	■		■	■		■
International Business Systems ibs.net	916-985-3900	■	■	■	■	■		■	■	■		■				■						■		■	■
INTTRA intrtra.com	973-263-5100	■		■			■	■	■	■	■	■													
Invata Intralogistics invata.com	860-819-3200		■		■		■	■	■	■	■	■	■		■				■	■		■		■	■
JDA Software jda.com	480-308-3000	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■		■	■	■	■
Kewill kewill.com	978-482-2500	■	■	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■		■	■
LeanLogistics leanlogistics.com	866-584-7280	■		■			■	■	■	■	■	■		■			■	■	■			■	■	■	
Llamasoft llamasoft.com	734-418-3119	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■		■	■	■	■
LOG-NET log-net.com	732-758-6800	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
LogFire logfire.com	678-271-9000	■				■	■	■	■	■	■	■			■		■	■	■	■		■	■	■	■
Logility logility.com	800-762-5207	■	■		■	■	■	■	■			■			■	■	■		■	■		■	■		■
M33 Integrated m33integrated.com	866-672-2862	■		■	■		■		■			■		■	■	■	■	■	■	■			■		■
MADE4NET made4net.us	201-645-4345	■	■	■		■	■	■	■	■	■	■			■	■	■	■	■	■		■	■	■	
Magaya Corporation magaya.com	786-845-9150	■	■	■	■	■			■	■	■	■		■	■	■		■	■	■		■			
MagicLogic Optimization magiclogic.com	206-274-6248	■	■		■	■	■	■	■	■		■													
Manhattan Associates manh.com	877-596-9208	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■		■	■	■	■
McLeod Software mcleodsoftware.com	205-823-5100	■	■			■						■													
MercuryGate International mercurygate.com	877-537-6419	■		■			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

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COMPANY NAME & URL		PHONE	WEB/CLOUD/SAAS/HOSTED		COST			INDUSTRY SERVED					VERTICAL SPECIALIZATION													
			LOCAL		TRANSACTIONAL (SUBSCRIPTION)	SYSTEM	SEAT/USER	MANUFACTURING (ALL KINDS)	RETAIL	WHOLESALE	E-BUSINESS	SERVICES/GOVERNMENT	TRANSPORTATION	AEROSPACE	AGRICULTURE	APPAREL & TEXTILES	AUTOMOTIVE	CHEMICALS	CONSTRUCTION & BUILDING MATERIALS	CONSUMER PACKAGED GOODS	ELECTRONICS	RENEWABLE ENERGY	FOOD & BEVERAGE	FURNITURE	GROCERY	HEALTHCARE
Navigate navigate.com		800-944-2471	■		■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■			■		■
NGC Software ngcsoftware.com		800-690-0642	■	■	■	■	■		■	■						■								■		
NTE nte.com		888-607-9371	■	■	■	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Nulogx nulogx.com		905-486-1162	■	■	■	■	■	■	■	■	■	■	■			■	■			■	■		■	■	■	
Numerex numerex.com		877-686-3739	■	■	■			■	■	■	■	■	■	■	■	■	■		■	■	■	■			■	■
nVision Global nvisionglobal.com		770-474-4122	■	■	■	■	■	■	■	■		■	■		■	■	■	■		■	■	■		■		■
One Network Enterprises onenetwork.com		866-302-1936	■		■			■	■	■	■	■	■			■	■			■	■		■		■	■
Optricity optricity.com		919-237-4846		■			■	■	■	■			■			■	■	■	■	■	■		■		■	■
Oracle oracle.com		800-672-2531	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
Paragon Software Systems paragontruckrouting.com		972-731-4038		■		■		■	■	■	■	■	■			■		■	■	■	■	■	■	■	■	■
PeopleNet peoplenetonline.com		888-346-3486	■		■	■						■			■	■	■	■	■	■	■	■	■	■	■	■
PINC Solutions pincsolutions.com		510-474-7519	■		■			■	■	■	■	■	■				■			■			■		■	
Precision Software (QAD) precisionsoftware.com		312-239-1630	■	■	■			■	■	■		■	■			■	■	■	■	■	■		■	■	■	■
QuestaWeb questaweb.com		908-838-4328	■	■	■	■	■	■	■			■	■	■		■	■	■			■		■			
Railinc railinc.com		877-724-5462	■		■	■		■			■	■	■													
RateLinx ratelinx.com		262-565-6150	■	■	■	■	■	■	■	■																
Robocom Systems robocom.com		631-753-2180	■	■			■			■	■		■				■		■	■	■		■		■	
SAP sap.com		610-661-1000	■	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
SciQuest sciquest.com		919-659-2100	■		■			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■			■
ShippersEdge TMS shippersedge.com/info		888-237-2465	■		■			■		■			■	■	■	■	■	■	■	■		■	■	■	■	

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COMPANY NAME & URL	PHONE	WEB/CLOUD/SAAS/HOSTED		COST			INDUSTRY SERVED						VERTICAL SPECIALIZATION												
		LOCAL		TRANSACTIONAL (SUBSCRIPTION)	SYSTEM	SEAT/USER	MANUFACTURING (ALL KINDS)	RETAIL	WHOLESALE	E-BUSINESS	SERVICES/GOVERNMENT	TRANSPORTATION	AEROSPACE	AGRICULTURE	APPAREL & TEXTILES	AUTOMOTIVE	CHEMICALS	CONSTRUCTION & BUILDING MATERIALS	CONSUMER PACKAGED GOODS	ELECTRONICS	RENEWABLE ENERGY	FOOD & BEVERAGE	FURNITURE	GROCERY	HEALTHCARE
ShipXpress shipxpress.com	904-241-5850	■		■	■		■		■		■	■		■			■		■		■	■			
Smart Software smartcorp.com	800-762-7899	■	■		■	■		■	■		■	■	■				■		■	■		■	■		
SMC³ smc3.com	800-845-8090	■	■	■		■	■	■	■	■	■	■	■	■	■		■	■		■		■	■	■	■
SphereWMS spherewms.com	214-382-2680	■		■	■		■	■	■	■	■	■	■		■	■	■	■	■	■	■	■	■	■	■
SPS Commerce spscommerce.com	866-245-8100	■		■			■	■	■	■	■	■			■				■			■	■	■	
Suntek Systems suntekscm.com	949-789-0070	■	■	■		■						■													
Systems Logic warehouseinbox.com	866-967-7226	■	■			■	■			■		■		■	■	■	■		■	■		■			
TECSYS tecsys.com	800-922-8649	■	■	■	■	■	■	■	■	■	■	■				■		■	■	■					■
Terra Technology terratechnology.com	203-847-4007	■	■	■	■	■	■	■	■					■	■	■	■	■	■	■		■		■	■
TMW Systems tmwsystems.com	800-401-6682	■	■	■	■	■	■	■	■			■			■	■	■	■				■	■	■	
ToolsGroup toolsgroup.com	617-263-0080	■	■	■	■	■	■	■	■	■	■			■	■		■	■	■	■	■	■	■	■	■
TOPS Software topseng.com	972-739-8677	■	■		■	■	■	■	■			■													
Trans-i Technologies trans-i.com	954-524-1501	■	■	■	■	■	■	■	■	■		■			■			■	■			■			■
TRANSPOREON Group Americas transporeon.com/us	267-281-1555	■		■			■	■				■	■	■		■	■	■	■	■	■	■	■	■	
TransportGistics transportgistics.com	631-567-4100	■	■	■	■		■	■	■	■	■	■	■		■	■	■	■	■	■		■	■	■	
Transwide transwide.com	877-763-3240	■		■			■	■	■			■		■			■	■	■			■		■	
TransWorks trnswrks.com	260-487-4450	■		■								■		■		■	■	■	■	■	■	■	■	■	
TZA tza.com	800-229-3450	■	■	■		■	■	■	■	■		■			■	■			■	■		■	■	■	■
U.S. Bank usbpayment.com/freight-payment	866-274-5898	■		■			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
UltraShipTMS ultrashiptms.com	800-731-7512	■		■			■	■	■	■	■	■		■	■			■	■			■		■	

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CipherLab's RS30 series touch mobile computer is a rugged smartphone that allows users to perform at a high level with minimal training. Its Android 4.4 OS paired with a 4.7 inch touch screen ensures that the user interface is as familiar as a personal smartphone. The touch screen is composed of a Corning® Gorilla® Glass 3 panel that can take vigorous tapping as well as automatically detect latex glove touches. The RS30 also includes versatile barcode reader options and Near Field Communication (NFC) to ensure top productivity. Seamless communication and collaboration among crew is achieved through HSPA+ and finely tuned 802.11 b/g/n. These features are ultimately protected with an industrial design which is proven to sustain accidental falls and water splashes. With the RS30, you can maximize your investments and perform with confidence.



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RS30 series

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One key step to finding answers to any logistics, supply chain, or technology challenge is knowing the right questions to ask.

Inbound Logistics assembled a team of supply chain and logistics technology leaders, and asked for their perspectives on the important logistics challenges and opportunities impacting your business.

More importantly, these logistics thought leaders can give you guidance when considering improvements to your business processes.

THOUGHT LEADERS

58 RICK ERICKSON

Global Director of Freight
Payment Solutions, U.S. Bank

59 SHANNON VAILLANCOURT

President, Founder, RateLinx

60 GEORGE KONTORAVDIS, Ph.D.

President, Fortigo

61 CHAD CROTTY

Vice President of Sales,
DDC FPO

62 TOM HEINE

CEO, Aljex Software

63 NATHAN HARRIS

President, YardView

Choosing to be a Shipper of Choice

Q: In the face of increasing capacity issues, rising equipment costs, and new regulations, carriers prefer to work with shippers that will support their business needs. How can companies become “Shippers of Choice”?

A: In a word, it’s about partnerships.

Q: Are there best practices for achieving this goal?

A: Yes. Pre-planning helps carriers anticipate load volume and frequency, and give drivers more predictable and profitable schedules — imperative for driver recruitment and retention. Keeping changes and cancellations to a minimum and reducing last-minute load requests also help. Having plans in place to notify carriers promptly when exceptions do occur builds trust. And honoring established bid commitments and schedules and paying quickly are essential. Preferred shippers do all they can to make billing and payment simple for the carrier — like



RICK

ERICKSON

Global Director of Freight
Payment Solutions
U.S. Bank

using integrated freight payment tools for visibility, online exception resolution, and collaboration.

Q: Becoming a “Shipper of Choice” is about more than creating efficiencies. How important is understanding and appreciating drivers?

A: With ongoing driver shortages contributing to capacity issues throughout the industry, it’s more important than ever for shippers to maintain a driver-friendly environment. Some of the things I mentioned earlier play a big part in that — such as maintaining consistent load volumes and frequencies, minimizing cancellations, and reducing last-minute loads. Efficient loading and unloading processes on site can limit wait times and get drivers back on the road quickly. But sometimes it’s the small things that can make a big difference: a clean, comfortable waiting area, access to decent restrooms, a friendly greeting, and a quick cup of coffee or a snack.

Q: You’ve talked about techniques. What about technologies?

A: Using an electronic freight management solution can help streamline every aspect of the process. U.S. Bank Freight Payment, for example, can improve automated invoice processing with 100 percent pre-payment audit and real-time invoice status updates. Shippers and carriers benefit from a collaborative, online solution that allows them to quickly resolve disputes and put powerful business intelligence at their fingertips.

Ultimately, any successful business relationship is about collaborative partnerships. Strengthening those relationships can help you become a Shipper of Choice for your carrier partners.

U.S. Bank | 866-274-5898

richard.erickson1@usbank.com | usbpayment.com/freight-payment

Strategic Shipping Solutions

Q: How is predictive modeling reshaping logistics?

A: Predictive modeling is changing the dynamic that exists between the carrier and the shipper. It's creating more of a collaborative environment, where the carrier and shipper can now talk openly about their goals with the transparency required to create and maintain a great relationship. The shipper now has the levers to pull that will instantly apply a new pricing proposal from a carrier, and provide instant feedback to the carrier during the rate discussions. Predictive modeling is also allowing the shipper to explore completely different strategies and understand the outcomes before investing a large amount of money to make the change.

Q: How can shippers harness their data to transform freight from a tactical necessity to a strategic advantage?

A: I see this as the biggest challenge facing shippers. It may seem obvious, but shippers have to start thinking more strategically and less tactically about freight. For example, shippers will perform an RFP with their carriers every year with the goal of lowering their rates each time. Instead, shippers should be evaluating their shipping profile to uncover the inefficiencies or lack of compliance that is currently costing them money. The shipper's rates may be the best rates in the market, but if they aren't using them correctly, how good are those rates? The data should be used to continually measure and monitor the health of their freight spend.

Q: How are shippers missing the mark when it comes to embracing big data analytics?

A: Big data is all about looking forward, not backward. I see shippers confusing big data with business intelligence, or descriptive analytics, which is looking

backward to confirm the decisions that have been made. Running an analysis to show how much money has been saved three months after implementing a change is not taking advantage of big data analytics. Big data is defined using the three V's (volume, velocity, and variety). Measuring change in real time takes advantage of the velocity element to assess both the volume and variety of data. This allows you to leverage the prescriptive nature of big data by having real-time visibility and transparency around any non-compliance that is preventing you from reaching your savings goal. You can now make any necessary changes in a timely manner. Non-compliance is corrected, and you're on track for realizing the savings.

RateLinx | 262-264-5554

shannon.vaillancourt@ratelinx.com | www.ratelinx.com



SHANNON

VAILLANCOURT

President, Founder
RateLinx

How to Forge Successful Value Chain Partnerships

Q: How can value chain partners cooperate to create and share efficiencies?

A: With an unprecedented global reach, access to new markets, increased regulation, and huge advances in technology, today's supply chain environment is more complex than ever. Coupled with increasing customer demands for speed, flexibility, cost efficiency, quality, and customization, it is very difficult for any single player to do it all by themselves and consistently meet customer expectations efficiently.

Thus is born the need for business partners to work together across the value chain with the intent to maximize the benefit to their customers—and, as a result, also to their own bottom line. Smart partners will do that by understanding their needs and combining, in varying degrees, their core competencies, total assets, technology, and relationships toward the mutual goals.

In all but the simplest of situations, this is not an easy endeavor, so it must be undertaken with great care. The first step is for each value chain partner to understand its own strengths and limitations. An honest assessment may not guarantee success, but a dishonest one—whether deliberate or not—will most certainly cause problems down the road and jeopardize the partnership's success.

At this point, the partners must also establish a well-defined framework of incentives and rewards. It is important for each side to feel motivated to do their best for the collective success of the partnership. It is equally important that all sides are satisfied that the eventual benefits will be shared justly and equitably.

Or the partnership could involve ongoing cooperation, including sharing resources to move freight or monitor freight flow.

Finally, at the pinnacle of this hierarchy is what we might call *collaborative logistics*, in which the partners have joint goals, share joint responsibilities, and incur



GEORGE

President
Fortigo

KONTORAVDIS, PHD

Next, the specific elements of the partnership and the associated operational processes must be set forth. It could be a simple networking arrangement in which the parties exchange information about a new market's conditions, such as demand signals, local regulations, or processes in a new logistics hub. It could involve active coordination between the partners, such as using real-time track-and-trace to provide visibility for the exact timing of handoffs in the supply chain.

joint risks. While the most complicated form of partnership, this model can also be the most rewarding, offering the highest potential to all partners involved.

Underlying all these arrangements—and fundamental to the partnership's success—is mutual trust and open communication. These elements develop over time, but when present, the sky is the limit for success in the value chain.

Fortigo | 866-376-8884

georgek@fortigo.com | www.fortigo.com

Offshore vs. Outsource for Transportation & Logistics

Q: Many transportation and logistics professionals based in the U.S. hear outsourcing and think offshoring. Is there a difference between the two? If so, what is it?

A: Yes, there is a big difference. When a company chooses to outsource, they are handing off a piece of their business to a specialist outside of the organization to manage. There are a number of reasons for this (e.g., cost savings, improved efficiency, faster turn-around time, higher accuracy, business continuity, etc.), but the main objective is to streamline business processes. Outsourcing can be across the globe or across the street. Offshoring, on the other hand, requires moving that piece of the business to another part of the world. You can outsource without having to offshore.

Q: If a logistics company wants to outsource without offshoring, will it suffer any loss in quality or cost? Why or why not?

A: Not necessarily. There are a number of solutions that leverage experienced onshore labor and/or innovative technology to reduce or eliminate costly man-hours, without sacrificing quality or cost. Dependable outsourcers who specialize in their individualized service offerings will utilize quality metrics and best practices to ensure the highest quality of output at very competitive prices.

Q: What are some examples of outsourcing projects that can be used to improve business in the supply chain without taking labor offshore?

A: The best examples are projects that integrate advanced technology wherever possible. The use of Optical Character Recognition (OCR) or Intelligent Capture (IC) is better now than it has ever been before in significantly reducing labor-intensive, manual data entry work. Large amounts of freight data can be captured, classified, extracted and transferred in any format, with a high degree of accuracy, without human intervention. This can be set up on-site or off-site, without moving work offshore. iCapture for Freight Billing is one example of our solutions that can be offered without moving labor offshore.

Q: Are there any outsourcing options for logistics companies that do not require eliminating staff at all? If so, what is an example?

A: Of course. For example, many transportation and logistics teams are trying to find ways to take raw data and turn it into useable information to make strategic business decisions. The problem is that many do not have the resources and time to do this. Partners like DDC make sense of client data by converting it into customized analytics reports and developing executive dashboards to equip decision makers with daily, weekly, or monthly snapshots of Key Performance Indicators (KPI's).

Instead of eliminating its billing staff after the roll-out with DDC FPO was completed, Clear Lane Freight Systems simply re-allocated the team members to focus on the company's core competencies. When clients take this approach, we see that they benefit from much more than just reduced costs and higher quality data, but it strengthens their operations throughout, allowing them to work through a much healthier business model.



CHAD

CROTTY

Vice President of Sales
DDC FPO

DDC FPO | 303-674-0681
info@ddcfpo.com | www.ddcfpo.com

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Using Technology to Maximize Value Chain Partnerships

Q: How can value chain partners cooperate to create and share efficiencies?

A: You just have to use your imagination and dig in. There are so many ways you can help your customers. You just need to ask and listen. Some third-party logistics (3PL) providers get deeply involved to provide technology so they stand out from their competitors



TOM

HEINE

CEO
Aljex Software

Q: Wow. That's a lot of cooperation. Any other interesting examples?

A: Sure, lots. I have another client that has developed a whole system to automate and manage a major fragrance manufacturer's inbound shipments. When vendors want to ship, they login to the 3PL provider's portal and choose which active POs to ship. From there, the information flows to an internal portal where the manufacturer can change destinations, set appointments, change quantities, and even choose which trailer to load it into. After that, the information is sent by API to the 3PL. Once the 3PL assigns a carrier, a bill of lading automatically is sent to the vendor with all the corrections, and the cycle is completed. All of this technology is provided by the 3PL. One of the best parts is that a system like this benefits everyone involved. It's a win-win-win. It makes it more profitable for the 3PL by reducing manual labor and locks them into the business. It helps the manufacturer by lowering costs and making their supply chain more efficient. It also helps the vendors have more automated, less error-prone relationships with its customer, the manufacturer.

and add value to their services. For instance, we have one client who delivers motorcycles for a major manufacturer. When the bikes are loaded into a trailer, someone scans the VID barcode, which triggers the manufacturer's billing to the dealer. It actually gets even deeper than that. When the bikes are delivered, they are inspected by a 3PL-provided phone app, and damage reports are instantly transmitted to the manufacturer. If you are providing technology like this to your customers, it makes it very hard to lose the business.

Q: That sounds complicated to set up. How do you get started with something like that?

A: Start small. See if you can help your customer with some custom reporting. Or, just come out and ask your customer where their pain is, and see if you can figure a way to remedy it. Many times, your customer's IT department is stretched thin and if you can come in with a solution, their best and easiest path is to outsource. If they outsource to you, you can lock your company into your customer's business for a long time to come. In my experience, many times these relationships last decades.

Aljex Software | 732-357-8700
tom@aljex.com | www.aljex.com

Improving Operations With a Yard Management System

Q: What is the role of a yard management system?

A: Two main roles come to mind—visibility and communication. Today's best systems offer visibility into basic information including the location, status, and contents of assets on the yard. They are also able to offer more detailed information including historical data, load detail down to the SKU, and accountability of who is performing tasks and when. Communication plays a huge role in providing updates and access to key information for all necessary parties. These include the gate staff, yard drivers, dock personnel, warehouse managers, carriers, and customers. A yard management tool may be the first time all of the groups are able to access the same up-to-date information in one place. Operations teams, customers, and carriers may choose to receive e-mail or text communications for key yard events either passing or approaching. Old communication techniques like phone calls and faxes are replaced by real-time information that is correct and always up to date.

Q: How do I justify the cost of a YMS?

A: There are both quantitative and qualitative ways to justify the cost of any system. Quantifying the value can be easy. You can calculate the savings if trailers are spotted 25 percent faster, the monthly saving if trailer utilization is improved and rental units are no longer needed, or how long it takes to do a yard check that may be incorrect when finished. Qualitative savings may



President
YardView

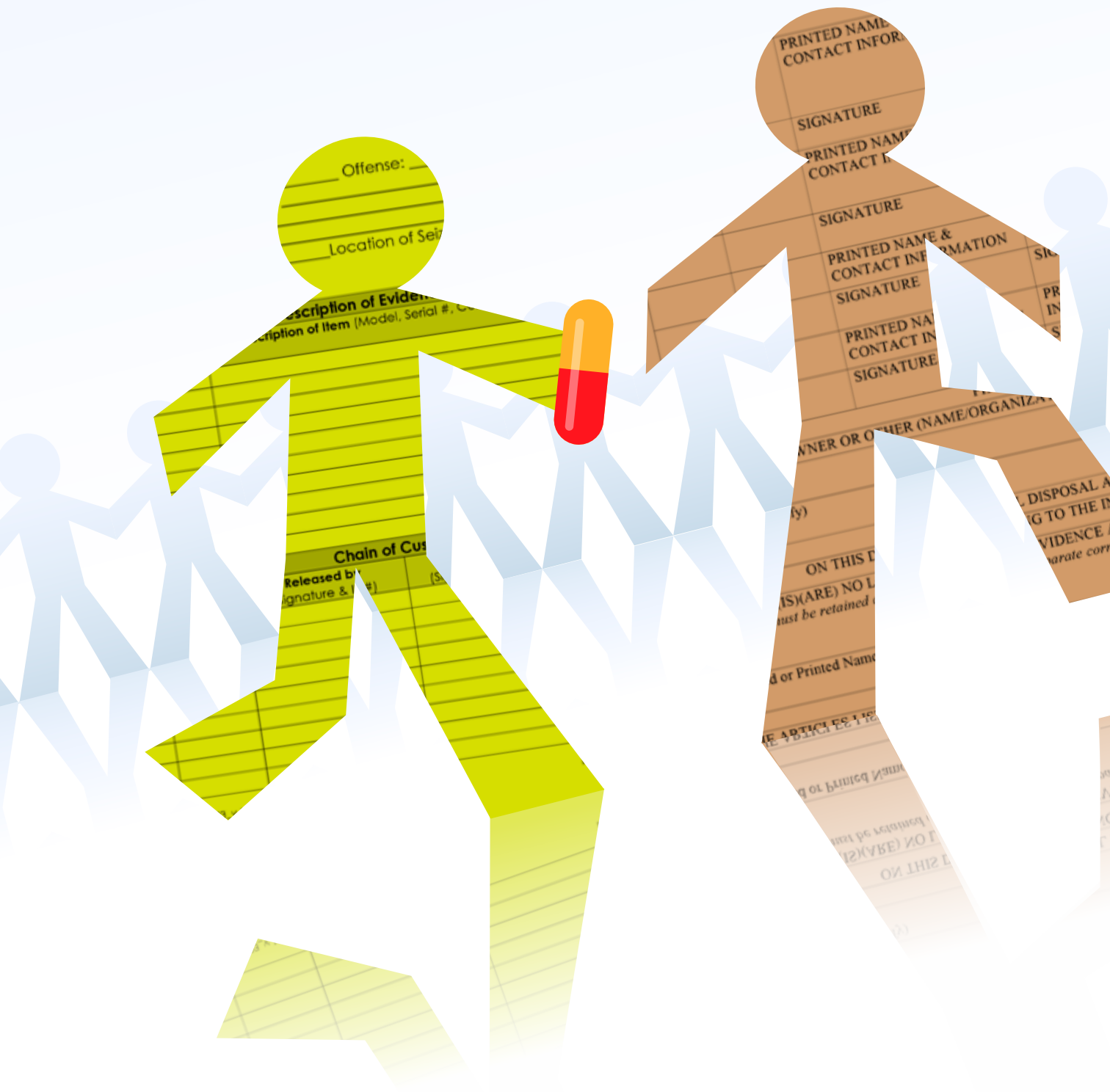
NATHAN
HARRIS

Q: What metrics and reporting can be expected from a YMS?

A: Today's YMS systems provide information at a glance, like how many total units are on the yard, how many are empty or loaded, or how many of a specific load type are on the yard. Further information like number of inbound, outbound, moves completed by driver, and dock performance metrics, like how long it takes to unload or load a trailer, are available. All of these metrics can be run by time period like day, week, month, quarter, and year. The reporting available in YMS systems today helps identify opportunities to improve the operation and save money.

not as easily be calculated into dollars, but savings certainly occur. How long it takes to find the oldest empty, or any empty, waiting for a trailer to get out of a door, phone calls with carriers, searching for a lost unit, paying a detention fee that you have no way to audit, double spotting of trailers, hours spent rolling up report data—all have a cost impact on the business and a process impact on the rest of the operation. A YMS is a drop in the bucket when all costs are considered.

YardView | 303-781-3430
nate@yardview.com | www.yardview.com





THE RACE IS ON: CHAIN *of* CUSTODY IN THE PHARMACEUTICAL SUPPLY CHAIN

New regulations ensuring the integrity of the pharma supply chain are nearing the finish line. While some companies have taken an early lead to compliance, others are late getting out of the gate. Which team are you on?



by Beth
Goodbaum

Tracking the global path of a pharmaceutical product from raw material to end consumer is complicated and risky. When done right, strategic chain of custody solutions can leverage brand reputation. But persistent vulnerabilities—poor visibility, and tainted, expired, or counterfeit drugs—can lead to numerous outcomes far more costly than a damaged reputation. Bad deliverables can be the difference between life and death.

Major pharmaceutical companies are susceptible to grim setbacks when weak points infiltrate the chain of custody. Some of these setbacks have become highly publicized cases that resulted in federal criminal charges.

One infamous example occurred in March 2015, when McNeil-PPC Inc., a wholly owned subsidiary of Johnson & Johnson, pled guilty in Federal District Court in connection with adulterated infants' and children's over-the-counter (OTC) liquid drugs. The ruling came five years after the Tylenol maker announced mass recalls of OTC medications including infants' and children's Tylenol and infants' and children's Motrin. In a 2010 press release, McNeil revealed that some of the unexpired recalled medications might have contained "tiny particles." Those foreign specks were later identified as metal—nickel/chromium-rich inclusions that were not intended ingredients of the medications.

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In a statement issued after McNeil's guilty plea, FDA Commissioner Margaret A. Hamburg, M.D., said, "The Food and Drug Administration expects manufacturers to have systems in place that will quickly discover and correct problems in medical products before they enter the U.S. marketplace. Today's guilty plea holds accountable those corporations who risk jeopardizing public health by not adhering to the high standards set by drug manufacturers."

Another threat to drug businesses lacking chain of custody systems include counterfeit medications, which have resulted in some deadly and sinister consequences. In 2006, the U.S. Attorney's Office indicted 18 people for a "multi-million-dollar international conspiracy to

custody process, Pfizer uses radio frequency identification (RFID) tags to identify and track its highly counterfeited products.

Amid these ongoing challenges, recent federal legislation is transforming all aspects of the pharma industry concerning track-and-trace solutions. The FDA's Drug Supply Chain Security Act (DSCSA), Title II of the Drug Quality and Security Act signed into law in late 2013, outlines imperative steps to building "an electronic, interoperable system to identify and trace certain specific drugs as they are distributed in the United States."

The multi-tiered act, which will be enacted in phases through 2023 (*see timeline, page 70*), requires all supply chain sectors—including manufacturers, repackagers, wholesale distributors, and

the need for better synchronization across global marketplaces is also rising steadily, Hooker adds.

Another DSCSA mandate, set to take effect in 2017, requires adherence to serialization measures, in which manufacturers must place unique product identifiers on drug packages to verify legitimacy. According to the law, wholesalers will not be able to accept products that are not serialized. "Serialization is on the horizon, and will come more quickly than businesses are prepared for," Hooker notes.

While serialization will start playing more of a role in unifying the line of communication across the supply chain, it's not the means to all ends.

"It has been frustrating to see all the attention—and budgets—being devoted



Many drug companies employ technology to help secure the chain of custody. For example, Cambridge Consultants' DropTag condition-monitoring system, comprising smart sensor event pucks, an app, and a secure server, allows companies to understand how goods have been treated at any given point in their journey.

smuggle untaxed cigarettes, counterfeit Viagra, and other goods to raise money for the Middle East terrorist group Hezbollah," according to a brochure published by Viagra maker Pfizer, which has fallen victim to multiple counterfeit products, including Lipitor, Celebrex, and Zoloft.

Pfizer's brochure also outlines the various ways that counterfeits can infiltrate business, and describes how drugs may move sideways from authorized distributors to middlemen or secondary wholesalers who sell drugs to one another, even within the United States. As part of its chain of

dispensers—to take part. While the act instills universal compliance, it also poses new challenges to businesses that will need to add improved, additional layers of management to their supply chains—inciting a race against time as the act rolls out.

"The DSCSA is topical, but it represents a need to fully secure the supply chain globally," says Robin Hooker, director of healthcare sector marketing at UPS. "We've seen the need for more supply chains to be global and to offer end-to-end solutions." As the population continues to expand due to a growing middle class,

to serialization, along with the dawning realization that without authentication, serialization is an inadequate fix for tracking products," explains Dr. Sharon Flank, CEO of InfraTrac, a Silver Spring, Md.-based company that provides light-based verification solutions to protect brands against counterfeiting.

"The first legal line of defense in the United States is serialization," Dr. Flank says. "The validation infrastructure is complex and expensive, but without it, the number codes have no data security and don't protect much."

“The need for authentication is growing as well,” she adds. “It puts fast, one-step checking into the hands of multiple stakeholders, including distributors, border agents, hospitals, and re-packagers.”

Prepping for Change

Managing a balanced chain of custody is integral to adhering to all elements of the DSCSA as other requirements take effect within the next decade. Key strategies—and potential missteps—can either help synchronize or disrupt the flow of all parties involved in the chain of custody process.

Good companies sometimes make bad decisions when attempting to expedite steps within the chain of custody. “Every business faces a time when it needs to run with a snap decision, but complex processes such as chain of custody do not fall into that realm,” contends Tom Wengrowski, executive vice president at TRIOSE, a Wyomissing, Pa.-based logistics management firm specializing in managed solutions for the healthcare industry.

From his experience working with healthcare companies, Wengrowski cites two detriments to the chain of custody process: poor planning horizon and resourcing. “For example, companies know that they will be required to report a piece of information by a certain date in two years,” he says. “But instead of developing a plan early, companies procrastinate due to a lack of resources.” The result: serious time compression.

Companies must also dedicate time to understanding the project’s definition and requirements. “Even great companies sometimes don’t take the time to apply the right resources to defining the requirements,” he explains. “Jumping into a solution is a common mistake.”

To avoid this type of error, Wengrowski recommends investing time to clearly understand the requirements or problem, analyze your own capabilities, and examine the technology and the people supporting it. This will help determine if your current process is sufficient or if it needs to change.

Businesses should also seek outside opinions on the solution. “Those who develop complex solutions are often too close to the challenges to be objective,” Wengrowski explains.

Visibility within the chain of custody is another prominent challenge. In fact, a recent study, *Top Ten Global Health Supply Chain Issues*, reveals that shipment visibility was measured as “important” and “critical” by 83 percent of survey respondents” (see sidebar, right).

“Past the central or national level, communication and shipment visibility deteriorate as products move farther down in-country supply chains,” according to the report, which also notes one alarming, albeit well-known fact: recipients at most supply chain stages—including health facilities and intermediate warehouses—have no information on when orders will arrive.

TOP 10 HEALTH SUPPLY CHAIN ISSUES

Recent research published in the academic journal *Operations Research for Health Care* titled *Top Ten Global Health Supply Chain Issues* provides insight into the leading challenges across the pharmaceutical supply chain. Through surveys and interviews with 22 industry stakeholders with roles in the global health and pharmaceutical supply chain – ranging from manufacturer to individual facility, the researchers identified key global health pharmaceutical delivery challenges ranked in order of most critical:

- 1 Lack of coordination
- 2 Inventory management
- 3 Absent demand information
- 4 Human resource dependency
- 5 Order management
- 6 Shortage avoidance
- 7 Expiration
- 8 Warehouse management
- 9 Temperature control
- 10 Shipment visibility

The authors, who restricted the survey to the delivery of pharmaceutical products in developing regions instead of the “broader overall delivery or health services and products throughout the globe,” conclude that they are hopeful that the findings “will drive future actions, policies, and research that can ultimately improve pharmaceutical delivery in developing regions and save lives.”



The FDA screens for counterfeit and sub-standard drugs with CD-3, a small, portable device that uses wavelengths of light to reveal differences between authentic and counterfeit drugs that look the same to the naked eye.

THE LAST WORD

ON CHAIN OF CUSTODY

Understanding the terminology around chain of custody issues is critical to compliance. This glossary explains some key terms and definitions.

Downstream: The directional order in which pharmaceutical product flows—and transactions occur—across the supply chain (from manufacturers to repackagers to wholesaler distributors to dispensers).

Homogeneous case: A sealed case containing only product that has a single National Drug Code number belonging to a single lot.

Interoperable electronic system: System to capture and exchange transaction data for each sale.

National Drug Code: A unique 10-digit, three-segment numeric identifier assigned to each medication prepared for commercial distribution in the United States. The three segments of the NDC identify the labeler, the product, and the commercial package size.

Product identifier: A standardized graphic that includes the standardized numerical identifier, lot number, and expiration date of the product.

Standardized numerical identifier: A set of numbers or characters used to uniquely identify a package or homogeneous case of product; includes a National Drug Code combined with a unique alphanumeric serial number of up to 20 characters.

Transaction history: A statement in paper or electronic form that includes the transaction information for each transaction going back to the point of origin by the manufacturer of the product.

Transaction information: All of the information associated with a transaction including: the name or names of the product, the strength and dosage form of the product, the container size, the number of containers, the lot number, the date of the transaction, the date of the shipment, the business name and address from which ownership is being transferred, and the business name and address to which ownership is being transferred.

Transaction statement: A statement, in paper or electronic form, confirming that the trading partner who is transferring ownership is authorized as required by law, received the product from an authorized person or entity as required by law, received transaction information and a transaction statement from the prior owner of the product, did not knowingly ship a suspect or illegitimate product, did not knowingly provide false transaction information, and did not knowingly alter the transaction history.

Trading partner: A manufacturer, repackager, wholesale distributor, or dispenser from whom a manufacturer, repackager, wholesale distributor, or dispenser accepts ownership of a product.

Upstream: The opposite directional order in which pharmaceutical product flows—and transactions occur—across the supply chain (from dispensers to wholesaler distributors to repackagers to manufacturers).

SOURCE: The PEW Charitable Trusts

“Everybody can get visibility to shipments, but unfortunately, in the pharmaceutical world, visibility might also mean that your product could be destroyed,” says Phil Abbate, global vice president, pharmaceutical and healthcare, for global 3PL UTi Worldwide.

Abbate adds that he constantly conveys to his operational staff that visibility alone is no longer adequate. “What we need is visibility with interventional processes,” he notes.

“We don’t think of visibility as track and trace, but rather as having visibility into every business object,” says Diane Palmquist, vice president of manufacturing industry solutions at GT Nexus, an Oakland, Calif.-based company that offers a cloud-based platform for supply chain management. Companies need to assess costs, service levels, service commitments, and other factors related to the business object, whether that means an order, a shipment, or an invoice, she says.

“To have good visibility, and especially to detect counterfeit drugs in the chain of custody, gathering data from all parties is essential,” Palmquist says. “Then you have to integrate and analyze that data, which provides predictive analytics for future use.

“If you see that a product is not traveling on its specified route, you have to be able to take action,” she says.

To Air is Human

Visibility also presents a challenge because pharma shipments are subject to extensive network handlers across the globe, leaving room for multiple mistakes. The issue is especially prominent in temperature-controlled pharmaceutical supply airfreight processes, where most temperature exceptions occur.

“Shipping pharmaceuticals via air is complicated because some nationalized airport operators have a closed system that limits visibility to what is happening to a package,” explains John Edgecombe, software group leader at Boston-based Cambridge Consultants, a product design and development firm that provides cold-chain solutions for the healthcare industry. He adds that the process inevitably involves handovers—where drugs come out of a well-controlled plane environment, then sit on the tarmac, only to be placed into

a well-controlled environment for the rest of their journey—and is where end-to-end monitoring comes into its own.

“Monitoring a drug shipment’s journey is of increasing importance as the industry gradually moves to optimized shipping lanes—where substantial cost savings can be achieved while maintaining good temperature performance,” Edgecombe explains. “But that’s only if enough is known about the individual lanes across an annual cycle.”

Strengthening the Chain

Edgecombe also notes that the current chain of custody system—specifically relevant to a shipment’s last mile—is often subject to a lack of responsibility, authority, and accountability.

“One way to strengthen the chain of custody process is for the organization that ultimately carries the liability to deploy a solid track-and-trace system by using one core identifier that carries through from manufacture to dispense or point of care,” he says. The identifier can be associated with GS1 and logistics track-and-trace numbers to tie to existing expiry date and batch code systems with minimal system modification.

Cambridge Consultants has added some space on its logging devices for custom identifiers to be stored locally, paired with the device serial number, and reported back to data collection systems. This helps tie up the records for improved compliance with chain of custody processes, Edgecombe explains.

On the parcel level (which includes moving through a small package network, before packaging occurs) a network profile analysis is one essential element that needs to be set in place, says Hooker.

“UPS has invested heavily in sending data loggers through tracking packages during some of the hottest and coldest periods throughout the year,” he says. “We do this on a global basis to understand the environment that our parcels are moving through.”

“Cold chain or temperature-sensitive packaging moving through the UPS network carries a certified label that allows some firms that may not have in-house testing capabilities to plug into UPS’ network analysis and validation of some

manufacturers’ packaging. That’s critical,” he adds.

UPS met with some large firms that were accessing big data repositories based on broad ambient temperatures drawn from weather reports. But those temperatures are markedly different from the actual temperature in the small parcel environment, Hooker explains.

The good news for industry is technology cost efficiency, driven by sweeping changes across the consumer industry. “In particular, the cost for MEMS technologies such as accelerometers—as well as the silicon area required for temperature, relative humidity monitoring, digital signature technology, and short

range wireless communications such as Bluetooth Low Energy—have all been coming down, enabling a new generation of sensors that are good at a few key functions, but can benefit from the scale of being used in billions of consumer devices, Edgecombe explains.

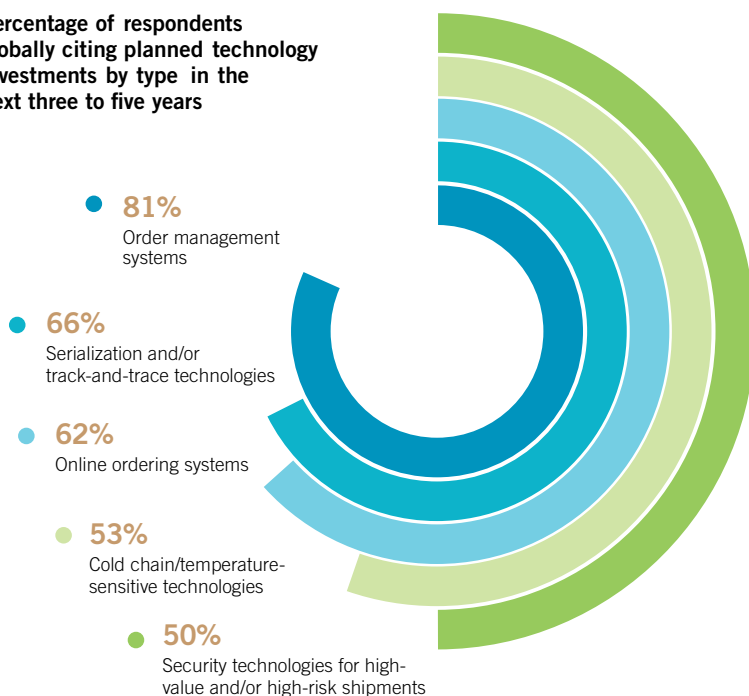
Experts say that infrastructure costs are dropping as certain devices (think smartphones) are increasingly used for data capture.

“As computing power increases—even low-cost processors sold in high volume—new solutions become available that use algorithms to process raw sensor data into information and context before sending data wirelessly,” says Edgecombe. “This

THE HEALTHCARE SUPPLY CHAIN: ARE YOU CONNECTED?

Investing in technology may be a winning strategy in healthcare, according to UPS’s annual *Pain in the (Supply) Chain Survey*. When survey respondents were asked about specific planned technology investments, two common themes emerged: Front-end technology investments, reflecting the need for manufacturers to pay attention to technology’s role at the front end of their operations; and product protection investments, illustrating a focus on ensuring product integrity and addressing product security concerns.

Percentage of respondents globally citing planned technology investments by type in the next three to five years



DSCSA TIMELINE

FOR MANUFACTURERS

Pharmaceutical manufacturers, the first step in the distribution supply chain, develop and produce prescription drugs for consumers and patients. They ship finished medicines to repackagers, wholesale distributors, and directly to dispensers.

Source: The PEW Charitable Trusts, April 2014

JANUARY 1, 2015

- Trade with authorized trading partners
- Provide transaction information to trading partners
- Quarantine and investigate suspect products
- Identify and remove illegitimate products, and notify FDA and trading partners

NOVEMBER 27, 2023

- Participate in electronic package-level traceability system

NOVEMBER 27, 2017

- Serialize with unique product identifier
- Provide transaction information to trading partners in electronic format
- Respond to verification requests from trading partners
- Verify unique product identifier of suspect products at package level
- Verify the unique product identifier of returned products intended for resale

enables a new generation of battery powered Internet of Things devices to provide increased visibility and quality.”

Edgecombe also recommends horizon scanning for new technologies in order to ensure tangible benefits can be quickly deployed across the organization.

With more opportunities for technology that bridges the communication line to take center stage Abbate warns companies to proceed with caution. “A company can implement all the technology in the world, but without process controls, they might as well throw it away.” His company works with a developing risk-averse tool for cold chain pharmaceuticals, an operational tool (at the desk level) that would put in the risk factors on any one given move.

UTi is currently working on the development of active temperature management. “As technology develops, active temperature management systems are something that we’ve been looking at for two years,” he says.

Aside from visibility and technological strategy, other deep issues can be reversed with better management. One such

common error is not allowing enough time for due diligence.

Companies must take the time to vet new solutions and partners. “Many large companies rely on a strict RFP process to vet providers, but a poorly constructed RFP will lead to a poor outcome,” says Wengrowski. “I can’t tell you how many times I’ve received an RFP from a company that says it needs a response in two weeks, will make a decision in 30 days, and wants to be up and running in 60 days. This timeframe is unrealistic; complex processes can take 90 to 120 days to implement alone.”

Digging Deeper

He also says companies can do more homework when they get background information from prospective technology partners. “Getting a list of current clients is great, but truly understanding what those clients get from that partner, and how big they are, is more important.”

Jeff Liter, senior principal in West Monroe Partners’ merger and acquisitions group, has more than 35 years of

experience in operations, integration and restructuring, strategy, and profit and loss management. He offers a different perspective on the chain of custody supply chain: “Much like real estate lives by the credo location, location, location; the first step in chain of custody best practices is document, document, document,” he says.

Liter also advises companies to build a strong external and internal audit program to monitor compliance, and to develop a traceability matrix for all key raw materials and ensure that it is always up to date.

Final steps include selecting the right individuals to manage chain of custody issues. “Put complete and detailed CAPA procedures in place, where trained and competent people are charged with getting to the root cause analysis of any deviations or nonconformance,” he says.

“Finally, education and training are key to ensuring people have a deep understanding of why the extra precautions are in place,” Liter adds. “Reinforcement in a manner that invokes effective learning is a must.” ■



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COLLABORATIVE DISTRIBUTION

An illustration of three business professionals—two women and one man—riding a tandem bicycle. They are dressed in business attire (suits and dresses). The bicycle is a long, single-frame tandem with multiple seats and handlebars. The background is a solid olive green, and the title 'COLLABORATIVE DISTRIBUTION' is written in large, bold, yellow capital letters, with 'COLLABORATIVE' on the top line and 'DISTRIBUTION' on the bottom line.

To break the cycle of needless, duplicative logistics costs, many competitors are choosing to work in tandem.

by Lisa Terry

A small but growing number of shippers now view the infrastructure required to move product from manufacture to retail as an opportunity to collaborate, rather than compete. That opportunity lies in cutting expenses that are needlessly duplicated across shippers: transportation planning, warehousing, exception management, accessorials, less-than-truck-load shipments, underused capacity, and other supply chain costs.



Collaborative distribution has long been the no-brainer idea that no one acts on, with obstacles mostly related to entrenched investments, cultures, and hidden agendas. While the group of early adopters is small, the tide is beginning to turn. Promising case studies and compelling research prompted some market leaders to open their minds to new ways of moving product, satisfying customers, and boosting the bottom line through both savings and increased sales.

“Over the past 10 years, interest in collaboration has picked up, but it has consisted of forecasting between manufacturer and retailer, or a few manufacturers pooling resources together. Supply chain was not involved,” says Brenda Hambleton, chief marketing and strategy officer for York, Pa.-based ES3, which specializes in working with consumer products goods (CPG) manufacturers. “Today, collaboration is more in vogue, and encounters less resistance.”

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More frequent collaborative distribution can reduce U.S. transportation carbon footprints by up to 25 percent, according to The Environmental Defense Fund (EDF). “We see strong value in the concept of collaboration,” notes Jason Mathers, senior manager, corporate partners program for EDF. “It can increase the productivity of every move, while using less fuel.”

Some compare collaborative distribution to consolidating freight containers for steamship moves: bringing multiple shippers together into one container and one move to maximize efficiency.

There’s Green, Then There’s Green

While carbon reduction is a big benefit of collaborative distribution, for most adopters the bigger drivers are cost savings and customer satisfaction. Collaborative distribution creates substantial opportunity to operate more efficiently—the U.S. Department of Transportation estimates that 15 to 25 percent of all the miles trucks travel in the United States are empty miles, and trailers are 36 percent underutilized for non-empty miles.

Collaborative distribution helps maximize asset utilization, reduce transportation costs, and keep customers happy. In retail, for example, it can help meet tight delivery deadlines and support smaller, more frequent deliveries. Some forms of collaborative distribution enable low-volume goods to move more quickly because they are consolidated with fast movers, reducing out-of-stocks, and benefiting retailer, supplier, and customer.

Another driver for collaborative distribution is resource constraints resulting from driver shortages. “Over the next 10 years, driver shortages and poor infrastructure will make it harder to move product, but demand will increase,” Mathers notes.

Who’s Collaborating?

Early adopters have forged new ground in making collaborative distribution work, although shippers often play these arrangements close to the vest. Among the more well-known collaborations:

- Beverage maker Ocean Spray used to ship product more than 1,000 miles from its Bordentown, N.J., distribution

center (DC) to another DC in Lakeland, Fla. Meanwhile, competitor Tropicana was sending refrigerated rail boxcars via the nearby CSX terminal to New Jersey. Wheels Clipper, a third-party logistics (3PL) provider in Woodridge, Ill., saw the synergies, and proposed an intermodal lane from New Jersey to Florida using Tropicana’s empty orange juice boxcars for Ocean Spray’s southbound shipments.

- Frisco, Texas-based 3PL Transplace matched up two disparate customers with opposite problems but similar routes across the U.S.-Mexico border. Ceramic tile and natural stone provider Dal-Tile’s heavy loads would weigh out, while appliance maker Whirlpool’s trucks cubed out. Each company used only 20 percent of capacity. Dal-Tile and its co-load partners—which now also include Convermex, a maker of plastic cups, plates, and utensils, and Werner Ladder with its aluminum and fiberglass ladders—have seen a consistent 20- to 30-percent net reduction in process and resource costs.

- Competing confectioners The Hershey Co. and The Ferrero Group share



Although they compete on store shelves, Ocean Spray and Tropicana have entered a collaborative distribution agreement on product shipping that cuts their respective costs and carbon footprints.

joint warehousing, transportation, and distribution facilities, creating one North American supply chain. The goal is to improve supply chain efficiency, enhance competitiveness, and reduce carbon dioxide emissions and energy consumption, with fewer vehicles needed to move products to customers.

■ Tupperware and Procter & Gamble's (P&G) European operations both manufacture in Belgium and were shipping significant volume to Greece—Tupperware via trailers and P&G via intermodal. Tupperware was cubing out, while P&G would weigh out, according to a presentation by Europe's Collaborative Concepts for Co-Modality Project. By consolidating shipments via intermodal, the two companies improved container and weight fill from 55 percent to 85 percent, saved 150,000 truck kilometers, and realized a 17-percent savings in total lane costs.

As these examples demonstrate, partners in a collaborative distribution project are sometimes in different industries, but more likely occupy different product spaces and share customers. CPG or auto parts suppliers make good collaboration partners because they are more likely to share consignees.

Sometimes, different divisions of the same parent company come together to collaborate. In a few cases, collaborating partners are direct competitors. Early adopters include consumer goods, automotive, and electronics companies.

Similarity fosters the most likely synergies. "If companies try to collaborate across industries, they can face business continuity difficulty, and different equipment needs," says Dave Belter, vice president and general manager of transportation management for Ryder, a 3PL based in Miami.

3PLs Take the Lead

One early proponent of collaborative distribution is Kane is Able. The Scranton, Pa.-based 3PL first got involved 14 years ago, working with a group of competing confectioners shipping to wholesaler McLane Company. "Even though they were in the candy business together, they realized they couldn't steal anything that they don't already have. They both shared

the same customers," recalls Dave Ward, load planner and consolidation manager at Kane is Able.

One benefit was to eliminate the need for mixing centers, where manufacturers brought together multiple product lines to consolidate into retailer shipments.

Since then, the 3PL has built its collaborative distribution practice around moving dry goods to mass merchants and grocery stores. Customers include Sun-Maid Growers, which saw its cost per hundredweight decrease by 62 percent for consolidated vs. non-consolidated freight. Collectively, shippers participating in Kane's collaborative distribution program report shipping costs dropping by 35 percent year over year, with as much as a 70-percent drop in some lanes.

"The program is basically a cooperative," notes Alex Stark, director of marketing at Kane is Able. "We pull freight together from different shippers to fill an entire truck, with each shipper paying for what it uses. It's a fluid operation. We set ourselves up as the matchmaker. We're the

eHarmony of matching shippers to retailers." Consolidation strategies include merge in transit and cross-docking.

To stimulate more interest, Kane is working with retailers to urge their suppliers to adopt collaborative distribution. Instead of receiving many small shipments from lower-volume manufacturers, collaboration enables retailers to receive those goods more efficiently, without having to change their processes.

Matchmaker, Matchmaker

It is not only 3PLs that are seeking to match up shippers for collaborative distribution opportunities. Industry organizations and conferences also have given rise to some relationships. The key is to have a means to compare supply chain networks to look for synergies, which 3PLs can do with the data they collect from multiple shippers. 3PLs typically become the broker, securing services on the shipper's behalf, rather than direct shipper-carrier contracts.

Transplace offers a TransMATCH co-shipping program, which enables shippers

DEFINING A FAIR SHARE

The Environmental Defense Fund defines collaborative distribution as "the sharing of distribution resources between two or more shippers to send their goods within a common logistics network." This sharing can take different forms, including:

Backhaul: Matching up companies with opposite routes, eliminating the empty capacity of a truck returning from its delivery destination.

Co-loading: Combining less-than-truckload freight from multiple shippers to create full truckloads, or even intermodal containers. Participants gain the financial benefits of mode shifting, and optimize the use of their assets.

Continuous move routing: Consolidating collective truckload shipments to create ongoing movement of freight that reduces one-way movements, empty miles, and high-cost minimum charges. Multi-stop trips replace separate shipments, reducing costs as shippers maximize their assets.

Physical Internet: The Physical Internet (PI) is a concept pioneered by Dr. Benoit Montreuil of Georgia Tech, based on an interconnected logistics system in which goods are handled, stored, and transported across a shared network. Routing standard, modular, and reusable containers through an open and global intermodal logistics system that uses real-time identification, collaborative protocols, and shared facilities for increased efficiency and sustainability enables the network's operation.

to consolidate freight through collaboration with multiple shipper companies, and increase delivery frequency to targeted customers without increasing costs. About 10 shippers—including Dal-Tile and Whirlpool—are currently participating in the program's U.S.-Mexico border-crossing arm, moving about 7,000 collaborative loads annually.

Ryder matches shippers with backhaul opportunities among its dedicated contract carriage customers. "We identify customers who can collaborate with complementing flows," says Belter. "Tighter truckload capacity creates an opportunity to leverage the networks where shippers can share their relationships with carriers, and keep trucks loaded in both directions," deliver-

handles 25 percent of northeast grocery volume through a massive, highly automated facility in York, Pa., with another facility soon to come online in the south. ES3 is also looking to add temperature-controlled goods to the D2S service.

"Most manufacturers and retailers are trying to set a different bar for speed and fill rate—on-shelf availability," says ES3's Hambleton. But because most grocery manufacturers use bracket pricing based on truckload order quantities, as many as one of every 12 or 13 products in a grocery store is intentionally out of stock, while the manufacturer waits to have enough volume to justify that fulfillment, she explains. The D2S model replaces that approach.

"The real way to get there is through

Fluctuating fuel prices are part of the reason. When oil prices are up, shippers are more open to new ideas for squeezing out costs. But one big barrier is the current, substantial investment many have made in infrastructure, although facilities can sometimes be repurposed for collaborative activities.

Another significant factor in resistance to collaboration is the entrenched culture, which encompasses everything from plain old fear of change to job protectionism and hidden agendas.

Collaboration does represent a small loss of control, and some shippers fear hiccups in their shipments could damage retailer relationships and lead to losing shelf space. Transparency can go a long way toward assuaging manufacturers' fears by providing visibility to goods at all times, and informing partners whenever exceptional events occur.

A related fear is the need to share sensitive shipment data. The *Third-Party Logistics Study* finds shippers are reticent to share the relevant information needed to collaborate effectively.

"Shippers still have concerns about data sharing," says Dr. Kimberly Ellis, associate professor at Virginia Tech and site director for the school's Center for Excellence in Logistics and Distribution.

Even though 3PLs have compelling reasons to respect the sanctity of customer data, ceding full control creates a certain amount of risk. "Shippers with tighter margins are more risk-averse," says Stark. "There is no margin for error."

Collaboration processes themselves are still evolving as well. In addition to the challenge of finding compatible shippers, the technology and automation must be in place to ensure visibility and efficiency. "The lack of automation is a big barrier because it makes processes too labor-intensive," says Mathers.

Many shippers overcome their initial fears once collaboration programs are underway and the benefits surface. "The benefits are so good that shippers never let go," says Ben Enriquez, country director for Transplace and Celtic in Mexico.

Though the number of collaborative distribution relationships is relatively

"We set ourselves up as the matchmaker, pulling freight together from different shippers to fill an entire truck. We're the eHarmony of matching shippers to retailers."

— Alex Stark, Director of Marketing, Kane is Able

ing savings. A 3PL brings technical and engineering capabilities, as well as subject matter expertise, to guide potential partners through the discovery process, initial pilots, and on to execution.

Ryder has also helped original equipment manufacturers create collaborative inbound and dealer-direct shipment services for automotive parts that can be particularly helpful for smaller shippers, explains Darcee Scavone, Ryder's vice president of automotive.

Founded on the concept of collaboration for the consumer products industry, ES3 now uses two different models for more than 60 manufacturers. One model ships to retail DCs, while the Direct to Store (D2S) model eliminates a distribution center and leg of transportation. D2S currently serves two chains—Giant of Carlisle and Giant of Landover—and plans to add two more retailers. The D2S model

smaller, more frequent orders, but that's hard for single manufacturers to accomplish," Hambleton adds. The D2S model enables goods to flow at a less-than-24-hour speed, which improves service levels to stores by at least four percent, driving about a one-percent improvement in revenue and on-shelf availability.

Obstacles to Collaboration

On its surface, the concept of collaborative distribution is compelling—even sexy. But shippers have not been totally captivated.

For several years, Penn State's annual *Third-Party Logistics Study* has tracked the fluctuating level of shipper interest in collaboration. In the 2015 study, 39 percent of respondents report collaborating with other companies to achieve logistics cost and service improvements, a drop from the 48 percent reported one year earlier.



From its Transportation Management Center, third-party logistics provider Ryder works to create collaborative distribution and transportation opportunities for its shipper customers.

small, the positive shipper experiences have helped 3PLs forge some best practices for making these arrangements work. “We’ve learned what shippers will support, and built a list of do’s and don’ts,” says Enriquez. “We’ve also learned to mitigate risks throughout the process.”

What to Expect

Collaboration projects developed by a 3PL typically go like this:

1. Once the 3PL makes a potential match between two shippers, projects start with a cost model to determine feasibility and potential benefits.

In some cases, the 3PL acts as the middleman, and no shipper-to-shipper contact is required. But for others, after a potential synergy is identified, the parties have to meet. Participants need to understand what the other parties are looking to accomplish, and align on goals. These terms and conditions should address details such as payment terms, and dealing with specific situations such as overshipping. Strong exception management and risk mitigation capabilities are a must.

It is important for shippers to approach the project with full commitment. “They have to be prepared to have a collaborative—not a procurement—mindset, and be willing to share the appropriate information within parameters,” says Enriquez. Collaboration must be a top priority for all partners because of the time commitment

required to arrive at a win-win arrangement and manage the associated changes.

2. The parties create a documented set of rules and commitments, such as identifying the minimum volume and lanes that are part of the program. These rules include how the relationship will be managed, and how partners will communicate. 3PLs may cover some of these functions.

To ensure the expected level of savings, for example, ES3 manufacturers agree to a flat assessorial per truck and to build to a set load size, while retailers agree to accept any product they carry, even if it’s mis-shipped.

3. The companies develop a pilot collaboration program, based on shared definitions of success.

4. The program is implemented and managed.

Beyond Collaboration

Even before collaborative distribution gains more traction, some are looking ahead to its next phase.

Researchers from Virginia Tech’s Center for Excellence in Logistics and Distribution, for example, are pioneering the idea that manufacturers and retailers may have the opportunity to leverage such an interconnected network for product movement in the future. Just as no one cares what servers their email touches on its journey from sender to receiver, Virginia Tech’s Physical Internet concept applies

the same approach to physical goods.

“We envision it as an open, global logistics system with many analogies to the digital Internet,” says Dr. Ellis.

The National Science Foundation and a group of transportation, retail, manufacturing, and technology companies commissioned Dr. Ellis and her colleagues Dr. Russell Meller and Bill Loftis to explore the potential benefits of such an approach. The results were overwhelmingly positive. For the data sets analyzed:

- The cost per load decreased 29 percent.

- Capacity utilization of trucks rose 34 percent.

- Because they drove shorter distances in a relay-type model, drivers could be home every two to four days at the same cost as today, reducing turnover.

The team sought out the pinch points in such a system, but didn’t find any. Every party—transportation providers, shippers, and retailers—benefitted. Phase II of the project has a second group of researchers focusing on the operational aspects: How “Dynamic Horizontal Collaboration” would work, what obstacles arise, and how incentives or other mechanisms could drive adoption.

While research continues, collaborative distribution advocates continue to evangelize the concept. Says Mathers: “Collaborative distribution will move forward because it makes economic sense.” ■



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FREIGHT TRANSPORT IN ALASKA:

THE HAUL OF THE WILD

Because of Alaska's remote location and precarious weather, transport providers carrying freight on land, sea, and air have developed special expertise to buck the challenges.

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Alaska distinguishes itself from the lower 48 states by its abundance of natural resources—crude oil, natural gas, and seafood—as well as breathtaking mountain ranges and vast acres of unspoiled land.

It also presents logistics challenges: a small but widely dispersed population, many in locales reachable only by water or air; highly rugged terrain in much of the state; extreme weather; and limited rail and road infrastructure.

Only 31 percent of Alaska's roads are paved. Central Alaska is where the roads are, but they don't reach southeast Alaska—which typically requires barge transport—or rural Alaska, where barge can reach the outskirts, but air is required everywhere else.

No matter what the mode of transport, the drivers of the industry are much the same: the oil and gas sector, the seafood industry, movement of military families in and out of the state, and providing basic supplies to a state with many far-flung, hard-to-access towns.

Alaska's logistics providers must be prepared to handle shipments differently than other U.S. providers. In Alaska, cargo such as building supplies, produce, and food products that would be trucked in other locations often requires air or barge transport—which, because of the weather, is an option only part of the year in some areas.

In addition, logistics in Alaska requires extra equipment, which must often be specialized for rugged conditions or specific needs, such as hauling oil-drilling equipment. For example, Lynden operates flatbeds and stretch decks, and moves modules for oil rigs, pipes, and raw materials such as mud.

Seafood Specials

Among the questions Alaska service providers are currently asking is, "Just how big will this year's seafood production be?" The answer depends on who is talking, but estimates generally call for 2015's salmon season to approach or exceed record levels. If that happens, it will be welcome news to

the array of companies that provide logistics services to Alaska. Seafood, which often comes from remote locations in the state, is the second-largest source of cargo behind the oil and gas sector.

Cargo leaving the state is primarily seafood—salmon, halibut, cod, and crab bound for the lower 48. In mid-May 2014, Alaska Air Cargo delivered the season's first Copper River salmon. In 2013, the carrier delivered nearly 25 million pounds of fresh seafood.

"Seafood is seasonal and cyclical," notes Betsy Bacon, managing director for Alaska Air Cargo. "We enjoyed one of our biggest years for seafood shipments in 2013; while in 2014, volume decreased and we had an average year. We expect another normal year in 2015."



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“A big part of Alaska Marine Lines’ overall business is shipping fish southbound, which includes canned salmon, and refrigerated and frozen fish from all parts of Alaska. This is mostly in the summer and our southbound barges are full,” says Kevin Anderson, Alaska Marine Lines’ president. “I am optimistic that 2015 will be a good year, especially with the predictions for southbound salmon out of Alaska. That’s a huge part of our business.”

Scheduling the proper amount of airlift can be crucial, especially for perishable seafood shipments.

“Lynden International is Alaska’s biggest perishables handler for moving fresh seafood from the state to locations around the world. We have to ensure we have enough airlift to handle that volume of cargo,” says Rick Pollock, vice president of Lynden International’s Alaska group.

“A lack of good lift options to the consuming markets will have a significant impact on product quality. We have to work diligently with the airlines to ensure when we bring the cargo to them it moves immediately,” he adds.

Pumping Up Oil & Gas

Logistics providers are wondering if the decline of oil prices over the past several months will have a long-lasting effect on the volume of oil-related cargo moving into Alaska. Moving equipment and supplies to the oil and gas companies working in the state’s remote oil fields, such as those near Prudhoe Bay on the north coast, has been a steady source of business for the past few decades. Until the price drop started, the sector was looking good, with the passage of the More Alaska Production Act, which cut oil taxes following a long political battle.

The drop in oil prices, however, has brought at least some temporary uncertainty about the industry’s growth. Logistics providers are of the opinion that if oil remains around \$50 per barrel, there will still be significant production activity.

“Moving forward, the big question mark is what kind of impact oil prices will have on overall business,” adds Bill Crawford, vice president of sales and marketing for Totem Ocean. “Oil prices affect the state because it is primarily funded from oil tax revenues.”

TED STEVENS AIRPORT: DO THE MATH

At Ted Stevens Anchorage International Airport (ANC) in Alaska, the truism “location, location, location” is the cornerstone of its ongoing success in the global marketplace. The airport’s unique geographic location is a competitive advantage. With three runways (10,600+ feet/3,200+ meters), special ramp facilities and procedures, and federal government tariff exemptions, ANC has made a name for itself as a critical refueling stop for cargo carriers flying between Asia and North America.

The bulk of ANC’s traffic is generated by pure geography. Nestled on the south-central coast of Alaska, Anchorage is roughly equidistant from Tokyo and New York City. That puts ANC within a 9.5-hour flight from 90 percent of the industrialized world. Roughly 80 percent of all air cargo traffic between Asia and North America passes through ANC.

With more than 500 wide-body cargo plane landings per week, mostly 747s, Anchorage International is the fifth-largest airport in the world in terms of cargo throughput and the second largest airport in North America in terms of landed cargo weight.

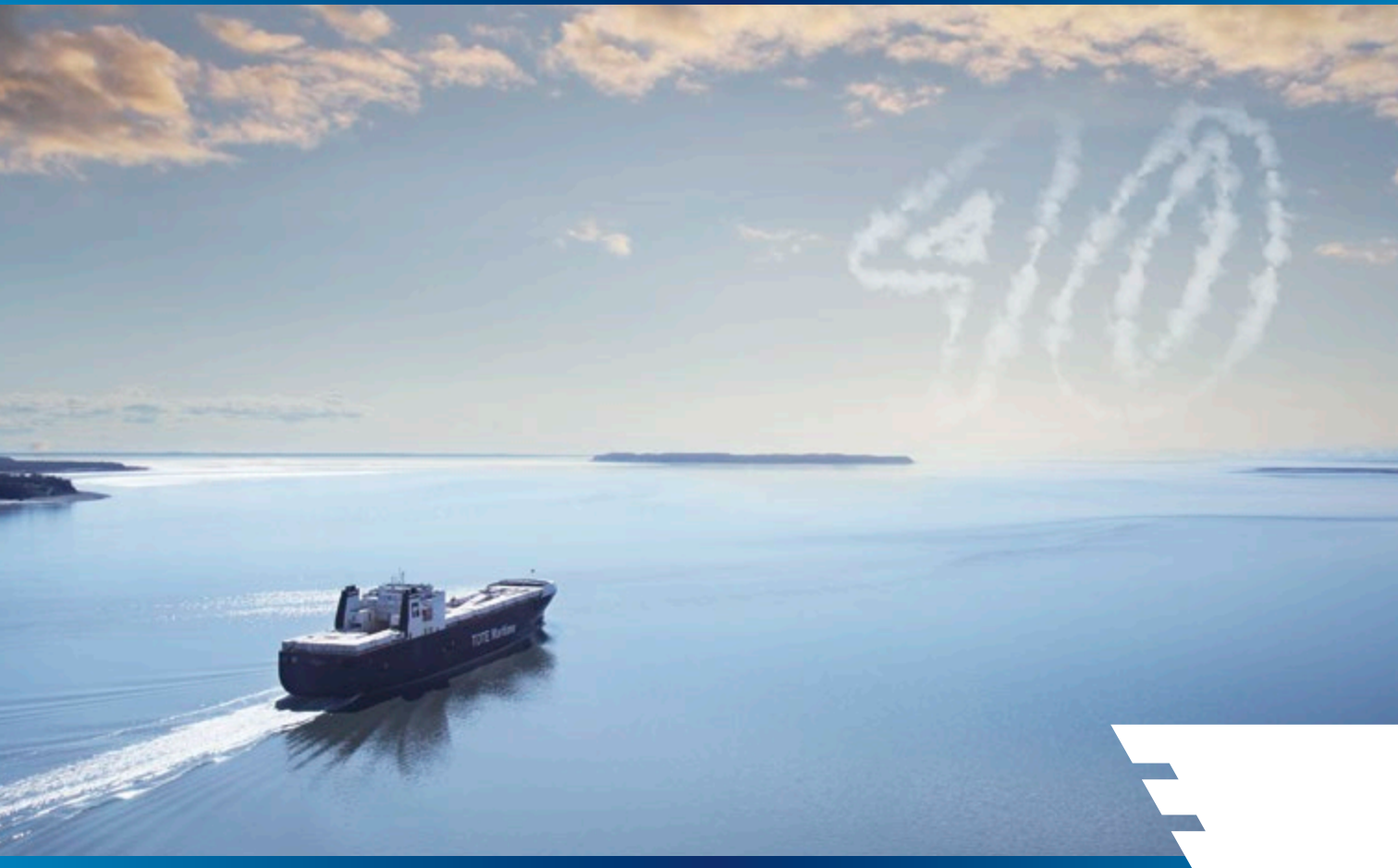
It’s all about the math—another significant advantage Anchorage has over other locations. Most international cargo carriers have two choices: carry more fuel and less cargo, which increases range but reduces per flight revenue; or carry more cargo and less fuel, which reduces flying range but boosts revenue. A stop at ANC gives carriers the best of all worlds. Carriers can shoulder an extra 100,000 pounds of cargo just by making a fuel stop in Anchorage. Conservative estimates indicate that carriers have the ability to increase revenue by more than \$150 million. And after doing the math, expenses incurred during stops amount to less than 10 percent of the additional revenue carriers can earn. That is the main reason why almost every carrier that serves trade routes between Asia and North America stops in Anchorage. It’s a sound business model.

Unconventional operation is the convention, and all similarities to traditional airports end at the runway. Unlike other cargo hubs that handle similar annual tonnage, ANC has no vast complexes of cargo warehouses and support facilities, railroad lines, or even special roads for transport trucks. They simply aren’t necessary. Most of the day-to-day business is conducted on the ramps. The airport maintains 14 parking spots for wide-body aircraft, with third-party developers providing even more capability. The ramp’s central location makes it easy for cargo planes to clear a landing runway, taxi to the parking spots, receive service from ground handlers, and then depart. Cargo planes can go from central parking spots to a departure runway in less than two minutes. And fueling is faster. ANC relies on an underground hydrant system. Fuel stations can pump fuel from both sides of an aircraft at the same time. Operations are completely fluid, efficiency maximized.

On top of all that—ANC offers federal tariff exemptions unique to Alaska. In an effort to stimulate economic growth and make national cargo shipping more efficient and economical, the U.S. Department of Transportation granted the airport a partial exemption from the Jones Act in the late 1990s.

Like most airports, ANC is an economic driver of the area’s economy; so its continued growth and viability are important. Currently, the airport directly employs 380 people; and one out of every 10 jobs in Anchorage (over 15,000) is dependent on ANC.

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2 Later this year, Totem Ocean will begin converting the first of two Orca Class vessels to run on liquefied natural gas.



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The Alaska LNG Project, a proposed \$45- to \$65-billion liquefied natural gas export project, would provide access to natural gas for Alaskans and would likely generate additional airfreight business in Alaska. The project is anchored by the Prudhoe Bay and Point Thomson fields, which are expected to average about 3.5 billion cubic feet of gas per day.

Up In The Air

The shortest flight path between the United States and Asia stretches over Alaska, and Asia-bound steamships typically pass near Alaska's Aleutian Islands. Airfreight shipments from Anchorage can reach 90 percent of the industrialized world within 9.5 hours.

Ted Stevens Anchorage International Airport is one of the world's leading cargo airports (*see sidebar, page 82*). In 2014, nearly 2.5 million metric tons of cargo moved through the airport, which ranked fifth in metric tons of cargo loaded and unloaded, and reported a growth rate of three percent, according to Airports Council International.

Alaska Air Cargo, a division of Alaska Airlines, is the primary airfreight service in the state. The Seattle-based carrier serves Alaska through two combi-carriers, one freighter, and the bellies of its passenger aircraft. Cargo business in Alaska has remained steady in recent years, but there has not been a huge amount of growth, according to Bacon.

The oil and gas industry is a big driver of air cargo into the state, along with perishables and other basic commodities bound for remote areas. To better serve Alaska's cargo needs, Alaska Air Cargo is converting three of its 737-700 passenger planes to full freighters by late 2016. The freighters will replace some aging 737-400 combis. "The new aircraft will help us better manage cargo by being able to dictate schedules based on cargo needs rather than passenger needs," Bacon says.

Lynden Air Cargo primarily serves Alaska and the Pacific Northwest, transporting goods through scheduled weekly service, and oversized cargo worldwide through charter flights. Its fleet of L-100 Hercules aircraft can haul oversized loads to and from remote areas, can land on rural airstrips, and has the flexibility to carry



GETTING SOME AIR TIME

To get the latest information about Ted Stevens Anchorage International Airport, *Inbound Logistics* spent a few minutes with Airport Manager John Parrott.

IL: Some shippers might have the impression that Alaska is "way out on the edge" geographically, so they don't consider it a shipment or trans-shipment point. Is that impression accurate?

JP: All you have to do is look at a globe to see how strategic Alaska's location is. We are within 9.5 hours of 90 percent of the industrialized world. In the past, aircraft landed here because they didn't have the range to fly all the way across the Pacific Ocean. Now they land here so they can carry more revenue cargo, and operate more efficiently.

IL: When shippers think about airports that move high volumes of cargo tonnage, they might think about Memphis or Atlanta. Where does Ted Stevens fit in that mix?

JP: Due to our strategic location and efficient operations, we are the second-busiest cargo airport in North America behind Memphis.

IL: Does Ted Stevens Airport have any special facilities that would interest shippers in the seafood business?

JP: We have seafood specialists such as CFI on the airport who are quite able to provide product as desired.

IL: Many projects in Alaska and surrounding regions require heavy lift and specialized cargo. What facilities/services does Ted Stevens provide to address those needs?

JP: The airport is Design Group VI (think A-380 or 747-8) compatible. We have handled the Antonov 225. Basically, if you can get it airborne, you can operate it at ANC.

IL: Any expansion plans?

JP: Due to the upgauging of cargo (and passenger) aircraft, our operations numbers are actually down a bit from the mid-2000s. That means we are already positioned to accommodate some growth before we need to think about expansion on the cargo side.

IL: Final thoughts?

JP: As the four-time winner of the Air Cargo Excellence award, we are proud of the way the entire airport community pulls together to provide an incredibly efficient place to operate. The unique cargo transfer provisions that are available at ANC (and Fairbanks Airport) offer even more reasons to look to Alaska as a location to optimize global supply chains.

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The Alaska International Airport System (AIAS) is comprised of Ted Stevens International Airport (ANC) and Fairbanks International Airport (FAI).

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ALASKA'S FULL SERVICE RAILROAD

Established in 1914, the Alaska Railroad was operated by the federal government until it was purchased by the state of Alaska in 1985. Chartered to operate as a private enterprise, the Alaska Railroad receives no funding from the state of Alaska. All operating expenses and improvements are paid out of revenues generated by freight services, passengers, and real estate.

Efficient handling, well-trained personnel, and more than 80 years of experience make the Alaska Railroad an exceptional value to rail shippers. The Alaska Railroad is committed to providing responsive customer service and reliable delivery under some adverse conditions. It requires constant improvement in systems and techniques, and is backed by reinvestment in capital improvements.

Alaska Railroad has the people, equipment, and experience to move difficult, heavy, large, and unusual dimensioned freight, as well as containerized and hazardous materials. With the Alaska Railroad's Rail-Marine Service, shippers can load their goods onto a railcar in the lower 48, and they will be seamlessly transferred to Alaska and railbelt communities via the Alaska Railroad's port in Seattle.

payloads up to 48,000 pounds of palletized or breakbulk freight. The aircraft can fly as low as 100 feet for oil dispersant spraying in response to oil spills.

Lynden Air Cargo is often contracted for humanitarian missions. Working with the Federal Emergency Management Association, the Red Cross, and the U.S. military, Lynden has delivered emergency vehicles, portable hospitals, food, water, and relief workers to ravaged areas, including Haiti and Indonesia after their earthquakes in 2011, as well as to Samoa after its tsunami in 2009.

One recent mission involved flying relief supplies to Vanuatu after Tropical Cyclone Pam devastated the South Pacific Islands in March 2015.

Communications company Digicel Fiji chartered a Lynden Air Cargo plane from Nadi, Fiji, to the capital city of Port Vila within days of the cyclone. It was loaded with food rations and technical equipment to repair towers and networks to restore communications throughout the islands. Later, working with the World Food Programme, Lynden continued to pick up more supplies from Brisbane, Australia, for air delivery to Port Vila in support of humanitarian efforts.

By The Sea

In Alaska, conditions are often extreme, costs are always high, and time is precious. Given the state's geographic breadth, fickle weather, and the cost of transporting freight across great distances, ensuring seamless transportation handoffs is a necessity.

When it comes to ocean transportation, Totem Ocean Trailer Express is Alaska's leader, with 40 years of service between the Ports of Tacoma and Anchorage.

Totem Ocean operates two Orca Class Ro/Ro cargo ships between the cities—*M.V. Midnight Sun* and *M.V. North Star*. The vessels were built to overcome the challenges that come with crossing the Gulf of Alaska year-round, while providing the capacity and flexibility to carry everything from containers to large vehicles, small vehicles, food, household goods, construction materials, and military supply support.

One ship departs Tacoma on Thursday and arrives on Sunday; the other leaves Tacoma on Saturday and arrives in

Anchorage on Tuesday. Each trip takes three days, and it takes 12 hours to load the ships.

Totem Ocean is in the process of converting both its ships, which were built in 2003, to run on liquefied natural gas. The first will be converted in winter 2015/2016, and the other will be converted the following winter. The Orca Class vessels will be the third and fourth cargo ships in the United States, second only to TOTE's (Totem Ocean's parent company) Marlin Class ships serving Puerto Rico to run on liquefied natural gas. As a result of the conversion, the Totem Ocean vessels will reduce sulphur oxide emissions by 100 percent; particulate matter by 91 percent; nitrogen oxide by 90 percent; and carbon dioxide by 35 percent.

"The conversion will result in a significant reduction in emissions," says Crawford. "This will be positive for the environments of both Alaska and the Puget Sound area, as well as for our employees and the communities we serve."

Crawford notes that Alaska's economy has evolved considerably over the past 15 years, with a variety of new big box retailers locating in the state. This has been a positive change for residents who benefit from many more shopping options and an improved quality of life.

"There are very few consumer commodities that we don't move," Crawford says. "This includes vehicles, military goods, retail products, and perishables. Our peak season begins around April 1 and goes through October. There's not much manufacturing in Alaska, so the primary commodities moving southbound are seafood, household goods, military materials, return merchandise, and some heavy equipment."

Barging In

Alaska Marine Lines is Lynden's ocean barge division, providing service between Seattle and Alaska, and Seattle and Hawaii. Most of the barge business is Alaska-related. Cargo is largely comprised of consumer goods, industrial goods, and seafood.

"We are able to carry just about anything," notes Anderson. "We stack containers, offer roll-on/roll-off, and carry heavy equipment and odd-sized freight. Every load is different, and that's part of the excitement of the

business. We carry some breakbulk cargo, and we stack some lumber and rebar. There is a lot of flexibility when loading a barge.”

Anderson describes the Alaska-bound cargo as diversified, with the grocery business providing steady cargo year-round. The company transports a lot of groceries, including produce, to serve food stores in southern Alaska. The mining and oil sectors also drive business.

Alaska Marine Lines has a fleet of 24 barges that provide scheduled service to Alaska and Hawaii, as well as several charters annually. Loads on the barges vary considerably and depend on the size of the barge and the mix of cargo. Containers can be stacked six high, and the company’s largest barges have a capacity of 15,000 tons and more than 800 containers.

On The Road

Interstate highways in Alaska are not required to be constructed to the same interstate highway standards that apply in the continental United States. Many

Alaskan highways are rural, two-lane, undivided thoroughfares—sometimes with steep grades, and not always paved. Shippers doing business in Alaska have to package shipments well to ensure safe transport of their goods moving to remote areas.

Driver issues also impact Alaska in unique ways. In addition to a population of fewer than one million from which to recruit drivers, increasing Hours-of-Service restrictions have particular implications for the state. When there is no civilization or creature comforts along a 500-mile stretch of road, it can be difficult—and even dangerous—for drivers to stop for a mandated rest period.

Lynden, like most trucking companies, has to deal with a nationwide shortage of qualified truck drivers. “The shortage is problematic,” says Alex McKallor, executive vice president and chief operating officer for Lynden. “Lynden addresses it by recruiting on a corporate-wide basis, and drawing many employees from the military. But our situation is more acute because of

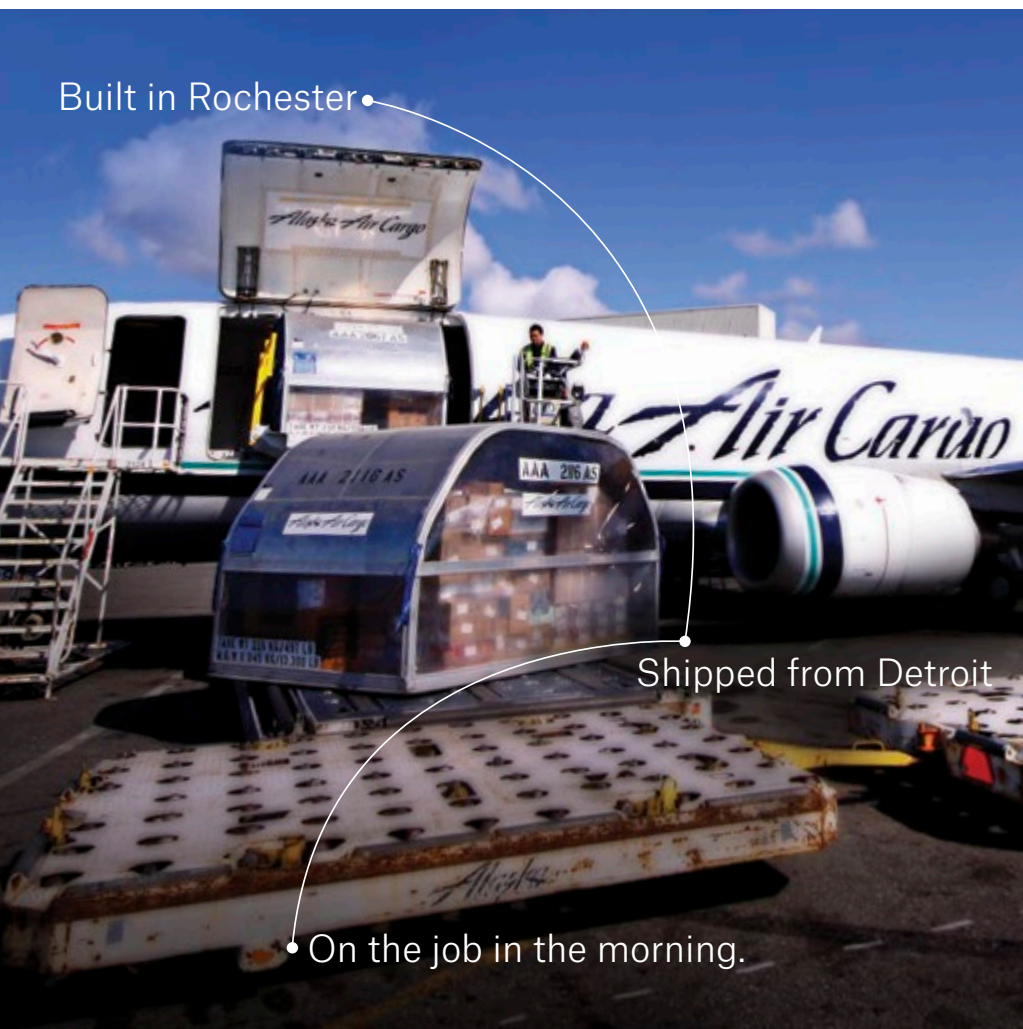
Alaska’s challenging environment. Drivers have to be highly experienced to operate on icy roads and steep climbs.”

Those challenging roads include the 414-mile Dalton Highway, which runs across northern Alaska and was built to supply the Trans-Alaska Pipeline System. The highway is treacherous in many places, and is considered one of the most isolated roads in the United States.

Challenging infrastructure conditions don’t deter Pacific Alaska Freightways (PAF), a trucking company that has been providing freight transportation services to Anchorage, Fairbanks, Kenai, Kodiak, and Southeast Alaska business and consumers since 1961. PAF receives freight from the lower 48, consolidates it into containers, and provides last-mile delivery in Alaska with a fleet of 45 trucks.

While the company historically focused on offering freight service between Alaska and the lower 48, PAF also provides intra-Alaska consolidation in Chicago, with weekly linehaul west for delivery in the Pacific Northwest and Alaska, as well as

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logistics services throughout the United States. These offerings include a bi-weekly steamship service considered to be the fastest ocean service to Anchorage.

While 2014 was a good year for Pacific Alaska Freightways, 2015 started off a little slow, according to Curtis Dorn, PAF's vice president of sales and marketing.

"Many large projects seem to be on hold in the state," he says. "When the price of oil goes up, it stimulates the economy, and people, goods, and service move north. When oil prices decline, business tends to slow down because it cools exploration and extraction. But we are seeing good solid trends in the right direction."

Another trucker at ease on Alaska's challenging roads is Reddaway, which serves customers shipping to Alaska from the lower 48. Reddaway transports goods from the 10 western states in its service footprint, and transfers them to the Port of Tacoma, where they are loaded on ships bound for Alaska. Pacific Alaska Freightways, its long-standing partner, delivers the freight to its final destination.

"Alaska is a niche market," notes Steve Selvig, Reddaway vice president of sales and marketing. "Shippers are truly looking for expertise. The partnership between Reddaway and PAF does a nice job of providing continuous service all the way from origin to Alaskan destinations. Shippers monitor the progress of their shipment via electronic updates, and receive a single invoice with itemized charges. With direct loading to Soldotna, Anchorage, and Fairbanks, the Reddaway/Pacific Alaska Freightways partnership provides distinguishable service performance."

A Tradition Of Service

Reddaway was founded in Oregon City, Ore., and has provided western regional coverage since 1919. Reddaway began as a premier service provider in the Pacific Northwest, but has grown to encompass all of the western United States. Reddaway has built a long-standing, industry-leading tradition of next-day and two-day delivery service, with high on-time reliability and one of the lowest claim ratios in the West.

The asset-based carrier offers electronic tracking, reliable and on-time pickup and delivery, professional drivers, dedicated customer service, and cost-efficient solutions. Reddaway extends that value and expertise to customers shipping to and from Alaska.

At Lynden Transport, the company's trucking division, business was up eight percent for the first two months of 2015, and Steve Hartmann, vice president, sales and marketing, is cautiously optimistic that trend will continue throughout the year. Like other divisions of Lynden, oil, gas, and seafood are major sources of cargo, along with groceries and retail goods.

"We haul just about anything and everything you can think of because when you service Alaska, you need the ability to move anything that goes up there, and have the equipment to do it," Hartmann says. "It's a unique state, one-fifth the size of the lower 48 with a population of 700,000 people. We've been servicing Alaska with scheduled service longer than anyone else—since 1954. We even handle freight for most of



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our competitors—they are our customers. It's a unique situation."

Alaskan shippers face the challenge of transporting freight across an expansive and often remote supply chain. Mode neutrality is a given. Common household goods fly, barges ferry rail cars, and flatbed trucks haul cargo over gravel and ice acting as roads. It's not uncommon for shipments to travel via all modes. With each additional touch, complexity grows.

To ease that complexity, many shippers turn to Lynden, a family of transportation companies serving Alaska and other regions over land, on water, and in the air. The company was created to help ease the challenges of Alaska's demanding environment and lack of infrastructure. Services include truckload and less-than-truckload, barges, intermodal bulk chemical hauls, air freighters, air forwarding, and ocean forwarding.

"Alaska is an interesting place to do business because it's such a multi-modal environment," McKallor says.

While McKallor believes 2015 will be

a good year overall for the company, he remains concerned about economic situations related to oil's low prices and its long-term impact on Alaska's economy.

"We have great people and are focused on refining and improving all parts of our business' safety and efficiency," McKallor says. "This year will be solid because we are committed to operating excellence. We continue to evolve and streamline our intermodal system of truck, marine, and air services to make it easy for customers to match their timing to the mode."

Forward, March

A broad range of domestic and international freight forwarding services are handled by Lynden International, which operates more than 50 offices around the globe. "Overall, the freight forwarding business is in good shape," says Pollock. "Our activity is strong and growing. Logistics is key for this market. Alaska is remote, and the cold weather presents a unique operating environment, but it's a good fit for what Lynden does."

Lynden International's Alaska operation is based at Ted Stevens Anchorage International Airport. In fact, it's the only freight forwarding operation located on airport property. That gives the company a great advantage when building up its loads, Pollock says.

Lynden International handles a wide gamut of cargo, ranging from construction materials, oil well equipment, and drilling tools to perishables and supplies.

Moving cargo within Alaska comes with many challenges, not the least of which are the oil patch projects that have been put on the back burner. "We had a stronger January and February 2015 than we did last year, and we expect that trend to continue into the spring, summer, and fall," says Pollock. "We are cautiously optimistic. That's the best way to describe it."

Despite the challenges, moving freight in and out of Alaska has gotten easier over the years. As transportation service providers continue to develop new offerings, it will become increasingly possible for shippers to tame the last frontier. ■



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DC Solutions | by Mary Shacklett

On Your Mark, Headset, Go!

To increase fulfillment efficiency and order picking accuracy, eBay Enterprise gives its warehouse a voice.



Warehouse workers at eBay Enterprise, a King of Prussia, Pa.-based retail order management and fulfillment provider, used to employ radio frequency (RF) handheld units for picking and packing orders, but found them counterproductive. With help from a voice-enabled technology solutions provider and data collection hardware manufacturer, eBay Enterprise implemented a hands-free, voice-based system to increase order accuracy and improve fulfillment efficiency to shorten delivery times.

eBay Enterprise provides distribution, warehouse management, inbound and outbound logistics, and returns processing from seven campuses across the United States, Canada, and Europe, and serves more than 60 countries around the world.

“The fulfillment division provides order fulfillment for both brick-and-mortar and e-commerce retailers,” says Jason Adamchik, director of engineering for eBay Enterprise. “To do this, we must make sure we have the right technology and warehouse capacity, and that new technology we acquire delivers

performance productivity and accuracy improvements.”

For many years, eBay Enterprise used RF technology to assist with picking and packing orders in the warehouse. But employees had to hold the RF units when they needed to operate in a hands-free mode.

The Choice of Voice

“We began to analyze whether it made sense to supplement our RF technology with voice, which would give our employees more freedom to be hands-free as they worked,” says Adamchik. “We thought our warehouse facility in



Louisville, Ky., would be a logical place to try voice-based technology. The Louisville facility serves many of our highest volume, highest unit clients. If we switched to a voice-based order picking system, we would eliminate the need to handle RF devices, which would improve productivity and accuracy.”

It wasn’t just high-volume order fulfillment challenges that Adamchik and his staff was trying to solve. There was also the issue of handling enormous seasonal spikes in order volumes, which the warehouse

Spanish while the voice technology listens and detects unique characteristics of the employee’s voice.

Once voice training is complete, the employee learns how to handle the various prompts that the voice-based system provides throughout the order fulfillment process. To use the voice-based technology, employees have to master the picking process so they know exactly how to answer the prompts and interact with the system.

“To fully engage with the voice-based system, employees have to understand

sense, so we talked with several different solutions providers before we ultimately made the decision to go with Mountain Leverage as our system integrator and solution provider, and Vocollect by Honeywell for our hardware and software. The Mountain Leverage solution was appealing because of its flexibility.”

“The business model at eBay Enterprise’s warehouse was variable, given seasonal sales spikes and the need to dramatically increase the workforce during those times,” says Alex Reneman, president of Mountain Leverage, based in Grafton, W. Va. “eBay Enterprise needed a flexible and scalable solution, due to that variability. From both deployment and pricing perspectives, the model had to scale both upward and downward.

“We designed a baseline subscription plan with incremental rental provisions for extra equipment as needed,” Reneman says. “That decreased equipment rentals at times of the year when eBay Enterprise didn’t need the extra capability.”

After the move to a voice-based system, order picking error rates dropped by 25 percent.

addressed by hiring temporary workers to augment regular crews.

“A major challenge was getting these temporary workers up to speed fast, so we were continuously training,” says Adamchik. “We thought we could reduce training time and error rates by moving to a voice-based system.”

The move to voice-based picking did exactly that. Across the board, warehouse order-picking error rates dropped 25 percent—including the temporary workers’ performance. For the temporary warehouse workers themselves, training times with voice-based picking were cut in half.

At Your Command

“Warehouse workers wear two elements of the voice-based system,” explains Adamchik. “The first piece of equipment is a headset equipped with a microphone. The second piece is a voice-based unit workers wear on their belts.”

eBay Enterprise works with each new employee to set up a voice “template” that is specific to the characteristics of that employee’s voice. This includes training the system so it can readily recognize each employee’s voice inflections or accents. To facilitate the learning process, the new employee is asked to recite a phonetic alphabet in either English or

the warehouse operation,” says Adamchik. “They must gain thorough knowledge of the process so they know when to place totes on carts, how to pick orders, when to load, and how to pack.”

eBay Enterprise uses a voice system that consists of a Honeywell Vocollect Talkman A730 voice unit that is attached to the employee’s belt, an SRX2 wireless headset, and Vocollect Voice Catalyst software. “Workers wear ruggedized devices integrated with a central software that screens out extraneous noise in the background,” says Jay Blinderman, director of product marketing for Vocollect by Honeywell.

This voice-based system assists the employee through the warehouse picking process, offering simplified prompts such as next, ready, repeat, go to 213, or pick three. By keeping voice commands simple and short, the voice-based system is able to accurately “hear” what the worker is saying. A second benefit of the abbreviated voice commands is that the system can easily translate them into a digitalized piece of information that can be sent to a warehouse management system (WMS) for integrated and automated order tracking.

“Before selecting a voice-based order picking system for the warehouse, we did our due diligence,” recalls Adamchik. “Internally, we felt the technology made

Making Changes on the Fly

Despite the advance planning and due diligence, eBay Enterprise encountered several wrinkles as it rolled out the initial implementation of warehouse voice.

“In any implementation, no matter how thoroughly you think you have planned, you have to make adjustments,” says Adamchik. “We saw several instances during deployment where it was advantageous to make some changes. And we found that we could make those changes on the fly.”

The ability to modify the technology quickly was also encouraging because of the volatility of eBay Enterprise’s seasonal workforce. “Any plan we devised had to address workforce fluctuations,” says Adamchik. “We run a 24/7 operation. We need to ensure we always have enough headsets available, as well as extra batteries so operations continue to flow without interruption.”

A second area of focus during implementation was integrating voice-generated commands into the WMS. “We needed to understand all the feeds into the WMS

and be sure we integrated them all,” says Adamchik. “A second and related phase was whether our network had sufficient capacity to add new devices that would transmit to the WMS. This required some network revisions to accommodate the additional communications, and ensure adequate network capacity.”

Much of the systems integration work was eased because the company was able to use industry standard application programming interfaces to get systems talking to each other. For operational integration, there was not much change on the packing side of warehouse operations, but

immediately involved its operations group in the project team, and used their input as the basis for making operational changes.

“We had some pickers who had been with us for a long time,” says Adamchik. “They were used to the RF system, and were initially not excited about changing how they did their work.”

Zoning Out

To ease adoption, eBay Enterprise took advantage of the fact that its warehouse operates in 12 separate work zones. “We phased in the voice-based technology by zones,” says Adamchik. Breaking the proj-

Going forward, operations, engineering, and pickers are “continuing to look at new enhancements and tweaks in the warehouse,” Adamchik says. “We are at a point where we feel comfortable with the new system. We are also happy with its ability to quickly make small modifications. Now we are looking at areas throughout the company where we can deploy the technology in the future.”

Adamchik is certain that eBay Enterprise will achieve a rapid return on investment. “We took the time to lay out all our requirements first, with everyone across the organization—operations, sys-



eBay Enterprise uses a Honeywell Vocollect Talkman A730 voice unit, SRX2 wireless headset, and Voice Catalyst software to optimize picking and packing workflows in its Louisville, Ky., warehouse.

some procedural adjustments had to be made on the picking side. These changes primarily involved enhancing existing operational procedures.

A third and critical area of implementation concerned the operational revisions that voice-based technology required.

“We needed a strong change management process to introduce this system without encountering any hiccups that would disrupt our production schedule,” says Adamchik. “We took our time and laid out all the specifications for replacing RF with voice.”

Because the move to voice impacted warehouse processes, eBay Enterprise

ect into individual implementations by zone allowed project team members to distribute the new technology incrementally, and to ensure it was embedded and running smoothly in one zone before the team moved on. This approach gave eBay Enterprise more control over troubleshooting technology and operational workflow issues, as well as ensuring that employees were being trained and acclimating to the new processes.

“Incremental implementation was well received,” notes Adamchik. “Employee feedback was positive, and most employees now say the voice-based picking and packing system makes their jobs easier.”

tems, and management—on board,” he says. “We also wanted to be certain that the benefits of the system would cover our initial investment, so we spent some time on ROI modeling. Finally, we vetted multiple vendors that offered voice-based picking solutions.

“Our goal was not only to find the right technology for what we wanted to accomplish, but also to find a capable business partner who would stay with us for the long haul. In the end, what made our project a success was a committed and multidisciplinary work team where systems, operations, and engineering personnel all pulled together.” ■

WhitePaperDigest

Industry experts amass supply chain management best practices and skill sets, and invest in new research and evaluation tools. Now you can benefit. *Inbound Logistics* has selected this collection of whitepapers that will give you a jump on important supply chain issues. For more information on any of these whitepapers, visit the Web sites listed below.



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TITLE: *Don't Let the Dirty Little Secrets of Freight Payment Impact You*
DOWNLOAD: bit.ly/1thL6oz
SUMMARY: Carriers make money from retailers in many not-so-obvious ways. The key is learning insider secrets to save big on transportation spend. With freight costs and transportation complexity increasing, comprehensive and accurate visibility to shipping spend remains of paramount importance. This whitepaper reveals the secrets.

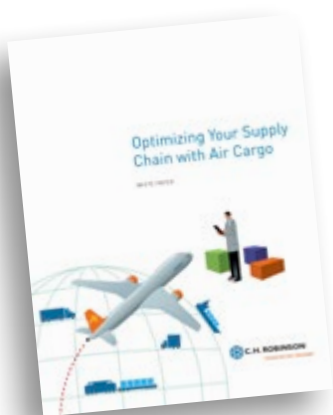
Amber Road

TITLE: *China Trade Management: Navigating Regulatory Complexity and Change*
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SUMMARY: According to SCM World research, supply chain leaders view China as a premier growth opportunity, but many also consider the country too risky to do business in. SCM World's new report digs a little deeper into the dynamics at play in China, the core capabilities for taking advantage of China growth opportunities, and how global trade management solutions can help organizations deal with an evolving China.

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TITLE: *The Five Point Tune-Up For Your Warehouse*
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TITLE: *Optimizing Your Supply Chain with Air Cargo*

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SUMMARY: Air cargo can help optimize your global supply chain with speed to market and the best combination of service and price. This whitepaper explores how air cargo can provide quick response to market demands, the value of technology in air cargo services, and the benefits of air cargo in emerging markets.

DHL

TITLE: *Solving the Talent Crisis: Five Alternatives Every Supply Chain Executive Must Consider*

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SUMMARY: The automotive supply chain is facing a real threat. Talent shortage in the industry has become a huge crisis that is expected to only worsen in the next five years. DHL's new whitepaper provides readers with insight into the talent shortage faced by the automotive supply chain sector - what's causing it, how it impacts the industry, and what solutions are available to ease the problem.



Kane Is Able

TITLE: *Labor Management Strategies in the Warehouse*

DOWNLOAD: bit.ly/1MfhBLo

SUMMARY: Kane Is Able recently sponsored research with 252 logistics executives on the strategies they employ for managing labor in the distribution center. The results of that research are summarized in this report. Questions explore a range of issues, including use of technology, strategies to drive productivity, and use of third-party labor providers. The report, filled with charts and other data, allows you to compare your approach with your peers.

4SIGHT Logistics Solution

TITLE: *Doing More with Less: Yard and Dock Management Software ROI*

DOWNLOAD: bit.ly/1xPhTpC

SUMMARY: This whitepaper provides an important analysis for anyone faced with logistics challenges - high operational and labor costs, inefficient processes, security, and more - in the yard or at the dock. Download this report to learn how integrated yard and dock management systems can help warehouses, manufacturers, retailers, and distribution centers do more with less, while realizing a return on investment in as few as 12 to 24 months.

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Canadian third-party logistics (3PL) company **Dominion Warehousing & Distribution Services** opened a new 250,000-square-foot warehouse in Vancouver, British Columbia. The facility features 20 dock level doors, racking and stacking storage, short-term and long-term warehousing, and is configured for transload services.

//Technology//

Supply chain software developers **Viewlocity** and **FDC Solutions** partnered to release *ViewlytICS*, a planning solution that allows users to create scenario and risk models for inventory positions across global operations, so they can safely reduce inventory levels and carrying costs.

Logistics software company **Roadnet Technologies** launched version 3.6.9 of its *Roadnet Transportation Suite* routing solution. The latest version optimizes planning, routing, and tracking services, and implements the company's *Roadnet Insight* business intelligence offering.

Epicor Software Corporation, a business software solutions provider, released version 12.15 of its *Epicor Prophet 21* wholesale distribution enterprise resource planning tool. The

update features a user-friendly interface, and improved wireless warehousing, accounts payable processing, and inventory tagging.

Spireon, a business intelligence and mobile asset management solutions developer, launched the next generation of its *Fleet & Asset Intelligence* information platform. The update includes new workforce management features, as well as greater flexibility, visibility, and business performance optimization for managing vehicle, trailer, and remote equipment fleets.

MAPMECHANICS, a provider of logistics technology solutions, released a new version of its *TRUCKSTOPS* route planning and scheduling software. New features include an ability to export routes in Excel spreadsheet formats,

enhanced batch processing capabilities, and vehicle emissions tracking to monitor a fleet's environmental performance.

The *SolidSuite* warehouse control software from logistics technology developer **Casi** provides a single point of control for all warehouse systems, including conveyor, labeling, manifest, and picking. The solution is Web-based, allowing access from any terminal or computer without the need for a special application.

Logistics software provider **Freightgate's** new cross-modal planning solution simulates different routes and intermodal combinations via all transport modes. The software then provides shippers with time and cost estimates to help optimize cargo movement.

//Services//

TASCO Berhad, a Yusen Logistics subsidiary, opened a new warehouse at Tanjung Pelepas, a Malaysian port. The 200,000-square-foot facility provides logistics services for the electronics, electrical equipment, and general consumer goods industries.

Global supply chain services company **UTi Worldwide** launched a strategic partnership with China-based logistics firm Changjiu Logistics Co. Three areas of joint development include rail solutions between Europe and China, vendor-managed inventory solutions for automotive OEMs, and aftermarket parts and accessories distribution.

Global supply chain management company **CEVA Logistics** expanded its Canadian footprint with a new facility in Richmond, British Columbia. The 53,189-square-foot location features nearby access to the Port of Vancouver and Vancouver International Airport, a freight yard for storing cargo containers, 2,500 racking locations, and an increase in dock doors and trailer parking space.

Tucker Company, a freight broker, moved its headquarters from Cherry Hill, N.J., to nearby Haddonfield, N.J. The new location provides Tucker with more space to expand its facilities and services.

DHL Express opened a new service center in Houston, Texas, to serve the oil and gas sector. The 20,000-square-foot facility processes 2,500 shipments per hour, and the company's expanded presence in the area allows it to extend drop-off times for shippers.

//Transportation//

Shipping line **SafmarineMPV** expanded its U.S.-to-West Africa trade route to include the Congo and Angola. Ports of call now include Houston, Texas; Lagos and Onne, Nigeria; Pointe-Noire, Congo; and Luanda, Angola. Additional West African ports are available for project cargo shipments.

Ocean carrier **Crowley Liner Services** added a new flat deck barge service to Puerto Rico. The barge handles 20-foot, 40-foot, 45-foot, and 53-foot containers, and arrives in San Juan every other week.

International courier **TNT** launched a five-time weekly service between Tel Aviv, Israel, and Liege, Belgium. The new route allows for later pickup times

in Israel, and shortens transit times for express shipments to and from Tel Aviv by one day.

Evergreen Line enhanced its services to and from Southeast Asian markets. The ocean carrier launched a new Taiwan-Shekou-Malacca Strait service, and introduced a dedicated Taiwan-to-Hong Kong service.



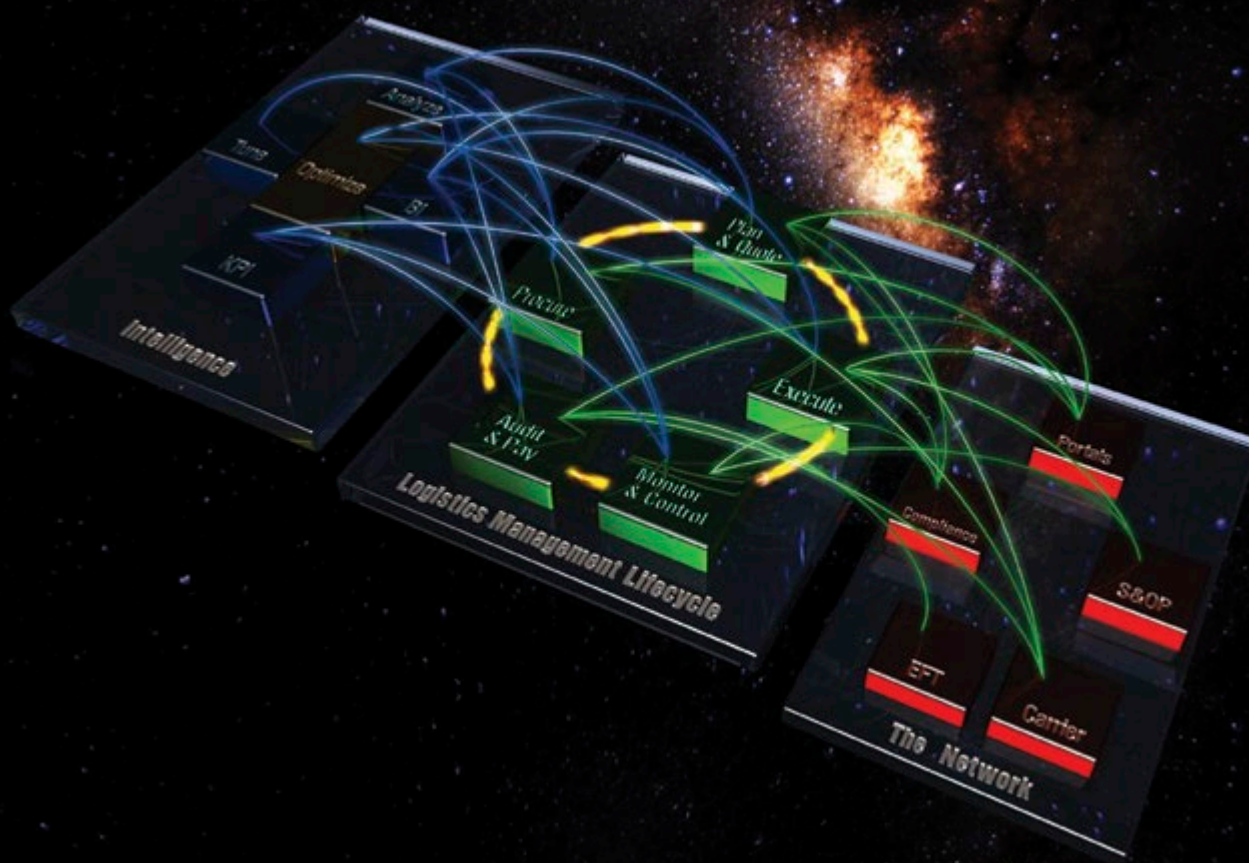
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3PLs



C.H. Robinson Worldwide, Inc. • www.chrobinson.com

Founded in 1905, C.H. Robinson Worldwide, Inc. is one of the largest third-party logistics companies in the world, providing multimodal transportation, fresh produce sourcing, and information services to more than 32,000 customers globally, ranging from Fortune 500 companies to small businesses in a variety of industries. For more information about our company, visit our website at www.chrobinson.com.

Cardinal Health Integrated Logistics Services • yourhealthcare3pl.com

With our unique understanding of the entire healthcare landscape, we bring you breadth and scale to drive costs out of the supply chain, so you achieve a greater impact on your bottom line. Our expertise in healthcare logistics provides: a nationwide network of distribution centers, transportation logistics, and regulatory experience; supply chain management and efficiency to improve your bottom line; and shipping solutions that deliver quality with reduced risk and complexity.



Choice Logistics • www.choicelogistics.com

Choice Logistics provides highly customized third-party service parts logistics solutions that meet the unique challenges of global high-tech OEMs and service organizations. With 400+ strategic stocking locations (SSLs) around the world, Choice provides 24/7 same-day solutions, and other value-added support options, for improved strategic inventory management.

CHTL Logistics • www.chtllogistics.com

CHTL Logistics is a non-asset-based truckload and intermodal solutions provider that helps shippers move dry van, temperature-controlled, drayage, flatbed, and oversized loads across North America. With a name dating back to the 1920s, CHTL Logistics is dedicated to serving customers with the highest level of integrity, professionalism, and flexibility. Put your trust in nearly a century of excellence by contacting CHTL Logistics for a quote today.



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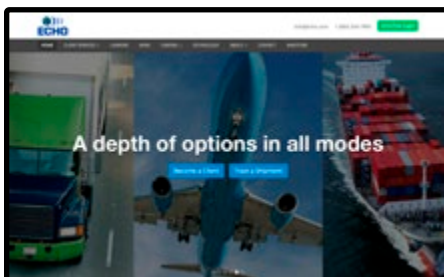


CLX Logistics • www.clxlogistics.com

CLX Logistics is a global provider of comprehensive logistics management, technology, and supply chain consulting services to a broad base of industry verticals. From chemical and energy to manufacturing, retail, agriculture, automotive, and heavy haul, we help clients in nearly every industry to realize sustainable supply chain value by employing a mix of managed services, on-demand global TMS technology, and comprehensive transportation management services to improve performance and reduce cost. CLX Logistics is dedicated to solving its customers' most vital logistics challenges.

Custom Shipping Solutions • www.customshippingsolutions.com

Custom Shipping Solutions (CSS) provides fast, affordable, and reliable LTL transactional services to North American shippers. Established in 1999, CSS is a uniquely simple way to ship using best-in-class technology, a broad selection of respected carrier partners, shipment delivery notifications, optional cargo claims processing, and monthly shipping activity reports. Get a custom quote and start shipping with CSS today.



Echo Global Logistics, Inc. • www.echo.com

Echo Global Logistics, Inc. (Nasdaq: ECHO) is a provider of technology-enabled transportation and supply chain management services. Echo maintains a proprietary, Web-based technology platform that compiles and analyzes data from its network of more than 30,000 transportation providers to serve its clients' needs. Offering freight brokerage and managed transportation services across all major modes, Echo works to simplify the critical tasks involved in transportation management.

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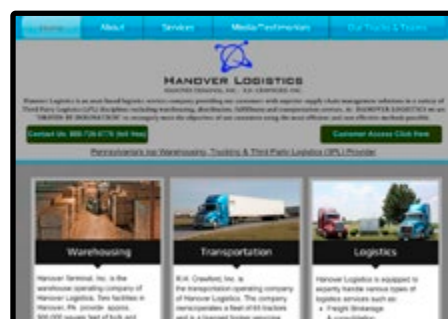


GlobalTranz • www.globaltranz.com

GlobalTranz is a privately held, Phoenix-based logistics company specializing in freight management services including LTL, full truckload, supply chain management, and domestic air/expedited shipping. We focus on innovative technology and partnering with sales professionals who possess energy, insight, and a fervent customer service mentality. GlobalTranz was named the Arizona Corporate Excellence (ACE) Awards 12th Largest Private Company in Arizona and 3rd Fastest Growing Company in Arizona 2014.

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Hanover Logistics is an asset-based logistics services company providing customers superior supply chain management solutions in a variety of third-party logistics (3PL) disciplines, including warehousing, distribution, fulfillment, and transportation services. Hanover Logistics is equipped to expertly handle various types of logistics services, including: freight brokerage, food/grocery storage and distribution, intermodal/cross-dock services, warehousing solutions for a variety of products (AIB certified, food grade), and general transportation management including truckload, LTL, and container hauling services.



J.B. Hunt Transport • www.jbhunt.com

J.B. Hunt Transport focuses on providing safe and reliable transportation services to a diverse group of customers throughout the continental United States, Canada and Mexico. Utilizing an integrated, multimodal approach, the company provides capacity-oriented solutions centered on delivering customer value and industry-leading service. J.B. Hunt Transport Services, Inc. stock trades on NASDAQ under the ticker symbol JBHT, and is a component of the Dow Jones Transportation Average. J.B. Hunt Transport, Inc. is a wholly owned subsidiary of JBHT. For more information, visit www.jbhunt.com.

LEGACY Supply Chain Services • www.legacyscs.com

LEGACY Supply Chain Services has developed 3PL solutions for clients for nearly 40 years. Our North American distribution footprint includes dedicated and multi-client space in 50 locations, across 19 states and 3 Canadian provinces. LEGACY's dedicated logistics solutions include warehousing and distribution, international and domestic transportation, customs and compliance, and pool distribution services. We excel at providing high-touch service to clients across many industries including retail, consumer goods, industrial manufacturing, technology, food and beverage, aftermarket automotive, life sciences, and healthcare.



IN THIS SECTION:

3PLs



Logistics Management Resources, Inc. • www.lmri.com

Since 1981, LMR has been providing third-party logistics services to the chemical, aircraft deicer, waste, oil/gas, and biofuels industries across multiple modes throughout North America. Our specialty is managing bulk truck logistics, both liquid and dry, plus additional services for truckload (hazmat/reefer/tote bin), intermodal, walking floor, end-dump, roll-on/roll-off, and high-wide-heavy specialized needs. With dedicated logistics professionals, and an internally developed, fully customized and customer-accessible TMS, LMR provides real-time cost and service reporting to transition your logistics operations from a "cost of doing business" to a competitive value-add.

M33 Integrated • www.m33integrated.com

M33 believes the best way to optimize logistics and drive business growth is through scalable technology tools and supply chain expertise. Our commitment is to provide a superior co-management support structure, coupled with an adaptive transportation management system, to effortlessly respond to evolving market conditions and customer demands. We are dedicated to helping organizations reduce costs, improve efficiencies, and gain the ultimate competitive advantage through our suite of integrated solutions and services.



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Mode Transportation • www.modetransportation.com

Mode Transportation is a 3PL offering all modes of transportation: TL, LTL, intermodal, rail, and international (air and ocean). Our transportation services are tailored to fit your unique business needs. Mode Transportation draws on decades of experience and a carrier network of 30,000+ providers to manage the efficient and timely transit of your goods. We find capacity when others can't. Our TMS, TRITAN™, offers our customers, carriers, and operations group visibility to your freight from start to finish. Let us tell you more about TRITAN and about us!

Network FOB • www.networkfob.com

For more than 25 years, Network FOB has been delivering transportation management excellence both domestically and internationally. Utilizing the many years' experience, we arrange and execute services that include heavy haul, truckload and LTL, air and ocean cargo, intermodal, government, and transportation management solutions. Our agents tailor transportation management to help shippers and the carriers they serve achieve their unique business goals. Contact us to learn how we're solving your competition's problems.



ROAR Logistics • www.roarlogistics.com

Founded in 2003, ROAR (Rail, Ocean, Air, Road) has rapidly become a leading transportation services provider, serving customers worldwide. A subsidiary of Rich Products Corp., ROAR views transportation from the perspective of the shipper, delivering value through world-class customer service, cutting-edge technologies, and competitive pricing. Call on ROAR for your truckload, LTL, domestic intermodal, import/export ocean, and global air cargo needs. Call 888-292-7627, e-mail: info@roarlogistics.com, or visit: www.roarlogistics.com.

Robocom Systems International • www.robocom.com

Robocom is a Supply Chain Execution software company offering solutions that include warehouse management, 3PL billing, transportation management, voice technology, and labor management. An Enterprise Transportation System and Enterprise Resource Planning System round out the Supply Chain Execution offering. Robocom's solutions address the needs of business leaders responsible for the day-to-day results in warehousing, distribution, third-party logistics, transportation, and trucking operations.



IN THIS SECTION:

3PLs



Ryder Supply Chain Solutions • www.ryderscs.com

Ryder Supply Chain Solutions is an end-to-end supply chain partner with nearly 80 years of experience helping customers in North America, the UK, and Asia transform their supply chains by delivering the best in operational execution. Ryder provides a full range of services, from optimizing day-to-day logistics operations to synchronizing the supply of parts and finished goods with customer demand. At Ryder, we understand that when it comes to logistics, Execution is Everything.

Transportation Insight • www.transportationinsight.com

The first 4PL invited to join the International Warehouse Logistics Association (IWLA), Transportation Insight is one of the largest and most experienced global lead logistics providers in North America. Our service and technology offerings span domestic transportation, international logistics, and warehousing – creating end-to-end supply chain solutions. Our core services include carrier sourcing, freight bill audit and payment, transportation management system, and supply chain analytics and reporting. Other offerings include our Insight Fusion® Big Data solution, transactional services, transportation management, and secondary packaging. Contact us at info@transportationinsight.com or call 877-226-9950.



Wagner Logistics • go.wagnerlogistics.com/home

Wagner Logistics offers dedicated warehousing, transportation management, packaging and assembly operations across the United States with more than three million square feet of warehousing space. We provide genuine customer service to our customers, and our superior onboarding process will make your customer's transition seamless. We work tirelessly to find innovative solutions to reduce supply chain costs while increasing your speed-to-market with our latest technology.

The West Logistics Group • www.westgl.com

The West Logistics Group is an asset-based, Southeast-focused third-party logistics company specializing in grocery, consumer packaged goods, and industrial products. With nearly one million square feet of distribution space, our customer-focused, single-point-of-contact team lives and breathes customer service with a commitment to technology, and assets including radio frequency-operated warehouses, temperature-controlled space, rail-served facilities, and flexible data communication options. If you need warehousing, transportation, distribution, freight management, consolidation, or overall supply chain knowledge, let the West Logistics Group service your world.



AIR CARGO



Alaska Air Cargo • www.alaskacargo.com

Alaska Air Cargo provides reliable air cargo services to meet your shipping needs. Whether it be small packages, full ULD shipments, or chartered freighter service, Alaska Air Cargo offers a variety of options, including GoldStreak® Package Express, a next-available-flight service for items up to 100 pounds; Priority Air Freight for time-sensitive shipments that are larger than GoldStreak and need to be at a destination by a specific time; and Animal Express, a priority express service that ensures animals a safe and comfortable journey.

Ted Stevens Anchorage International Airport • www.dot.state.ak.us/anc

For more than 50 years, Ted Stevens Anchorage International Airport has played an integral role in the growth of Anchorage and the state of Alaska. Today, the airport has an exciting and dynamic future, with geographic location providing unlimited potential moving goods, and services and infrastructure to be used in the global marketplace. The mission of the Ted Stevens Anchorage International Airport is to Develop - Operate - Maintain The Airport for Anchorage - Alaska - the World.



ASSOCIATIONS



Transportation Marketing & Sales Association (TMSA) www.TMSAtoday.org

The Transportation Marketing & Sales Association provides knowledge, connections, recognition, and solutions to marketing, sales, and communications professionals in North American freight transportation and logistics. TMSA members from all market segments are involved, including motor carriers, 3PLs, railroads, air carriers, ocean lines, port authorities, OEMs, media, and suppliers. Get it on your calendar: The 2015 TMSA Logistics Marketing & Sales Leadership Conference takes place June 7-9 in St. Petersburg, Fla.

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CDM Software Solutions • www.cdmssoft.com

CDM Software Solutions provides fast, efficient, user-friendly software products, services, and support for the international trade community – specifically freight forwarding, NVOCC, warehouses, importers, and exporters. We are a U.S. Customs Certified Vendor and IBM Business Partner that provides software solutions for air freight (import, export and domestic), air freight consolidation, ocean freight (import and export), ocean freight consolidation, truck/inland freight, rail freight, warehousing, logistics, and electronic data interchange.



IN THIS SECTION:

Bulk: Liquid-Dry - Cold Storage

BULK: LIQUID-DRY



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Over land, on the water, in the air – or in any combination – Lynden has been helping customers solve transportation problems for almost a century. Operating in such challenging areas as Alaska, Western Canada and Russia, as well as other areas around the globe, Lynden has built a reputation of superior service to diverse industries.

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CONSULTANTS



Franzetta & Associates • www.franzetta.com

Franzetta & Associates has assembled some of the most respected supply chain experts in the world. We are not just consultants; we are proven successful industry leaders who created yesterday's standards and are driving today's innovations. Our focus is assisting firms to unleash the power of their supply chains. We can show you how to take control of your supply chain to reduce costs, improve customer satisfaction, and increase revenues. Our fees are lower than any of our competitors, yet we are far more reliable, non-intrusive, and efficient. Call 814-466-9010.

Open Sky Group • www.openskygroup.com

Open Sky Group is dedicated to being the best consulting partner on the planet for implementing supply chain software solutions. We specialize in services for JDA Warehouse Management (former RedPrairie WMS). Contact us today to reach new heights of supply chain efficiency with your WMS.



DEDICATED CONTRACT CARRIAGE



AAA Cooper Transportation • www.aaacooper.com

AAA Cooper Transportation has been delivering safe, efficient transportation for more than 50 years. With strategically located service centers, we are prepared to give individual attention to your shipping needs. AAA Cooper Transportation is dedicated to the long-term sustainability of the environment, and continues to implement processes that will make the world a better place to live for generations to come.

Ryder Supply Chain Solutions • www.ryderscs.com

Ryder Supply Chain Solutions is an end-to-end supply chain partner with nearly 80 years of experience helping customers in North America, the UK, and Asia transform their supply chains by delivering the best in operational execution. Ryder provides a full range of services, from optimizing day-to-day logistics operations to synchronizing the supply of parts and finished goods with customer demand. At Ryder, we understand that when it comes to logistics, Execution is Everything.



IN THIS SECTION:

Distribution Center Management - Economic Development

DISTRIBUTION CENTER MANAGEMENT



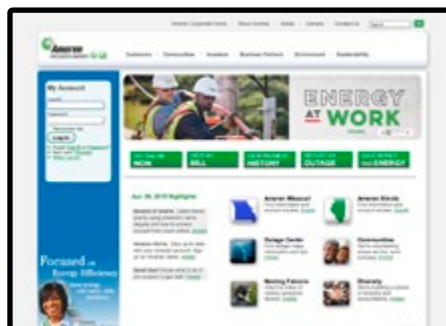
Penske Logistics • www.penskelogistics.com

Penske Logistics is an award-winning logistics services provider with operations in North America, South America, Europe, and Asia. Our products and services range from dedicated contract carriage and distribution center management to transportation management and fully customized solutions. No matter what your needs or industry, Penske Logistics engineers supply chain solutions that deliver business results like boosting productivity, improving service, and shrinking carbon footprints. Call us today at 1-800-529-6531 to learn more.

ECONOMIC DEVELOPMENT

Ameren Corporation • www.ameren.com

St. Louis-based Ameren Corporation is a Fortune 500 company dedicated to generating electricity, delivering electricity, and distributing natural gas to 3.2 million customers throughout Illinois, mid-Missouri, and the St. Louis Metropolitan Area. Ameren's professional development team serves as a complete source for business assistance services. For more information, visit Ameren's website: www.ameren.com.



Columbus Region • www.columbusregion.com

The Columbus Region-Columbus Logistics Council focuses on the growth of the region's industry in its eight counties of the broader Columbus 2020! growth strategy. The Columbus Region is your channel to the global marketplace. Through truck, rail, air, and port, the Columbus Region logistics infrastructure gets your freight where it needs to be, when it needs to be there. For more information, contact 614-225-6903.

TVA Economic Development • TVAed.com

TVA's GIS-based online database helps corporate and site selection consultants identify optimal properties available in the 80,000-square-mile TVA region. Search for available properties and buildings (2,000 listings), find demographic data, and download maps. Your source for economic development information and services in the seven-state TVA region is TVAed.com.



EDUCATION



American Public University (APU) • StudyatAPU.com/IL

A Transportation & Logistics Education For Those Who Expect More. American Public University (APU) can help prepare you for success in today's demand-driven logistics industry. Students learn from experienced practitioners who know how to help a logistic strategy stand out—from supply chain management to reverse logistics. APU's professors are industry insiders, many of who work in corporate leadership roles. Choose from 190+ affordable online degree and certificate programs. Get started today at StudyatAPU.com/IL

Baruch College Division of Continuing and Professional Studies baruch.cuny.edu/caps

Trade globally...learn locally! Baruch College's Weissman Center for International Business and Division of Continuing and Professional Studies (CAPS) runs 45+ practical courses and 7 rigorous certificate programs to develop and advance your international trade career. We offer Customs Broker License Test Preparation, Import and Export Operations, Logistics, Supply Chain Management, International Entrepreneurship, NASBITE-endorsed Certified Global Business Professional test preparation, and more. Earn NCBFAA-approved CEUs in selected courses and seminars. Taught by industry experts on our NYC campus, NJ port area, onsite, and online.



Georgia College • www.gcsu.edu/business/miscm.htm

Now fully on-line, Georgia College has offered a nationally recognized Master of Logistics and Supply Chain Management program for 40 years, preparing thousands of students for success in their chosen careers and professions. The program was ranked in the top 10 on-line logistics/SCM programs by BestSchools. The university is also expanding their educational efforts in undergraduate courses focused on a concentration in logistics and transportation.

Illinois Institute of Technology/Industrial Technology & Management www.appliedtech.iit.edu/intm

Industrial Technology and Management (INTM) at Illinois Institute of Technology (IIT) offers Bachelor and Masters degrees, with specializations in Supply Chain Management, Industrial Facilities, Industrial Sustainability, and Manufacturing Technology. The Bachelor (BINTM) is a transfer degree, requiring an Associates degree or equivalent college credits in a technical field. The Master of Industrial Operations (MITO) prepares students for management positions in industrial companies. Evening and online courses allow flexibility for working adults.



IN THIS SECTION:

Education - Freight Forwarding



The Executive Masters in International Logistics & Supply Chain Strategy at Georgia Tech www.emil.gatech.edu

After 15 years in existence, Georgia Tech's Executive Masters in International Logistics & Supply Chain Strategy (EMIL-SCS) program is clearly in a category of its own. For the senior logistics executive seeking an advanced degree in international logistics and supply chain strategy, EMIL-SCS is the program of choice. The 18-month program leads to a Master's of Science in International Logistics. The program's executive format fits perfectly into your busy work schedule, only requiring two weeks of course work per semester. We combine a strategic blend of people, places, and content that goes far beyond a workshop.

Transportation Intermediaries Association (TIA) • www.tianet.org

The Transportation Intermediaries Association (TIA) is the professional organization of the third-party logistics industry. TIA is the only organization exclusively representing transportation intermediaries of all disciplines doing business in domestic and international commerce. TIA is the voice of transportation intermediaries to shippers, carriers, government officials, and international organizations.



University of Alaska Anchorage • www.logistics.alaska.edu

The Department of Logistics at the University of Alaska Anchorage offers a Master of Science in Global Supply Chain Management (30 credits, 20 months, emphasis on strategy, leadership, knowledge management, and international business practices). Also offered are: a BBA in Global Logistics and Supply Chain Management (4 years); an Associate of Applied Science in Logistics and Supply Chain Operations (2 years); and a Certificate in Logistics and Supply Chain Operations (1 year).

FREIGHT FORWARDING

Lynden • www.lynden.com

Over land, on the water, in the air - or in any combination - Lynden has been helping customers solve transportation problems for almost a century. Operating in such challenging areas as Alaska, Western Canada and Russia, as well as other areas around the globe, Lynden has built a reputation of superior service to diverse industries.



FREIGHT PAYMENT/AUDIT SERVICES



RateLinx • www.ratelinx.com

RateLinx provides transportation management solutions, TMS technology, and freight payment and auditing for companies for all modes, as well as providing cutting-edge Vendor Compliance technology and methodologies for companies with vendor compliance programs and the vendors that utilize them. RateLinx manages and/or services freight in the billions of dollars for thousands of shippers both domestically and internationally, and is recognized as a leading manufacturer of integrated logistics software for small parcel, LTL, truckload, ocean, air, and expedited shipping. For more information, visit our website or contact us at sales@ratelinx.com.

Trans Audit • www.transaudit.com

Trans Audit is the world's largest and most successful global freight and parcel post audit specialist. We have performed worldwide transportation audits on a contingent basis for hundreds of Fortune and Global 1000 corporations. Trans Audit's freight and parcel post audit services have delivered hundreds of millions of dollars to our clients' bottom line by recovering overbillings and overpayments, correcting erroneous billing, and reducing future expenses.



TransportGistics • www.transportgistics.com

TransportGistics is a global, multi-product and services company that provides market-leading, simple, incremental solutions for transportation management and logistics functions within the supply chain. Our Web-based solutions enable our customers to source, procure, and execute transportation services; enable collaboration; reduce costs; improve processes; identify hidden costs of transportation; improve vendor compliance routing guides; improve Supplier Relationship Management; monitor vendor performance; improve shipment visibility; generate automatic, status-driven alerts; and monitor carrier performance with respect to time in transit, service failure, and billing.

FULFILLMENT

KNAPP Logistics Automation, Inc. • www.knapp.com

KNAPP Logistics Automation, Inc. is a leading global provider of automated warehouse solutions and warehouse logistics software. Our superior product technology, extensive global experience, and exceptional design capabilities enable our customers to dramatically improve their warehouse and distribution center operations. For manual picking solutions or fully-automatic all-in-one solutions, let KNAPP help you profit from the technologies of tomorrow, today!



IN THIS SECTION:

Fulfillment - Global Logistics

**Performance Team • www.performanceteam.net**

Performance Team is the only thing that should come between your products and your customers. For nearly 25 years, Performance Team has been offering its expertise to the retail and manufacturing industries with a broad range of supply chain services including: trucking, distribution, logistics, and fulfillment. Through 11 domestic hubs, over 5.1 million square feet of warehouse space, and a fleet of more than 400 trucks, Performance Team's skilled team of employees processes approximately \$100 billion in wholesale goods. See why Performance Team continuously earns a reputation as the premiere trucking, consolidation, and distribution company in the United States; log on to www.performanceteam.net.

Wagner Logistics • go.wagnerlogistics.com/home

Wagner Logistics offers dedicated warehousing, transportation management, packaging, and assembly operations across the United States with more than three million square feet of warehousing space. We provide genuine customer service to our customers and our superior onboarding process will make your customer's transition seamless. We work tirelessly to find innovative solutions to reduce supply chain costs while increasing your speed-to-market with our latest technology.



GLOBAL LOGISTICS

**CLX Logistics • www.clxlogistics.com**

CLX Logistics is a global provider of comprehensive logistics management, technology, and supply chain consulting services to a broad base of industry verticals. From chemical and energy to manufacturing, retail, agriculture, automotive and heavy haul, we help clients in nearly every industry to realize sustainable supply chain value by employing a mix of managed services, on-demand global TMS technology, and comprehensive transportation management services to improve performance and reduce cost. CLX Logistics is dedicated to solving its customers' most vital logistics challenges.

COSCO Container Lines Americas • www.cosco-usa.com

As a premier carrier of both import and export refrigerated commodities, COSCO has been very successful in providing the most specialized handling and reporting to meet the stringent demands of the world's top importers and exporters. COSCO is dedicated to creating 21st-century solutions for your high-volume, low-volume, time-sensitive, or hard-to-service locations anywhere in the world.





UniGroup Logistics • www.unigroupinc.com

Managing a supply chain is complex. And your business is unique. Let UniGroup Logistics design a solution tailored to your needs. We'll show you the way to a more efficient logistics solution. UniGroup Logistics is built on the heritage of United Van Lines and Mayflower Transit, trusted providers of reliable specialized transportation and logistics services for more than 50 years. Based on a network of 1,300 service centers in 146 countries, we are a single source for customized supply chain solutions. Whether your supply chain is domestic or international, UniGroup Logistics manages a global network of resources to show you the way to seamless, dependable and efficient solutions.

GLOBAL TRADE

Pilot Freight Services, Inc. • www.PilotDelivers.com

Pilot Freight Services, Inc. is a full-service transportation and logistics provider with over 75 locations throughout North America, as well as stations in Amsterdam, Toronto, Vancouver, Mexico City, and A Coruña, Spain. The company's freight forwarding services encompass every mode of transportation, including air, ground, and ocean, serving all corners of the globe. Pilot's logistics programs offer a complete line of expedited and time-definite services, international shipping solutions, product warehousing, and inventory management. In addition, Pilot's online shipment navigator, CoPilot, makes online shipping fast, convenient, and secure. Learn more about Pilot Freight Services at www.PilotDelivers.com.



Questaweb, Inc. • www.questaweb.com

Questaweb is a premier provider of integrated, Web-based global trade management software. Questaweb's applications unify import, export, logistics, compliance, and financial processes under one roof. The applications include U.S. Customs, self-entry, foreign trade zone, landed costs, HTS, PO management, export licensing, drawback, reconciliation, denied party screening, product catalog, tracking, and international document repository. The centralized global database maintains up-to-date trade content and currencies. Questaweb can also be efficiently integrated to your ERP system if designated.

INSURANCE

Avalon Risk Management • www.avalonrisk.com

Avalon Risk Management provides insurance and surety solutions to the transportation and logistics industries. Local service is provided through 10 offices in major U.S. port cities. Products include: bonds, marine cargo insurance, professional liability, property and casualty, executive risk, and specialty auto programs including truck, courier, and paratransit. Visit www.avalonrisk.com for more information.



IN THIS SECTION:

Intermodal

INTERMODAL

**Alliance Shippers Inc. • www.alliance.com**

With operating facilities in the United States, Canada and Mexico, Alliance Shippers Inc. combines excellent customer care with state-of-the-art rail, highway, ocean, and air transportation solutions. Additional services include warehousing, distribution, customs clearance, equipment/driver leasing, and expedited transportation. For cost-effective logistic solutions tailored to your company's exact needs, contact Alliance Shippers Inc.

Canadian National (CN) • www.cn.ca

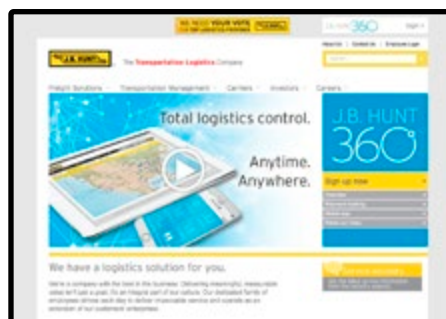
CN's network of logistics parks are strategically located at the heart of North America to connect your business to world markets. Located in, or adjacent to, its intermodal rail yards, CN provides you with seamless and efficient transportation and easy access to major highways. CN provides access to all key logistics services - rail, intermodal, warehousing, distribution, CargoFlo liquid and dry bulk transload, and Autoport distribution facilities - in one location. As your supply chain partner, CN can help you find your new distribution home.

**CLX Logistics • www.clxlogistics.com**

CLX Logistics is a global provider of comprehensive logistics management, technology, and supply chain consulting services to a broad base of industry verticals. From chemical and energy to manufacturing, retail, agriculture, automotive and heavy haul, we help clients in nearly every industry to realize sustainable supply chain value by employing a mix of managed services, on-demand global TMS technology, and comprehensive transportation management services to improve performance and reduce cost. CLX Logistics is dedicated to solving its customers' most vital logistics challenges.

J.B. Hunt Transport • www.jbhunt.com

J.B. Hunt Transport focuses on providing safe and reliable transportation services to a diverse group of customers throughout the continental United States, Canada, and Mexico. Utilizing an integrated, multimodal approach, the company provides capacity-oriented solutions centered on delivering customer value and industry-leading service. J.B. Hunt Transport Services, Inc. stock trades on NASDAQ under the ticker symbol JBHT, and is a component of the Dow Jones Transportation Average. J.B. Hunt Transport, Inc. is a wholly owned subsidiary of JBHT. For more information, visit www.jbhunt.com.





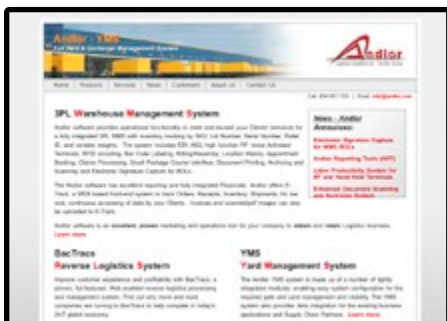
Railinc Corporation • www.railinc.com

Railinc Corp. is a leading provider of rail data, IT, and information services to the North American freight rail industry. Our Umler® and RailSight™ systems support critical rail processes from car movement to track and trace, and provide intelligence that helps railroads, rail equipment owners, their customers and business partners increase productivity and keep assets moving. Railinc is the largest single source for real-time, accurate, interline rail data and rail shipment status information.

LOGISTICS IT

Amber Road • www.amberroad.com

Amber Road's (NYSE: AMBR) mission is to improve the way companies manage their international supply chains and conduct global trade. As a leading provider of cloud-based global trade management (GTM) solutions, we automate and optimize the supply chain functions required to import and export goods: collaborating with foreign suppliers on design and quality assurance; executing import and export compliance checks; booking international carriers and tracking goods as they move around the world; and minimizing the associated duties through preferential trade agreements and foreign trade zones.



Andlor Logistics Systems • www.andlor.com

Andlor staff have partnered with the 3PL logistics industry for more than 30 years. The software is a fully integrated 3PL WMS. The Web system provides access for the total supply chain. Users create orders and appointments; access inventories/VMI, receipts, shipments, invoices, claims, EDI data, labor productivity, client messaging, and scheduled/on demand reports. Andlor also offers BacTracs for Reverse Logistics and a Yard Management System. Excellent functionality and support are the Andlor trademarks.

Cardinal Hosted Logistics • www.cardinalhostedlogistics.com

Cardinal Hosted Logistics™, a division of Cardinal Logistics Management Corporation, provides integrated technology solutions customized for each client. Created with real operations in mind, our user-friendly and flexible suite of solutions allows customers to select the applications most important to their businesses. Cardinal Hosted Logistics' offerings include: fleet, warehouse and order management solutions; hosted TMS; integrated voice technologies; routing and scheduling; and handhelds with real-time status updates, signature capture, scanning capabilities, and more. Visit us at www.cardinalhostedlogistics.com.



IN THIS SECTION:

Logistics IT

**CargoSmart • www.cargosmart.com**

CargoSmart provides global shipment management software solutions that enable shippers, consignees, and logistics service providers to improve planning and on-time deliveries. Connected to over 30 ocean carriers, CargoSmart leverages big data sources and a cloud-based platform to offer sailing schedules, visibility, documentation, contract management, compliance, and benchmarking solutions. Launched in 2000, CargoSmart helps transportation and logistics professionals to increase delivery reliability, lower transportation costs, and streamline operations. Visit CargoSmart's website to learn more.

Cass Information Systems • www.cassinfo.com

Cass is the nation's oldest and largest provider of freight bill payment, audit, and rating services. We offer a wide array of services for processing and paying freight bills, as well as our industry-leading Internet reporting service, CassPort. In business since 1906, and providing freight payment services since 1956, Cass continues to offer stability, security, and expertise in the freight audit, payment, and information market.

**CDM Software Solutions • www.cdmsoft.com**

CDM Software Solutions provides fast, efficient, user-friendly software products, services, and support for the international trade community – specifically freight forwarding, NVOCC, warehouses, importers, and exporters. We are a U.S. Customs Certified Vendor and IBM Business Partner that provides software solutions for air freight (import, export, and domestic), air freight consolidation, ocean freight (import and export), ocean freight consolidation, truck/inland freight, rail freight, warehousing, logistics, and electronic data interchange.

CipherLab • www.cipherlab.com

CipherLab is a world leader in AIDC solutions for a wide range of industries. CipherLab's expertise is at the convergence of scanning, mobile computing, and business process design. This results in more efficient supply chains, field sales services, retail operations, and reduced cost of doing business in almost every sector. CipherLab's skilled network of reliable partners delivers successful solutions to small, medium, and enterprise businesses that choose CipherLab for value, performance, and quality.





CT Logistics • www.ctlogistics.com

CT has over 91 years of global expertise and is the preeminent innovator and leader of freight payment services. Small to Fortune 100 firms partner with CT to design and deliver unique solutions. CT's FreightRater® software, the industry's first choice for freight analysis and TMS solutions, prices freight in all modes and its data model supports over 500 fields for your internal metrics. CT maximizes ROI and provides flexibility while giving complete supply chain visibility using Business Intelligent reporting for benchmarking and trending with Cognos dashboards and reports. CT has SOCII and ISO 9001:2008 certifications. Call 216-267-2000, ext.2190 to learn more.

CTSI-Global • www.ctsi-global.com

For more than 50 years, CTSI-Global has been a valuable resource to companies by providing the technology and industry expertise to help them manage all aspects of their supply chain—physical, informational, and financial—through freight audit and payment, transportation management systems (TMS), information management tools, and global consulting. The end results are improved shipping efficiencies, greater control, and significant ongoing savings. CTSI-Global is your link to supply chain solutions.



Data2Logistics • www.data2logistics.com

Data2Logistics provides the business intelligence you need to reduce transportation expense by 7 percent to 15 percent, and improve control for your freight and parcel shipments. For more than four decades, clients have relied on Data2Logistics to provide accurate pre-audit, post-audit, freight cost allocation, and robust global information. These services are provided as part of our worldwide freight bill payment capabilities. We process bills for all modes of transportation, including less-than-truckload, truckload, air, ocean, and parcel. We are a recognized source for actionable information, not just access to data. Data2Logistics has the experienced staff and global presence to service your locations in North America and around the world.

Fortigo • www.fortigo.com

Fortigo's team of experts specializes in logistics optimization and enterprise Web-based software. For companies seeking to reduce costs, improve customer satisfaction, and increase profitability, Fortigo automates, optimizes, and audits logistics decisions. Fortigo plugs into established supply chain applications and provides rapid return on investment by optimizing and deploying closed-loop logistics processes, minimizing ship-to-order times and streamlining collaboration with logistics providers.



IN THIS SECTION:

Logistics IT

**Freightgate • www.freightgate.com**

Freightgate is the leader in logistics and supply chain cloud computing, offering importers, exporters, and logistics providers innovation with bottom-line sustainability to help manage best practices and cost control in your supply chain. The adaptive Freightgate Universe encompasses ISO9001:2008-certified end-to-end Transportation Spend Management solutions with procurement, optimization, carbon initiatives, dynamic multi-leg routing, capacity management, booking, visibility, metrics, compliance, audit, and payment. Enable real-time collaboration between global vendors, logistics providers, and your offices.

MagicLogic Optimization • www.magiclogic.com

MagicLogic's Cube-IQ software represents the state-of-the-art in load planning software. It is built around the best loading engine on the market and will give you optimal volume/weight utilization. Cube-IQ comes with its own database, data import/export, 3D load diagrams, and reporting.

MagicLogic also offers the Cube-IQ BlackBox for integration into other software and websites. All versions have built-in modes of operation for container, truck, rail car, and ULD loading, palletization, and cartonization.

**Manhattan Associates • www.manh.com**

For 23 years, Manhattan Associates has provided global supply chain excellence to organizations that consider supply chain software, processes, and technology strategic to market leadership. The company's platform-based supply chain software portfolios—Manhattan SCOPE®, Manhattan SCALE™ and Manhattan Carrier™—are designed to deliver both business agility and total cost of ownership advantages and are used by 1,200 companies globally.

nVision Global Technology Solutions Inc. • www.nvisionglobal.com

nVision Global Technology Solutions, Inc. is a leading international freight audit, payment, and logistics management solutions provider. With locations in North America, Europe, and Asia, our staff is fluent in over 25 languages, and processes and pays freight invoices from over 190 countries worldwide. Over the years, our customers have come to rely on our prompt, accurate Sarbanes-Oxley-compliant freight payment services, as well as our leading-edge information management analytical tools including global mapping, graphing, benchmarking, modeling, and network optimization analysis to help them manage their overall supply chain costs.





Paradox Software Consulting • www.paradoxsci.com

Paradox Software Consulting offers software tools and consulting services for planning and executing logistics and supply chain management functions to companies of any size. Carriers, shippers, 3PLs, brokers, and logistics consultants receive the benefit of an improved bottom line and a significant return on their investment. For over 15 years, our products have continued to keep up with the industry's demands in the areas of vehicle routing and scheduling, continuous move planning, fleet sizing, lane matching, and resource scheduling, as well as network design and fulfillment planning for the supply chain. Call 855-472-7236, visit www.paradoxsci.com or email info@paradoxsci.com for more information.

Railinc Corporation • www.railinc.com

Railinc Corp. is a leading provider of rail data, IT, and information services to the North American freight rail industry. Our Umler® and RailSight™ systems support critical rail processes from car movement to track and trace, and provide intelligence that helps railroads, rail equipment owners, their customers and business partners increase productivity and keep assets moving. Railinc is the largest single source for real-time, accurate, interline rail data and rail shipment status information.



RateLinx • www.ratelinx.com

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SMC³ • www.smc3.com/smc3

SMC³ is the foremost provider of data, technology, and education as an integrated solution to the freight transportation community. SMC³'s core competency is its pricing expertise, which it delivers through products and services that simplify processes and promote collaboration between buyers and sellers of transportation services. The company currently serves more than 5,000 customers operating throughout the contiguous United States, Canada, and Mexico. SMC³'s customer base includes shippers, carriers, logistics service providers, and freight payment companies.



IN THIS SECTION:

Logistics IT



Suntek Systems Inc. • www.ilogisys.com

Suntek provides its logistics management software, *iLogisys*, for freight forwarders, NVOCCs, 3PLs, and customs brokers. As the company's flagship solution, *iLogisys* offers simple and efficient methods of logistics operation, collaboration tools between related parties, extensive supply chain visibility, B2B EDI connectivity, and more control over business management. The cost-effective and feature-rich *iLogisys* products boost your customer satisfaction, and increase sales opportunities for business growth.

Transwide • www.transwide.com/en-nafta

Transwide TMS is a modular, on-demand (SaaS) collaboration platform that enables partners in a logistics network to increase transportation performance through optimized planning, execution, visibility, and cost management. With 500+ customers (100,000+ users), 20,000+ in 80 countries across four continents, the Transwide solution suite enables shippers to source, plan, execute, settle, and analyze their transportation with maximum cost efficiency.



WIN (Web Integrated Network) • www.gowithwin.com

WIN (Web Integrated Network) is not a Transportation Management System, it's better. WIN is the no-fee, Web- based tool that enables you to manage your shipping from one place. It helps optimize freight movements; simplifying your daily transportation management activities while providing immediate savings. WIN is your route to transportation control and freight savings, and always leaves you in control of your transportation management role.

Zipline Logistics • www.ziplinelogistics.com

3PL Zipline Logistics serves a comprehensive range of products, industries, and modes. Its customized analysis and reporting tools enable transport professionals to improve their decisions and reduce costs. Personal logistics consultants are experienced and equipped to help shippers explore new markets, new modes, and shipping plans for new product lines. Contact Zipline Logistics to learn how its team of experienced, diligent logistics consultants can focus on your success and provide real value.



MATERIALS HANDLING



Akro-Mils • www.akro-mils.com

Akro-Mils is a leading manufacturer of plastic and metal storage, organization, transport and material handling products designed to improve inventory control and productivity in any setting – including industrial, medical, commercial, and consumer. As the industry leader, Akro-Mils strives to continually provide customers with innovative, quality products; unsurpassed customer service; and the fastest, most reliable shipping in the industry.

KNAPP Logistics Automation, Inc. • www.knapp.com

KNAPP Logistics Automation, Inc. is a leading global provider of automated warehouse solutions and warehouse logistics software. Our superior product technology, extensive global experience, and exceptional design capabilities enable our customers to dramatically improve their warehouse and distribution center operations. For manual picking solutions or fully-automatic all-in-one solutions, let KNAPP help you profit from the technologies of tomorrow, today!



MOISTURE & TEMPERATURE CONTROL



Multisorb Technologies • www.multisorb.com

TranSorb® container desiccants are designed for use in freight containers and warehouse storage to protect products against moisture damage. TranSorb container desiccants safeguard cargo against rust and corrosion, mold and mildew, and from spoilage. TranSorb container desiccants absorb a large quantity of moisture and safely retain it once it is absorbed into the pack. They are available in single packs, strip format, in nets, with adhesive backing, and now with hooks for convenient hanging.

MULTI-MODAL

Lynden • www.lynden.com

Over land, on the water, in the air - or in any combination - Lynden has been helping customers solve transportation problems for almost a century. Operating in such challenging areas as Alaska, Western Canada and Russia, as well as other areas around the globe, Lynden has built a reputation of superior service to diverse industries.



IN THIS SECTION:

Ocean - Pallets

OCEAN

**Bahri General Cargo • www.bahrigc.com**

Bahri General Cargo (NSCSA) offers liner services with wholly-owned, state-of-the-art Ro/Ro multipurpose vessels catering to Ro/Ro, breakbulk, projects, military, and containerized cargoes moving between the Arabian Gulf-Indian Sub-Continent-Red Sea-Mediterranean-US/Canada (East Coast)-US (Gulf) ports with 15-17 days frequency. In addition, Bahri offers personalized customer service, regular sailings, competitive rates, and effective intermodal resources. Bahri is reaching toward tomorrow's horizon by connecting economies, sharing prosperity, and driving excellence in global logistics services.

COSCO Container Lines Co. • www.coscon.com

China Ocean Shipping (Group) Company (COSCO), the national flag carrier of the People's Republic of China, is one of the world's premier full-service intermodal carriers. The company utilizes a vast network of ocean vessels, barges, railroads, and motor carriers to link the international shipper with the consignee. COSCON's 20 main-line services connect over 100 ports worldwide to reach more direct ports of call than any other carrier in the world, with weekly, fixed-day service to many destinations. The AUM-Pendulum Service's direct ports of call include Tokyo, Qingdao, Shanghai, Yantian, Hong Kong, Charleston, Norfolk, New York, Boston, Valencia, Naples, Genoa, and Barcelona.

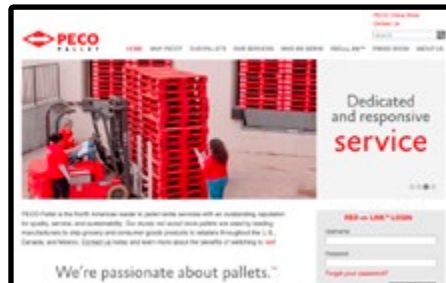
**Totem Ocean Trailer Express • www.totemocean.com**

Totem Ocean is proud to be the leading oceangoing carrier for the Alaska trade, providing twice-weekly service between the ports of Tacoma and Anchorage. Totem Ocean understands the critical role its vessels and employees play in supplying Alaskans with the things they need for life in the Last Frontier. That's why everyone at Totem Ocean is committed to giving their all to provide safe, reliable service that stands above the rest.

PALLETES

PECO Pallet • www.pecopallet.com

PECO Pallet is the North American leader in pallet rental services with an outstanding reputation for quality, service, and sustainability. Leading consumer goods manufacturers utilize PECO's sturdy red wood block pallets to ship to grocery and warehouse retailers in the U.S., Canada, and Mexico. For more information, visit www.pecopallet.com.



PORTS



JAXPORT • www.jaxport.com

As the fourth-fastest growing containerized import port in the nation, JAXPORT is now the port of choice for thousands of businesses worldwide. On the export side, we're also a top 10 U.S. port. Located in Northeast Florida in the heart of the South Atlantic, minutes away from Interstate highways and major rail hubs, your shipment is never more than a day away from 60 million consumers. Together, we can move your business further.

Port of Los Angeles • www.portoflosangeles.org

The Port of Los Angeles—America's Port® and the premier gateway for international commerce—not only sustains its competitive edge with record-setting cargo operations, but is also known for its groundbreaking environmental initiatives, progressive security measures, and an emerging LA waterfront. The port encompasses 7,500 acres of land and water along 43 miles of waterfront. It features 25 passenger and cargo terminals, including automobile, breakbulk, container, dry and liquid bulk, and warehouse facilities that handle billions of dollars worth of cargo each year.

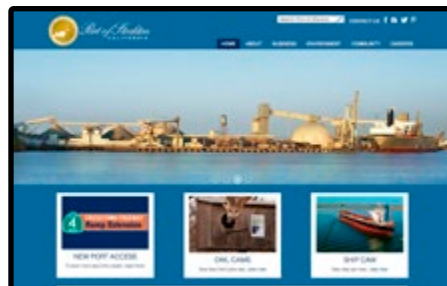


Port of Palm Beach • www.portofpalmbeach.com

The Port of Palm Beach is a 162-acre, full-service, diversified port, handling a full range of cargoes and moving \$4 billion worth of commodities, two million tons of diversified cargoes, and more than 340,000 passengers annually. The Port is committed to the highest levels of service and to fiscal and environmental responsibility while ensuring the utmost safety and security. For more information on the Port of Palm Beach, please visit www.portofpalmbeach.com.

Port of Stockton • www.portofstockton.com

Located 75 nautical miles from San Francisco Bay, Port of Stockton is a 35-ft. deep-water international, inland port located in FTZ#231, providing secure 24/7 access and operations, 15 berths, and 2,000 operating acres. It has true on-dock rail for direct-vessel load and discharge for transfers to/from warehouses, DCs, trucks and open storage areas. Import/export cargo includes steel, heavy projects, bulk, and more. The port has two 140-ton mobile harbor cranes and reinforced docks to facilitate heavy-lifts.



IN THIS SECTION:

Printing Solutions - Rail

PRINTING SOLUTIONS

**SATO • www.satoamerica.com/CLNX**

SATO is a pioneer in the Automatic Identification and Data Collection (AIDC) industry, and the inventor of the world's first electronic thermal transfer bar-code printer. It revolutionized the bar-coding industry by introducing the Data Collection System (DCS) & Labeling concept - a total bar-code and labeling solution providing high-quality bar-code printers, scanners/handheld terminals, label design software, and consumables. SATO is one of the first in the industry to introduce a complete, multi-protocol EPC-compliant, UHF RFID solution. Turn to SATO for all your bar-code and RFID printing needs.

PROJECT LOGISTICS

Lynden • www.lynden.com

Over land, on the water, in the air - or in any combination - Lynden has been helping customers solve transportation problems for almost a century. Operating in such challenging areas as Alaska, Western Canada and Russia, as well as other areas around the globe, Lynden has built a reputation of superior service to diverse industries.



RAIL

**Alaska Railroad • www.alaskarailroad.com**

If you have freight or equipment to transport to or from Alaska, or within Alaska, contact the Alaska Railroad first. We have the people, equipment, and experience to move difficult, heavy, large, and unusual dimensioned freight, as well as containerized and hazardous materials. With the Alaska Railroad's Rail-Marine Service, customers can load their goods onto a railcar in the Lower 48, and it will be seamlessly transferred to Alaska and railbelt communities via the Alaska Railroad's port in Seattle.

Canadian National (CN) • www.cn.ca

CN's network of logistics parks are strategically located at the heart of North America to connect your business to world markets. Located in, or adjacent to, its intermodal rail yards, CN provides you with seamless and efficient transportation and easy access to major highways. CN provides access to all key logistics services - rail, intermodal, warehousing, distribution, CargoFlo liquid and dry bulk transload, and Autoport distribution facilities - in one location. As your supply chain partner, CN can help you find your new distribution home.





Railinc Corporation • www.railinc.com

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RAPID RESPONSE LOGISTICS

Lynden • www.lynden.com

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REAL ESTATE



Dalfen America Corp. • www.dalfen.com

Dalfen America Corp. is a private equity firm specializing in real estate and real estate-related investments. Dalfen acquires, develops, owns, and manages millions of square feet of premier commercial properties throughout the United States and in Canada. The company's success is rooted in its focus on real estate fundamentals, careful and detailed analysis, and the strength of the relationships it builds with clients, investors, suppliers, and lenders. Put Dalfen's combination of real estate experience and business acumen to work for you.

Mericle Commercial Real Estate • www.mericlereadytogo.com

Mericle Commercial Real Estate Services has developed more bulk industrial space and fully prepared sites than any other private developer along Pennsylvania's I-81 Corridor. Mericle has a wide variety of space available - all with ceiling clear heights in excess of 30' and all located immediately adjacent to an interstate. Mericle lists many 3PLs and 13 of the nation's top e-commerce fulfillment companies among its numerous tenants and clients. All of Mericle's available industrial properties can be reviewed at www.mericlereadytogo.com.



IN THIS SECTION:

Recruiting - Shipping Software

RECRUITING



Vaco Logistics • www.vacologistics.com

Vaco Logistics partners with clients on strategic talent acquisitions in the areas of logistics, transportation, distribution and supply chain. Our recruiting team is comprised of former industry professionals that understand the job and can match the right candidate to the position the first time. When faced with a critical hire that requires specialized expertise or the opportunity to hand-pick dynamic players, Vaco Logistics is here to serve you. Free Yourself.

RETAIL LOGISTICS

AFN • www.loadafn.com

Serving carriers, manufacturers, and retailers since 2003, AFN is a recognized leader in freight brokerage, third-party logistics, and transportation management services. We're known for our commitment to client service, our proactive approach to fighting cargo theft, and our expertise in retail compliance. AFN's team works with you to provide a solution that blends seamlessly into your daily business processes.



REVERSE LOGISTICS



KNAPP Logistics Automation, Inc. • www.knapp.com

KNAPP Logistics Automation, Inc. is a leading global provider of automated warehouse solutions and warehouse logistics software. Our superior product technology, extensive global experience, and exceptional design capabilities enable our customers to dramatically improve their warehouse and distribution center operations. For manual picking solutions or fully-automatic all-in-one solutions, let KNAPP help you profit from the technologies of tomorrow, today!

SHIPPING SOFTWARE

Cardinal Hosted Logistics • www.cardinalhostedlogistics.com

Cardinal Hosted Logistics™, a division of Cardinal Logistics Management Corporation, provides integrated technology solutions customized for each client. Created with real operations in mind, our user-friendly and flexible suite of solutions allows customers to select the applications most important to their businesses. Cardinal Hosted Logistics' offerings include: fleet, warehouse and order management solutions; hosted TMS; integrated voice technologies; routing and scheduling; and handhelds with real-time status updates, signature capture, scanning capabilities, and more. Visit us at www.cardinalhostedlogistics.com.





RateLinx • www.ratelinx.com

RateLinx provides transportation management solutions, TMS technology, and freight payment and auditing for companies for all modes, as well as providing cutting-edge Vendor Compliance technology and methodologies for companies with vendor compliance programs and the vendors that utilize them. RateLinx manages and/or services freight in the billions of dollars for thousands of shippers both domestically and internationally, and is recognized as a leading manufacturer of integrated logistics software for small parcel, LTL, truckload, ocean, air, and expedited shipping. For more information, visit our website or contact us at sales@ratelinx.com.

SITE SELECTION

Hoosier Energy • www.hepn.com

Hoosier Energy is a generation and transmission cooperative providing electric power to 17 member electric distribution cooperatives in central and southern Indiana and one member cooperative in Illinois. Based in Bloomington, Ind., Hoosier Energy operates coal, natural gas, and renewable energy power plants and delivers power through a 1,450-mile transmission network. Hoosier Energy is a Touchstone Energy Cooperative, one member of a nationwide alliance of electric co-ops providing high standards of service according to four core values: integrity, accountability, innovation, and commitment to community.



Kentucky Cabinet for Economic Development • www.thinkkentucky.com

Many of the world's most successful companies have discovered that Kentucky, land of the thoroughbred, is a great place to build their business. Kentucky is home to not one, but two air cargo hubs, ranking the state third in the nation in total cargo. Kentucky's industrial power costs rank sixth-lowest in the United States, and are over 22 percent less than the national average.

TVA Economic Development • TVAsites.com

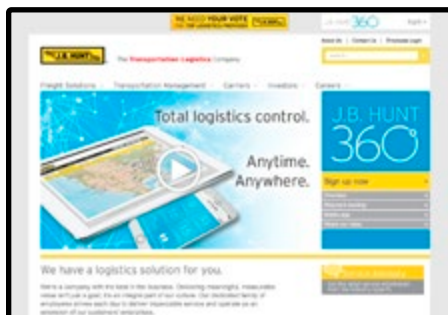
TVA's GIS-based online database helps corporate and site selection consultants identify optimal properties available in the 80,000-square-mile TVA region. Search for available properties and buildings (2,000 listings), find demographic data, and download maps. Your source for economic development information and services in the seven-state TVA region is TVAsites.com.



IN THIS SECTION:

SmartWay - Supply Chain Mgmt/Optimization

SMARTWAY



J.B. Hunt Transport • www.jbhunt.com

J.B. Hunt Transport focuses on providing safe and reliable transportation services to a diverse group of customers throughout the continental United States, Canada and Mexico. Utilizing an integrated, multimodal approach, the company provides capacity-oriented solutions centered on delivering customer value and industry-leading service. J.B. Hunt Transport Services, Inc. stock trades on NASDAQ under the ticker symbol JBHT, and is a component of the Dow Jones Transportation Average. J.B. Hunt Transport, Inc. is a wholly owned subsidiary of JBHT. For more information, visit www.jbhunt.com.

SOURCING/NEGOTIATIONS

ClearTrack Information Network • www.cleartrack.com

ClearTrack is dedicated to supplying supply chain execution solutions to help retailers improve operational performance and reduce costs. Our latest product offering, Load Tender X-change™, automates the request for pricing, load bidding and the tender process for truckload and less-than-truckload shipments by activating the power of cloud technology to seamlessly connect with your preferred carrier community.



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SUPPLY CHAIN MGMT/OPTIMIZATION

C3 Solutions • www.c3solutions.com

C3 Solutions provides advanced software applications that transform static logistics operations into dynamic flow-through centers. C3 Reservations, its web-based dock scheduling system, streamlines the scheduling process by improving dock productivity, expanding visibility on scheduled appointments, and measuring vendor compliance. Yard Smart, C3's award-winning yard management system (YMS), empowers yard managers by providing visibility on yard assets, optimizing the flow of trailers from gate to gate, and automating yard driver task assignment.





Compliance Networks • www.compliancencetworks.com

Compliance Networks' retail-centric solutions optimize supply chain flow by automating key processes including: vendor compliance and collaboration, scorecards and certification, chargeback management, purchase order fill rate and accuracy measurement, and supply chain alerts. This enables greater supply chain efficiencies. Compliance Networks provides better business intelligence so retailers can make informed decisions and collaborate with suppliers to increase vendor compliance and directly improve the bottom line. Compliance Networks offers a no-risk approach to recovering lost profits in as little as 120 days.

INSIGHT, Inc. • www.insightoutsmart.com

INSIGHT, Inc. provides optimization-based supply chain analytics and consulting services to meet today's dynamic business challenges. INSIGHT solves the complex supply chain strategic, tactical, and financial planning management issues of the world's foremost companies, such as ExxonMobil, Nestle, and BASF. Our software and services help firms minimize costs, maximize profits, free up capital, streamline operations, and increase customer service levels.



Paradox Software Consulting • www.paradoxsci.com

Paradox Software Consulting offers software tools and consulting services for planning and executing logistics and supply chain management functions to companies of any size. Carriers, shippers, 3PLs, brokers, and logistics consultants receive the benefit of an improved bottom line and a significant return on their investment. For over 15 years, our products have continued to keep up with the industry's demands in the areas of vehicle routing and scheduling, continuous move planning, fleet sizing, lane matching and resource scheduling, as well as network design and fulfillment planning for the supply chain. Call 855-472-7236, visit www.paradoxsci.com or emailinfo@paradoxsci.com for more information.

Werner Enterprises Inc. • www.werner.com

Werner Enterprises is a premier transportation and logistics company, with coverage throughout the United States, Canada, Mexico, and China. Werner maintains a global headquarters in Omaha, offering 24/7/365 service. Werner is among the five largest truckload carriers in the United States, with a service portfolio that includes long-haul, regional and local van capacity, temperature-controlled, flatbed, dedicated, and expedited. Werner's value-added services portfolio includes import and export freight management, PO and vendor management, truck brokerage, intermodal, load/mode and network optimization, and global visibility. Internationally, Werner provides freight forwarding and customs brokerage services, and is a licensed NVOCC.



IN THIS SECTION:

Supply Chain Visibility - TMS

SUPPLY CHAIN VISIBILITY

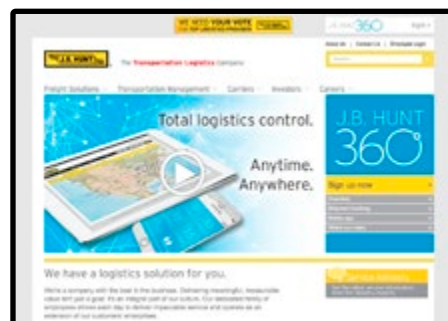
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SUSTAINABILITY

J.B. Hunt Transport • www.jbhunt.com

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TEMPERATURE-CONTROLLED SHIPPING

**Frozen Food Express • www.ffeinc.com**

Frozen Food Express strives to be the leader in the temperature-controlled LTL market. We will leverage our core competencies in refrigerated transportation and storage that have been developed over 65 years to provide our customers with the highest levels of service which represent great value. Every member of the FFE team will work in a collaborative manner to exceed the expectations of our customers. We will always strive to deliver a great customer experience and perform with honesty, integrity, and a sense of urgency to deliver on what we promise. We have been very busy here at Frozen Food Express upgrading our technology and service centers in preparation for the Food Safety Modernization Act. Give us a call at 800-569-9200 to find out how we can be a great addition to your business. Don't forget to ask about our Guaranteed Service Offering. Visit our website at www.ffeinc.com

TMS

Acuitive Solutions • www.acuitivesolutions.com

Acuitive Solutions is a privately held provider of cloud-based supply chain software/solutions based in Charlotte, N.C. Founded in 2002, Acuitive is recognized as an innovative force in the emerging International TMS market specializing in air freight, ocean, and small parcel. Acuitive's clients include leading companies such as The Home Depot, Ralph Lauren, Jo-Ann Stores, PVH, Hasbro, J-Crew, Pier 1 Imports, Avon Products, and Dorel Industries.





Aljex Software Inc. • www.aljex.com

Aljex has an innovative Web-based software for carriers, freight brokers, and intermodal specialists. If you see a demo of our software, you will want it. Why? You will see how Aljex can easily double the number of shipments you can handle. It's so easy to learn that we include unlimited training and support. With Aljex, there is no long, painful switchover. In 48 hours, we can have you trained, linked into the load boards, have your logo on your forms, your users set up, your carriers and customers imported, and ready to work.

Cardinal Hosted Logistics • www.cardinalhostedlogistics.com

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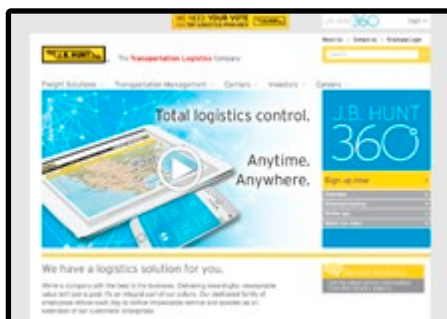


CLX Logistics • www.clxlogistics.com

CLX Logistics is a global provider of comprehensive logistics management, technology, and supply chain consulting services to a broad base of industry verticals. From chemical and energy to manufacturing, retail, agriculture, automotive and heavy haul, we help clients in nearly every industry to realize sustainable supply chain value by employing a mix of managed services, on-demand global TMS technology, and comprehensive transportation management services to improve performance and reduce cost. CLX Logistics is dedicated to solving its customers' most vital logistics challenges.

J.B. Hunt Transport • www.jbhunt.com

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IN THIS SECTION:

TMS



McLeod Software • www.mcleodsoftware.com

McLeod Software is the leader when it comes to transportation management solutions, including our comprehensive Freight Management Solutions (FMS) for shippers. We deliver powerful bidding/procurement, carrier realignment, order consolidation/load optimization, load execution, and spot market capabilities all in one solution. McLeod's FMS reduces freight costs and freight spend, and strengthens the carrier relationship. McLeod Software is dedicated to providing the best software offerings available to the transportation industry.

RateLinx • www.ratelinx.com

RateLinx provides transportation management solutions, TMS technology, and freight payment and auditing for companies for all modes, as well as providing cutting-edge Vendor Compliance technology and methodologies for companies with vendor compliance programs and the vendors that utilize them. RateLinx manages and/or services freight in the billions of dollars for thousands of shippers both domestically and internationally, and is recognized as a leading manufacturer of integrated logistics software for small parcel, LTL, truckload, ocean, air, and expedited shipping. For more information, visit our website or contact us at sales@ratelinx.com.



TransportGistics • www.transportgistics.com

TransportGistics is a global, multi-product and services company that provides market-leading, simple, incremental solutions for transportation management and logistics functions within the supply chain. Our Web-based solutions enable our customers to source, procure, and execute transportation services; enable collaboration; reduce costs; improve processes; identify hidden costs of transportation; improve vendor compliance routing guides; improve Supplier Relationship Management; monitor vendor performance; improve shipment visibility; generate automatic, status-driven alerts; and monitor carrier performance with respect to time in transit, service failure, and billing.

Transwide • www.transwide.com/en-nafta

Transwide TMS is a modular, on-demand (SaaS) collaboration platform that enables partners in a logistics network to increase transportation performance through optimized planning, execution, visibility, and cost management. With 500+ customers (100,000+ users), 20,000+ in 80 countries across four continents, the Transwide solution suite enables shippers to source, plan, execute, settle, and analyze their transportation with maximum cost efficiency.





TransWorks • www.trnswrks.com

TransWorks offers fully integrated TMS/Supply Chain Execution solutions that automate transportation processes and provide instant savings without capital investment. We accomplish this by leveraging the best technology, and seamlessly integrating it with our customers' ERP platform. TransWorks has consistently delivered the best TMS solutions, and enables our customers to communicate more effectively with their carriers and customers. *Inbound Logistics* Top 100 Logistics IT Provider since 2006.

UltraShipTMS • www.ultrashiptms.com

UltraShipTMS offers award-winning software-as-a-service solutions to leading shippers in food production, packaging, retail and other industries. UltraShipTMS and LoadFusion Transportation Optimizer (the Stevie Awards' 2013 Transportation Product of the Year) provide a single-source solution for optimization, transportation, and settlement for inbound and outbound shipping across all modes of transport. Robust private fleet management capabilities unmatched by any other solution currently available make UltraShipTMS an emerging leader in the supply chain management industry.



WIN (Web Integrated Network) • www.gowithwin.com

WIN (Web Integrated Network) is not a Transportation Management System, it's better. WIN is the no-fee Web-based tool that enables you to manage your shipping from one place. It helps optimize freight movements; simplifying your daily transportation management activities while providing immediate savings. WIN is your route to transportation control and freight savings, and always leaves you in control of your transportation management role.

TRANSPORTATION

Lynden • www.lynden.com

Over land, on the water, in the air - or in any combination - Lynden has been helping customers solve transportation problems for almost a century. Operating in such challenging areas as Alaska, Western Canada and Russia, as well as other areas around the globe, Lynden has built a reputation of superior service to diverse industries.



IN THIS SECTION:

Transportation - Transportation Mgmt/Freight Mgmt

**MCS Logistics • www.mcs-logistics.com**

MCS Logistics is a transportation company dedicated to helping companies across the country move their freight quickly and cost effectively. We strive to surpass our customers' expectations, all while providing the best customer service each and every day. Our mission is to provide the finest in one-stop freight solutions based on reliability, prompt service, honesty, and trust. Our services include full truckload shipping, refrigerated LTL out of Chicago, domestic intermodal, and cold storage warehousing.

Pacific Alaska Freightways • www.pafak.com

Pacific Alaska Freightways has been providing freight transportation services to Anchorage, Fairbanks, Kenai, Kodiak, and Southeast Alaska business and consumers since 1961. We have gained experience in all modes of transportation to Alaska including steamship, barge, rail, air, and over-the-road. In addition, with established intermodal, LTL, and truckload carrier services available in the lower 48 states, we can offer seamless origin to destination services to all our clients throughout Alaska. We take pride in packaging our services to accommodate the best value to our Alaska customers and we have the experience to provide the on-time service you require cost effectively to your door.

**Performance Team • www.performanceteam.net**

Performance Team is the only thing that should come between your products and your customers. For nearly 25 years, Performance Team has been offering its expertise to the retail and manufacturing industries with a broad range of supply chain services including: trucking, distribution, logistics, and fulfillment. Through 11 domestic hubs, over 5.1 million square feet of warehouse space, and a fleet of more than 400 trucks, Performance Team's skilled team of employees processes approximately \$100 billion in wholesale goods. See why Performance Team continuously earns a reputation as the premiere trucking, consolidation, and distribution company in the United States; log on to www.performanceteam.net.

TRANSPORTATION MGMT/FREIGHT MGMT

Robocom Systems International Inc. • www.robocom.com

Robocom is a Supply Chain Execution software company offering solutions that include warehouse management, 3PL billing, transportation management, voice technology, and labor management. An Enterprise Transportation System and Enterprise Resource Planning System round out the Supply Chain Execution offering. Robocom's solutions address the needs of business leaders responsible for the day-to-day results in warehousing, distribution, third-party logistics, transportation, and trucking operations.





TranSolutions Inc. • www.transolutionsinc.com

TranSolutions Inc. is a leading supplier of freight claim management, logistics, claim recovery, loss and damage software, freight claim overcharge, loss prevention database, and Web-based applications. Our clients include Global 5000 companies in the specialty chemicals, pharmaceuticals, consumer packaged goods, and food and beverage industries. Since 1997, TranSolutions Inc. has helped companies decrease freight claim-generation cycle time and increase claim documentation organization, while reducing data input errors, accelerating carrier claim payment, increasing efficiency, improving quality, and directly influencing the freight claims management process.

Wagner Logistics • go.wagnerlogistics.com/home

Wagner Logistics offers dedicated warehousing, transportation management, packaging and assembly operations across the United States with over three million square feet of warehousing space. We provide genuine customer service to our customers and our superior onboarding process will make your customer's transition seamless. We work tirelessly to find innovative solutions to reduce supply chain costs while increasing your speed-to-market with our latest technology.



TRUCKING

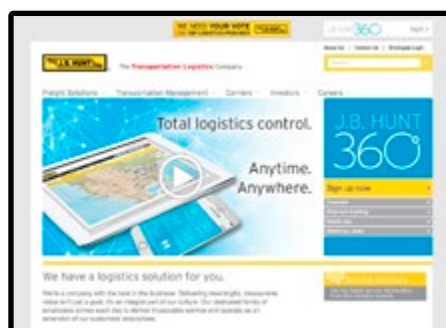


AAA Cooper Transportation • www.aacooper.com

AAA Cooper Transportation has been delivering safe, efficient transportation for more than 50 years. With strategically located service centers, we are prepared to give individual attention to your shipping needs. AAA Cooper Transportation is dedicated to the long-term sustainability of the environment, and continues to implement processes that will make the world a better place to live for generations to come.

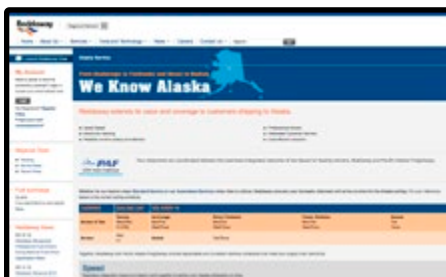
J.B. Hunt Transport • www.jbhunt.com

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IN THIS SECTION:

Trucking-Flatbed - Trucking-LTL



Reddaway • www.reddawayregional.com

Reddaway has provided western regional coverage since 1919, and has built a long-standing industry-leading tradition of next-day and two-day delivery service. With high on-time reliability and one of the lowest claim ratios in the West, Reddaway is a complete and formidable western service provider. Reddaway provides direct, regional delivery in 12 western states and one Canadian province, ships door-to-door to Hawaii, and provides ocean delivery to Alaska via twice-weekly sailings.

TRUCKING-FLATBED

Lynden • www.lynden.com

Over land, on the water, in the air - or in any combination - Lynden has been helping customers solve transportation problems for almost a century. Operating in such challenging areas as Alaska, Western Canada and Russia, as well as other areas around the globe, Lynden has built a reputation of superior service to diverse industries.



TRUCKING-HEAVY SPECIALIZED



Lynden • www.lynden.com

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TRUCKING-LTL

AAA Cooper Transportation • www.aaacooper.com

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Colonial Cartage Corporation • www.colonialcartage.com

Since 1969, Colonial Cartage Corporation (CCC), ABW's in-house carrier, has provided regular temperature-controlled LTL and TL service to all points in the Southeast. CCC currently manages over 11,000 truckloads annually to support plant production facilities. We recently expanded our service areas to include LTL service to the Southwest, Midwest, and Great Plains as far West as the Rockies, with truckload service on additional lanes to IL, TX, PA, and other regions. As an industry leader on safety, we focus on exceptional service to satisfy the most stringent risk management and customer service requirements.

Frozen Food Express • www.ffeinc.com

Frozen Food Express strives to be the leader in the temperature-controlled LTL market. We will leverage our core competencies in refrigerated transportation and storage that have been developed over 65 years to provide our customers with the highest levels of service which represent great value. Every member of the FFE team will work in a collaborative manner to exceed the expectations of our customers. We will always strive to deliver a great customer experience and perform with honesty, integrity, and a sense of urgency to deliver on what we promise. We have been very busy here at Frozen Food Express upgrading our technology and service centers in preparation for the Food Safety Modernization Act. Give us a call at 800-569-9200 to find out how we can be a great addition to your business. Don't forget to ask about our Guaranteed Service Offering. Visit our website at www.ffeinc.com



Lynden • www.lynden.com

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New England Motor Freight • www.nemf.com

New England Motor Freight (NEMF) is one of the privately-held Shevell Group of Companies. Its service area covers the northeastern and mid-Atlantic states from Maine to Virginia along with service to Ohio, the Chicago area and Puerto Rico. The largest fleet in the Northeast with over 8,000 trucks and trailers, NEMF provides a broad array of supply chain-related services. Through partnerships with leading carriers in other regions, NEMF provides service to the remaining U.S. states including Alaska and Canada. NEMF, with corporate offices in Elizabeth, N.J., is a family-owned, non-Teamster carrier that can commit to a long-term partnership with you. Visit our website for details.



IN THIS SECTION:

Trucking-LTL - Trucking-TL

**Saia LTL Freight • www.saia.com**

For nearly 90 years, Saia LTL Freight has been providing customers with fast, reliable regional and interregional shipping. With 147 terminals located in 34 states, Saia LTL Freight offers a range of products and services that are backed up by a guarantee like no other in the industry. Our Customer Service Indicators, or CSIs, allow us to measure our performance each month against a set of six indices that our shippers said are the most important to them.

TRUCKING-TL

Eastern Freight Ways • www.easternfreightways.com

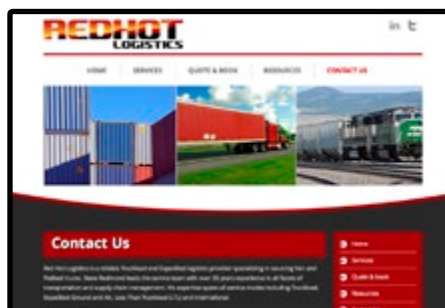
Eastern Freight Ways, a member of the Shevell Group, is the premium service truckload and flatbed carrier in the U.S. Northeast and Mid-Atlantic. Our "on the ball" motto exemplifies our service record of excellent response time, guaranteed equipment availability, and outstanding on-time performance. By combining third generation successful transportation experience and state-of-the-art technology, Eastern Freight Ways can customize our trucking services to suit your needs and become your proactive resource for the most stringent shipping challenges. Contact Eastern Freight Ways today for premium truckload service. Rest assured knowing your shipment will arrive on time every time!

**Lynden • www.lynden.com**

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Red Hot Logistics • redhotcorp.com

Red Hot Logistics is a reliable truckload and expedited logistics provider specializing in sourcing van and flatbed trucks. Steve Redmond leads the service team, with over 25 years of experience. His expertise includes all modes of transportation from truckload to less-than-truckload to international, among other options. Red Hot Logistics is based in Overland Park, Kansas.



VENDOR COMPLIANCE



ClearTrack Information Network • www.cleartrack.com

ClearTrack is dedicated to supplying supply chain execution solutions to help retailers improve operational performance and reduce costs. Our latest product offering, Load Tender X-change™, automates the request for pricing, load bidding and the tender process for truckload and less-than-truckload shipments by activating the power of cloud technology to seamlessly connect with your preferred carrier community.

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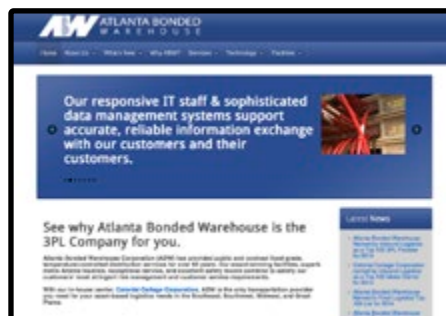
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WAREHOUSING

Atlanta Bonded Warehouse Corporation • www.atlantabonded.com

Atlanta Bonded Warehouse (ABW) Corporation has provided public and contract food-grade, temperature-controlled distribution services for more than 60 years. Its award-winning facilities, superb metro Atlanta location, exceptional service, and excellent safety record combine to satisfy customers' most stringent risk management and customer service requirements. With its in-house carrier service, and extensive network of interline partners, ABW is the only provider you need for your asset-based logistics needs in the Southeast.



IN THIS SECTION:

Warehousing



D&D Distribution Services • www.dd-dist.com

Full-service public warehousing and distribution services provider D&D Distribution Services is centrally located in York, Pa., near the mid-Atlantic region's major metropolitan areas and seaports. We serve customers around the globe, developing customized logistics and customer service solutions. Handling raw materials at the front end of the supply chain, and finished goods at the back, D&D Distribution Services develops flexible programs to accomplish customers' goals.

Metro Park Warehouses, Inc. • www.mpwus.com

Metro Park Warehouses, Inc. is a full-service 3PL offering 2 million square feet in Kansas City of modern food-grade warehousing space, including medical temperature-controlled space, ATF and national pharmaceutical licensed distribution, AIB Superior ratings, and 5 rail facilities, all open to reciprocal switching. Value-added services include end-to-end call center, shipping, and invoicing; retail display building; heat-tunnel packaging and shrink-wrapping; and a dedicated local and regional trucking fleet. Contact Metro Park to gain the competitive edge.



Wagner Logistics • go.wagnerlogistics.com/home

Wagner Logistics offers dedicated warehousing, transportation management, packaging and assembly operations across the United States with over three million square feet of warehousing space. We provide genuine customer service to our customers and our superior onboarding process will make your customer's transition seamless. We work tirelessly to find innovative solutions to reduce supply chain costs while increasing your speed-to-market with our latest technology.

The West Logistics Group • www.westgl.com

The West Logistics Group is an asset-based, Southeast-focused third-party logistics company specializing in grocery, consumer packaged goods, and industrial products. With nearly one million square feet of distribution space, our customer-focused, single-point-of-contact team lives and breathes customer service with a commitment to technology, and assets including radio frequency-operated warehouses, temperature-controlled space, rail-served facilities, and flexible data communication options. If you need warehousing, transportation, distribution, freight management, consolidation, or overall supply chain knowledge, let the West Logistics Group service your world.



WMS

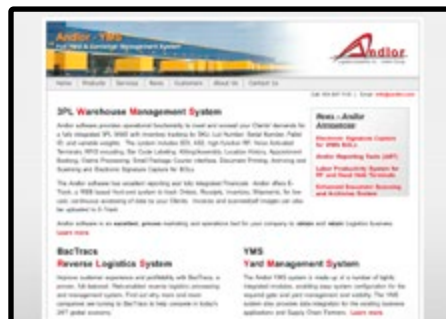


Aljex Software Inc. • www.aljex.com

Aljex has an innovative Web-based software for carriers, freight brokers, and intermodal specialists. If you see a demo of our software, you will want it. Why? You will see how Aljex can easily double the number of shipments you can handle. It's so easy to learn that we include unlimited training and support. With Aljex, there is no long, painful switchover. In 48 hours, we can have you trained, linked into the load boards, have your logo on your forms, your users set up, your carriers and customers imported, and ready to work.

Andlor Logistics Systems • www.andlor.com

Andlor staff have partnered with the 3PL logistics industry for more than 30 years. The software is a fully integrated 3PL WMS. The Web system provides access for the total supply chain. Users create orders and appointments; access inventories/VMI, receipts, shipments, invoices, claims, EDI data, labor productivity, client messaging, and scheduled /on demand reports. Andlor also offers BacTracs for Reverse Logistics and a Yard Management System. Excellent functionality and support are the Andlor trademarks.



Interlink Technologies • www.thinkinterlink.com

Interlink Technologies is consistently ranked in the Top 100 Technology Solutions. Boost productivity and profits, work with real-time, accurate information and get control of inventory! Interlink Technologies brings the latest technologies and solutions into warehouses with Web-based Warehouse Link® WMS software. Warehouse Link supports multi-building/company/locations, multi-receiving/putaway/picking methods, tracking raw materials to finished product, expiration dates, lot/batch/serial numbers, environmental controls, kitting, wave picking, dynamic slotting, staging, cross dock, shuttle transfer and "lite" manufacturing.

proVision WMS • www.provisionwms.com

proVision WMS Warehouse Management Software, designed specifically for small to medium-sized companies, delivers real-time visibility into vital inventory and labor resources while coordinating order fulfillment, customer service, and cycle times - for single or multiple warehouses. Totally flexible and configurable to your business, proVision gives you the control over your specific warehouse workflow and business rules. Easily integrating with existing ERP/accounting software, proVision WMS delivers increased productivity and profitable warehouse operations for much less than other warehouse software.



IN THIS SECTION:

WMS - Yard Management



Robocom Systems International Inc. • www.robocom.com

Robocom is a Supply Chain Execution software company offering solutions that include warehouse management, 3PL billing, transportation management, voice technology, and labor management. An Enterprise Transportation System and Enterprise Resource Planning System round out the Supply Chain Execution offering. Robocom's solutions address the needs of business leaders responsible for the day-to-day results in warehousing, distribution, third-party logistics, transportation, and trucking operations.

YARD MANAGEMENT

C3 Solutions • www.c3solutions.com

C3 Solutions provides advanced software applications that transform static logistics operations into dynamic flow-through centers. C3 Reservations, its Web-based dock scheduling system, streamlines the scheduling process by improving dock productivity, expanding visibility on scheduled appointments, and measuring vendor compliance. Yard Smart, C3's award-winning yard management system (YMS), empowers yard managers by providing visibility on yard assets, optimizing the flow of trailers from gate to gate, and automating yard driver task assignment.

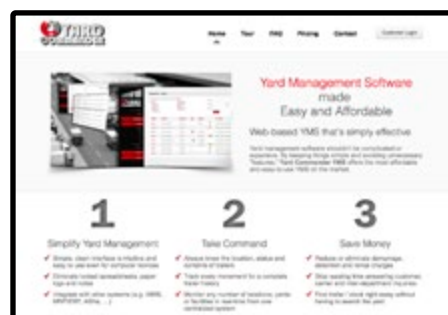


Cypress Inland (Yardview) • www.yardview.com

YardView is a Web-based yard management system that is easy to learn and simple to use for operations personnel. Managing yard inventories, movements, appointments, drivers, carriers, time-related events, and other yard activities can be difficult. YardView works for any size operation. YardView is experienced with helping operations become more effective. YardView gets everyone on the same page. The benefits of a software program to help manage these processes are proven and can be realized by your operation. Contact our experts to discuss how we can translate what you are doing now into a more efficient system. Call 303-781-3430.

Sentier Systems Inc. (Yard Commander) • www.yardcommander.com

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MAY
19

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www.tiacasummit.org | Miami, Fla. | May 19-25

AUDIENCE: Supply chain professionals, air cargo shippers and stakeholders

FOCUS: Operating in South America, Latin America, and the Caribbean; impending electronic manifest regulations; dangerous goods regulations; the future of air cargo

OCT 18-21, 2015 Chicago, Ill.
Customized Logistics and Delivery Association

PARCEL Forum '15

www.parcelforum.com

AUDIENCE: Distribution, logistics, supply chain, and warehouse managers; small-package supply chain stakeholders

FOCUS: Educational tracks and case studies; dimensional weight pricing; home delivery strategies; distribution center tours; regional carrier, warehousing, and materials handling exhibition

CONFERENCES

JUNE 1-3, 2015 San Diego, Calif.
Worldwide Business Research

INTERLOG

interlog.wbrresearch.com

AUDIENCE: Aftermarket service parts supply chain stakeholders

FOCUS: Import/export and trade agreement compliance, managing the global supply network, Lean inventory planning strategies, driving supply chain performance with metrics, establishing sustainable customer relationships

JUNE 3, 2015 Arlington, Va.
Institute for Supply Management

Risk Management Summit

www.ism.ws

AUDIENCE: Supply chain and procurement professionals

FOCUS: Supply chain continuity and resiliency, best practices in risk management, identifying critical risks, gaining visibility into the supply chain

JULY 13-14, 2015 Lake Geneva, Wis.
Midwest Association of Rail Shippers

Summer Meeting

www.mwrailshippers.com

AUDIENCE: Supply chain and transportation managers, rail shippers

FOCUS: Resolving transportation and railcar supply problems, railroad operating practices, innovations in transportation, new rail legislation

SEPT 20-22, 2015 Ft. Lauderdale, Fla.

Intermodal Association of North America

Intermodal EXPO

www.intermodal.org

AUDIENCE: Supply chain and transportation professionals, intermodal shippers and stakeholders

FOCUS: The future of intermodal in 2015 and beyond, effects of maritime labor uncertainties, chassis provisioning, intermodal conversion, managing drayage relationships, intermodal legislative update, intermodal solutions exhibition

SEPT 27-30, 2015 San Diego, Calif.

Council for Supply Chain Management Professionals

2015 Annual Conference

www.cscmp.org

AUDIENCE: Supply chain, logistics, and transportation professionals

FOCUS: Supply chain innovations, cultivating an environment that fosters leadership, manufacturing performance from a supply chain perspective, supply chain best practices, supply chain infrastructure

OCT 5-7, 2015 Las Vegas, Nev.

The Association for Operations Management

APICS 2015

www.apics.org

AUDIENCE: Supply chain and logistics professionals

FOCUS: Best practices in sustainable supply chains, solutions exhibition, the future of supply chain and operations management

SEMINARS & WORKSHOPS

MAY 18-20, 2015 Overland Park, Kansas
University of Kansas

How to Lay Out a Warehouse

ceipe.ku.edu/warehouse

AUDIENCE: Warehouse and distribution managers, industrial engineers, supply chain planners and managers

FOCUS: Reducing handling costs, optimizing storage efficiency, improving warehouse performance, planning for growth and expansion, building flexibility

MAY 29, 2015 Bethlehem, Pa.

Lehigh University Center
for Supply Chain Research

APICS Certified Supply Chain Professional Certification

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AUDIENCE: Logistics and supply chain professionals

FOCUS: Supply chain management best practices, concepts, metrics, techniques, and methodologies; impact of sales and operations planning on the supply chain

MAY 31-JUNE 5, 2015 Lansing, Mich.
Michigan State University

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execed.broad.msu.edu

AUDIENCE: Supply chain, logistics, procurement professionals

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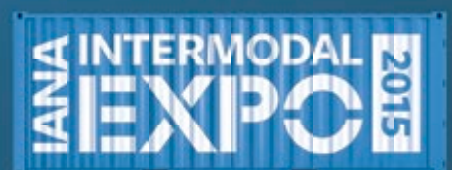
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Juraj Vaculik, co-founder and CEO (left), and Stefan Klein, co-founder, CTO, and chief designer of AeroMobil, are making their dream of a flying car come true.





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We hope you enjoy our service.

Agile Logistics Inc.

SHIPMENT FACT			
Invoice BL No.	Master BL No.	AMS BL No.	SCS No.
438-101008	HSC 101008	AMS 101008	4381010100001
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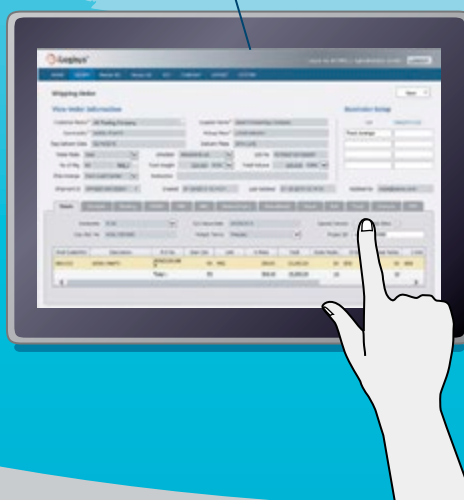
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